Upper Flamingo Wash Detention Basin

Letter of Map Revision

Volume 1
Report

Prepared By:

Black & Veatch
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Prepared For:

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Las Vegas, NV 89101

EXECUTIVE SUMMARY

RECD

PREFACE

On behalf of Clark County (Community No. 320003), this report and supporting information has been assembled in the preparation of the application for a Letter of Map Revision (LOMR) for a portion of the Flamingo Wash located in Section 28, Township 21 South, Range 60 East, Clark County, Nevada. With this application, Clark County requests revision to a portion of the Special Flood Hazard Area (SFHA), designated Zone A on FIRM 32003C, Panel No. 2535D. The revision requested is based on operation of the Upper Flamingo Wash Detention Basin (UFWDB) and the Southern Vista Estates (SVE) Diversion Berm and Channel.

This application is a resubmittal to the Federal Emergency Management Agency (FEMA) based on FEMA's review comments to an initial application for Conditional Letter of Map Revision (CLOMR) in March 1993. The original application was assigned FEMA Case No. 93-09-407R. The review comments provided by FEMA (letter received August 27, 1993) requested that additional analysis and information pertaining to UFWDB and the SVE Diversion be provided.

UPPER FLAMINGO WASH DETENTION BASIN

The UFWDB was originally designed by Black & Veatch to attenuate the 100-year flood from a 21-square mile upstream watershed. The original design storm produced a peak inflow of 5450 cfs into the detention basin, and a corresponding peak discharge of 1225 cfs. However, changes in land use, planning, and development have resulted in the incremental diversion of flows from the lower Red Rock watershed southward towards UFWDB. Likewise, construction of the SVE Development and associated diversion berm and channel have also served to increase the drainage area tributary to the UFWDB.

In the letter dated August 27, 1993, FEMA specifically requested that an analysis be completed to evaluate the impact of flow diversion from the Red Rock watershed south along Durango into the UFWDB. To respond to FEMA's request, a "new Base Flood Event" was established to evaluate the performance of the UFWDB for such an occurrence. Because of the uncertainty in predicting the portion of Red Rock floodwaters that will reliably be diverted into UFWDB, the

new Base Flood Event is based on the assumption that all flow from the lower Red Rock watershed, including the Red Rock Detention Basin outflow, are routed through the UFWDB.

The new Base Flood Event produces a total runoff hydrograph volume of 1448 acre-feet and a peak inflow of 6660 cfs into the UFWDB, which results in spillway overtopping of 0.5 ft or less for a period of 5.5 hours. These results include provisions for 105 acre-feet of sediment storage and account for the additional basin storage volume available due to the ongoing aggregate mining operations.

The UFWDB discharge channel was originally designed for a 100-year peak discharge of 1225 cfs, and the channel was constructed with an additional 2 to 3 feet of freeboard above the 100-year water surface elevation. For the new Base Flood Event, the total peak discharge from the detention basin (including outlet works and spillway discharge) is 2579 cfs. This peak outflow exceeds the capacity of the existing discharge channel and will result in shallow depth, overbank flooding of the adjacent undeveloped lowlands. However, the width of the resulting flood plain for the new Base Flood Event is less than that depicted on the current FIRM.

The structural and geotechnical basis of design for the UFWDB was originally based on the Probable Maximum Flood (PMF) event. In review of the original design, it is concluded that the UFWDB is stable and suitable for operation during flood events in excess of the new Base Flood Event.

SOUTHERN VISTA ESTATES DIVERSION CHANNEL AND BERM

The SVE Diversion Channel and Berm was designed by Engineers and Surveyors, Inc., and constructed in conjunction with the Southern Vista Estates development project. The diversion channel and berm function as an extension of the UFWDB embankment and are intended to collect and divert flows from approximately 520 acres of undeveloped land into the UFWDB.

The downstream section of the SVE diversion consists of an unlined trapezoidal channel. Based on review of the original design information and subsequent evaluation performed for this submittal, the channel section has adequate capacity to convey the peak 100-year discharge of

approximately 690 cfs. Available freeboard above the peak 100-year water surface elevation ranges from 0.4 to 1.1 feet.

The upstream section of the SVE diversion consists of a flat-sloped, low-height earthen berm. The upper reach of the berm is subject to 100-year peak discharges of 490 cfs. Additional drainage tributary to the lower reach of the berm increases the 100-year peak flow to approximately 650 cfs. The available freeboard above the 100-year water surface elevation for the berm ranges from 1.8 to 3.0 feet.

The SVE diversion is a local drainage improvement and not a regional facility. The channel and berm are intended to provide protection to the SVE developments from stormwater runoff from a small, defined, and predictable watershed. Although the available freeboard for the SVE facilities is less than required by NFIP 44CFR 65.10, the facilities are of adequate capacity and integrity to convey the 100-year flood to the UFWDB and should therefore, protect the SVE developments as was the original design intent.

CONCLUSION

The limits of the SFHA on the current and previous FIRM in the vicinity of the UFWDB appear to be interpretive based on early studies and mapping efforts. The revised limits of the SFHA requested with this application for a LOMR are also somewhat interpretive due to the complexity of determining exact floodplain limits resulting from the UFWDB spillway overtopping. However, it is apparent that operation of the UFWDB and discharge channel will significantly reduce the limits of downstream floodways.

INTRODUCTION

BACKGROUND

This report is a compilation of the Technical Memorandums prepared by Black & Veatch in response to FEMA's review comments on a previous submittal prepared by Mr. Thomas Granillo, P.E., of Landmark Engineering, Inc. The previous submittal by Mr. Granillo was in pursuit of a CLOMR to remove the Southern Vista Estates development project from a Special Flood Hazard Area designated Zone A on FIRM 32003C, Panel No. 2535D. At the time of the initial review, FEMA Case No. 93-09-407R was assigned to this request.

On behalf of Clark County (Community No. 320003), the Clark County Regional Flood Control District (CCRFCD) and Black & Veatch have prepared this resubmittal in pursuit of a LOMR for in-place operation of both the Upper Flamingo Wash Detention Basin (UFWDB) and the Southern Vista Estates (SVE) Diversion Berm and Channel. In the response letter to Mr. Granillo's submittal, FEMA specifically identified questions and comments regarding the design and function of the UFWDB and the SVE diversion project. This resubmittal package includes this compilation report, copies of supplementary reports, As-Built drawings, construction test results, and the appropriate Application Certification forms in an effort to provide FEMA with the additional information needed to complete the processing of this case.

UPPER FLAMINGO WASH DETENTION BASIN

Black & Veatch provided the design and construction administration services to Clark County Department of Public Works for the UFWDB and discharge channel. The facility was originally designed to attenuate peak flows from a 21-square mile drainage area. The original design of the facility was based on a 100-year flood which produced a peak inflow of 5450 cfs resulting in a peak discharge through the low level outlet of 1225 cfs.

Construction of the UFWDB project, including the discharge channel, was completed by Wheeler Construction, Inc. on February 21, 1992. The as-built conditions of the project were verified by the contractor's surveyor, and the work was certified by the Project Manager, Dana V. Reel, P.E., to be constructed in accordance with the As-Built plans and specifications.

The As-Built plans of the UFWDB and a QA/QC report, consisting of all the soils and concrete tests, were submitted to the State of Nevada, Department of Conservation and Natural Resources on July 6, 1992. The Clark County Department of Public Works received authorization from the State on July 14, 1992, to impound stormwater flows behind the UFWDB.

SVE DEVELOPMENT PROJECT

Subsequent to the completion of the UFWDB, the Southern Vista Estates development project was designed and constructed. The SVE project included single family housing and a condominium complex. The SVE development site was subject to stormwater runoff from approximately 520 acres of land located southwest of the planned development. To eliminate the need for conveyance facilities through the SVE site for this offsite drainage, the developer constructed a diversion berm and channel to redirect the offsite drainage into the UFWDB. The SVE diversion berm and channel was designed by Engineers and Surveyors Inc. (ESI) in late 1992. The upstream end of the SVE diversion project begins approximately 2600 feet south of the UFWDB, and extends due north 1000 feet as a low height berm at which point the cross section transforms from a berm to a channel section. The channel section continues north 1630 feet and discharges into the UFWDB at the south end of the detention basin embankment.

ESI's design was approved by the Clark County Department of Public Works and CCRFCD in conjunction with the Southern Vista Estates Condominium development project. Construction of the SVE diversion berm and channel was completed in 1993. A copy of ESI's design report, design drawings, and a letter from ESI certifying the as-built condition of the diversion berm and channel are included with this submittal.

OVERVIEW

With regard to the UFWDB, FEMA has specifically requested that an analysis be completed to evaluate the impact of flows diverted south along Durango Drive, from Red Rock Wash to the UFWDB. In response to this inquiry, and in evaluation of the information submitted with this request, the flows are defined as follows:

- All flows from the Red Rock Detention Basin, as it existed in 1995, and from portions of the Red Rock watershed downstream of the detention basin are diverted into the UFWDB.

- Runoff from 15.9 square miles of the Flamingo Wash watershed are routed into the UFWDB.

The resulting inflow hydrograph into UFWDB is referred to throughout this report as the "new Base Flood Event." The assumptions in the determination of this new Base Flood Event reflect conservatism based on the following:

- A storm centered such that it would produce a flood in the Red Rock Wash capable of overtopping the Red Rock Detention basin emergency spillway, concurrent with a 100-year flood on the Flamingo Wash watershed is unlikely.

- The capacity and reliability of the improvements that serve to divert Red Rock flows south along Durango Drive are questionable.

This compilation report consists of six technical memorandums or sections that summarize the investigations and analyses related to the following subject matter:

- *Base Hydrology* - Summary of the initial HEC-1 analysis to establish the new Base Flood Event into UFWDB.

- *Sedimentation Analysis* - Summary of the analysis and discussion of results with respect to COE estimates for annual and new Base Flood Event sediment delivery to UFWDB.

- *UFWDB Performance Analysis* - Summary of the UFWDB performance for new Base Flood Event which accounts for increased basin storage due to ongoing mining operations and provisions for sediment storage.

- *Embankment and Spillway Stability* - Summary of the design parameters and procedures used in the original design of the UFWDB embankment and spillway. Comparison of original design parameters with those for the new Base Flood Event.

- *Discharge Channel Analysis* - Summary of the HEC-2 analysis for the UFWDB discharge channel under the new Base Flood Event and discussion of resulting flood zone.

- *SVE Diversion Channel and Berm* - Summary of the design and performance of the SVE diversion project for the 100-year event.

The LOMR Application/Certification forms follow the report. A revised floodplain was established based on the findings of this report and is shown on the aerial map included with this submittal.

Federal Emergency Management Agency

Washington, D.C. 20472

AUG 27 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 93-09-407R

The Honorable Jay Bingham
Chairman, Clark County Board
of Commissioners
225 Bridger Avenue
Las Vegas, Nevada 89155

Community: Clark County, Nevada
(unincorporated areas)
Community No.: 320003

104

Dear Mr. Bingham:

With a letter dated July 26, 1993, Mr. Thomas Granillo, P.E., Landmark Engineering, submitted additional data to support a request for a Conditional Letter of Map Revision (CLOMR) to the effective Flood Insurance Rate Map (FIRM) for the unincorporated areas of Clark County, Nevada, dated September 29, 1989. The initial request was submitted by Mr. Granillo with a letter dated March 30, 1993.

It is our understanding that the base (100-year) flood from Flamingo Wash is being intercepted and detained by the existing Upper Flamingo Wash Detention Basin (UFWDB). The UFWDB is located southeast of the intersection of Durango Drive and Hacienda Avenue. The base flood is conveyed from the UFWDB past the proposed Southern Vista Estates subdivision by way of channel improvements along Flamingo Wash from the outlet of the UFWDB downstream to Hacienda Avenue. In addition, a proposed diversion channel will extend approximately 2,900 feet south from the southern end of the UFWDB embankment in order to divert the base flood from an unnamed wash into the UFWDB, thereby providing protection to the proposed subdivision. The area of concern is currently within the Special Flood Hazard Area (SFHA) designated as Zone A on the FIRM.

All data required to evaluate this request were submitted by Mr. Granillo with his letters dated March 30 through July 26, 1993. All fees necessary to process this request (a total of $2,500) have been received.

We have completed our review of the data submitted and can provide you with the following comments regarding the UFWDB and the proposed diversion channel. In order for us to revise the FIRM to reflect UFWDB's ability to provide base flood protection, we require submission of the data listed below:

- Analysis that evaluates the impact of flows diverted south along Durango Drive, from Red Rock Wash, on the UFWDB
- Engineering analysis that evaluates the impact of the sediment load associated with the base flood on the UFWDB

- Geotechnical and structural analyses that evaluate the stability and structural integrity of the embankment and outlet structure of the UFWDB during the base flood event on Flamingo Wash

- A topographic work map, certified by a registered professional engineer, showing the 100-year floodplain as computed by the HEC-2 hydraulic computer model for the channel improvements from the UFWDB outlet structure to Hacienda Avenue

- As-built plans, certified by a registered professional engineer, for the UFWDB and the channel improvements that extend from the UFWDB outlet structure to Hacienda Avenue

- An officially adopted maintenance and operation plan for the UFWDB. This plan may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation. The plan should include information regarding the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.

However, after the SFHA designation is removed from areas protected by the UFWDB, the proposed subdivision will still be subject to flooding from the unnamed wash that crosses the subdivision property.

With regards to the diversion channel, if the channel is constructed as described in the report entitled "Southern Vista Estates Request for a Combined Conditional Letter of Map Revision (CLOMR) & Letter of Map Revision (LOMR)," dated May 1993, prepared by Landmark Engineering, Inc., and if the following requirements are met, then we will recognize the channel as protecting the proposed subdivision from the base flood from the unnamed wash. These requirements are as follows:

- Engineering analysis that evaluates the impact of the sediment load associated with the base flood on the proposed diversion channel

- Engineering analyses and an operation and maintenance plan that demonstrate that the berms along the proposed diversion channel meet the requirements set forth in Section 65.10 of the National Flood Insurance Program (NFIP) regulations

- As-built plans, certified by a registered professional engineer, of the proposed diversion channel and all improvements constructed as a part of the proposed Southern Vista Estates subdivision

- An as-built hydraulic analysis of the base flood along the proposed diversion channel.

As stated above, upon receipt of the required data regarding the UFWDB, we will initiate a revision to the FIRM to reflect the protection provided by the UFWDB. However, in order to

entirely remove the SFHA designation from the proposed Southern Vista Estates subdivision, we must also receive the required data regarding the proposed diversion channel.

Our review and findings are for the sole purpose of establishing risk zone determinations for NFIP maps, and will not constitute a determination by the Federal Emergency Management Agency (FEMA) as to how the flood control measure will perform in an actual flood event.

The basis of this CLOMR is, in part, a proposed channel modification project. Paragraph 60.3(b)(7) of the NFIP regulations requires that communities "assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained." This provision is incorporated into your community's existing floodplain management regulations. Consequently, your community must agree to accept responsibility for the maintenance of the modified channel before allowing its construction.

This response to Mr. Granillo's request is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all proposed floodplain development, including this request, and for assuring that the necessary permits required by Federal or State law have been received. State and community officials, based on knowledge of local conditions and in the interest of human safety, may set higher standards for construction or may limit development in floodplain areas. If the State of Nevada or Clark County has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

Should you have any questions regarding this matter, please contact the Chief, Natural and Technological Hazards Division of FEMA in San Francisco, California, at (415) 923-7175, or Mr. John Magnotti of my staff in Washington, DC, at (202) 646-3932, or by facsimile at (202) 646-3445.

Sincerely,

William R. Locke
Chief, Risk Studies Division
Federal Insurance Administration

cc: Mr. Thomas E. Granillo, P.E.
Project Manager
Landmark Engineering, Inc.

Mr. Gale William Fraser II, P.E.
Assistant General Manager
Clark County Regional Flood Control District

BASE HYDROLOGY

SCOPE

Black & Veatch established a new Base Flood Event for the UFWDB in accordance with FEMA's letter dated August 27, 1993. In response to FEMA Case No. 93-09-407R, the existing *Flood Insurance Study* (FIS) HEC-1 model was revised to divert flows from the Red Rock watershed south along Durango Drive and into the UFWDB. The new Base Flood Event is used in subsequent investigations discussed in the following sections of this submittal.

DISCUSSION

The development of the new Base Flood Event was based on the existing *Flood Insurance Study* (FIS) HEC-1 computer model as developed by James M. Montgomery Engineers in 1991. The model reflects a hydrologic adjustment for calibration with the U.S. Army Corps of Engineers' *Feasibility Study*. To determine the new Base Flood Event, the following modifications were made to the FIS model for this analysis:

- Outfall from the Red Rock Detention Basin was routed through the UFWDB.
- Runoff from 1.51 square miles of Subbasin R6 into the UFWDB was deleted since this area has since been developed with the Spanish Trail community and runoff is diverted elsewhere.
- With the UFWDB as the point of interest, the tributary drainage area is 87.6 square miles. A corresponding depth area reduction factor (DARF) of 0.62 was used for this analysis.

It should be noted that the UFWDB operational parameters were not modified in the revised HEC-1 model as this did not influence the new Base Flood Event. The UFWDB operational parameters represent the As-Built facility. Modifications to the storage capacity of the basin are discussed in the UFWDB PERFORMANCE ANALYSIS Section.

NEW BASE FLOOD EVENT

The revised HEC-1 model produced a new Base Flood Event with a peak inflow to the UFWDB of 6660 cfs. The UFWDB peak inflow includes 5429 cfs routed from the Red Rock Detention Basin spillway and outfall. It also includes runoff from subbasins downstream of the Red Rock Detention Basin in addition to the 15.9 square mile Upper Flamingo Wash watershed. The revised routing from the Red Rock Detention Basin and downstream subbasins produces a peak inflow which represents a worst-case scenario for the UFWDB.

HEC-1 MODEL RESULTS

Using the As-Built operational parameters for the UFWDB, the peak reservoir stage reaches 2471.15 feet for the 100-year storm, which exceeds the spillway elevation of 2470.50 feet. This results in low head spillway overtopping for a period of approximately nine hours with depths ranging from 0 to 0.65 feet. The HEC-1 results for the modified FIS model are listed below.

Peak Inflow	6660 cfs	Peak Spillway Discharge	1670 cfs
Peak Outflow	2962 cfs	Peak Reservoir Stage	2471.15 ft
Peak Orifice Discharge	1292 cfs	Peak Storage	1056.4 ac-ft

CONCLUSION

The FIS hydrologic model of the Upper Flamingo and Red Rock watersheds was modified to represent rerouted flows, current development conditions, and points of interest. The revised FIS HEC-1 model produces a new Base Flood Event with a peak inflow of 6660 cfs. Subsequent sections of this submittal take into account the sediment loading and storage capacity changes in the UFWDB impoundment area which affect the performance of the facility.

REFERENCES

1. U.S. Army Corps of Engineers (1990). "HEC-1 Flood Hydrograph Package," Hydrologic Engineering Center, Davis, CA.

2. U.S. Army Corps of Engineers (1991). "Las Vegas Wash & Tributaries (Tropicana and Flamingo Washes) Nevada," Los Angeles District, South Pacific Division.

3. Clark County Regional Flood Control District (1990). "Hydrologic Criteria and Drainage Design Manual," Clark County, Nevada.

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*                                    *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1) *
*          SEPTEMBER 1990            *
*           VERSION 4.0              *
*                                    *
* RUN DATE  10/16/1995  TIME  13:52:11 *
*                                    *
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*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*        609 SECOND STREET           *
*      DAVIS, CALIFORNIA 95616       *
*         (916) 756-1104             *
*                                    *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
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X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -ANSXX- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          $DIAGRAM
    1     ID    INPUT FILE = LONR.DAT
    2     ID     CLARK COUNTY FLOOD CONTROL DISTRICT MASTER PLAN UPDATE
    3     ID     RED ROCK & FLAMINGO WATERSHED
    4     ID     EXISTING DRAINAGE SYSTEM WITH PRESENT DEVELOPMENT
    5     ID     FIS FILE F100.DAT MODIFIED BY BLACK & VEATCH APRIL 1995
    6     ID        FILE PURGED DOWNSTREAM OF UFWDB
    7     ID        STORM IN RED ROCK WATERSHED ROUTED THRU UFWDB
    8     ID        SUBBASIN R6 DELETED AS NO LONGER CONTRIBUTING
    9     ID        DARF ADDED FOR UFWDB TRIBUTARY AREA
   10     ID    100-YEAR 6-HR STORM (SDN 85)
   11     ID
   12     ID    BASIC DATA FILE BASED ON COE FILE S10P40X.
   13     ID    MODIFICATIONS ADDED FROM B&V RED ROCK BASIN AND UPPER FLAMINGO
   14     ID        BASIN HEC-1 RUNS; NIMBUS NORTHWEST MCCARRAN AIRPORT HEC-1 RUNS;
   15     ID        AND SUBBASIN MODIFICATIONS DUE TO RECENT DEVELOPMENT.
   16     ID
   17     ID     COE MUSKINGUM ROUTING CONVERTED TO KINEMATIC FOR EXISTING
   18     ID        IMPROVED CHANNELS FROM FACILITY INVENTORY.
   19     ID
   20     ID     PB CARDS CONTAIN POINT PRECIPITATION.  DARF'S FROM CCRFCD MANUAL
   21     ID     BASED ON STORM AREAS FOR CONCENTRATION POINTS AS FOLLOWS:
   22     ID
   23     ID        SUBBASIN        AREA (SQMI)        DARF
   24     ID        --------        -----------        ----
   25     ID         RRDB            53               0.675
   26     ID         UFDB            87.6             0.62
   27     ID
   28     IT      5       0       0     300
   29     IO      5
   30     JR    PREC    .675     .62

   31     KK     RR1 RUNOFF FROM RR1
   32     KM        RR1-RR14 DATA TAKEN FROM B&V TR-20 MODEL FOR UPPER FLAMINGO BASIN
   33     KM        NEW MUSKINGUM ROUTING PARAMETERS, CN'S AND LAGS USED FOR BETTER
   34     KM        AGREEMENT WITH COE FLOWS
   35     BA    3.83
   36     PC    .000    .020    .059    .080    .110    .144    .150    .160    .168    .171
   37     PC    .180    .182    .187    .190    .197    .202    .210    .220    .230    .241
   38     PC    .250    .259    .265    .280    .290    .300    .305    .309    .310    .317
   39     PC    .321    .327    .333    .346    .361    .381    .408    .430    .477    .514
   40     PC    .561    .630    .710    .720    .731    .752    .779    .790    .795    .804
   41     PC    .810    .820    .826    .840    .859    .889    .910    .930    .966    .970
   42     PC    .974    .979    .981    .983    .985    .989    .990    .992    .993    .996
   43     PC    .997    .999    1.00
   44     PB    4.08
   45     LS             84
   46     UD    0.34

   47     KK     RR4 ROUTE RR1 THRU RR4
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  50      BA   2.74
  51      PB   3.82
  52      LS           81
  53      UD   1.26

  54      KK    RR4 COMBINE RR1+RR4
  55      HC     2

  56      KK    RR2 RUNOFF FROM RR2
  57      BA   3.35
  58      PB   4.10
  59      LS           83
  60      UD   0.44

  61      KK    RR3 ROUTE RR2 THRU RR3
  62      RM     2    0.36    0.15

  63      KK    RR3 RUNOFF FROM RR3
  64      BA   3.19
  65      PB   3.83
  66      LS           81
  67      UD   0.50

  68      KK    RR4 COMBINE RR2+RR3+RR4
  69      HC     3

  70      KK    RR8 ROUTE RR4 THRU RR8
  71      RM     2    0.52    0.15

  72      KK    RR5 RUNOFF FROM RR5
  73      BA   7.32
  74      PB   3.79
  75      LS           80
  76      UD   1.44

  77      KK    RR8 ROUTE RR5 THRU RR8
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  79      KK    RR6 RUNOFF FROM RR6
  80      BA   2.85
  81      PB   3.80
  82      LS           83
  83      UD   0.36

  84      KK    RR7 ROUTE RR6 THRU RR7
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  86      KK    RR7 RUNOFF FROM RR7
  87      BA   4.87
  88      PB   3.59
  89      LS           81
  90      UD   1.13
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  91      KK    RR7 COMBINE RR6+RR7
  92      HC      2

  93      KK    RR8 ROUTE RR7 THRU RR8
  94      RM      2    0.51    0.15

  95      KK    RR9 RUNOFF FROM RR8
  96      BA   1.75
  97      PB   3.49
  98      LS            B1
  99      UD   1.57

 100      KK    RR9 RUNOFF FROM RR9
 101      BA   3.71
 102      PB   3.37
 103      LS            B4
 104      UD   0.79

 105      KK    RR8 COMBINE RR4+RR5+RR7+RR8+RR9
 106      HC      5

 107      KK   RR10 ROUTE RR8 THRU RR10
 108      RM      2    0.25    0.15

 109      KK   RR10 RUNOFF FROM RR10
 110      BA   3.30
 111      PB   3.40
 112      LS            B1
 113      UD   1.19

 114      KK   RR10 COMBINE RR8+RR10
 115      HC      2

 116      KK   RR12 ROUTE RR10 THRU RR12
 117      RM      2    0.28    0.15

 118      KK   RR11 RUNOFF FROM RR11
 119      BA   3.40
 120      PB   3.46
 121      LS            B3
 122      UD    .82

 123      KK   RR12 ROUTE RR11 THRU RR12
 124      RM      2    0.18    0.15

 125      KK   RR12 RUNOFF FROM RR12
 126      BA   4.25
 127      PB   3.43
 128      LS            B4
 129      UD    .77
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  130     KK    RR12 COMBINE RR10+RR11+RR12
  131     HC      3

  132     KK    RR13 ROUTE RR12 THRU RR13
  133     RM      2    0.24    0.15

  134     KK    RR13 RUNOFF FROM RR13
  135     BA    2.26
  136     PB    3.32
  137     LS            80
  138     UD    0.51

  139     KK    RR13 COMBINE RR12+RR13
  140     HC      2

  141     KK    RR14 ROUTE RR13 THRU RR14
  142     RM      2     .10     .15

  143     KK    RR14 RUNOFF FROM RR14
  144     BA    6.22
  145     PB    3.60
  146     LS            83
  147     UD    1.53

  148     KK    RR14 COMBINE RR13+RR14
  149     HC      2
          $ ######## END OF DATA FROM D&V REPORT #######

  150     KK   RR.DD ROUTE THRU RED ROCK DETENTION BASIN
  151     KM         USE STORAGE-OUTFLOW DATA FROM COE FEASIBILITY REPORT
  152     RS      1    STOR       0
  153     SV      0     150     600    1100    1860    1900    2250    2630    2800
  154     SQ      0     750    1100    1250    1410    1420   22650   72500   97500
  155     SE   3159    3170    3190    3200    3210  3210.5    3215    3220    3222

  156     KK    RR23 ROUTE RED ROCK OUTFLOW THRU RR23
  157     RM      6    0.53    0.15

  158     KK    RR23 RUNOFF FROM RR23
  159     BA    2.03
  160     PB    3.20
  161     LS      0    74.9
  162     UK    500    .025    0.15     100
  163     RK   5500    .025    .030    0.09                    1
  164     RK  15500    .023    .030            TRAP     100      5      NO

  165     KK    RR23 COMBINE RED ROCK OUTFLOW WITH RR23
  166     HC      2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

167       KK     R1 RUNOFF FROM R1
168       BA   1.12
169       PB   3.17
170       LS      0    87.7
171       UD   0.47

172       KK   RR23 COMBINE R1+RR23
173       HC      2

174       KK     R5 ROUTE RR23 THRU R5
175       RM      5    0.39    0.15

176       KK   RR20 RUNOFF FROM RR20
177       BA   1.37
178       PB   3.22
179       LS      0      88
180       UD   0.69

181       KK     R5 ROUTE RR20 THRU R5
182       RM      7    0.61    0.15

183       KK   RR21 RUNOFF FROM RR21
184       BA   6.27
185       PB   3.26
186       LS      0      87
187       UD   1.00

188       KK     R5 ROUTE RR21 THRU R5
189       RM      8    0.64    0.15

190       KK   RR22 RUNOFF FROM RR22
191       BA   2.15
192       PB   3.20
193       LS      0      87
194       UD   0.62

195       KK     R5 ROUTE RR22 THRU R5
196       RM      8    0.70    0.15

197       KK     R5 RUNOFF FROM R5
198       BA   5.77
199       PB   3.00
200       LS      0    75.5
201       UK    600    .025     .15     100
202       RK   7920    .023     .030    .20                    1
203       RK  13000    .019     .030           TRAP      40    2

204       KK     R5 COMBINE R5+RR23+RR22+RR21+RR20
205       HC      5
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  206     KK     F1 RUNOFF FROM F1
  207     BA   4.63
  208     PB   3.23
  209     LS      0      88
  210     UD   0.78

  211     KK     F5 ROUTE F1 THRU F5N
  212     RM     12    0.99    0.15

  213     KK     F2 RUNOFF FROM F2
  214     BA   1.28
  215     PB   3.19
  216     LS      0      88
  217     UD    .43

  218     KK     F5 ROUTE F2 THRU F5N
  219     RM      9    0.76    0.15

  220     KK     F3 RUNOFF FROM F3
  221     BA   2.60
  222     PB   3.09
  223     LS      0      87
  224     UD    .34

  225     KK     F5 ROUTE F3 THRU F5N
  226     RM      5    0.40    0.15

  227     KK     F4 RUNOFF FROM F4
  228     BA   1.30
  229     PB   3.03
  230     LS      0      86
  231     UD    .41

  232     KK     F5 ROUTE F4 THRU F5S
  233     RM      8    0.69    0.15

  234     KK    F5N RUNOFF FROM F5N
  235     BA   4.04
  236     PB   3.00
  237     LS      0      85
  238     UK    300    .025     .15    100
  239     RK   3200    .025    .030    .20                        1
  240     RK  18000    .023    .030          TRAP      70       5      NO

  241     KK    F5S RUNOFF FROM F5S
  242     BA   2.00
  243     PB   2.86
  244     LS      0      85
  245     UK    400    .020     .25    100
  246     RK   3500    .020    .030    .16                        1
  247     RK  14500    .017    .030          TRAP      50       5      NO
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

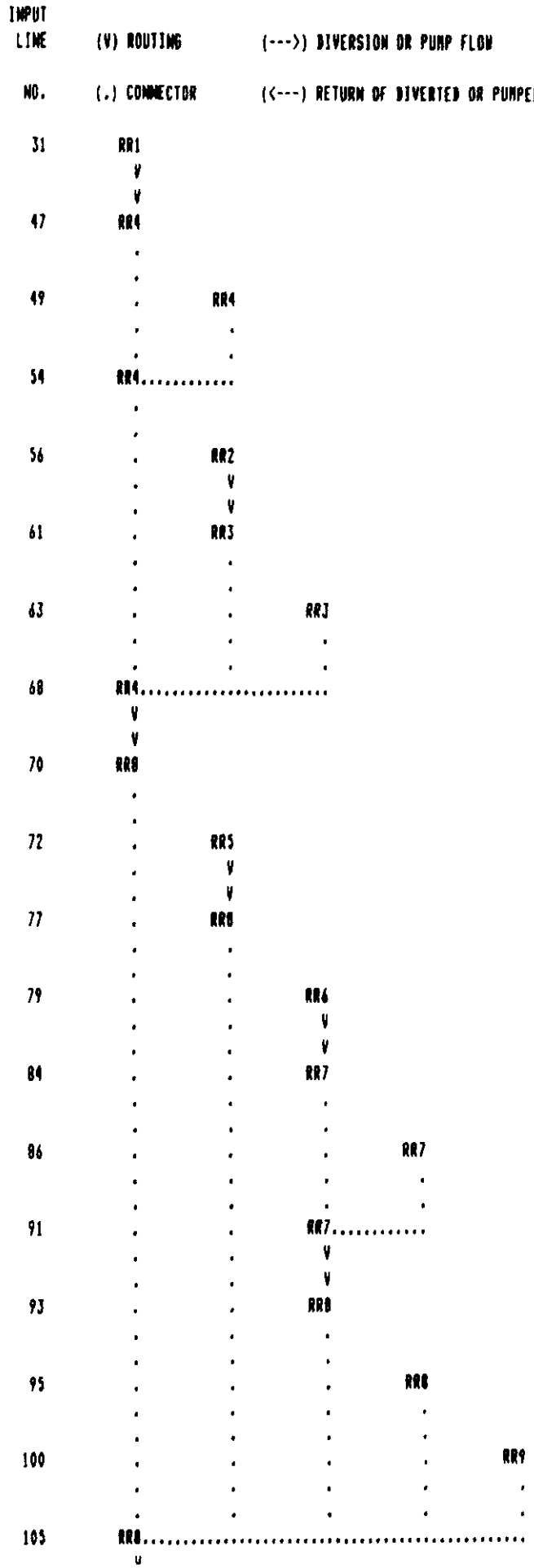
248       KK     F5 COMBINE F5N AND F5S
249       HC      2

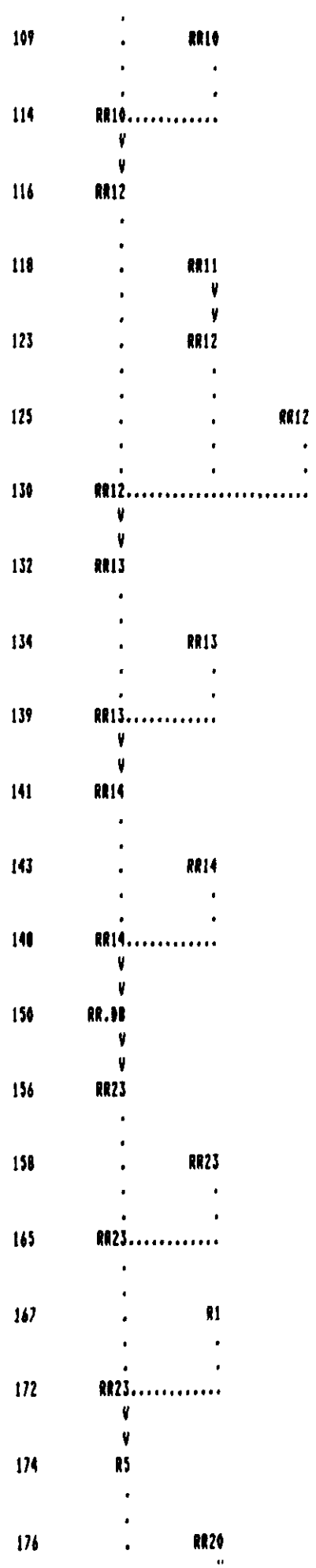
250       KK     F5 COMBINE R5, F1, F2, F3, AND F4
251       HC      6

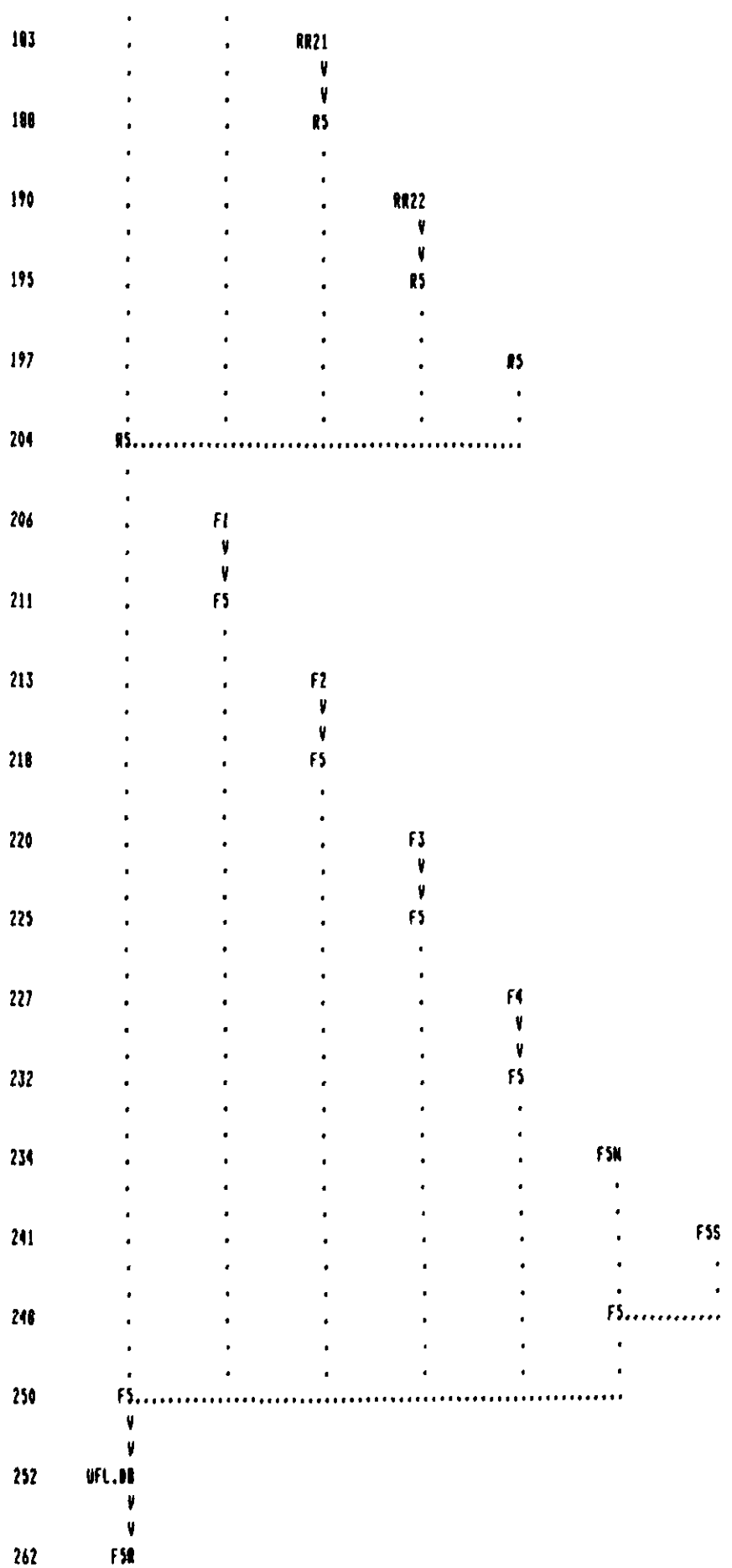
252       KK  UFL.DB UPPER FLAMINGO DETENTION BASIN
253       KM         STORAGE-OUTFLOW DATA FROM D&V DESIGN PLANS
254       KO      1
255       RS      1   STOR       0
256       SV      0     10      25     100     220     560     950    1000    1130    1430
257       SV   2070
258       SQ      0     75     300     675     910    1100    1260    1280    5170   20600
259       SQ  50300
260       SE   2445 2447.5    2450    2455    2460    2465    2470  2470.5    2472    2475
261       SE   2480

262       KK    F5R ROUTE UPPER FLAMINGO DB OUTFLOW THRU OUTFALL CHANNEL
263       KM        CHANNEL GEOMETRY FROM D&V PREDESIGN MEMORANDUM
264       RK   3500   .010    .020          TRAP      30       3
265       ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK




109 RR10
114 RR10
116 RR12
118 RR11
123 RR12
125 RR12
130 RR12
132 RR13
134 RR13
139 RR13
141 RR14
143 RR14
140 RR14
150 RR.9B
156 RR23
158 RR23
165 RR23
167 R1
172 RR23
174 R5
176 RR20



(888) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**********************************************
*                                            *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)         *
*           SEPTEMBER 1990                   *
*            VERSION 4.0                     *
*                                            *
*  RUN DATE  10/16/1995  TIME  13:52:11      *
*                                            *
**********************************************
```

```
**********************************************
*                                            *
*   U.S. ARMY CORPS OF ENGINEERS             *
*   HYDROLOGIC ENGINEERING CENTER            *
*         609 SECOND STREET                  *
*       DAVIS, CALIFORNIA 95616              *
*          (916) 756-1104                    *
*                                            *
**********************************************
```

```
INPUT FILE = LOWR.DAT
 CLARK COUNTY FLOOD CONTROL DISTRICT MASTER PLAN UPDATE
 RED ROCK & FLAMINGO WATERSHED
 EXISTING DRAINAGE SYSTEM WITH PRESENT DEVELOPMENT
 FIS FILE F100.DAT MODIFIED BY BLACK & VEATCH APRIL 1995
     FILE PURGED DOWNSTREAM OF UFWDB
     STORM IN RED ROCK WATERSHED ROUTED THRU UFWDB
     SUBBASIN R6 DELETED AS NO LONGER CONTRIBUTING
     DARF ADDED FOR UFWDB TRIBUTARY AREA
100-YEAR 6-HR STORM (SBN 85)

BASIC DATA FILE BASED ON COE FILE S10P40X.
MODIFICATIONS ADDED FROM BBV RED ROCK BASIN AND UPPER FLAMINGO
     BASIN HEC-1 RUNS; NIMBUS NORTHWEST MCCARRAN AIRPORT HEC-1 RUNS;
     AND SUBBASIN MODIFICATIONS DUE TO RECENT DEVELOPMENT.

 COE MUSKINGUM ROUTING CONVERTED TO KINEMATIC FOR EXISTING
     IMPROVED CHANNELS FROM FACILITY INVENTORY.

 PB CARDS CONTAIN POINT PRECIPITATION.  DARF'S FROM CCRFCD MANUAL
 BASED ON STORM AREAS FOR CONCENTRATION POINTS AS FOLLOWS:

     SUBBASIN        AREA (SQMI)        DARF
     --------        -----------        ----
      RRDB            53                0.675
      UFDB            87.6              0.62
```

```
29 IO        OUTPUT CONTROL VARIABLES
                  IPRNT         5  PRINT CONTROL
                  IPLOT         0  PLOT CONTROL
                  QSCAL        0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                  NMIN          5  MINUTES IN COMPUTATION INTERVAL
                 IDATE     1    0  STARTING DATE
                 ITIME        0000  STARTING TIME
                    NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE     2    0  ENDING DATE
                NDTIME        0055  ENDING TIME
                 ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

      ENGLISH UNITS
          DRAINAGE AREA        SQUARE MILES
          PRECIPITATION DEPTH  INCHES
          LENGTH, ELEVATION    FEET
```

```
          TEMPERATURE          DEGREES FAHRENHEIT

    JP        MULTI-PLAN OPTION
                 NPLAN          1  NUMBER OF PLANS

    JR        MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
                 .68       .62


 *** FBKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  2



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          ###############
          #             #
252 KK    #   UFL.DB    #     UPPER FLAMINGO DETENTION BASIN
          #             #
          ###############

254 KO        OUTPUT CONTROL VARIABLES
                 IPRNT          1  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL          0.  HYDROGRAPH PLOT SCALE

          HYDROGRAPH ROUTING DATA

255 RS        STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       STOR  TYPE OF INITIAL CONDITION
                 RSVRIC        .00  INITIAL CONDITION
                     X         .00 WORKING R AND D COEFFICIENT

256 SV          STORAGE          .0     10.0     25.0    100.0    220.0    560.0    950.0   1000.0   1130.0   1430.0
                              2070.0

258 SQ        DISCHARGE          0.     75.     300.     675.     910.    1100.    1260.    1280.    5170.   20600.
                             50300.

260 SE        ELEVATION     2445.00  2447.50  2450.00  2455.00  2460.00  2465.00  2470.00  2470.50  2472.00  2475.00
                             2480.00

                                                  ***

*****************************************************************************************************************************

                                        HYDROGRAPH AT STATION   UFL.DB
                                          PLAN 1,   RATIO =   .68

*****************************************************************************************************************************

                                                 *                                                 *
 DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE  *  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE  *  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                                 *                                                 *
  1    0000   1       0.        .0  2445.0  *   1    0820 101    4203.   1097.7  2471.6  *   1    1640 201    1285.   1000.2  2470.5
  1    0005   2       0.        .0  2445.0  *   1    0825 102    4368.   1103.2  2471.7  *   1    1645 202    1283.   1000.1  2470.5
  1    0010   3       0.        .0  2445.0  *   1    0830 103    4477.   1106.8  2471.7  *   1    1650 203    1281.   1000.0  2470.5
  1    0015   4       0.        .0  2445.0  *   1    0835 104    4526.   1108.5  2471.8  *   1    1655 204    1280.   1000.0  2470.5
  1    0020   5       0.        .0  2445.0  *   1    0840 105    4520.   1108.3  2471.7  *   1    1700 205    1280.    999.9  2470.5
```

1	0040	9	0.	.0	2445.0	#	1	0900	109	4062.	1093.0	2471.6	#	1	1720	209	1280.	999.4	2470.5
1	0045	10	0.	.0	2445.0	#	1	0905	110	3877.	1086.8	2471.5	#	1	1725	210	1280.	999.3	2470.5
1	0050	11	0.	.0	2445.0	#	1	0910	111	3670.	1080.2	2471.4	#	1	1730	211	1280.	999.1	2470.5
1	0055	12	0.	.0	2445.0	#	1	0915	112	3471.	1073.2	2471.3	#	1	1735	212	1280.	998.9	2470.5
1	0100	13	0.	.0	2445.0	#	1	0920	113	3261.	1066.2	2471.3	#	1	1740	213	1279.	998.7	2470.5
1	0105	14	0.	.1	2445.0	#	1	0925	114	3052.	1059.2	2471.2	#	1	1745	214	1279.	998.5	2470.5
1	0110	15	1.	.1	2445.0	#	1	0930	115	2850.	1052.5	2471.1	#	1	1750	215	1279.	998.3	2470.5
1	0115	16	1.	.2	2445.0	#	1	0935	116	2659.	1046.1	2471.0	#	1	1755	216	1279.	998.0	2470.5
1	0120	17	2.	.3	2445.1	#	1	0940	117	2482.	1040.2	2471.0	#	1	1800	217	1279.	997.8	2470.5
1	0125	18	3.	.5	2445.1	#	1	0945	118	2323.	1034.9	2470.9	#	1	1805	218	1279.	997.5	2470.5
1	0130	19	5.	.7	2445.2	#	1	0950	119	2183.	1030.2	2470.8	#	1	1810	219	1279.	997.2	2470.5
1	0135	20	7.	.9	2445.2	#	1	0955	120	2062.	1026.1	2470.8	#	1	1815	220	1279.	996.9	2470.5
1	0140	21	9.	1.2	2445.3	#	1	1000	121	1958.	1022.7	2470.8	#	1	1820	221	1279.	996.6	2470.5
1	0145	22	12.	1.6	2445.4	#	1	1005	122	1871.	1019.7	2470.7	#	1	1825	222	1278.	996.2	2470.5
1	0150	23	16.	2.1	2445.5	#	1	1010	123	1798.	1017.3	2470.7	#	1	1830	223	1278.	995.8	2470.5
1	0155	24	20.	2.7	2445.7	#	1	1015	124	1737.	1015.3	2470.7	#	1	1835	224	1278.	995.5	2470.5
1	0200	25	26.	3.4	2445.9	#	1	1020	125	1686.	1013.6	2470.7	#	1	1840	225	1278.	995.1	2470.5
1	0205	26	32.	4.3	2446.1	#	1	1025	126	1644.	1012.2	2470.6	#	1	1845	226	1278.	994.7	2470.4
1	0210	27	40.	5.3	2446.3	#	1	1030	127	1609.	1011.0	2470.6	#	1	1850	227	1278.	994.2	2470.4
1	0215	28	49.	6.6	2446.6	#	1	1035	128	1580.	1010.0	2470.6	#	1	1855	228	1278.	993.8	2470.4
1	0220	29	60.	8.0	2447.0	#	1	1040	129	1555.	1009.2	2470.6	#	1	1900	229	1277.	993.3	2470.4
1	0225	30	72.	9.6	2447.4	#	1	1045	130	1535.	1008.5	2470.6	#	1	1905	230	1277.	992.8	2470.4
1	0230	31	95.	11.3	2447.7	#	1	1050	131	1517.	1007.9	2470.6	#	1	1910	231	1277.	992.3	2470.4
1	0235	32	124.	13.3	2448.0	#	1	1055	132	1503.	1007.4	2470.6	#	1	1915	232	1277.	991.8	2470.4
1	0240	33	154.	15.3	2448.4	#	1	1100	133	1490.	1007.0	2470.6	#	1	1920	233	1277.	991.3	2470.4
1	0245	34	185.	17.4	2448.7	#	1	1105	134	1479.	1006.7	2470.6	#	1	1925	234	1276.	990.7	2470.4
1	0250	35	217.	19.5	2449.1	#	1	1110	135	1470.	1006.4	2470.6	#	1	1930	235	1276.	990.2	2470.4
1	0255	36	250.	21.7	2449.4	#	1	1115	136	1462.	1006.1	2470.6	#	1	1935	236	1276.	989.6	2470.4
1	0300	37	283.	23.9	2449.8	#	1	1120	137	1455.	1005.8	2470.6	#	1	1940	237	1276.	989.0	2470.4
1	0305	38	306.	26.2	2450.1	#	1	1125	138	1448.	1005.6	2470.6	#	1	1945	238	1275.	988.4	2470.4
1	0310	39	318.	28.7	2450.2	#	1	1130	139	1443.	1005.4	2470.6	#	1	1950	239	1275.	987.8	2470.4
1	0315	40	332.	31.4	2450.4	#	1	1135	140	1437.	1005.3	2470.6	#	1	1955	240	1275.	987.1	2470.4
1	0320	41	348.	34.6	2450.6	#	1	1140	141	1433.	1005.1	2470.6	#	1	2000	241	1275.	986.5	2470.4
1	0325	42	367.	38.4	2450.9	#	1	1145	142	1428.	1005.0	2470.6	#	1	2005	242	1274.	985.8	2470.4
1	0330	43	390.	43.1	2451.2	#	1	1150	143	1424.	1004.8	2470.6	#	1	2010	243	1274.	985.1	2470.4
1	0335	44	420.	49.1	2451.6	#	1	1155	144	1420.	1004.7	2470.6	#	1	2015	244	1274.	984.4	2470.3
1	0340	45	459.	56.9	2452.1	#	1	1200	145	1417.	1004.6	2470.6	#	1	2020	245	1273.	983.7	2470.3
1	0345	46	510.	67.0	2452.8	#	1	1205	146	1413.	1004.5	2470.6	#	1	2025	246	1273.	983.0	2470.3
1	0350	47	575.	80.0	2453.7	#	1	1210	147	1410.	1004.3	2470.6	#	1	2030	247	1273.	982.2	2470.3
1	0355	48	657.	96.3	2454.8	#	1	1215	148	1407.	1004.2	2470.5	#	1	2035	248	1273.	981.5	2470.3
1	0400	49	707.	116.4	2455.7	#	1	1220	149	1404.	1004.1	2470.5	#	1	2040	249	1272.	980.7	2470.3
1	0405	50	754.	140.4	2456.7	#	1	1225	150	1401.	1004.0	2470.5	#	1	2045	250	1272.	979.9	2470.3
1	0410	51	809.	168.2	2457.8	#	1	1230	151	1398.	1003.9	2470.5	#	1	2050	251	1272.	979.1	2470.3
1	0415	52	869.	199.3	2459.1	#	1	1235	152	1395.	1003.8	2470.5	#	1	2055	252	1271.	978.3	2470.3
1	0420	53	917.	233.2	2460.2	#	1	1240	153	1392.	1003.8	2470.5	#	1	2100	253	1271.	977.5	2470.3
1	0425	54	938.	269.6	2460.7	#	1	1245	154	1390.	1003.7	2470.5	#	1	2105	254	1271.	976.6	2470.3
1	0430	55	959.	308.0	2461.3	#	1	1250	155	1387.	1003.6	2470.5	#	1	2110	255	1270.	975.8	2470.3
1	0435	56	982.	348.9	2461.9	#	1	1255	156	1384.	1003.5	2470.5	#	1	2115	256	1270.	974.9	2470.2
1	0440	57	1005.	389.2	2462.5	#	1	1300	157	1382.	1003.4	2470.5	#	1	2120	257	1270.	974.0	2470.2
1	0445	58	1028.	431.3	2463.1	#	1	1305	158	1379.	1003.3	2470.5	#	1	2125	258	1269.	973.1	2470.2
1	0450	59	1052.	474.3	2463.7	#	1	1310	159	1377.	1003.2	2470.5	#	1	2130	259	1269.	972.2	2470.2
1	0455	60	1077.	518.0	2464.4	#	1	1315	160	1374.	1003.1	2470.5	#	1	2135	260	1269.	971.3	2470.2
1	0500	61	1101.	562.3	2465.0	#	1	1320	161	1372.	1003.1	2470.5	#	1	2140	261	1268.	970.3	2470.2
1	0505	62	1119.	607.1	2465.6	#	1	1325	162	1369.	1003.0	2470.5	#	1	2145	262	1268.	969.4	2470.2
1	0510	63	1138.	652.0	2466.2	#	1	1330	163	1367.	1002.9	2470.5	#	1	2150	263	1267.	968.4	2470.2
1	0515	64	1156.	696.8	2466.8	#	1	1335	164	1364.	1002.8	2470.5	#	1	2155	264	1267.	967.4	2470.2
1	0520	65	1174.	741.2	2467.3	#	1	1340	165	1362.	1002.7	2470.5	#	1	2200	265	1267.	966.4	2470.2
1	0525	66	1192.	784.8	2467.9	#	1	1345	166	1360.	1002.7	2470.5	#	1	2205	266	1266.	965.4	2470.2
1	0530	67	1210.	827.5	2468.4	#	1	1350	167	1357.	1002.6	2470.5	#	1	2210	267	1266.	964.4	2470.1
1	0535	68	1227.	868.9	2469.0	#	1	1355	168	1355.	1002.5	2470.5	#	1	2215	268	1265.	963.3	2470.1
1	0540	69	1243.	908.9	2469.5	#	1	1400	169	1353.	1002.4	2470.5	#	1	2220	269	1265.	962.3	2470.1
1	0545	70	1259.	947.4	2470.0	#	1	1405	170	1350.	1002.4	2470.5	#	1	2225	270	1264.	961.2	2470.1
1	0550	71	1274.	984.4	2470.3	#	1	1410	171	1348.	1002.3	2470.5	#	1	2230	271	1264.	960.1	2470.1

1	0610	75	3716.	1081.4	2471.4	*	1	1430	175	1339.	1002.0	2470.5	*	1	2250	275	1262.	955.6	2470.1
1	0615	76	4044.	1092.4	2471.6	*	1	1435	176	1337.	1001.9	2470.5	*	1	2255	276	1262.	954.4	2470.0
1	0620	77	4263.	1099.7	2471.7	*	1	1440	177	1335.	1001.8	2470.5	*	1	2300	277	1261.	953.1	2470.0
1	0625	78	4394.	1104.1	2471.7	*	1	1445	178	1333.	1001.8	2470.5	*	1	2305	278	1261.	951.8	2470.0
1	0630	79	4453.	1106.0	2471.7	*	1	1450	179	1330.	1001.7	2470.5	*	1	2310	279	1260.	950.5	2470.0
1	0635	80	4453.	1106.0	2471.7	*	1	1455	180	1328.	1001.6	2470.5	*	1	2315	280	1260.	949.2	2470.0
1	0640	81	4407.	1104.5	2471.7	*	1	1500	181	1326.	1001.5	2470.5	*	1	2320	281	1259.	947.8	2470.0
1	0645	82	4323.	1101.7	2471.7	*	1	1505	182	1324.	1001.5	2470.5	*	1	2325	282	1259.	946.4	2470.0
1	0650	83	4212.	1098.0	2471.6	*	1	1510	183	1322.	1001.4	2470.5	*	1	2330	283	1258.	944.9	2469.9
1	0655	84	4080.	1093.6	2471.6	*	1	1515	184	1320.	1001.3	2470.5	*	1	2335	284	1257.	943.5	2469.9
1	0700	85	3934.	1088.7	2471.5	*	1	1520	185	1317.	1001.3	2470.5	*	1	2340	285	1257.	941.9	2469.9
1	0705	86	3780.	1083.5	2471.5	*	1	1525	186	1315.	1001.2	2470.5	*	1	2345	286	1256.	940.4	2469.9
1	0710	87	3622.	1078.3	2471.4	*	1	1530	187	1313.	1001.1	2470.5	*	1	2350	287	1255.	938.8	2469.9
1	0715	88	3465.	1073.0	2471.3	*	1	1535	188	1311.	1001.0	2470.5	*	1	2355	288	1255.	937.2	2469.8
1	0720	89	3311.	1067.9	2471.3	*	1	1540	189	1309.	1001.0	2470.5	*	2	0000	289	1254.	935.5	2469.8
1	0725	90	3166.	1063.0	2471.2	*	1	1545	190	1307.	1000.9	2470.5	*	2	0005	290	1253.	933.8	2469.8
1	0730	91	3035.	1058.6	2471.2	*	1	1550	191	1305.	1000.8	2470.5	*	2	0010	291	1253.	932.1	2469.8
1	0735	92	2920.	1055.1	2471.1	*	1	1555	192	1303.	1000.8	2470.5	*	2	0015	292	1252.	930.4	2469.7
1	0740	93	2861.	1052.8	2471.1	*	1	1600	193	1301.	1000.7	2470.5	*	2	0020	293	1251.	928.6	2469.7
1	0745	94	2852.	1052.5	2471.1	*	1	1605	194	1299.	1000.6	2470.5	*	2	0025	294	1250.	926.8	2469.7
1	0750	95	2912.	1054.6	2471.1	*	1	1610	195	1297.	1000.6	2470.5	*	2	0030	295	1250.	924.9	2469.7
1	0755	96	3047.	1059.0	2471.2	*	1	1615	196	1295.	1000.5	2470.5	*	2	0035	296	1249.	923.0	2469.7
1	0800	97	3245.	1065.7	2471.3	*	1	1620	197	1293.	1000.4	2470.5	*	2	0040	297	1248.	921.1	2469.6
1	0805	98	3486.	1073.7	2471.4	*	1	1625	198	1291.	1000.4	2470.5	*	2	0045	298	1247.	919.2	2469.6
1	0810	99	3744.	1082.3	2471.4	*	1	1630	199	1289.	1000.3	2470.5	*	2	0050	299	1247.	917.2	2469.6
1	0815	100	3990.	1090.6	2471.5	*	1	1635	200	1287.	1000.2	2470.5	*	2	0055	300	1246.	915.2	2469.6

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
4526.	8.58	(CFS)	2923.	1542.	1486.	1486.
		(INCHES)	.310	.655	.655	.655
		(AC-FT)	1449.	3059.	3059.	3059.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
1108.	8.58	1055.	843.	812.	812.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
2471.75	8.58	2471.13	2467.21	2466.39	2466.39

CUMULATIVE AREA = 87.60 SQ MI

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HYDROGRAPH AT STATION UFL.DB
PLAN 1, RATIO = .62

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000	1	0.	.0	2445.0	*	1	0820	101	1911.	1021.1	2470.7	*	1	1640	201	1280.	999.6	2470.5
1	0005	2	0.	.0	2445.0	*	1	0825	102	1866.	1019.6	2470.7	*	1	1645	202	1280.	999.5	2470.5
1	0010	3	0.	.0	2445.0	*	1	0830	103	1824.	1018.2	2470.7	*	1	1650	203	1280.	999.4	2470.5
1	0015	4	0.	.0	2445.0	*	1	0835	104	1787.	1016.9	2470.7	*	1	1655	204	1280.	999.2	2470.5
1	0020	5	0.	.0	2445.0	*	1	0840	105	1753.	1015.8	2470.7	*	1	1700	205	1280.	999.1	2470.5
1	0025	6	0.	.0	2445.0	*	1	0845	106	1722.	1014.8	2470.7	*	1	1705	206	1280.	998.9	2470.5
1	0030	7	0.	.0	2445.0	*	1	0850	107	1695.	1013.9	2470.7	*	1	1710	207	1279.	998.7	2470.5
1	0035	8	0.	.0	2445.0	*	1	0855	108	1670.	1013.0	2470.7	*	1	1715	208	1279.	998.5	2470.5

1	0055	12	0.	.0	2445.0	1	1	0915	112	1593.	1010.5	2470.6	1	1	1735	212	1279.	997.4	2470.5
1	0100	13	0.	.0	2445.0	1	1	0920	113	1578.	1010.0	2470.6	1	1	1740	213	1279.	997.1	2470.5
1	0105	14	0.	.0	2445.0	1	1	0925	114	1565.	1009.5	2470.6	1	1	1745	214	1279.	996.8	2470.5
1	0110	15	0.	.0	2445.0	1	1	0930	115	1553.	1009.1	2470.6	1	1	1750	215	1279.	996.5	2470.5
1	0115	16	0.	.1	2445.0	1	1	0935	116	1541.	1008.7	2470.6	1	1	1755	216	1278.	996.1	2470.5
1	0120	17	1.	.1	2445.0	1	1	0940	117	1531.	1008.4	2470.6	1	1	1800	217	1278.	995.7	2470.5
1	0125	18	1.	.2	2445.0	1	1	0945	118	1522.	1008.1	2470.6	1	1	1805	218	1278.	995.4	2470.5
1	0130	19	2.	.3	2445.1	1	1	0950	119	1514.	1007.8	2470.6	1	1	1810	219	1278.	994.9	2470.4
1	0135	20	3.	.4	2445.1	1	1	0955	120	1506.	1007.5	2470.6	1	1	1815	220	1278.	994.5	2470.4
1	0140	21	4.	.6	2445.1	1	1	1000	121	1498.	1007.3	2470.6	1	1	1820	221	1278.	994.1	2470.4
1	0145	22	6.	.8	2445.2	1	1	1005	122	1492.	1007.1	2470.6	1	1	1825	222	1277.	993.6	2470.4
1	0150	23	8.	1.0	2445.3	1	1	1010	123	1485.	1006.9	2470.6	1	1	1830	223	1277.	993.2	2470.4
1	0155	24	11.	1.4	2445.4	1	1	1015	124	1479.	1006.7	2470.6	1	1	1835	224	1277.	992.7	2470.4
1	0200	25	14.	1.9	2445.5	1	1	1020	125	1474.	1006.5	2470.6	1	1	1840	225	1277.	992.2	2470.4
1	0205	26	18.	2.4	2445.6	1	1	1025	126	1468.	1006.3	2470.6	1	1	1845	226	1277.	991.6	2470.4
1	0210	27	23.	3.1	2445.8	1	1	1030	127	1463.	1006.1	2470.6	1	1	1850	227	1276.	991.1	2470.4
1	0215	28	30.	4.0	2446.0	1	1	1035	128	1459.	1006.0	2470.6	1	1	1855	228	1276.	990.6	2470.4
1	0220	29	37.	4.9	2446.2	1	1	1040	129	1454.	1005.8	2470.6	1	1	1900	229	1276.	990.0	2470.4
1	0225	30	46.	6.1	2446.5	1	1	1045	130	1450.	1005.7	2470.6	1	1	1905	230	1276.	989.4	2470.4
1	0230	31	56.	7.4	2446.9	1	1	1050	131	1446.	1005.5	2470.6	1	1	1910	231	1276.	988.8	2470.4
1	0235	32	67.	8.9	2447.2	1	1	1055	132	1442.	1005.4	2470.6	1	1	1915	232	1275.	988.2	2470.4
1	0240	33	84.	10.6	2447.6	1	1	1100	133	1438.	1005.3	2470.6	1	1	1920	233	1275.	987.6	2470.4
1	0245	34	110.	12.4	2447.9	1	1	1105	134	1434.	1005.2	2470.6	1	1	1925	234	1275.	986.9	2470.4
1	0250	35	137.	14.2	2448.2	1	1	1110	135	1431.	1005.0	2470.6	1	1	1930	235	1275.	986.3	2470.4
1	0255	36	165.	16.0	2448.5	1	1	1115	136	1427.	1004.9	2470.6	1	1	1935	236	1274.	985.6	2470.4
1	0300	37	193.	17.8	2448.8	1	1	1120	137	1424.	1004.8	2470.6	1	1	1940	237	1274.	984.9	2470.3
1	0305	38	221.	19.7	2449.1	1	1	1125	138	1421.	1004.7	2470.6	1	1	1945	238	1274.	984.2	2470.3
1	0310	39	249.	21.6	2449.4	1	1	1130	139	1418.	1004.6	2470.6	1	1	1950	239	1273.	983.5	2470.3
1	0315	40	280.	23.7	2449.8	1	1	1135	140	1415.	1004.5	2470.6	1	1	1955	240	1273.	982.7	2470.3
1	0320	41	305.	25.9	2450.1	1	1	1140	141	1412.	1004.4	2470.6	1	1	2000	241	1273.	982.0	2470.3
1	0325	42	318.	28.6	2450.2	1	1	1145	142	1409.	1004.3	2470.5	1	1	2005	242	1272.	981.2	2470.3
1	0330	43	335.	32.0	2450.5	1	1	1150	143	1406.	1004.2	2470.5	1	1	2010	243	1272.	980.4	2470.3
1	0335	44	357.	36.4	2450.8	1	1	1155	144	1403.	1004.1	2470.5	1	1	2015	244	1272.	979.6	2470.3
1	0340	45	386.	42.2	2451.1	1	1	1200	145	1400.	1004.0	2470.5	1	1	2020	245	1272.	978.8	2470.3
1	0345	46	424.	49.8	2451.7	1	1	1205	146	1397.	1003.9	2470.5	1	1	2025	246	1271.	978.0	2470.3
1	0350	47	473.	59.6	2452.3	1	1	1210	147	1394.	1003.8	2470.5	1	1	2030	247	1271.	977.2	2470.3
1	0355	48	535.	72.0	2453.1	1	1	1215	148	1392.	1003.7	2470.5	1	1	2035	248	1271.	976.3	2470.3
1	0400	49	612.	87.3	2454.2	1	1	1220	149	1389.	1003.6	2470.5	1	1	2040	249	1270.	975.5	2470.3
1	0405	50	686.	105.6	2455.2	1	1	1225	150	1386.	1003.5	2470.5	1	1	2045	250	1270.	974.6	2470.2
1	0410	51	728.	127.0	2456.1	1	1	1230	151	1384.	1003.5	2470.5	1	1	2050	251	1269.	973.7	2470.2
1	0415	52	775.	151.2	2457.1	1	1	1235	152	1381.	1003.4	2470.5	1	1	2055	252	1269.	972.8	2470.2
1	0420	53	828.	178.0	2458.2	1	1	1240	153	1378.	1003.3	2470.5	1	1	2100	253	1269.	971.8	2470.2
1	0425	54	884.	206.9	2459.5	1	1	1245	154	1376.	1003.2	2470.5	1	1	2105	254	1268.	970.9	2470.2
1	0430	55	920.	237.8	2460.3	1	1	1250	155	1373.	1003.1	2470.5	1	1	2110	255	1268.	970.0	2470.2
1	0435	56	938.	270.3	2460.7	1	1	1255	156	1371.	1003.0	2470.5	1	1	2115	256	1268.	969.0	2470.2
1	0440	57	957.	304.2	2461.2	1	1	1300	157	1368.	1002.9	2470.5	1	1	2120	257	1267.	968.0	2470.2
1	0445	58	977.	339.2	2461.8	1	1	1305	158	1366.	1002.9	2470.5	1	1	2125	258	1267.	967.0	2470.2
1	0450	59	997.	375.0	2462.3	1	1	1310	159	1363.	1002.8	2470.5	1	1	2130	259	1266.	966.0	2470.2
1	0455	60	1017.	411.6	2462.8	1	1	1315	160	1361.	1002.7	2470.5	1	1	2135	260	1266.	965.0	2470.2
1	0500	61	1038.	448.9	2463.4	1	1	1320	161	1358.	1002.6	2470.5	1	1	2140	261	1266.	964.0	2470.1
1	0505	62	1059.	486.7	2463.9	1	1	1325	162	1356.	1002.5	2470.5	1	1	2145	262	1265.	962.9	2470.1
1	0510	63	1080.	524.9	2464.5	1	1	1330	163	1354.	1002.5	2470.5	1	1	2150	263	1265.	961.9	2470.1
1	0515	64	1101.	563.2	2465.0	1	1	1335	164	1351.	1002.4	2470.5	1	1	2155	264	1264.	960.8	2470.1
1	0520	65	1117.	601.3	2465.5	1	1	1340	165	1349.	1002.3	2470.5	1	1	2200	265	1264.	959.7	2470.1
1	0525	66	1132.	639.0	2466.0	1	1	1345	166	1347.	1002.2	2470.5	1	1	2205	266	1263.	958.6	2470.1
1	0530	67	1148.	676.0	2466.5	1	1	1350	167	1344.	1002.1	2470.5	1	1	2210	267	1263.	957.5	2470.1
1	0535	68	1162.	712.0	2466.9	1	1	1355	168	1342.	1002.1	2470.5	1	1	2215	268	1263.	956.3	2470.1
1	0540	69	1177.	746.9	2467.4	1	1	1400	169	1340.	1002.0	2470.5	1	1	2220	269	1262.	955.1	2470.1
1	0545	70	1190.	780.5	2467.8	1	1	1405	170	1337.	1001.9	2470.5	1	1	2225	270	1262.	953.9	2470.0
1	0550	71	1204.	812.9	2468.2	1	1	1410	171	1335.	1001.8	2470.5	1	1	2230	271	1261.	952.6	2470.0
1	0555	72	1217.	844.0	2468.6	1	1	1415	172	1333.	1001.8	2470.5	1	1	2235	272	1261.	951.3	2470.0
1	0600	73	1229.	873.8	2469.0	1	1	1420	173	1331.	1001.7	2470.5	1	1	2240	273	1260.	950.0	2470.0

1	0625	78	1292.	1000.4	2470.5	*	1	1445	178	1320.	1001.3	2470.5	*	1	2305	278	1257.	942.8	2469.9
1	0630	79	1851.	1019.1	2470.7	*	1	1450	179	1318.	1001.3	2470.5	*	1	2310	279	1256.	941.3	2469.9
1	0635	80	2264.	1032.9	2470.9	*	1	1455	180	1315.	1001.2	2470.5	*	1	2315	280	1256.	939.7	2469.9
1	0640	81	2560.	1042.8	2471.0	*	1	1500	181	1313.	1001.1	2470.5	*	1	2320	281	1255.	938.1	2469.8
1	0645	82	2760.	1049.5	2471.1	*	1	1505	182	1311.	1001.0	2470.5	*	1	2325	282	1254.	936.4	2469.8
1	0650	83	2884.	1053.6	2471.1	*	1	1510	183	1309.	1001.0	2470.5	*	1	2330	283	1254.	934.8	2469.8
1	0655	84	2949.	1055.8	2471.1	*	1	1515	184	1307.	1000.9	2470.5	*	1	2335	284	1253.	933.1	2469.8
1	0700	85	2967.	1056.4	2471.2	*	1	1520	185	1305.	1000.8	2470.5	*	1	2340	285	1252.	931.3	2469.8
1	0705	86	2951.	1055.8	2471.1	*	1	1525	186	1303.	1000.8	2470.5	*	1	2345	286	1252.	929.6	2469.7
1	0710	87	2909.	1054.4	2471.1	*	1	1530	187	1301.	1000.7	2470.5	*	1	2350	287	1251.	927.8	2469.7
1	0715	88	2848.	1052.4	2471.1	*	1	1535	188	1299.	1000.6	2470.5	*	1	2355	288	1250.	925.9	2469.7
1	0720	89	2776.	1050.0	2471.1	*	1	1540	189	1297.	1000.6	2470.5	*	2	0000	289	1249.	924.1	2469.7
1	0725	90	2696.	1047.3	2471.0	*	1	1545	190	1295.	1000.5	2470.5	*	2	0005	290	1249.	922.2	2469.6
1	0730	91	2612.	1044.5	2471.0	*	1	1550	191	1293.	1000.4	2470.5	*	2	0010	291	1248.	920.2	2469.6
1	0735	92	2527.	1041.7	2471.0	*	1	1555	192	1290.	1000.3	2470.5	*	2	0015	292	1247.	918.3	2469.6
1	0740	93	2443.	1038.9	2470.9	*	1	1600	193	1288.	1000.3	2470.5	*	2	0020	293	1246.	916.3	2469.6
1	0745	94	2362.	1036.1	2470.9	*	1	1605	194	1286.	1000.2	2470.5	*	2	0025	294	1245.	914.3	2469.5
1	0750	95	2284.	1033.5	2470.9	*	1	1610	195	1284.	1000.1	2470.5	*	2	0030	295	1245.	912.3	2469.5
1	0755	96	2210.	1031.1	2470.9	*	1	1615	196	1282.	1000.1	2470.5	*	2	0035	296	1244.	910.2	2469.5
1	0800	97	2140.	1028.8	2470.8	*	1	1620	197	1280.	1000.0	2470.5	*	2	0040	297	1243.	908.1	2469.5
1	0805	98	2076.	1026.6	2470.8	*	1	1625	198	1280.	999.9	2470.5	*	2	0045	298	1242.	906.0	2469.4
1	0810	99	2016.	1024.6	2470.8	*	1	1630	199	1280.	999.9	2470.5	*	2	0050	299	1241.	903.8	2469.4
1	0815	100	1961.	1022.8	2470.8	*	1	1635	200	1280.	999.8	2470.5	*	2	0055	300	1240.	901.6	2469.4

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
2967.	7.00	(CFS)	1820.	1249.	1203.	1203.
		(INCHES)	.193	.530	.530	.530
		(AC-FT)	902.	2478.	2478.	2478.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
1056.	7.00	1018.	821.	791.	791.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
2471.15	7.00	2470.71	2466.85	2466.04	2466.04

CUMULATIVE AREA = 87.60 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO PRECIPITATION	
OPERATION	STATION	AREA	PLAN		RATIO 1	RATIO 2
					.68	.62
HYDROGRAPH AT	RR1	3.83	1	FLOW	2176.	1892.
				TIME	3.75	3.75
ROUTED TO	RR4	3.83	1	FLOW	1826.	1586.
				TIME	4.08	4.08
HYDROGRAPH AT	RR4	2.74	1	FLOW	606.	518.
				TIME	4.92	5.08
2 COMBINED AT	RR4	6.57	1	FLOW	2208.	1906.
				TIME	4.08	4.17
HYDROGRAPH AT	RR2	3.35	1	FLOW	1629.	1408.
				TIME	3.83	3.83
ROUTED TO	RR3	3.35	1	FLOW	1422.	1228.
				TIME	4.17	4.17
HYDROGRAPH AT	RR3	3.19	1	FLOW	1166.	992.
				TIME	3.92	3.92
3 COMBINED AT	RR4	13.11	1	FLOW	4667.	4016.
				TIME	4.08	4.08
ROUTED TO	RR8	13.11	1	FLOW	3976.	3418.
				TIME	4.58	4.58
HYDROGRAPH AT	RR5	7.32	1	FLOW	1456.	1244.
				TIME	5.42	5.42
ROUTED TO	RR8	7.32	1	FLOW	1447.	1235.
				TIME	5.67	5.67
HYDROGRAPH AT	RR6	2.85	1	FLOW	1307.	1195.
				TIME	3.75	3.75
ROUTED TO	RR7	2.85	1	FLOW	1133.	976.
				TIME	4.17	4.17
HYDROGRAPH AT	RR7	4.87	1	FLOW	1006.	851.
				TIME	4.67	4.75
2 COMBINED AT	RR7	7.72	1	FLOW	1971.	1678.
				TIME	4.25	4.25
ROUTED TO	RR8	7.72	1	FLOW	1766.	1504.
				TIME	4.83	4.83
HYDROGRAPH AT	RR9	1.75	1	FLOW	306.	261.
				TIME	5.58	5.58
HYDROGRAPH AT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

				TIME	4.75	4.75
ROUTED TO	RR10	33.61	1	FLOW	7689.	6573.
				TIME	5.00	5.00
HYDROGRAPH AT	RR10	3.30	1	FLOW	599.	506.
				TIME	4.83	5.00
2 COMBINED AT	RR10	36.91	1	FLOW	8286.	7079.
				TIME	5.00	5.00
ROUTED TO	RR12	36.91	1	FLOW	8169.	6992.
				TIME	5.33	5.42
HYDROGRAPH AT	RR11	3.40	1	FLOW	888.	757.
				TIME	4.25	4.25
ROUTED TO	RR12	3.40	1	FLOW	872.	743.
				TIME	4.42	4.50
HYDROGRAPH AT	RR12	4.25	1	FLOW	1198.	1027.
				TIME	4.17	4.25
3 COMBINED AT	RR12	44.56	1	FLOW	9751.	8368.
				TIME	5.33	5.33
ROUTED TO	RR13	44.56	1	FLOW	9660.	8290.
				TIME	5.58	5.58
HYDROGRAPH AT	RR13	2.26	1	FLOW	581.	483.
				TIME	3.92	3.92
2 COMBINED AT	RR13	46.82	1	FLOW	9897.	8489.
				TIME	5.50	5.58
ROUTED TO	RR14	46.82	1	FLOW	9881.	8481.
				TIME	5.67	5.67
HYDROGRAPH AT	RR14	6.22	1	FLOW	1288.	1111.
				TIME	5.42	5.50
2 COMBINED AT	RR14	53.04	1	FLOW	11157.	9578.
				TIME	5.58	5.67
ROUTED TO	RR.DB	53.04	1	FLOW	5429.	1408.
				TIME	7.33	8.42
				** PEAK STAGES IN FEET **		
			1	STAGE	3211.35	3209.89
				TIME	7.33	8.42
ROUTED TO	RR23	53.04	1	FLOW	5018.	1408.
				TIME	7.92	8.92
HYDROGRAPH AT	RR23	2.03	1	FLOW	241.	199.
				TIME	5.25	5.25
2 COMBINED AT	RR23	55.07	1	FLOW	5046.	1423.
				TIME	7.92	8.67
HYDROGRAPH AT	R1	1.12	1	FLOW	441.	384.
				TIME	3.83	3.83

ROUTED TO	R5	56.19	1	FLOW	4845.	1422.
				TIME	8.33	9.08
HYDROGRAPH AT	RR20	1.37	1	FLOW	462.	403.
				TIME	4.08	4.08
ROUTED TO	R5	1.37	1	FLOW	432.	377.
				TIME	4.75	4.75
HYDROGRAPH AT	RR21	6.27	1	FLOW	1652.	1433.
				TIME	4.42	4.42
ROUTED TO	R5	6.27	1	FLOW	1599.	1390.
				TIME	5.08	5.17
HYDROGRAPH AT	RR22	2.15	1	FLOW	719.	623.
				TIME	4.00	4.00
ROUTED TO	R5	2.15	1	FLOW	659.	572.
				TIME	4.75	4.75
HYDROGRAPH AT	R5	5.77	1	FLOW	637.	525.
				TIME	5.17	5.17
5 COMBINED AT	R5	71.75	1	FLOW	4998.	3681.
				TIME	8.33	5.25
HYDROGRAPH AT	F1	4.63	1	FLOW	1468.	1280.
				TIME	4.17	4.17
ROUTED TO	F5	4.63	1	FLOW	1351.	1180.
				TIME	5.25	5.25
HYDROGRAPH AT	F2	1.28	1	FLOW	538.	470.
				TIME	3.83	3.83
ROUTED TO	F5	1.28	1	FLOW	466.	407.
				TIME	4.58	4.58
HYDROGRAPH AT	F3	2.60	1	FLOW	1094.	949.
				TIME	3.75	3.75
ROUTED TO	F5	2.60	1	FLOW	978.	848.
				TIME	4.17	4.17
HYDROGRAPH AT	F4	1.30	1	FLOW	456.	393.
				TIME	3.83	3.83
ROUTED TO	F5	1.30	1	FLOW	397.	341.
				TIME	4.50	4.50
HYDROGRAPH AT	F5M	4.04	1	FLOW	860.	697.
				TIME	4.42	4.58
HYDROGRAPH AT	F5S	2.00	1	FLOW	420.	339.
				TIME	4.25	4.33
2 COMBINED AT	F5	6.04	1	FLOW	1264.	1014.
				TIME	4.33	4.50
6 COMBINED AT	F5	87.60	1	FLOW	7661.	6660.
				TIME	5.17	5.25

				** PEAK STAGES IN FEET **		
				1 STAGE	2471.75	2471.15
				TIME	8.58	7.00
ROUTED TO		F5R	87.60	1 FLOW	4524.	2962.
				TIME	8.67	7.08

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .68									
RR23	NAME	5.00	766.30	243.37	1.08	5.00	757.34	245.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1178E+03 OUTFLOW= .1169E+03 BASIN STORAGE= .1338E+00 PERCENT ERROR= .7

FOR PLAN = 1 RATIO= .68									
RR23	NAME	4.90	240.55	315.00	.45	5.00	240.55	315.00	.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4963E+02 OUTFLOW= .4902E+02 BASIN STORAGE= .1338E+00 PERCENT ERROR= 1.0

FOR PLAN = 1 RATIO= .62									
RR23	NAME	5.00	199.11	314.34	.36	5.00	199.04	315.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4006E+02 OUTFLOW= .3950E+02 BASIN STORAGE= .1340E+00 PERCENT ERROR= 1.0

FOR PLAN = 1 RATIO= .68									
R5	NAME	3.28	1993.78	240.86	.98	5.00	1992.70	240.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3039E+03 OUTFLOW= .3014E+03 BASIN STORAGE= .1976E+00 PERCENT ERROR= .8

FOR PLAN = 1 RATIO= .68									
R5	NAME	4.95	639.03	307.45	.40	5.00	637.44	310.00	.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1261E+03 OUTFLOW= .1245E+03 BASIN STORAGE= .1782E+00 PERCENT ERROR= 1.1

FOR PLAN = 1 RATIO= .62									
R5	NAME	5.00	525.85	310.75	.32	5.00	525.31	310.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1013E+03 OUTFLOW= .9988E+02 BASIN STORAGE= .1859E+00 PERCENT ERROR= 1.2

FOR PLAN = 1 RATIO= .68									
F5N	NAME	5.00	2063.25	243.98	1.58	5.00	2044.26	245.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3422E+03 OUTFLOW= .3405E+03 BASIN STORAGE= .3591E+00 PERCENT ERROR= .4

FOR PLAN = 1 RATIO= .68									
F5N	NAME	5.00	861.20	262.22	.81	5.00	859.64	265.00	.81

FOR PLAN = 1 RATIO= .62

F5N	NAME	5.00	702.53	273.25	.69	5.00	696.78	275.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1496E+03 OUTFLOW= .1484E+03 BASIN STORAGE= .3578E+00 PERCENT ERROR= .6

FOR PLAN = 1 RATIO= .68

F5S	NAME	4.39	1039.47	236.23	1.46	5.00	1034.04	235.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1569E+03 OUTFLOW= .1561E+03 BASIN STORAGE= .1206E+00 PERCENT ERROR= .4

FOR PLAN = 1 RATIO= .68

F5S	NAME	4.88	428.97	250.84	.74	5.00	428.17	255.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7942E+02 OUTFLOW= .7876E+02 BASIN STORAGE= .1205E+00 PERCENT ERROR= .7

FOR PLAN = 1 RATIO= .62

F5S	NAME	5.00	339.79	259.65	.63	5.00	339.35	260.00	.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6755E+02 OUTFLOW= .6693E+02 BASIN STORAGE= .1188E+00 PERCENT ERROR= .7

FOR PLAN = 1 RATIO= .68

F5R	NAME	1.57	4526.00	518.18	.65	5.00	4523.61	520.00	.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3059E+04 EXCESS= .0000E+00 OUTFLOW= .3048E+04 BASIN STORAGE= .1118E+02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .62

F5R	NAME	1.76	2967.26	423.48	.53	5.00	2962.42	425.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2478E+04 EXCESS= .0000E+00 OUTFLOW= .2466E+04 BASIN STORAGE= .1115E+02 PERCENT ERROR= .0

*** NORMAL END OF HEC-1 ***

SEDIMENTATION ANALYSIS

SCOPE

Black & Veatch evaluated the sediment load impact on the UFWDB by determining average annual and 100-year event sediment production using the Universal Soil Loss Equation (USLE) and the Modified Universal Soil Loss Equation (MUSLE) methods. Sedimentation analysis results were then compared to the U.S. Army Corps of Engineers' adopted values.

DISCUSSION OF PARAMETERS

The following discussion defines the variables used in the USLE and MUSLE methods for estimating sediment loads delivered to the Upper Flamingo Wash Detention Basin.

Universal Soil Loss Equation (USLE)

The Universal Soil Loss Equation, developed by the USDA Soil Conservation Service, is one method for predicting the gross sediment amount produced by sheet and rill erosion. The following equation was used to predict values for average annual or single storm erosion:

$$A = RKLSCP$$

Where, A = Soil loss / unit area (tons/acre),
R = Rainfall factor,
K = Soil erodibility factor,
LS = Length-slope factor,
C = Vegetal cover factor, and
P = Conservation practice factor.

The dimensionless factors that comprise the equation take into account the characteristics of the watershed. Several authors were referenced to determine the most representative values for the UFWDB watershed. A summary of the factor selection and range of values considered for use in the USLE follows.

Rainfall Factor (R). The rainfall factor is a product of a rainfall's kinetic energy and its maximum 30-minute intensity, and represents the erosive forces of falling rain and runoff. The R value for the average annual erosion is based on a 2-year, 6-hour precipitation depth. Reference 9 (Table A) listed the annual R value for Las Vegas as 15, whereas a value of 27 was derived from figures or equations in References 1 and 6.

The following equation was used to calculate the R value for the Base Flood (100-year, 6-hour) event.

$$R_{100} = \frac{19.25P^{2.2}}{D^{0.4672}} \qquad \text{(Ref. 1)}$$

Where, R_{100} = Rainfall factor for 100-year, 6-hour storm,
P = Depth of precipitation (inches), and
D = Storm duration (hours).

The 100-year, 6-hour precipitation depth of 2.3 inches was adjusted to 3.3 inches in accordance with Reference 3, thereby producing an R value of 115.24. This was the only R value used for 100-year event calculations.

Soil Erodibility Factor (K). The K factor represents a soil's susceptibility to erosion or its resistance to detachment by rainfall and runoff. Several references estimate K values as a function of soil textures, gradation, and permeabilities. Soil characteristics for the Upper Flamingo watershed were obtained from the geotechnical investigation (Ref. 5) performed during the 1989 design of the UFWDB. Values for the K factor did not vary greatly among the references consulted. The K values used in the USLE calculations ranged from 0.13 to 0.17 for each subbasin.

Length-Slope Factor (LS). The LS factor describes the combined effect of the length and steepness of the watershed slope on the runoff energy. The LS value was calculated using the following equation:

$$LS = \left(\frac{\lambda}{72.6}\right)^{m}\left(\frac{430x^2 + 30x + 0.43}{6.613}\right) \quad \text{(Ref. 1)}$$

Where, λ = Slope length (ft),
x = Slope gradient (ft/ft), and
m = 0.3 for $x \leq 3\%$, 0.4 for $x = 4\%$, and 0.5 for $x \geq 5\%$.

The LS factor was calculated for the individual subbasins and then averaged over the watershed area to obtain an overall LS value of 8.48. The overall value was used in the basic USLE computations and MUSLE lumped parameter method.

Vegetal Cover Factor (C). Sometimes called the Crop Management Factor, the C factor is dependent on the type and density of plant cover. The Soil Conservation Service has compiled a table for "Permanent Pasture, Rangeland, and Idle Land" (References 1, 6, and 9) from which to estimate the C value based on the percentage of canopy and ground cover. Other tables exist for disturbed or altered lands, such as construction or agricultural sites.

The Upper Flamingo watershed is considered idle land with a random distribution of vegetation in the form of short brush and/or tall weeds over as much as 25 percent of the area, and a ground cover of weeds over 20 percent or less of the area. Each subbasin was estimated separately. Subbasins located low on the alluvial fan, or with a majority of their area comprised of washes, were rated as having no appreciable canopy or ground cover. Subbasins located midway up the fan were rated as having no canopy and 20 percent ground cover, and the remaining subbasins were estimated to have 25 percent canopy and 20 percent ground cover. The following C values were obtained from the SCS table:

Subbasin Description	Canopy Cover %	Ground Cover %	C Value
Lower fan/wash	0	0	0.45
Middle fan	0	20	0.24
Upper fan	25	20	0.20

Individual subbasin C values were weighted over the watershed area yielding 0.28 as an average C value for the watershed.

Conservation Practice Factor (P). Often used in conjunction with the C factor, the P factor is a ratio of soil loss under a certain erosion control practice, such as contour farming, to the soil loss resulting from straight-row farming. A default value of 1.0 is used for non-crop land such as the Upper Flamingo watershed.

As defined above, the USLE accounts for the detachment and transport effects of rainfall, but does not account for significant amounts of deposition within the watershed. Therefore, the sediment loading values obtained from the USLE are gross amounts and not a computed value of sediment yield.

Modified Universal Soil Loss Equation (MUSLE)

To estimate the sediment yield directly for a specific storm event, the USLE is modified by replacing the rainfall factor R with the product of runoff volume and peak discharge. The MUSLE is defined as follows:

$$Y = 95\,(Q \times V)^{0.56}\, K\, LS\, CP \qquad \text{(Ref. 7)}$$

Where, Y = Single storm sediment yield (tons),
Q = Peak discharge (cfs),
V = Runoff volume (ac-ft), and
K, LS, and CP are as defined under USLE section.

The MUSLE method may be applied to a homogeneous watershed, whereby the lumped parameter approach is used, or to a nonhomogeneous watershed using sediment routing procedures. For the lumped parameter method, the K, LS, and CP values are area weighted averages over the watershed. Peak discharge and runoff volume are the total values for the watershed and are generated from a HEC-1 model. In the sediment routing procedure, the sediment yield is calculated for each subbasin. A routing coefficient is then applied to the sediment yield produced from each subbasin to account for the size and quantity of sediment

exiting the subbasin and reaching the watershed exit, or detention basin. The sediment yield total for the watershed is then the summation of the routed subbasin yields.

Sediment Delivery Ratio

To convert the gross sediment loads calculated with the USLE method, a ratio of sediment yield to gross sediment production, or sediment delivery ratio, is required. Evaluations of a sediment delivery ratio (SDR) are typically determined from reservoir sedimentation surveys or direct measurements. In the absence of actual measurements, a range of sediment delivery ratios was developed from a relationship presented in Reference 8. The SDR values for the 34.56 sq mi Upper Flamingo watershed is 4 to 29 percent.

U.S. ARMY CORPS OF ENGINEERS' METHODS

In their 1991 report, the U.S. Army Corps of Engineers (COE) discussed several procedures for developing the sediment yield for average annual and 100-year, 6-hour storm events (Ref. 7). The first several sections of the COE report compare different methods for obtaining sediment yields. The COE then establishes a sediment yield/square mile "rule of thumb" for alluvial fans using the USLE and MUSLE methods. The COE findings are discussed below.

COE Comparisons

The COE compared the results calculated with the "Los Angeles District Debris Estimation Method" (Method) to five watersheds having geographic similarities to the Upper Flamingo watershed, and which had had their sediment yield measured or estimated. The latter watersheds were some of the watersheds used to produce the Las Vegas Regional Curve which shows sediment yield plotted against drainage area (Reference 2). When plotted on the same curve, the sediment yield from the Method watersheds was about 5.6 times greater than the study watersheds. The COE concluded that watersheds in this geographic area yield 18 percent of the sediment generated by the Method for average annual sediment amounts.

The COE then compared values for average annual and 100-year sediment yields calculated using the Method to determine a ratio between the two yields. They estimated that the 100-year sediment yield is 15 times greater than the average annual sediment yield. The average annual

yields derived using this ratio compared well to the Las Vegas Regional Curve, and the COE adopted these values for the watersheds examined in their report.

Additional data obtained from the USDA Agricultural Service for reservoirs in the same physiographic/climatic region as Las Vegas, were plotted on the Las Vegas Regional Curve. These plots were consistently below the curve, so the COE determined that the curve reflects a maximum value for average annual sediment yield rather than a minimum value as suggested in Reference 2.

The final comparison made by the COE to substantiate their adopted values was to the "Pacific Southwest Area Interagency Committee (PSIAC) Method. Their findings suggested that the values obtained using the 15:1 ratio were comparable.

COE "Unit" Sediment Yields

Using the same USLE and MUSLE equations discussed earlier in this report, the COE attempted to establish the average annual and event-based sediment yields on an alluvial fan. The following values were used for the factors on a representative 1 square mile watershed:

Parameter	USLE	MUSLE
R	27	N/A
K	.15	.15
LS	0.5928	0.5928
CP	.95	.95
Q	N/A	1130 cfs
V	N/A	87 ac-ft

The peak discharge was obtained from a table and the runoff volume was pulled from a HEC-1 model on a similar watershed with a 1 square mile area. The R and K factors are similar to those defined for the Upper Flamingo watershed in the previous section, however, the CP value of .95 is more than double the values reported in the SCS table. The CP value used by the COE is in the range reported for disturbed, i.e., bulldozed, fields, which does not represent the desert topography found throughout this region.

Using the above factors, the COE estimated the average annual sediment yield to be 0.67 ac-ft/sq mi/yr. Using a more representative, yet conservative, CP factor of 0.45 for no canopy or ground cover, the adjusted "unit" average annual sediment yield would be 0.32 ac-ft/sq mi/yr. The COE 100-year flood "unit" sediment yield is 2.30 ac-ft, which becomes 1.09 ac-ft with a more realistic CP factor.

DISCUSSION OF RESULTS

This section will compare and discuss the results of the different methods used to estimate the average annual and storm specific, or 100-year, 6-hour storm, sediment yields.

Average Annual Sediment Yield

The COE used the "unit" average annual sediment yield figure of 0.67 ac-ft/sq mi/yr to estimate the Upper Flamingo sediment yield at 24.1 ac-ft/yr. Using the adjusted "unit" value, the estimate for the average annual sediment yield would be 11.1 ac-ft/yr.

Using the Las Vegas Regional Curve, which the COE proposed to be a maximum value based on their plots of measured sediment yield/drainage area for geographically similar watersheds, the average annual sediment yield from the 34.56 sq mi Upper Flamingo watershed is 13.13 ac-ft/yr.

The USLE calculations performed by Black & Veatch for this task yield gross average annual sediment loads of between 55.3 and 117.5 ac-ft/yr. Applying the median SDR value of 16 percent, the average annual range is 8.85 to 18.8 ac-ft/yr. The value obtained from the Las Vegas Regional Curve falls in the middle of this range.

A statistical analysis method was also used to corroborate the sediment yield values obtained thus far for the Upper Flamingo watershed area. For drainage areas between 1 and 30,000 sq mi, the following relation was established by Dendy and Bolton:

$$\frac{S}{S_R} = \left(\frac{A}{A_R}\right)^{-0.16} \qquad \text{(Ref. 6)}$$

Where, S = Sediment yield (tons/sq mi/yr),
S_R = Reference sediment yield for 1 sq mi = 1645 tons/yr,
A = Drainage area (sq mi), and
A_R = Reference drainage area = 1 sq mi

Applying the above relation to the Upper Flamingo watershed and using the reference values, the sediment yield generated is 17.63 ac-ft/yr. Using the COE "unit" value for sediment load produced per 1 sq mi, the yield is 15.64 ac-ft/yr. Adjusting further to correct for the high CP value used by the COE, the sediment yield becomes 7.4 ac-ft/yr.

Another method obtained from the *Journal of Hydraulics Division*, ASCE, was published as being specific to the western United States (Ref. 4). The method predicted the average annual sediment yield by using climate (average precipitation and temperature values), watershed slope, and soil characteristics as independent variables in the following equation:

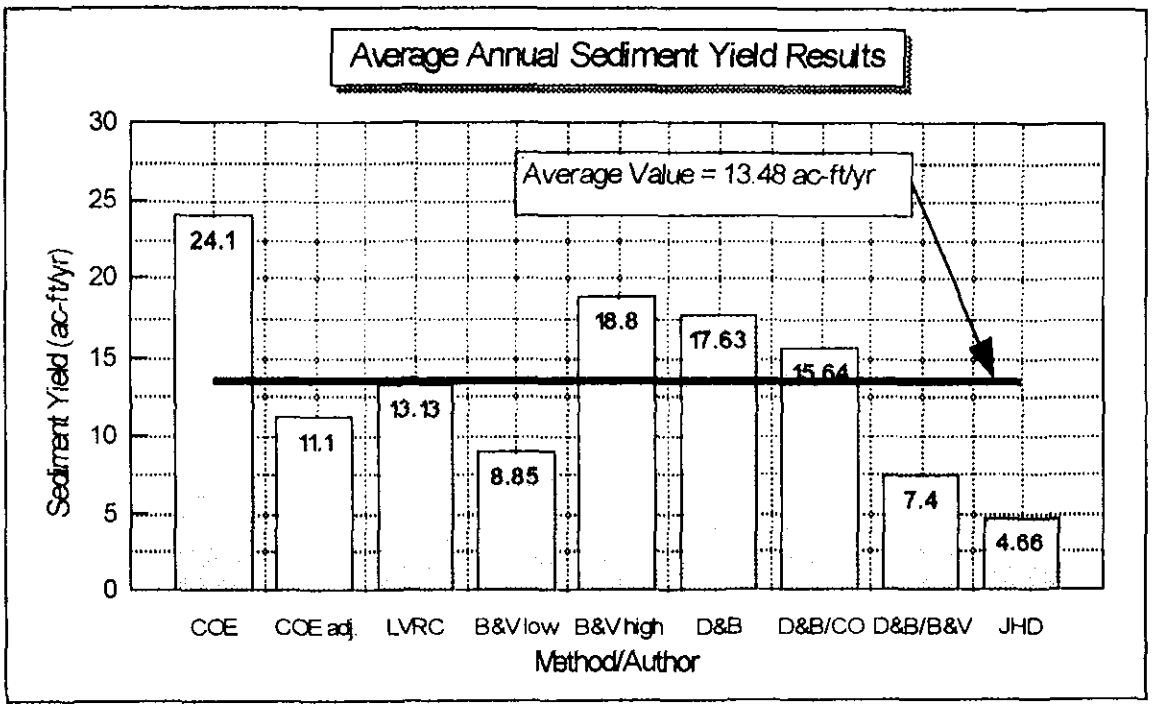
$$\log (Y + 100) = 6.21301 - 2.19113 \log(X_1 + 100) + 0.06034 \log(X_2 + 100) - 0.01644 \log(X_3 + 100) + 0.04250 \log(X_4 + 100)$$

Where, Y = Sediment Yield (ac-ft/sq mi/yr),
X_1 = Avg. precipitation / avg. temperature ratio (in/°F),
X_2 = Weighted watershed average (%),
X_3 = Soil particles > 1mm (%), and
X_4 = Soil particles < 2μm (%).

In addition to the percentage of particles smaller than 2μm, the X_4 value can be positive or negative depending on the pH of the soil. For pH values greater than 7.0, as for the Upper Flamingo watershed soils, the sign is positive; for acidic soils, the sign is negative. The average

annual sediment yield produced by the above equation is 4.66 ac-ft/yr. This value falls below the range developed from the Las Vegas Regional Curve.

In summary, average annual sediment yields calculated using values specific to this geographic region were lower than the yields generated using general approaches. The following graph depicts the range of values suggested for the average annual sediment yield for the Upper Flamingo watershed. The average annual sediment yield suggested for use in this study is 13.48 ac-ft/yr.



Storm Specific Sediment Yield

For the 100-year event, the COE took the average annual estimates for the small watersheds studied in their report, and applied the 15:1 ratio. These small watersheds accounted for 12.43 sq mi of the Upper Flamingo watershed. For the remainder of the watershed, 25.86 sq mi according to the COE report, sediment yield from sheet and rill erosion, gully erosion, channel

degradation, and bank erosion were calculated and added to the previous total. The COE also added sediment yield from the Red Rock Detention Basin based on a trap efficiency of 91 percent. The total sediment yield from the Upper Flamingo watershed is 153 ac-ft for the 100-year event. Using a trap efficiency of 90 percent for the UFWDB, the sediment remaining in the detention basin becomes 138 ac-ft.

Using the adjusted COE's "unit" sediment yield of 1.09 ac-ft/sq mi, the total sediment yield for the Upper Flamingo watershed would be 37.7 ac-ft. Adding to this the 78.2 ac-ft generated by gully, channel, and bank erosion, (adjusted for area), the total sediment yield into the UFWDB becomes 115.9 ac-ft. Applying the 90 percent trap efficiency value, the sediment load remaining in the basin is 104.3 ac-ft for the 100-year event.

The MUSLE lumped parameter method assumes a homogeneous watershed which is not characteristic of the Upper Flamingo watershed. The sediment yield obtained using this method produced an unrealistic value of 236 ac-ft over the watershed. Since the watershed is heterogeneous, the lumped parameter solution was eliminated from consideration.

The MUSLE routing procedure produced a 100-year sediment load of 116 ac-ft which would equate to 104.4 ac-ft of sediment remaining in the basin. This value is the same as that derived using the COE's information.

The following table summarizes the sediment yields estimated for the 100-year, 6-hour event.

Method / Author	Sediment Yield 100-year Storm (ac-ft)
COE	138
COE adjusted	104.3
MUSLE - Routing Method	104.4

For analysis of the impact on the UFWDB, a value of 105 ac-ft will be used for the 100-year event sediment loading.

CONCLUSION

The various methods used to estimate the average annual and storm event sediment loading on the Upper Flamingo Wash Detention Basin have produced results which differ by as much as five magnitudes. Watersheds which have had their sediment yield measured or estimated, and which have geographic similarities to the UFWDB, were considered to provide a better indication of the sediment yield expected to occur from the Flamingo watershed rather than the general analytical approaches. The average annual sediment yield estimated for the UFWDB is 13.48 acre-feet. The 100-year sediment loading is estimated to be 105 acre-feet. This value will be used to adjust the storage capacity of the UFWDB for the new Base Flood Event which will be evaluated in the following section, UFWDB PERFORMANCE ANALYSIS.

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CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
UNIVERSAL SOIL LOSS EQUATION

Subbasin	Description	Area (sq mi)	R	K	Reach (ft)	El. Drop (ft)	S (ft/ft)	m	LS	C	P	Gross Erosion (ton/ac/yr)	Gross Erosion (ac-ft/yr)	Sediment Yield/mi per LV curve (af/sqmi/yr)	Sediment Yield (ac-ft/yr)	
RR23	low fan/wash	2.03	15	0.17	13000	500	0.038	0.40	2.67	0.45	1	3.07	2.18	0.70	1.42	
R1	mid fan	1.12	15	0.15	10575	260	0.025	0.30	0.96	0.24	1	0.52	0.20	0.80	0.90	
RR20	upper fan	1.37	15	0.13	19200	2000	0.104	0.50	20.22	0.20	1	7.88	3.78	0.77	1.05	
RR21	upper fan	6.27	15	0.13	23000	1780	0.077	0.50	14.34	0.20	1	5.59	12.27	0.55	3.45	
RR22	upper fan	2.15	15	0.13	12000	1060	0.088	0.50	12.51	0.20	1	4.88	3.67	0.69	1.48	
R5	low fan/wash	5.77	15	0.17	19000	400	0.021	0.30	1.01	0.45	1	1.15	2.33	0.56	3.23	
F1	upper fan	4.63	15	0.13	14000	1600	0.114	0.50	19.90	0.20	1	7.76	12.57	0.59	2.73	
F2	upper fan	1.28	15	0.13	8000	500	0.063	0.50	6.33	0.20	1	2.47	1.10	0.78	1.00	
F3	mid fan	2.6	15	0.15	10500	840	0.080	0.50	10.15	0.24	1	5.48	4.99	0.65	1.69	
F4	upper fan	1.3	15	0.13	8000	300	0.038	0.40	2.14	0.20	1	0.84	0.38	0.78	1.01	
F5N	mid fan	4.04	15	0.15	19000	540	0.028	0.30	1.31	0.24	1	0.71	1.00	0.63	2.55	
F5S	low fan/wash	2	15	0.17	16000	280	0.018	0.30	0.83	0.45	1	0.95	0.67	0.71	1.42	SDR
											SUM	41.30	45		21.93	0.49
Weighted Averages *			15	0.15	16369	959	0.059	0.5	8.48	0.28	1	5.19	62.78			
Overall Watershed		34.56	15	0.15	40,000	2,320	0.058	0.5	12.84	0.28	1	7.86	95.01	0.38	13.24	0.14

The following values were adopted for use in the USLE table:

Subbasin Description	K	C
low fan/wash	0.17	0.45
mid fan	0.15	0.24
upper fan	0.13	0.20
Sediment Specific Weight	84	pcf

* Weighted averages are used in other USLE methods and the MUSLE methods.

CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
UNIVERSAL SOIL LOSS EQUATION

Reference: Applied Hydrology and Sedimentation for Distributed Areas
by: B.J. Barfield & R.C. Warner

A = RKLSCP

Where:
A = soil loss / unit area [tons/acre/year]
R = rainfall factor
K = soil erodibility factor
LS = length slope factor
CP = control practice factor

Annual Average
2-yr, 6-hr

A = 9.6 tons/ac/yr
using values shown in outlined boxes

A = 3.4 af/sq.mi./yr
using sediment sp. wt. 84 pcf

R	Average annual R =	27	per Fig. 5.3
K	Design K value for topsoil =	0.15	per Table 5.5 for sand
LS	Length slope factor =	8.48	weighted value per USLE spreadsheet
CP	Control practice factor =	0.28	per Table 5.A.3 for ea. subbasin, watershed avg. see USLE spreadsheet

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Storm Specific
100-yr, 6-hr

A = 41.0 tons/ac/yr
using values shown in outlined boxes

A = 14.4 af/sq.mi./yr
using sediment sp. wt. 84 pcf

R	R value for specific storm =	115.24	for 100-yr, 6-hr storm
	when: P =	3.3	in
	D =	6	hr
K	Design K value for topsoil =	0.15	per Table 5.5 for sand
LS	Length slope factor =	8.48	weighted value per USLE spreadsheet
CP	Control practice factor =	0.28	per Table 5.A.3 for ea. subbasin, watershed avg. see USLE spreadsheet

CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
UNIVERSAL SOIL LOSS EQUATION

Reference: Guides for Erosion and Sediment Control in Nevada, Aug. 1976
by: U.S. Dept. of Agriculture Soil Conservation Service, Reno, NV

A = RKLSCP

Where: A = soil loss / unit area [tons/acre/year]
R = rainfall factor
K = soil erodibility factor
LS = length slope factor
C = vegetal cover factor
P = conservation practice factor (Delete P for Nevada)

A = 4.6 tons/ac/yr
using values shown in outlined boxes

A = 1.6 af/sq.mi./yr
using sediment sp. wt. 84 pcf

R Annual R factor = 15 per Table A
% material <2.0mm = 32%
%sand (0.1mm to 2.0mm) = 21.6%

K Design K value for topsoil = 0.13 per Chart 1

LS Length slope factor = 8.48 weighted value per USLE spreadsheet

C Vegetal cover factor = 0.28 per Table 2 for ea. subbasin, watershed avg.
see USLE spreadsheet

CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
JOURNAL OF HYDRAULICS DIVISION - ASCE
Predicting Sediment Yield in Western U.S.
by Elliott M. Flaxman

Subbasin	Area (sq mi)	Reach (ft)	El. Drop (ft)	S (ft/ft)
RR23	2.03	13000	500	0.038
R1	1.12	10575	260	0.025
RR20	1.37	19200	2000	0.104
RR21	6.27	23000	1780	0.077
RR22	2.15	12000	1060	0.088
R5	5.77	19000	400	0.021
F1	4.63	14000	1600	0.114
F2	1.28	8000	500	0.063
F3	2.6	10500	840	0.080
F4	1.3	8000	300	0.038
F5N	4.04	19000	540	0.028
F5S	2	16000	280	0.018
				0.060

Independent Variables

X1 = Precipitation/Temperature ratio (avg. annual values) X1 = 0.062
Pavg = 4.13 in
Tavg = 67.1 deg. F

X2 = Weighted avg. slope across watershed X2 = 6.0

X3 = % coarse soil particles > 1mm X3 = 72.6
Takes into account armoring &
resistance of coarse materials to erosion.

X4 = Soil aggregation = soil particles < 2microns X4 = 0.0
Value is + if pH >7, and - if pH < 7
The pH is assumed to be >7 based on other
geotechnical reports from similar areas.

Dependent Variable

Y = ac-ft/sq. mi./year of sediment yield log(Y+100) = 2.001
Y = 0.135 ac-ft/sq.mi./yr

Then average annual sediment yield = 4.66 *ac-ft/year*

CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
MODIFIED UNIVERSAL SOIL LOSS EQUATION

Routing Method

Subbasin	Q (cfs)	V (ac-ft)	K	L (ft)	dE (ft)	S (ft/ft)	m	LS	CP
RR23	617	101	0.17	13000	500	0.038	0.4	2.67	0.45
R1	752	110	0.15	10575	260	0.025	0.3	0.96	0.24
RR20	772	138	0.13	19200	2000	0.104	0.5	20.22	0.20
RR21	2564	559	0.13	23000	1780	0.077	0.5	14.34	0.20
RR22	1174	196	0.13	12000	1060	0.088	0.5	12.51	0.20
R5	1476	243	0.17	19000	400	0.021	0.3	1.01	0.45
F1	2281	434	0.13	14000	1600	0.114	0.5	19.90	0.20
F2	901	128	0.13	8000	500	0.063	0.5	6.33	0.20
F3	1776	224	0.15	10500	840	0.080	0.5	10.15	0.24
F4	803	110	0.13	8000	300	0.038	0.4	2.14	0.20
F5N	1696	292	0.15	19000	540	0.028	0.3	1.31	0.24
F5S	893	139	0.17	16000	280	0.018	0.3	0.83	0.45

Subbasin	Area (sq mi)	Gross Erosion (ton/yr)	Gross Erosion (ac-ft/yr)	Travel Time (hours)	Delivery Ratio	Sediment Yield (ton/yr)	Sediment Yield (ac-ft/yr)
RR23	2.03	9408	5	2.67	0.31	5010	3
R1	1.12	1867	1	2.71	0.65	985	1
RR20	1.37	32643	18	2.45	0.61	18314	10
RR21	6.27	99251	54	3.19	0.58	46786	26
RR22	2.15	31093	17	1.80	0.60	20350	11
R5	5.77	9432	5	4.61	0.29	3182	2
F1	4.63	111947	61	1.83	0.63	72635	40
F2	1.28	10677	6	1.49	0.69	7509	4
F3	2.60	47465	26	1.68	0.68	31933	17
F4	1.30	3114	2	1.83	0.58	2022	1
F5N	4.04	6922	4	4.09	0.49	2641	1
F5S	2.00	4292	2	4.32	0.46	1548	1
SUM	**34.56**		**201**				**116**
AVG					**0.52**		

The following values were adopted for use in the table:

Descriptio	K	C	
lower fan	0.17	0.45	
mid fan	0.15	0.24	
upper fan	0.13	0.20	
Sediment Specific Wt =		84	pcf
2yr, 24hr rainfall depth =		1.30	in
Manning's n =		0.03	
Average D50 size, PF2=		0.410	mm leaving subbasin
Watershed Q (cfs) =		6021	cfs
Watershed V (ac-ft) =		1363	ac-ft
.56ln(Q*V) =		8.92	
Storm Value Factor, R =		115.24	per USLE worksheet
Routing Coefficient, B =		0.3683	calculated value

CCRFCD - LOMR UPPER FLAMINGO WASH DETENTION BASIN
MODIFIED UNIVERSAL SOIL LOSS EQUATION (MUSLE)

Reference: Applied Hydrology and Sedimentology for Disturbed Areas
Barfield, B.J.; Warner, R.C.; Haan, C.T.

Lumped Parameter Method

$$Y = [95(Q \times V)^{.56}] \times K \times LS \times CP$$

where, Y = *single storm sediment yield (tons)*
Q = peak discharge (cfs) - based on HEC-1 model
V = runoff volume (ac-ft) - based on HEC-1 model
K, LS, CP are the weighted averages shown in the USLE table

Storm Frequency (yr)	100	
Storm Duration (hr)	6	
Sediment Sp. Wt (pcf)	84	

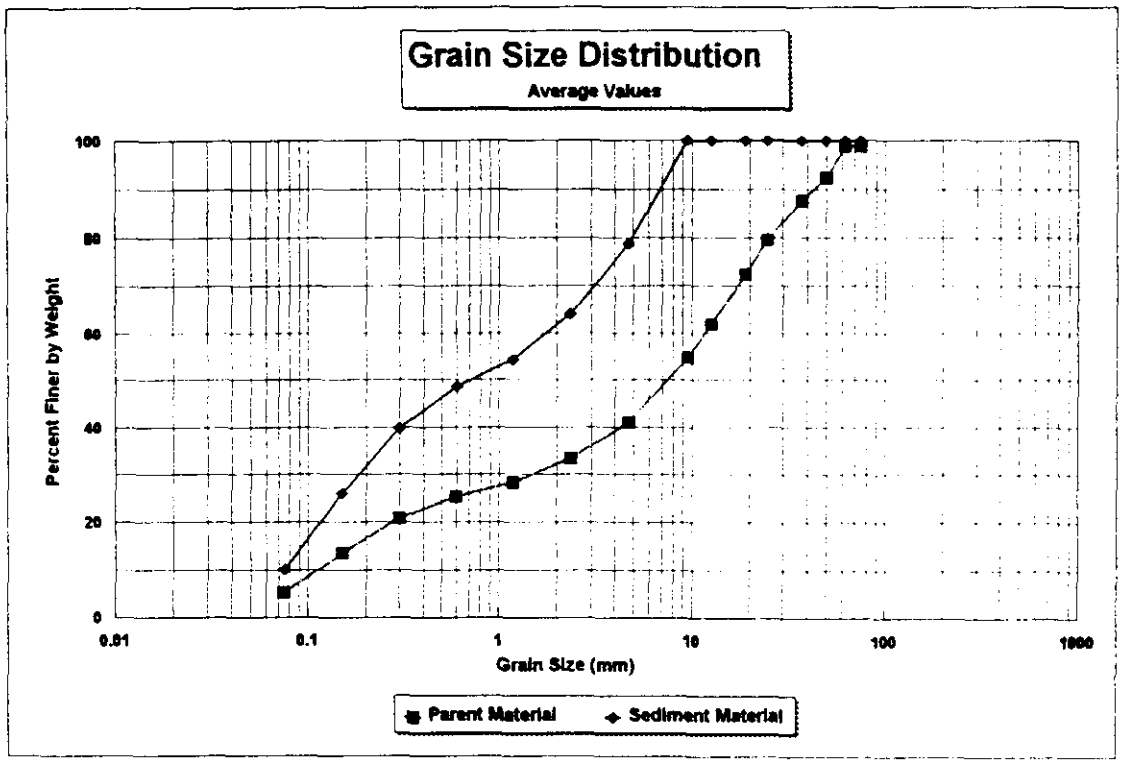
HEC-1 Model:	**UFDB**	Runoff from UF subbasins, routed to UFDB
Watershed Area =	34.56	sq. mi.
Q =	6021	*cfs*
V =	1363	ac-ft
K =	0.15	
LS =	8.48	
CP =	0.28	
Sediment Yield, Y =	244,899	tons or [134] ac-ft

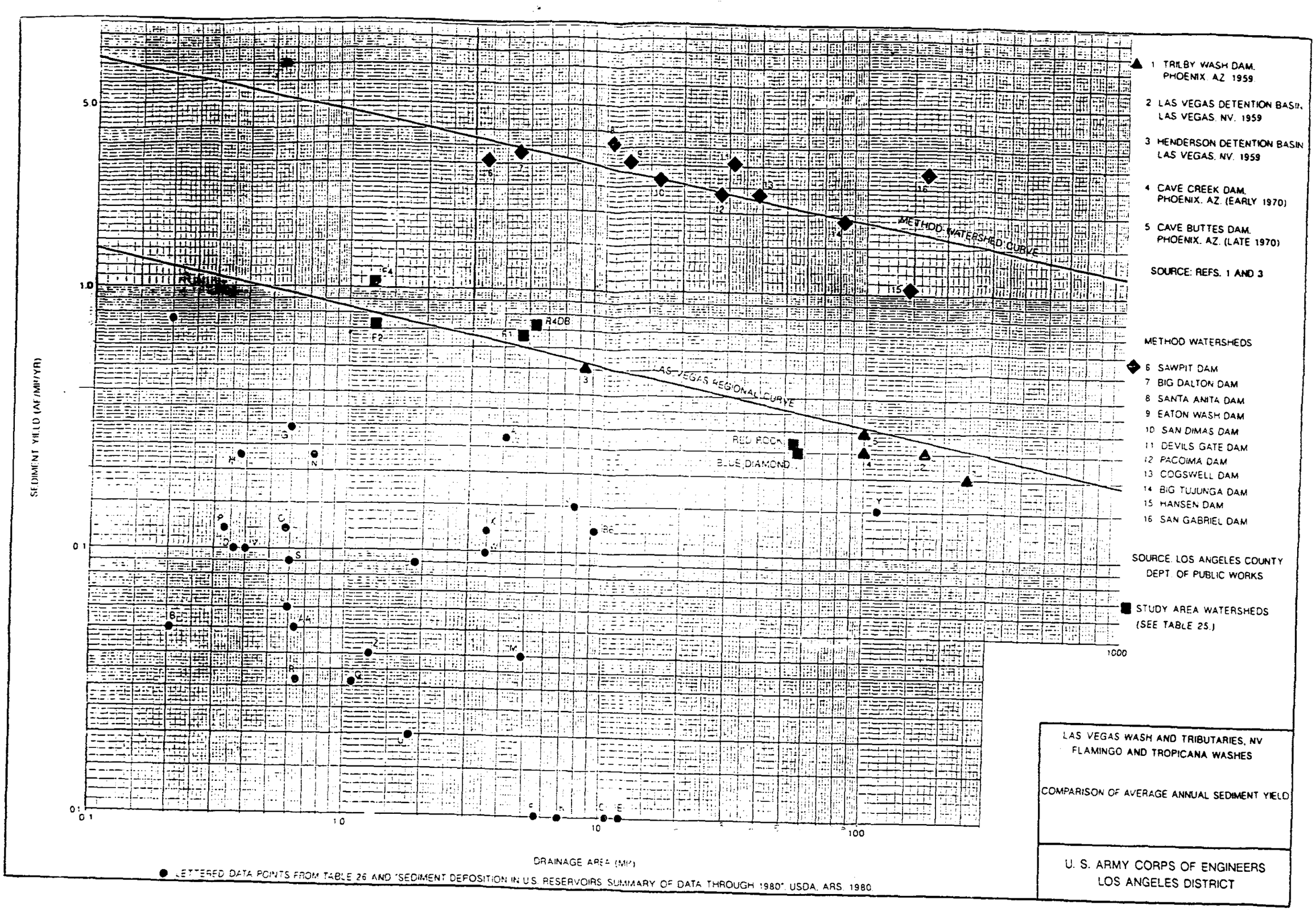
HEC-1 Model:	**RR**	Runoff from RR subbasins, *routed to UFDB*
Watershed Area =	87.6	sq. mi.
Q =	1407	cfs
V =	2016	ac-ft
K =	0.15	Assume same weighted USLE values
LS =	8.48	
CP =	0.28	
Sediment Yield, Y =	135,087	tons or [74] ac-ft at UF

HEC-1 Model:	**RR**	Runoff from RR subbasins at RRDB
Watershed Area =	53.04	sq. mi.
Q =	11157	cfs
V =	2794	ac-ft
K =	0.15	Assume same weighted USLE values
LS =	8.48	
CP =	0.28	
Sediment Yield, Y =	517,092	tons or [283] ac-ft (COE 100-yr debris estimate = 222 ac-ft)

HEC-1 Model:	**LOMR**	Runoff from RR & UF subbasins, routed to UFDB
Watershed Area =	87.6	sq. mi.
Q =	6660	cfs
V =	3380	ac-ft
K =	0.15	
LS =	8.48	
CP =	0.28	
Sediment Yield, Y =	430,917	tons or [236] ac-ft

Selve Size (std)	Sieve Size (mm)	Grain Size Distribution Sample # 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Average Parent Gradation	% Finer Exiting Subbasin
200	0.075	4.0	4.0	4.0	6.0	4.0	1.0	5.0	4.0	6.5	9.0	6.0	14.5	2.0	2.0	10.5	3.0	4.0	5.0	5.3	10.1
100	0.15	6.5	9.0	13.0	19.0	12.0	2.0	15.5	8.0	15.5	24.0	9.0	31.0	7.0	12.0	25.0	11.0	9.0	16.0	13.6	26.1
50	0.3	11.5	19.0	21.5	27.0	20.0	3.0	21.5	18.5	20.0	34.5	15.0	42.5	10.0	20.0	36.0	16.0	12.0	26.0	20.8	39.9
30	0.6	14.5	24.5	38.5	30.0	25.0	4.5	25.0	23.0	24.0	39.0	17.0	49.0	12.0	24.0	39.5	19.0	16.0	31.0	25.3	48.6
16	1.18	18.0	28.0	36.5	32.0	30.0	5.5	29.0	26.0	25.0	43.0	21.0	55.0	14.0	28.0	42.0	22.0	19.0	35.0	28.3	54.3
8	2.36	26.0	34.0	45.0	34.0	37.0	7.0	35.0	32.0	26.5	49.0	27.0	62.5	17.0	33.0	47.0	24.0	25.0	40.0	33.4	64.1
4	4.75	32.5	43.0	56.5	39.0	45.5	11.0	44.0	42.0	27.0	55.5	37.0	74.0	22.5	43.0	56.0	29.0	35.0	47.0	41.1	78.9
3/8	9.5	47.0	60.0	73.0	50.0	60.5	20.0	65.0	60.0	29.0	74.0	52.0	80.5	37.0	56.0	70.5	41.0	49.0	60.0	54.7	100.0
1/2	12.7	56.5	68.5	80.0	56.0	67.0	27.0	75.5	70.0	30.0	83.0	59.5	84.0	45.0	62.0	77.0	49.0	56.0	68.0	61.9	100.0
3/4	19	69.0	77.0	86.0	67.0	77.0	39.0	90.0	81.0	33.0	92.0	72.5	88.0	66.0	69.5	86.0	61.0	68.0	81.5	72.4	100.0
1	25	77.0	83.0	90.0	75.0	85.0	50.0	95.0	87.0	36.5	98.0	85.0	95.0	76.0	75.0	91.0	69.0	78.5	88.5	79.7	100.0
1-1/2	37.5	91.0	93.0	92.0	86.0	95.5	66.5	95.5	94.0	48.5	100.0	91.0	95.0	81.0	83.0	99.0	83.0	88.0	96.0	87.7	100.0
2	50	97.0	97.0	93.0	93.5	100.0	69.0	100.0	100.0	58.0	100.0	100.0	95.0	92.0	88.0	100.0	88.5	92.0	100.0	92.4	100.0
2-1/2	62.5													100.0	100.0	100.0	95.0			98.8	100.0
3	75	100.0	100.0	100.0	100.0	100.0	78.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.8	100.0
																			D50 Size (mm) =	7.86	0.41
																			Avg Subbasin SDR =		0.52





● LETTERED DATA POINTS FROM TABLE 26 AND "SEDIMENT DEPOSITION IN U.S. RESERVOIRS SUMMARY OF DATA THROUGH 1980", USDA, ARS, 1980.

LAS VEGAS WASH AND TRIBUTARIES, NV
FLAMINGO AND TROPICANA WASHES

COMPARISON OF AVERAGE ANNUAL SEDIMENT YIELD

U. S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

PLATE 39

UFWDB PERFORMANCE ANALYSIS

SCOPE

The performance of the UFWDB was analyzed for the new Base Flood Event after adjusting for the sediment loading and the increased storage capacity provided by the mining operation occurring within the impoundment area. The HEC-1 computer model was modified from the one presented in the BASE HYDROLOGY Section to account for the change in basin capacity. The results are provided in this section.

INCREASED STORAGE

Following completion of the UFWDB in 1992, the Bureau of Land Management (BLM) granted a 3-year mining permit to Hollywood Gravel to excavate and remove aggregate from the UFWDB impoundment area. According to Hollywood Gravel, approximately 334,000 cubic yards (cy) of material had been removed from the impoundment area by April 1995. They estimated that between 450,000 to 500,000 cy of material would be removed by the end of 1995, when their mining permit expires. Hollywood Gravel indicated that they may request a 6-month extension of the mining permit.

To evaluate the progress of the mining operation, Black & Veatch obtained the grading plans from the CCRFCD. Based on conversations with Hollywood Gravel, review of the grading plans, and field reconnaissance, excavation is taking place between the elevations of 2460 and 2480. Using Hollywood Gravel's estimate that 450,000 cy will be removed from the impoundment area by the end of 1995, the mining operation will provide approximately 280 acre-feet of additional storage capacity in the basin. However, only the material excavated below the spillway elevation of 2470.5 feet will benefit detention basin storage for the base flood event.

The impact of the mining operation on the UFWDB storage capacity was determined graphically from the stage-storage curves shown in the figure titled "UFWDB Stage - Storage Curves" at the end of this section. The original curve was plotted using the basin parameters representative of the existing facility. Beginning at elevation 2460, the original curve was "stretched" and extended an additional 280 acre-feet at elevation 2480 to become the extended curve. New

storage capacities were obtained from the extended curve. Next, the sediment load for the new Base Flood Event (105 acre-feet) was subtracted from the extended curve volumes and a third curve, the revised curve, was plotted. The revised curve volumes were entered into the HEC-1 computer model defined in the BASE HYDROLOGY Section to evaluate the performance of the UFWDB after accounting for the mining operation and sediment loading.

PERFORMANCE RESULTS

By adjusting the existing stage-storage curve between the elevations of 2460 and 2470.5, the UFWDB's storage capacity increased approximately 150 acre-feet. However, most of the increased capacity was offset by the 105 acre-feet required for sediment storage. The remaining 45 acre-feet serves to lower the 100-year pool elevation thereby reducing the spillway overtopping head from elevation 2471.15, as modeled previously, to elevation 2471.00. The results of the revised HEC-1 model are listed below. These values were used for all subsequent analyses.

Peak Inflow	6660 cfs	Peak Spillway Discharge	1287 cfs
Peak Outflow	2579 cfs	Peak Reservoir Stage	2471 ft
Peak Orifice Discharge	1292 cfs	Peak Storage	1095 ac-ft

CONCLUSIONS

The peak inflow of 6660 cfs into the UFWDB includes 5429 cfs routed from the Red Rock Detention Basin spillway and outfall. The UFWDB peak inflow also includes runoff from subbasins downstream of the Red Rock Detention Basin in addition to the 15.9-square mile Upper Flamingo Wash watershed. This revised routing from the Red Rock Detention Basin and downstream subbasins produces a peak inflow which represents a worst-case scenario for the UFWDB. Although the UFWDB operational parameters account for the BLM mining operation and sediment loading, these worst-case conditions produce a 100-year pool elevation which exceeds the spillway elevation of 2470.5 feet with depths ranging from 0 to 0.5 feet. The maximum stage of 2471.0 feet is maintained for approximately 35 minutes; the spillway head exceeds two inches for a period of 2.25 hours. During the approximately 5.5 hours that the stage is above 2470.5 feet, approximately 17.8 acre feet of water surpasses the capacity of the spillway.

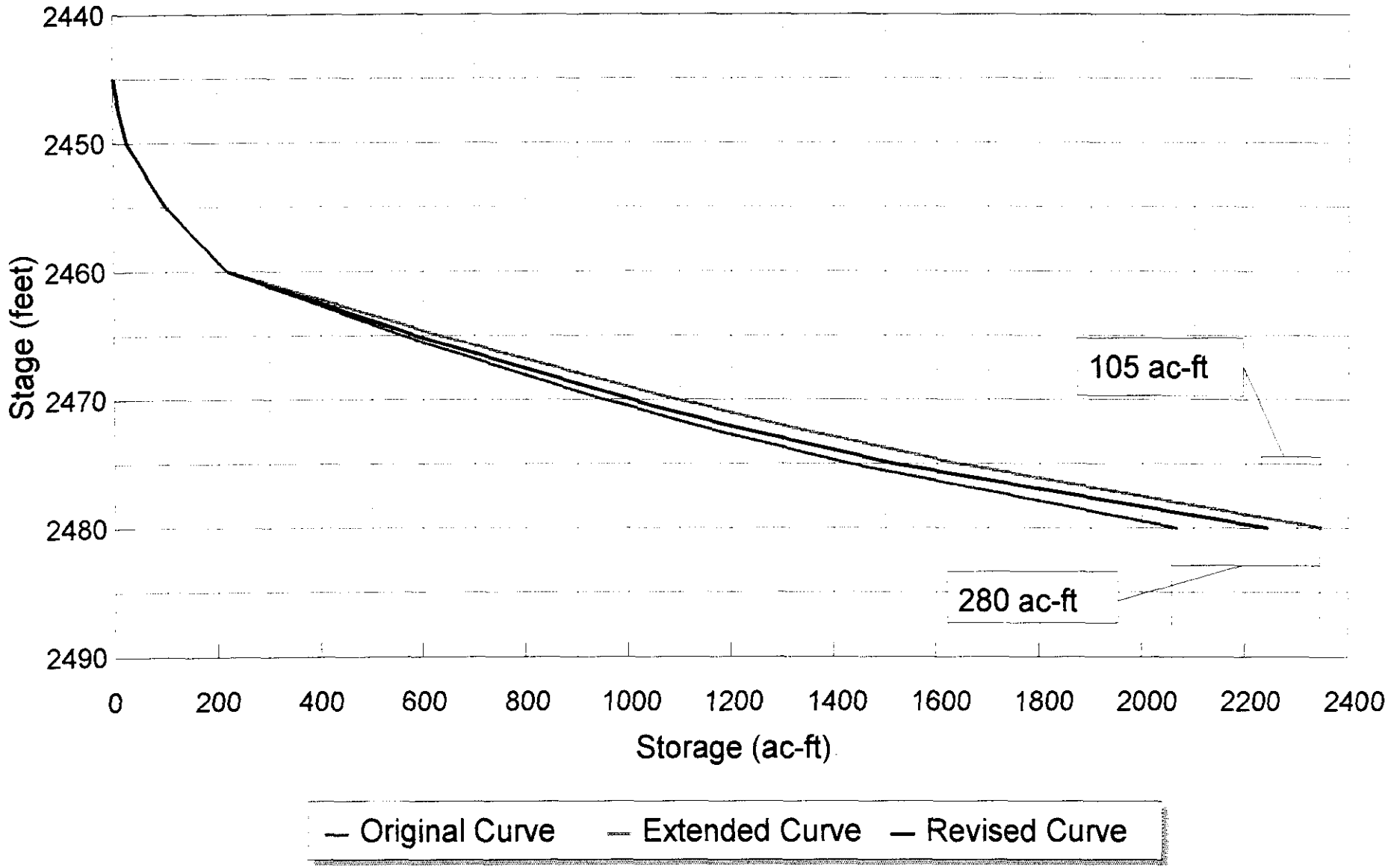
REFERENCES

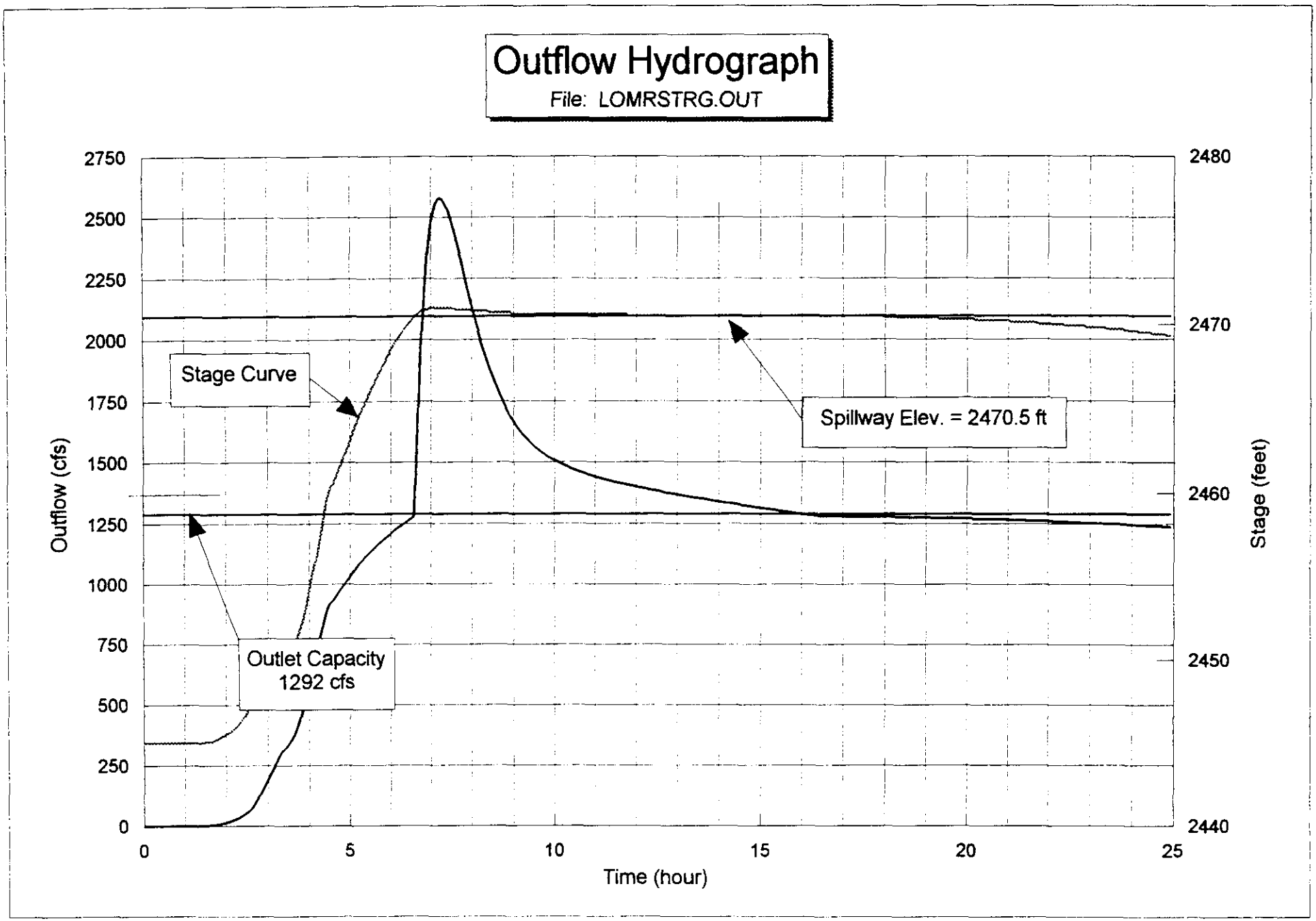
1. U.S. Army Corps of Engineers (1990). "HEC-1 Flood Hydrograph Package," Hydrologic Engineering Center, Davis, CA.

2. U.S. Army Corps of Engineers (1991). "Las Vegas Wash & Tributaries (Tropicana and Flamingo Washes) Nevada," Los Angeles District, South Pacific Division.

3. Clark County Regional Flood Control District (1990). "Hydrologic Criteria and Drainage Design Manual," Clark County, Nevada.

UFWDB Stage-Storage Curves




Outflow Hydrograph
File: LOMRSTRG.OUT
Outflow (cfs)
Stage (feet)
Time (hour)
2750
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
2480
2470
2460
2450
2440
0
5
10
15
20
25
Stage Curve
Spillway Elev. = 2470.5 ft
Outlet Capacity
1292 cfs

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*           SEPTEMBER 1990              *
*            VERSION 4.0                *
*                                       *
* RUN DATE  08/07/1995  TIME  11:02:19  *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -ANSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          $DIAGRAM                                                    1
    1     ID   INPUT FILE = LONRSTRG.DAT
    2     ID    CLARK COUNTY FLOOD CONTROL DISTRICT MASTER PLAN UPDATE
    3     ID    RED ROCK & FLAMINGO WATERSHED
    4     ID    EXISTING DRAINAGE SYSTEM WITH PRESENT DEVELOPMENT
    5     ID    MODEL ACCOUNTS FOR:  SEDIMENT STORAGE = 105 ac ft
    6     ID                         BLM MINING 450,000 CY OF MATERIAL
    7     ID    STORM IN RED ROCK WATERSHED
    8     ID       100-YEAR 6-HR STORM (SBN 95)
    9     ID       B&V    APRIL 1995
   10     ID
   11     ID       BASIC DATA FILE BASED ON COE FILE S10P40X.
   12     ID       MODIFICATIONS ADDED FROM B&V RED ROCK BASIN AND UPPER FLAMINGO
   13     ID       BASIN HEC-1 RUNS; NIMBUS NORTHWEST MCCARRAN AIRPORT HEC-1 RUNS;
   14     ID       AND SUBBASIN MODIFICATIONS DUE TO RECENT DEVELOPMENT.
   15     ID
   16     ID       ORIGINAL FILE, F100.DAT, PURGED BELOW UPPER FLAMINGO DET. BASIN.
   17     ID       SUBBASIN R6 DELETED FROM FILE SINCE NO LONGER ROUTED INTO UFBB
   18     ID
   19     ID       COE MUSKINGUM ROUTING CONVERTED TO KINEMATIC FOR EXISTING
   20     ID       IMPROVED CHANNELS FROM FACILITY INVENTORY.
   21     ID
   22     ID    PB CARDS CONTAIN POINT PRECIPITATION.  DARF'S FROM CCRFCD MANUAL
   23     ID    BASED ON STORM AREAS FOR CONCENTRATION POINTS AS FOLLOWS:
   24     ID
   25     ID       SUBBASIN        AREA (SQMI)       DARF
   26     ID       --------        -----------       ----
   27     ID        RRBB            53               0.675
   28     ID        UFBB            87.6             0.62
   29     ID
   30     IT     5      0      0     300
   31     IO     5
   32     JR   PREC     .62

   33     KK    RRJ RUNOFF FROM RRJ
   34     KM       RR1-RR14 DATA TAKEN FROM B&V TR-20 MODEL FOR UPPER FLAMINGO BASIN
   35     KM       NEW MUSKINGUM ROUTING PARAMETERS, CN'S AND LAGS USED FOR BETTER
   36     KM       AGREEMENT WITH COE FLOWS
   37     BA   3.83
   38     PC   .000   .020   .059   .080   .110   .144   .150   .160   .168   .171
   39     PC   .180   .182   .187   .190   .197   .202   .210   .220   .230   .241
   40     PC   .250   .259   .265   .280   .290   .300   .305   .309   .310   .317
   41     PC   .321   .327   .335   .346   .361   .381   .408   .430   .477   .514
   42     PC   .561   .630   .710   .720   .731   .752   .779   .790   .795   .804
   43     PC   .810   .820   .826   .840   .859   .889   .910   .938   .966   .970
   44     PC   .974   .979   .981   .983   .985   .989   .990   .992   .993   .996
   45     PC   .997   .999   1.00
   46     PB   4.08
   47     LS           84
   48     UD   0.34
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  49      KK    RR4 ROUTE RR1 THRU RR4
  50      RM      2    0.36    0.15

  51      KK    RR4 RUNOFF FROM RR4
  52      BA   2.74
  53      PB   3.82
  54      LS            81
  55      UD   1.26

  56      KK    RR4 COMBINE RR1+RR4
  57      HC      2

  58      KK    RR2 RUNOFF FROM RR2
  59      BA   3.35
  60      PB   4.10
  61      LS            83
  62      UD   0.44

  63      KK    RR3 ROUTE RR2 THRU RR3
  64      RM      2    0.36    0.15

  65      KK    RR3 RUNOFF FROM RR3
  66      BA   3.19
  67      PB   3.83
  68      LS            81
  69      UD   0.50

  70      KK    RR4 COMBINE RR2+RR3+RR4
  71      HC      3

  72      KK    RR8 ROUTE RR4 THRU RR8
  73      RM      2    0.52    0.15

  74      KK    RR5 RUNOFF FROM RR5
  75      BA   7.32
  76      PB   3.79
  77      LS            80
  78      UD   1.44

  79      KK    RR8 ROUTE RR5 THRU RR8
  80      RM      2    0.26    0.15

  81      KK    RR6 RUNOFF FROM RR6
  82      BA   2.85
  83      PB   3.88
  84      LS            83
  85      UD   0.36

  86      KK    RR7 ROUTE RR6 THRU RR7
  87      RM      2    0.41    0.15
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  88      KK    RR7 RUNOFF FROM RR7
  89      BA   4.87
  90      PB   3.59
  91      LS            81
  92      UD   1.13

  93      KK    RR7 COMBINE RR6+RR7
  94      HC      2

  95      KK    RR8 ROUTE RR7 THRU RR8
  96      RM      2    0.51    0.15

  97      KK    RR8 RUNOFF FROM RR8
  98      BA   1.75
  99      PB   3.49
 100      LS            81
 101      UD   1.57

 102      KK    RR9 RUNOFF FROM RR9
 103      BA   3.71
 104      PB   3.37
 105      LS            84
 106      UD   0.79

 107      KK    RR8 COMBINE RR4+RR5+RR7+RR8+RR9
 108      HC      5

 109      KK   RR10 ROUTE RR8 THRU RR10
 110      RM      2    0.25    0.15

 111      KK   RR10 RUNOFF FROM RR10
 112      BA   3.30
 113      PB   3.40
 114      LS            81
 115      UD   1.19

 116      KK   RR10 COMBINE RR8+RR10
 117      HC      2

 118      KK   RR12 ROUTE RR10 THRU RR12
 119      RM      2    0.28    0.15

 120      KK   RR11 RUNOFF FROM RR11
 121      BA   3.40
 122      PB   3.46
 123      LS            83
 124      UD    .82

 125      KK   RR12 ROUTE RR11 THRU RR12
 126      RM      2    0.18    0.15
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  127     KK   RR12 RUNOFF FROM RR12
  128     BA   4.25
  129     PB   3.43
  130     LS           84
  131     UB    .77

  132     KK   RR12 COMBINE RR10+RR11+RR12
  133     HC     3

  134     KK   RR13 ROUTE RR12 THRU RR13
  135     RM     2   0.24   0.15

  136     KK   RR13 RUNOFF FROM RR13
  137     BA   2.26
  138     PB   3.32
  139     LS           80
  140     UB   0.51

  141     KK   RR13 COMBINE RR12+RR13
  142     HC     2

  143     KK   RR14 ROUTE RR13 THRU RR14
  144     RM     2    .10    .15

  145     KK   RR14 RUNOFF FROM RR14
  146     BA   6.22
  147     PB   3.60
  148     LS           83
  149     UB   1.53

  150     KK   RR14 COMBINE RR13+RR14
  151     HC     2
          * ******** END OF DATA FROM B&V REPORT *******

  152     KK   RR.DB ROUTE THRU RED ROCK DETENTION BASIN
  153     KM       USE STORAGE-OUTFLOW DATA FROM COE FEASIBILITY REPORT
  154     RS     1   STOR      0
  155     SV     0    150    600   1100   1860   1900   2250   2630   2800
  156     SQ     0    750   1100   1250   1410   1420  22650  72500  97500
  157     SE  3159   3170   3190   3200   3210 3210.5   3215   3220   3222

  158     KK   RR23 ROUTE RED ROCK OUTFLOW THRU RR23
  159     RM     6   0.53   0.15

  160     KK   RR23 RUNOFF FROM RR23
  161     BA   2.03
  162     PB   3.20
  163     LS     0   74.9
  164     UK   500   .025   0.15    100
  165     RK  5500   .025   .030   0.09                    1
  166     RK 15500   .023   .030          TRAP    100     5     NO
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  167     KK    RR23 COMBINE RED ROCK OUTFLOW WITH RR23
  168     HC      2

  169     KK      R1 RUNOFF FROM R1
  170     BA    1.12
  171     PB    3.17
  172     LS       0    87.7
  173     UD    0.47

  174     KK    RR23 COMBINE R1+RR23
  175     HC      2

  176     KK      R5 ROUTE RR23 THRU R5
  177     RM       5    0.39    0.15

  178     KK    RR20 RUNOFF FROM RR20
  179     BA    1.37
  180     PB    3.22
  181     LS       0      88
  182     UD    0.69

  183     KK      R5 ROUTE RR20 THRU R5
  184     RM       7    0.61    0.15

  185     KK    RR21 RUNOFF FROM RR21
  186     BA    6.27
  187     PB    3.26
  188     LS       0      87
  189     UD    1.00

  190     KK      R5 ROUTE RR21 THRU R5
  191     RM       8    0.64    0.15

  192     KK    RR22 RUNOFF FROM RR22
  193     BA    2.15
  194     PB    3.20
  195     LS       0      87
  196     UD    0.62

  197     KK      R5 ROUTE RR22 THRU R5
  198     RM       8    0.70    0.15

  199     KK      R5 RUNOFF FROM R5
  200     BA    5.77
  201     PB    3.00
  202     LS       0    75.5
  203     UK     600    .025     .15     100
  204     RK    7920    .023     .030    .20                        1
  205     RK   13000    .019     .030           TRAP      40        2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

206       KK     R5 COMBINE R5+RR23+RR22+RR21+RR20
207       HC      5

208       KK     F1 RUNOFF FROM F1
209       BA   4.63
210       PB   3.23
211       LS      0     88
212       UB   0.78

213       KK     F5 ROUTE F1 THRU F5N
214       RM     12    0.99    0.15

215       KK     F2 RUNOFF FROM F2
216       BA   1.28
217       PB   3.19
218       LS      0     88
219       UB    .43

220       KK     F5 ROUTE F2 THRU F5N
221       RM      9    0.76    0.15

222       KK     F3 RUNOFF FROM F3
223       BA   2.60
224       PB   3.09
225       LS      0     87
226       UB    .34

227       KK     F5 ROUTE F3 THRU F5N
228       RM      5    0.40    0.15

229       KK     F4 RUNOFF FROM F4
230       BA   1.30
231       PB   3.03
232       LS      0     86
233       UB    .41

234       KK     F5 ROUTE F4 THRU F5S
235       RM      8    0.69    0.15

236       KK    F5N RUNOFF FROM F5N
237       BA   4.04
238       PB   3.00
239       LS      0     85
240       UK    300   .025    .15    100
241       RK   3200   .025   .030    .20                    1
242       RK  10000   .023   .030          TRAP     70      5     NO

243       KK    F5S RUNOFF FROM F5S
244       BA   2.00
245       PB   2.86
246       LS      0     85
247       UK    400   .020    .25    100
248       RK   3500   .020   .030    .16                    1
249       RK  14500   .017   .030          TRAP     50      5     NO
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

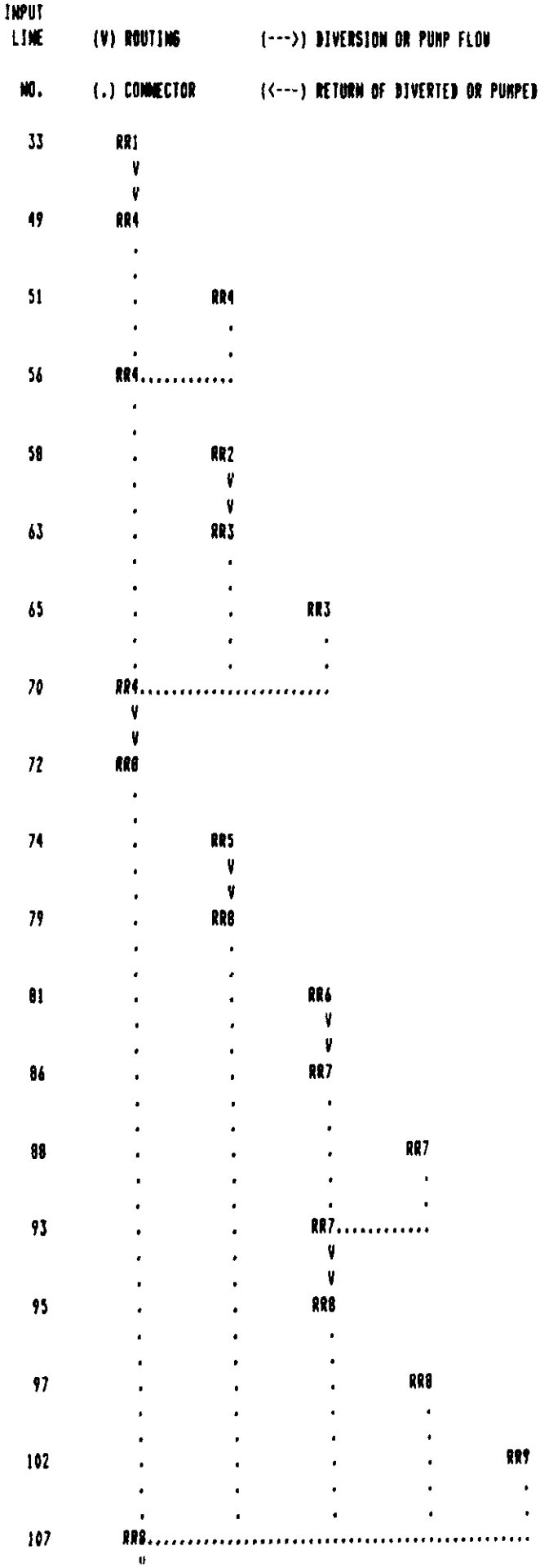
  250     KK     F5 COMBINE F5N AND F5S
  251     HC      2

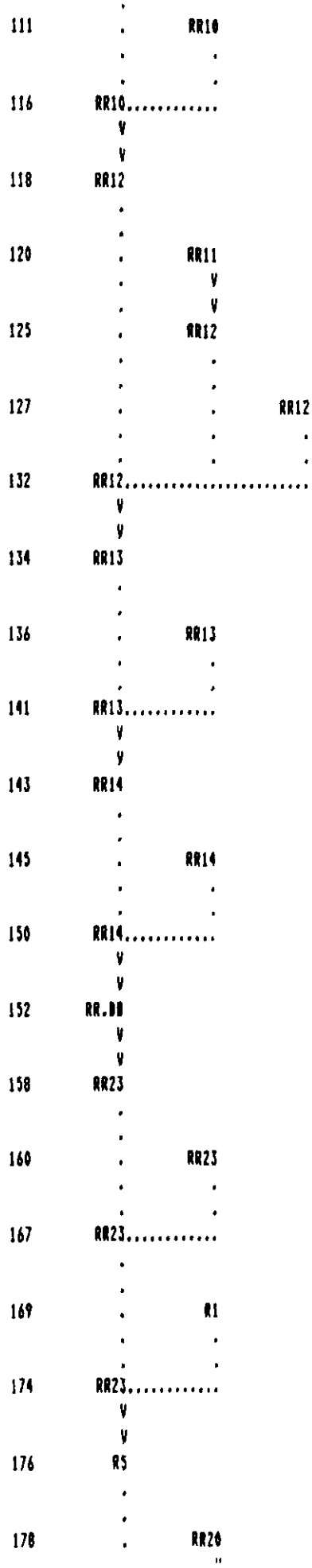
  252     KK     F5 COMBINE R5, F1, F2, F3, AND F4
  253     HC      6

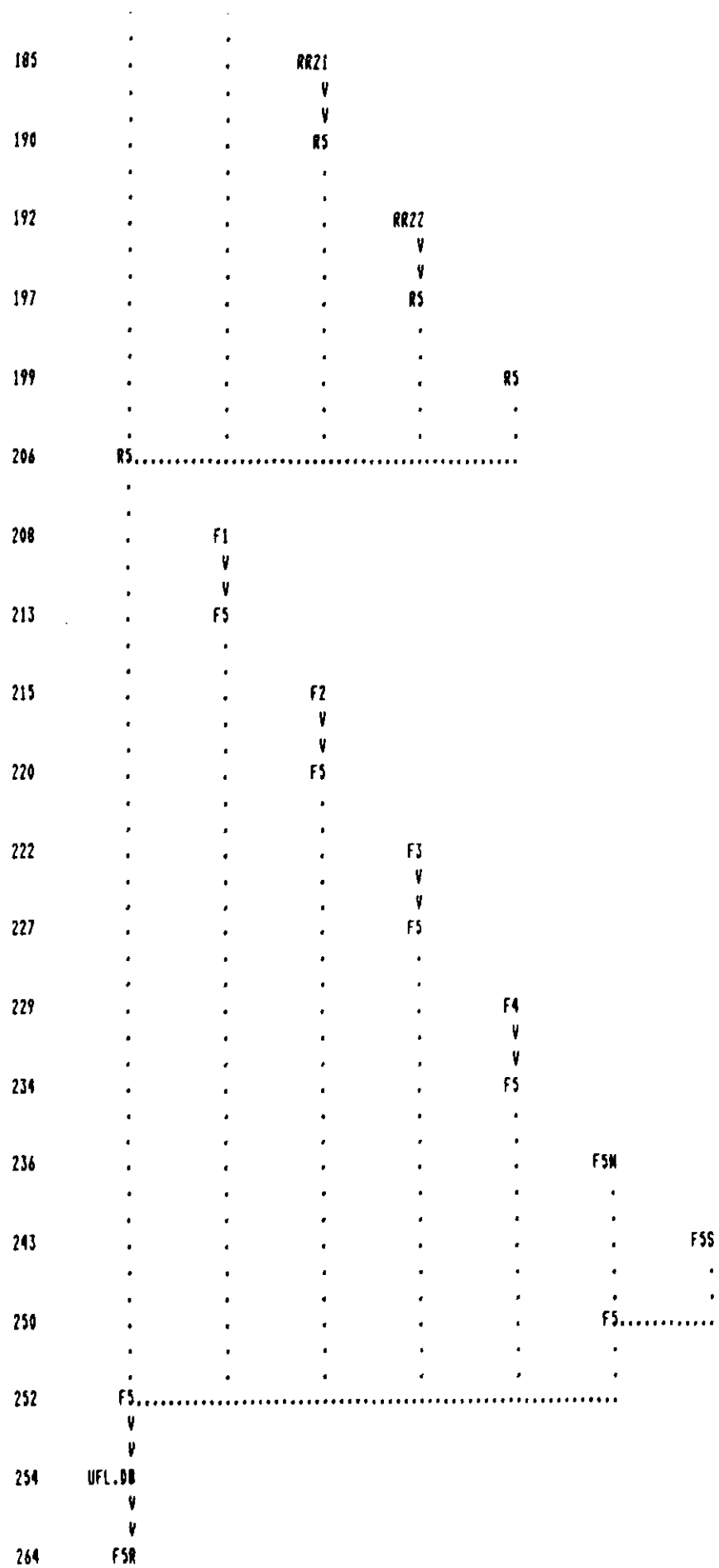
  254     KK  UFL.DB UPPER FLAMINGO DETENTION BASIN
  255     KM         STORAGE-OUTFLOW DATA FROM B&V DESIGN PLANS
  256     KO      1
  257     RS      1   STOR      0
  258     SV      0     10     25    100    220    585   1005   1045   1195   1515
  259     SV   2244
  260     SQ      0     75    300    675    910   1100   1260   1280   5170  20600
  261     SQ  50300
  262     SE   2445  2447.5   2450   2455   2460   2465   2470 2470.5   2472   2475
  263     SE   2480

  264     KK    F5R ROUTE UPPER FLAMINGO DB OUTFLOW THRU OUTFALL CHANNEL
  265     KM        CHANNEL GEOMETRY FROM B&V PREDESIGN MEMORANDUM
  266     RK   3500    .010    .020          TRAP      30       3
  267     ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK




111 RR10
116 RR10
118 RR12
120 RR11
125 RR12
127 RR12
132 RR12
134 RR13
136 RR13
141 RR13
143 RR14
145 RR14
150 RR14
152 RR.DD
158 RR23
160 RR23
167 RR23
169 R1
174 RR23
176 R5
178 RR20



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**********************************************
*                                            *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)         *
*           SEPTEMBER 1990                   *
*            VERSION 4.0                     *
*                                            *
* RUN DATE  08/07/1995  TIME  11:02:19       *
*                                            *
**********************************************
```

```
**********************************************
*                                            *
*   U.S. ARMY CORPS OF ENGINEERS             *
*   HYDROLOGIC ENGINEERING CENTER            *
*        609 SECOND STREET                   *
*      DAVIS, CALIFORNIA 95616               *
*         (916) 756-1104                     *
*                                            *
**********************************************
```

```
INPUT FILE = LOWRSTRG.DAT
 CLARK COUNTY FLOOD CONTROL DISTRICT MASTER PLAN UPDATE
 RED ROCK & FLAMINGO WATERSHED
 EXISTING DRAINAGE SYSTEM WITH PRESENT DEVELOPMENT
 MODEL ACCOUNTS FOR:  SEDIMENT STORAGE = 105 ac ft
                      BLM MINING 450,000 CY OF MATERIAL
 STORM IN RED ROCK WATERSHED
     100-YEAR 6-HR STORM (SDN #5)
     B&V    APRIL 1995

     BASIC DATA FILE BASED ON COE FILE S10P40X.
     MODIFICATIONS ADDED FROM B&V RED ROCK BASIN AND UPPER FLAMINGO
     BASIN HEC-1 RUNS; NIMBUS NORTHWEST MCCARRAN AIRPORT HEC-1 RUNS;
     AND SUBBASIN MODIFICATIONS DUE TO RECENT DEVELOPMENT.

     ORIGINAL FILE, F100.DAT, PURGED BELOW UPPER FLAMINGO DET. BASIN.
     SUBBASIN R6 DELETED FROM FILE SINCE NO LONGER ROUTED INTO UFDB

     COE MUSKINGUM ROUTING CONVERTED TO KINEMATIC FOR EXISTING
     IMPROVED CHANNELS FROM FACILITY INVENTORY.

 PB CARDS CONTAIN POINT PRECIPITATION.  DARF'S FROM CCRFCD MANUAL
 BASED ON STORM AREAS FOR CONCENTRATION POINTS AS FOLLOWS:

     SUBBASIN        AREA (SQMI)        DARF
     --------        -----------        ----
      RRDB            53                0.675
      UFDB            87.6              0.62


31 10         OUTPUT CONTROL VARIABLES
                   IPRNT          5  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                   NMIN           5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1   0  STARTING DATE
                   ITIME        0000  STARTING TIME
                     NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2   0  ENDING DATE
                  NDTIME        0055  ENDING TIME
                  ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                    TOTAL TIME BASE   24.92 HOURS

      ENGLISH UNITS
```

```
            STORAGE VOLUME      ACRE-FEET
            SURFACE AREA        ACRES
            TEMPERATURE         DEGREES FAHRENHEIT

   JP       MULTI-PLAN OPTION
                NPLAN          1  NUMBER OF PLANS

   JR       MULTI-RATIO OPTION
               RATIOS OF PRECIPITATION
               .62


    *** FRKRUT - NEWTON RAPHSON FAILED.FIXED POINT ITERATION USED - ITERATION=  2



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


         ***************
         *             *
254 KK   *   UFL.DB     *     UPPER FLAMINGO DETENTION BASIN
         *             *
         ***************

256 KO       OUTPUT CONTROL VARIABLES
                IPRNT          1  PRINT CONTROL
                IPLOT          0  PLOT CONTROL
                QSCAL          0.  HYDROGRAPH PLOT SCALE

          HYDROGRAPH ROUTING DATA

257 RS       STORAGE ROUTING
                NSTPS          1  NUMBER OF SUBREACHES
                 ITYP       STOR  TYPE OF INITIAL CONDITION
                RSVRIC        .00  INITIAL CONDITION
                    X         .00 WORKING R AND D COEFFICIENT

258 SV         STORAGE          .0     10.0     25.0    100.0    220.0    585.0   1005.0   1045.0   1195.0   1515.0
                             2244.0

260 SQ         DISCHARGE        0.     75.     300.     675.     910.    1100.    1260.    1280.    5170.   20600.
                            50300.

262 SE         ELEVATION    2445.00  2447.50  2450.00  2455.00  2460.00  2465.00  2470.00  2470.50  2472.00  2475.00
                            2480.00

                                                  ***

**********************************************************************************************************************************

                                        HYDROGRAPH AT STATION  UFL.DB
                                           PLAN 1,  RATIO =  .62

**********************************************************************************************************************************

                                                 *                                                 *
 DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE  *  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE  *  DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                                 *                                                 *
  1    0000   1       0.       .0  2445.0  *   1    0820 101    1929.   1070.0  2470.8  *   1    1640 201    1280.   1044.7  2470.5
  1    0005   2       0.       .0  2445.0  *   1    0825 102    1886.   1068.4  2470.7  *   1    1645 202    1280.   1044.6  2470.5
  1    0010   3       0.       .0  2445.0  *   1    0830 103    1844.   1066.8  2470.7  *   1    1650 203    1280.   1044.4  2470.5
```

1	0030	7	0.	.0	2445.0	#	1	0850	107	1718.	1061.9	2470.7	#	1	1710	207	1279.	1043.7	2470.5
1	0035	8	0.	.0	2445.0	#	1	0855	108	1692.	1060.9	2470.7	#	1	1715	208	1279.	1043.5	2470.5
1	0040	9	0.	.0	2445.0	#	1	0900	109	1669.	1060.0	2470.6	#	1	1720	209	1279.	1043.3	2470.5
1	0045	10	0.	.0	2445.0	#	1	0905	110	1648.	1059.2	2470.6	#	1	1725	210	1279.	1043.0	2470.5
1	0050	11	0.	.0	2445.0	#	1	0910	111	1628.	1058.4	2470.6	#	1	1730	211	1279.	1042.8	2470.5
1	0055	12	0.	.0	2445.0	#	1	0915	112	1611.	1057.8	2470.6	#	1	1735	212	1279.	1042.5	2470.5
1	0100	13	0.	.0	2445.0	#	1	0920	113	1595.	1057.1	2470.6	#	1	1740	213	1279.	1042.2	2470.5
1	0105	14	0.	.0	2445.0	#	1	0925	114	1580.	1056.6	2470.6	#	1	1745	214	1278.	1041.9	2470.5
1	0110	15	0.	.0	2445.0	#	1	0930	115	1567.	1056.1	2470.6	#	1	1750	215	1278.	1041.5	2470.5
1	0115	16	0.	.1	2445.0	#	1	0935	116	1555.	1055.6	2470.6	#	1	1755	216	1278.	1041.2	2470.5
1	0120	17	1.	.1	2445.0	#	1	0940	117	1544.	1055.2	2470.6	#	1	1800	217	1278.	1040.8	2470.4
1	0125	18	1.	.2	2445.0	#	1	0945	118	1534.	1054.8	2470.6	#	1	1805	218	1278.	1040.4	2470.4
1	0130	19	2.	.3	2445.1	#	1	0950	119	1524.	1054.4	2470.6	#	1	1810	219	1278.	1040.0	2470.4
1	0135	20	3.	.4	2445.1	#	1	0955	120	1516.	1054.1	2470.6	#	1	1815	220	1277.	1039.6	2470.4
1	0140	21	4.	.6	2445.1	#	1	1000	121	1508.	1053.8	2470.6	#	1	1820	221	1277.	1039.2	2470.4
1	0145	22	6.	.8	2445.2	#	1	1005	122	1500.	1053.5	2470.6	#	1	1825	222	1277.	1038.7	2470.4
1	0150	23	8.	1.0	2445.3	#	1	1010	123	1493.	1053.2	2470.6	#	1	1830	223	1277.	1038.3	2470.4
1	0155	24	11.	1.4	2445.4	#	1	1015	124	1487.	1053.0	2470.6	#	1	1835	224	1276.	1037.8	2470.4
1	0200	25	14.	1.9	2445.5	#	1	1020	125	1481.	1052.7	2470.6	#	1	1840	225	1276.	1037.3	2470.4
1	0205	26	18.	2.4	2445.6	#	1	1025	126	1475.	1052.5	2470.6	#	1	1845	226	1276.	1036.8	2470.4
1	0210	27	23.	3.1	2445.8	#	1	1030	127	1469.	1052.3	2470.6	#	1	1850	227	1276.	1036.2	2470.4
1	0215	28	30.	4.0	2446.0	#	1	1035	128	1464.	1052.1	2470.6	#	1	1855	228	1275.	1035.7	2470.4
1	0220	29	37.	4.9	2446.2	#	1	1040	129	1459.	1051.9	2470.6	#	1	1900	229	1275.	1035.1	2470.4
1	0225	30	46.	6.1	2446.5	#	1	1045	130	1455.	1051.7	2470.6	#	1	1905	230	1275.	1034.5	2470.4
1	0230	31	56.	7.4	2446.9	#	1	1050	131	1450.	1051.6	2470.6	#	1	1910	231	1274.	1034.0	2470.4
1	0235	32	67.	8.9	2447.2	#	1	1055	132	1446.	1051.4	2470.6	#	1	1915	232	1274.	1033.3	2470.4
1	0240	33	84.	10.6	2447.6	#	1	1100	133	1442.	1051.3	2470.6	#	1	1920	233	1274.	1032.7	2470.3
1	0245	34	110.	12.4	2447.9	#	1	1105	134	1438.	1051.1	2470.6	#	1	1925	234	1274.	1032.1	2470.3
1	0250	35	137.	14.2	2448.2	#	1	1110	135	1435.	1051.0	2470.6	#	1	1930	235	1273.	1031.4	2470.3
1	0255	36	165.	16.0	2448.5	#	1	1115	136	1431.	1050.8	2470.6	#	1	1935	236	1273.	1030.8	2470.3
1	0300	37	193.	17.8	2448.8	#	1	1120	137	1427.	1050.7	2470.6	#	1	1940	237	1273.	1030.1	2470.3
1	0305	38	221.	19.7	2449.1	#	1	1125	138	1424.	1050.6	2470.6	#	1	1945	238	1272.	1029.4	2470.3
1	0310	39	249.	21.6	2449.4	#	1	1130	139	1421.	1050.4	2470.6	#	1	1950	239	1272.	1028.7	2470.3
1	0315	40	280.	23.7	2449.8	#	1	1135	140	1417.	1050.3	2470.6	#	1	1955	240	1271.	1028.0	2470.3
1	0320	41	305.	25.9	2450.1	#	1	1140	141	1414.	1050.2	2470.6	#	1	2000	241	1271.	1027.2	2470.3
1	0325	42	318.	28.6	2450.2	#	1	1145	142	1411.	1050.1	2470.6	#	1	2005	242	1271.	1026.5	2470.3
1	0330	43	335.	32.0	2450.5	#	1	1150	143	1408.	1049.9	2470.5	#	1	2010	243	1270.	1025.7	2470.3
1	0335	44	357.	36.4	2450.8	#	1	1155	144	1405.	1049.8	2470.5	#	1	2015	244	1270.	1024.9	2470.2
1	0340	45	386.	42.2	2451.1	#	1	1200	145	1402.	1049.7	2470.5	#	1	2020	245	1270.	1024.1	2470.2
1	0345	46	424.	49.8	2451.7	#	1	1205	146	1399.	1049.6	2470.5	#	1	2025	246	1269.	1023.3	2470.2
1	0350	47	473.	59.6	2452.3	#	1	1210	147	1397.	1049.5	2470.5	#	1	2030	247	1269.	1022.5	2470.2
1	0355	48	535.	72.0	2453.1	#	1	1215	148	1394.	1049.4	2470.5	#	1	2035	248	1268.	1021.6	2470.2
1	0400	49	612.	87.3	2454.2	#	1	1220	149	1391.	1049.3	2470.5	#	1	2040	249	1268.	1020.8	2470.2
1	0405	50	686.	105.6	2455.2	#	1	1225	150	1388.	1049.2	2470.5	#	1	2045	250	1267.	1019.9	2470.2
1	0410	51	728.	127.0	2456.1	#	1	1230	151	1386.	1049.1	2470.5	#	1	2050	251	1267.	1019.1	2470.2
1	0415	52	775.	151.2	2457.1	#	1	1235	152	1383.	1049.0	2470.5	#	1	2055	252	1267.	1018.2	2470.2
1	0420	53	828.	178.0	2458.2	#	1	1240	153	1380.	1048.9	2470.5	#	1	2100	253	1266.	1017.3	2470.2
1	0425	54	884.	206.9	2459.5	#	1	1245	154	1378.	1048.8	2470.5	#	1	2105	254	1266.	1016.3	2470.1
1	0430	55	919.	237.8	2460.2	#	1	1250	155	1375.	1048.7	2470.5	#	1	2110	255	1265.	1015.4	2470.1
1	0435	56	936.	270.4	2460.7	#	1	1255	156	1373.	1048.6	2470.5	#	1	2115	256	1265.	1014.5	2470.1
1	0440	57	954.	304.3	2461.2	#	1	1300	157	1370.	1048.5	2470.5	#	1	2120	257	1264.	1013.5	2470.1
1	0445	58	972.	339.2	2461.6	#	1	1305	158	1368.	1048.4	2470.5	#	1	2125	258	1264.	1012.5	2470.1
1	0450	59	991.	375.1	2462.1	#	1	1310	159	1365.	1048.3	2470.5	#	1	2130	259	1263.	1011.6	2470.1
1	0455	60	1010.	411.7	2462.6	#	1	1315	160	1363.	1048.2	2470.5	#	1	2135	260	1263.	1010.6	2470.1
1	0500	61	1029.	449.0	2463.1	#	1	1320	161	1360.	1048.1	2470.5	#	1	2140	261	1262.	1009.5	2470.1
1	0505	62	1049.	486.9	2463.7	#	1	1325	162	1358.	1048.0	2470.5	#	1	2145	262	1262.	1008.5	2470.0
1	0510	63	1069.	525.2	2464.2	#	1	1330	163	1356.	1047.9	2470.5	#	1	2150	263	1261.	1007.5	2470.0
1	0515	64	1089.	563.6	2464.7	#	1	1335	164	1353.	1047.8	2470.5	#	1	2155	264	1261.	1006.4	2470.0
1	0520	65	1106.	601.8	2465.2	#	1	1340	165	1351.	1047.7	2470.5	#	1	2200	265	1260.	1005.4	2470.0
1	0525	66	1121.	639.6	2465.6	#	1	1345	166	1348.	1047.6	2470.5	#	1	2205	266	1260.	1004.3	2470.0
1	0530	67	1135.	676.6	2466.1	#	1	1350	167	1346.	1047.5	2470.5	#	1	2210	267	1259.	1003.2	2470.0
1	0535	68	1149.	712.7	2466.5	#	1	1355	168	1344.	1047.5	2470.5	#	1	2215	268	1259.	1002.0	2470.0

1	0600	73	1210.	875.1	2468.5	*	1	1420	173	1332.	1047.0	2470.5	*	1	2240 273	1257.	995.8	2469.9
1	0605	74	1221.	903.5	2468.8	*	1	1425	174	1330.	1046.9	2470.5	*	1	2245 274	1256.	994.5	2469.9
1	0610	75	1232.	930.5	2469.1	*	1	1430	175	1328.	1046.9	2470.5	*	1	2250 275	1255.	993.1	2469.9
1	0615	76	1241.	956.1	2469.4	*	1	1435	176	1326.	1046.8	2470.5	*	1	2255 276	1255.	991.7	2469.8
1	0620	77	1250.	980.0	2469.7	*	1	1440	177	1324.	1046.7	2470.5	*	1	2300 277	1254.	990.3	2469.8
1	0625	78	1259.	1002.4	2470.0	*	1	1445	178	1321.	1046.6	2470.5	*	1	2305 278	1254.	988.8	2469.8
1	0630	79	1269.	1023.2	2470.2	*	1	1450	179	1319.	1046.5	2470.5	*	1	2310 279	1253.	987.3	2469.8
1	0635	80	1279.	1042.4	2470.5	*	1	1455	180	1317.	1046.4	2470.5	*	1	2315 280	1253.	985.7	2469.8
1	0640	81	1640.	1058.9	2470.6	*	1	1500	181	1315.	1046.3	2470.5	*	1	2320 281	1252.	984.1	2469.8
1	0645	82	1966.	1071.5	2470.8	*	1	1505	182	1313.	1046.3	2470.5	*	1	2325 282	1251.	982.5	2469.7
1	0650	83	2206.	1080.7	2470.9	*	1	1510	183	1311.	1046.2	2470.5	*	1	2330 283	1251.	980.9	2469.7
1	0655	84	2374.	1087.2	2470.9	*	1	1515	184	1309.	1046.1	2470.5	*	1	2335 284	1250.	979.2	2469.7
1	0700	85	2484.	1091.4	2471.0	*	1	1520	185	1307.	1046.0	2470.5	*	1	2340 285	1250.	977.5	2469.7
1	0705	86	2549.	1093.9	2471.0	*	1	1525	186	1304.	1045.9	2470.5	*	1	2345 286	1249.	975.7	2469.7
1	0710	87	2578.	1095.0	2471.0	*	1	1530	187	1302.	1045.9	2470.5	*	1	2350 287	1248.	973.9	2469.6
1	0715	88	2579.	1095.1	2471.0	*	1	1535	188	1300.	1045.8	2470.5	*	1	2355 288	1247.	972.1	2469.6
1	0720	89	2559.	1094.3	2471.0	*	1	1540	189	1298.	1045.7	2470.5	*	2	0000 289	1247.	970.3	2469.6
1	0725	90	2525.	1093.0	2471.0	*	1	1545	190	1296.	1045.6	2470.5	*	2	0005 290	1246.	968.4	2469.6
1	0730	91	2479.	1091.2	2471.0	*	1	1550	191	1294.	1045.5	2470.5	*	2	0010 291	1245.	966.5	2469.5
1	0735	92	2427.	1089.2	2470.9	*	1	1555	192	1292.	1045.5	2470.5	*	2	0015 292	1245.	964.6	2469.5
1	0740	93	2369.	1087.0	2470.9	*	1	1600	193	1290.	1045.4	2470.5	*	2	0020 293	1244.	962.6	2469.5
1	0745	94	2310.	1084.7	2470.9	*	1	1605	194	1288.	1045.3	2470.5	*	2	0025 294	1243.	960.6	2469.5
1	0750	95	2250.	1082.4	2470.9	*	1	1610	195	1286.	1045.2	2470.5	*	2	0030 295	1242.	958.6	2469.4
1	0755	96	2191.	1080.1	2470.9	*	1	1615	196	1284.	1045.2	2470.5	*	2	0035 296	1242.	956.5	2469.4
1	0800	97	2133.	1077.9	2470.8	*	1	1620	197	1282.	1045.1	2470.5	*	2	0040 297	1241.	954.4	2469.4
1	0805	98	2077.	1075.8	2470.8	*	1	1625	198	1280.	1045.0	2470.5	*	2	0045 298	1240.	952.3	2469.4
1	0810	99	2025.	1073.7	2470.8	*	1	1630	199	1280.	1044.9	2470.5	*	2	0050 299	1239.	950.2	2469.3
1	0815	100	1975.	1071.8	2470.8	*	1	1635	200	1280.	1044.8	2470.5	*	2	0055 300	1238.	948.0	2469.3

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
2579.	7.25	(CFS)	1735.	1226.	1181.	1181.
		(INCHES)	.184	.521	.521	.521
		(AC-FT)	860.	2432.	2432.	2432.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
1095.	7.25	1063.	855.	824.	824.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
2471.00	7.25	2470.68	2466.79	2465.99	2465.99

CUMULATIVE AREA = 87.60 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO PRECIPITATION
OPERATION	STATION	AREA	PLAN		RATIO 1
					.62
HYDROGRAPH AT	RR1	3.83	1	FLOW	1892.
				TIME	3.75
ROUTED TO	RR4	3.83	1	FLOW	1586.
				TIME	4.08
HYDROGRAPH AT	RR4	2.74	1	FLOW	518.
				TIME	5.08
2 COMBINED AT	RR4	6.57	1	FLOW	1906.
				TIME	4.17
HYDROGRAPH AT	RR2	3.35	1	FLOW	1408.
				TIME	3.83
ROUTED TO	RR3	3.35	1	FLOW	1228.
				TIME	4.17
HYDROGRAPH AT	RR3	3.19	1	FLOW	992.
				TIME	3.92
3 COMBINED AT	RR4	13.11	1	FLOW	4016.
				TIME	4.08
ROUTED TO	RR8	13.11	1	FLOW	3418.
				TIME	4.58
HYDROGRAPH AT	RR5	7.32	1	FLOW	1244.
				TIME	5.42
ROUTED TO	RR8	7.32	1	FLOW	1235.
				TIME	5.67
HYDROGRAPH AT	RR6	2.85	1	FLOW	1195.
				TIME	3.75
ROUTED TO	RR7	2.85	1	FLOW	976.
				TIME	4.17
HYDROGRAPH AT	RR7	4.87	1	FLOW	851.
				TIME	4.75
2 COMBINED AT	RR7	7.72	1	FLOW	1678.
				TIME	4.25
ROUTED TO	RR8	7.72	1	FLOW	1504.
				TIME	4.83
HYDROGRAPH AT	RR8	1.75	1	FLOW	261.
				TIME	5.58

				TIME	4.75
ROUTED TO	RR10	33.61	1	FLOW	6573.
				TIME	5.00
HYDROGRAPH AT	RR10	3.30	1	FLOW	506.
				TIME	5.00
2 COMBINED AT	RR10	36.91	1	FLOW	7079.
				TIME	5.00
ROUTED TO	RR12	36.91	1	FLOW	6992.
				TIME	5.42
HYDROGRAPH AT	RR11	3.40	1	FLOW	757.
				TIME	4.25
ROUTED TO	RR12	3.40	1	FLOW	743.
				TIME	4.50
HYDROGRAPH AT	RR12	4.25	1	FLOW	1027.
				TIME	4.25
3 COMBINED AT	RR12	44.56	1	FLOW	8368.
				TIME	5.33
ROUTED TO	RR13	44.56	1	FLOW	8290.
				TIME	5.58
HYDROGRAPH AT	RR13	2.26	1	FLOW	483.
				TIME	3.92
2 COMBINED AT	RR13	46.82	1	FLOW	8489.
				TIME	5.58
ROUTED TO	RR14	46.82	1	FLOW	8481.
				TIME	5.67
HYDROGRAPH AT	RR14	6.22	1	FLOW	1111.
				TIME	5.50
2 COMBINED AT	RR14	53.04	1	FLOW	9578.
				TIME	5.67
ROUTED TO	RR.DD	53.04	1	FLOW	1408.
				TIME	8.42
			** PEAK STAGES IN FEET **		
			1	STAGE	3209.89
				TIME	8.42
ROUTED TO	RR23	53.04	1	FLOW	1408.
				TIME	8.92
HYDROGRAPH AT	RR23	2.03	1	FLOW	199.
				TIME	5.25
2 COMBINED AT	RR23	55.07	1	FLOW	1423.
				TIME	8.67
HYDROGRAPH AT	R1	1.12	1	FLOW	384.
				TIME	3.83

ROUTED TO	R5	56.19	1	FLOW	1422.
				TIME	9.08
HYDROGRAPH AT	RR20	1.37	1	FLOW	403.
				TIME	4.08
ROUTED TO	R5	1.37	1	FLOW	377.
				TIME	4.75
HYDROGRAPH AT	RR21	6.27	1	FLOW	1433.
				TIME	4.42
ROUTED TO	R5	6.27	1	FLOW	1390.
				TIME	5.17
HYDROGRAPH AT	RR22	2.15	1	FLOW	623.
				TIME	4.00
ROUTED TO	R5	2.15	1	FLOW	572.
				TIME	4.75
HYDROGRAPH AT	R5	5.77	1	FLOW	525.
				TIME	5.17
5 COMBINED AT	R5	71.75	1	FLOW	3681.
				TIME	5.25
HYDROGRAPH AT	F1	4.63	1	FLOW	1280.
				TIME	4.17
ROUTED TO	F5	4.63	1	FLOW	1180.
				TIME	5.25
HYDROGRAPH AT	F2	1.28	1	FLOW	470.
				TIME	3.83
ROUTED TO	F5	1.28	1	FLOW	407.
				TIME	4.58
HYDROGRAPH AT	F3	2.60	1	FLOW	949.
				TIME	3.75
ROUTED TO	F5	2.60	1	FLOW	848.
				TIME	4.17
HYDROGRAPH AT	F4	1.30	1	FLOW	393.
				TIME	3.83
ROUTED TO	F5	1.30	1	FLOW	341.
				TIME	4.50
HYDROGRAPH AT	F5N	4.04	1	FLOW	697.
				TIME	4.58
HYDROGRAPH AT	F5S	2.00	1	FLOW	339.
				TIME	4.33
2 COMBINED AT	F5	6.04	1	FLOW	1014.
				TIME	4.50
6 COMBINED AT	F5	87.60	1	FLOW	6660.
				TIME	5.25

				** PEAK STAGES IN FEET **	
			1	STAGE	2471.00
				TIME	7.25
ROUTED TO	F5R	87.60	1	FLOW	2578.
				TIME	7.25

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .62									
RR23	NAME	5.00	766.30	243.37	1.08	5.00	757.34	245.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1178E+03 OUTFLOW= .1169E+03 BASIN STORAGE= .1338E+00 PERCENT ERROR= .7

FOR PLAN = 1 RATIO= .62									
RR23	NAME	5.00	199.11	314.34	.36	5.00	199.04	315.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4006E+02 OUTFLOW= .3950E+02 BASIN STORAGE= .1340E+00 PERCENT ERROR= 1.0

FOR PLAN = 1 RATIO= .62									
R5	NAME	3.28	1993.78	240.86	.98	5.00	1992.70	240.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3039E+03 OUTFLOW= .3014E+03 BASIN STORAGE= .1976E+00 PERCENT ERROR= .8

FOR PLAN = 1 RATIO= .62									
R5	NAME	5.00	525.85	310.75	.32	5.00	525.31	310.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1013E+03 OUTFLOW= .9988E+02 BASIN STORAGE= .1859E+00 PERCENT ERROR= 1.2

FOR PLAN = 1 RATIO= .62									
F5N	NAME	5.00	2063.25	243.98	1.58	5.00	2044.26	245.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3422E+03 OUTFLOW= .3405E+03 BASIN STORAGE= .3591E+00 PERCENT ERROR= .4

FOR PLAN = 1 RATIO= .62									
F5N	NAME	5.00	702.53	273.25	.69	5.00	696.78	275.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1496E+03 OUTFLOW= .1484E+03 BASIN STORAGE= .3578E+00 PERCENT ERROR= .6

FOR PLAN = 1 RATIO= .62									
F5S	NAME	4.39	1039.47	236.23	1.46	5.00	1034.04	235.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1569E+03 OUTFLOW= .1561E+03 BASIN STORAGE= .1206E+00 PERCENT ERROR= .4

FOR PLAN = 1 RATIO= .62									
F5S	NAME	5.00	339.79	259.65	.63	5.00	339.35	260.00	.63

```
 FOR PLAN = 1  RATIO=  .62
     FSR  NAME          1.04   2570.51    437.02      .52      5.00   2577.84    435.00        .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2432E+04 EXCESS= .0000E+00 OUTFLOW= .2420E+04 BASIN STORAGE= .1114E+02 PERCENT ERROR=    .0



*** NORMAL END OF HEC-1 ***
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EMBANKMENT AND SPILLWAY STABILITY

SCOPE

This section evaluates the stability of the UFWDB embankment and spillway during the new Base Flood Event. The evaluation is based on review of the original design parameters and comparison of the original design conditions with the conditions produced for the new Base Flood Event.

SITE DESCRIPTION AND GEOLOGY

The Upper Flamingo Wash Detention Basin was constructed on undeveloped desert topography dominated by Flamingo Wash. Surficial sand deposits were present over a majority of the site with some areas of gravels and cobbles exposed in the wash bottoms. The ground surface was sparsely vegetated, with somewhat heavier vegetation present near the wash. Site elevations generally decrease from southwest to northeast.

During the original design phase of the project, an extensive geotechnical exploration was conducted by Kleinfelder, Inc. to investigate the geologic conditions of the site and determine appropriate material properties for design. The geotechnical programs included a literature review of previously published studies and reports for this area of the Las Vegas Valley, field investigations, and preliminary and final design reports. The field investigation program consisted of 31 soil borings ranging in depth from 10 to 70 feet, and 29 backhoe excavated test pits ranging in depth from 0.5 to 14 feet. (The shallow test pits resulted from backhoe refusal on cemented material.) Soil samples obtained from the borings and test pits were used in laboratory analyses to determine both insitu and remolded soil properties. The Project Geotechnical Report was prepared to document the findings of the geotechnical exploration program. A copy of this report is provided in Volume 2 of this submittal.

EMBANKMENT REVIEW

This section summarizes the basis of design for the UFWDB embankment structure and addresses the issue of embankment stability for the new Base Flood Event.

Embankment Geometry

The UFWDB embankment is a 4813-foot long, homogeneous-fill earthen embankment with a downstream foundation blanket drain. The embankment height varies from 0 to 38 feet. The upstream slope is 3:1 (H:V). The downstream slope changes from 2:1 at the toe to a variable slope in the middle section, and then to a slope of 2.5:1 for the upper portion of the embankment.

Materials of Construction

The UFWDB embankment is constructed of job excavated materials obtained from within the detention basin impoundment (reservoir) area. As indicated in the Project Geotechnical Report, the onsite materials consisted primarily of alluvial sands and gravels with USCS classifications SM, SP, SW, GM, GP, GW, and dual classified materials. The insitu soils in the southern portion of the site ranged from moderately to heavily cemented materials. Shallow depth, low impact blasting was necessary to free materials for excavation and processing. Blasting was not permitted within 200 feet of the upstream toe of the embankment.

Excavated materials were processed using screening operations to remove oversized cobbles, boulders, and cemented gravel conglomerates from the embankment fill material. A maximum stone size of 6 inches was specified in the construction specifications. Oversized materials were processed to produce riprap for the upstream embankment slope face, downstream toe drain, and graded gravel for the foundation blanket drain.

Discussion of Analysis & Design Methods

A summary of the analysis and basis of design for the UFWDB embankment is provided below. Analysis calculations and documentation are included in Volume 3 of this submittal.

Slope Stability. A slope stability analysis of the UFWDB embankment structure was prepared using the XSTABL computer program. Modes of slope failure investigated included modified Bishop methods for circular failures, and simplified Jambu methods for irregular failure surfaces and block failure modes. Minimum factors of safety used for design are in accordance with the recommendations published in "Earth Dams and Reservoirs", Soil Conservation Service, TR-60, 1981.

For the analysis, a range of material weights and soil strength parameters were considered to evaluate the sensitivity of variation in material properties. The range of values used are listed below.

Property	Embankment	Foundation
Moist unit weight γm	126 pcf	105 pcf
Saturated unit weight γs	135 pcf	115 pcf
Cohesion c	0 psf	0 psf
Internal friction angle ϕ	32° to 36°	29° to 36°

Upstream Slope. The stability of the upstream slope was evaluated for end of construction, seismic, and rapid reservoir drawdown conditions. The analysis was based on a typical maximum embankment section with a height of 38 feet. Minimum factors of safety published in TR-60 are as follows:

Condition	Minimum Safety Factor
End of Construction	1.3
Seismic Event	1.1
Rapid Drawdown	1.2

The end of construction, seismic, and rapid drawdown conditions were analyzed according to the following case descriptions:

Case 1. For the end of construction case, a saturation surface was assumed because of the build up of pore pressures resulting from drainage of construction waters. This case reflects a very conservative analysis due to the granular nature of the embankment materials. Factors of safety for this case ranged from 1.31 to 1.60.

Case 2. Seismic analysis of the upstream slope was based on a saturated soil condition and a horizontal acceleration of 0.1g. Factors of safety for this case ranged from 1.42 to 2.56.

Case 3A. The reservoir stage rapidly drops from the PMF pool elevation of 2478.4 to an empty basin. Although this situation does not reflect a realistic operating scenario, it provides a very conservative analysis of the overall stability of the upstream slope, since the slope is completely saturated when the basin is empty. Factors of safety for this case ranged from 1.53 to 1.95.

Case 3B. The reservoir stage rapidly drops from the PMF pool elevation of 2478.4 to the spillway crest elevation of 2470.5. This situation reflects a conservative but more realistic analysis of the upstream slope stability under detention basin operation for a PMF event. Factors of safety for this case ranged from 1.62 to 2.65.

Case 3C. The reservoir stage rapidly drops from the PMF elevation of 2478.4 to an elevation of 2460. This situation reflects continued detention basin operation beyond the period of spillway overtopping. Factors of safety for this case ranged from 1.55 to 1.84.

Downstream Slope. The stability of the downstream slope was evaluated for end of construction, seismic, and transient seepage conditions. The analysis was based on a typical maximum embankment section with a height of 38 feet. Minimum factors of safety published in TR-60 are as follows:

Condition	Minimum Safety Factor
End of Construction	1.3
Seismic Event	1.1
Seepage	1.5

The end of construction, seismic, and seepage conditions were analyzed according to the following case descriptions:

Case 1. For the end of construction case, a saturation surface was assumed because of the build up of pore pressures resulting from drainage of construction waters. This case reflects a very conservative analysis due to the granular nature of the embankment materials. Factors of safety for this case ranged from 1.72 to 2.45.

Case 2. Seismic analysis of the upstream slope was based on a moist soil condition and a horizontal acceleration of 0.1g. Factors of safety for this case ranged from 1.25 to 3.15.

Case 3. To evaluate the effects of seepage on the downstream slope, a phreatic surface was established based on a transient flow net evaluation. Factors of safety for this case ranged from 1.62 to 2.49.

SPILLWAY REVIEW

This section summarizes the structural basis of design for the UFWDB spillway structure and addresses the issue of spillway stability for the new Base Flood Event.

Spillway Geometry

The UFWDB spillway structure is a labyrinth-type spillway which consists of the following two principal structural elements:

- A four cycle, 25-ft vertical cantilever, labyrinth weir wall on a mat foundation.
- Variable height spillway abutment walls designed and constructed as counterfort retaining walls on continuous footings.

The spillway was originally designed as a three-cycle labyrinth by Black & Veatch in May 1989. Following delays associated with desert tortoise mitigation, project funding, and subsequent revision in the methods of computing the PMF, a fourth cycle was added in September 1990. The addition of a fourth labyrinth cycle did not impact the analysis or design of the structure. The structural design is based primarily on analysis of strip wall sections and plate theory which is common practice in the design of structural walls.

Materials of Design

The labyrinth spillway weir wall, foundation, and counterfort abutment walls were designed to be constructed of reinforced concrete with the following properties:

Concrete compressive strength	f'c = 4000 psi
Reinforcing steel yield strength	fy = 60,000 psi

Concrete design was completed using ultimate strength methodology using the above values and appropriate load factors.

Discussion of Analysis & Design Methods

A summary of the basis of design for the labyrinth spillway section and the spillway abutment walls is provided below. Design calculations for the two structures are included in Volume 3 of this submittal.

Labyrinth Spillway & Foundation Slab. The labyrinth weir wall section consists of 25-foot tapered vertical cantilever walls. The thickness of the wall varies from 2.13 feet at the base to 12 inches at the top. The wall is rigidly attached to a 3-foot thick base slab.

The labyrinth wall section was analyzed by conventional means assuming a fixed based, free top model. The resulting wall base shear and moment values were used as input in the analysis of the base slab. The base slab was assumed to behave as a mat foundation. However, for analytical simplicity, the base slab was modeled by computer methods as a series of strip beams on elastic foundations. The modulus of subgrade reaction (Ks = 200 pcf) used in the analysis was based on literature review and information contained in the Project Geotechnical Report. Multiple strips were analyzed to determine the resulting slab shears and the distribution of moments in the upper and lower portions of the slab at various plan locations.

The controlling case for the labyrinth wall and base slab design was based on a hydrostatic loading equal to 34 feet of static water pressure applied to the upstream face of the labyrinth wall. This loading condition represents a spillway operating head of nine feet as shown in the

figure titled "Hydrostatic Design Loading - Labyrinth Spillway Weir Wall" at the end of this section. The effect of backwater forces acting on the downstream face of the labyrinth wall to counteract the driving head forces was conservatively neglected.

Spillway Abutment Walls. The abutment walls at each end of the spillway section consist of sloping counterfort retaining walls. The wall height varies from 35.25 feet at the center portion of the embankment dam to 5.44 feet and 2 feet at the upstream and downstream toes, respectively.

The stability of the walls were analyzed for various loading cases using conventional methods. Based on consultation with Kleinfelder Inc. and the Project Geotechnical Report, design of the wall footings was based on an allowable soil bearing pressure of 8,000 psf. This bearing pressure was established to limit total footing settlement to approximately 0.75 to 1 inch, and differential settlement to 0.5 inch. The coefficient of soil friction against wall sliding used in the analysis was 0.58. The following four loading cases were analyzed:

- Construction Condition - basin empty, surcharge loading of 400 psf to account for compaction of soil behind wall.
- 100-year Flood - detention basin water surface elevation at 2470.5, no backwater acting on downstream portion of wall, embankment (backfill) saturated.
- PMF Event - detention basin water surface elevation at 2478.4, backwater elevation 2456.0, embankment (backfill) saturated.
- Post PMF Event - detention basin drained, embankment (backfill) saturated.

Various height wall sections were considered to establish corresponding footing widths and check factors of safety against overturning and sliding. The factor of safety against overturning for the various wall sections ranged from 2.5 to 5.2, with the Post PMF Event typically producing the

controlling conditions. The factor of safety against sliding for the various wall sections ranged from 1.5 to 2.1. Again, the Post PMF Event typically produced the lowest factors of safety.

Once proportioned for stability, wall panel and counterfort design was based on conventional methods of analysis and the United States Bureau of Reclamation publication entitled "Moments and Reactions for Rectangular Plates," (1974).

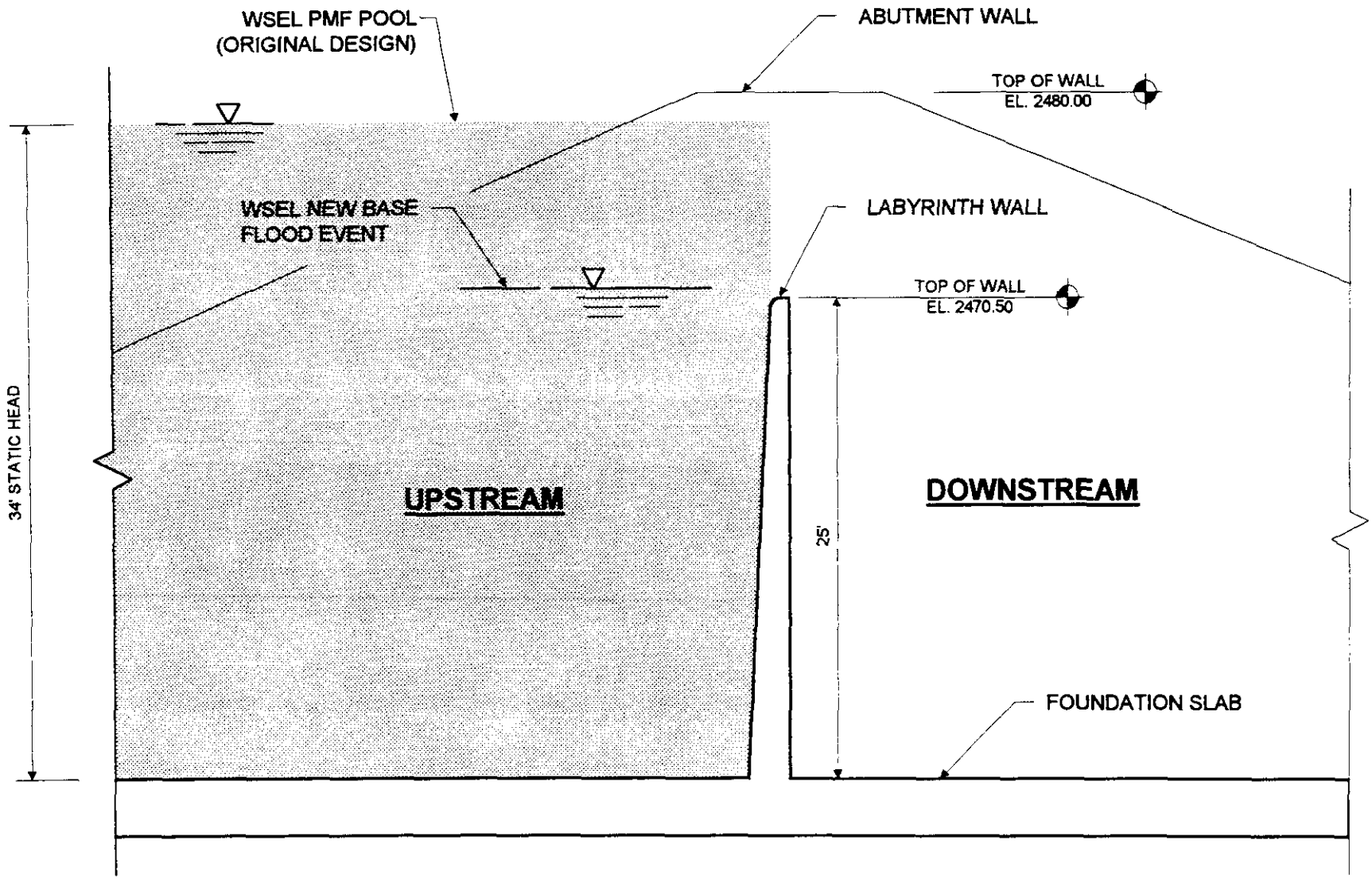
QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance of the design requirements for the embankment and spillway was safeguarded during construction by a full time Black & Veatch resident engineer and the Owner's independent testing consultant. A summary of the construction testing results is provided in Volume 2 of this submittal.

CONCLUSION OF STABILITY ANALYSIS

The UFWDB embankment and spillway structures were originally designed for short term reservoir operation at elevation 2478.4 feet. In review of the work presented in the BASE HYDROLOGY and UFWDB PERFORMANCE ANALYSIS Sections of this report, the new Base Flood Event will produce a maximum reservoir surface elevation of 2471.0 feet. As a result, the hydrostatic and hydraulic forces acting on the UFWDB embankment and spillway structure due to the new Base Flood Event will be less than the forces used in the original design of the facility. Based on these findings, review of the original design calculations, and review of the construction testing records, we find the UFWDB embankment and spillway structure to be suitable and stable for loading conditions in excess of those produced by the new Base Flood Event.

Hydrostatic Design Loading - Labyrinth Spillway Weir Wall



Clark County Regional Flood Control District
Upper Flamingo Wash Detention Basin

DISCHARGE CHANNEL ANALYSIS

SCOPE

Black & Veatch analyzed the existing UFWDB discharge channel by inputting the new Base Flood Event from the HEC-1 model developed in the UFWDB PERFORMANCE ANALYSIS section into the U.S. Army Corps of Engineers' HEC-2 Water Surface Profiles computer program. The new Base Flood Event peak discharge is 2579 cfs. The HEC-2 output was evaluated to determine the water surface profile in the discharge channel and the aerial extent of the 100-year flood plain. The output was also compared to the results obtained from calculations using Manning's Equation.

UFWDB OUTFALL DESCRIPTION

A 7-foot by 8-foot orifice is constructed in the center cycle of the four-cycle labyrinth spillway. The orifice discharge is contained by the walls of the 100-foot deep labyrinth until it emerges into a 52-foot wide energy dissipating "chute" in the center of the apron. The chute contains 2-foot high baffle blocks down the 3H : 1V slope. Over the next 55.3 feet of apron length, the chute bottom width transitions from 52 feet wide to 20 feet wide to match the discharge channel bottom width. Water on other portions of the 272-foot wide apron can flow into this transitional approach to the discharge channel. A 10-foot wide layer of 18-inch riprap abuts the downstream end of the apron. The spillway and apron are shown in plan on Sheet 11 and in section on Sheet 12 of the As-Built Construction Drawings.

The UFWDB discharge channel is approximately 2900 feet long beginning at Station 1+46.44 at the spillway apron edge. The channel ends at the Hacienda Avenue box culvert at Station 30+43.62. The trapezoidal channel has a 20-foot bottom width and 2H : 1V side slopes. A 6-foot wide concrete low-flow channel is constructed down the center of the channel to handle nuisance flows. The rest of the channel is lined with gabion mattresses. A 10-foot wide access road constructed with 4 inches of Type II aggregate base material is located on the right, or south, channel bank. The discharge channel plan and profile are shown on Sheets 17 through 19 of the As-Built Construction Drawings.

The channel alignment is generally from the southwest to the northeast. Three curves make horizontal changes in direction: two gradual curves at Stations 2+32.32 and 14+03.09, and a sharp curve at Station 29+00.44. At Station 6+65.00, a 1.77-foot gabion drop structure makes up a grade differential between the existing topography and the channel flowline. The channel has three reaches which are characterized by a change in the bottom slope and gabion lining height. The following table lists the reach characteristics:

CHANNEL REACH CHARACTERISTICS			
STATIONS	1+46.44 to 6+65.00	6+65.00 to 28+00.00	28+00.00 to 30+43.62
Slope (%)	0.30	1.06	0.15
Lining Height (ft)	7' - 4"	6' - 0"	8' - 6"
Capacity (cfs)	2458	3135	2327

Channel flow capacities were initially calculated to the top
Equation. A Manning's "n" value of 0.024 was used to rep
low-flow channel and gabion lining. Based on the channe
cfs, the critical depth for the channel is 6.43 feet. Oth
tabulated below.

CALCULATED CHANNEL REACH CHARACTER			
STATIONS	1+46.44 to 6+65.00	6+65.00	
Flow Regime	*subcritical*	sup	
Froude Number	.75	1.36	.54
Velocity (fps)	9.80	15.46	7.61

The discharge channel was originally designed to convey 1225 cfs with an available freeboard of approximately two feet. The limiting reach of channel is between Stations 28+00.00 and 30+43.62 where the slope is reduced to 0.15 percent. Using Manning's Equation, the approximate channel capacity without freeboard, or to the top of the gabion lining, is 2327 cfs in this reach.

CHANNEL OVERBANK DESCRIPTIONS

For approximately 100 feet downstream of the apron, the left, or north, overbank area slopes toward the discharge channel. From approximate Stations 3+00 to 22+00, the left overbank area is typically one to three feet lower than the channel bank and Hacienda Avenue. Water which enters the left overbank between these stations remains in the low area bounded by the channel bank and Hacienda Avenue and is not able to reenter the channel. Along the next 600 feet of channel length, the left overbank is elevated between the channel and Hacienda Avenue. Beginning at Station 28+00 and to the end of the channel, the left overbank grade diminishes along with the grade of Hacienda Avenue such that, at the box culvert, the grades are equal to the channel bank. Photos 1 through 4 at the end of this section illustrate the left overbank topography.

The right overbank slopes away from the channel along most of the channel length. Water entering the right overbank upstream of Station 4+00 will flow toward a depressed area approximately 150 feet south of the channel. Between Stations 4+00 and 24+00, the right overbank is defined by a 12-foot high concrete block wall and a vacant lot with grades up to seven feet higher than the channel bank. Water which enters the right overbank along this reach will drain into short, minor gullies. The gullies parallel the discharge channel and then reenter the channel through culverts installed in the channel bank at Stations 17+62.00, 18+02.00, and 24+57.00. The right overbank reduces in elevation after Station 24+00, however, superelevation of the right channel bank begins at Station 23+12.25 and appears to be sufficient to prevent water from overtopping the right channel bank downstream of that station. Photos 5 through 9 at the end of this section illustrate the right overbank topography.

PEAK DISCHARGE IMPACT ON THE SPILLWAY AND APRON

Based on the outflow hydrograph for the new Base Flood Event, water overtops the spillway up to a depth of 0.5 feet during the 100-year storm event. This equates to a flowrate of approximately 1300 cfs overtopping the spillway during the 5 to 10 minutes the UFWDB is at peak stage. It is estimated that water overflowing the two inside spillway cycles will be collected in the discharge channel. However, the overflow from the two outside labyrinth cycles will most likely overcome the mild transverse apron slope toward the channel and flow off the end of the apron into the channel's overbank areas. This assumption yields a maximum of 325 cfs of water flowing off the apron into each overbank area.

Because of the slope of the left overbank toward the channel, it is assumed that water entering the left overbank area will flow into the discharge channel within 100 feet downstream of the apron. Water entering the right overbank will flow south approximately 150 feet and pond in a low area bounded by the UFWDB embankment on the west, approximately 12 feet of fill on the south, and a 12-foot concrete block wall on the east. The ponding area is shown in Photo 10 at the end of this section. Once the pond depth reaches approximately one foot, the water will flow along the concrete block wall and flow parallel to the channel entering the minor gullies discussed earlier. The ponding water will dissipate via infiltration or evaporation.

WATER SURFACE PROFILE MODEL

To evaluate the performance of the UFWDB discharge channel and delineate the floodplain, the water surface profile was determined using the U.S. Army Corps of Engineers' HEC-2 computer program. Although the overbanks may convey some of the water overtopping the spillway, the discharge channel was conservatively analyzed using the total peak discharge of 2579 cfs. As stated earlier, the calculated maximum capacity of the discharge channel is 2327 cfs. Based on the HEC-1 output from the UFWDB PERFORMANCE ANALYSIS Section, this channel capacity is exceeded for a period of approximately 50 minutes. During this time frame, approximately 252 cfs of water cannot be contained in the discharge channel.

The discharge channel geometry was obtained from the As-Built construction drawings. A survey was performed to update the overbank topography since construction of the UFWDB project.

HEC-2 computer models were developed to calculate the water surface elevation by first using the flow area available within the limits of the channel by implementing the X3 card in the program. If the calculated water surface elevation exceeded one of the channel banks, the available overbank area was included. Other HEC-2 models were prepared which provided only the channel cross-section data, omitting the overbank information. In these models, if the water surface exceeded the channel banks, the program projected vertical extensions at the banks to calculate the additional depth required. The HEC-2 file names are included below for ease of discussion.

RCHSUB - Subcritical run with overbank information.
RCHSUP - Supercritical run with overbank information.
ROWSUB - Subcritical run without overbank information.
ROWSUP - Supercritical run without overbank information.

The following sections describe the HEC-2 Water Surface Profile results. Comparisons are made to the initial calculations performed using Manning's Equation. Cross sections of the channel and overbanks are provided at the end of this section. The water surface elevation shown in the cross section is taken from the combined HEC-2 results as described below.

Station 1+46.44 to Station 6+65.00

Using Manning's Equation, this reach has a maximum capacity of 2458 cfs to the top of the 7'-4" high lining. Based on the outflow hydrograph, this channel capacity is exceeded for approximately 30 minutes. During this time, approximately 121 cfs of water would top the channel banks if the peak discharge (2579 cfs) entered the channel. The first 500 feet of the discharge channel was calculated as a subcritical reach with a normal depth of 7.52 feet, which is approximately 2.2 inches above the channel lining.

Although this reach was determined to flow subcritical, the 1.77-foot drop at Station 6+65 and subsequent change to supercritical flow appear to create a drawdown effect so that the reach flows lower than calculated. When analyzed in the subcritical run RCHSUB, the program defaulted to "critical depth assumed" at all stations except Station 1+46. The HEC-2 program

is unable to calculate flow depths below critical depth under subcritical conditions, therefore, the flow was determined to be at or below critical depth in model RCHSUB. Although the water surface profile was calculated using critical depth, the model indicated that as much as 1327 cfs (more than half of the peak discharge) entered the left overbank area at Station 6+00. The flow depth at Station 6+00 was 7.36 feet.

When the reach was analyzed in model ROWSUB, critical depth was assumed only at Station 6+65, which corresponds with the location of the drop structure where critical depth is expected. The height of the vertical extensions at the channel banks required by the upstream stations varied from between 0.78 feet at Station 6+00 to 1.01 feet at Station 2+00. The average vertical extension, or depth of flow over the channel banks, was 0.92 feet. To determine the area of flow over the channel banks, the average flow depth was multiplied by the average distance (86.5 feet) between the stations. The average channel velocity in this reach was 10.3 fps, but the flow velocity over the banks should be much less than the velocity in the channel. The average overbank flow velocity calculated in model RCHSUB was 2.2 fps. Thus, the flowrate over the channel banks was estimated by multiplying the average flow area by 2.2 fps, which yields 175 cfs.

When modeled in the supercritical run RCHSUP, all of the stations except Station 2+00 had flow depths below critical depth. The HEC-2 program defaulted to critical depth at Station 2+00 indicating that the flow depth was higher than the program could calculate. The overbank flowrates and channel flow depths calculated in model RCHSUP more closely resembled the values predicted using Manning's Equation and the flow area method described above. Overbank flow occurred at the two upstream stations where a maximum of 154.4 cfs entered the left overbank and 184.6 cfs entered the right overbank. This occurred at Station 2+00 where the flow depth over the channel banks was 1.16 feet, slightly higher than the average depth determined in model ROWSUB. (This depth would yield 220 cfs in the overbanks using the flow area method.) The average flow depth in the channel was 7.6 feet, or approximately three inches over the channel lining height and within one inch of the normal depth predicted with Manning's Equation.

Critical depth was assumed for all stations in model ROWSUP. Although the actual flow depth may be higher than the depth used in the model, the flow remained in the channel and vertical extensions were not required.

Based on the various models, this reach can be expected to contribute up to 220 cfs of water into the overbank areas providing 2579 cfs enters the channel. Water entering the right overbank will be stopped by a concrete block wall. Water will flow east along the wall until it enters a minor gully, which will eventually daylight into the UFWDB discharge channel. Water overflowing the left channel bank downstream of Station 2+00 will be contained by a defined wash in the outer left overbank area. The wash becomes less defined downstream but this overflow will remain in the left overbank area. Upstream of Station 2+00, left overbank flow will reenter the discharge channel.

The water surface profile provided at the end of this section was produced with the output from the supercritical model RCHSUP between Stations 1+46.44 and 6+65.00.

Station 6+65.00 to Station 28+00.00

The reach of channel between Stations 6+65.00 and 28+00.00 flows supercritical and, using Manning's Equation, has a capacity of 3135 cfs to the top of the 6-foot high lining. The HEC-2 model RCHSUP shows that the channel is able to convey the peak discharge of 2579 cfs until Station 23+00. At this station, water enters the right overbank at a rate of 91.6 cfs. Superelevation of the right channel bank begins at Station 23+12.25 and is sufficient to prevent water from entering the right overbank downstream of that station. Water begins entering the left overbank at Station 23+00 until the end of this reach. However, the maximum rate of overflow is 8.8 cfs at Station 24+00.

Model ROWSUP indicates that vertical extensions are required to contain channel flow between Stations 8+00 to 23+00 for the right channel bank, and Stations 8+00 to 27+00 for the left channel bank. The right bank extensions range from 0.16 feet to 0.26 feet with an average height of 0.24 feet. The left bank extensions range from 0.16 feet to 0.28 feet with an average height of 0.25 feet. The average channel velocity is 15.72 fps and the average overbank flow velocity

is 1.9 fps (from model RCHSUP). The overbank flowrate is estimated to be approximately 47 cfs using the flow area method.

Although both models RCHSUP and ROWSUP calculated water surface depths for each station in this reach, the transition to subcritical depth at Station 28+00 is expected to create a backwater effect on the downstream stations of the supercritical reach. The subcritical model RCHSUB calculated flow depths above critical depth until Station 26+00. A mild (undular) or submerged hydraulic jump may occur in the supercritical reach between Stations 25+00 and 26+00.

Downstream of Station 25+00, the flow regime was assumed to be subcritical. The water surface profile for Stations 26+00 through 28+00 were obtained from model RCHSUB. The maximum overbank discharge occurred at Station 27+00 where 605 cfs entered the left overbank. The vertical extension required at the left overbank at that station was 2.56 feet.

Flow entering the left overbank area between Stations 6+65 and 28+00 will remain in the low-lying left overbank area and not reenter the channel. Flow overtopping the right channel bank upstream of Station 24+00 will reenter the discharge channel via one of the culverts which daylight in the channel. Right bank overflow did not occur downstream of Station 24+00.

The water surface profile provided at the end of this section was produced with the output from the supercritical model RCHSUP from Station 6+65 to Station 25+00, and model RCHSUB beginning at Station 26+00.

Station 28+00.00 to Station 30+43.62

This reach of channel flows subcritical. As stated earlier, the mild slope of this downstream subcritical reach limits the channel capacity to 2327 cfs. In the HEC-2 model RCHSUB, as much as 437.1 cfs tops the left channel bank at Station 29+46.50 and enters the left overbank area. Capacity is limited in the downstream left overbank area, and it is likely that this overflow will impact Hacienda Avenue which is also lower in this area. The superelevated right overbank contains the channel flow.

The height of vertical extensions required in model ROWSUB ranged from 1.31 feet to 1.36 feet with an average height of 1.34 feet. Applying the flow area method using the average overbank flow velocity (1.7 fps) computed in model RCHSUB, the average channel overflow rate is 112 cfs.

To verify that the computer program adequately accounted for superelevation as the channel alignment curved, the required freeboard was calculated. The required superelevation is calculated to be 1.02 feet following the CCRFCD Manual guidelines. The HEC-2 model indicates that at least one foot of freeboard is available on the outside of the channel curve. Therefore, adequate freeboard is available at the curve.

The water surface profile provided at the end of this section was produced with the output from the subcritical model RCHSUB between Stations 28+00 and 30+00.

FLOODPLAIN DELINEATION

The upstream limits of this study are defined by the UFWDB embankment and SVE diversion berm and channel. Washes which are intercepted by either facility have had their floodplains removed or reduced from that shown on the FIRM dated August 16, 1995. The downstream limits are the intersection of the discharge channel and Hacienda Avenue, and the thalwag of the finger wash adjacent to Buffulo Drive. The area of the floodplain removed is indicated with cross-hatching on enclosed FIRM.

The left and right overbanks are delineated on the enclosed aerial floodplain map to show the limits of the flow in those areas. The limits of the right overbank are the minor gullies parallelling the channel. The limits of the left overbank are contained by a defined wash until approximately Station 16+00, where the floodplain extends to Hacienda Avenue.

CONCLUSION

The peak discharge obtained from the UFWDB PERFORMANCE ANALYSIS hydrology is 2579 cfs. Approximately 0.5 feet of water overtops the spillway during the 5.5 hours the stage exceeds elevation 2470.5, which equates to approximately 1300 cfs. Although it is estimated that 25

percent of the overflow will flow directly into each overbank area, the discharge channel was modeled for conveying the entire 2579 cfs.

The limiting capacity of the discharge channel was calculated to be 2327 cfs in the subcritical downstream reach. This capacity is exceeded for approximately 50 minutes. The HEC-2 Water Surface Profile computer programs used to model the discharge channel indicated that up to 605 cfs overtopped the channel (Station 27+00). The majority of the channel overflow enters the left overbank area downstream of Station 27+00 which will impact Hacienda Avenue. The right overbank receives most of its overflow at the upstream end of the channel near Station 2+00. This water will pond in a low overbank area or flow in the parallel gullies which later reenter the channel through culverts.

REFERENCES

1. U.S. Army Corps of Engineers (1990). "HEC-2 Water Surface Profiles," Hydrologic Engineering Center, Davis, CA.

2. Clark County Regional Flood Control District (1990). "Hydrologic Criteria and Drainage Design Manual," Clark County, Nevada.

3. French, R.H., (1985). Open-Channel Hydraulics, McGraw-Hill.

4. Chow, V.T., (1988). Open-Channel Hydraulics, McGraw-Hill.

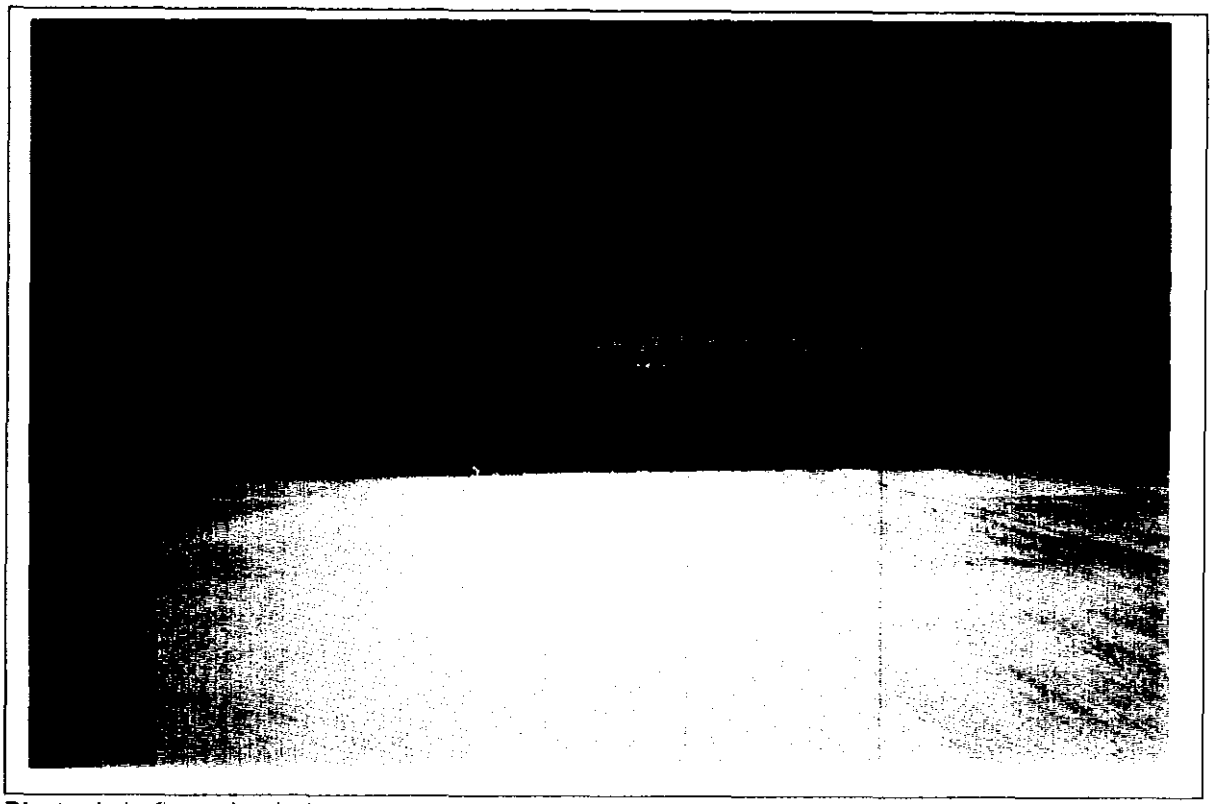


Photo 1 Left overbank downstream of apron.



Photo 2 Left overbank looking downstream from Station 6+65.

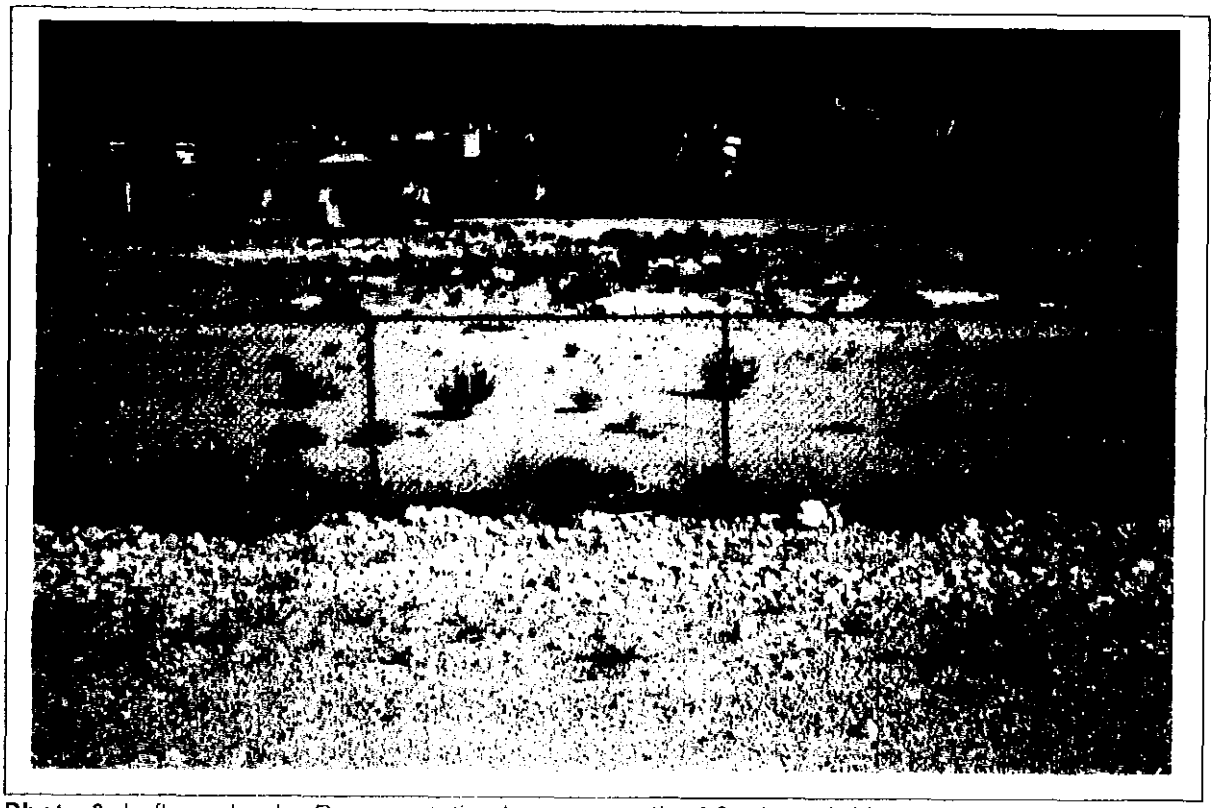


Photo 3 Left overbank. Representative low area north of Station 17+00.



Photo 4 Rise in left overbank area looking downstream from Station 24+50.

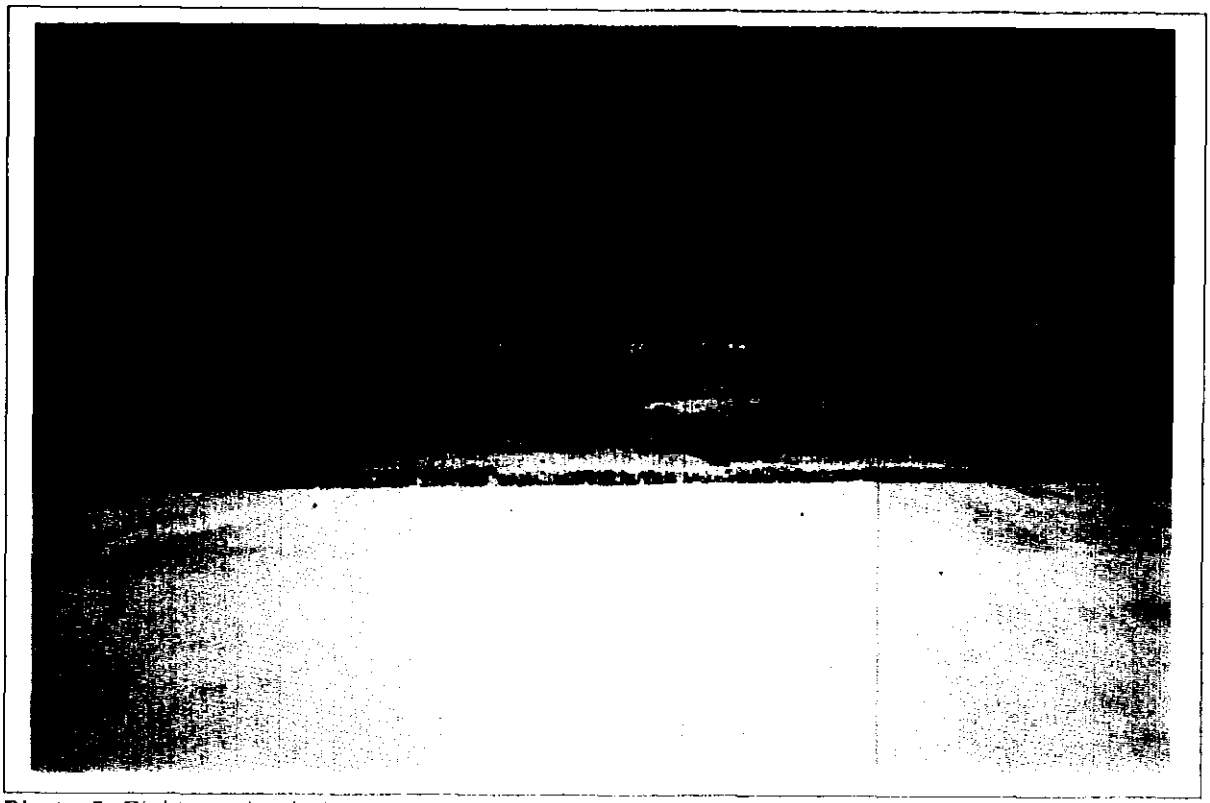


Photo 5 Right overbank downstream of apron.



Photo 6 Low ponding area in right overbank - Station 3+00.

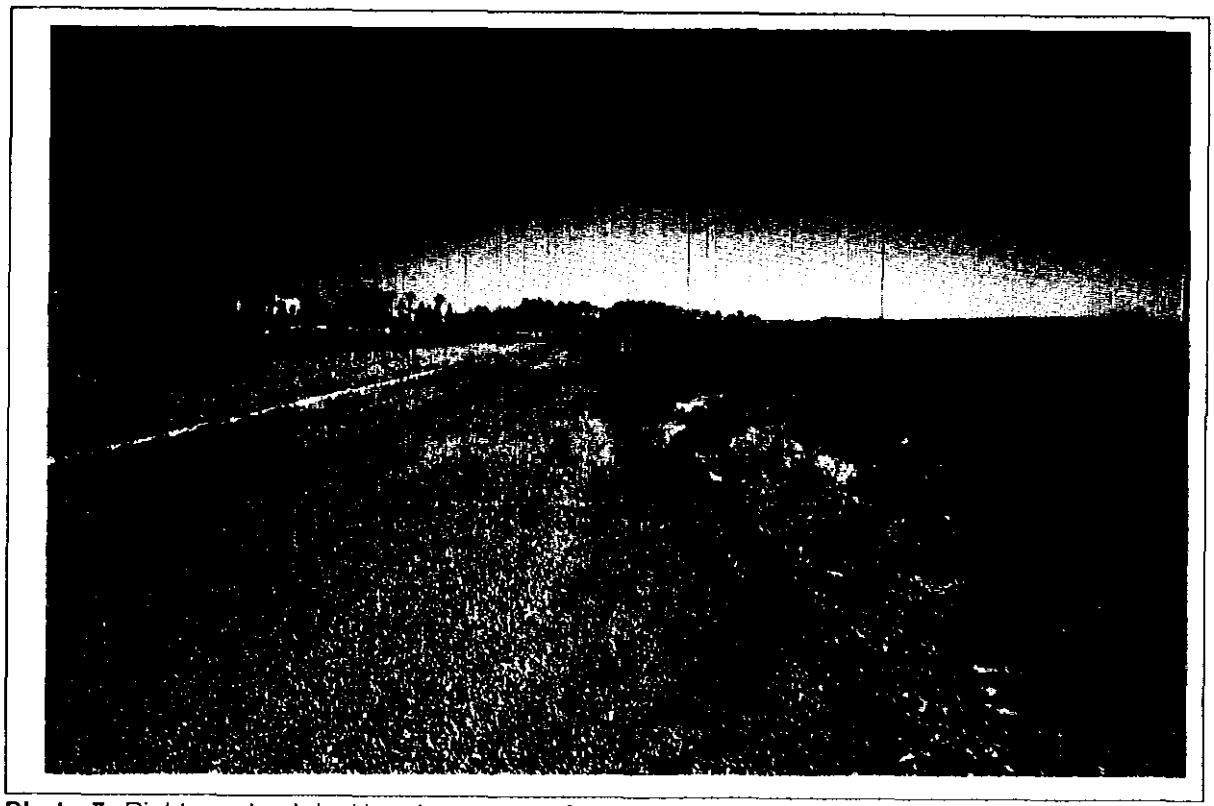


Photo 7 *Right overbank looking downstream from Station 8+00.*



Photo 8 *Right overbank looking upstream from Station16+00.*



Photo 9 Right bank with superelevation looking upstream from Station 30+00.

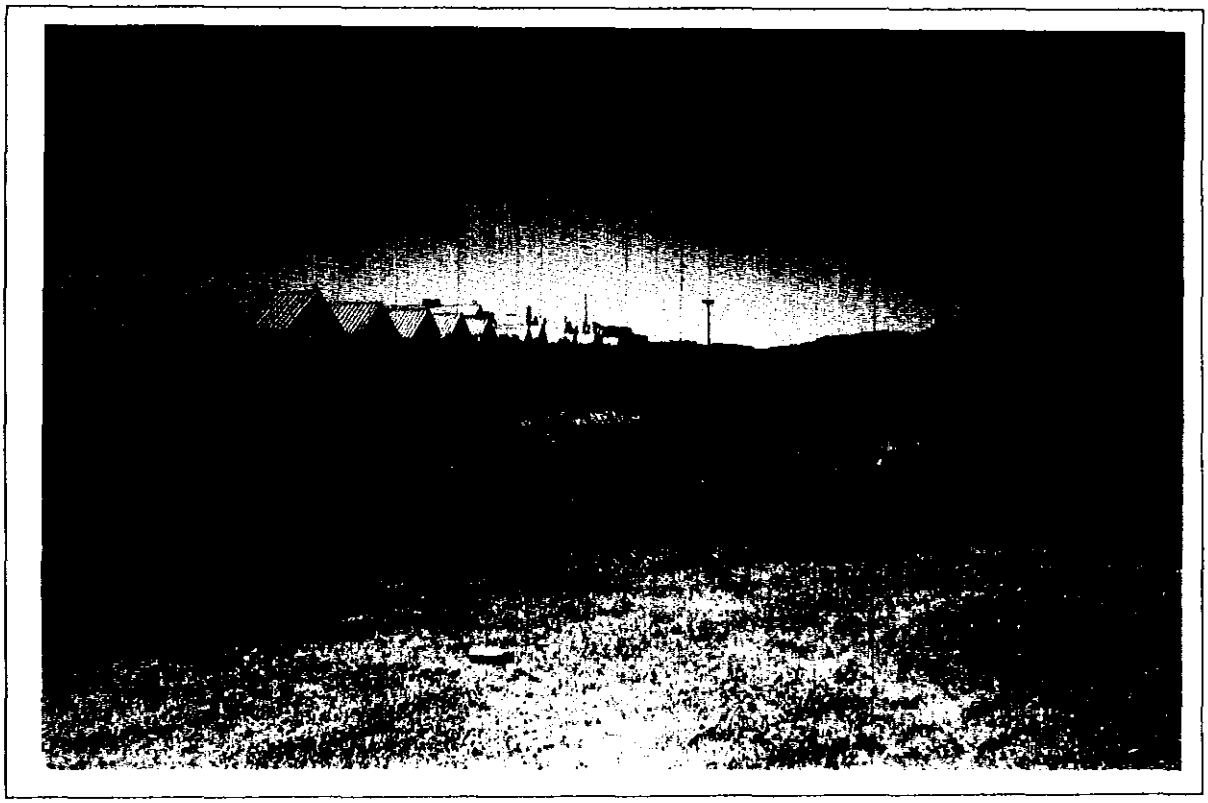
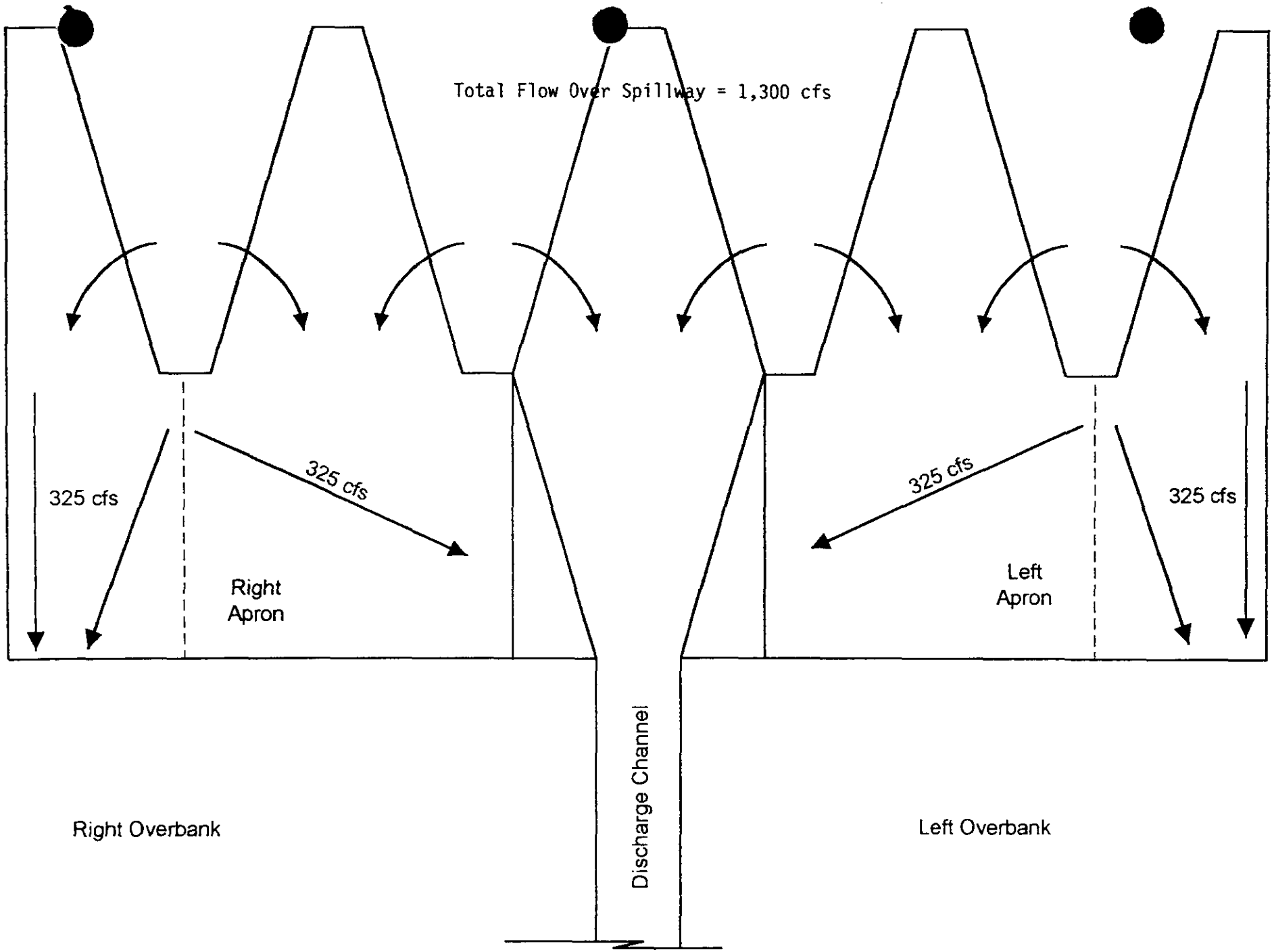
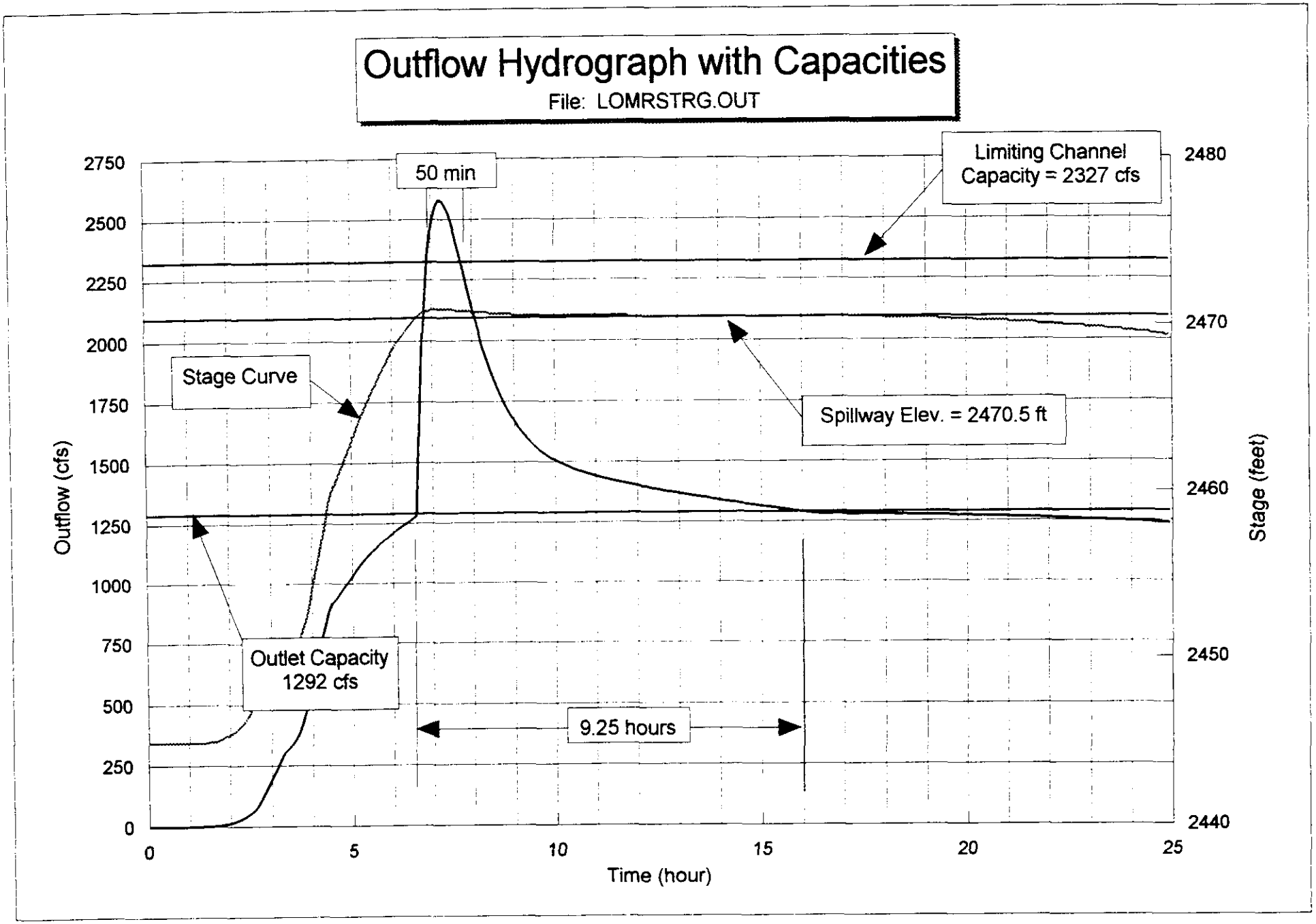


Photo 10 Ponding area in right overbank at Station 5+00.



IMPACT OF SPILLWAY OVERFLOW ON CHANNEL OVERBANKS


Outflow Hydrograph with Capacities
File: LOMRSTRG.OUT
50 min
Limiting Channel
Capacity = 2327 cfs
Stage Curve
Spillway Elev. = 2470.5 ft
Outlet Capacity
1292 cfs
9.25 hours
Outflow (cfs)
Stage (feet)
Time (hour)
2750
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
2480
2470
2460
2450
2440
0
5
10
15
20
25

Channel Capacity Using Manning's Equation
Q = 1.486*A*(R^.66)*(S^.5)/n

Station 1+46.44 to Station 6+65.00

where:	b =	20	ft
	z =	2	ft/ft
	y =	7.33	ft
	P =	52.80	ft
	S =	0.0030	ft/ft
	n =	0.024	
then:			
	A = (b+zy)y =	254.22	sf
	R = A/P =	4.82	ft
so:			
	Q =	**2458.43**	**cfs**

Station 6+65.00 to Station 28+00.00

where:	b =	20	ft
	z =	2	ft/ft
	y =	6.00	ft
	P =	46.83	ft
	S =	0.0106	ft/ft
	n =	0.024	
then:			
	A = (b+zy)y =	192.00	sf
	R = A/P =	4.10	ft
so:			
	Q =	**3135.18**	**cfs**

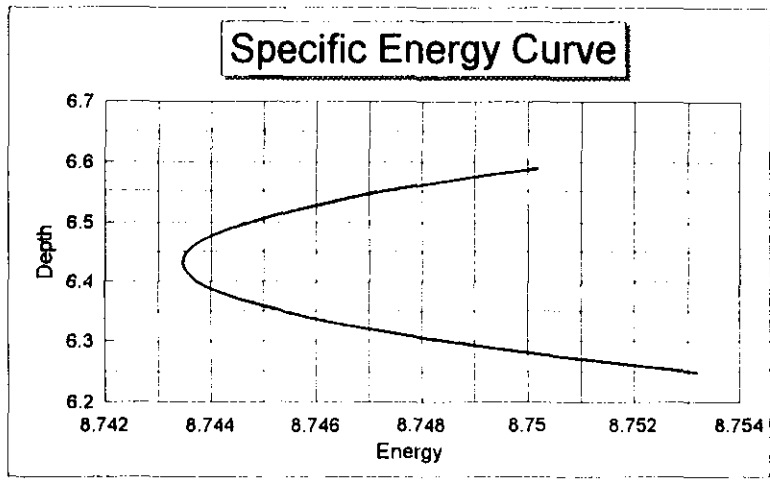
Station 28+00.00 to Station 30+43.62

where:	b =	20	ft
	z =	2	ft/ft
	y =	8.50	ft
	P =	58.01	ft
	S =	0.0015	ft/ft
	n =	0.024	
then:			
	A = (b+zy)y =	314.50	sf
	R = A/P =	5.42	ft
so:			
	Q =	**2327.39**	**cfs**

Specific Energy - y critical

Channel configuration	b	z
Flow (cfs) 2579	20	2

Depth	Area	Velocity	Energy
6.250	203.13	12.70	8.75317
6.260	203.58	12.67	8.75211
6.270	204.03	12.64	8.75111
6.280	204.48	12.61	8.75018
6.290	204.93	12.58	8.74931
6.300	205.38	12.56	8.74850
6.310	205.83	12.53	8.74776
6.320	206.28	12.50	8.74707
6.330	206.74	12.47	8.74645
6.340	207.19	12.45	8.74588
6.350	207.65	12.42	8.74538
6.360	208.10	12.39	8.74493
6.370	208.55	12.37	8.74455
6.380	209.01	12.34	8.74422
6.390	209.46	12.31	8.74395
6.400	209.92	12.29	8.74374
6.410	210.38	12.26	8.74358
6.420	210.83	12.23	8.74349
6.430	211.29	12.21	8.74345
6.440	211.75	12.18	8.74346
6.450	212.21	12.15	8.74354
6.460	212.66	12.13	8.74366
6.470	213.12	12.10	8.74385
6.480	213.58	12.08	8.74408
6.490	214.04	12.05	8.74437
6.500	214.50	12.02	8.74472
6.510	214.96	12.00	8.74512
6.520	215.42	11.97	8.74557
6.530	215.88	11.95	8.74608
6.540	216.34	11.92	8.74663
6.550	216.81	11.90	8.74724
6.560	217.27	11.87	8.74791
6.570	217.73	11.84	8.74862
6.580	218.19	11.82	8.74938
6.590	218.66	11.79	8.75020



Normal Depth

Trial & Error Solution

Stations 1+46.44 to 6+65.00

Flow (cfs)	2579
n =	0.024
S =	0.003
b =	20
z =	2

AR^(2/3) = (nQ)/(1.486*S^.5) **RHS = 760.47**

Y	A	V	P	R	LHS	Fr
7.500	262.50	9.82	53.54	4.90	757.57	0.76
7.501	262.55	9.82	53.55	4.90	757.77	0.76
7.502	262.60	9.82	53.55	4.90	757.97	0.76
7.503	262.65	9.82	53.55	4.90	758.17	0.76
7.504	262.70	9.82	53.56	4.90	758.37	0.75
7.505	262.75	9.82	53.56	4.91	758.56	0.75
7.506	262.80	9.81	53.57	4.91	758.76	0.75
7.507	262.85	9.81	53.57	4.91	758.96	0.75
7.508	262.90	9.81	53.58	4.91	759.16	0.75
7.509	262.95	9.81	53.58	4.91	759.36	0.75
7.510	263.00	9.81	53.59	4.91	759.56	0.75
7.511	263.05	9.80	53.59	4.91	759.76	0.75
7.512	263.10	9.80	53.59	4.91	759.95	0.75
7.513	263.15	9.80	53.60	4.91	760.15	0.75
7.514	263.20	9.80	53.60	4.91	760.35	0.75
7.515	263.25	9.80	53.61	4.91	760.55	0.75
7.516	263.30	9.79	53.61	4.91	760.75	0.75
7.517	263.35	9.79	53.62	4.91	760.95	0.75
7.518	263.40	9.79	53.62	4.91	761.15	0.75
7.519	263.45	9.79	53.63	4.91	761.35	0.75
7.520	263.50	9.79	53.63	4.91	761.54	0.75
7.521	263.55	9.79	53.63	4.91	761.74	0.75
7.522	263.60	9.78	53.64	4.91	761.94	0.75
7.523	263.65	9.78	53.64	4.91	762.14	0.75
7.524	263.70	9.78	53.65	4.92	762.34	0.75
7.525	263.75	9.78	53.65	4.92	762.54	0.75
7.526	263.80	9.78	53.66	4.92	762.74	0.75
7.527	263.85	9.77	53.66	4.92	762.94	0.75
7.528	263.90	9.77	53.67	4.92	763.14	0.75
7.529	263.95	9.77	53.67	4.92	763.34	0.75
7.530	264.00	9.77	53.68	4.92	763.54	0.75
7.531	264.05	9.77	53.68	4.92	763.73	0.75
7.532	264.10	9.77	53.68	4.92	763.93	0.75
7.533	264.15	9.76	53.69	4.92	764.13	0.75
7.534	264.20	9.76	53.69	4.92	764.33	0.75

Normal Depth

Trial & Error Solution

Stations 6+65.00 to 28+00.00

Flow (cfs)	2579
n =	0.024
S =	0.0106
b =	20
z =	2

AR^(2/3) = (nQ)/(1.486*S^.5) **RHS = 404.57**

Y	A	V	P	R	LHS	Fr
5.400	166.32	15.51	44.15	3.77	402.68	1.37
5.401	166.36	15.50	44.15	3.77	402.82	1.37
5.402	166.40	15.50	44.16	3.77	402.96	1.37
5.403	166.44	15.49	44.16	3.77	403.10	1.37
5.404	166.49	15.49	44.17	3.77	403.24	1.36
5.405	166.53	15.49	44.17	3.77	403.38	1.36
5.406	166.57	15.48	44.18	3.77	403.52	1.36
5.407	166.61	15.48	44.18	3.77	403.66	1.36
5.408	166.65	15.48	44.19	3.77	403.80	1.36
5.409	166.69	15.47	44.19	3.77	403.94	1.36
5.410	166.74	15.47	44.19	3.77	404.08	1.36
5.411	166.78	15.46	44.20	3.77	404.23	1.36
5.412	166.82	15.46	44.20	3.77	404.37	1.36
5.413	166.86	15.46	44.21	3.77	404.51	1.36
5.414	166.90	15.45	44.21	3.78	404.65	1.36
5.415	166.94	15.45	44.22	3.78	404.79	1.36
5.416	166.99	15.44	44.22	3.78	404.93	1.36
5.417	167.03	15.44	44.23	3.78	405.07	1.36
5.418	167.07	15.44	44.23	3.78	405.21	1.36
5.419	167.11	15.43	44.23	3.78	405.35	1.36
5.420	167.15	15.43	44.24	3.78	405.50	1.36
5.421	167.19	15.43	44.24	3.78	405.64	1.36
5.422	167.24	15.42	44.25	3.78	405.78	1.36
5.423	167.28	15.42	44.25	3.78	405.92	1.36
5.424	167.32	15.41	44.26	3.78	406.06	1.36
5.425	167.36	15.41	44.26	3.78	406.20	1.36
5.426	167.40	15.41	44.27	3.78	406.34	1.36
5.427	167.44	15.40	44.27	3.78	406.48	1.35
5.428	167.49	15.40	44.27	3.78	406.63	1.35
5.429	167.53	15.39	44.28	3.78	406.77	1.35
5.430	167.57	15.39	44.28	3.78	406.91	1.35
5.431	167.61	15.39	44.29	3.78	407.05	1.35
5.432	167.65	15.38	44.29	3.79	407.19	1.35
5.433	167.69	15.38	44.30	3.79	407.33	1.35
5.434	167.74	15.38	44.30	3.79	407.47	1.35

Normal Depth

Trial & Error Solution

Stations 28+00.00 to 30+43.62

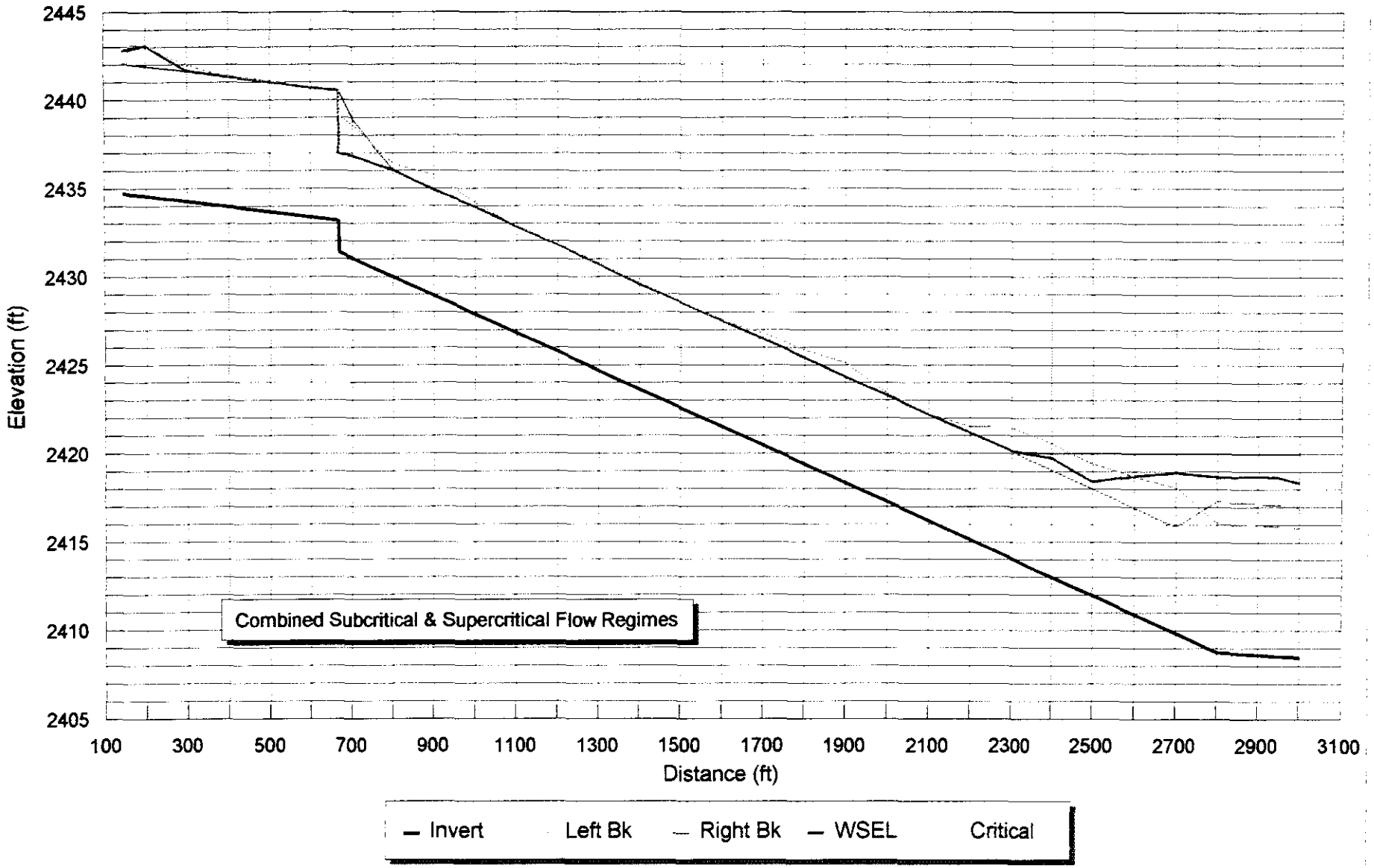
Flow (cfs)	2579
n =	0.024
S =	0.0015
b =	20
z =	2

AR^(2/3) = (nQ)/(1.486*S^.5) **RHS = 1075.47**

Y	A	V	P	R	LHS	Fr
8.940	338.65	7.62	59.98	5.65	1073.75	0.54
8.941	338.70	7.61	59.99	5.65	1073.99	0.54
8.942	338.76	7.61	59.99	5.65	1074.23	0.54
8.943	338.81	7.61	59.99	5.65	1074.48	0.54
8.944	338.87	7.61	60.00	5.65	1074.72	0.54
8.945	338.93	7.61	60.00	5.65	1074.96	0.54
8.946	338.98	7.61	60.01	5.65	1075.20	0.54
8.947	339.04	7.61	60.01	5.65	1075.44	0.54
8.948	339.09	7.61	60.02	5.65	1075.68	0.54
8.949	339.15	7.60	60.02	5.65	1075.92	0.54
8.950	339.21	7.60	60.03	5.65	1076.17	0.54
8.951	339.26	7.60	60.03	5.65	1076.41	0.54
8.952	339.32	7.60	60.03	5.65	1076.65	0.54
8.953	339.37	7.60	60.04	5.65	1076.89	0.54
8.954	339.43	7.60	60.04	5.65	1077.13	0.54
8.955	339.48	7.60	60.05	5.65	1077.37	0.54
8.956	339.54	7.60	60.05	5.65	1077.62	0.54
8.957	339.60	7.59	60.06	5.65	1077.86	0.54
8.958	339.65	7.59	60.06	5.66	1078.10	0.54
8.959	339.71	7.59	60.07	5.66	1078.34	0.54
8.960	339.76	7.59	60.07	5.66	1078.58	0.54
8.961	339.82	7.59	60.07	5.66	1078.83	0.54
8.962	339.87	7.59	60.08	5.66	1079.07	0.54
8.963	339.93	7.59	60.08	5.66	1079.31	0.54
8.964	339.99	7.59	60.09	5.66	1079.55	0.54
8.965	340.04	7.58	60.09	5.66	1079.79	0.54
8.966	340.10	7.58	60.10	5.66	1080.04	0.54
8.967	340.15	7.58	60.10	5.66	1080.28	0.54
8.968	340.21	7.58	60.11	5.66	1080.52	0.54
8.969	340.27	7.58	60.11	5.66	1080.76	0.54
8.970	340.32	7.58	60.12	5.66	1081.00	0.54
8.971	340.38	7.58	60.12	5.66	1081.25	0.54
8.972	340.43	7.58	60.12	5.66	1081.49	0.54
8.973	340.49	7.57	60.13	5.66	1081.73	0.54
8.974	340.55	7.57	60.13	5.66	1081.97	0.54

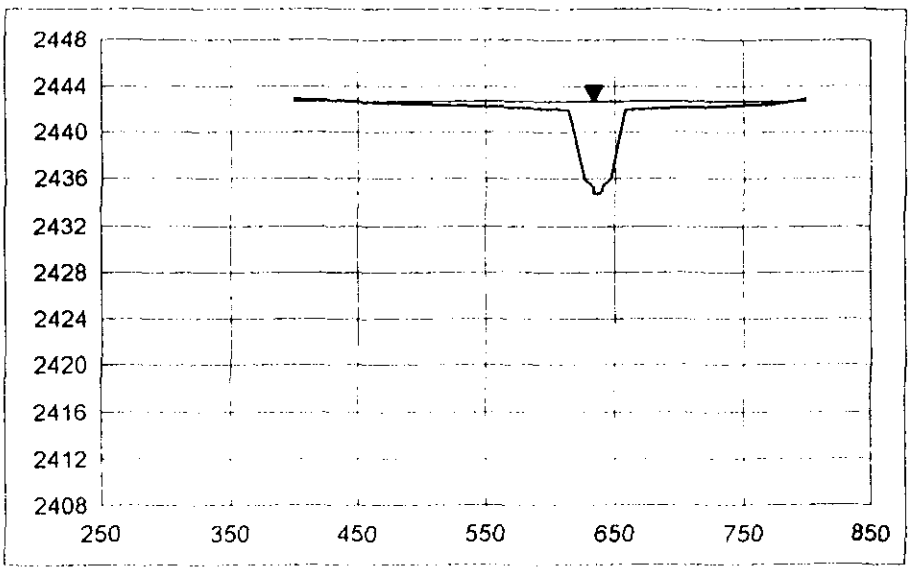
Discharge Channel Profile

Upper Flamingo Wash Detention Basin

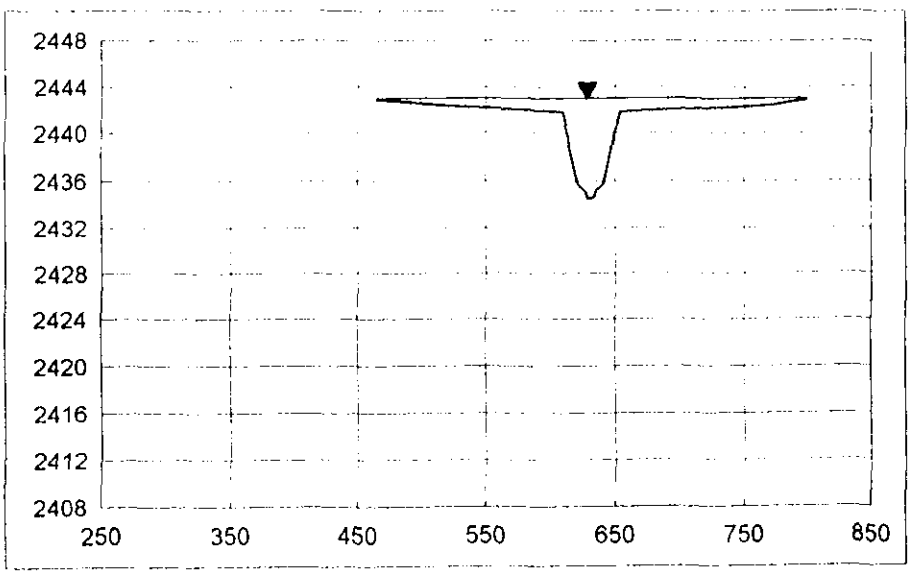


CCRFCD - Upper Flamingo Wash Detention Basin
B&V
OUTFALL CHANNEL CROSS SECTIONS
Water surface elevations obtained from combined HEC-2 outputs

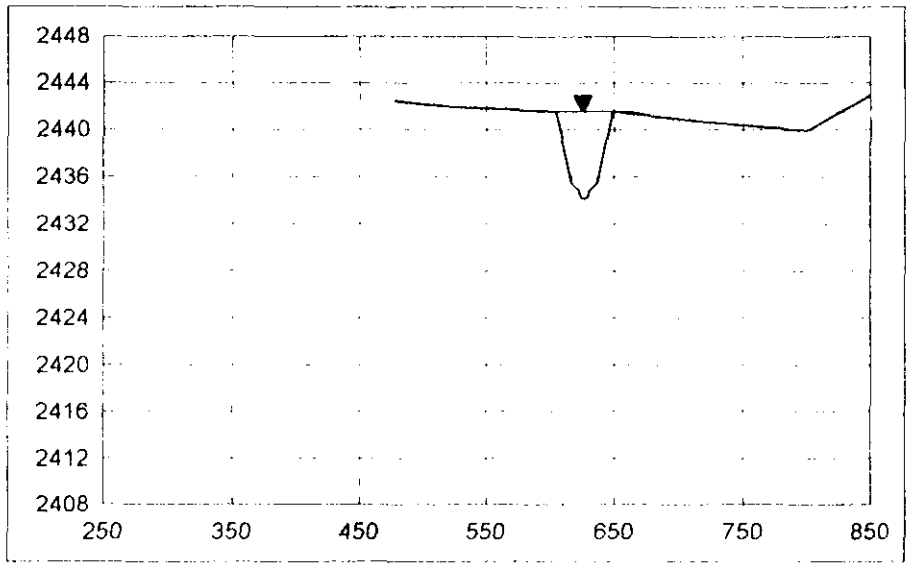
Station	Elevation	istance
146.4	2443.00	400.0
	2442.50	501.0
	2442.08	613.7
	2440.75	616.4
	2435.95	626.0
	2435.31	632.4
	2434.81	633.0
	2434.75	636.0
	2434.81	639.0
	2435.31	639.6
	2435.95	646.0
	2440.75	655.6
	2442.08	658.3
	2442.50	771.0
	2443.00	800.0



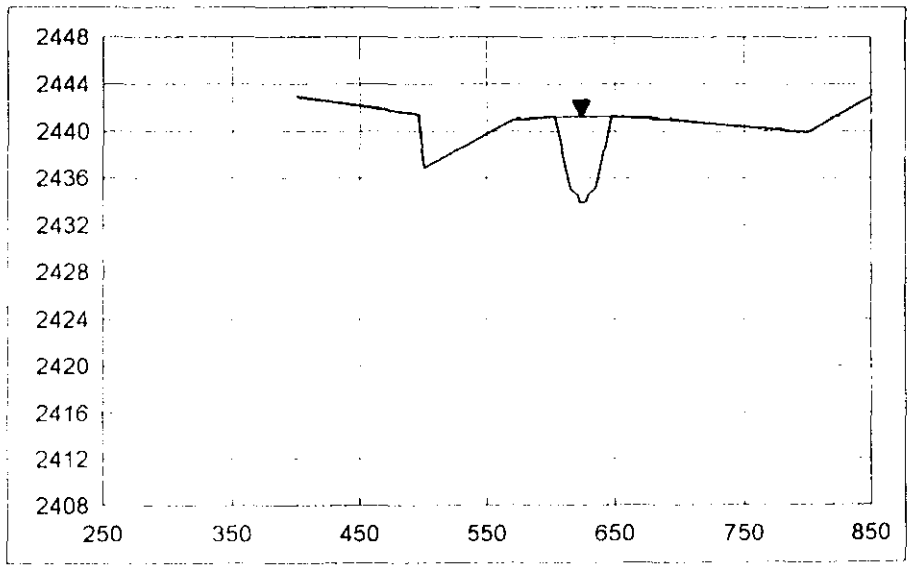
200.3	2443.00	464.00
	2442.50	514.00
	2441.92	608.70
	2440.59	611.40
	2435.79	621.00
	2435.15	627.40
	2434.59	628.00
	2434.59	631.00
	2434.65	634.00
	2435.15	634.60
	2435.79	641.00
	2440.59	650.60
	2441.92	653.30
	2442.50	771.00
	2443.00	800.00



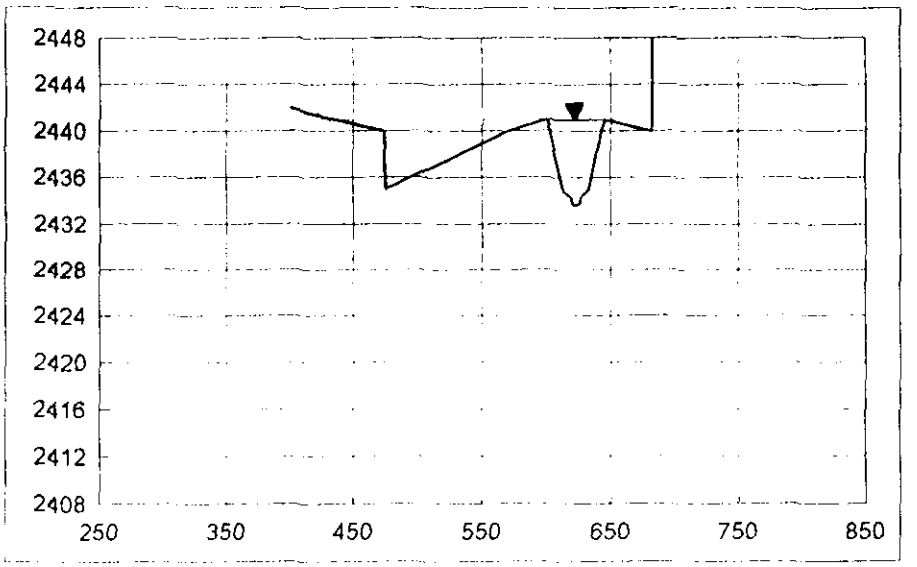
300.3	2442.50	477.00
	2442.00	527.00
	2441.62	604.20
	2440.29	606.90
	2435.49	616.50
	2434.85	622.90
	2434.35	623.50
	2434.29	626.50
	2434.35	629.50
	2434.85	630.10
	2435.49	636.50
	2440.29	646.10
	2441.62	648.80
	2441.00	697.00
	2440.50	745.00
	2440.00	800.00
	2443.00	850.00



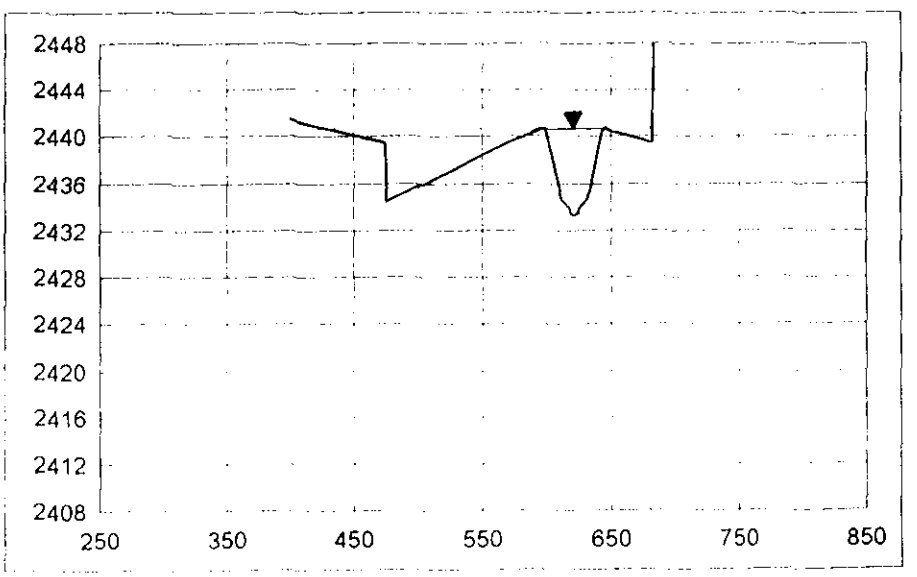
400.3	2443.00	400.00
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	2441.32	602.70
	2439.99	605.40
	2435.19	615.00
	2434.55	621.40
	2434.05	622.00
	2433.99	625.00
	2434.05	628.00
	2434.55	628.60
	2435.19	635.00
	2439.99	644.60
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	2441.00	697.00
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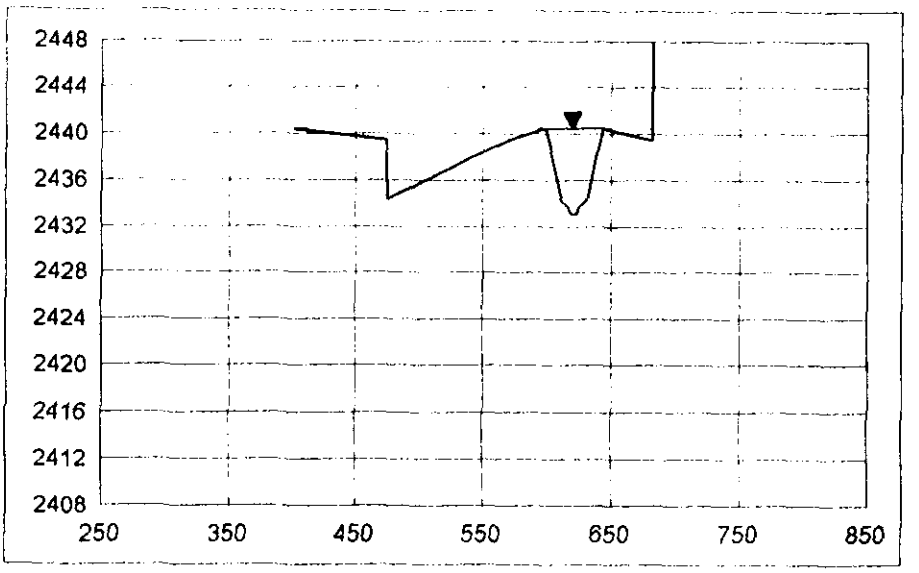
500.3	2442.00	400.00
	2440.00	474.00
	2435.00	475.00
	2440.00	570.00
	2441.02	600.20
	2439.69	602.90
	2434.89	612.50
	2434.25	618.90
	2433.75	619.50
	2433.69	622.50
	2433.75	625.50
	2434.25	626.10
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	2439.69	642.10
	2441.02	644.80
	2440.00	682.00
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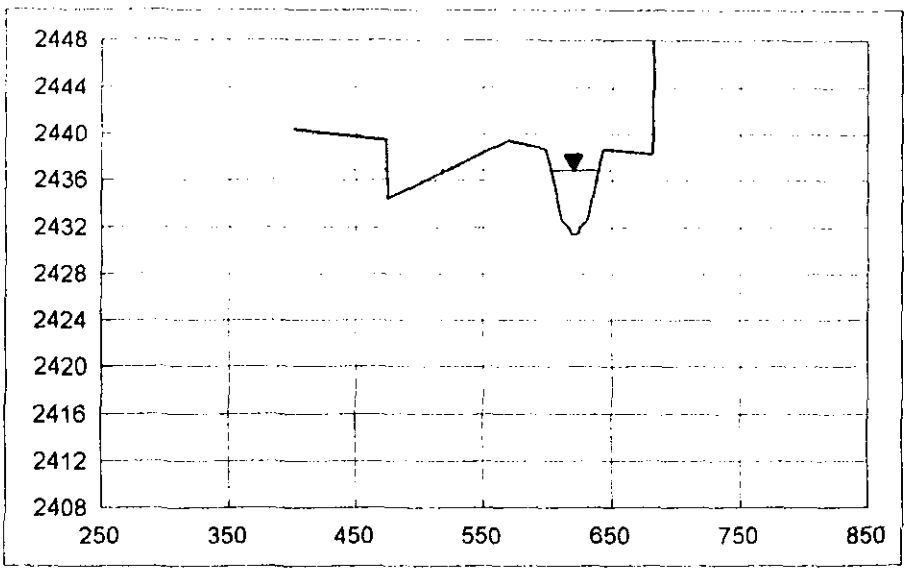
600.3	2441.50	400.00
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	2434.50	475.00
	2439.50	570.00
	2440.72	598.70
	2439.39	601.40
	2434.59	611.00
	2433.95	617.40
	2433.45	618.00
	2433.39	621.00
	2433.45	624.00
	2433.95	624.60
	2434.59	631.00
	2439.39	640.60
	2440.72	643.30
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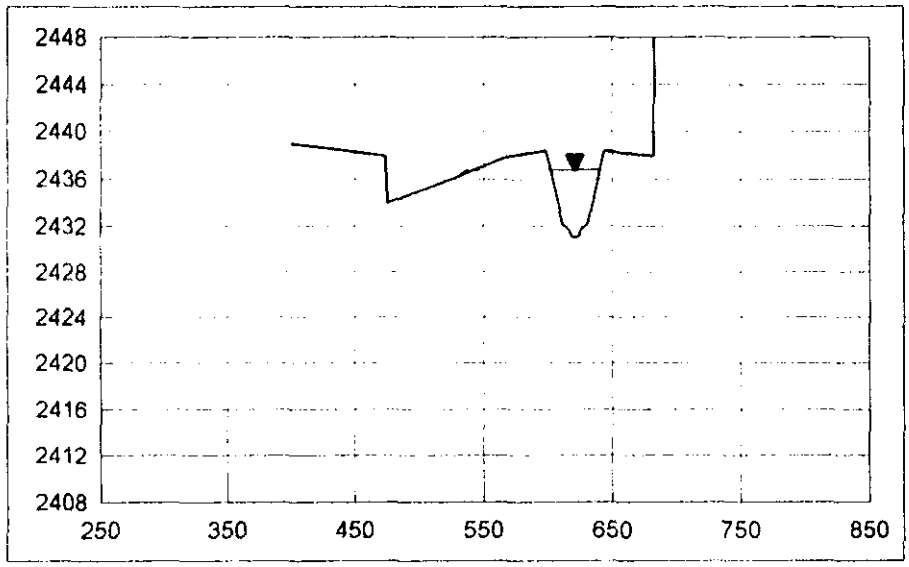
665.8	2440.50	400.00
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	2434.50	475.00
	2439.50	570.00
	2440.53	598.70
	2439.19	601.40
	2434.39	611.00
	2433.75	617.40
	2433.25	618.00
	2433.15	621.00
	2433.25	624.00
	2433.75	624.60
	2434.39	631.00
	2439.19	640.60
	2440.53	643.30
	2439.50	682.00
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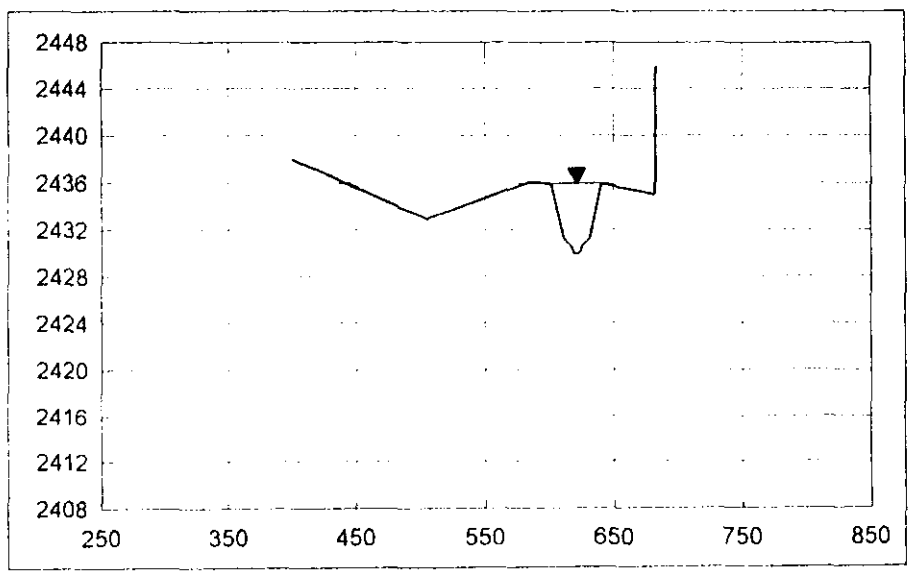
666.8	2440.50	400.00
	2439.50	474.00
	2434.50	475.00
	2439.50	570.00
	2438.76	598.70
	2437.42	601.40
	2432.62	611.00
	2431.98	617.40
	2431.48	618.00
	2431.42	621.00
	2431.48	624.00
	2431.98	624.60
	2432.62	631.00
	2437.42	640.60
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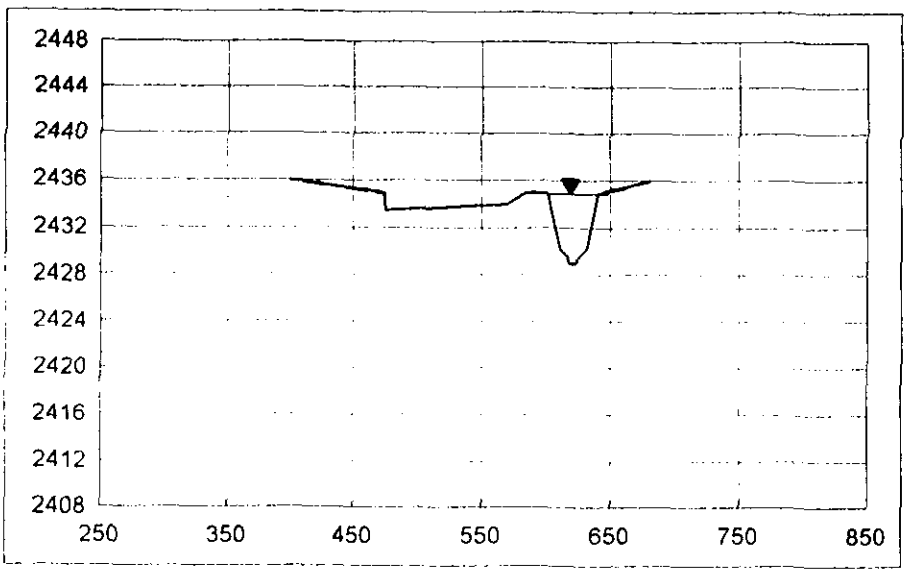
700.5	2439.00	400.00
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	2434.00	475.00
	2438.00	570.00
	2438.40	598.70
	2437.06	601.40
	2432.26	611.00
	2431.62	617.40
	2431.12	618.00
	2431.06	621.00
	2431.12	624.00
	2431.62	624.60
	2432.26	631.00
	2437.06	640.60
	2438.40	643.30
	2438.00	682.00
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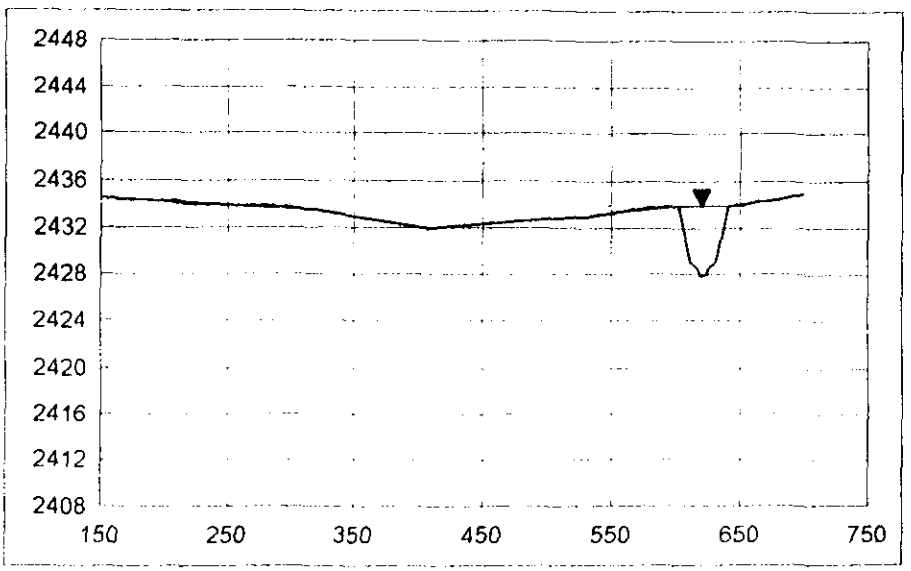
800.5	2438.00	400.00
	2433.00	505.00
	2436.10	585.00
	2436.00	601.40
	2431.20	611.00
	2430.56	617.40
	2430.06	618.00
	2430.00	621.00
	2430.06	624.00
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	2431.20	631.00
	2436.00	640.60
	2435.00	682.00
	2446.00	682.50



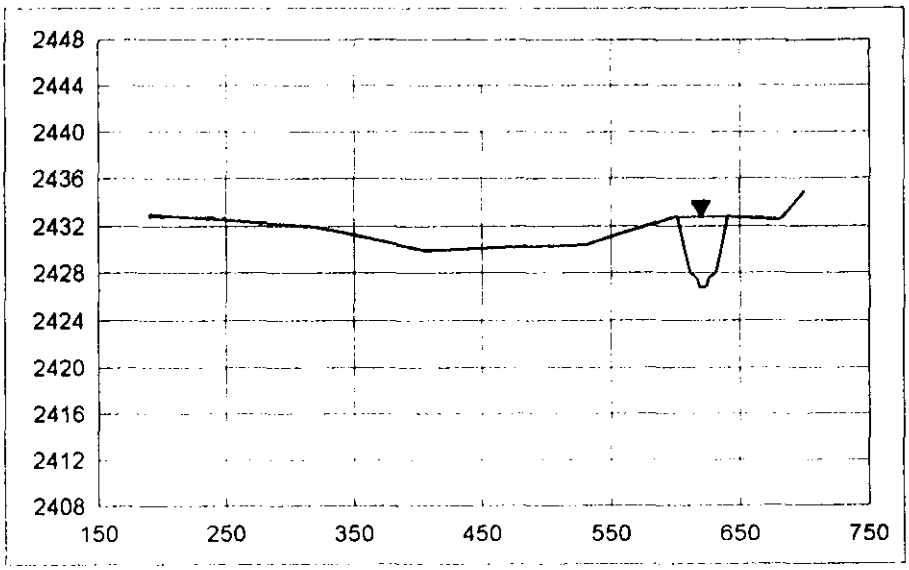
900.5	2436.00	400.00
	2435.00	474.00
	2433.50	475.00
	2434.00	570.00
	2435.00	585.00
	2434.94	601.40
	2430.14	611.00
	2429.50	617.40
	2429.00	618.00
	2428.94	621.00
	2429.00	624.00
	2429.50	624.60
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	2436.00	681.00



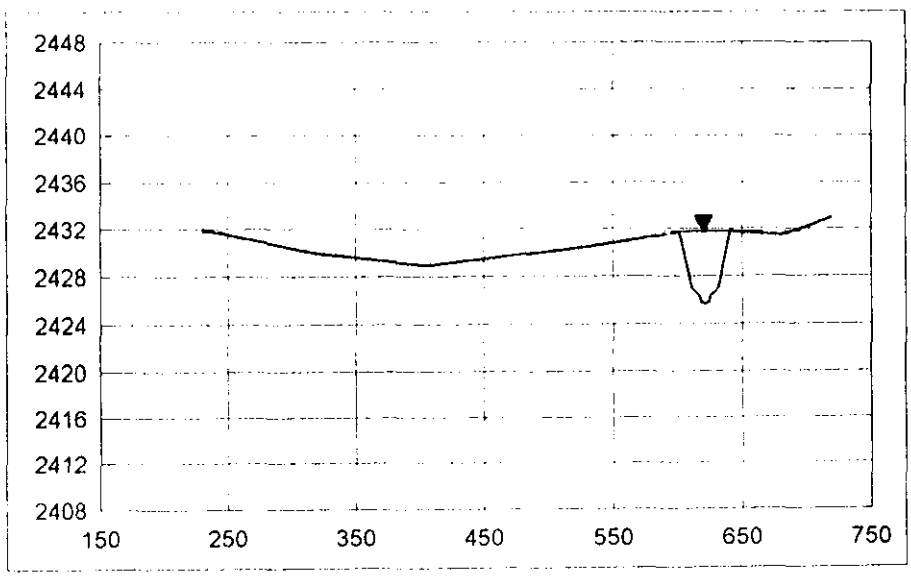
1000.5	2434.50	150.00
	2433.50	320.00
	2432.00	405.00
	2433.00	531.00
	2433.50	561.00
	2433.88	601.40
	2429.08	611.00
	2428.44	617.40
	2427.94	618.00
	2427.88	621.00
	2427.94	624.00
	2428.44	624.60
	2429.08	631.00
	2433.88	640.60
	2434.50	681.00
	2435.00	700.00



1100.6	2433.00	190.00
	2432.00	320.00
	2430.00	405.00
	2430.50	531.00
	2431.50	561.00
	2432.82	601.40
	2428.02	611.00
	2427.38	617.40
	2426.88	618.00
	2426.82	621.00
	2426.88	624.00
	2427.38	624.60
	2428.02	631.00
	2432.82	640.60
	2432.50	681.00
	2435.00	700.00

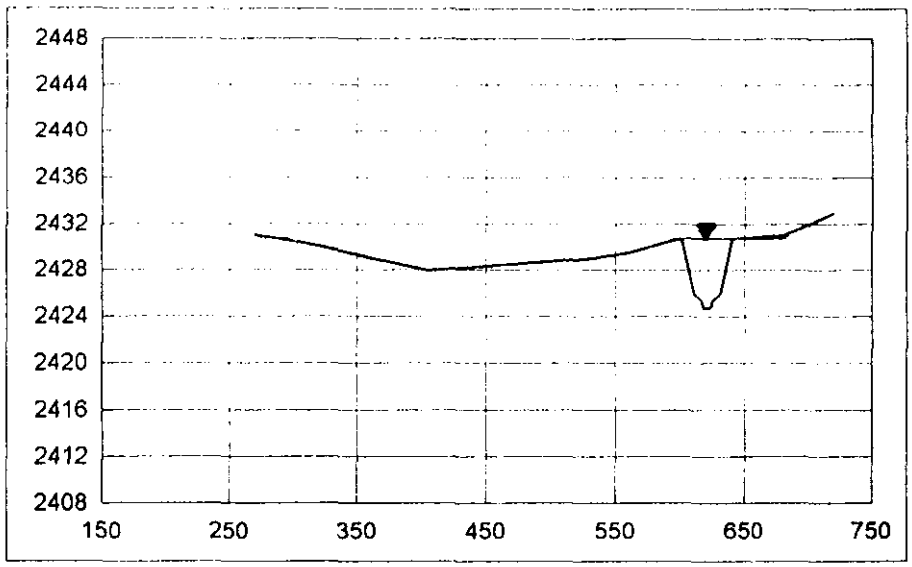


1200.4	2432.00	230.00
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	2429.00	405.00
	2430.50	531.00
	2431.00	561.00
	2431.76	601.40
	2426.96	611.00
	2426.32	617.40
	2425.82	618.00
	2425.76	621.00
	2425.82	624.00
	2426.32	624.60
	2426.96	631.00
	2431.80	640.60
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	2433.00	720.00



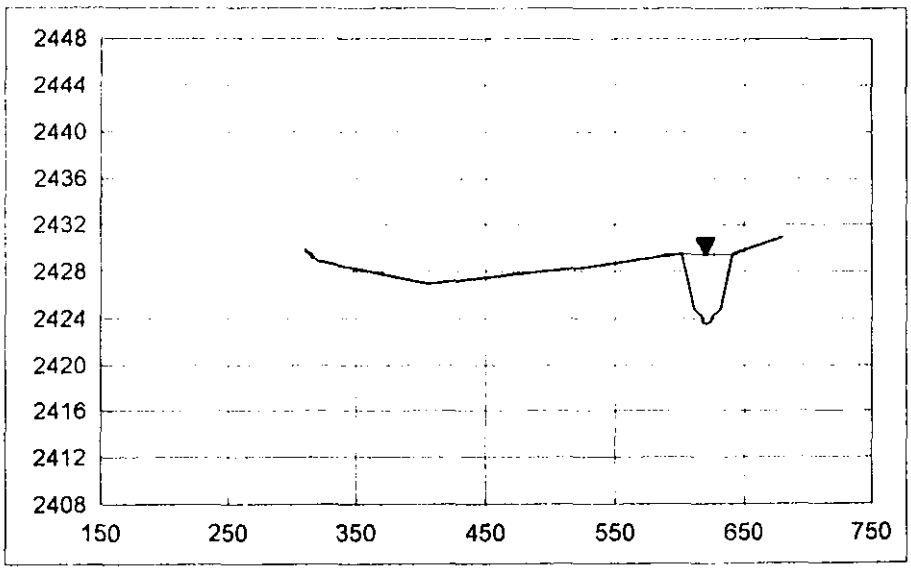
1300.5

2431.00	270.00
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2429.00	531.00
2429.50	561.00
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2425.90	611.00
2425.26	617.40
2424.76	618.00
2424.70	621.00
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2425.26	624.60
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2430.70	640.60
2431.00	681.00
2433.00	720.00

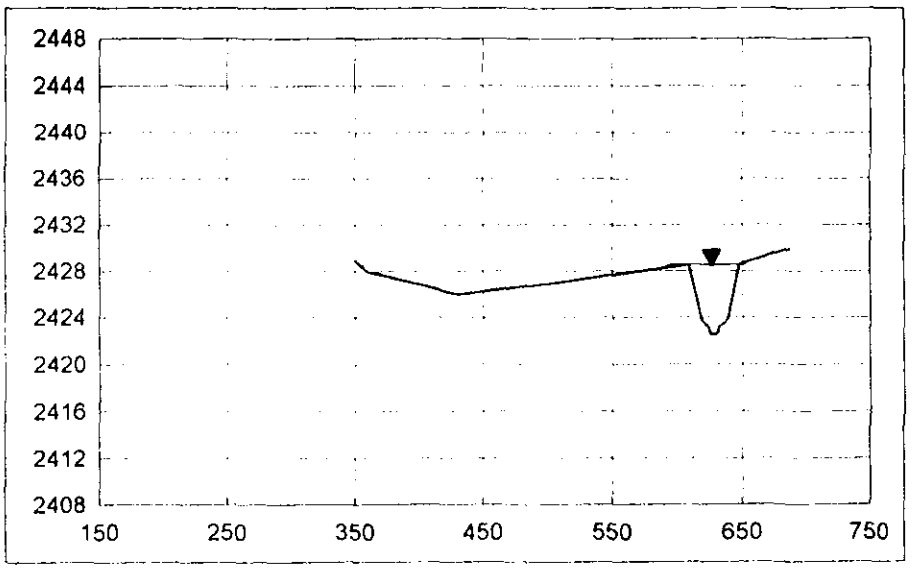


1400.4

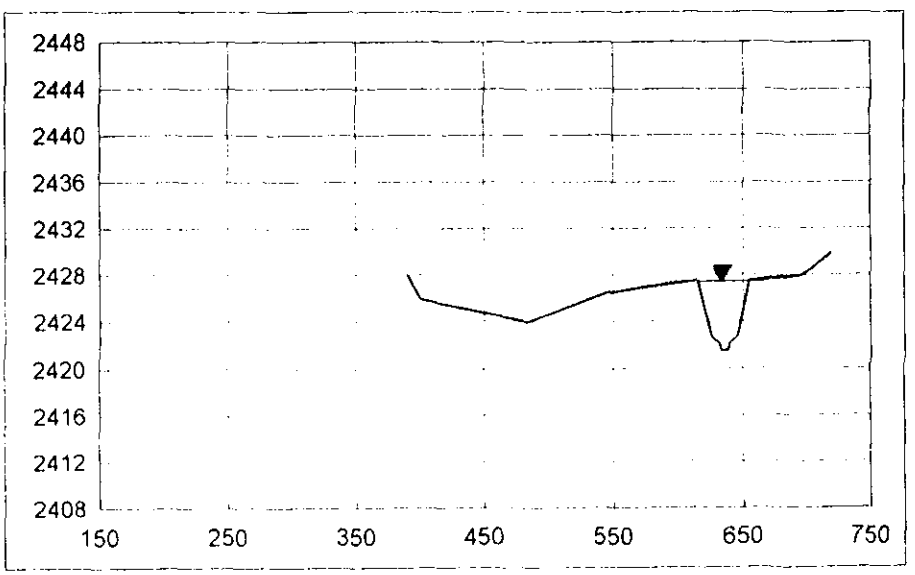
2430.00	310.00
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2428.50	531.00
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2424.84	611.00
2424.20	617.40
2423.70	618.00
2423.64	621.00
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2424.84	631.00
2429.64	640.60
2431.00	681.00



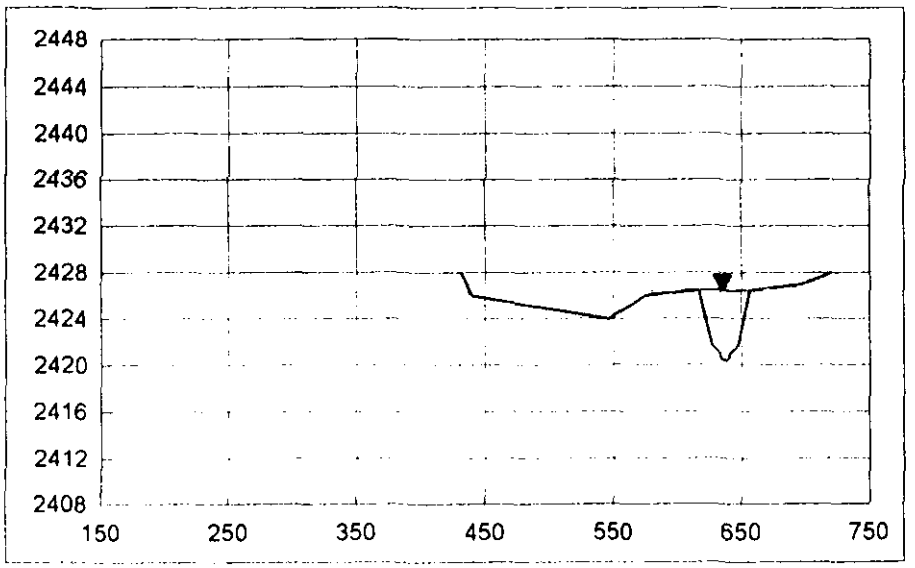
1500.5	2429.00	350.00
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	2426.00	430.00
	2427.50	538.00
	2428.00	568.00
	2428.58	608.40
	2423.78	618.00
	2423.14	624.40
	2422.64	625.00
	2422.58	628.00
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	2423.14	631.60
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	2430.00	688.00



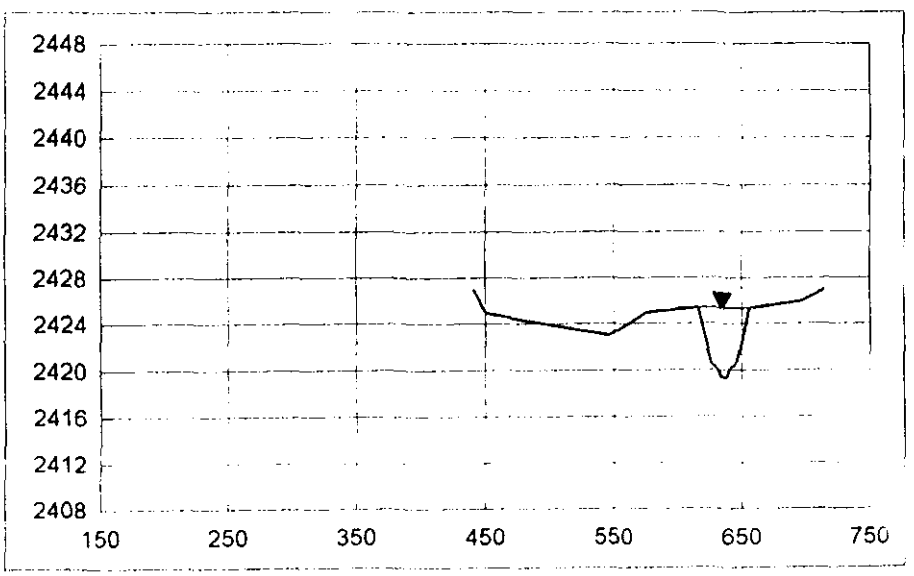
1600.5	2428.00	390.00
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	2424.00	483.00
	2426.50	545.00
	2427.00	575.00
	2427.52	615.40
	2422.72	625.00
	2422.08	631.40
	2421.58	632.00
	2421.52	635.00
	2421.58	638.00
	2422.08	638.60
	2422.72	645.00
	2427.52	654.60
	2428.00	696.00
	2430.00	720.00



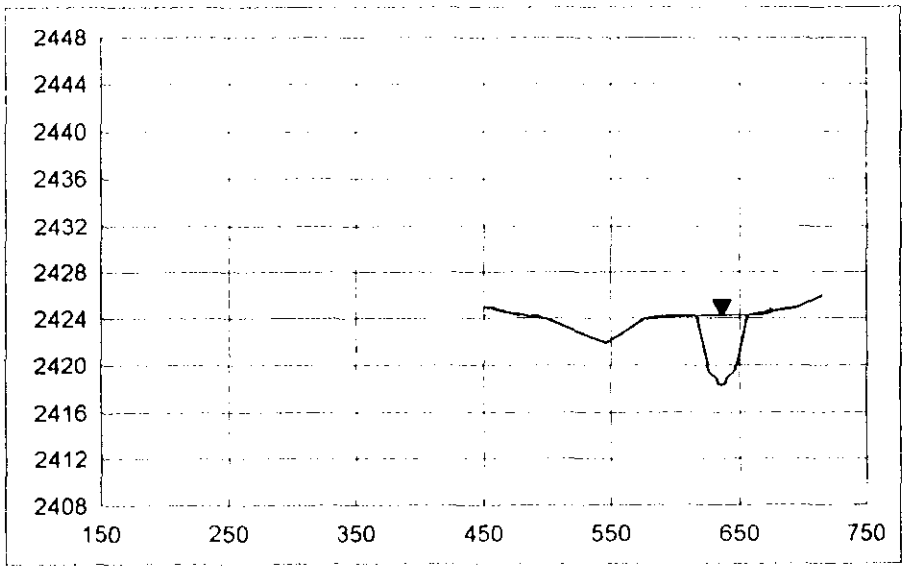
1700.9	2428.00	431.00
	2426.00	440.00
	2424.00	546.00
	2426.00	576.00
	2426.46	617.40
	2421.66	627.00
	2421.02	633.40
	2420.52	634.00
	2420.46	637.00
	2420.52	640.00
	2421.02	640.60
	2421.66	647.00
	2426.46	656.60
	2427.00	696.00
	2428.00	720.00



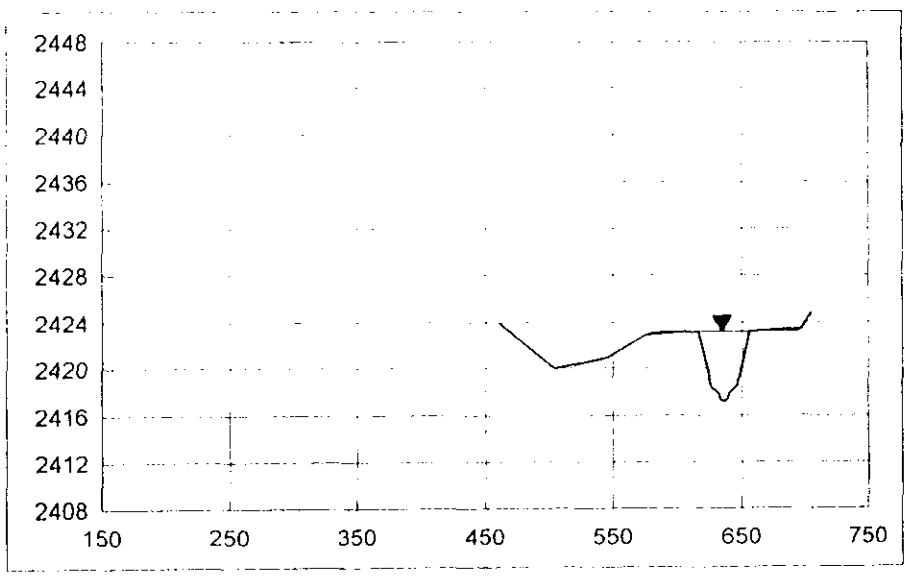
1800.9	2427.00	441.00
	2425.00	450.00
	2423.00	546.00
	2425.00	576.00
	2425.40	616.40
	2420.60	626.00
	2419.96	632.40
	2419.46	633.00
	2419.40	636.00
	2419.46	639.00
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	2427.00	715.00



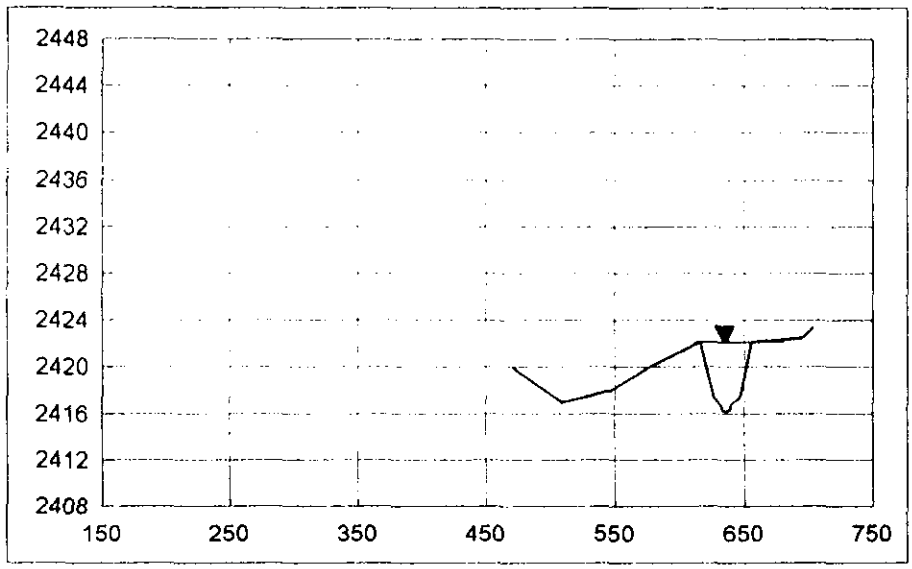
1900.8	2425.00	451.00
	2424.00	499.00
	2422.00	546.00
	2424.00	576.00
	2424.34	616.40
	2419.54	626.00
	2418.90	632.40
	2418.40	633.00
	2418.34	636.00
	2418.40	639.00
	2418.90	639.60
	2419.54	646.00
	2424.34	655.60
	2425.00	696.00
	2426.00	715.00



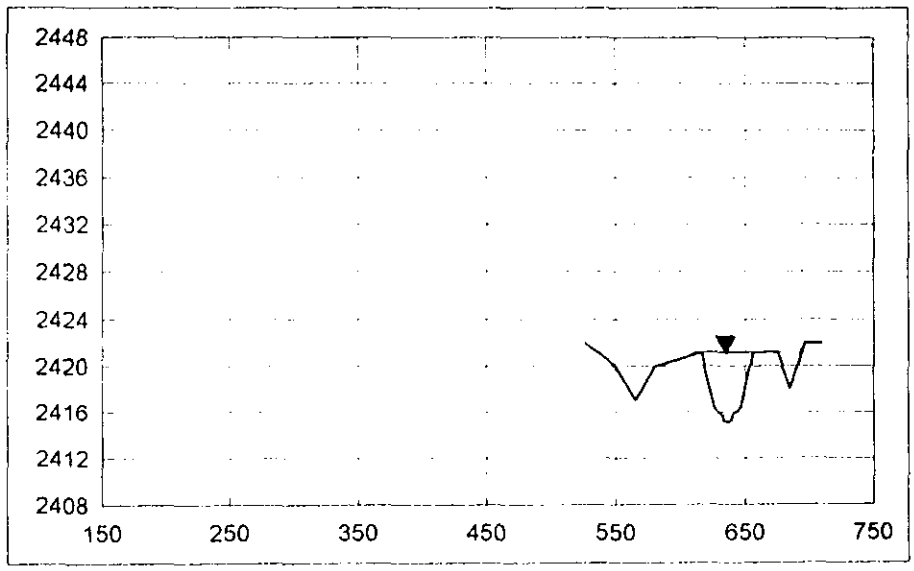
2000.8	2424.00	461.00
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	2421.00	546.00
	2423.00	576.00
	2423.28	616.40
	2418.48	626.00
	2417.84	632.40
	2417.34	633.00
	2417.28	636.00
	2417.34	639.00
	2417.84	639.60
	2418.48	646.00
	2423.28	655.60
	2423.50	696.00
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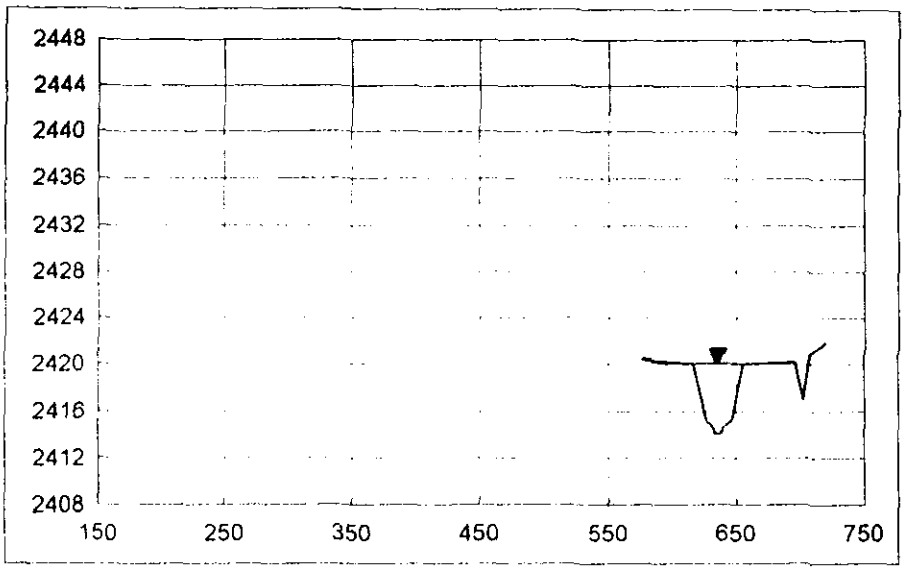
2100.8	2420.00	471.00
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	2420.00	576.00
	2422.22	616.40
	2417.42	626.00
	2416.78	632.40
	2416.28	633.00
	2416.22	636.00
	2416.28	639.00
	2416.78	639.60
	2417.42	646.00
	2422.22	655.60
	2422.50	696.00
	2423.50	705.00



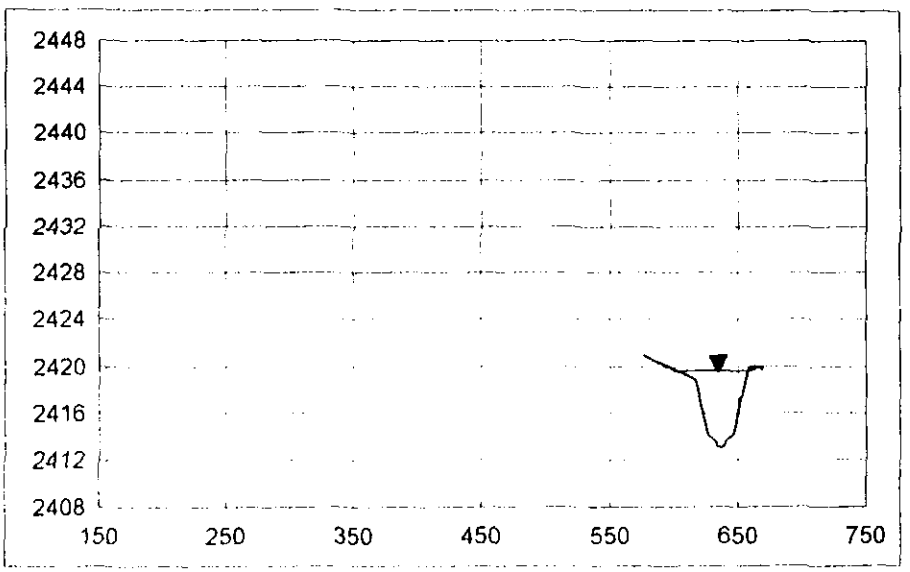
2200.7	2422.00	526.00
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	2420.00	580.00
	2421.16	616.40
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	2415.72	632.40
	2415.22	633.00
	2415.16	636.00
	2415.22	639.00
	2415.72	639.60
	2416.36	646.00
	2421.16	655.60
	2421.20	675.00
	2418.00	685.00
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	2422.00	710.00



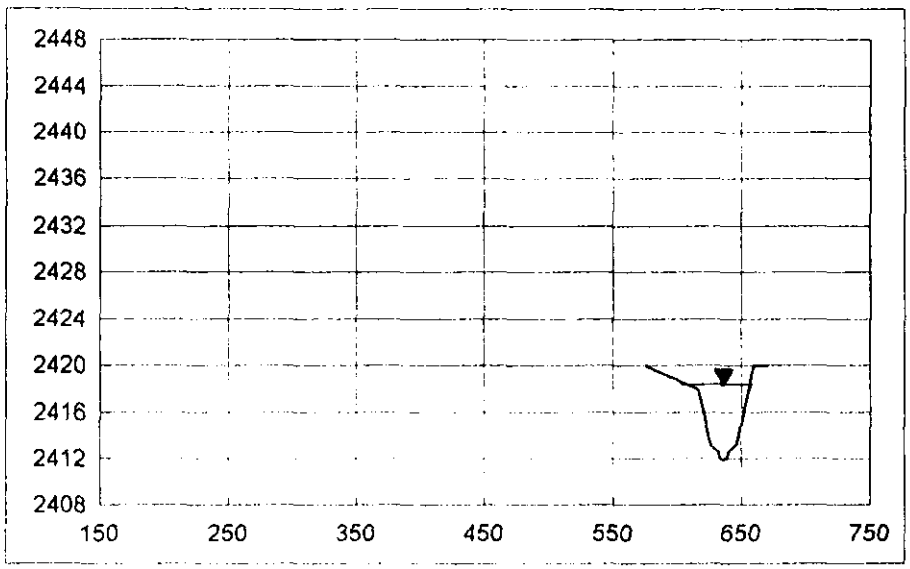
2300.7	2420.50	576.00
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	2414.66	632.40
	2414.16	633.00
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	2414.16	639.00
	2414.66	639.60
	2415.30	646.00
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	2421.00	708.00
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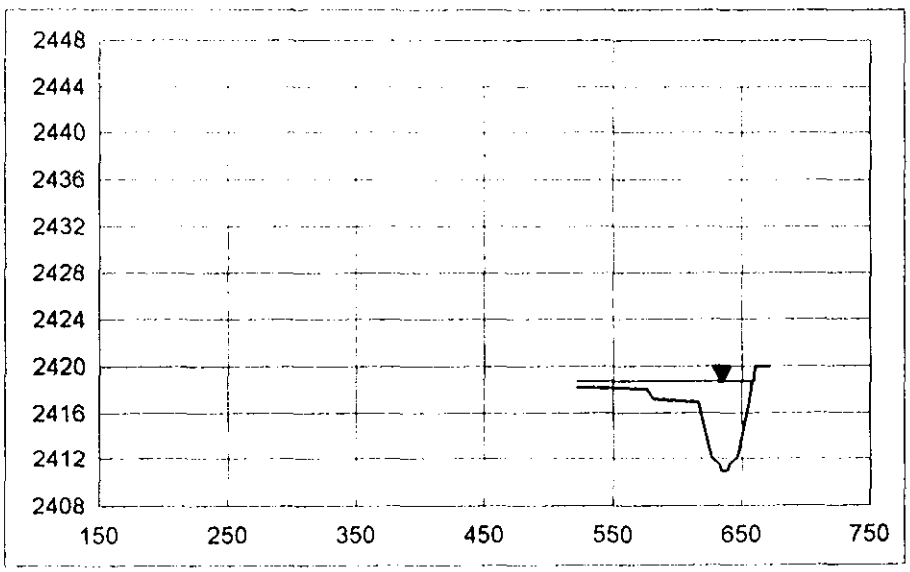
2400.7	2421.00	576.00
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	2413.60	632.40
	2413.10	633.00
	2413.04	636.00
	2413.10	639.00
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	2414.24	646.00
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	2420.00	658.00
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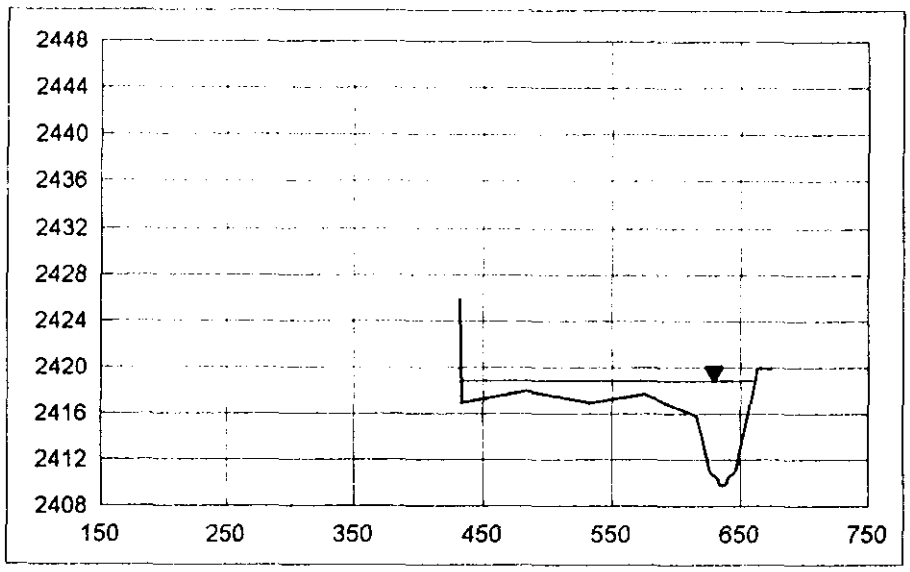
2500.7	2420.00	576.00
	2417.98	616.40
	2413.18	626.00
	2412.54	632.40
	2412.04	633.00
	2411.98	636.00
	2412.04	639.00
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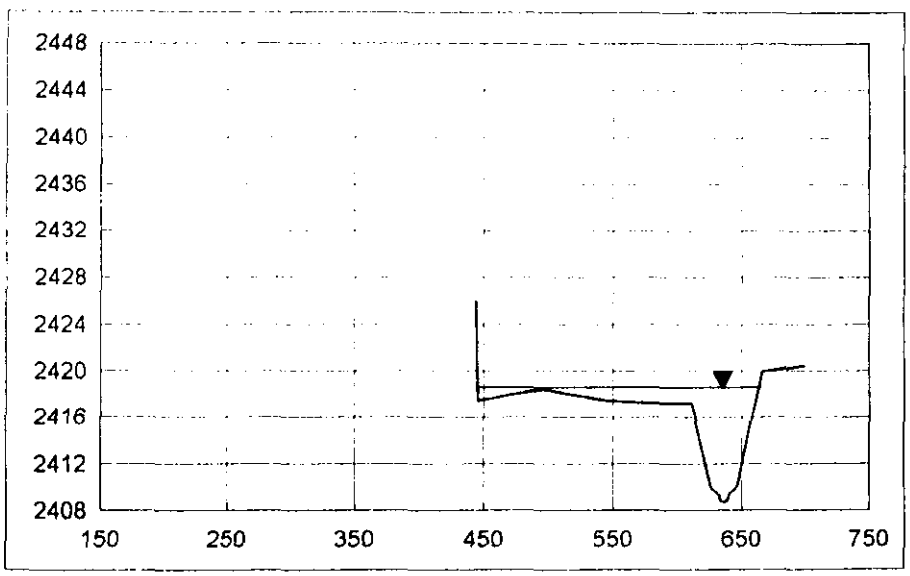
2600.7	2418.20	522.00
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	2417.20	581.00
	2416.92	616.40
	2412.12	626.00
	2411.48	632.40
	2410.98	633.00
	2410.92	636.00
	2410.98	639.00
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	2412.12	646.00
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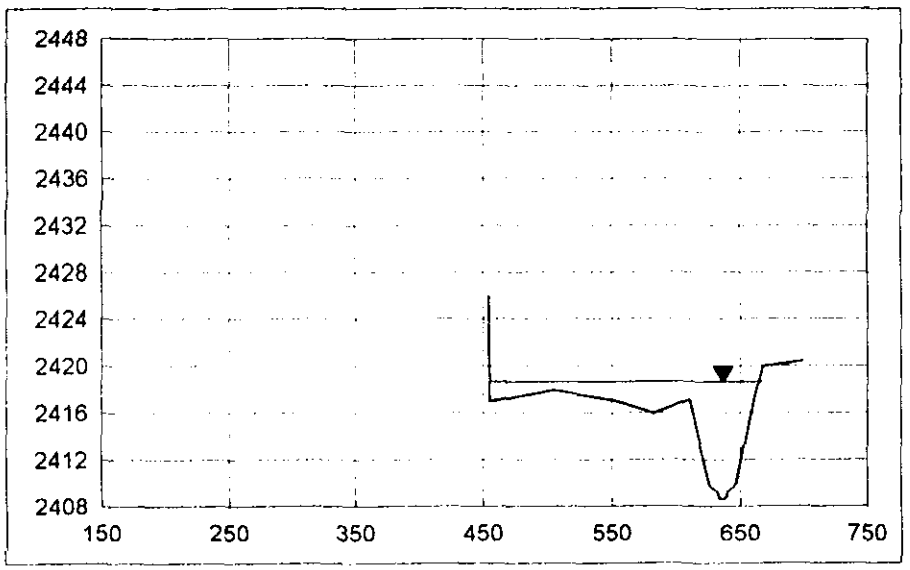
2700.6	2426.00	432.00
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	2417.00	533.00
	2417.70	575.00
	2415.86	616.40
	2411.06	626.00
	2410.42	632.40
	2409.92	633.00
	2409.86	636.00
	2409.92	639.00
	2410.42	639.60
	2411.06	646.00
	2415.86	655.60
	2420.00	663.00
	2420.00	675.00



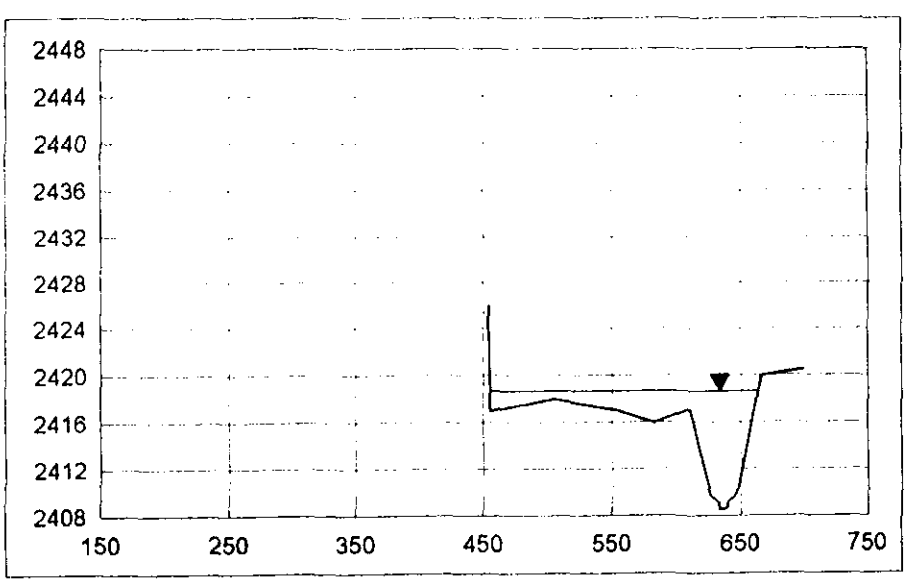
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	2418.50	495.00
	2417.50	545.00
	2417.30	578.00
	2417.30	611.40
	2416.14	613.70
	2414.80	616.40
	2410.00	626.00
	2409.36	632.40
	2408.86	633.00
	2408.80	636.00
	2408.86	639.00
	2409.36	639.60
	2410.00	646.00
	2414.80	655.60
	2416.14	658.30
	2417.30	660.60
	2420.00	666.00
	2420.50	700.00



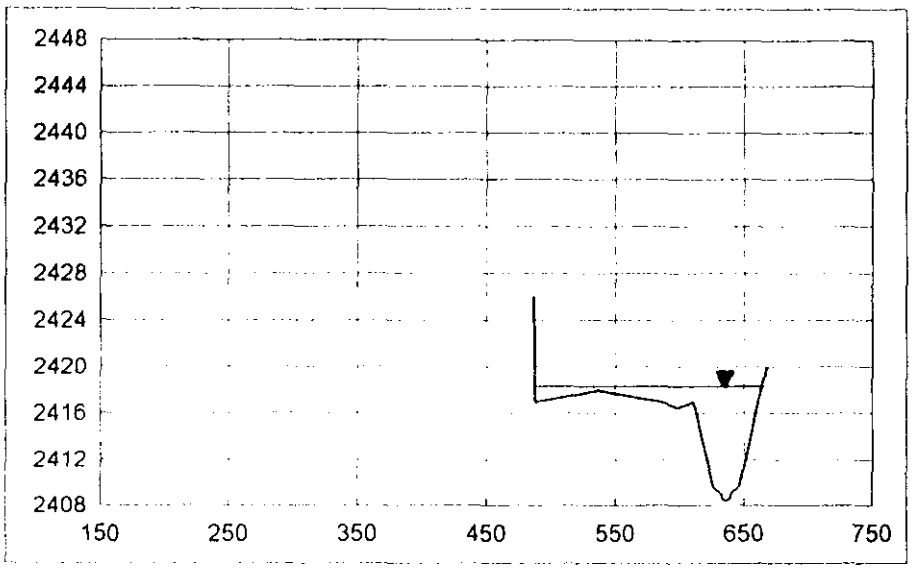
2900.7	2426.00	454.00
	2417.00	455.00
	2418.00	505.00
	2417.00	555.00
	2416.00	583.00
	2417.15	611.40
	2415.99	613.70
	2414.65	616.40
	2409.85	626.00
	2409.21	632.40
	2408.71	633.00
	2408.65	636.00
	2408.71	639.00
	2409.21	639.60
	2409.85	646.00
	2414.65	655.60
	2415.99	658.30
	2417.15	660.60
	2420.00	667.00
	2420.50	700.00



2946.5	2426.00	454.00
	2417.00	455.00
	2418.00	505.00
	2417.00	555.00
	2416.00	583.00
	2417.10	611.40
	2415.92	613.70
	2414.58	616.40
	2409.78	626.00
	2409.14	632.40
	2408.60	633.00
	2408.58	636.00
	2408.64	639.00
	2409.14	639.60
	2409.78	646.00
	2414.60	655.60
	2415.92	658.30
	2417.08	660.60
	2420.00	666.00
	2420.50	700.00



3001.8	2426.00	486.00
	2417.00	487.00
	2418.00	537.00
	2417.00	587.00
	2416.50	599.00
	2417.00	611.40
	2415.84	613.70
	2414.50	616.40
	2409.70	626.00
	2409.06	632.40
	2408.56	633.00
	2408.50	636.00
	2408.56	639.00
	2409.06	639.60
	2409.70	646.00
	2414.50	655.60
	2415.84	658.30
	2417.00	660.60
	2420.00	667.00



```
**************************************************
*  WATER SURFACE PROFILES                        *
*  VERSION OF SEPTEMBER 1988                     *
*  ERROR: 01.02.03.04                            *
*  UPDATED:  JUNE 1990                           *
*  RUN DATE    10JAN96    TIME   17:53:07        *
**************************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*           (916) 756-1104             *
****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX  XXXXX              XXXXXXX
```

END OF BANNER

FILE: RCHSUB - Subcritical run with overbank information.

THIS RUN EXECUTED 10JAN96 17:53:07

```
**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

 ERROR CORR - 01.02.03.04
 MODIFICATION -
**************************************************

T1      CCRFCD - Upper Flamingo Wash Detention Basin
T2      B&V
T3      SUBCRITICAL - OUTFALL CHANNEL

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0     2418.36     0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     -1                                             -1                         15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

QT       1      2579
NC   0.035    0.035    0.024      0.1        0.3
X1   3001.8       20   611.40   667.00       0.00     0.00     0.00
X3       10
GR   2426.0   486.00   2417.00  487.00   2418.00  537.00   2417.00  587.00   2416.50  599.00
GR   2417.0   611.40   2415.84  613.70   2414.50  616.40   2409.70  626.00   2409.06  632.40
GR   2408.6   633.00   2408.50  636.00   2408.56  639.00   2409.06  639.60   2409.70  646.00
GR   2414.5   655.60   2415.84  658.30   2417.00  660.60   2420.00  667.00   2420.50  700.00


X1   2946.5       20   611.40   666.00    39.50    71.12    55.31
X3       10
GR   2426.0   454.00   2417.00  455.00   2418.00  505.00   2417.00  555.00   2416.00  583.00
GR   2417.1   611.40   2415.92  613.70   2414.58  616.40   2409.78  626.00   2409.14  632.40
GR   2408.6   633.00   2408.58  636.00   2408.64  639.00   2409.14  639.60   2409.78  646.00
GR   2414.6   655.60   2415.92  658.30   2417.08  660.60   2420.00  666.00   2420.50  700.00


X1   2900.7       20   611.40   667.00    30.00    61.62    45.81
X3       10
GR   2426.0   454.00   2417.00  455.00   2418.00  505.00   2417.00  555.00   2416.00  583.00
GR   2417.2   611.40   2415.99  613.70   2414.65  616.40   2409.85  626.00   2409.21  632.40
GR   2408.7   633.00   2408.65  636.00   2408.71  639.00   2409.21  639.60   2409.85  646.00
GR   2414.7   655.60   2415.99  658.30   2417.15  660.60   2420.00  667.00   2420.50  700.00
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	2800.6	20	611.40	666.00	100.10	100.10	100.10			
X3	10									
GR	2426.0	444.00	2417.50	445.00	2418.50	495.00	2417.50	545.00	2417.30	578.00
GR	2417.3	611.40	2416.14	613.70	2414.80	616.40	2410.00	626.00	2409.36	632.40
GR	2408.9	633.00	2408.80	636.00	2408.86	639.00	2409.36	639.60	2410.00	646.00
GR	2414.8	655.60	2416.14	658.30	2417.30	660.60	2420.00	666.00	2420.50	700.00
X1	2700.6	16	616.40	663.00	99.95	99.95	99.95			
X3	10									
GR	2426.0	432.00	2417.00	433.00	2418.00	483.00	2417.00	533.00	2417.70	575.00
GR	2415.9	616.40	2411.06	626.00	2410.42	632.40	2409.92	633.00	2409.86	636.00
GR	2409.9	639.00	2410.42	639.60	2411.06	646.00	2415.86	655.60	2420.00	663.00
GR	2420.0	675.00								
X1	2500.7	14	616.40	660.00	99.93	99.93	99.93			
X3	10									
GR	2418.2	522.00	2418.10	576.00	2417.20	581.00	2416.92	616.40	2412.12	626.00
GR	2411.5	632.40	2410.98	633.00	2410.92	636.00	2410.98	639.00	2411.48	639.60
GR	2412.1	646.00	2416.92	655.60	2420.00	660.00	2420.00	672.00		
X1	2500.7	12	616.40	659.00	99.99	99.99	99.99			
X3	10									
X1	2420.0	576.00	2417.98	616.40	2413.18	626.00	2412.54	632.40	2412.04	633.00
	2412.0	636.00	2412.04	639.00	2412.54	639.60	2413.18	646.00	2417.98	655.60
GR	2420.0	659.00	2420.00	671.00						
X1	2400.7	12	616.40	658.00	99.97	99.97	99.97			
X3	10									
GR	2421.0	576.00	2419.04	616.40	2414.24	626.00	2413.60	632.40	2413.10	633.00
GR	2413.0	636.00	2413.10	639.00	2413.60	639.60	2414.24	646.00	2419.04	655.60
GR	2420.0	658.00	2420.00	670.00						
X1	2300.7	14	616.40	655.60	99.98	99.98	99.98			
X3	10									
GR	2420.5	576.00	2420.12	616.40	2415.30	626.00	2414.66	632.40	2414.16	633.00
GR	2414.1	636.00	2414.16	639.00	2414.66	639.60	2415.30	646.00	2420.12	655.60
GR	2420.3	696.00	2417.00	702.00	2421.00	708.00	2422.00	720.00		
X1	2200.7	17	616.40	655.60	100.00	100.00	100.00			
X3	10									
GR	2422.0	526.00	2420.00	550.00	2417.00	565.00	2420.00	580.00	2421.16	616.40
GR	2416.4	626.00	2415.72	632.40	2415.22	633.00	2415.16	636.00	2415.22	639.00
GR	2415.7	639.60	2416.36	646.00	2421.16	655.60	2421.20	675.00	2418.00	685.00
GR	2422.0	696.00	2422.00	710.00						

X1	2100.8	15	616.40	655.60	99.96	99.96	99.96			
X3	10									
GR	2420.0	471.00	2417.00	509.00	2418.00	546.00	2420.00	576.00	2422.22	616.40
GR	2417.4	626.00	2416.78	632.40	2416.28	633.00	2416.22	636.00	2416.28	639.00
GR	2416.8	639.60	2417.42	646.00	2422.22	655.60	2422.50	696.00	2423.50	705.00
X1	2000.8	15	616.40	655.60	99.94	99.94	99.94			
X3	10									
GR	2424.0	461.00	2420.00	504.00	2421.00	546.00	2423.00	576.00	2423.28	616.40
GR	2418.5	626.00	2417.84	632.40	2417.34	633.00	2417.28	636.00	2417.34	639.00
GR	2417.8	639.60	2418.48	646.00	2423.28	655.60	2423.50	696.00	2425.00	705.00
X1	1900.8	15	616.40	655.60	100.01	100.01	100.01			
X3	10									
GR	2425.0	451.00	2424.00	499.00	2422.00	546.00	2424.00	576.00	2424.34	616.40
GR	2419.5	626.00	2418.90	632.40	2418.40	633.00	2418.34	636.00	2418.40	639.00
GR	2418.9	639.60	2419.54	646.00	2424.34	655.60	2425.00	696.00	2426.00	715.00
X1	1800.9	15	616.40	655.60	99.92	99.92	99.92			
X3	10									
GR	2427.0	441.00	2425.00	450.00	2423.00	546.00	2425.00	576.00	2425.40	616.40
GR	2420.6	626.00	2419.96	632.40	2419.46	633.00	2419.40	636.00	2419.46	639.00
GR	2420.0	639.60	2420.60	646.00	2425.40	655.60	2426.00	696.00	2427.00	715.00
X1	1700.9	15	617.40	656.60	103.00	97.00	100.02			
X3	10									
GR	2428.0	431.00	2426.00	440.00	2424.00	546.00	2426.00	576.00	2426.46	617.40
GR	2421.7	627.00	2421.02	633.40	2420.52	634.00	2420.46	637.00	2420.52	640.00
GR	2421.0	640.60	2421.66	647.00	2426.46	656.60	2427.00	696.00	2428.00	720.00
X1	1600.5	16	615.40	654.60	105.00	95.86	100.43			
X3	10									
GR	2428.0	390.00	2426.00	400.00	2424.00	483.00	2426.50	545.00	2427.00	575.00
GR	2427.5	615.40	2422.72	625.00	2422.08	631.40	2421.58	632.00	2421.52	635.00
GR	2421.6	638.00	2422.08	638.60	2422.72	645.00	2427.52	654.60	2428.00	696.00
GR	2430.0	720.00								
X1	1500.5	15	608.40	647.60	105.00	95.00	100.01			
X3	10									
GR	2429.0	350.00	2428.00	360.00	2426.00	430.00	2427.50	538.00	2428.00	568.00
GR	2428.6	608.40	2423.78	618.00	2423.14	624.40	2422.64	625.00	2422.58	628.00
GR	2422.6	631.00	2423.14	631.60	2423.78	638.00	2428.58	647.60	2430.00	688.00

	1400.4	15	601.40	640.60	105.00	95.00	100.01			
X3	10									
GR	2430.0	310.00	2429.00	320.00	2427.00	405.00	2428.50	531.00	2429.00	561.00
GR	2429.6	601.40	2424.84	611.00	2424.20	617.40	2423.70	618.00	2423.64	621.00
GR	2423.7	624.00	2424.20	624.60	2424.84	631.00	2429.64	640.60	2431.00	681.00
X1	1300.5	16	601.40	640.60	99.89	99.89	99.89			
X3	10									
GR	2431.0	270.00	2430.00	320.00	2428.00	405.00	2429.00	531.00	2429.50	561.00
GR	2430.7	601.40	2425.90	611.00	2425.26	617.40	2424.76	618.00	2424.70	621.00
GR	2424.8	624.00	2425.26	624.60	2425.90	631.00	2430.70	640.60	2431.00	681.00
GR	2433.0	720.00								
X1	1200.4	16	601.40	640.60	100.12	100.12	100.12			
X3	10									
GR	2432.0	230.00	2430.00	320.00	2429.00	405.00	2430.50	531.00	2431.00	561.00
GR	2431.8	601.40	2426.96	611.00	2426.32	617.40	2425.82	618.00	2425.76	621.00
GR	2425.8	624.00	2426.32	624.60	2426.96	631.00	2431.80	640.60	2431.50	681.00
GR	2433.0	720.00								
X1	1100.6	16	601.40	640.60	99.88	99.88	99.88			
X3	10									
GR	2433.0	190.00	2432.00	320.00	2430.00	405.00	2430.50	531.00	2431.50	561.00
GR	2432.8	601.40	2428.02	611.00	2427.38	617.40	2426.88	618.00	2426.82	621.00
GR	2426.9	624.00	2427.38	624.60	2428.02	631.00	2432.82	640.60	2432.50	681.00
GR	2435.0	700.00								
X1	1000.5	16	601.40	640.60	100.05	100.05	100.05			
X3	10									
GR	2434.5	150.00	2433.50	320.00	2432.00	405.00	2433.00	531.00	2433.50	561.00
GR	2433.9	601.40	2429.08	611.00	2428.44	617.40	2427.94	618.00	2427.88	621.00
GR	2427.9	624.00	2428.44	624.60	2429.08	631.00	2433.88	640.60	2434.50	681.00
GR	2435.0	700.00								
X1	900.5	15	601.40	640.60	99.96	99.96	99.96			
X3	10									
GR	2436.0	400.00	2435.00	474.00	2433.50	475.00	2434.00	570.00	2435.00	585.00
GR	2434.9	601.40	2430.14	611.00	2429.50	617.40	2429.00	618.00	2428.94	621.00
GR	2429.0	624.00	2429.50	624.60	2430.14	631.00	2434.94	640.60	2436.00	681.00
X1	800.5	15	601.40	640.60	100.06	100.06	100.06			
X3	10									
GR	2438.0	400.00	2436.00	475.00	2433.00	505.00	2436.10	585.00	2436.00	601.40
GR	2431.2	611.00	2430.56	617.40	2430.06	618.00	2430.00	621.00	2430.06	624.00
GR	2430.6	624.60	2431.20	631.00	2436.00	640.60	2435.00	682.00	2446.00	682.50

X1	700.5	17	598.70	643.30	99.96	99.96	99.96			
X3	10									
GR	2439.0	400.00	2438.00	474.00	2434.00	475.00	2438.00	570.00	2438.40	598.70
GR	2437.1	601.40	2432.26	611.00	2431.62	617.40	2431.12	618.00	2431.06	621.00
GR	2431.1	624.00	2431.62	624.60	2432.26	631.00	2437.06	640.60	2438.40	643.30
GR	2438.0	682.00	2448.00	682.50						
X1	666.8	17	598.70	643.30	33.71	33.71	33.71			
X3	10									
GR	2440.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2438.76	598.70
GR	2437.4	601.40	2432.62	611.00	2431.98	617.40	2431.48	618.00	2431.42	621.00
GR	2431.5	624.00	2431.98	624.60	2432.62	631.00	2437.42	640.60	2438.76	643.30
GR	2438.3	682.00	2448.00	682.50						
X1	665.8	17	598.70	643.30	1.00	1.00	1.00			
X3	10									
GR	2440.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2440.53	598.70
GR	2439.2	601.40	2434.39	611.00	2433.75	617.40	2433.25	618.00	2433.19	621.00
GR	2433.3	624.00	2433.75	624.60	2434.39	631.00	2439.19	640.60	2440.53	643.30
GR	2439.5	682.00	2448.00	682.50						
X1	600.3	17	598.70	643.30	65.53	65.53	65.53			
X3	10									
GR	2441.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2440.72	598.70
GR	2439.4	601.40	2434.59	611.00	2433.95	617.40	2433.45	618.00	2433.39	621.00
GR	2433.5	624.00	2433.95	624.60	2434.59	631.00	2439.39	640.60	2440.72	643.30
GR	2439.5	682.00	2448.00	682.50						
X1	500.3	17	600.20	644.80	99.98	99.98	99.98			
X3	10									
GR	2442.0	400.00	2440.00	474.00	2435.00	475.00	2440.00	570.00	2441.02	600.20
GR	2439.7	602.90	2434.89	612.50	2434.25	618.90	2433.75	619.50	2433.69	622.50
GR	2433.8	625.50	2434.25	626.10	2434.89	632.50	2439.69	642.10	2441.02	644.80
GR	2440.0	682.00	2448.00	682.50						
X1	400.3	19	602.70	647.30	100.00	100.00	100.00			
X3	10									
GR	2443.0	400.00	2441.50	495.00	2437.00	500.00	2441.00	570.00	2441.32	602.70
GR	2440.0	605.40	2435.19	615.00	2434.55	621.40	2434.05	622.00	2433.99	625.00
GR	2434.1	628.00	2434.55	628.60	2435.19	635.00	2439.99	644.60	2441.32	647.30
GR	2441.0	697.00	2440.50	745.00	2440.00	800.00	2443.00	850.00		

	300.3	17	604.20	648.80	100.06	100.06	100.06			
	10									
GR	2442.5	477.00	2442.00	527.00	2441.62	604.20	2440.29	606.90	2435.49	616.50
GR	2434.9	622.90	2434.35	623.50	2434.29	626.50	2434.35	629.50	2434.85	630.10
GR	2435.5	636.50	2440.29	646.10	2441.62	648.80	2441.00	697.00	2440.50	745.00
GR	2440.0	800.00	2443.00	850.00						
X1	200.3	15	608.70	653.30	101.00	98.90	99.95			
X3	10									
GR	2443.0	464.00	2442.50	514.00	2441.92	608.70	2440.59	611.40	2435.79	621.00
GR	2435.2	627.40	2434.65	628.00	2434.59	631.00	2434.65	634.00	2435.15	634.60
GR	2435.8	641.00	2440.59	650.60	2441.92	653.30	2442.50	771.00	2443.00	800.00
X1	146.4	15	613.70	658.30	53.86	53.86	53.86			
X3	10									
GR	2443.0	400.00	2442.50	501.00	2442.08	613.70	2440.75	616.40	2435.95	626.00
GR	2435.3	632.40	2434.81	633.00	2434.75	636.00	2434.81	639.00	2435.31	639.60
GR	2436.0	646.00	2440.75	655.60	2442.08	658.30	2442.50	771.00	2443.00	800.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 3001.800

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.00 ELREA= 2420.00

3001.800	9.86	2418.36	2415.79	2418.36	2419.09	.73	.00	.00	2417.00
2579.0	196.8	2382.2	.0	125.4	333.6	.0	.0	.0	2420.00
.00	1.57	7.14	.00	.035	.024	.000	.000	2408.50	486.85
.001239	0.	0.	0.	0	7	0	.00	176.65	663.50

FLOW DISTRIBUTION FOR SECNO= 3001.80 CWSEL= 2418.36

STA=	487.	537.	587.	599.	611.	667.
PER Q=	2.3	2.3	1.5	1.6	92.4	
AREA=	43.1	43.0	19.3	20.0	333.6	
VEL=	1.3	1.4	2.1	2.1	7.1	
DEPTH=	.9	.9	1.6	1.6	6.4	

*SECNO 2946.500

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.10 ELREA= 2420.00

2946.500	10.08	2418.66	2415.90	.00	2419.17	.52	.06	.02	2417.10
2579.0	421.1	2157.9	.0	236.7	344.8	.0	.6	.2	2420.00
.00	1.78	6.26	.00	.035	.024	.000	.000	2408.58	454.82
.000914	40.	55.	71.	2	8	0	.00	208.71	663.52

FLOW DISTRIBUTION FOR SECNO= 2946.50 CWSEL= 2418.66

STA=	455.	505.	555.	583.	611.	666.
PER Q=	3.2	3.2	5.0	4.9	83.7	
AREA=	58.2	58.1	60.5	60.0	344.8	
VEL=	1.4	1.4	2.1	2.1	6.3	
DEPTH=	1.2	1.2	2.2	2.1	6.6	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 2900.700

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2417.20 ELREA= 2420.00

2900.700	10.05	2418.70	2415.96	.00	2419.21	.51	.04	.00	2417.20
2579.0	437.1	2141.9	.0	242.2	343.7	.0	1.1	.4	2420.00
.00	1.80	6.23	.00	.035	.024	.000	.000	2408.65	454.81
.000922	30.	46.	62.	0	11	0	.00	209.28	664.09

FLOW DISTRIBUTION FOR SECNO= 2900.70 CWSEL= 2418.70

STA=	455.	505.	555.	583.	611.	667.
PER Q=	3.4	3.4	5.2	4.9	83.1	
AREA=	60.4	60.2	61.7	59.8	343.7	
VEL=	1.5	1.5	2.2	2.1	6.2	
DEPTH=	1.2	1.2	2.2	2.1	6.5	

#SECNO 2800.600

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2417.30 ELREA= 2420.00

2800.600	9.87	2418.67	2416.11	.00	2419.37	.70	.10	.06	2417.30
2579.0	231.7	2347.3	.0	155.5	334.3	.0	2.4	.8	2420.00
.01	1.49	7.02	.00	.035	.024	.000	.000	2408.80	444.86
.001191	100.	100.	100.	2	11	0	.00	218.49	663.35

FLOW DISTRIBUTION FOR SECNO= 2800.60 CWSEL= 2418.67

STA=	445.	495.	545.	578.	611.	666.
PER Q=	1.5	1.5	2.8	3.2	91.0	
AREA=	33.7	33.7	42.1	45.9	334.3	
VEL=	1.1	1.1	1.7	1.8	7.0	
DEPTH=	.7	.7	1.3	1.4	6.4	

#SECNO 2700.600

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2415.90 ELREA= 2420.00

2700.600	9.05	2418.91	2418.11	.00	2419.50	.60	.12	.01	2415.90
2579.0	605.0	1974.0	.0	294.2	282.0	.0	3.6	1.4	2420.00
.01	2.06	7.00	.00	.035	.024	.000	.000	2409.86	432.79
.001211	100.	100.	100.	2	9	0	.00	228.27	661.05

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 2700.60 CWSEL= 2418.91

STA=	433.	483.	533.	575.	616.	663.
PER Q=	5.1	5.1	5.1	8.2	76.5	
AREA=	70.7	70.5	65.6	87.4	282.0	
VEL=	1.9	1.9	2.0	2.4	7.0	
DEPTH=	1.4	1.4	1.6	2.1	6.3	

*SECNO 2600.700
3280 CROSS SECTION 2600.70 EXTENDED .54 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2416.92 ELREA= 2420.00

2600.700	7.82	2418.74	2418.74	.00	2420.19	1.45	.18	.26	2416.92
2579.0	264.1	2314.9	.0	96.6	228.0	.0	4.6	1.8	2420.00
.02	2.73	10.15	.00	.035	.024	.000	.000	2410.92	522.00
.003097	100.	100.	100.	0	12	0	.00	136.20	658.20

FLOW DISTRIBUTION FOR SECNO= 2600.70 CWSEL= 2418.74

STA=	522.	576.	581.	616.	660.
PER Q=	2.0	.5	7.7	89.8	
AREA=	31.8	5.4	59.4	228.0	
VEL=	1.6	2.5	3.3	10.2	
DEPTH=	.6	1.1	1.7	5.5	

*SECNO 2500.700

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.98 ELREA= 2420.00

2500.700	7.44	2419.44	2419.44	.00	2421.58	2.14	.37	.21	2417.98
2579.0	49.8	2529.2	.0	21.4	213.3	.0	5.3	2.0	2420.00
.02	2.33	11.86	.00	.035	.024	.000	.000	2412.00	587.15
.004570	100.	100.	100.	0	8	0	.00	70.91	658.06

FLOW DISTRIBUTION FOR SECNO= 2500.70 CWSEL= 2419.44

STA=	587.	616.	659.
PER Q=	1.9	98.1	
AREA=	21.4	213.3	
VEL=	2.3	11.9	
DEPTH=	.7	5.1	

*SECNO 2400.700
3280 CROSS SECTION 2400.70 EXTENDED .58 FEET

[illegible]85 MINIMUM SPECIFIC ENERGY
[illegible]0 CRITICAL DEPTH ASSUMED

2400.700	7.58	2420.58	2420.58	.00	2422.60	2.01	.44	.01	2419.04
2579.0	56.7	2509.3	13.0	24.5	217.4	7.0	5.8	2.2	2420.00
.02	2.31	11.54	1.86	.035	.024	.035	.000	2413.00	584.60
.004188	100.	100.	100.	0	8	0	.00	85.40	670.00

FLOW DISTRIBUTION FOR SECNO= 2400.70 CWSEL= 2420.58

STA=	585.	616.	658.	670.
PER Q=	2.2	97.3	.5	
AREA=	24.5	217.4	7.0	
VEL=	2.3	11.5	1.9	
DEPTH=	.8	5.2	.6	

*SECNO 2300.700
3280 CROSS SECTION 2300.70 EXTENDED 1.48 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

2300.700	7.88	2421.98	2421.55	.00	2422.99	1.01	.29	.10	2420.12
2579.0	183.6	2035.4	360.0	67.4	227.7	115.0	6.6	2.5	2420.12
.03	2.72	8.94	3.13	.035	.024	.035	.000	2414.10	576.00
.002182	100.	100.	100.	4	8	0	.00	143.74	719.74

FLOW DISTRIBUTION FOR SECNO= 2300.70 CWSEL= 2421.98

STA=	576.	616.	656.	696.	702.	708.	720.
PER Q=	7.1	78.9	8.9	3.1	2.5	.3	
AREA=	67.4	227.7	71.4	20.0	17.9	5.7	
VEL=	2.7	8.9	2.9	4.0	3.6	1.2	
DEPTH=	1.7	5.8	1.8	3.3	3.0	.5	

*SECNO 2200.700
3280 CROSS SECTION 2200.70 EXTENDED .72 FEET

3301 HV CHANGED MORE THAN HVINS

2200.700	7.56	2422.72	2421.53	.00	2423.22	.50	.17	.05	2421.16
2579.0	819.2	1491.9	267.9	245.4	215.0	100.9	7.7	2.8	2421.16
.03	3.34	6.94	2.66	.035	.024	.035	.000	2415.16	526.00
.001417	100.	100.	100.	3	15	0	.00	184.00	710.00

FLOW DISTRIBUTION FOR SECNO= 2200.70 CWSEL= 2422.72

STA=	526.	550.	565.	580.	616.	656.	675.	685.	696.	710.
PER Q=	3.6	10.1	10.1	8.0	57.8	2.5	4.0	3.5	.5	
AREA=	41.2	63.2	63.2	77.8	215.0	29.8	31.2	29.9	10.0	
VEL=	2.2	4.1	4.1	2.7	6.9	2.1	3.3	3.0	1.2	
DEPTH=	1.7	4.2	4.2	2.1	5.5	1.5	3.1	2.7	.7	

*SECNO 2100.800
3280 CROSS SECTION 2100.80 EXTENDED 3.16 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.48

2100.800	6.94	2423.16	2422.27	.00	2423.34	.18	.09	.03	2422.22
2579.0	1718.1	829.6	31.3	594.4	191.3	34.4	9.3	3.3	2422.22
.04	2.89	4.34	.91	.035	.024	.035	.000	2416.22	471.00
.000648	100.	100.	100.	2	17	0	.00	230.96	701.96

FLOW DISTRIBUTION FOR SECNO= 2100.80 CWSEL= 2423.16

STA=	471.	509.	546.	576.	616.	656.	696.	702.
PER Q=	19.6	27.9	13.5	5.6	32.2	1.2	.0	
AREA=	177.2	209.5	124.9	82.9	191.3	32.4	2.0	
VEL=	2.9	3.4	2.8	1.7	4.3	.9	.5	
DEPTH=	4.7	5.7	4.2	2.1	4.9	.8	.3	

#SECNO 2000.800

3301 HV CHANGED MORE THAN HVINS

3735 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2000.800	6.15	2423.43	2423.43	.00	2424.37	.94	.13	.23	2423.28
2579.0	1064.0	1514.1	.9	240.5	160.0	2.0	10.7	3.8	2423.28
.04	4.42	9.46	.47	.035	.024	.035	.000	2417.28	467.16
.003908	100.	100.	100.	0	10	0	.00	215.43	682.59

FLOW DISTRIBUTION FOR SECNO= 2000.80 CWSEL= 2423.43

STA=	467.	504.	546.	576.	616.	656.	683.
PER Q=	9.3	25.9	5.6	.5	58.7	.0	
AREA=	63.1	122.9	42.8	11.6	160.0	2.0	
VEL=	3.8	5.4	3.4	1.2	9.5	.5	
DEPTH=	1.7	2.9	1.4	.3	4.1	.1	

#SECNO 1900.800
3280 CROSS SECTION 1900.80 EXTENDED .16 FEET

7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

1900.800	6.82	2425.16	2425.16	.00	2426.13	.97	.35	.01	2424.34
2579.0	808.3	1741.1	29.6	238.7	186.9	20.2	11.6	4.4	2424.34
.05	3.39	9.32	1.46	.035	.024	.035	.000	2418.34	451.00
.003083	100.	100.	100.	0	8	0	.00	248.13	699.13

FLOW DISTRIBUTION FOR SECNO= 1900.80 CWSEL= 2425.16

STA=	451.	499.	546.	576.	616.	656.	696.	699.
PER Q=	2.2	15.6	9.9	3.7	67.5	1.1	.0	
AREA=	31.9	101.7	64.9	40.2	186.9	20.0	.3	
VEL=	1.8	3.9	3.9	2.3	9.3	1.5	.4	
DEPTH=	.7	2.2	2.2	1.0	4.8	.5	.1	

#SECNO 1800.900
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1800.900	6.54	2425.94	2425.94	.00	2426.81	.87	.31	.01	2425.40
2579.0	973.1	1596.2	9.6	275.5	175.1	9.6	12.7	4.9	2425.40
.05	3.53	9.12	1.00	.035	.024	.035	.000	2419.40	445.79
.003222	100.	100.	100.	0	10	0	.00	245.84	691.63

FLOW DISTRIBUTION FOR SECNO= 1800.90 CWSEL= 2425.94

STA=	446.	450.	546.	576.	616.	656.	692.
PER Q=	.1	27.0	8.4	2.3	61.9	.4	
AREA=	2.0	185.8	58.1	29.7	175.1	9.6	
VEL=	1.4	3.7	3.7	2.0	9.1	1.0	
DEPTH=	.5	1.9	1.9	.7	4.5	.3	

#SECNO 1700.900
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1700.900	6.45	2426.91	2426.91	.00	2427.75	.84	.33	.00	2426.46
2579.0	1021.6	1550.8	6.6	289.7	171.6	7.4	13.8	5.5	2426.46
.05	3.53	9.04	.89	.035	.024	.035	.000	2420.46	435.91
.003246	103.	100.	97.	0	6	0	.00	253.48	689.39

SECNO	DEPTH	CWSEL	CRITWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1700.90 CWSEL= 2426.91

STA=	436.	440.	546.	576.	617.	657.	689.
PER Q=	.1	29.2	8.3	2.0	60.1	.3	
AREA=	1.9	202.4	57.3	28.1	171.6	7.4	
VEL=	1.4	3.7	3.7	1.9	9.0	.9	
DEPTH=	.5	1.9	1.9	.7	4.4	.2	

*SECNO 1600.500

1600.500	6.08	2427.60	2427.51	.00	2428.07	.47	.28	.04	2427.50
2579.0	1438.3	1140.6	.1	407.1	157.4	.3	15.0	6.1	2427.52
.06	3.53	7.25	.24	.035	.024	.035	.000	2421.52	392.01
.002344	105.	100.	96.	2	19	0	.00	269.33	661.34

FLOW DISTRIBUTION FOR SECNO= 1600.50 CWSEL= 2427.60

STA=	392.	400.	483.	545.	575.	615.	655.	661.
PER Q=	.4	32.5	20.5	1.8	.6	44.2	.0	
AREA=	6.4	215.6	145.6	25.4	14.1	157.4	.3	
VEL=	1.7	3.9	3.6	1.8	1.0	7.2	.2	
DEPTH=	.8	2.6	2.3	.8	.3	4.0	.0	

*SECNO 1500.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1500.500	6.05	2428.63	2428.63	.00	2429.32	.69	.29	.07	2428.60
2579.0	1231.1	1347.9	.0	359.9	156.4	.0	16.3	6.8	2428.58
.06	3.42	8.62	.02	.035	.024	.035	.000	2422.58	353.66
.003352	105.	100.	95.	0	7	0	.00	295.48	649.14

FLOW DISTRIBUTION FOR SECNO= 1500.50 CWSEL= 2428.63

STA=	354.	360.	430.	538.	568.	608.	648.
PER Q=	.1	15.1	29.6	2.3	.6	52.3	
AREA=	2.0	114.4	203.5	26.5	13.5	156.4	
VEL=	1.1	3.4	3.7	2.3	1.2	8.6	
DEPTH=	.3	1.6	1.9	.9	.3	4.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1400.400
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2429.60 ELREA= 2429.64

1400.400	6.00	2429.64	2429.64	.00	2430.19	.55	.32	.01	2429.60
2579.0	1348.9	1230.1	.0	419.6	154.4	.0	17.6	7.5	2429.64
.07	3.21	7.97	.00	.035	.024	.000	.000	2423.64	313.61
.002906	105.	100.	95.	0	7	0	.00	326.98	640.60

FLOW DISTRIBUTION FOR SECNO= 1400.40 CWSEL= 2429.64

STA=	314.	320.	405.	531.	561.	601.	641.
PER Q=	.1	17.2	32.3	2.2	.6	47.7	
AREA=	2.0	139.3	238.0	26.7	13.7	154.4	
VEL=	1.1	3.2	3.5	2.1	1.1	8.0	
DEPTH=	.3	1.6	1.9	.9	.3	3.9	

#SECNO 1300.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1300.500	6.09	2430.79	2430.79	.00	2431.15	.35	.23	.02	2430.70
2579.0	1535.2	1043.6	.1	531.9	157.9	.6	19.0	8.4	2430.79
.08	2.89	6.61	.25	.035	.024	.035	.000	2424.70	280.25
.001940	100.	100.	100.	0	16	0	.00	373.13	653.39

FLOW DISTRIBUTION FOR SECNO= 1300.50 CWSEL= 2430.79

STA=	280.	320.	405.	531.	561.	601.	641.	653.
PER Q=	.6	16.3	36.5	4.5	1.6	40.5	.0	
AREA=	15.8	152.6	289.2	46.3	28.1	157.9	.6	
VEL=	1.0	2.8	3.3	2.5	1.5	6.6	.2	
DEPTH=	.4	1.8	2.3	1.5	.7	4.0	.0	

#SECNO 1200.400
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1200.400	6.05	2431.81	2431.81	.00	2432.12	.31	.19	.00	2431.80
2579.0	1584.7	990.4	3.9	576.4	155.7	7.5	20.7	9.3	2431.80
.08	2.75	6.36	.53	.035	.024	.035	.000	2425.76	238.75
.001836	100.	100.	100.	0	8	0	.00	450.20	688.95

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1200.40 CWSEL= 2431.81

STA=	239.	320.	405.	531.	561.	601.	641.	681.	689.
PER Q=	4.8	24.1	29.5	2.3	.6	38.4	.1	.0	
AREA=	73.4	196.0	259.0	31.7	16.4	155.7	6.3	1.2	
VEL=	1.7	3.2	2.9	1.9	1.0	6.4	.5	.5	
DEPTH=	.9	2.3	2.1	1.1	.4	4.0	.2	.2	

#SECNO 1100.600
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2432.80 ELREA= 2432.82

1100.600	5.98	2432.80	2432.80	.00	2433.08	.28	.18	.00	2432.80
2579.0	1651.9	927.1	.0	597.2	153.6	.0	22.4	10.3	2432.82
.09	2.77	6.03	.00	.035	.024	.000	.000	2426.82	215.64
.001676	100.	100.	100.	0	8	0	.00	424.92	640.57

CW DISTRIBUTION FOR SECNO= 1100.60 CWSEL= 2432.80

STA=	216.	320.	405.	531.	561.	601.	641.
PER Q=	1.5	15.3	40.5	5.4	1.3	35.9	
AREA=	41.9	153.2	321.6	54.1	26.4	153.6	
VEL=	.9	2.6	3.2	2.6	1.3	6.0	
DEPTH=	.4	1.8	2.6	1.8	.7	3.9	

#SECNO 1000.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1000.500	6.35	2434.23	2434.23	.00	2434.83	.61	.21	.10	2433.90
2579.0	1204.5	1371.7	2.7	438.9	167.9	3.9	23.9	11.3	2433.88
.09	2.74	8.17	.69	.035	.024	.035	.000	2427.88	196.32
.002740	100.	100.	100.	0	9	0	.00	466.93	663.25

FLOW DISTRIBUTION FOR SECNO= 1000.50 CWSEL= 2434.23

STA=	196.	320.	405.	531.	561.	601.	641.	663.
PER Q=	2.0	14.0	27.0	2.5	1.2	53.2	.1	
AREA=	45.0	125.6	217.7	29.3	21.3	167.9	3.9	
VEL=	1.1	2.9	3.2	2.2	1.5	8.2	.7	
DEPTH=	.4	1.5	1.7	1.0	.5	4.3	.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
#SECNO 900.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   900.500      6.79   2435.73   2435.73       .00   2436.72      1.00       .30       .12   2434.90
    2579.0     813.8    1750.0      15.2     239.8     185.3      11.8      25.1      12.1   2434.94
       .10      3.39      9.45      1.29      .035      .024      .035      .000   2428.94    420.27
   .003204      100.      100.      100.         0         8         0       .00    250.29    670.56


FLOW DISTRIBUTION FOR SECNO=    900.50         CWSEL=   2435.73

STA=     420.     474.     475.     570.     585.     601.     641.     671.
  PER Q=      .9       .1     27.5      2.0      1.0     67.9       .6
   AREA=    19.5      1.5    187.7     18.4     12.7     185.3    11.8
    VEL=     1.2      2.1      3.8      2.7      2.0       9.4     1.3
  DEPTH=      .4      1.5      2.0      1.2       .8       4.7      .4

#SECNO 800.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   800.500      6.52   2436.52   2436.52       .00   2437.43       .91       .33       .01   2436.00
    2579.0     860.9    1615.5     102.6     231.2     174.6      42.3      26.2      12.7   2436.00
       .10      3.72      9.25      2.42      .035      .024      .035      .000   2430.00    455.45
   .003334      100.      100.      100.         0        10         0       .00    226.62    682.07


FLOW DISTRIBUTION FOR SECNO=    800.50         CWSEL=   2436.52

STA=     455.     475.     505.     585.     601.     641.     682.
  PER Q=      .2      9.2     23.6       .4     62.6      4.0
   AREA=     5.1     60.6    157.7      7.7    174.6     42.3
    VEL=     1.0      3.9      3.9      1.5      9.3      2.4
  DEPTH=      .3      2.0      2.0       .5      4.5      1.0

#SECNO 700.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   700.500      7.60   2438.66   2438.66       .00   2439.26       .60       .24       .03   2438.40
    2579.0     937.9    1642.0      19.1     284.4     221.7      17.8      27.3      13.2   2438.40
       .11      3.23      7.41      1.07      .035      .024      .035      .000   2431.06    425.27
   .001856      100.      100.      100.         0        13         0       .00    256.76    682.03
```

	SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
	TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
	SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 700.50 CWSEL= 2438.66

STA=	425.	474.	475.	570.	599.	643.	682.
PER Q=	.5	.1	34.4	.6	63.7	.7	
AREA=	16.0	2.7	252.6	13.2	221.7	17.7	
VEL=	.9	1.4	3.5	1.1	7.4	1.1	
DEPTH=	.3	2.7	2.7	.5	5.0	.5	

*SECNO 666.800

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

666.800	7.42	2438.84	2438.84	.00	2439.79	.95	.08	.10	2438.76
2579.0	673.1	1893.5	12.4	181.3	214.2	12.2	27.6	13.4	2438.76
.11	3.71	8.84	1.02	.035	.024	.035	.000	2431.42	474.13
.002765	34.	34.	34.	0	7	0	.00	169.99	682.03

W DISTRIBUTION FOR SECNO= 666.80 CWSEL= 2438.84

STA=	474.	475.	558.	599.	643.	682.
PER Q=	.1	26.0	.0	73.4	.5	
AREA=	1.9	179.3	.1	214.2	12.2	
VEL=	1.3	3.7	.3	8.8	1.0	
DEPTH=	2.2	2.2	.0	4.8	.3	

*SECNO 665.800
3280 CROSS SECTION 665.80 EXTENDED .08 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

665.800	7.39	2440.58	2440.58	.00	2440.94	.35	.00	.06	2440.53
2579.0	1280.5	1275.9	22.6	403.6	212.7	22.1	27.6	13.4	2440.53
.11	3.17	6.00	1.02	.035	.024	.035	.000	2433.19	400.00
.001286	1.	1.	1.	0	9	0	.00	282.06	682.06

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 665.80 CWSEL= 2440.58

STA=	400.	474.	475.	570.	599.	643.	682.
PER Q=	1.8	.2	47.0	.7	49.5	.9	
AREA=	43.2	3.6	340.5	16.3	212.7	22.0	
VEL=	1.1	1.2	3.6	1.0	6.0	1.0	
DEPTH=	.6	3.6	3.6	.6	4.8	.6	

*SECNO 600.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

600.300	7.36	2440.75	2440.75	.00	2441.09	.33	.08	.00	2440.72
2579.0	1327.3	1224.9	26.9	407.9	211.4	25.0	28.6	13.8	2440.72
.11	3.25	5.80	1.08	.035	.024	.035	.000	2433.39	427.61
.001210	66.	66.	66.	0	0	0	.00	254.47	682.07

FLOW DISTRIBUTION FOR SECNO= 600.30 CWSEL= 2440.75

STA=	428.	474.	475.	570.	599.	643.	682.
PER Q=	1.2	.2	49.3	.8	47.5	1.0	
AREA=	29.1	3.8	356.6	18.5	211.4	24.9	
VEL=	1.1	1.2	3.6	1.1	5.8	1.1	
DEPTH=	.6	3.8	3.8	.6	4.7	.6	

*SECNO 500.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

500.300	7.33	2441.02	2441.02	.00	2441.41	.38	.13	.02	2441.02
2579.0	1263.4	1296.6	19.0	373.3	210.0	19.2	30.0	14.4	2441.02
.12	3.38	6.17	.99	.035	.024	.035	.000	2433.69	436.11
.001384	100.	100.	100.	0	9	0	.00	245.96	682.06

FLOW DISTRIBUTION FOR SECNO= 500.30 CWSEL= 2441.02

STA=	436.	474.	475.	570.	600.	645.	682.
PER Q=	.8	.2	47.4	.6	50.3	.7	
AREA=	19.4	3.5	334.8	15.5	210.0	19.1	
VEL=	1.0	1.2	3.7	1.0	6.2	1.0	
DEPTH=	.5	3.5	3.5	.5	4.7	.5	

SECNO	DEPTH	CWSEL	CRIWS	WSELV	ES	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	KLOBL	KLCH	KLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

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#SECNO 400.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  400.300      7.23  2441.32  2441.32      .00  2442.10      .77      .18      .12  2441.32
   2579.0     638.0   1741.2    199.8    178.2    209.9    109.0     31.3     15.1  2441.32
      .12      3.58     8.29     1.83     .035     .024     .035     .000  2433.99   495.20
  .002500      100.      100.      100.        0        9        0      .00   326.84   822.03


FLOW DISTRIBUTION FOR SECNO=    400.30         CWSEL=   2441.32

STA=     495.     500.     570.     603.     647.     697.     745.     800.     822.
 PER Q=    1.2     23.4       .1     67.5       .2      1.6      5.1       .9
  AREA=   10.4    162.5      5.3    209.9      8.5     27.5     59.0     16.6
   VEL=    2.9      3.7       .6      5.3       .6      1.5      ...      1.6
 DEPTH=    2.2      2.3       .2      4.7       .2       .6     1.1       .7

#SECNO 300.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  300.300      7.68  2441.97  2441.97      .00  2442.95      .98      .26      .06  2441.62
   2579.0       8.6   2006.1    564.3     12.6    225.5    217.8     32.4     15.8  2441.62
      .13       .68     8.90     2.59     .035     .024     .035     .000  2434.29   532.56
  .002620      100.      100.      100.        0        8        0      .00   300.32   832.88


FLOW DISTRIBUTION FOR SECNO=    300.30         CWSEL=   2441.97

STA=     533.     604.     649.     697.     745.     800.     833.
 PER Q=      .3     77.8      2.0      5.7     11.5      2.7
  AREA=    12.6    225.5     31.9     58.7     94.7     32.4
   VEL=      .7      8.9      1.7      2.5      3.1      2.2
 DEPTH=      .2      5.1       .7      1.2      1.7      1.0

#SECNO 200.300
3280 CROSS SECTION    200.30 EXTENDED      .04 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  200.300      8.45  2443.04  2443.04      .00  2444.07     1.03      .23      .02  2441.92
   2579.0     147.3   2256.8    174.9     93.6    259.8    106.6     33.4     16.5  2441.92
      .13      1.57     8.69     1.64     .035     .024     .035     .000  2434.59   464.00
  .002067      101.      100.       99.        0        9        0      .00   336.00   800.00
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 200.30 CWSEL= 2443.04

STA=	464.	514.	609.	653.	771.	800.
PER Q=	.5	5.2	87.5	6.5	.3	
AREA=	14.7	78.9	259.8	98.1	8.5	
VEL=	.9	1.7	8.7	1.7	.9	
DEPTH=	.3	.8	5.8	.8	.3	

#SECNO 146.400
3280 CROSS SECTION 146.40 EXTENDED .71 FEET

3301 HV CHANGED MORE THAN HVINS

146.400	8.96	2443.71	2443.24	.00	2444.20	.49	.08	.05	2442.08
2579.0	408.5	1854.8	315.7	256.9	282.3	187.8	34.2	17.0	2442.08
.13	1.59	6.57	1.68	.035	.024	.035	.000	2434.75	400.00
.001057	54.	54.	54.	6	5	0	.00	400.00	800.00

FLOW DISTRIBUTION FOR SECNO= 146.40 CWSEL= 2443.71

STA=	400.	501.	614.	658.	771.	800.
PER Q=	5.0	10.8	71.9	10.8	1.4	
AREA=	96.9	160.0	282.3	160.0	27.8	
VEL=	1.3	1.7	6.6	1.7	1.3	
DEPTH=	1.0	1.4	6.3	1.4	1.0	

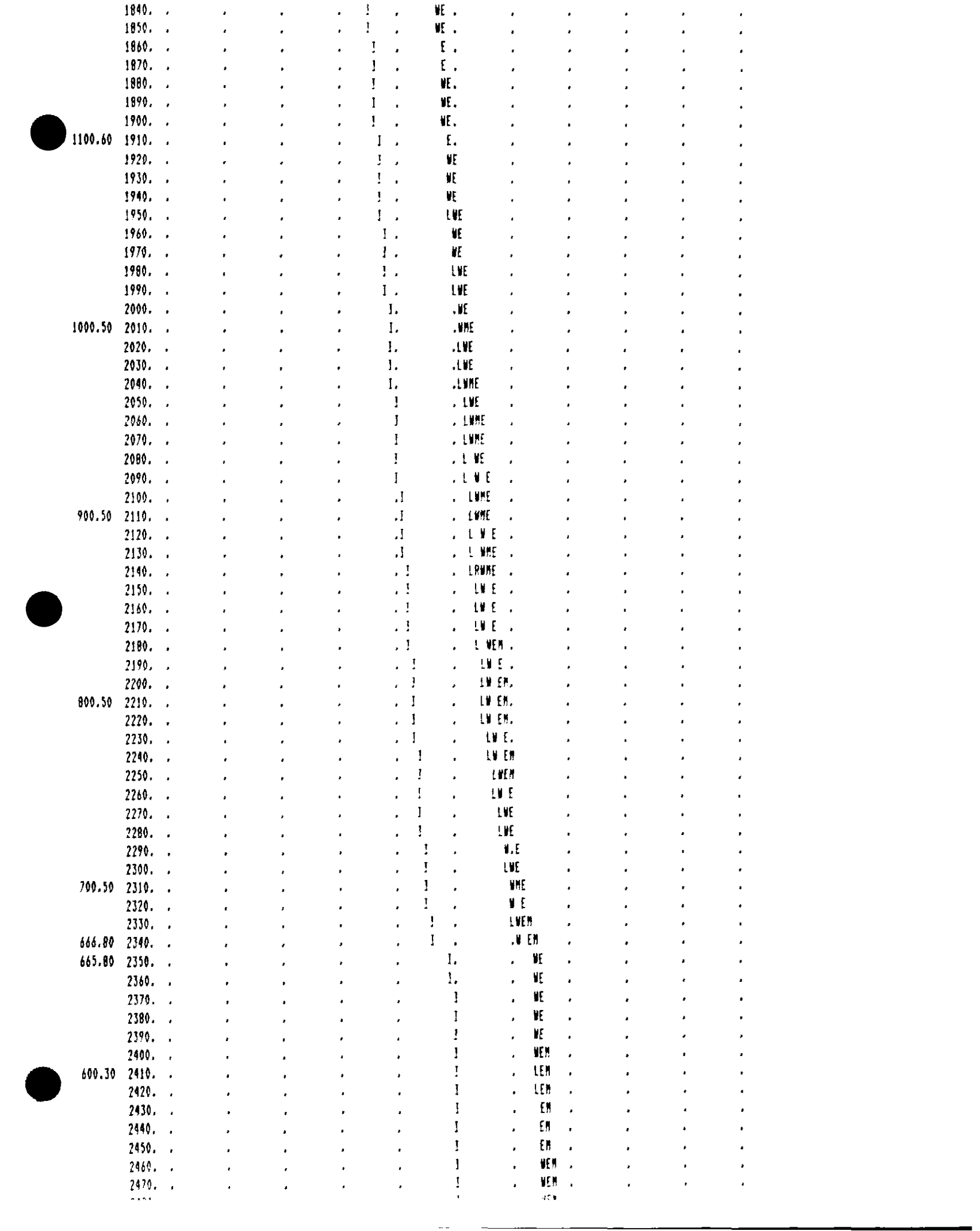
PROFILE FOR STREAM SUBCRITICAL - OUTFALL C

OTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION SECNO	2409. CUMDIS	2414.	2419.	2424.	2429.	2434.	2439.	2444.	2449.	2454.
3001.80	0.	I	C L	WE RM						
	10.	I	C L	WE RM						
	20.	I	C L	WE RM						
	30.	I	C L	WE RM						
	40.	I	C L	WE RM						
	50.	I	C L	WE RM						
2944.50	60.	I	C L	WE RM						
	70.	I	C L	WE RM						
	80.	I	C L	WE RM						
	90.	I	C L	WE RM						
	100.	I	C L	WE RM						
2900.70	110.	I	C L	WE RM						
	120.	I	C L	WE RM						
	130.	I	C L	WE RM						
	140.	I	C L	W ERM						
	150.	I	C L	W ERM						
	160.	I	C L	W ERM						
	170.	I	C L	W ERM						
	180.	.I	C L	W ERM						
	190.	.I	C L	W ERM						
	200.	.I	C L	W ERM						
2800.60	210.	.I	C L	W ERM						
	220.	.I	CL	W ERM						
	230.	.I	CL	W ERM						
	240.	.I	CL	W ERM						
	250.	.I	LC	.WERM						
	260.	. I	LC	.WER						
	270.	. I	L C	.WER						
	280.	. I	L C	.WER						
	290.	. I	L C	.WER						
	300.	. I	L	C.WER						
2700.60	310.	. I	L	C.WER						
	320.	. I	L	C.WER						
	330.	. I	L	C.WER						
	340.	. I	L	CWER						
	350.	. I	L	CWME						
	360.	. I	L	CW E						
	370.	. I	L	CW E						
	380.	. I	L	CW E						
	390.	. I	L	CW E						
	400.	. I	L	CW E						
2600.70	410.	. I	L	MW E						
	420.	. I	L	MW RE						
	430.	. I	L	MW RE						
	440.	. I	L	MW RE						
	450.	. I	L	.W RE						
	460.	. I	L	.W R E						
	470.	. I	L	.WMR E						
	480.	. I	L	.WMR E						
	490.	. I	L	.WR E						

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          520.  .    I  .       L. WR  E  .       .       .       .       .       .       .       .
          530.  .    I  .       L. WR  E  .       .       .       .       .       .       .       .
          540.  .     I .        L  W  E  .       .       .       .       .       .       .       .
          550.  .     I .        L  W  E  .       .       .       .       .       .       .       .
          560.  .     I .        L  W  E  .       .       .       .       .       .       .       .
          570.  .     I .        L  W  E  .       .       .       .       .       .       .       .
          580.  .     I .        L  W    E.       .       .       .       .       .       .       .
          590.  .      I.        .L RW   E.       .       .       .       .       .       .       .
          600.  .      I.        .L RW   E.       .       .       .       .       .       .       .
2400.70   610.  .      I.        .L RW   E.       .       .       .       .       .       .       .
          620.  .      I.        .L RW   E.       .       .       .       .       .       .       .
          630.  .      I.        . LR W  E.       .       .       .       .       .       .       .
          640.  .       I        . LR W  E.       .       .       .       .       .       .       .
          650.  .       I        . LR W   E.      .       .       .       .       .       .       .
          660.  .       I        . LRMCW  E.      .       .       .       .       .       .       .
          670.  .       I        . LRMCW  E.      .       .       .       .       .       .       .
          680.  .      .I        . LM W  E.       .       .       .       .       .       .       .
          690.  .      .I        . LM W  E.       .       .       .       .       .       .       .
          700.  .      .I        . LM CW E.       .       .       .       .       .       .       .
2300.70   710.  .      .I        . LM CW E.       .       .       .       .       .       .       .
          720.  .      .I        . LM CW E.       .       .       .       .       .       .       .
          730.  .      . I       .  LMCW E.       .       .       .       .       .       .       .
          740.  .      . I       .  LMCW E.       .       .       .       .       .       .       .
          750.  .      . I       .  LMC WE.       .       .       .       .       .       .       .
          760.  .      . I       .  L C WE.       .       .       .       .       .       .       .
          770.  .      . I       .  L C WE.       .       .       .       .       .       .       .
          780.  .      .  I      .   LC WE.       .       .       .       .       .       .       .
          790.  .      .  I      .   LC WE.       .       .       .       .       .       .       .
          800.  .      .  I      .   LCMWE.       .       .       .       .       .       .       .
2200.70   810.  .      .  I      .   LCMWE.       .       .       .       .       .       .       .
          820.  .      .   I     .    CM E.       .       .       .       .       .       .       .
          830.  .      .   I     .    C  E.       .       .       .       .       .       .       .
          840.  .      .   I     .    LC WE       .       .       .       .       .       .       .
          850.  .      .   I     .    MLC WE      .       .       .       .       .       .       .
          860.  .      .   I     .    MLC WE      .       .       .       .       .       .       .
          870.  .      .    I    .    M C WE      .       .       .       .       .       .       .
          880.  .      .    I    .   M  C WE      .       .       .       .       .       .       .
          890.  .      .    I    .   M  C WE      .       .       .       .       .       .       .
          900.  .      .    I    .  M   C WE      .       .       .       .       .       .       .
2100.80   910.  .      .    I    .  M   LCWE      .       .       .       .       .       .       .
          920.  .      .     I   .   M   CWE      .       .       .       .       .       .       .
          930.  .      .     I   .   M   CWE      .       .       .       .       .       .       .
          940.  .      .     I   .   M   CWE      .       .       .       .       .       .       .
          950.  .      .     I   .    M C WE      .       .       .       .       .       .       .
          960.  .      .      I  .    M CWE       .       .       .       .       .       .       .
          970.  .      .      I  .     MCWE       .       .       .       .       .       .       .
          980.  .      .      I  .      CWE       .       .       .       .       .       .       .
          990.  .      .      I  .      CWE       .       .       .       .       .       .       .
         1000.  .      .      I  .      LW E      .       .       .       .       .       .       .
2000.80  1010.  .      .       I .       WWE      .       .       .       .       .       .       .
         1020.  .      .       I .       WWE      .       .       .       .       .       .       .
         1030.  .      .       I .       LWE      .       .       .       .       .       .       .
         1040.  .      .       I .       LWWE     .       .       .       .       .       .       .
         1050.  .      .       I .       LWWE     .       .       .       .       .       .       .
         1060.  .      .       I.        .LWE     .       .       .       .       .       .       .
         1070.  .      .       I.        .LW E    .       .       .       .       .       .       .
         1080.  .      .       I.        .LW E    .       .       .       .       .       .       .
         1090.  .      .       I.        .L W E   .       .       .       .       .       .       .
         1100.  .      .       I.        .L W E   .       .       .       .       .       .       .
1900.80  1110.  .      .        I        . LW E   .       .       .       .       .       .       .
         1120.  .      .        I        . LW E   .       .       .       .       .       .       .
         1130.  .      .        I        . L W E  .       .       .       .       .       .       .
         1140.  .      .        I        . L W E  .       .       .       .       .       .       .
         1150.  .      .        .I       .  LWWE  .       .       .       .       .       .       .
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        1180. .  .  .I    . LW E  .  .  .  .  .  .  .
        1190. .  .  .I    . L WE  .  .  .  .  .  .  .
        1200. .  .  . I   .  LWEM .  .  .  .  .  .  .
1800.90 1210. .  .  . I   .  LW E .  .  .  .  .  .  .
        1220. .  .  . I   .  LW E .  .  .  .  .  .  .
        1230. .  .  . I   .  LW E .  .  .  .  .  .  .
        1240. .  .  . I   .  LW EM.  .  .  .  .  .  .
        1250. .  .  .  I  .   LWEM.  .  .  .  .  .  .
        1260. .  .  .  I  .   LW E.  .  .  .  .  .  .
        1270. .  .  .  I  .   LW E.  .  .  .  .  .  .
        1280. .  .  .  I  .   LW E.  .  .  .  .  .  .
        1290. .  .  .  I  .   LW EM. .  .  .  .  .  .
        1300. .  .  .  I  .   LWEM. .  .  .  .  .  .
1700.90 1310. .  .  .  I  .   LW E. .  .  .  .  .  .
        1320. .  .  .  I  .   LW E. .  .  .  .  .  .
        1330. .  .  .  I  .   LW E. .  .  .  .  .  .
        1340. .  .  .   I .    W E. .  .  .  .  .  .
        1350. .  .  .   I .    W E. .  .  .  .  .  .
        1360. .  .  .   I .    CWE. .  .  .  .  .  .
        1370. .  .  .   I .    LWE. .  .  .  .  .  .
        1380. .  .  .   I .    LWE. .  .  .  .  .  .
        1390. .  .  .    I.     WE. .  .  .  .  .  .
        1400. .  .  .    I.     WE. .  .  .  .  .  .
1600.50 1410. .  .  .    I.     WE. .  .  .  .  .  .
        1420. .  .  .    I.     WE. .  .  .  .  .  .
        1430. .  .  .    I.     CWE .  .  .  .  .  .
        1440. .  .  .     I.     WE .  .  .  .  .  .
        1450. .  .  .     I.     WE .  .  .  .  .  .
        1460. .  .  .     I.     WE .  .  .  .  .  .
        1470. .  .  .     I.     WWE .  .  .  .  .  .
        1480. .  .  .      I.     WE .  .  .  .  .  .
        1490. .  .  .      I.     WE .  .  .  .  .  .
        1500. .  .  .      I.     WE .  .  .  .  .  .
1500.50 1510. .  .  .      I.     WWE .  .  .  .  .  .
        1520. .  .  .      I.     WWE .  .  .  .  .  .
        1530. .  .  .       I.    .WE .  .  .  .  .  .
        1540. .  .  .       I.    .WE .  .  .  .  .  .
        1550. .  .  .       I.    .WE .  .  .  .  .  .
        1560. .  .  .       I.    .WWE .  .  .  .  .  .
        1570. .  .  .       I.    .WWE .  .  .  .  .  .
        1580. .  .  .        I    . WE .  .  .  .  .  .
        1590. .  .  .        I    . WE .  .  .  .  .  .
        1600. .  .  .        I    . WE .  .  .  .  .  .
1400.40 1610. .  .  .        I    . WE .  .  .  .  .  .
        1620. .  .  .        I    . LWE .  .  .  .  .  .
        1630. .  .  .       .I    .  WE .  .  .  .  .  .
        1640. .  .  .       .I    .  WE .  .  .  .  .  .
        1650. .  .  .       .I    .  WE .  .  .  .  .  .
        1660. .  .  .       .I    .  WE .  .  .  .  .  .
        1670. .  .  .       . I   .   WE .  .  .  .  .  .
        1680. .  .  .       . I   .   WE .  .  .  .  .  .
        1690. .  .  .       . I   .   WE .  .  .  .  .  .
        1700. .  .  .       . I   .   WE .  .  .  .  .  .
1300.50 1710. .  .  .       . I   .   LE .  .  .  .  .  .
        1720. .  .  .       .  I  .    E .  .  .  .  .  .
        1730. .  .  .       .  I  .    WE .  .  .  .  .  .
        1740. .  .  .       .  I  .    WE .  .  .  .  .  .
        1750. .  .  .       .  I  .    WE .  .  .  .  .  .
        1760. .  .  .       .  I  .    LE .  .  .  .  .  .
        1770. .  .  .       .   I .    E .  .  .  .  .  .
        1780. .  .  .       .   I .    WE .  .  .  .  .  .
        1790. .  .  .       .   I .    WE .  .  .  .  .  .
        1800. .  .  .       .   I .    WE .  .  .  .  .  .
1200.40 1810. .  .  .       .    I.    E .  .  .  .  .  .
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1100.60
1000.50
900.50
800.50
700.50
666.80
665.80
600.30

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        2500.  .  .  .  .  .  I  .  WEM  .  .  .  .
500.30  2510.  .  .  .  .  .  I  .  WEM  .  .  .  .
        2520.  .  .  .  .  .  I  .  WEM  .  .  .  .
        2530.  .  .  .  .  .  I  .  WEM  .  .  .  .
        2540.  .  .  .  .  .  .I .  WE M .  .  .  .
        2550.  .  .  .  .  .  .I .  WE M .  .  .  .
        2560.  .  .  .  .  .  .I .  W EM .  .  .  .
        2570.  .  .  .  .  .  .I .  W EM .  .  .  .
        2580.  .  .  .  .  .  .I .  W EM .  .  .  .
        2590.  .  .  .  .  .  .I .  WE M. .  .  .  .
        2600.  .  .  .  .  .  .I .  WE M. .  .  .  .
400.30  2610.  .  .  .  .  .  .I .  WE M. .  .  .  .
        2620.  .  .  .  .  .  .I .  WE M. .  .  .  .
        2630.  .  .  .  .  .  .I .  W EM. .  .  .  .
        2640.  .  .  .  .  .  .I .  W EM. .  .  .  .
        2650.  .  .  .  .  .  .I .  W EM. .  .  .  .
        2660.  .  .  .  .  .  .I .  W EM. .  .  .  .
        2670.  .  .  .  .  .  .I .  W E . .  .  .  .
        2680.  .  .  .  .  .  .I .  LWE . .  .  .  .
        2690.  .  .  .  .  .  .I .  LWME. .  .  .  .
        2700.  .  .  .  .  .  . I .  LWME. .  .  .  .
300.30  2710.  .  .  .  .  .  . I .  LWME. .  .  .  .
        2720.  .  .  .  .  .  . I .  LWME. .  .  .  .
        2730.  .  .  .  .  .  . I .  LWME. .  .  .  .
        2740.  .  .  .  .  .  . I .  L W E .  .  .  .
        2750.  .  .  .  .  .  . I .  L W E .  .  .  .
        2760.  .  .  .  .  .  . I .  LWME  .  .  .  .
        2770.  .  .  .  .  .  . I .  LWME  .  .  .  .
        2780.  .  .  .  .  .  . I .  LWME  .  .  .  .
        2790.  .  .  .  .  .  . I .  L W.E .  .  .  .
        2800.  .  .  .  .  .  . I .  L W.E .  .  .  .
200.30  2810.  .  .  .  .  .  . I .  L W.E .  .  .  .
        2820.  .  .  .  .  .  . I .  L W.E .  .  .  .
        2830.  .  .  .  .  .  . I .  L CWE .  .  .  .
        2840.  .  .  .  .  .  . I .  L CWE .  .  .  .
        2850.  .  .  .  .  .  . I .  L CWE .  .  .  .
146.40  2860.  .  .  .  .  .  .  I .  L CWE .  .  .  .
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THIS RUN EXECUTED 10JAN96 17:53:38

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HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

ERROR CORR - 01.02.03.04
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUBCRITICAL - OUTFALL C

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*XS	VCH	AREA	.01K
	3001.800	.00	.00	.00	2408.50	2579.00	2418.36	2415.79	2419.09	12.39	7.14	459.03	732.81
	2946.500	55.31	.00	.00	2408.58	2579.00	2418.66	2415.90	2419.17	9.14	6.26	581.58	852.96
	2900.700	45.81	.00	.00	2408.65	2579.00	2418.70	2415.96	2419.21	9.22	6.23	585.84	849.56
	2800.600	100.10	.00	.00	2408.80	2579.00	2418.67	2416.11	2419.37	11.91	7.02	489.82	747.23
	2700.600	99.95	.00	.00	2409.86	2579.00	2418.91	2418.11	2419.50	12.11	7.00	576.26	741.08
*	2600.700	99.93	.00	.00	2410.92	2579.00	2418.74	2418.74	2420.19	30.97	10.15	324.65	463.43
*	2500.700	99.99	.00	.00	2412.00	2579.00	2419.44	2419.44	2421.58	45.70	11.86	234.73	381.52
*	2400.700	99.97	.00	.00	2413.00	2579.00	2420.58	2420.58	2422.60	41.88	11.54	248.95	398.51
	2300.700	99.98	.00	.00	2414.10	2579.00	2421.98	2421.55	2422.99	21.82	8.94	410.15	552.14
	2200.700	100.00	.00	.00	2415.16	2579.00	2422.72	2421.53	2423.22	14.37	6.94	561.34	685.11
*	2100.800	99.96	.00	.00	2416.22	2579.00	2423.16	2422.27	2423.34	6.48	4.34	820.09	1013.09
*	2000.800	99.94	.00	.00	2417.28	2579.00	2423.43	2423.43	2424.37	39.08	9.46	402.45	412.53
*	1900.800	100.01	.00	.00	2418.34	2579.00	2425.16	2425.16	2426.13	30.83	9.32	445.89	464.48
*	1800.900	99.92	.00	.00	2419.40	2579.00	2425.94	2425.94	2426.81	32.22	9.12	460.22	454.36
*	1700.900	100.02	.00	.00	2420.46	2579.00	2426.91	2426.91	2427.75	32.46	9.04	468.67	452.68
	1600.500	100.43	.00	.00	2421.52	2579.00	2427.60	2427.51	2428.07	23.44	7.25	564.78	532.69
	1500.500	100.01	.00	.00	2422.58	2579.00	2428.63	2428.63	2429.32	33.52	8.62	516.28	445.48

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10%KS	VCH	AREA	.01K
*	1400.400	100.01	.00	.00	2423.64	2579.00	2429.64	2429.64	2430.19	29.06	7.97	574.04	478.43
*	1300.500	99.89	.00	.00	2424.70	2579.00	2430.79	2430.79	2431.15	19.40	6.61	690.47	585.48
*	1200.400	100.12	.00	.00	2425.76	2579.00	2431.81	2431.81	2432.12	18.36	6.36	739.62	601.92
*	1100.600	99.88	.00	.00	2426.82	2579.00	2432.80	2432.80	2433.08	16.76	6.03	750.86	630.00
*	1000.500	100.05	.00	.00	2427.88	2579.00	2434.23	2434.23	2434.83	27.40	8.17	610.69	492.72
*	900.500	99.96	.00	.00	2428.94	2579.00	2435.73	2435.73	2436.72	32.04	9.45	436.88	455.63
*	800.500	100.06	.00	.00	2430.00	2579.00	2436.52	2436.52	2437.43	33.34	9.25	448.04	446.64
*	700.500	99.96	.00	.00	2431.06	2579.00	2438.66	2438.66	2439.26	18.56	7.41	523.89	598.64
*	666.800	33.71	.00	.00	2431.42	2579.00	2438.84	2438.84	2439.79	27.65	8.84	407.69	490.43
*	665.800	1.00	.00	.00	2433.19	2579.00	2440.58	2440.58	2440.94	12.86	6.00	638.33	719.08
*	600.300	65.53	.00	.00	2433.39	2579.00	2440.75	2440.75	2441.09	12.10	5.80	644.26	741.45
*	500.300	99.98	.00	.00	2433.69	2579.00	2441.02	2441.02	2441.41	13.84	6.17	602.44	693.15
*	400.300	100.00	.00	.00	2433.99	2579.00	2441.32	2441.32	2442.10	25.00	8.29	497.18	515.75
*	300.300	100.06	.00	.00	2434.29	2579.00	2441.97	2441.97	2442.95	26.20	8.90	455.89	503.81
*	200.300	99.95	.00	.00	2434.59	2579.00	2443.04	2443.04	2444.07	20.67	8.69	459.99	567.31
	146.400	53.86	.00	.00	2434.75	2579.00	2443.71	2443.24	2444.20	10.57	6.57	726.97	793.12

SUBCRITICAL - OUTFALL E

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	3001.800	2579.00	2418.36	.00	.00	.00	176.65	.00
	2946.500	2579.00	2418.66	.00	.30	.00	208.71	55.31
	2900.700	2579.00	2418.70	.00	.05	.00	209.28	45.81
	2800.600	2579.00	2418.67	.00	-.03	.00	218.49	100.10
	2700.600	2579.00	2418.91	.00	.23	.00	228.27	99.95
*	2600.700	2579.00	2418.74	.00	-.17	.00	136.20	99.93
*	2500.700	2579.00	2419.44	.00	.70	.00	70.91	99.99
*	2400.700	2579.00	2420.58	.00	1.14	.00	85.40	99.97
	2300.700	2579.00	2421.98	.00	1.40	.00	143.74	99.98
	2200.700	2579.00	2422.72	.00	.73	.00	184.00	100.00
	2100.800	2579.00	2423.16	.00	.44	.00	230.96	99.96
*	2000.800	2579.00	2423.43	.00	.27	.00	215.43	99.94
*	1900.800	2579.00	2425.16	.00	1.74	.00	248.13	100.01
*	1800.900	2579.00	2425.94	.00	.77	.00	245.84	99.92
*	1700.900	2579.00	2426.91	.00	.97	.00	253.48	100.02
	1600.500	2579.00	2427.60	.00	.69	.00	269.33	100.43
*	1500.500	2579.00	2428.63	.00	1.04	.00	295.48	100.03
*	1400.400	2579.00	2429.64	.00	1.00	.00	326.98	100.01
*	1300.500	2579.00	2430.79	.00	1.16	.00	373.13	99.89
*	1200.400	2579.00	2431.81	.00	1.01	.00	450.20	100.12
*	1100.600	2579.00	2432.80	.00	1.00	.00	424.92	99.88
*	1000.500	2579.00	2434.23	.00	1.42	.00	466.93	100.05
*	900.500	2579.00	2435.73	.00	1.50	.00	250.29	99.96
*	800.500	2579.00	2436.52	.00	.80	.00	226.62	100.06

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	700.500	2579.00	2438.66	.00	2.14	.00	256.76	99.96
*	666.800	2579.00	2438.84	.00	.19	.00	169.99	33.71
*	665.800	2579.00	2440.58	.00	1.74	.00	282.06	1.00
*	600.300	2579.00	2440.75	.00	.17	.00	254.47	65.53
*	500.300	2579.00	2441.02	.00	.27	.00	245.96	99.98
*	400.300	2579.00	2441.32	.00	.30	.00	326.84	100.00
*	300.300	2579.00	2441.97	.00	.65	.00	300.32	100.06
*	200.300	2579.00	2443.04	.00	1.07	.00	336.00	99.95
	146.400	2579.00	2443.71	.00	.67	.00	400.00	53.86

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2600.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2600.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2500.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2500.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2400.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2400.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 2100.800 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2000.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2000.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1900.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1900.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1800.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1800.900 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1700.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1700.900 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1500.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1500.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1400.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1400.400 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1300.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1300.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1200.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 1100.600 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1100.600 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1000.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1000.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 900.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 900.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 800.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 800.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 700.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 700.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 666.800 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 666.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 665.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 665.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 600.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 600.300 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 500.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 500.300 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 400.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 400.300 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 300.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 300.300 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 200.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 200.300 PROFILE= 1 MINIMUM SPECIFIC ENERGY

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**********************************************************
*  WATER SURFACE PROFILES                                *
*  VERSION OF SEPTEMBER 1988                             *
*  ERROR: 01.02.03.04                                    *
*  UPDATED:  JUNE 1990                                   *
*  RUN DATE    10JAN96    TIME    09:46:28               *
**********************************************************
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****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*           (916) 756-1104             *
****************************************
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X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X          X     X
X     X  X        X                      X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX  XXXXX              XXXXXXX
```

END OF BANNER

FILE: RCHSUP - Supercritical run with overbank information.

THIS RUN EXECUTED 10JAN96 09:46:29

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

 ERROR CORR - 01,02,03,04
 MODIFICATION -
**************************************************

T1      CCRFCD - Upper Flamingo Wash Detention Basin
T2      B&V
T3      SUPERCRITICAL - OUTFALL CHANNEL

J1  ICHECK   INQ      NINV     IBIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0       2        0        1        0        0        0        0   2442.78       0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     -1                                          -1                          15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

QT       1     2579
NC   0.035    0.035    0.024      0.1      0.3
X1   146.4       15   613.70   658.30    53.86    53.86    53.86
X3    10.0
GR  2443.0   400.00  2442.50   501.00  2442.08   613.70  2440.75   616.40  2435.95   626.00
GR  2435.3   632.40  2434.81   633.00  2434.75   636.00  2434.81   639.00  2435.31   639.60
GR  2436.0   646.00  2440.75   655.60  2442.08   658.30  2442.50   771.00  2443.00   800.00

X1   200.3       15   608.70   653.30   101.00    98.90    99.95
X3    10.0
GR  2443.0   464.00  2442.50   514.00  2441.92   608.70  2440.59   611.40  2435.79   621.00
GR  2435.2   627.40  2434.59   628.00  2434.59   631.00  2434.65   634.00  2435.15   634.60
GR  2435.8   641.00  2440.59   650.60  2441.92   653.30  2442.50   771.00  2443.00   800.00

X1   300.3       17   604.20   648.80   100.06   100.06   100.06
X3    10.0
GR  2442.5   477.00  2442.00   527.00  2441.62   604.20  2440.29   606.90  2435.49   616.50
GR  2434.9   622.90  2434.35   623.50  2434.29   626.50  2434.35   629.50  2434.85   630.10
GR  2435.5   636.50  2440.29   646.10  2441.62   648.80  2441.00   697.00  2440.50   745.00
GR  2440.0   800.00  2443.00   850.00

X1   400.3       19   602.70   647.30   100.00   100.00   100.00
X3    10.0
GR  2443.0   400.00  2441.50   495.00  2437.00   500.00  2441.00   570.00  2441.32   602.70
GR  2440.0   605.40  2435.19   615.00  2434.55   621.40  2434.05   622.00  2433.99   625.00
GR  2434.1   628.00  2434.55   628.60  2435.19   635.00  2439.99   644.60  2441.32   647.30
GR  2441.0   697.00  2440.50   745.00  2440.00   800.00  2443.00   850.00
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X1	500.3	17	600.20	644.80	99.98	99.98	99.98			
X3	10.0									
GR	2442.0	400.00	2440.00	474.00	2435.00	475.00	2440.00	570.00	2441.02	600.20
GR	2439.7	602.90	2434.89	612.50	2434.25	618.90	2433.75	619.50	2433.69	622.50
GR	2433.8	625.50	2434.25	626.10	2434.89	632.50	2439.69	642.10	2441.02	644.80
GR	2440.0	682.00	2448.00	682.50						
X1	600.3	17	598.70	643.30	65.53	65.53	65.53			
X3	10.0									
GR	2441.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2440.72	598.70
GR	2439.4	601.40	2434.59	611.00	2433.95	617.40	2433.45	618.00	2433.39	621.00
GR	2433.5	624.00	2433.95	624.60	2434.59	631.00	2439.39	640.60	2440.72	643.30
GR	2439.5	682.00	2448.00	682.50						
X1	665.8	17	598.70	643.30	1.00	1.00	1.00			
X3	10.0									
GR	2440.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2440.53	598.70
GR	2439.2	601.40	2434.39	611.00	2433.75	617.40	2433.25	618.00	2433.19	621.00
GR	2433.3	624.00	2433.75	624.60	2434.39	631.00	2439.19	640.60	2440.53	643.30
GR	2439.5	682.00	2448.00	682.50						
	666.8	17	598.70	643.30	33.71	33.71	33.71			
X3	10.0									
GR	2440.5	400.00	2439.50	474.00	2434.50	475.00	2439.50	570.00	2438.76	598.70
GR	2437.4	601.40	2432.62	611.00	2431.98	617.40	2431.48	618.00	2431.42	621.00
GR	2431.5	624.00	2431.98	624.60	2432.62	631.00	2437.42	640.60	2438.76	643.30
GR	2438.3	682.00	2448.00	682.50						
X1	700.5	17	598.70	643.30	99.96	99.96	99.96			
X3	10.0									
GR	2439.0	400.00	2438.00	474.00	2434.00	475.00	2438.00	570.00	2438.40	598.70
GR	2437.1	601.40	2432.26	611.00	2431.62	617.40	2431.12	618.00	2431.06	621.00
GR	2431.1	624.00	2431.62	624.60	2432.26	631.00	2437.06	640.60	2438.40	643.30
GR	2438.0	682.00	2448.00	682.50						
X1	800.5	15	601.40	640.60	100.06	100.06	100.06			
X3	10.0									
GR	2438.0	400.00	2436.00	475.00	2433.00	505.00	2436.10	585.00	2436.00	601.40
GR	2431.2	611.00	2430.56	617.40	2430.06	618.00	2430.00	621.00	2430.06	624.00
GR	2430.6	624.60	2431.20	631.00	2436.00	640.60	2435.00	682.00	2446.00	682.50

X1	900.5	15	601.40	640.60	99.96	99.96	99.96			
X3	10.0									
GR	2436.0	400.00	2435.00	474.00	2433.50	475.00	2434.00	570.00	2435.00	585.00
GR	2434.9	601.40	2430.14	611.00	2429.50	617.40	2429.00	618.00	2428.94	621.00
GR	2429.0	624.00	2429.50	624.60	2430.14	631.00	2434.94	640.60	2436.00	681.00
X1	1000.5	16	601.40	640.60	100.05	100.05	100.05			
X3	10.0									
GR	2434.5	150.00	2433.50	320.00	2432.00	405.00	2433.00	531.00	2433.50	561.00
GR	2433.9	601.40	2429.08	611.00	2428.44	617.40	2427.94	618.00	2427.88	621.00
GR	2427.9	624.00	2428.44	624.60	2429.08	631.00	2433.88	640.60	2434.50	681.00
GR	2435.0	700.00								
X1	1100.6	16	601.40	640.60	99.88	99.88	99.88			
X3	10.0									
GR	2433.0	190.00	2432.00	320.00	2430.00	405.00	2430.50	531.00	2431.50	561.00
GR	2432.8	601.40	2428.02	611.00	2427.38	617.40	2426.88	618.00	2426.82	621.00
GR	2426.9	624.00	2427.38	624.60	2428.02	631.00	2432.82	640.60	2432.50	681.00
GR	2435.0	700.00								
X1	1200.4	16	601.40	640.60	100.12	100.12	100.12			
X3	10.0									
GR	2432.0	230.00	2430.00	320.00	2429.00	405.00	2430.50	531.00	2431.00	561.00
GR	2431.8	601.40	2426.96	611.00	2426.32	617.40	2425.82	618.00	2425.76	621.00
GR	2425.8	624.00	2426.32	624.60	2426.96	631.00	2431.80	640.60	2431.50	681.00
GR	2433.0	720.00								
X1	1300.5	16	601.40	640.60	99.89	99.89	99.89			
X3	10.0									
GR	2431.0	270.00	2430.00	320.00	2428.00	405.00	2429.00	531.00	2429.50	561.00
GR	2430.7	601.40	2425.90	611.00	2425.26	617.40	2424.76	618.00	2424.70	621.00
GR	2424.8	624.00	2425.26	624.60	2425.90	631.00	2430.70	640.60	2431.00	681.00
GR	2433.0	720.00								
X1	1400.4	15	601.40	640.60	105.00	95.00	100.01			
X3	10.0									
GR	2430.0	310.00	2429.00	320.00	2427.00	405.00	2428.50	531.00	2429.00	561.00
GR	2429.6	601.40	2424.84	611.00	2424.20	617.40	2423.70	618.00	2423.64	621.00
GR	2423.7	624.00	2424.20	624.60	2424.84	631.00	2429.64	640.60	2431.00	681.00
X1	1500.5	15	608.40	647.60	105.00	95.00	100.01			
X3	10.0									
GR	2429.0	350.00	2428.00	360.00	2426.00	430.00	2427.50	538.00	2428.00	568.00
GR	2428.6	608.40	2423.78	618.00	2423.14	624.40	2422.64	625.00	2422.58	628.00
GR	2422.6	631.00	2423.14	631.60	2423.78	638.00	2428.58	647.60	2430.00	688.00

X1	1600.5	16	615.40	654.60	105.00	95.86	100.43			
X3	10.0									
GR	2428.0	390.00	2426.00	400.00	2424.00	483.00	2426.50	545.00	2427.00	575.00
GR	2427.5	615.40	2422.72	625.00	2422.08	631.40	2421.58	632.00	2421.52	635.00
GR	2421.6	638.00	2422.08	638.60	2422.72	645.00	2427.52	654.60	2428.00	696.00
GR	2430.0	720.00								
X1	1700.9	15	617.40	656.60	103.00	97.00	100.02			
X3	10.0									
GR	2428.0	431.00	2426.00	440.00	2424.00	546.00	2426.00	576.00	2426.46	617.40
GR	2421.7	627.00	2421.02	633.40	2420.52	634.00	2420.46	637.00	2420.52	640.00
GR	2421.0	640.60	2421.66	647.00	2426.46	656.60	2427.00	696.00	2428.00	720.00
X1	1800.9	15	616.40	655.60	99.92	99.92	99.92			
X3	10.0									
GR	2427.0	441.00	2425.00	450.00	2423.00	546.00	2425.00	576.00	2425.40	616.40
GR	2420.6	626.00	2419.96	632.40	2419.46	633.00	2419.40	636.00	2419.46	639.00
GR	2420.0	639.60	2420.60	646.00	2425.40	655.60	2426.00	696.00	2427.00	715.00
X1	1900.8	15	616.40	655.60	100.01	100.01	100.01			
X3	10.0									
	2425.0	451.00	2424.00	499.00	2422.00	546.00	2424.00	576.00	2424.34	616.40
	2419.5	626.00	2418.90	632.40	2418.40	633.00	2418.34	636.00	2418.40	639.00
GR	2418.9	639.60	2419.54	646.00	2424.34	655.60	2425.00	696.00	2426.00	715.00
X1	2000.8	15	616.40	655.60	99.94	99.94	99.94			
X3	10.0									
GR	2424.0	461.00	2420.00	504.00	2421.00	546.00	2423.00	576.00	2423.28	616.40
GR	2418.5	626.00	2417.84	632.40	2417.34	633.00	2417.28	636.00	2417.34	639.00
GR	2417.8	639.60	2418.48	646.00	2423.28	655.60	2423.50	696.00	2425.00	705.00
X1	2100.8	15	616.40	655.60	99.96	99.96	99.96			
X3	10.0									
GR	2420.0	471.00	2417.00	509.00	2418.00	546.00	2420.00	576.00	2422.22	616.40
GR	2417.4	626.00	2416.78	632.40	2416.28	633.00	2416.22	636.00	2416.28	639.00
GR	2416.8	639.60	2417.42	646.00	2422.22	655.60	2422.50	696.00	2423.50	705.00
X1	2200.7	17	616.40	655.60	100.00	100.00	100.00			
X3	10.0									
GR	2422.0	526.00	2420.00	550.00	2417.00	565.00	2420.00	580.00	2421.16	616.40
GR	2416.4	626.00	2415.72	632.40	2415.22	633.00	2415.16	636.00	2415.22	639.00
GR	2415.7	639.60	2416.36	646.00	2421.16	655.60	2421.20	675.00	2418.00	685.00
GR	2422.0	696.00	2422.22	710.00						

X1	2300.7	14	616.40	655.60	99.98	99.98	99.98			
X3	10.0									
GR	2420.5	576.00	2420.12	616.40	2415.30	626.00	2414.66	632.40	2414.16	633.00
GR	2414.1	636.00	2414.16	639.00	2414.66	639.60	2415.30	646.00	2420.12	655.60
GR	2420.3	696.00	2417.00	702.00	2421.00	708.00	2422.00	720.00		
X1	2400.7	12	616.40	658.00	99.97	99.97	99.97			
X3	10									
GR	2421.0	576.00	2419.04	616.40	2414.24	626.00	2413.60	632.40	2413.10	633.00
GR	2413.0	636.00	2413.10	639.00	2413.60	639.60	2414.24	646.00	2419.04	655.60
GR	2420.0	658.00	2420.00	670.00						
X1	2500.7	12	616.40	659.00	99.99	99.99	99.99			
X3	10.0									
GR	2420.0	576.00	2417.98	616.40	2413.18	626.00	2412.54	632.40	2412.04	633.00
GR	2412.0	636.00	2412.04	639.00	2412.54	639.60	2413.18	646.00	2417.98	655.60
GR	2420.0	659.00	2420.00	671.00						
X1	2600.7	14	616.40	660.00	99.93	99.93	99.93			
X3	10.0									
GR	2418.2	522.00	2418.10	576.00	2417.20	581.00	2416.92	616.40	2412.12	626.00
GR	2411.5	632.40	2410.98	633.00	2410.92	636.00	2410.98	639.00	2411.48	639.60
GR	2412.1	646.00	2416.92	655.60	2420.00	660.00	2420.00	672.00		
X1	2700.6	16	616.40	663.00	99.95	99.95	99.95			
X3	10.0									
GR	2426.0	432.00	2417.00	433.00	2418.00	483.00	2417.00	533.00	2417.70	575.00
GR	2415.9	616.40	2411.06	626.00	2410.42	632.40	2409.92	633.00	2409.86	636.00
GR	2409.9	639.00	2410.42	639.60	2411.06	646.00	2415.86	655.60	2420.00	663.00
GR	2420.0	675.00								
X1	2800.6	20	611.40	666.00	100.10	100.10	100.10			
X3	10.0									
GR	2426.0	444.00	2417.50	445.00	2418.50	495.00	2417.50	545.00	2417.30	578.00
GR	2417.3	611.40	2416.14	613.70	2414.80	616.40	2410.00	626.00	2409.36	632.40
GR	2408.9	633.00	2408.80	636.00	2408.86	639.00	2409.36	639.60	2410.00	646.00
GR	2414.8	655.60	2416.14	658.30	2417.30	660.60	2420.00	666.00	2420.50	700.00
X1	2900.7	20	611.40	667.00	30.00	61.62	45.81			
X3	10.0									
GR	2426.0	454.00	2417.00	455.00	2418.00	505.00	2417.00	555.00	2416.00	583.00
GR	2417.2	611.40	2415.99	613.70	2414.65	616.40	2409.85	626.00	2409.21	632.40
GR	2408.7	633.00	2408.65	636.00	2408.71	639.00	2409.21	639.60	2409.85	646.00
GR	2414.7	655.60	2415.99	658.30	2417.15	660.60	2420.00	667.00	2420.50	700.00

X1	2946.5	20	611.40	666.00	39.50	71.12	55.31			
X3	10.0									
GR	2426.0	454.00	2417.00	455.00	2418.00	505.00	2417.00	555.00	2416.00	583.00
GR	2417.1	611.40	2415.92	613.70	2414.58	616.40	2409.78	626.00	2409.14	632.40
GR	2408.6	633.00	2408.58	636.00	2408.64	639.00	2409.14	639.60	2409.78	646.00
GR	2414.6	655.60	2415.92	658.30	2417.08	660.60	2420.00	666.00	2420.50	700.00

X1	3001.8	20	611.40	667.00	0.00	0.00	0.00			
X3	10.0									
GR	2426.0	486.00	2417.00	487.00	2418.00	537.00	2417.00	587.00	2416.50	599.00
GR	2417.0	611.40	2415.84	613.70	2414.50	616.40	2409.70	626.00	2409.06	632.40
GR	2408.6	633.00	2408.50	636.00	2408.56	639.00	2409.06	639.60	2409.70	646.00
GR	2414.5	655.60	2415.84	658.30	2417.00	660.60	2420.00	667.00	2420.50	700.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 146.400

146.400	8.03	2442.78	2443.20	2442.78	2444.24	1.46	.00	.00	2442.08
2579.0	85.3	2412.0	81.7	63.1	240.8	57.5	.0	.0	2442.08
.00	1.35	10.01	1.42	.035	.024	.035	.000	2434.75	444.43
.003036	0.	0.	0.	0	7	0	.00	342.81	787.24

FLOW DISTRIBUTION FOR SECNO= 146.40 CWSEL= 2442.78

STA=	444.	501.	614.	658.	771.	787.
PER Q=	.2	3.1	93.5	3.1	.1	
AREA=	7.9	55.2	240.8	55.2	2.3	
VEL=	.6	1.5	10.0	1.5	.6	
DEPTH=	.1	.5	5.4	.5	.1	

*SECNO 200.300
3280 CROSS SECTION 200.30 EXTENDED .08 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

200.300	8.49	2443.08	2443.08	.00	2444.07	.99	.13	.11	2441.92
2579.0	156.4	2238.0	184.6	98.6	261.5	111.6	.5	.4	2441.92
.00	1.59	8.56	1.65	.035	.024	.035	.000	2434.59	464.00
.001992	54.	54.	54.	20	8	0	.00	336.00	800.00

FLOW DISTRIBUTION FOR SECNO= 200.30 CWSEL= 2443.08

STA=	464.	514.	609.	653.	771.	800.
PER Q=	.6	5.5	86.8	6.8	.3	
AREA=	16.4	82.2	261.5	102.1	9.5	
VEL=	.9	1.7	8.6	1.7	.9	
DEPTH=	.3	.9	5.9	.9	.3	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XMCH	XMR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 300.300

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3715 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2441.62 ELREA= 2441.62

300.300	7.33	2441.62	2442.00	.00	2443.97	2.35	.31	.14	2441.62
2579.0	.0	2579.0	.0	.0	209.6	.0	1.3	.9	2441.62
.00	.00	12.30	.00	.000	.024	.000	.000	2434.29	604.20
.005518	101.	100.	99.	20	12	0	.00	44.59	648.80

FLOW DISTRIBUTION FOR SECNO= 300.30 CWSEL= 2441.62

STA= 604. 649.
PER Q= 100.0
AREA= 209.6
VEL= 12.3
DEPTH= 4.7

#SECNO 400.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3715 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2441.32 ELREA= 2441.32

400.300	7.31	2441.30	2441.33	.00	2443.67	2.36	.55	.41	2441.32
2579.0	.0	2579.0	.0	.0	209.0	.0	1.8	1.0	2441.32
.01	.00	12.34	.00	.000	.024	.000	.000	2433.99	602.74
.005552	100.	100.	100.	20	14	0	.00	44.53	647.26

FLOW DISTRIBUTION FOR SECNO= 400.30 CWSEL= 2441.30

STA= 603. 647.
PER Q= 100.0
AREA= 209.0
VEL= 12.3
DEPTH= 4.7

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 500.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2441.02 ELREA= 2441.02

500.300	7.33	2441.02	2441.04	.00	2443.37	2.35	.55	.41	2441.02
2579.0	.0	2579.0	.0	.0	209.8	.0	2.3	1.1	2441.02
.01	.00	12.29	.00	.000	.024	.000	.000	2433.69	600.20
.005497	100.	100.	100.	20	16	0	.00	44.59	644.80

FLOW DISTRIBUTION FOR SECNO= 500.30 CWSEL= 2441.02

STA= 600. 645.
PER Q= 100.0
AREA= 209.8
VEL= 12.3
DEPTH= 4.7

#SECNO 600.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2440.72 ELREA= 2440.72

600.300	7.30	2440.69	2440.76	.00	2443.07	2.38	.55	.06	2440.72
2579.0	.0	2579.0	.0	.0	208.3	.0	2.7	1.2	2440.72
.01	.00	12.38	.00	.000	.024	.000	.000	2433.39	598.77
.005604	100.	100.	100.	20	16	0	.00	44.46	643.23

FLOW DISTRIBUTION FOR SECNO= 600.30 CWSEL= 2440.69

STA= 599. 643.
PER Q= 100.0
AREA= 208.3
VEL= 12.4
DEPTH= 4.7

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 665.800
3280 CROSS SECTION 665.80 EXTENDED .03 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2440.53 ELREA= 2440.53

665.800	7.34	2440.53	2440.60	.00	2442.87	2.34	.36	.26	2440.53
2579.0	.0	2579.0	.0	.0	210.0	.0	3.1	1.2	2440.53
.01	.00	12.28	.00	.000	.024	.000	.000	2433.19	598.71
.005474	66.	66.	66.	20	17	0	.00	44.58	643.29

FLOW DISTRIBUTION FOR SECNO= 665.80 CWSEL= 2440.53

STA= 599. 643.
PER Q= 100.0
AREA= 210.0
VEL= 12.3
DEPTH= 4.7

#SECNO 666.800

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, XRATIO = 1.83

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2438.76 ELREA= 2438.76

666.800	5.52	2436.94	2439.07	.00	2442.53	5.60	.01	.33	2438.76
2579.0	.0	2579.0	.0	.0	135.9	.0	3.1	1.2	2438.76
.01	.00	18.98	.00	.000	.024	.000	.000	2431.42	602.33
.018261	1.	1.	1.	10	10	0	.00	37.31	639.64

FLOW DISTRIBUTION FOR SECNO= 666.80 CWSEL= 2436.94

STA= 602. 643.
PER Q= 100.0
AREA= 135.9
VEL= 19.0
DEPTH= 3.6

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 700.500

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2438.40 ELREA= 2438.40

700.500	5.75	2436.81	2438.60	.00	2441.78	4.97	.57	.19	2438.40
2579.0	.0	2579.0	.0	.0	144.2	.0	3.2	1.3	2438.40
.01	.00	17.89	.00	.000	.024	.000	.000	2431.06	601.99
.015449	34.	34.	34.	6	14	0	.00	38.10	640.09

FLOW DISTRIBUTION FOR SECNO= 700.50 CWSEL= 2436.81

STA= 602. 643.
PER Q= 100.0
AREA= 144.2
VEL= 17.9
DEPTH= 3.8

*SECNO 800.500

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2436.00 ELREA= 2436.00

800.500	5.99	2435.99	2436.42	.00	2440.36	4.36	1.41	.18	2436.00
2579.0	.0	2579.0	.0	.0	153.9	.0	3.5	1.3	2436.00
.01	.00	16.76	.00	.000	.024	.000	.000	2430.00	601.41
.012928	100.	100.	100.	20	11	0	.00	39.17	640.59

FLOW DISTRIBUTION FOR SECNO= 800.50 CWSEL= 2435.99

STA= 601. 641.
PER Q= 100.0
AREA= 153.9
VEL= 16.8
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 900.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2434.90 ELREA= 2434.94

900.500	5.94	2434.88	2435.75	.00	2439.34	4.45	1.31	.00	2434.90
2579.0	.0	2579.0	.0	.0	152.3	.0	3.9	1.4	2434.94
.02	.00	16.94	.00	.000	.024	.000	.000	2428.94	601.43
.013308	100.	100.	100.	20	8	0	.00	39.06	640.49

FLOW DISTRIBUTION FOR SECNO= 900.50 CWSEL= 2434.88

STA= 601. 641.
PER Q= 100.0
AREA= 152.3
VEL= 16.9
DEPTH= 3.9

SECNO 1000.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2433.90 ELREA= 2433.88

1000.500	6.02	2433.90	2434.21	.00	2438.20	4.31	1.30	.04	2433.90
2579.0	.0	2579.0	.0	.0	154.9	.0	4.2	1.5	2433.88
.02	.00	16.65	.05	.000	.024	.035	.000	2427.88	601.41
.012662	100.	100.	100.	20	9	0	.00	40.26	641.67

FLOW DISTRIBUTION FOR SECNO= 1000.50 CWSEL= 2433.90

STA= 601. 641.
PER Q= 100.0
AREA= 154.9
VEL= 16.7
DEPTH= 4.0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1100.600
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2432.80 ELREA= 2432.82

1100.600	5.98	2432.80	2432.82	.00	2437.18	4.39	1.28	.80	2432.80
2579.0	.0	2579.0	.0	.0	153.4	.0	4.6	1.6	2432.82
.02	.00	16.81	.00	.000	.024	.000	.000	2426.82	601.40
.013017	100.	100.	100.	20	9	0	.00	39.15	640.56

FLOW DISTRIBUTION FOR SECNO= 1100.60 CWSEL= 2432.80

STA= 601. 641.
PER Q= 100.0
AREA= 153.4
VEL= 16.8
DEPTH= 3.9

*SECNO 1200.400
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2431.80 ELREA= 2431.80

1200.400	6.01	2431.77	2431.83	.00	2436.11	4.34	1.29	.10	2431.80
2579.0	.0	2579.0	.0	.0	154.2	.0	4.9	1.7	2431.80
.02	.00	16.72	.00	.000	.024	.000	.000	2425.76	601.46
.012793	100.	100.	100.	20	16	0	.00	39.07	640.54

FLOW DISTRIBUTION FOR SECNO= 1200.40 CWSEL= 2431.77

STA= 601. 641.
PER Q= 100.0
AREA= 154.2
VEL= 16.7
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1300.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2430.70 ELREA= 2430.70

1300.500	6.00	2430.70	2430.70	.00	2435.05	4.35	1.28	.81	2430.70
2579.0	.0	2579.0	.0	.0	154.1	.0	5.3	1.8	2430.70
.02	.00	16.73	.00	.000	.024	.000	.000	2424.70	601.40
.012844	100.	100.	100.	20	10	0	.00	39.19	640.60

FLOW DISTRIBUTION FOR SECNO= 1300.50 CWSEL= 2430.70

STA= 601. 641.
PER Q= 100.0
AREA= 154.1
VEL= 16.7
DEPTH= 3.9

#SECNO 1400.400
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2429.60 ELREA= 2429.64

1400.400	5.93	2429.57	2429.63	.00	2434.06	4.50	1.31	.72	2429.60
2579.0	.0	2579.0	.0	.0	151.6	.0	5.6	1.9	2429.64
.02	.00	17.02	.00	.000	.024	.000	.000	2423.64	601.47
.013484	100.	100.	100.	20	8	0	.00	38.98	640.45

FLOW DISTRIBUTION FOR SECNO= 1400.40 CWSEL= 2429.57

STA= 601. 641.
PER Q= 100.0
AREA= 151.6
VEL= 17.0
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1500.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2428.60 ELREA= 2428.58

1500.500	5.97	2428.55	2428.61	.00	2432.95	4.40	1.33	.08	2428.60
2579.0	.0	2579.0	.0	.0	153.2	.0	6.0	2.0	2428.58
.03	.00	16.83	.00	.000	.024	.000	.000	2422.58	608.49
.013056	105.	100.	95.	20	14	0	.00	39.06	647.55

FLOW DISTRIBUTION FOR SECNO= 1500.50 CWSEL= 2428.55

STA= 608. 648.
PER Q= 100.0
AREA= 153.2
VEL= 16.8
DEPTH= 3.9

#SECNO 1600.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2427.50 ELREA= 2427.52

1600.500	5.96	2427.48	2427.50	.00	2431.91	4.44	1.31	.81	2427.50
2579.0	.0	2579.0	.0	.0	152.6	.0	6.3	2.1	2427.52
.03	.00	16.90	.00	.000	.024	.000	.000	2421.52	615.45
.013222	105.	100.	95.	20	23	0	.00	39.06	654.51

FLOW DISTRIBUTION FOR SECNO= 1600.50 CWSEL= 2427.48

STA= 615. 655.
PER Q= 100.0
AREA= 152.6
VEL= 16.9
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1700.900
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2426.46 ELREA= 2426.46

1700.900	5.98	2426.44	2426.80	.00	2430.84	4.40	1.32	.43	2426.46
2579.0	.0	2579.0	.0	.0	153.3	.0	6.7	2.2	2426.46
.03	.00	16.83	.00	.000	.024	.000	.000	2420.46	617.44
.013054	105.	100.	96.	20	8	0	.00	39.12	656.56

FLOW DISTRIBUTION FOR SECNO= 1700.90 CWSEL= 2426.44

STA= 617. 657.
PER Q= 100.0
AREA= 153.3
VEL= 16.8
DEPTH= 3.9

SECNO 1800.900
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2425.40 ELREA= 2425.40

1800.900	6.00	2425.40	2425.86	.00	2429.75	4.35	1.30	.09	2425.40
2579.0	.0	2579.0	.0	.0	154.0	.0	7.0	2.2	2425.40
.03	.00	16.74	.00	.000	.024	.000	.000	2419.40	616.40
.012891	103.	100.	97.	20	8	0	.00	39.19	655.60

FLOW DISTRIBUTION FOR SECNO= 1800.90 CWSEL= 2425.40

STA= 616. 656.
PER Q= 100.0
AREA= 154.0
VEL= 16.7
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1900.800
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2424.34 ELREA= 2424.34

1900.800	5.99	2424.33	2425.13	.00	2428.67	4.34	1.28	.35	2424.34
2579.0	.0	2579.0	.0	.0	154.3	.0	7.4	2.3	2424.34
.03	.00	16.72	.00	.000	.024	.000	.000	2418.34	616.42
.012807	100.	100.	100.	20	11	0	.00	39.17	655.58

FLOW DISTRIBUTION FOR SECNO= 1900.80 CWSEL= 2424.33

STA= 616. 656.
PER Q= 100.0
AREA= 154.3
VEL= 16.7
DEPTH= 3.9

#SECNO 2000.800
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2423.28 ELREA= 2423.28

2000.800	5.99	2423.27	2423.39	.00	2427.63	4.36	1.28	.06	2423.28
2579.0	.0	2579.0	.0	.0	154.0	.0	7.7	2.4	2423.28
.03	.00	16.75	.00	.000	.024	.000	.000	2417.28	616.41
.012874	100.	100.	100.	20	13	0	.00	39.17	655.59

FLOW DISTRIBUTION FOR SECNO= 2000.80 CWSEL= 2423.27

STA= 616. 656.
PER Q= 100.0
AREA= 154.0
VEL= 16.7
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2100.800
3280 CROSS SECTION 2100.80 EXTENDED 2.21 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2422.22 ELREA= 2422.22

2100.800	5.99	2422.21	2422.27	.00	2426.57	4.35	1.29	.14	2422.22
2579.0	.0	2579.0	.0	.0	154.0	.0	8.1	2.5	2422.22
.04	.00	16.74	.00	.000	.024	.000	.000	2416.22	616.42
.012880	100.	100.	100.	20	16	0	.00	39.17	655.58

FLOW DISTRIBUTION FOR SECNO= 2100.80 CWSEL= 2422.21

STA= 616. 656.
PER Q= 100.0
AREA= 154.0
VEL= 16.7
DEPTH= 3.9

*SECNO 2200.700
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2421.16 ELREA= 2421.16

2200.700	6.00	2421.16	2421.55	.00	2425.52	4.36	1.29	.37	2421.16
2579.0	.0	2579.0	.0	.0	153.9	.0	8.4	2.6	2421.16
.04	.00	16.76	.00	.000	.024	.000	.000	2415.16	616.41
.012911	100.	100.	100.	20	8	0	.00	39.19	655.59

FLOW DISTRIBUTION FOR SECNO= 2200.70 CWSEL= 2421.16

STA= 616. 656.
PER Q= 100.0
AREA= 153.9
VEL= 16.8
DEPTH= 3.9

SECNO	DEPTH	CWSEL	CRITWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 2300.700

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

2300.700	6.05	2420.15	2421.52	.00	2423.97	3.82	1.22	.15	2420.12
2579.0	.0	2487.4	91.6	.1	156.1	16.6	8.8	2.7	2420.12
.04	.05	15.93	5.51	.035	.024	.035	.000	2414.10	612.92
.011461	100.	100.	100.	20	11	0	.00	60.49	706.73

FLOW DISTRIBUTION FOR SECNO= 2300.70 CWSEL= 2420.15

STA=	613.	616.	656.	702.	707.
PER Q=	.0	96.4	2.0	1.6	
AREA=	.1	156.1	9.2	7.5	
VEL=	.0	15.9	5.6	5.4	
DEPTH=	.0	4.0	.2	1.6	

#SECNO 2400.700

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2419.04 ELREA= 2420.00

2400.700	6.72	2419.72	2420.58	.00	2422.82	3.10	.94	.22	2419.04
2579.0	8.8	2570.2	.0	4.8	181.7	.0	9.2	2.9	2420.00
.04	1.83	14.14	.00	.035	.024	.000	.000	2413.00	602.32
.007809	100.	100.	100.	8	11	0	.00	54.98	657.31

FLOW DISTRIBUTION FOR SECNO= 2400.70 CWSEL= 2419.72

STA=	602.	616.	658.
PER Q=	.3	99.7	
AREA=	4.8	181.7	
VEL=	1.8	14.1	
DEPTH=	.3	4.4	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 2500.700

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2417.98 ELREA= 2420.00

2500.700	6.41	2418.41	2419.44	.00	2421.92	3.52	.85	.04	2417.98
2579.0	2.7	2576.3	.0	1.8	171.1	.0	9.6	3.0	2420.00
.04	1.46	15.06	.00	.035	.024	.000	.000	2412.00	607.87
.009304	100.	100.	100.	9	8	0	.00	48.45	656.32

FLOW DISTRIBUTION FOR SECNO= 2500.70 CWSEL= 2418.41

STA=	608.	616.	659.
PER Q=	.1	99.9	
AREA=	1.8	171.1	
VEL=	1.5	15.1	
DEPTH=	.2	4.3	

#SECNO 2600.700

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2416.92 ELREA= 2420.00

2600.700	6.28	2417.20	2418.71	.00	2420.93	3.73	.97	.02	2416.92
2579.0	6.5	2572.5	.0	5.3	165.8	.0	10.0	3.1	2420.00
.05	1.22	15.51	.00	.035	.024	.000	.000	2410.92	580.94
.010194	100.	100.	100.	6	11	0	.00	75.08	656.02

FLOW DISTRIBUTION FOR SECNO= 2600.70 CWSEL= 2417.20

STA=	581.	616.	660.
PER Q=	.3	99.7	
AREA=	5.3	165.8	
VEL=	1.2	15.5	
DEPTH=	.2	4.2	

#SECNO 2700.600

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 2415.90 ELREA= 2420.00

2700.600	6.30	2416.16	2418.09	.00	2419.91	3.75	1.02	.00	2415.90
2579.0	.8	2578.2	.0	.8	165.9	.0	10.4	3.3	2420.00
.05	1.10	15.54	.00	.035	.024	.000	.000	2409.86	610.44
.010259	100.	100.	100.	6	12	0	.00	45.69	656.13

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 2700.60 CWSEL= 2416.16

STA=	610.	616.	663.
PER Q=	.0	100.0	
AREA=	.8	165.9	
VEL=	1.1	15.5	
DEPTH=	.1	4.2	

#SECNO 2800.600

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.30 ELREA= 2420.00

2800.600	6.26	2415.06	2416.12	.00	2418.86	3.79	1.04	.00	2417.30
2579.0	.0	2579.0	.0	.0	165.0	.0	10.8	3.4	2420.00
.05	.00	15.63	.00	.000	.024	.000	.000	2408.80	615.85
.010637	100.	100.	100.	7	8	0	.00	40.30	656.15

FLOW DISTRIBUTION FOR SECNO= 2800.60 CWSEL= 2415.06

STA=	616.	666.
PER Q=	100.0	
AREA=	165.0	
VEL=	15.6	
DEPTH=	4.1	

#SECNO 2900.700

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.20 ELREA= 2420.00

2900.700	7.33	2415.98	2415.98	.00	2418.33	2.35	.75	.47	2417.20
2579.0	.0	2579.0	.0	.0	209.6	.0	11.2	3.5	2420.00
.05	.00	12.30	.00	.000	.024	.000	.000	2408.65	613.72
.005513	100.	100.	100.	20	8	0	.00	44.55	658.28

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 2900.70 CWSEL= 2415.98

STA= 614. 667.
PER Q= 100.0
AREA= 209.6
VEL= 12.3
DEPTH= 4.7

#SECNO 2946.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.10 ELREA= 2420.00

2946.500	7.29	2415.87	2415.87	.00	2418.25	2.39	.26	.08	2417.10
2579.0	.0	2579.0	.0	.0	208.0	.0	11.5	3.5	2420.00
.05	.00	12.40	.00	.000	.024	.000	.000	2408.58	613.81
.005627	30.	46.	62.	20	5	0	.00	44.39	658.19

FLOW DISTRIBUTION FOR SECNO= 2946.50 CWSEL= 2415.87

STA= 614. 666.
PER Q= 100.0
AREA= 208.0
VEL= 12.4
DEPTH= 4.7

#SECNO 3001.800
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2417.00 ELREA= 2420.00

3001.800	7.30	2415.80	2415.80	.00	2418.17	2.38	.31	.32	2417.00
2579.0	.0	2579.0	.0	.0	208.5	.0	11.7	3.6	2420.00
.05	.00	12.37	.00	.000	.024	.000	.000	2408.50	613.78
.005585	40.	55.	71.	20	5	0	.00	44.43	658.22

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XWL	XWCH	XWR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 3001.80 CWSEL= 2415.80

STA= 614. 667.
PER Q= 100.0
AREA= 208.5
VEL= 12.4
DEPTH= 4.7

PROFILE FOR STREAM SUPERCRITICAL - OUTFALL

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION SECNO	CUMDIS	2409.	2414.	2419.	2424.	2429.	2434.	2439.	2444.	2449.	2454.
146.40	0.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	10.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	20.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	30.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	40.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	50.	.	.	.	.	.	.	I	.	L W.E	.	.	.
200.30	60.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	70.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	80.	.	.	.	.	.	.	I	.	L W.E	.	.	.
	90.	.	.	.	.	.	.	I	.	LWC.E	.	.	.
	100.	.	.	.	.	.	.	I	.	LWM.E	.	.	.
	110.	.	.	.	.	.	.	I	.	LW .E	.	.	.
	120.	.	.	.	.	.	.	I	.	LWC .E	.	.	.
	130.	.	.	.	.	.	.	I	.	LWC .E	.	.	.
	140.	.	.	.	.	.	.	I	.	LWM .E	.	.	.
	150.	.	.	.	.	.	.	I	.	LWM .E	.	.	.
300.30	160.	.	.	.	.	.	.	I	.	WCM .E	.	.	.
	170.	.	.	.	.	.	.	I	.	WCM .E	.	.	.
	180.	.	.	.	.	.	.	I	.	WCM .E	.	.	.
	190.	.	.	.	.	.	.	I	.	WCM .E	.	.	.
	200.	.	.	.	.	.	.	I	.	W M .E	.	.	.
	210.	.	.	.	.	.	.	I	.	W M .E	.	.	.
	220.	.	.	.	.	.	.	I	.	W M.E	.	.	.
	230.	.	.	.	.	.	.	I	.	W M.E	.	.	.
	240.	.	.	.	.	.	.	I	.	W ME	.	.	.
	250.	.	.	.	.	.	.	I	.	W ME	.	.	.
400.30	260.	.	.	.	.	.	.	I	.	W ME	.	.	.
	270.	.	.	.	.	.	.	I	.	W ME	.	.	.
	280.	.	.	.	.	.	.	I	.	WC ME	.	.	.
	290.	.	.	.	.	.	.	I	.	W M E	.	.	.
	300.	.	.	.	.	.	.	I	.	W M E	.	.	.
	310.	.	.	.	.	.	.	I	.	W M E	.	.	.
	320.	.	.	.	.	.	.	I	.	W M E	.	.	.
	330.	.	.	.	.	.	.	I	.	W M E	.	.	.
	340.	.	.	.	.	.	.	I	.	W M E	.	.	.
	350.	.	.	.	.	.	.	I	.	W M E	.	.	.
500.30	360.	.	.	.	.	.	.	I	.	W M E	.	.	.
	370.	.	.	.	.	.	.	I	.	W M E	.	.	.
	380.	.	.	.	.	.	.	I	.	W M E	.	.	.
	390.	.	.	.	.	.	.	I	.	W M E	.	.	.
	400.	.	.	.	.	.	.	I	.	W M E	.	.	.
	410.	.	.	.	.	.	.	I	.	WM E.	.	.	.
	420.	.	.	.	.	.	.	I	.	WM E.	.	.	.
	430.	.	.	.	.	.	.	I	.	WM E.	.	.	.
	440.	.	.	.	.	.	.	I	.	WM E.	.	.	.
	450.	.	.	.	.	.	.	I	.	WCM E.	.	.	.
600.30	460.	.	.	.	.	.	.	I	.	WCM E.	.	.	.
	470.	.	.	.	.	.	.	I	.	W M E.	.	.	.
	480.	.	.	.	.	.	.	I	.	WM E.	.	.	.

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          510.  .  .  .  .  .  .  I.  .  .  M  E.  .  .  .
665.80    520.  .  .  .  .  .  .  I.  .  .  M  E.  .  .  .
666.80    530.  .  .  .  .  .  .  I  .  .  M .C M  E .  .  .
          540.  .  .  .  .  .  .  I  .  .  M LC M  E .  .  .
          550.  .  .  .  .  .  .  I  .  .  M LCM  E .  .  .
700.50    560.  .  .  .  .  .  .  I  .  .  M CM  E .  .  .
          570.  .  .  .  .  .  .  I  .  .  M LCM  E .  .  .
          580.  .  .  .  .  .  .  I  .  .  M C.M  E .  .  .
          590.  .  .  .  .  .  .  I  .  .  M LCM  E .  .  .
          600.  .  .  .  .  .  .  I  .  .  M C M  E .  .  .
          610.  .  .  .  .  .  .  I  .  .  MLC M  E .  .  .
          620.  .  .  .  .  .  .  I  .  .  MLC M  E .  .  .
          630.  .  .  .  .  .  .  I  .  .  MLC  M  E .  .  .
          640.  .  .  .  .  .  .  I  .  .  MLC M.  E .  .  .
          650.  .  .  .  .  .  .  I  .  .  MC  M.  E .  .  .
800.50    660.  .  .  .  .  .  .  I  .  .  MC  M.  E .  .  .
          670.  .  .  .  .  .  .  I  .  .  MC  M.  E .  .  .
          680.  .  .  .  .  .  .  I  .  .  MC M . E .  .  .
          690.  .  .  .  .  .  .  I  .  .  MC  M . E .  .  .
          700.  .  .  .  .  .  .  I  .  .  MC M  . E .  .  .
          710.  .  .  .  .  .  .  I  .  .  MC M  . E .  .  .
          720.  .  .  .  .  .  .  I  .  .  MC M  . E .  .  .
          730.  .  .  .  .  .  .  I  .  .  MRCM  . E .  .  .
          740.  .  .  .  .  .  .I  .  .  M CM  . E .  .  .
          750.  .  .  .  .  .  .I  .  .  M C   . E .  .  .
900.50    760.  .  .  .  .  .  .I  .  .  M C   . E .  .  .
          770.  .  .  .  .  .  .I  .  .  MCM   .E .  .  .
          780.  .  .  .  .  .  I  .  . M C   .E .  .  .
          790.  .  .  .  .  .  I  .  . M C   .E .  .  .
          800.  .  .  .  .  .  I  .  . MCM   .E .  .  .
          810.  .  .  .  .  .  I  .  . MC    .E .  .  .
          820.  .  .  .  .  .  I  .  . MC    E  .  .  .
          830.  .  .  .  .  .  I. .  .MCM    E  .  .  .
          840.  .  .  .  .  .  I. .  .MCM    E  .  .  .
          850.  .  .  .  .  .  I. .  .MC     E  .  .  .
1000.50   860.  .  .  .  .  .  I. .  .MM     E. .  .  .
          870.  .  .  .  .  .  I. .  .MM     E. .  .  .
          880.  .  .  .  .  .  I  .  . MC    E. .  .  .
          890.  .  .  .  .  .  I  .  . MC    E. .  .  .
          900.  .  .  .  .  .  I  .  . MM    E. .  .  .
          910.  .  .  .  .  .  I  .  . MM    E  .  .  .
          920.  .  .  .  .  .  I  .  . MC    E  .  .  .
          930.  .  .  .  .  .  I  .  . MM    E  .  .  .
          940.  .  .  .  .  .  I  .  . MM    E  .  .  .
          950.  .  .  .  .  .  I  .  . M.    E  .  .  .
1100.60   960.  .  .  .  .  .  I  .  . M.    E  .  .  .
          970.  .  .  .  .  .  I  .  . MM.   E  .  .  .
          980.  .  .  .  .  .  I  .  . MM.   E  .  .  .
          990.  .  .  .  .  .  I  .  . M .   E  .  .  .
         1000.  .  .  .  .  .  I  .  . M .   E  .  .  .
         1010.  .  .  .  .  .  I  .  . M .   E  .  .  .
         1020.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1030.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1040.  .  .  .  .  .  I  .  . M  .  E  .  .  .
         1050.  .  .  .  .  .  I  .  . M  .  E  .  .  .
1200.40  1060.  .  .  .  .  .  I  .  . M  .  E  .  .  .
         1070.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1080.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1090.  .  .  .  .  .  I  .  . M  .  E  .  .  .
         1100.  .  .  .  .  .  I  .  . M  .  E  .  .  .
         1110.  .  .  .  .  .  I  .  . MC .  E  .  .  .
         1120.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1130.  .  .  .  .  .  I  .  . MM .  E  .  .  .
         1140.  .  .  .  .  .  I  .  . M  .  E  .  .  .
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        1170.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1180.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1190.  .  .  .  .I  .  W   .E  .  .  .  .  .
        1200.  .  .  .  .I  .  WC  .E  .  .  .  .  .
        1210.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1220.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1230.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1240.  .  .  .  .I  .  W   .E  .  .  .  .  .
        1250.  .  .  .  .I  .  WM  .E  .  .  .  .  .
1400.40 1260.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1270.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1280.  .  .  .  .I  .  WM  .E  .  .  .  .  .
        1290.  .  .  .  .I  .  W   E  .  .  .  .  .
        1300.  .  .  .  I.  .  WM  E  .  .  .  .  .
        1310.  .  .  .  I.  .  WM  E  .  .  .  .  .
        1320.  .  .  .  I.  .  WM  E  .  .  .  .  .
        1330.  .  .  .  I.  .  WM  E  .  .  .  .  .
        1340.  .  .  .  I.  .  W   E. .  .  .  .  .
        1350.  .  .  .  I.  .  WM  E. .  .  .  .  .
1500.50 1360.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1370.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1380.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1390.  .  .  .  I.  .  WC  E. .  .  .  .  .
        1400.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1410.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1420.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1430.  .  .  .  I.  .  WM  E. .  .  .  .  .
        1440.  .  .  .  I.  .  WM. E. .  .  .  .  .
        1450.  .  .  .  I.  .  WM. E. .  .  .  .  .
1600.50 1460.  .  .  .  I.  .  WM. E. .  .  .  .  .
        1470.  .  .  .  I.  .  WM. E. .  .  .  .  .
        1480.  .  .  .  I.  .  WM. E. .  .  .  .  .
        1490.  .  .  .  I.  .  WCM. E. .  .  .  .  .
        1500.  .  .  .  I.  .  W M. E. .  .  .  .  .
        1510.  .  .  .  I.  .  W M. E. .  .  .  .  .
        1520.  .  .  .  I.  .  W M. E. .  .  .  .  .
        1530.  .  .  .  I.  .  W M. E. .  .  .  .  .
        1540.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1550.  .  .  .  I.  .  WC M. E. .  .  .  .  .
1700.90 1560.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1570.  .  .  .  I.  .  W  M. E. .  .  .  .  .
        1580.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1590.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1600.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1610.  .  .  .  I.  .  WC M. E. .  .  .  .  .
        1620.  .  .  .  I.  .  W  M. E. .  .  .  .  .
        1630.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1640.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1650.  .  .  .I.  .  WC M. E. .  .  .  .  .
1800.90 1660.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1670.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1680.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1690.  .  .  .I.  .  WC M. E. .  .  .  .  .
        1700.  .  .  .I.  .  WCM. E. .  .  .  .  .
        1710.  .  .  .I.  .  WCM. E. .  .  .  .  .
        1720.  .  .  .I.  .  WCM. E. .  .  .  .  .
        1730.  .  .  .I.  .  W C. E. .  .  .  .  .
        1740.  .  .  .I.  .  W C. E. .  .  .  .  .
        1750.  .  .  .I.  .  WC. E. .  .  .  .  .
1900.80 1760.  .  .  .I.  .  WC. E. .  .  .  .  .
        1770.  .  .  .I.  .  W C. E. .  .  .  .  .
        1780.  .  .  .I.  .  W C. E. .  .  .  .  .
        1790.  .  .  .I.  .  WC. E. .  .  .  .  .
        1800.  .  .  .I.  .  WC. E. .  .  .  .  .
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          1830.  .    .    I .      WCM    E.  .  .  .  .  .  .
          1840.  .    .    I .      WM     E.  .  .  .  .  .  .
          1850.  .    .    I .      WM     E   .  .  .  .  .  .
2000.80   1860.  .    .    I .      WM     E   .  .  .  .  .  .
          1870.  .    .   I  .      WC     E   .  .  .  .  .  .
          1880.  .    .   I  .      W.     E   .  .  .  .  .  .
          1890.  .    .   I  .      W.     E   .  .  .  .  .  .
          1900.  .    .   I  .     MW.     E   .  .  .  .  .  .
          1910.  .    .  I   .     MWC.    E   .  .  .  .  .  .
          1920.  .    .  I   .    M W .    E   .  .  .  .  .  .
          1930.  .    .  I   .    M  W.    E   .  .  .  .  .  .
          1940.  .    .  I   .    M  W.    E   .  .  .  .  .  .
          1950.  .    .  I   .   M   W.    E   .  .  .  .  .  .
2100.80   1960.  .    .  I   .   M   WC.   E   .  .  .  .  .  .
          1970.  .    .  I   .   M   W .   E   .  .  .  .  .  .
          1980.  .    .  I   .    M  W .   E   .  .  .  .  .  .
          1990.  .    .  I   .    M  W .   E   .  .  .  .  .  .
          2000.  .    .  I   .     M W .   E   .  .  .  .  .  .
          2010.  .    .  I   .     MWC .   E   .  .  .  .  .  .
          2020.  .    .  I   .     MWC .   E   .  .  .  .  .  .
          2030.  .    .  I   .      WC .   E   .  .  .  .  .  .
          2040.  .    .  I   .      W  .   E   .  .  .  .  .  .
          2050.  .    .  I   .      WM .   E   .  .  .  .  .  .
2200.70   2060.  .    .  I   .     WCM .   E   .  .  .  .  .  .
          2070.  .    .  I   .     WCM .   E   .  .  .  .  .  .
          2080.  .    .  I   .     WC  .   E   .  .  .  .  .  .
          2090.  .    .  I   .     WC  .   E   .  .  .  .  .  .
          2100.  .    .  I   .    LWC  .   E   .  .  .  .  .  .
          2110.  .    .  I   .    W C  .   E   .  .  .  .  .  .
          2120.  .    .  I   .    WMC  .   E   .  .  .  .  .  .
          2130.  .    .  I   .    WMC  .   E   .  .  .  .  .  .
          2140.  .    .  I   .    WMC  .   E   .  .  .  .  .  .
          2150.  .    .I      .   LW C  .   E   .  .  .  .  .  .
2300.70   2160.  .    .I      .   WM C  .   E   .  .  .  .  .  .
          2170.  .    .I      .   WM C  .   E   .  .  .  .  .  .
          2180.  .    .I      .   WM C  .   E   .  .  .  .  .  .
          2190.  .    .I      .   WMC   .   E   .  .  .  .  .  .
          2200.  .    I       .  LWMC   .   E   .  .  .  .  .  .
          2210.  .    I       .  LW C   .   E   .  .  .  .  .  .
          2220.  .    I       .  LW C   .   E   .  .  .  .  .  .
          2230.  .    I       .  LW C   .   E.  .  .  .  .  .  .
          2240.  .    I.      .  LW C   .   E.  .  .  .  .  .  .
          2250.  .    I.      .  L WC   .   E.  .  .  .  .  .  .
2400.70   2260.  .    I.      .  LWRC   .   E.  .  .  .  .  .  .
          2270.  .    I.      .  LWRC   .   E   .  .  .  .  .  .
          2280.  .    I.      .  LWRC   .   E   .  .  .  .  .  .
          2290.  .   I  .     .  L WC   .   E   .  .  .  .  .  .
          2300.  .   I  .     .  LW C   .   E   .  .  .  .  .  .
          2310.  .   I  .     .  LW C   .   E   .  .  .  .  .  .
          2320.  .   I  .     .  LW C   .   E   .  .  .  .  .  .
          2330.  .   I  .     .  LW C   .   E   .  .  .  .  .  .
          2340.  .  I   .     .  LW CR  .   E   .  .  .  .  .  .
          2350.  .  I   .     .  LW CR  .   E   .  .  .  .  .  .
2500.70   2360.  .  I   .     .  LW CR  .   E   .  .  .  .  .  .
          2370.  .  I   .     .  LW CR  .   E   .  .  .  .  .  .
          2380.  .  I   .     .  W. CR  .   E   .  .  .  .  .  .
          2390.  . I    .     . LW.CMR  .   E   .  .  .  .  .  .
          2400.  . I    .     . LW.CMR  .   E   .  .  .  .  .  .
          2410.  . I    .     . LW.C R  .   E   .  .  .  .  .  .
          2420.  . I    .     .  W .C R .   E   .  .  .  .  .  .
          2430.  .I     .     . LW MC R .   E   .  .  .  .  .  .
          2440.  .I     .     . LW MC R .   E   .  .  .  .  .  .
          2450.  .I     .     . LW MC R .   E   .  .  .  .  .  .
2600.70   2460.  .I     .     .  W MC  R .  E   .  .  .  .  .  .
          2470.  .I     .     .  W  C  R .  E
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	2490.	.	I	.	LW	C	RE	.	.	.	.	.	.	.
	2500.	.	I	.	LW	CM	RE	.	.	.	.	.	.	.
	2510.	.	I	.	W	CM	RE	.	.	.	.	.	.	.
	2520.	.	I	.	W	C	MRE	.	.	.	.	.	.	.
	2530.	.	I	.	LW	C	ME	.	.	.	.	.	.	.
	2540.	.	I	.	LW	C.	ME	.	.	.	.	.	.	.
	2550.	.	I	.	LW	C.	E	.	.	.	.	.	.	.
2700.60	2560.	.	I	.	W	C.	E	.	.	.	.	.	.	.
	2570.	.	I	.	W	C.	E	.	.	.	.	.	.	.
	2580.	.	I	.	W	C	. ER	.	.	.	.	.	.	.
	2590.	.	I	.	WL	C	. ER	.	.	.	.	.	.	.
	2600.	.	I	.	W	L	C . ER	.	.	.	.	.	.	.
	2610.	.	I	.	W	LC	. ERM	.	.	.	.	.	.	.
	2620.	.	I	.	W	LC	. ERM	.	.	.	.	.	.	.
	2630.	.	I	.	W	CL	.E RM	.	.	.	.	.	.	.
	2640.	.	I	.	W	CL	.E RM	.	.	.	.	.	.	.
	2650.	.	I	.	W	CL	.E RM	.	.	.	.	.	.	.
2800.60	2660.	.	I	.	W	C	L .E RM	.	.	.	.	.	.	.
	2670.	.	I	.	W	C	L .E RM	.	.	.	.	.	.	.
	2680.	.	I	.	WC	L	.E RM	.	.	.	.	.	.	.
	2690.	.	I	.	WC	L	E RM	.	.	.	.	.	.	.
	2700.	I		.	WC	L	E RM	.	.	.	.	.	.	.
	2710.	I		.	WC	L	E RM	.	.	.	.	.	.	.
	2720.	I		.	WC	L	E RM	.	.	.	.	.	.	.
	2730.	I		.	WC	L	E RM	.	.	.	.	.	.	.
	2740.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2750.	I		.	W	L	E RM	.	.	.	.	.	.	.
2900.70	2760.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2770.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2780.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2790.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2800.	I		.	W	L	E RM	.	.	.	.	.	.	.
2946.50	2810.	I		.	W	L	E RM	.	.	.	.	.	.	.
	2820.	I		.	W	L	E. RM	.	.	.	.	.	.	.
	2830.	I		.	W	L	E. RM	.	.	.	.	.	.	.
	2840.	I		.	W	L	E. RM	.	.	.	.	.	.	.
	2850.	I		.	W	L	E. RM	.	.	.	.	.	.	.
3001.80	2860.	I		.	W	L	E. RM	.	.	.	.	.	.	.

THIS RUN EXECUTED 10JAN96 09:47:17

****
HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

ERROR CORR - 01.02.03.04
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUPERCRITICAL - OUTFALL

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*XS	VCH	AREA	.01K
	146.400	.00	.00	.00	2434.75	2579.00	2442.78	2443.20	2444.24	30.36	10.01	361.48	468.07
*	200.300	53.86	.00	.00	2434.59	2579.00	2443.08	2443.08	2444.07	19.92	8.56	471.65	577.79
	300.300	99.95	.00	.00	2434.29	2579.00	2441.62	2442.00	2443.97	55.18	12.30	209.64	347.19
*	400.300	100.06	.00	.00	2433.99	2579.00	2441.30	2441.33	2443.67	55.52	12.34	209.03	346.11
*	500.300	100.00	.00	.00	2433.69	2579.00	2441.02	2441.04	2443.37	54.97	12.29	209.79	347.84
*	600.300	99.98	.00	.00	2433.39	2579.00	2440.69	2440.76	2443.07	56.04	12.38	208.33	344.52
*	665.800	65.53	.00	.00	2433.19	2579.00	2440.53	2440.60	2442.87	54.74	12.28	210.04	348.58
*	666.800	1.00	.00	.00	2431.42	2579.00	2436.94	2439.07	2442.53	182.61	18.98	135.86	190.85
	700.500	33.71	.00	.00	2431.06	2579.00	2436.81	2438.60	2441.78	154.49	17.89	144.17	207.49
*	800.500	99.96	.00	.00	2430.00	2579.00	2435.99	2436.42	2440.36	129.28	16.76	153.87	226.82
*	900.500	100.06	.00	.00	2428.94	2579.00	2434.88	2435.75	2439.34	133.08	16.94	152.29	223.56
*	1000.500	99.96	.00	.00	2427.88	2579.00	2433.90	2434.21	2438.20	126.62	16.65	154.89	229.19
*	1100.600	100.05	.00	.00	2426.82	2579.00	2432.80	2432.82	2437.18	130.17	16.81	153.45	226.04
*	1200.400	99.88	.00	.00	2425.76	2579.00	2431.77	2431.83	2436.11	127.93	16.72	154.22	228.02
*	1300.500	100.12	.00	.00	2424.70	2579.00	2430.70	2430.70	2435.05	128.44	16.73	154.13	227.57
	1400.400	99.89	.00	.00	2423.64	2579.00	2429.57	2429.63	2434.06	134.84	17.02	151.57	222.09
*	1500.500	100.01	.00	.00	2422.58	2579.00	2428.55	2428.61	2432.95	130.56	16.83	153.24	225.71

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10WKS	WCH	AREA	.01K
*	1600.500	100.01	.00	.00	2421.52	2579.00	2427.48	2427.50	2431.91	132.22	16.90	152.58	224.28
*	1700.900	100.43	.00	.00	2420.46	2579.00	2426.44	2426.80	2430.84	130.54	16.83	153.27	225.72
*	1800.900	100.02	.00	.00	2419.40	2579.00	2425.40	2425.86	2429.75	128.91	16.74	154.02	227.14
*	1900.800	99.92	.00	.00	2418.34	2579.00	2424.33	2425.13	2428.67	128.07	16.72	154.28	227.89
*	2000.800	100.01	.00	.00	2417.28	2579.00	2423.27	2423.39	2427.63	128.74	16.75	153.99	227.30
*	2100.800	99.94	.00	.00	2416.22	2579.00	2422.21	2422.27	2426.57	128.80	16.74	154.02	227.25
*	2200.700	99.96	.00	.00	2415.16	2579.00	2421.16	2421.55	2425.52	129.11	16.76	153.88	226.97
*	2300.700	100.00	.00	.00	2414.10	2579.00	2420.15	2421.52	2423.97	114.61	15.93	172.81	240.90
	2400.700	99.98	.00	.00	2413.00	2579.00	2419.72	2420.58	2422.82	78.09	14.14	186.54	291.85
	2500.700	99.97	.00	.00	2412.00	2579.00	2418.41	2419.44	2421.92	93.04	15.06	172.90	267.37
	2600.700	99.99	.00	.00	2410.92	2579.00	2417.20	2418.71	2420.93	101.94	15.51	171.16	255.43
	2700.600	99.93	.00	.00	2409.86	2579.00	2416.16	2418.09	2419.91	102.59	15.54	166.68	254.62
	2800.600	99.95	.00	.00	2408.80	2579.00	2415.06	2416.12	2418.86	106.37	15.63	165.00	250.06
*	2900.700	100.10	.00	.00	2408.65	2579.00	2415.98	2415.98	2418.33	55.13	12.30	209.61	347.35
*	2946.500	45.81	.00	.00	2408.58	2579.00	2415.87	2415.87	2418.25	56.27	12.40	208.03	343.79
*	3001.800	55.31	.00	.00	2408.50	2579.00	2415.80	2415.80	2418.17	55.85	12.37	208.50	345.09

PERCRITICAL - OUTFALL

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	146.400	2579.00	2442.78	.00	.00	.00	342.81	.00
*	200.300	2579.00	2443.08	.00	.30	.00	336.00	53.86
*	300.300	2579.00	2441.62	.00	-1.46	.00	44.59	99.95
*	400.300	2579.00	2441.30	.00	-.32	.00	44.53	100.06
*	500.300	2579.00	2441.02	.00	-.28	.00	44.59	100.00
*	600.300	2579.00	2440.69	.00	-.33	.00	44.46	99.98
*	665.800	2579.00	2440.53	.00	-.16	.00	44.58	65.53
*	666.800	2579.00	2436.94	.00	-3.59	.00	37.31	1.00
	700.500	2579.00	2436.81	.00	-.13	.00	38.10	33.71
	800.500	2579.00	2435.99	.00	-.82	.00	39.17	99.96
*	900.500	2579.00	2434.88	.00	-1.11	.00	39.06	100.06
*	1000.500	2579.00	2433.90	.00	-.99	.00	40.26	99.96
*	1100.600	2579.00	2432.80	.00	-1.10	.00	39.15	100.05
*	1200.400	2579.00	2431.77	.00	-1.03	.00	39.07	99.88
*	1300.500	2579.00	2430.70	.00	-1.07	.00	39.19	100.12
*	1400.400	2579.00	2429.57	.00	-1.13	.00	38.98	99.89
*	1500.500	2579.00	2428.55	.00	-1.01	.00	39.06	100.01
*	1600.500	2579.00	2427.48	.00	-1.08	.00	39.06	100.01
*	1700.900	2579.00	2426.44	.00	-1.03	.00	39.12	100.43
*	1800.900	2579.00	2425.40	.00	-1.04	.00	39.19	100.02
*	1900.800	2579.00	2424.33	.00	-1.07	.00	39.17	99.92
*	2000.800	2579.00	2423.27	.00	-1.06	.00	39.17	100.01
	2100.800	2579.00	2422.21	.00	-1.06	.00	39.17	99.94
*	2200.700	2579.00	2421.16	.00	-1.05	.00	39.19	99.96

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	2300.700	2579.00	2420.15	.00	-1.00	.00	60.49	100.00
	2400.700	2579.00	2419.72	.00	-.43	.00	54.98	99.98
	2500.700	2579.00	2418.41	.00	-1.32	.00	48.45	99.97
	2600.700	2579.00	2417.20	.00	-1.20	.00	75.08	99.99
	2700.600	2579.00	2416.16	.00	-1.04	.00	45.69	99.93
	2800.600	2579.00	2415.06	.00	-1.09	.00	40.30	99.95
*	2900.700	2579.00	2415.98	.00	.92	.00	44.55	100.10
*	2946.500	2579.00	2415.87	.00	-.11	.00	44.39	45.81
*	3001.800	2579.00	2415.80	.00	-.07	.00	44.43	55.31

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 200.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 200.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 200.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 300.300 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 300.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 400.300 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 400.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 500.300 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 500.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 600.300 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 600.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 665.800 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 665.800 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 666.800 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 800.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 800.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 900.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 900.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1000.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1000.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1100.600 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1100.600 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1200.400 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1200.400 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1300.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1300.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1400.400 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1400.400 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1500.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1500.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1600.500 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1600.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1700.900 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1700.900 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO=  1800.900  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  1800.900  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  1900.800  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  1900.800  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2000.800  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2000.800  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2100.800  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2100.800  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2200.700  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2200.700  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2300.700  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2300.700  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2900.700  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2900.700  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2900.700  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2946.500  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2946.500  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2946.500  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  3001.800  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3001.800  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3001.800  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

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**************************************************
* WATER SURFACE PROFILES                         *
* VERSION OF SEPTEMBER 1988                      *
* ERROR: 01.02.03.04                             *
* UPDATED: JUNE 1990                             *
* RUN DATE   10JAN96   TIME   10:29:47           *
**************************************************
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****************************************
* U.S. ARMY CORPS OF ENGINEERS         *
* THE HYDROLOGIC ENGINEERING CENTER    *
* 609 SECOND STREET, SUITE D           *
* DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                 X     X
XXXXXXX  XXXX     X          XXXXX   XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

END OF BANNER

FILE: ROWSUB - Subcritical run without overbank information.

THIS RUN EXECUTED 10JAN96 10:29:47

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

 ERROR CORR - 01.02.03.04
 MODIFICATION -
**************************************************

T1      CCRFCD - Upper Flamingo Wash Detention Basin
T2      B&V
T3      SUBCRITICAL - OUTFALL CHANNEL (Channel width only)

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0   2418.36        0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     -1                                             -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

GT       1     2579
NC   0.035    0.035    0.024      0.1      0.3
X1  3001.8       14   611.40   667.00     0.00     0.00     0.00
GR  2417.0   611.40  2415.84   613.70  2414.50   616.40  2409.70   626.00  2409.06   632.40
GR  2408.6   633.00  2408.50   636.00  2408.56   639.00  2409.06   639.60  2409.70   646.00
GR  2414.5   655.60  2415.84   658.30  2417.00   660.60  2420.00   667.00

X1  2946.5       14   611.40   666.00    39.50    71.12    55.31
GR  2417.1   611.40  2415.92   613.70  2414.58   616.40  2409.78   626.00  2409.14   632.40
GR  2408.6   633.00  2408.58   636.00  2408.64   639.00  2409.14   639.60  2409.78   646.00
GR  2414.6   655.60  2415.92   658.30  2417.08   660.60  2420.00   666.00

X1  2900.7       14   611.40   667.00    30.00    61.62    45.81
GR  2417.2   611.40  2415.99   613.70  2414.65   616.40  2409.85   626.00  2409.21   632.40
GR  2408.7   633.00  2408.65   636.00  2408.71   639.00  2409.21   639.60  2409.85   646.00
GR  2414.7   655.60  2415.99   658.30  2417.15   660.60  2420.00   667.00

X1  2800.6       14   611.40   666.00   100.10   100.10   100.10
GR  2417.3   611.40  2416.14   613.70  2414.80   616.40  2410.00   626.00  2409.36   632.40
GR  2408.9   633.00  2408.80   636.00  2408.86   639.00  2409.36   639.60  2410.00   646.00
GR  2414.8   655.60  2416.14   658.30  2417.30   660.60  2420.00   666.00
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	2700.6	10	616.40	663.00	99.95	99.95	99.95			
GR	2415.9	616.40	2411.06	626.00	2410.42	632.40	2409.92	633.00	2409.86	636.00
GR	2409.9	639.00	2410.42	639.60	2411.06	646.00	2415.86	655.60	2420.00	663.00
X1	2600.7	10	616.40	660.00	99.93	99.93	99.93			
GR	2416.9	616.40	2412.12	626.00	2411.48	632.40	2410.98	633.00	2410.92	636.00
GR	2411.0	639.00	2411.48	639.60	2412.12	646.00	2416.92	655.60	2420.00	660.00
X1	2500.7	10	616.40	659.00	99.99	99.99	99.99			
GR	2418.0	616.40	2413.18	626.00	2412.54	632.40	2412.04	633.00	2411.98	636.00
GR	2412.0	639.00	2412.54	639.60	2413.18	646.00	2417.98	655.60	2420.00	659.00
X1	2400.7	10	616.40	658.00	99.97	99.97	99.97			
GR	2419.0	616.40	2414.24	626.00	2413.60	632.40	2413.10	633.00	2413.04	636.00
GR	2413.1	639.00	2413.60	639.60	2414.24	646.00	2419.04	655.60	2420.00	658.00
X1	2300.7	9	616.40	655.60	99.98	99.98	99.98			
GR	2420.1	616.40	2415.30	626.00	2414.66	632.40	2414.16	633.00	2414.10	636.00
GR	2414.2	639.00	2414.66	639.60	2415.30	646.00	2420.12	655.60		
	2200.7	9	616.40	655.60	100.00	100.00	100.00			
GR	2421.2	616.40	2416.36	626.00	2415.72	632.40	2415.22	633.00	2415.16	636.00
GR	2415.2	639.00	2415.72	639.60	2416.36	646.00	2421.16	655.60		
X1	2100.8	9	616.40	655.60	99.96	99.96	99.96			
GR	2422.2	616.40	2417.42	626.00	2416.78	632.40	2416.28	633.00	2416.22	636.00
GR	2416.3	639.00	2416.78	639.60	2417.42	646.00	2422.22	655.60		
X1	2000.8	9	616.40	655.60	99.94	99.94	99.94			
GR	2423.3	616.40	2418.48	626.00	2417.84	632.40	2417.34	633.00	2417.28	636.00
GR	2417.3	639.00	2417.84	639.60	2418.48	646.00	2423.28	655.60		
X1	1900.8	9	616.40	655.60	100.01	100.01	100.01			
GR	2424.3	616.40	2419.54	626.00	2418.90	632.40	2418.40	633.00	2418.34	636.00
GR	2418.4	639.00	2418.90	639.60	2419.54	646.00	2424.34	655.60		
X1	1800.9	9	616.40	655.60	99.92	99.92	99.92			
GR	2425.4	616.40	2420.60	626.00	2419.96	632.40	2419.46	633.00	2419.40	636.00
GR	2419.5	639.00	2419.96	639.60	2420.60	646.00	2425.40	655.60		

X1	1700.9	9	617.40	656.60	103.00	97.00	100.02			
GR	2426.5	617.40	2421.66	627.00	2421.02	633.40	2420.52	634.00	2420.46	637.00
GR	2420.5	640.00	2421.02	640.60	2421.66	647.00	2426.46	656.60		
X1	1600.5	9	615.40	654.60	105.00	95.86	100.43			
GR	2427.5	615.40	2422.72	625.00	2422.08	631.40	2421.58	632.00	2421.52	635.00
GR	2421.6	638.00	2422.08	638.60	2422.72	645.00	2427.52	654.60		
X1	1500.5	9	608.40	647.60	105.00	95.00	100.01			
GR	2428.6	608.40	2423.78	618.00	2423.14	624.40	2422.64	625.00	2422.58	628.00
GR	2422.6	631.00	2423.14	631.60	2423.78	638.00	2428.58	647.60		
X1	1400.4	9	601.40	640.60	105.00	95.00	100.01			
GR	2429.6	601.40	2424.84	611.00	2424.20	617.40	2423.70	618.00	2423.64	621.00
GR	2423.7	624.00	2424.20	624.60	2424.84	631.00	2429.64	640.60		
X1	1300.5	9	601.40	640.60	99.89	99.89	99.89			
GR	2430.7	601.40	2425.90	611.00	2425.26	617.40	2424.76	618.00	2424.70	621.00
GR	2424.8	624.00	2425.26	624.60	2425.90	631.00	2430.70	640.60		
X1	1200.4	9	601.40	640.60	100.12	100.12	100.12			
GR	2431.8	601.40	2426.96	611.00	2426.32	617.40	2425.82	618.00	2425.76	621.00
GR	2425.8	624.00	2426.32	624.60	2426.96	631.00	2431.80	640.60		
X1	1100.6	9	601.40	640.60	99.88	99.88	99.88			
GR	2432.8	601.40	2428.02	611.00	2427.38	617.40	2426.88	618.00	2426.82	621.00
GR	2426.9	624.00	2427.38	624.60	2428.02	631.00	2432.82	640.60		
X1	1000.5	9	601.40	640.60	100.05	100.05	100.05			
GR	2433.9	601.40	2429.08	611.00	2428.44	617.40	2427.94	618.00	2427.88	621.00
GR	2427.9	624.00	2428.44	624.60	2429.08	631.00	2433.88	640.60		
X1	900.5	9	601.40	640.60	99.96	99.96	99.96			
GR	2434.9	601.40	2430.14	611.00	2429.50	617.40	2429.00	618.00	2428.94	621.00
GR	2429.0	624.00	2429.50	624.60	2430.14	631.00	2434.94	640.60		
X1	800.5	9	601.40	640.60	100.06	100.06	100.06			
GR	2436.0	601.40	2431.20	611.00	2430.56	617.40	2430.06	618.00	2430.00	621.00
GR	2430.1	624.00	2430.56	624.60	2431.20	631.00	2436.00	640.60		

	700.5	11	598.70	643.30	99.96	99.96	99.96			
GR	2438.4	598.70	2437.06	601.40	2432.26	611.00	2431.62	617.40	2431.12	618.00
GR	2431.1	621.00	2431.12	624.00	2431.62	624.60	2432.26	631.00	2437.06	640.60
GR	2438.4	643.30								
X1	666.8	11	598.70	643.30	33.71	33.71	33.71			
GR	2438.8	598.70	2437.42	601.40	2432.62	611.00	2431.98	617.40	2431.48	618.00
GR	2431.4	621.00	2431.48	624.00	2431.98	624.60	2432.62	631.00	2437.42	640.60
GR	2438.8	643.30								
X1	665.8	11	598.70	643.30	1.00	1.00	1.00			
GR	2440.5	598.70	2439.19	601.40	2434.39	611.00	2433.75	617.40	2433.25	618.00
GR	2433.2	621.00	2433.25	624.00	2433.75	624.60	2434.39	631.00	2439.19	640.60
GR	2440.5	643.30								
X1	600.3	11	598.70	643.30	65.53	65.53	65.53			
GR	2440.7	598.70	2439.39	601.40	2434.59	611.00	2433.95	617.40	2433.45	618.00
GR	2433.4	621.00	2433.45	624.00	2433.95	624.60	2434.59	631.00	2439.39	640.60
GR	2440.7	643.30								
	500.3	11	600.20	644.80	99.98	99.98	99.98			
	2441.0	600.20	2439.69	602.90	2434.89	612.50	2434.25	618.90	2433.75	619.50
GR	2433.7	622.50	2433.75	625.50	2434.25	626.10	2434.89	632.50	2439.69	642.10
GR	2441.0	644.80								
X1	400.3	11	602.70	647.30	100.00	100.00	100.00			
GR	2441.3	602.70	2439.99	605.40	2435.19	615.00	2434.55	621.40	2434.05	622.00
GR	2434.0	625.00	2434.05	628.00	2434.55	628.60	2435.19	635.00	2439.99	644.60
GR	2441.3	647.30								
X1	300.3	11	604.20	648.80	100.06	100.06	100.06			
GR	2441.6	604.20	2440.29	606.90	2435.49	616.50	2434.85	622.90	2434.35	623.50
GR	2434.3	626.50	2434.35	629.50	2434.85	630.10	2435.49	636.50	2440.29	646.10
GR	2441.6	648.80								
X1	200.3	11	608.70	653.30	101.00	98.90	99.95			
GR	2441.9	608.70	2440.59	611.40	2435.79	621.00	2435.15	627.40	2434.59	628.00
GR	2434.6	631.00	2434.65	634.00	2435.15	634.60	2435.79	641.00	2440.59	650.60
GR	2441.9	653.30								

XI	146.4	11	613.70	658.30	53.86	53.86	53.86			
GR	2442.1	613.70	2440.75	616.40	2435.95	626.00	2435.31	632.40	2434.81	633.00
GR	2434.8	636.00	2434.81	639.00	2435.31	639.60	2435.95	646.00	2440.75	655.60
GR	2442.1	658.30								

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
#SECNO 3001.800
3280 CROSS SECTION 3001.80 EXTENDED 1.36 FEET

3001.800	9.86	2418.36	2415.80	2418.36	2419.29	.93	.00	.00	2417.00
2579.0	.0	2579.0	.0	.0	333.6	.0	.0	.0	2420.00
.00	.00	7.73	.00	.000	.024	.000	.000	2408.50	611.40
.001499	0.	0.	0.	0	14	0	.00	52.10	663.50

#SECNO 2946.500
3280 CROSS SECTION 2946.50 EXTENDED 1.34 FEET

2946.500	9.86	2418.44	2415.88	.00	2419.37	.93	.08	.00	2417.10
2579.0	.0	2579.0	.0	.0	333.5	.0	.4	.1	2420.00
.00	.00	7.73	.00	.000	.024	.000	.000	2408.58	611.40
.001490	40.	55.	71.	0	15	0	.00	51.72	663.12

#SECNO 2900.700
3280 CROSS SECTION 2900.70 EXTENDED 1.31 FEET

2900.700	9.86	2418.51	2415.96	.00	2419.44	.93	.07	.00	2417.20
2579.0	.0	2579.0	.0	.0	333.5	.0	.8	.1	2420.00
.00	.00	7.73	.00	.000	.024	.000	.000	2408.65	611.40
.001506	30.	46.	62.	0	15	0	.00	52.26	663.66

#SECNO 2800.600
3280 CROSS SECTION 2800.60 EXTENDED 1.36 FEET

2800.600	9.86	2418.66	2416.10	.00	2419.59	.93	.15	.00	2417.30
2579.0	.0	2579.0	.0	.0	333.5	.0	1.5	.2	2420.00
.01	.00	7.73	.00	.000	.024	.000	.000	2408.80	611.40
.001495	100.	100.	100.	0	15	0	.00	51.92	663.32

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CDRAR	TOPWID	ENDST

#SECNO 2700.600
3280 CROSS SECTION 2700.60 EXTENDED 2.56 FEET

3301 HV CHANGED MORE THAN HVINS

2700.600	8.60	2418.46	2417.08	.00	2419.96	1.50	.20	.17	2415.90
2579.0	.0	2579.0	.0	.0	262.2	.0	2.2	.4	2420.00
.01	.00	9.84	.00	.000	.024	.000	.000	2409.86	616.40
.002756	100.	100.	100.	2	19	0	.00	43.85	660.25

#SECNO 2600.700
3280 CROSS SECTION 2600.70 EXTENDED 1.25 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .70

2600.700	7.23	2418.15	2418.12	.00	2420.64	2.49	.38	.30	2416.90
2579.0	.0	2579.0	.0	.0	203.7	.0	2.8	.4	2420.00
.01	.00	12.66	.00	.000	.024	.000	.000	2410.92	616.40
.005630	100.	100.	100.	3	15	0	.00	40.96	657.36

#SECNO 2500.700
3280 CROSS SECTION 2500.70 EXTENDED 1.20 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2500.700	7.22	2419.20	2419.20	.00	2421.70	2.50	.57	.00	2418.00
2579.0	.0	2579.0	.0	.0	203.1	.0	3.2	.5	2420.00
.01	.00	12.70	.00	.000	.024	.000	.000	2411.98	616.40
.005720	100.	100.	100.	0	5	0	.00	41.25	657.65

#SECNO 2400.700
3280 CROSS SECTION 2400.70 EXTENDED 1.25 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
2400.700	7.21	2420.25	2420.25	.00	2422.74	2.49	.57	.00	2419.00
2579.0	.0	2579.0	.0	.0	203.6	.0	3.7	.6	2420.00
.02	.00	12.67	.00	.000	.024	.000	.000	2413.04	616.40
.005751	100.	100.	100.	0	5	0	.00	41.60	658.00

#SECNO 2300.700
3280 CROSS SECTION 2300.70 EXTENDED 1.15 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2300.700	7.15	2421.25	2421.25	.00	2423.85	2.60	.58	.03	2420.10
2579.0	.0	2579.0	.0	.0	199.2	.0	4.2	.7	2420.12
.02	.00	12.95	.00	.000	.024	.000	.000	2414.10	616.40
.005867	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 2200.700
3280 CROSS SECTION 2200.70 EXTENDED 1.17 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2200.700	7.17	2422.33	2422.33	.00	2424.91	2.58	.58	.00	2421.20
2579.0	.0	2579.0	.0	.0	199.9	.0	4.6	.8	2421.16
.02	.00	12.90	.00	.000	.024	.000	.000	2415.16	616.40
.005809	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 2100.800
3280 CROSS SECTION 2100.80 EXTENDED 1.18 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2100.800	7.16	2423.38	2423.38	.00	2425.97	2.59	.58	.00	2422.20
2579.0	.0	2579.0	.0	.0	199.6	.0	5.1	.9	2422.22
.02	.00	12.92	.00	.000	.024	.000	.000	2416.22	616.40
.005833	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 2000.800
3280 CROSS SECTION 2000.80 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

2000.800	7.16	2424.44	2424.44	.00	2427.03	2.59	.58	.00	2423.30
2579.0	.0	2579.0	.0	.0	199.8	.0	5.5	1.0	2423.28
.03	.00	12.91	.00	.000	.024	.000	.000	2417.28	616.40
.005821	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 1900.800
3280 CROSS SECTION 1900.80 EXTENDED 1.19 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1900.800	7.15	2425.49	2425.49	.00	2428.08	2.59	.58	.00	2424.30
2579.0	.0	2579.0	.0	.0	199.6	.0	6.0	1.1	2424.34
.03	.00	12.92	.00	.000	.024	.000	.000	2418.34	616.40
.005835	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 1800.900
3280 CROSS SECTION 1800.90 EXTENDED 1.17 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1800.900	7.17	2426.57	2426.57	.00	2429.15	2.59	.58	.00	2425.40
2579.0	.0	2579.0	.0	.0	199.9	.0	6.4	1.2	2425.40
.03	.00	12.90	.00	.000	.024	.000	.000	2419.40	616.40
.005808	100.	100.	100.	0	5	0	.00	39.20	655.60

#SECNO 1700.900
3280 CROSS SECTION 1700.90 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1700.900	7.16	2427.62	2427.62	.00	2430.21	2.59	.58	.00	2426.50
2579.0	.0	2579.0	.0	.0	199.8	.0	6.9	1.3	2426.46
.03	.00	12.91	.00	.000	.024	.000	.000	2420.46	617.40
.005821	103.	100.	97.	0	5	0	.00	39.20	656.60

#SECNO 1600.500
3280 CROSS SECTION 1600.50 EXTENDED 1.18 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1600.500	7.16	2428.68	2428.68	.00	2431.27	2.59	.58	.00	2427.50
2579.0	.0	2579.0	.0	.0	199.8	.0	7.4	1.4	2427.52
.03	.00	12.91	.00	.000	.024	.000	.000	2421.52	615.40
.005819	105.	100.	96.	0	5	0	.00	39.20	654.60

*SECNO 1500.500
3280 CROSS SECTION 1500.50 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1500.500	7.16	2429.74	2429.74	.00	2432.33	2.58	.58	.00	2428.60
2579.0	.0	2579.0	.0	.0	199.9	.0	7.8	1.4	2428.58
.04	.00	12.90	.00	.000	.024	.000	.000	2422.58	608.40
.005812	105.	100.	95.	0	5	0	.00	39.20	647.60

*SECNO 1400.400
3280 CROSS SECTION 1400.40 EXTENDED 1.19 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1400.400	7.15	2430.79	2430.79	.00	2433.38	2.59	.58	.00	2429.60
2579.0	.0	2579.0	.0	.0	199.7	.0	8.3	1.5	2429.64
.04	.00	12.92	.00	.000	.024	.000	.000	2423.64	601.40
.005829	105.	100.	95.	0	5	0	.00	39.20	640.60

*SECNO 1300.500
3280 CROSS SECTION 1300.50 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1300.500	7.16	2431.86	2431.86	.00	2434.45	2.59	.58	.00	2430.70
2579.0	.0	2579.0	.0	.0	199.8	.0	8.7	1.6	2430.70
.04	.00	12.91	.00	.000	.024	.000	.000	2424.70	601.40
.005811	100.	100.	100.	0	5	0	.00	39.20	640.60

*SECNO 1200.400

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

3280 CROSS SECTION 1200.40 EXTENDED 1.13 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1200.400	7.17	2432.93	2432.93	.00	2435.52	2.59	.58	.00	2431.80
2579.0	.0	2579.0	.0	.0	199.9	.0	9.2	1.7	2431.80
.04	.00	12.90	.00	.000	.024	.000	.000	2425.76	601.40
.005808	100.	100.	100.	0	5	0	.00	39.20	640.60

#SECND 1100.600
3280 CROSS SECTION 1100.60 EXTENDED 1.18 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1100.600	7.16	2433.98	2433.98	.00	2436.57	2.59	.58	.00	2432.80
2579.0	.0	2579.0	.0	.0	199.6	.0	9.7	1.8	2432.82
.04	.00	12.92	.00	.000	.024	.000	.000	2426.82	601.40
.005834	100.	100.	100.	0	5	0	.00	39.20	640.60

#SECND 1000.500
3280 CROSS SECTION 1000.50 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1000.500	7.16	2435.04	2435.04	.00	2437.63	2.59	.58	.00	2433.90
2579.0	.0	2579.0	.0	.0	199.9	.0	10.1	1.9	2433.88
.05	.00	12.90	.00	.000	.024	.000	.000	2427.88	601.40
.005815	100.	100.	100.	0	5	0	.00	39.20	640.60

#SECND 900.500
3280 CROSS SECTION 900.50 EXTENDED 1.20 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

900.500	7.16	2436.10	2436.10	.00	2438.68	2.59	.58	.00	2434.90
2579.0	.0	2579.0	.0	.0	199.8	.0	10.6	2.0	2434.94
.05	.00	12.91	.00	.000	.024	.000	.000	2428.94	601.40
.005823	100.	100.	100.	0	5	0	.00	39.20	640.60

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 800.500
3280 CROSS SECTION 800.50 EXTENDED 1.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

800.500	7.16	2437.16	2437.16	.00	2439.75	2.59	.58	.00	2436.00
2579.0	.0	2579.0	.0	.0	199.8	.0	11.0	2.1	2436.00
.05	.00	12.91	.00	.000	.024	.000	.000	2430.00	601.40
.005810	100.	100.	100.	0	5	0	.00	39.20	640.60

#SECNO 700.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

700.500	7.27	2438.37	2438.37	.00	2440.74	2.36	.57	.02	2438.40
2579.0	.0	2579.0	.0	.0	209.2	.0	11.5	2.2	2438.40
.05	.00	12.33	.00	.000	.024	.000	.000	2431.10	598.75
.005542	100.	100.	100.	0	5	0	.00	44.50	643.25

#SECNO 666.800
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

666.800	7.32	2438.72	2438.72	.00	2441.09	2.37	.19	.00	2438.80
2579.0	.0	2579.0	.0	.0	208.6	.0	11.7	2.2	2438.80
.05	.00	12.36	.00	.000	.024	.000	.000	2431.40	598.86
.005559	34.	34.	34.	0	5	0	.00	44.29	643.14

#SECNO 665.800
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

665.800	7.27	2440.47	2440.47	.00	2442.86	2.39	.01	.01	2440.50
2579.0	.0	2579.0	.0	.0	207.8	.0	11.7	2.2	2440.50
.05	.00	12.41	.00	.000	.024	.000	.000	2433.20	598.76
.005657	1.	1.	1.	0	5	0	.00	44.48	643.24

#SECNO 600.300
3280 CROSS SECTION 600.30 EXTENDED .78 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

600.300	8.08	2441.48	2440.69	.00	2443.21	1.74	.29	.07	2440.70
2579.0	.0	2579.0	.0	.0	243.8	.0	12.0	2.3	2440.70
.06	.00	10.58	.00	.000	.024	.000	.000	2433.40	598.70
.003477	66.	66.	66.	5	5	0	.00	44.60	643.30

$SECNO 500.300
3280 CROSS SECTION 500.30 EXTENDED .89 FEET

500.300	8.19	2441.89	2440.98	.00	2443.56	1.67	.34	.01	2441.00
2579.0	.0	2579.0	.0	.0	248.8	.0	12.6	2.4	2441.00
.06	.00	10.37	.00	.000	.024	.000	.000	2433.70	600.20
.003270	100.	100.	100.	2	11	0	.00	44.60	644.80

$SECNO 400.300
3280 CROSS SECTION 400.30 EXTENDED .93 FEET

400.300	8.24	2442.24	2441.27	.00	2443.88	1.64	.32	.00	2441.30
2579.0	.0	2579.0	.0	.0	250.7	.0	13.1	2.5	2441.30
.06	.00	10.29	.00	.000	.024	.000	.000	2434.00	602.70
.003196	100.	100.	100.	1	15	0	.00	44.60	647.30

$SECNO 300.300
3280 CROSS SECTION 300.30 EXTENDED 1.00 FEET

300.300	8.29	2442.59	2441.57	.00	2444.20	1.61	.31	.00	2441.60
2579.0	.0	2579.0	.0	.0	253.5	.0	13.7	2.6	2441.60
.06	.00	10.17	.00	.000	.024	.000	.000	2434.30	604.20
.003089	100.	100.	100.	2	15	0	.00	44.60	648.80

$SECNO 200.300
3280 CROSS SECTION 200.30 EXTENDED 1.01 FEET

200.300	8.32	2442.91	2441.87	.00	2444.51	1.60	.31	.00	2441.90
2579.0	.0	2579.0	.0	.0	254.2	.0	14.3	2.7	2441.90
.07	.00	10.14	.00	.000	.024	.000	.000	2434.59	608.70
.003066	101.	100.	99.	0	15	0	.00	44.60	653.30

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XMCH	XMR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 146.400
3280 CROSS SECTION 146.40 EXTENDED .98 FEET

146.400	8.28	2443.08	2442.04	.00	2444.68	1.60	.16	.00	2442.10
2579.0	.0	2579.0	.0	.0	254.3	.0	14.6	2.7	2442.10
.07	.00	10.14	.00	.000	.024	.000	.000	2434.80	613.70
.003058	54.	54.	54.	0	15	0	.00	44.60	658.30

PROFILE FOR STREAM SUBCRITICAL - OUTFALL C

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

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ELEVATION  2409.    2414.    2419.    2424.    2429.    2434.    2439.    2444.    2449.    2454.
  SECNO  CUMDIS

3001.80     0. I       .   C L  W ER    .        .        .        .        .        .        .
           10. I       .   C L  W ER    .        .        .        .        .        .        .
           20. I       .   C L  W ER    .        .        .        .        .        .        .
           30. I       .   C L  W ER    .        .        .        .        .        .        .
           40. I       .   C L  W ER    .        .        .        .        .        .        .
           50. I       .   C L  W ER    .        .        .        .        .        .        .
2946.50    60. I       .   C L  W ER    .        .        .        .        .        .        .
           70. I       .   C L  W ER    .        .        .        .        .        .        .
           80. I       .   C L  W ER    .        .        .        .        .        .        .
           90. I       .   C L  W ER    .        .        .        .        .        .        .
          100. I       .   C L  W ER    .        .        .        .        .        .        .
2900.70   110. I       .   C L  W ER    .        .        .        .        .        .        .
          120. I       .   C L  W ER    .        .        .        .        .        .        .
          130. I       .   C L  W ER    .        .        .        .        .        .        .
          140. I       .   C L  W ER    .        .        .        .        .        .        .
          150. I       .   C L  W ER    .        .        .        .        .        .        .
          160. I       .   C L  W ER    .        .        .        .        .        .        .
          170. I       .   C  L W ER    .        .        .        .        .        .        .
          180. .I      .   C  L W ER    .        .        .        .        .        .        .
          190. .I      .   C  L W ER    .        .        .        .        .        .        .
          200. .I      .   C  L W ER    .        .        .        .        .        .        .
2800.60   210. .I      .   C  L W ER    .        .        .        .        .        .        .
          220. .I      .   C L  W ER    .        .        .        .        .        .        .
          230. .I      .    CL  W ER    .        .        .        .        .        .        .
          240. .I      .    CL  W ER    .        .        .        .        .        .        .
          250. .I      .    C   W ER    .        .        .        .        .        .        .
          260. . I     .    C   W  E    .        .        .        .        .        .        .
          270. . I     .    C   W  E    .        .        .        .        .        .        .
          280. . I     .    LC  W  E    .        .        .        .        .        .        .
          290. . I     .   L C  W  E    .        .        .        .        .        .        .
          300. .  I    .   L C  W  E    .        .        .        .        .        .        .
2700.60   310. .  I    .   L C  W  E    .        .        .        .        .        .        .
          320. .  I    .   L C  W  E    .        .        .        .        .        .        .
          330. .  I    .   L  C W  E    .        .        .        .        .        .        .
          340. .  I    .   L  C W  E    .        .        .        .        .        .        .
          350. .   I   .    L C W  E    .        .        .        .        .        .        .
          360. .   I   .    L C W  RE   .        .        .        .        .        .        .
          370. .   I   .    L C W  RE   .        .        .        .        .        .        .
          380. .   I   .    L  W.  RE   .        .        .        .        .        .        .
          390. .   I   .    L  W.  RE   .        .        .        .        .        .        .
          400. .    I  .     L W.  RE   .        .        .        .        .        .        .
2600.70   410. .    I  .     L W.  RE   .        .        .        .        .        .        .
          420. .    I  .     L CW  RE   .        .        .        .        .        .        .
          430. .    I  .     L  W  R E  .        .        .        .        .        .        .
          440. .    I  .     L  W  R E  .        .        .        .        .        .        .
          450. .     I .      L W  R E  .        .        .        .        .        .        .
          460. .     I .      L W  R E  .        .        .        .        .        .        .
          470. .     I .      L .W R  E .        .        .        .        .        .        .
          480. .     I .      L .W R  E .        .        .        .        .        .        .
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2500.70  510.  .   I  .      L.W R  E  .     .     .     .     .     .     .     .
         520.  .   I  .      L. WR  E  .     .     .     .     .     .     .     .
         530.  .   I  .      L. WR  E  .     .     .     .     .     .     .     .
         540.  .    I .       L WR  E  .     .     .     .     .     .     .     .
         550.  .    I .       L WR  E  .     .     .     .     .     .     .     .
         560.  .    I .       L WR  E  .     .     .     .     .     .     .     .
         570.  .    I .       L  W   E .     .     .     .     .     .     .     .
         580.  .    I .       L  W   E .     .     .     .     .     .     .     .
         590.  .     I.       .L W   E .     .     .     .     .     .     .     .
         600.  .     I.       .L W   E .     .     .     .     .     .     .     .
2400.70  610.  .     I.       .L RW  E .     .     .     .     .     .     .     .
         620.  .     I.       .L RW   E.     .     .     .     .     .     .     .
         630.  .      I       .L RW   E.     .     .     .     .     .     .     .
         640.  .      I       . LRW   E.     .     .     .     .     .     .     .
         650.  .      I       . LRW   E.     .     .     .     .     .     .     .
         660.  .      I       . LR W   E     .     .     .     .     .     .     .
         670.  .      I       . LR W   E     .     .     .     .     .     .     .
         680.  .     .I       . L W   E      .     .     .     .     .     .     .
         690.  .     .I       . L W   E      .     .     .     .     .     .     .
         700.  .     .I       . L W   E      .     .     .     .     .     .     .
2300.70  710.  .     .I       . L  W  .E     .     .     .     .     .     .     .
         720.  .     .I       . L  W  .E     .     .     .     .     .     .     .
         730.  .     . I      .  L W  .E     .     .     .     .     .     .     .
         740.  .     . I      .  L W  .E     .     .     .     .     .     .     .
         750.  .     . I      .  L W  . E    .     .     .     .     .     .     .
         760.  .     . I      .  L  W . E    .     .     .     .     .     .     .
         770.  .     . I      .  RL W . E    .     .     .     .     .     .     .
         780.  .     .  I     .   L W . E    .     .     .     .     .     .     .
         790.  .     .  I     .   L W . E    .     .     .     .     .     .     .
         800.  .     .  I     .   L W . E    .     .     .     .     .     .     .
2200.70  810.  .     .  I     .   L  W. E    .     .     .     .     .     .     .
         820.  .     .   I    .    L W. E    .     .     .     .     .     .     .
         830.  .     .   I    .    L W. E    .     .     .     .     .     .     .
         840.  .     .   I    .    L W. E    .     .     .     .     .     .     .
         850.  .     .   I    .    L  W. E   .     .     .     .     .     .     .
         860.  .     .   I    .    L  W. E   .     .     .     .     .     .     .
         870.  .     .    I   .     L W. E   .     .     .     .     .     .     .
         880.  .     .   I    .    L W. E    .     .     .     .     .     .     .
         890.  .     .   I    .    L W.  E   .     .     .     .     .     .     .
         900.  .     .   I    .    L  W  E   .     .     .     .     .     .     .
2100.80  910.  .     .   I    .    L  W  E   .     .     .     .     .     .     .
         920.  .     .    I   .     L W  E   .     .     .     .     .     .     .
         930.  .     .    I   .     L W  E   .     .     .     .     .     .     .
         940.  .     .   I    .     L W   E  .     .     .     .     .     .     .
         950.  .     .   I    .     L .W  E  .     .     .     .     .     .     .
         960.  .     .    I   .     RL.W  E  .     .     .     .     .     .     .
         970.  .     .   I    .      L.W  E  .     .     .     .     .     .     .
         980.  .     .   I    .      L.W  E  .     .     .     .     .     .     .
         990.  .     .   I    .      L.W   E .     .     .     .     .     .     .
        1000.  .     .   I    .      L. W  E .     .     .     .     .     .     .
2000.80 1010.  .     .    I   .       L W  E .     .     .     .     .     .     .
        1020.  .     .    I   .       L W  E .     .     .     .     .     .     .
        1030.  .     .    I   .       L W  E .     .     .     .     .     .     .
        1040.  .     .    I   .       L  W  E.     .     .     .     .     .     .
        1050.  .     .    I   .       L  W  E.     .     .     .     .     .     .
        1060.  .     .     I  .       .L W  E.     .     .     .     .     .     .
        1070.  .     .     I  .       .L W  E.     .     .     .     .     .     .
        1080.  .     .     I  .       .L W   E     .     .     .     .     .     .
        1090.  .     .     I  .       .L  W  E     .     .     .     .     .     .
        1100.  .     .     I  .       .L  W  E     .     .     .     .     .     .
1900.80 1110.  .     .      I .       . L W  E      .     .     .     .     .     .
        1120.  .     .      I .       . L W  E      .     .     .     .     .     .
        1130.  .     .      I .       . L W   E     .     .     .     .     .     .
        1140.  .     .      I .       . L  W  E     .     .     .     .     .     .
        1150.  .     .      I .       . L  W  E     .     .     .     .     .     .
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         1170.  .  .  .I  .  L W  E  .  .  .  .  .  .
         1180.  .  .  .I  .  L W  .E  .  .  .  .  .  .
         1190.  .  .  .I  .  L  W  .E  .  .  .  .  .  .
         1200.  .  .  . I  .  L W  .E  .  .  .  .  .  .
1800.90  1210.  .  .  . I  .  L W  .E  .  .  .  .  .  .
         1220.  .  .  . I  .  L W  . E  .  .  .  .  .  .
         1230.  .  .  . I  .  L  W  . E  .  .  .  .  .  .
         1240.  .  .  . I  .  L  W  . E  .  .  .  .  .  .
         1250.  .  .  .  I  .  L W  . E  .  .  .  .  .  .
         1260.  .  .  . I  .  L W  . E  .  .  .  .  .  .
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         1280.  .  .  . I  .  L  W . E  .  .  .  .  .  .
         1290.  .  .  . J  .  RL W . E  .  .  .  .  .  .
         1300.  .  .  .  I  .  L W . E  .  .  .  .  .  .
1700.90  1310.  .  .  .  I  .  L W . E  .  .  .  .  .  .
         1320.  .  .  .  I  .  L W .  E  .  .  .  .  .  .
         1330.  .  .  .  I  .  L  W.  E  .  .  .  .  .  .
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         1370.  .  .  .  I  .  L  W  E  .  .  .  .  .  .
         1380.  .  .  .  I  .  L  W  E  .  .  .  .  .  .
         1390.  .  .  .  I  .  L W  E  .  .  .  .  .  .
         1400.  .  .  .  I  .  L W  E  .  .  .  .  .  .
1600.50  1410.  .  .  .  I  .  L W  E  .  .  .  .  .  .
         1420.  .  .  .  I  .  L .W  E  .  .  .  .  .  .
         1430.  .  .  .  I  .  L .W  E  .  .  .  .  .  .
         1440.  .  .  .  I  .  L.W  E  .  .  .  .  .  .
         1450.  .  .  .  I  .  L.W  E  .  .  .  .  .  .
         1460.  .  .  .  I  .  L.W  E  .  .  .  .  .  .
         1470.  .  .  .  I  .  L. W  E  .  .  .  .  .  .
         1480.  .  .  .  I .  L W  E  .  .  .  .  .  .
         1490.  .  .  .  I .  L W  E  .  .  .  .  .  .
         1500.  .  .  .  I .  L W  E  .  .  .  .  .  .
1500.50  1510.  .  .  .  I .  L W  E .  .  .  .  .  .
         1520.  .  .  .  I .  L  W  E .  .  .  .  .  .
         1530.  .  .  .  I.  .L W  E .  .  .  .  .  .
         1540.  .  .  .  I.  .L W  E .  .  .  .  .  .
         1550.  .  .  .  I.  .L W  E .  .  .  .  .  .
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         1570.  .  .  .  I.  .L  W  E.  .  .  .  .  .
         1580.  .  .  .  I  . L W  E.  .  .  .  .  .
         1590.  .  .  .  I  . L W  E.  .  .  .  .  .
         1600.  .  .  .  I  . L W  E  .  .  .  .  .
1400.40  1610.  .  .  .  I  . L  W  E  .  .  .  .  .
         1620.  .  .  .  I  . L  W  E  .  .  .  .  .
         1630.  .  .  .  .I  .  L W  E  .  .  .  .  .
         1640.  .  .  .  .I  .  L W  E  .  .  .  .  .
         1650.  .  .  .  .I  .  L W  .E  .  .  .  .  .
         1660.  .  .  .  .I  .  L  W  .E  .  .  .  .  .
         1670.  .  .  .  . I  .  L W  .E  .  .  .  .  .
         1680.  .  .  .  . J  .  L W  .E  .  .  .  .  .
         1690.  .  .  .  . I  .  L W  .E  .  .  .  .  .
         1700.  .  .  .  . I  .  L  W  . E  .  .  .  .  .
1300.50  1710.  .  .  .  . I  .  L  W  . E  .  .  .  .  .
         1720.  .  .  .  .  I  .  L W  . E  .  .  .  .  .
         1730.  .  .  .  .  I  .  L W  . E  .  .  .  .  .
         1740.  .  .  .  .  I  .  L W  . E  .  .  .  .  .
         1750.  .  .  .  .  I  .  L  W . E  .  .  .  .  .
         1760.  .  .  .  .  I  .  L  W . E  .  .  .  .  .
         1770.  .  .  .  .  .  I  .  L W . E  .  .  .  .  .
         1780.  .  .  .  .  .  I  .  L W . E  .  .  .  .  .
         1790.  .  .  .  .  .  I  .  L W .  E  .  .  .  .  .
         1800.  .  .  .  .  .  I  .  L  W.  E  .  .  .  .  .
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          1830.  .  .  .  .  I  .  L W.  E  .  .  .  .  .
          1840.  .  .  .  .  I  .  L W.  E  .  .  .  .  .
          1850.  .  .  .  .  I  .  L  W  E  .  .  .  .  .
          1860.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1870.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1880.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1890.  .  .  .  .  I  .  L .W  E  .  .  .  .  .
          1900.  .  .  .  .  I  .  L .W  E  .  .  .  .  .
1100.60   1910.  .  .  .  .  I  .  L.W  E  .  .  .  .  .
          1920.  .  .  .  .  I  .  L.W  E  .  .  .  .  .
          1930.  .  .  .  .  I  .  L.W  E  .  .  .  .  .
          1940.  .  .  .  .  I  .  L. W  E  .  .  .  .  .
          1950.  .  .  .  .  I  .  L. W  E  .  .  .  .  .
          1960.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1970.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1980.  .  .  .  .  I  .  L W  E  .  .  .  .  .
          1990.  .  .  .  .  I  .  L  W  E  .  .  .  .  .
          2000.  .  .  .  .  I.  .L W  E  .  .  .  .  .
1000.50   2010.  .  .  .  .  I.  .L W  E  .  .  .  .  .
          2020.  .  .  .  .  I.  .L W  E  .  .  .  .  .
          2030.  .  .  .  .  I.  .L  W  E.  .  .  .  .  .
          2040.  .  .  .  .  I.  .L  W  E.  .  .  .  .  .
          2050.  .  .  .  .  I  . L W  E.  .  .  .  .  .
          2060.  .  .  .  .  I  . L W  E.  .  .  .  .  .
          2070.  .  .  .  .  I  . L W  E  .  .  .  .  .
          2080.  .  .  .  .  I  . L  W  E  .  .  .  .  .
          2090.  .  .  .  .  I  . L  W  E  .  .  .  .  .
          2100.  .  .  .  .  .I  .  L W  E  .  .  .  .  .
 900.50   2110.  .  .  .  .  .I  .  L W  E  .  .  .  .  .
          2120.  .  .  .  .  .I  .  L W  .E  .  .  .  .  .
          2130.  .  .  .  .  .I  .  L  W  .E  .  .  .  .  .
          2140.  .  .  .  .  . I  .  LR W  .E  .  .  .  .  .
          2150.  .  .  .  .  . I  .  L W  .E  .  .  .  .  .
          2160.  .  .  .  .  . I  .  L W  .E  .  .  .  .  .
          2170.  .  .  .  .  . I  .  L W  . E  .  .  .  .  .
          2180.  .  .  .  .  . I  .  L  W  . E  .  .  .  .  .
          2190.  .  .  .  .  .  I  .  L W  . E  .  .  .  .  .
          2200.  .  .  .  .  .  I  .  L W  . E  .  .  .  .  .
 800.50   2210.  .  .  .  .  .  I  .  L W  . E  .  .  .  .  .
          2220.  .  .  .  .  .  I  .  L  W . E  .  .  .  .  .
          2230.  .  .  .  .  .  I  .  L W . E  .  .  .  .  .
          2240.  .  .  .  .  .  I  .  L W . E  .  .  .  .  .
          2250.  .  .  .  .  .  I  .  LW . E  .  .  .  .  .
          2260.  .  .  .  .  .  I  .  L W. E  .  .  .  .  .
          2270.  .  .  .  .  .  I  .  LW.  E  .  .  .  .  .
          2280.  .  .  .  .  .  I  .  LW.  E  .  .  .  .  .
          2290.  .  .  .  .  .  I  .  W.  E  .  .  .  .  .
          2300.  .  .  .  .  .  I  .  W.  E  .  .  .  .  .
 700.50   2310.  .  .  .  .  .  I  .  W  E  .  .  .  .  .
          2320.  .  .  .  .  .  I  .  W  E  .  .  .  .  .
          2330.  .  .  .  .  .  I  .  W  E  .  .  .  .  .
 666.80   2340.  .  .  .  .  .  I  .  WL  E  .  .  .  .  .
 665.80   2350.  .  .  .  .  .  I.  .  W  E.  .  .  .  .
          2360.  .  .  .  .  .  I.  .  W  E.  .  .  .  .
          2370.  .  .  .  .  .  I  .  CW  E.  .  .  .  .
          2380.  .  .  .  .  .  I  .  CW  E.  .  .  .  .
          2390.  .  .  .  .  .  I  .  CW  E.  .  .  .  .
          2400.  .  .  .  .  .  I  .  CW  E.  .  .  .  .
 600.30   2410.  .  .  .  .  .  I  .  C W E.  .  .  .  .
          2420.  .  .  .  .  .  I  .  C W E.  .  .  .  .
          2430.  .  .  .  .  .  I  .  CLW  E  .  .  .  .
          2440.  .  .  .  .  .  I  .  CW  E  .  .  .  .
          2450.  .  .  .  .  .  I  .  CW  E  .  .  .  .
          2460.  .  .  .  .  .  I  .  CW  E  .  .  .  .
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        2490. .  .  .  .  .  I  .  C W  E  .  .  .
        2500. .  .  .  .  .  I  .  C W  E  .  .  .
500.30  2510. .  .  .  .  .  I  .  C W  E  .  .  .
        2520. .  .  .  .  .  I  .  C W  E  .  .  .
        2530. .  .  .  .  .  .I .  C W  E  .  .  .
        2540. .  .  .  .  .  .I .  C W  E  .  .  .
        2550. .  .  .  .  .  .I .  C W  E  .  .  .
        2560. .  .  .  .  .  .I .  C W  E  .  .  .
        2570. .  .  .  .  .  .I .  C W .E  .  .  .
        2580. .  .  .  .  .  .I .  C W .E  .  .  .
        2590. .  .  .  .  .  .I .  C W .E  .  .  .
        2600. .  .  .  .  .  .I .  CLW .E  .  .  .
400.30  2610. .  .  .  .  .  .I .   CW .E  .  .  .
        2620. .  .  .  .  .  .I .  C W .E  .  .  .
        2630. .  .  .  .  .  .I .  C W .E  .  .  .
        2640. .  .  .  .  .  .I .  C W .E  .  .  .
        2650. .  .  .  .  .  .I .  C W .E  .  .  .
        2660. .  .  .  .  .  .I .  C W .E  .  .  .
        2670. .  .  .  .  .  .I .  C W .E  .  .  .
        2680. .  .  .  .  .  .I .  C W .E  .  .  .
        2690. .  .  .  .  .  .I .  C W .E  .  .  .
        2700. .  .  .  .  .  . I .  C W .E  .  .  .
300.30  2710. .  .  .  .  .  . I .  C W .E  .  .  .
        2720. .  .  .  .  .  . I .  C W .E  .  .  .
        2730. .  .  .  .  .  . I .  C W . E  .  .  .
        2740. .  .  .  .  .  . I .  C W . E  .  .  .
        2750. .  .  .  .  .  . I .  C W . E  .  .  .
        2760. .  .  .  .  .  . I .  CL W. E  .  .  .
        2770. .  .  .  .  .  . I .   C W. E  .  .  .
        2780. .  .  .  .  .  . I .   C W. E  .  .  .
        2790. .  .  .  .  .  . I .   C W. E  .  .  .
        2800. .  .  .  .  .  . I .   C W. E  .  .  .
200.30  2810. .  .  .  .  .  . I .   C W. E  .  .  .
        2820. .  .  .  .  .  . I .   C W. E  .  .  .
        2830. .  .  .  .  .  . I .   C W. E  .  .  .
        2840. .  .  .  .  .  . I .   C W. E  .  .  .
        2850. .  .  .  .  .  . I .   C W. E  .  .  .
146.40  2860. .  .  .  .  .  . I .   C W. E  .  .  .
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THIS RUN EXECUTED 10JAN96 10:30:08

****
HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

ERROR CORR - 01,02,03,04
MODIFICATION -
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUBCRITICAL - OUTFALL C

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	3001.800	.00	.00	.00	2408.50	2579.00	2418.36	2415.80	2419.29	14.99	7.73	333.63	666.18
	2946.500	55.31	.00	.00	2408.58	2579.00	2418.44	2415.88	2419.37	14.90	7.73	333.52	668.11
	2900.700	45.81	.00	.00	2408.65	2579.00	2418.51	2415.96	2419.44	15.06	7.73	333.49	664.61
	2800.600	100.10	.00	.00	2408.80	2579.00	2418.66	2416.10	2419.59	14.95	7.73	333.54	667.11
	2700.600	99.95	.00	.00	2409.86	2579.00	2418.46	2417.08	2419.96	27.56	9.84	262.20	491.23
*	2600.700	99.93	.00	.00	2410.92	2579.00	2418.15	2418.12	2420.64	56.30	12.66	203.68	343.70
*	2500.700	99.99	.00	.00	2411.98	2579.00	2419.20	2419.20	2421.70	57.20	12.70	203.13	341.01
*	2400.700	99.97	.00	.00	2413.04	2579.00	2420.25	2420.25	2422.74	57.51	12.67	203.61	340.07
*	2300.700	99.98	.00	.00	2414.10	2579.00	2421.25	2421.25	2423.85	58.67	12.95	199.18	336.70
*	2200.700	100.00	.00	.00	2415.16	2579.00	2422.33	2422.33	2424.91	58.09	12.90	199.89	338.37
*	2100.800	99.96	.00	.00	2416.22	2579.00	2423.38	2423.38	2425.97	58.33	12.92	199.61	337.68
*	2000.800	99.94	.00	.00	2417.28	2579.00	2424.44	2424.44	2427.03	58.21	12.91	199.79	338.02
*	1900.800	100.01	.00	.00	2418.34	2579.00	2425.49	2425.49	2428.08	58.35	12.92	199.62	337.62
*	1800.900	99.92	.00	.00	2419.40	2579.00	2426.57	2426.57	2429.15	58.08	12.90	199.87	338.42
*	1700.900	100.02	.00	.00	2420.46	2579.00	2427.62	2427.62	2430.21	58.21	12.91	199.76	338.04
	1600.500	100.43	.00	.00	2421.52	2579.00	2428.68	2428.68	2431.27	58.19	12.91	199.77	338.09
*	1500.500	100.01	.00	.00	2422.58	2579.00	2429.74	2429.74	2432.33	58.12	12.90	199.89	338.30

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10WS	VCH	AREA	.01K
*	1400.400	100.01	.00	.00	2423.64	2579.00	2430.79	2430.79	2433.38	58.29	12.92	199.69	337.80
*	1300.500	99.89	.00	.00	2424.70	2579.00	2431.86	2431.86	2434.45	58.11	12.91	199.83	338.33
*	1200.400	100.12	.00	.00	2425.76	2579.00	2432.93	2432.93	2435.52	58.08	12.90	199.87	338.40
*	1100.600	99.88	.00	.00	2426.82	2579.00	2433.98	2433.98	2436.57	58.34	12.92	199.60	337.66
*	1000.500	100.05	.00	.00	2427.88	2579.00	2435.04	2435.04	2437.63	58.15	12.90	199.86	338.21
*	900.500	99.96	.00	.00	2428.94	2579.00	2436.10	2436.10	2438.68	58.23	12.91	199.76	337.98
*	800.500	100.06	.00	.00	2430.00	2579.00	2437.16	2437.16	2439.75	58.10	12.91	199.84	338.35
*	700.500	99.96	.00	.00	2431.10	2579.00	2438.37	2438.37	2440.74	55.42	12.33	209.15	346.42
*	666.800	33.71	.00	.00	2431.40	2579.00	2438.72	2438.72	2441.09	55.59	12.36	208.62	345.91
*	665.800	1.00	.00	.00	2433.20	2579.00	2440.47	2440.47	2442.86	56.57	12.41	207.79	342.90
	600.300	65.53	.00	.00	2433.40	2579.00	2441.48	2440.69	2443.21	34.77	10.58	243.82	437.36
	500.300	99.98	.00	.00	2433.70	2579.00	2441.89	2440.98	2443.56	32.70	10.37	248.80	450.99
	400.300	100.00	.00	.00	2434.00	2579.00	2442.24	2441.27	2443.88	31.96	10.29	250.69	456.18
	300.300	100.06	.00	.00	2434.30	2579.00	2442.59	2441.57	2444.20	30.89	10.17	253.53	464.04
	200.300	99.95	.00	.00	2434.59	2579.00	2442.91	2441.87	2444.51	30.66	10.14	254.23	465.77
	146.400	53.86	.00	.00	2434.80	2579.00	2443.08	2442.04	2444.68	30.58	10.14	254.29	466.38

CRITICAL - OUTFALL C

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	3001.800	2579.00	2418.36	.00	.00	.00	52.10	.00
	2946.500	2579.00	2418.44	.00	.08	.00	51.72	55.31
	2900.700	2579.00	2418.51	.00	.07	.00	52.26	45.81
	2800.600	2579.00	2418.66	.00	.15	.00	51.92	100.10
	2700.600	2579.00	2418.46	.00	-.20	.00	43.85	99.95
*	2600.700	2579.00	2418.15	.00	-.31	.00	40.96	99.93
*	2500.700	2579.00	2419.20	.00	1.05	.00	41.25	99.99
*	2400.700	2579.00	2420.25	.00	1.05	.00	41.60	99.97
*	2300.700	2579.00	2421.25	.00	1.00	.00	39.20	99.98
	2200.700	2579.00	2422.33	.00	1.08	.00	39.20	100.00
*	2100.800	2579.00	2423.38	.00	1.05	.00	39.20	99.96
*	2000.800	2579.00	2424.44	.00	1.07	.00	39.20	99.94
*	1900.800	2579.00	2425.49	.00	1.05	.00	39.20	100.01
*	1800.900	2579.00	2426.57	.00	1.07	.00	39.20	99.92
*	1700.900	2579.00	2427.62	.00	1.06	.00	39.20	100.02
*	1600.500	2579.00	2428.68	.00	1.05	.00	39.20	100.43
*	1500.500	2579.00	2429.74	.00	1.07	.00	39.20	100.01
*	1400.400	2579.00	2430.79	.00	1.05	.00	39.20	100.01
*	1300.500	2579.00	2431.86	.00	1.07	.00	39.20	99.89
*	1200.400	2579.00	2432.93	.00	1.07	.00	39.20	100.12
*	1100.600	2579.00	2433.98	.00	1.04	.00	39.20	99.88
*	1000.500	2579.00	2435.04	.00	1.07	.00	39.20	100.05
	900.500	2579.00	2436.10	.00	1.05	.00	39.20	99.96
*	800.500	2579.00	2437.16	.00	1.07	.00	39.20	100.06

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	700.500	2579.00	2438.37	.00	1.21	.00	44.50	99.96
*	666.800	2579.00	2438.72	.00	.35	.00	44.29	33.71
*	665.800	2579.00	2440.47	.00	1.75	.00	44.48	1.00
	600.300	2579.00	2441.48	.00	1.01	.00	44.60	65.53
	500.300	2579.00	2441.89	.00	.41	.00	44.60	99.98
	400.300	2579.00	2442.24	.00	.35	.00	44.60	100.00
	300.300	2579.00	2442.59	.00	.35	.00	44.60	100.06
	200.300	2579.00	2442.91	.00	.32	.00	44.60	99.95
	146.400	2579.00	2443.08	.00	.17	.00	44.60	53.86

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 2600.700 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2500.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2500.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2400.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2400.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2300.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2300.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2200.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2200.700 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2100.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2100.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2000.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2000.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1900.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1900.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1800.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1800.900 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1700.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1700.900 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1600.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1600.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1500.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1500.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1400.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1400.400 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1300.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 1200.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1200.400 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1100.600 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 1000.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1000.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 900.500 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 900.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 800.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 800.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 700.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 700.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 666.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 666.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 665.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 665.800 PROFILE= 1 MINIMUM SPECIFIC ENERGY

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**********************************************************
*  WATER SURFACE PROFILES                                *
*  VERSION OF SEPTEMBER 1988                             *
*  ERROR: 01.02.03.04                                    *
*  UPDATED:  JUNE 1990                                   *
*  RUN DATE    10JAN96    TIME    09:40:02               *
**********************************************************
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****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*           (916) 756-1104             *
****************************************
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```
X    X  XXXXXXX   XXXXX            XXXXX
X    X  X       X    X          X    X
X    X  X       X                    X
XXXXXXX  XXXX    X         XXXXX   XXXXX
X    X  X       X                  X
X    X  X       X    X             X
X    X  XXXXXXX   XXXXX            XXXXXXX
```

END OF BANNER

FILE: ROWSUP - Supercritical run without overbank information.

THIS RUN EXECUTED 10JAN96 09:40:03

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

 ERROR CORR - 01,02,03,04
 MODIFICATION -
**************************************************

T1      CCRFCD - Upper Flamingo Wash Detention Basin
T2      B&V
T3      SUPERCRITICAL - OUTFALL CHANNEL (Channel width only)

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

       0       2        0        1        0        0        0        0   2442.04       0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      -1                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

QT        1      2579
NC    0.035    0.035    0.024      0.1      0.3
X1    146.4       11   613.70   658.30    53.86    53.86    53.86
GR   2442.1   613.70  2440.75   616.40  2435.95   626.00  2435.31   632.40  2434.81   633.00
GR   2434.8   636.00  2434.81   639.00  2435.31   639.60  2435.95   646.00  2440.75   655.60
GR   2442.1   658.30

X1    200.3       11   608.70   653.30   101.00    98.90    99.95
GR   2441.9   608.70  2440.59   611.40  2435.79   621.00  2435.15   627.40  2434.59   628.00
GR   2434.6   631.00  2434.65   634.00  2435.15   634.60  2435.79   641.00  2440.59   650.60
GR   2441.9   653.30

X1    300.3       11   604.20   648.80   100.06   100.06   100.06
GR   2441.6   604.20  2440.29   606.90  2435.49   616.50  2434.85   622.90  2434.35   623.50
GR   2434.3   626.50  2434.35   629.50  2434.85   630.10  2435.49   636.50  2440.29   646.10
GR   2441.6   648.80

X1    400.3       11   602.70   647.30   100.00   100.00   100.00
GR   2441.3   602.70  2439.99   605.40  2435.19   615.00  2434.55   621.40  2434.05   622.00
GR   2434.0   625.00  2434.05   628.00  2434.55   628.60  2435.19   635.00  2439.99   644.60
GR   2441.3   647.30
```

X1	500.3	11	600.20	644.80	99.98	99.98	99.98			
GR	2441.0	600.20	2439.69	602.90	2434.89	612.50	2434.25	618.90	2433.75	619.50
GR	2433.7	622.50	2433.75	625.50	2434.25	626.10	2434.89	632.50	2439.69	642.10
GR	2441.0	644.80								
X1	600.3	11	598.70	643.30	65.53	65.53	65.53			
GR	2440.7	598.70	2439.39	601.40	2434.59	611.00	2433.95	617.40	2433.45	618.00
GR	2433.4	621.00	2433.45	624.00	2433.95	624.60	2434.59	631.00	2439.39	640.60
GR	2440.7	643.30								
X1	665.8	11	598.70	643.30	1.00	1.00	1.00			
GR	2440.5	598.70	2439.19	601.40	2434.39	611.00	2433.75	617.40	2433.25	618.00
GR	2433.2	621.00	2433.25	624.00	2433.75	624.60	2434.39	631.00	2439.19	640.60
GR	2440.5	643.30								
X1	666.8	11	598.70	643.30	33.71	33.71	33.71			
GR	2438.8	598.70	2437.42	601.40	2432.62	611.00	2431.98	617.40	2431.48	618.00
GR	2431.4	621.00	2431.48	624.00	2431.98	624.60	2432.62	631.00	2437.42	640.60
GR	2438.8	643.30								
X1	700.5	11	598.70	643.30	99.96	99.96	99.96			
GR	2438.4	598.70	2437.06	601.40	2432.26	611.00	2431.62	617.40	2431.12	618.00
GR	2431.1	621.00	2431.12	624.00	2431.62	624.60	2432.26	631.00	2437.06	640.60
GR	2438.4	643.30								
X1	800.5	9	601.40	640.60	100.06	100.06	100.06			
GR	2436.0	601.40	2431.20	611.00	2430.56	617.40	2430.06	618.00	2430.00	621.00
GR	2430.1	624.00	2430.56	624.60	2431.20	631.00	2436.00	640.60		
X1	900.5	9	601.40	640.60	99.96	99.96	99.96			
GR	2434.9	601.40	2430.14	611.00	2429.50	617.40	2429.00	618.00	2428.94	621.00
GR	2429.0	624.00	2429.50	624.60	2430.14	631.00	2434.94	640.60		
X1	1000.5	9	601.40	640.60	100.05	100.05	100.05			
GR	2433.9	601.40	2429.08	611.00	2428.44	617.40	2427.94	618.00	2427.88	621.00
GR	2427.9	624.00	2428.44	624.60	2429.08	631.00	2433.88	640.60		
X1	1100.6	9	601.40	640.60	99.88	99.88	99.88			
GR	2432.8	601.40	2428.02	611.00	2427.38	617.40	2426.88	618.00	2426.82	621.00
GR	2426.9	624.00	2427.38	624.60	2428.02	631.00	2432.82	640.60		

XJ	1200.4	9	601.40	640.60	100.12	100.12	100.12			
GR	2431.8	601.40	2426.96	611.00	2426.32	617.40	2425.82	618.00	2425.76	621.00
GR	2425.8	624.00	2426.32	624.60	2426.96	631.00	2431.80	640.60		
X1	1300.5	9	601.40	640.60	99.89	99.89	99.89			
GR	2430.7	601.40	2425.90	611.00	2425.26	617.40	2424.76	618.00	2424.70	621.00
GR	2424.8	624.00	2425.26	624.60	2425.90	631.00	2430.70	640.60		
X1	1400.4	9	601.40	640.60	105.00	95.00	100.01			
GR	2429.6	601.40	2424.84	611.00	2424.20	617.40	2423.70	618.00	2423.64	621.00
GR	2423.7	624.00	2424.20	624.60	2424.84	631.00	2429.64	640.60		
X1	1500.5	9	608.40	647.60	105.00	95.00	100.01			
GR	2428.6	608.40	2423.78	618.00	2423.14	624.40	2422.64	625.00	2422.58	628.00
GR	2422.6	631.00	2423.14	631.60	2423.78	638.00	2428.58	647.60		
XJ	1600.5	9	615.40	654.60	105.00	95.86	100.43			
GR	2427.5	615.40	2422.72	625.00	2422.08	631.40	2421.58	632.00	2421.52	635.00
GR	2421.6	638.00	2422.08	638.60	2422.72	645.00	2427.52	654.60		
X1	1700.9	9	617.40	656.60	103.00	97.00	100.02			
GR	2426.5	617.40	2421.66	627.00	2421.02	633.40	2420.52	634.00	2420.46	637.00
GR	2420.5	640.00	2421.02	640.60	2421.66	647.00	2426.46	656.60		
X1	1800.9	9	616.40	655.60	99.92	99.92	99.92			
GR	2425.4	616.40	2420.60	626.00	2419.96	632.40	2419.46	633.00	2419.40	636.00
GR	2419.5	639.00	2419.96	639.60	2420.60	646.00	2425.40	655.60		
X1	1900.8	9	616.40	655.60	100.01	100.01	100.01			
GR	2424.3	616.40	2419.54	626.00	2418.90	632.40	2418.40	633.00	2418.34	636.00
GR	2418.4	639.00	2418.90	639.60	2419.54	646.00	2424.34	655.60		
X1	2000.8	9	616.40	655.60	99.94	99.94	99.94			
GR	2423.3	616.40	2418.48	626.00	2417.84	632.40	2417.34	633.00	2417.28	636.00
GR	2417.3	639.00	2417.84	639.60	2418.48	646.00	2423.28	655.60		
X1	2100.8	9	616.40	655.60	99.96	99.96	99.96			
GR	2422.2	616.40	2417.42	626.00	2416.78	632.40	2416.28	633.00	2416.22	636.00
GR	2416.3	639.00	2416.78	639.60	2417.42	646.00	2422.22	655.60		

	2200.7	9	616.40	655.60	100.00	100.00	100.00			
GR	2421.2	616.40	2416.36	626.00	2415.72	632.40	2415.22	633.00	2415.16	636.00
GR	2415.2	639.00	2415.72	639.60	2416.36	646.00	2421.16	655.60		
X1	2300.7	9	616.40	655.60	99.98	99.98	99.98			
GR	2420.1	616.40	2415.30	626.00	2414.66	632.40	2414.16	633.00	2414.10	636.00
GR	2414.2	639.00	2414.66	639.60	2415.30	646.00	2420.12	655.60		
X1	2400.7	10	616.40	658.00	99.97	99.97	99.97			
GR	2419.0	616.40	2414.24	626.00	2413.60	632.40	2413.10	633.00	2413.04	636.00
GR	2413.1	639.00	2413.60	639.60	2414.24	646.00	2419.04	655.60	2420.00	658.00
X1	2500.7	10	616.40	659.00	99.99	99.99	99.99			
GR	2418.0	616.40	2413.18	626.00	2412.54	632.40	2412.04	633.00	2411.98	636.00
GR	2412.0	639.00	2412.54	639.60	2413.18	646.00	2417.98	655.60	2420.00	659.00
X1	2600.7	10	616.40	660.00	99.93	99.93	99.93			
GR	2416.9	616.40	2412.12	626.00	2411.48	632.40	2410.98	633.00	2410.92	636.00
GR	2411.0	639.00	2411.48	639.60	2412.12	646.00	2416.92	655.60	2420.00	660.00
	2700.6	10	616.40	663.00	99.95	99.95	99.95			
GR	2415.9	616.40	2411.06	626.00	2410.42	632.40	2409.92	633.00	2409.86	636.00
GR	2409.9	639.00	2410.42	639.60	2411.06	646.00	2415.86	655.60	2420.00	663.00
X1	2800.6	14	611.40	666.00	100.10	100.10	100.10			
GR	2417.3	611.40	2416.14	613.70	2414.80	616.40	2410.00	626.00	2409.36	632.40
GR	2408.9	633.00	2408.80	636.00	2408.86	639.00	2409.36	639.60	2410.00	646.00
GR	2414.8	655.60	2416.14	658.30	2417.30	660.60	2420.00	666.00		
X1	2900.7	14	611.40	667.00	30.00	61.62	45.81			
GR	2417.2	611.40	2415.99	613.70	2414.65	616.40	2409.85	626.00	2409.21	632.40
GR	2408.7	633.00	2408.65	636.00	2408.71	639.00	2409.21	639.60	2409.85	646.00
GR	2414.7	655.60	2415.99	658.30	2417.15	660.60	2420.00	667.00		
X1	2946.5	14	611.40	666.00	39.50	71.12	55.31			
GR	2417.1	611.40	2415.92	613.70	2414.58	616.40	2409.78	626.00	2409.14	632.40
GR	2408.6	633.00	2408.58	636.00	2408.64	639.00	2409.14	639.60	2409.78	646.00
GR	2414.6	655.60	2415.92	658.30	2417.08	660.60	2420.00	666.00		

X1	3001.8	14	611.40	667.00	0.00	0.00	0.00			
GR	2417.0	611.40	2415.84	613.70	2414.50	616.40	2409.70	626.00	2409.06	632.40
GR	2408.6	633.00	2408.50	636.00	2408.56	639.00	2409.06	639.60	2409.70	646.00
GR	2414.5	655.60	2415.84	658.30	2417.00	660.60	2420.00	667.00		

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300

#SECNO 146.400

146.400	7.24	2442.04	2442.05	2442.04	2444.43	2.39	.00	.00	2442.10
2579.0	.0	2579.0	.0	.0	208.0	.0	.0	.0	2442.10
.00	.00	12.40	.00	.000	.024	.000	.000	2434.80	613.82
.005621	0.	0.	0.	0	4	0	.00	44.36	658.18

#SECNO 200.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

200.300	7.30	2441.89	2441.89	.00	2444.26	2.37	.30	.01	2441.90
2579.0	.0	2579.0	.0	.0	208.8	.0	.3	.1	2441.90
.00	.00	12.35	.00	.000	.024	.000	.000	2434.59	608.72
.005583	54.	54.	54.	20	5	0	.00	44.56	653.28

#SECNO 300.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

300.300	7.28	2441.58	2441.58	.00	2443.96	2.38	.56	.43	2441.60
2579.0	.0	2579.0	.0	.0	208.1	.0	.7	.2	2441.60
.00	.00	12.39	.00	.000	.024	.000	.000	2434.30	604.25
.005633	101.	100.	99.	20	5	0	.00	44.51	648.75

#SECNO 400.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

400.300	7.28	2441.28	2441.28	.00	2443.66	2.38	.56	.42	2441.30
2579.0	.0	2579.0	.0	.0	208.3	.0	1.2	.3	2441.30
.01	.00	12.38	.00	.000	.024	.000	.000	2434.00	602.74
.005617	100.	100.	100.	20	5	0	.00	44.53	647.26

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 500.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

500.300	7.28	2440.98	2440.98	.00	2443.36	2.38	.56	.42	2441.00
2579.0	.0	2579.0	.0	.0	208.4	.0	1.7	.4	2441.00
.01	.00	12.38	.00	.000	.024	.000	.000	2433.70	600.23
.005612	100.	100.	100.	20	5	0	.00	44.53	644.77

#SECNO 600.300
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

600.300	7.28	2440.68	2440.68	.00	2443.06	2.38	.56	.42	2440.70
2579.0	.0	2579.0	.0	.0	208.3	.0	2.2	.5	2440.70
.01	.00	12.38	.00	.000	.024	.000	.000	2433.40	598.74
.005619	100.	100.	100.	20	5	0	.00	44.52	643.26

#SECNO 665.800
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

665.800	7.28	2440.48	2440.48	.00	2442.86	2.38	.37	.09	2440.50
2579.0	.0	2579.0	.0	.0	208.4	.0	2.5	.5	2440.50
.01	.00	12.38	.00	.000	.024	.000	.000	2433.20	598.74
.005614	66.	66.	66.	20	5	0	.00	44.53	643.26

#SECNO 666.800

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. XRATIO = 1.80

666.800	5.54	2436.94	2438.72	.00	2442.53	5.59	.01	.32	2438.80
2579.0	.0	2579.0	.0	.0	135.9	.0	2.5	.5	2438.80
.01	.00	18.98	.00	.000	.024	.000	.000	2431.48	602.37
.018244	1.	1.	1.	6	5	0	.00	37.27	639.63

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 700.500

3301 HV CHANGED MORE THAN HVINS

700.500	5.71	2436.81	2438.35	.00	2441.78	4.97	.57	.19	2438.40
2579.0	.0	2579.0	.0	.0	144.2	.0	2.6	.6	2438.40
.01	.00	17.89	.00	.000	.024	.000	.000	2431.10	601.91
.015468	34.	34.	34.	6	11	0	.00	38.17	640.09

#SECNO 800.500
3280 CROSS SECTION 800.50 EXTENDED .15 FEET

3301 HV CHANGED MORE THAN HVINS

800.500	6.15	2436.15	2437.15	.00	2440.17	4.02	1.32	.28	2436.00
2579.0	.0	2579.0	.0	.0	160.2	.0	2.9	.6	2436.00
.01	.00	16.10	.00	.000	.024	.000	.000	2430.00	601.40
.011401	100.	100.	100.	8	11	0	.00	39.20	640.60

#SECNO 900.500
3280 CROSS SECTION 900.50 EXTENDED .29 FEET

900.500	6.25	2435.19	2436.09	.00	2439.02	3.83	1.10	.06	2434.90
2579.0	.0	2579.0	.0	.0	164.2	.0	3.3	.7	2434.94
.02	.00	15.70	.00	.000	.024	.000	.000	2428.94	601.40
.010577	100.	100.	100.	9	11	0	.00	39.20	640.60

#SECNO 1000.500
3280 CROSS SECTION 1000.50 EXTENDED .26 FEET

1000.500	6.25	2434.13	2435.07	.00	2437.96	3.83	1.06	.00	2433.90
2579.0	.0	2579.0	.0	.0	164.3	.0	3.7	.8	2433.88
.02	.00	15.70	.00	.000	.024	.000	.000	2427.88	601.40
.010563	100.	100.	100.	8	8	0	.00	39.20	640.60

#SECNO 1100.600
3280 CROSS SECTION 1100.60 EXTENDED .27 FEET

SECNO	DEPTH	CWSEL	CRITWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST
1100.600	6.25	2433.07	2434.00	.00	2436.90	3.83	1.06	.00	2432.80
2579.0	.0	2579.0	.0	.0	164.2	.0	4.1	.9	2432.82
.02	.00	15.71	.00	.000	.024	.000	.000	2426.82	601.40
.010580	100.	100.	100.	8	8	0	.00	39.20	640.60

*SECNO 1200.400
3280 CROSS SECTION 1200.40 EXTENDED .23 FEET

1200.400	6.26	2432.02	2432.95	.00	2435.84	3.82	1.05	.00	2431.80
2579.0	.0	2579.0	.0	.0	164.4	.0	4.4	1.0	2431.80
.02	.00	15.69	.00	.000	.024	.000	.000	2425.76	601.40
.010535	100.	100.	100.	8	8	0	.00	39.20	640.60

*SECNO 1300.500
3280 CROSS SECTION 1300.50 EXTENDED .25 FEET

1300.500	6.25	2430.95	2431.89	.00	2434.79	3.83	1.06	.00	2430.70
2579.0	.0	2579.0	.0	.0	164.2	.0	4.8	1.1	2430.70
.02	.00	15.71	.00	.000	.024	.000	.000	2424.70	601.40
.010581	100.	100.	100.	8	8	0	.00	39.20	640.60

*SECNO 1400.400
3280 CROSS SECTION 1400.40 EXTENDED .28 FEET

1400.400	6.24	2429.88	2430.82	.00	2433.73	3.84	1.06	.00	2429.60
2579.0	.0	2579.0	.0	.0	163.9	.0	5.2	1.2	2429.64
.02	.00	15.73	.00	.000	.024	.000	.000	2423.64	601.40
.010643	100.	100.	100.	8	8	0	.00	39.20	640.60

*SECNO 1500.500
3280 CROSS SECTION 1500.50 EXTENDED .25 FEET

1500.500	6.25	2428.83	2429.77	.00	2432.66	3.83	1.06	.00	2428.60
2579.0	.0	2579.0	.0	.0	164.2	.0	5.6	1.3	2428.58
.03	.00	15.71	.00	.000	.024	.000	.000	2422.58	608.40
.010590	105.	100.	95.	8	8	0	.00	39.20	647.60

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1600.500
3280 CROSS SECTION 1600.50 EXTENDED .27 FEET

1600.500	6.25	2427.77	2428.70	.00	2431.60	3.83	1.06	.00	2427.50
2579.0	.0	2579.0	.0	.0	164.2	.0	6.0	1.4	2427.52
.03	.00	15.70	.00	.000	.024	.000	.000	2421.52	615.40
.010575	105.	100.	95.	8	8	0	.00	39.20	654.60

#SECNO 1700.900
3280 CROSS SECTION 1700.90 EXTENDED .26 FEET

1700.900	6.26	2426.72	2427.65	.00	2430.54	3.82	1.06	.00	2426.50
2579.0	.0	2579.0	.0	.0	164.5	.0	6.3	1.5	2426.46
.03	.00	15.68	.00	.000	.024	.000	.000	2420.46	617.40
.010528	105.	100.	96.	8	8	0	.00	39.20	656.60

#SECNO 1800.900
3280 CROSS SECTION 1800.90 EXTENDED .26 FEET

1800.900	6.26	2425.66	2426.59	.00	2429.48	3.83	1.05	.00	2425.40
2579.0	.0	2579.0	.0	.0	164.3	.0	6.7	1.6	2425.40
.03	.00	15.70	.00	.000	.024	.000	.000	2419.40	616.40
.010551	103.	100.	97.	8	8	0	.00	39.20	655.60

#SECNO 1900.800
3280 CROSS SECTION 1900.80 EXTENDED .28 FEET

1900.800	6.24	2424.58	2425.52	.00	2428.42	3.84	1.06	.00	2424.30
2579.0	.0	2579.0	.0	.0	164.0	.0	7.1	1.6	2424.34
.03	.00	15.73	.00	.000	.024	.000	.000	2418.34	616.40
.010628	100.	100.	100.	8	8	0	.00	39.20	655.60

#SECNO 2000.800
3280 CROSS SECTION 2000.80 EXTENDED .25 FEET

2000.800	6.25	2423.53	2424.47	.00	2427.36	3.83	1.06	.00	2423.30
2579.0	.0	2579.0	.0	.0	164.2	.0	7.5	1.7	2423.28
.04	.00	15.70	.00	.000	.024	.000	.000	2417.28	616.40
.010581	100.	100.	100.	8	8	0	.00	39.20	655.60

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 2100.800
3280 CROSS SECTION 2100.80 EXTENDED .27 FEET

2100.800	6.25	2422.47	2423.40	.00	2426.30	3.83	1.06	.00	2422.20
2579.0	.0	2579.0	.0	.0	164.2	.0	7.8	1.8	2422.22
.04	.00	15.71	.00	.000	.024	.000	.000	2416.22	616.40
.010577	100.	100.	100.	8	8	0	.00	39.20	655.60

#SECNO 2200.700
3280 CROSS SECTION 2200.70 EXTENDED .26 FEET

2200.700	6.26	2421.42	2422.35	.00	2425.24	3.83	1.06	.00	2421.20
2579.0	.0	2579.0	.0	.0	164.3	.0	8.2	1.9	2421.16
.04	.00	15.70	.00	.000	.024	.000	.000	2415.16	616.40
.010563	100.	100.	100.	8	8	0	.00	39.20	655.60

#SECNO 2300.700
3280 CROSS SECTION 2300.70 EXTENDED .26 FEET

2300.700	6.26	2420.36	2421.29	.00	2424.19	3.83	1.06	.00	2420.10
2579.0	.0	2579.0	.0	.0	164.2	.0	8.6	2.0	2420.12
.04	.00	15.71	.00	.000	.024	.000	.000	2414.10	616.40
.010569	100.	100.	100.	8	8	0	.00	39.20	655.60

#SECNO 2400.700
3280 CROSS SECTION 2400.70 EXTENDED .28 FEET

2400.700	6.24	2419.28	2420.27	.00	2423.12	3.84	1.07	.00	2419.00
2579.0	.0	2579.0	.0	.0	164.0	.0	9.0	2.1	2420.00
.04	.00	15.72	.00	.000	.024	.000	.000	2413.04	616.40
.010755	100.	100.	100.	8	8	0	.00	39.81	656.21

#SECNO 2500.700
3280 CROSS SECTION 2500.70 EXTENDED .25 FEET

2500.700	6.26	2418.24	2419.23	.00	2422.05	3.81	1.07	.01	2418.00
2579.0	.0	2579.0	.0	.0	164.7	.0	9.4	2.2	2420.00
.04	.00	15.66	.00	.000	.024	.000	.000	2411.98	616.40
.010571	100.	100.	100.	8	8	0	.00	39.65	656.05

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	CORAR	TOPWID	ENDST

#SECNO 2600.700
3280 CROSS SECTION 2600.70 EXTENDED .28 FEET

2600.700	6.26	2417.18	2418.15	.00	2420.99	3.81	1.06	.00	2416.90
2579.0	.0	2579.0	.0	.0	164.7	.0	9.7	2.3	2420.00
.05	.00	15.66	.00	.000	.024	.000	.000	2410.92	616.40
.010540	100.	100.	100.	8	8	0	.00	39.58	655.98

#SECNO 2700.600
3280 CROSS SECTION 2700.60 EXTENDED .23 FEET

2700.600	6.27	2416.13	2417.11	.00	2419.93	3.81	1.05	.00	2415.90
2579.0	.0	2579.0	.0	.0	164.7	.0	10.1	2.4	2420.00
.05	.00	15.65	.00	.000	.024	.000	.000	2409.86	616.40
.010565	100.	100.	100.	8	8	0	.00	39.68	656.08

#SECNO 2800.600

2800.600	6.25	2415.05	2416.12	.00	2418.87	3.82	1.06	.00	2417.30
2579.0	.0	2579.0	.0	.0	164.5	.0	10.5	2.5	2420.00
.05	.00	15.68	.00	.000	.024	.000	.000	2408.80	615.88
.010732	100.	100.	100.	7	8	0	.00	40.24	656.12

#SECNO 2900.700

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2900.700	7.33	2415.98	2415.98	.00	2418.33	2.35	.75	.47	2417.20
2579.0	.0	2579.0	.0	.0	209.7	.0	10.9	2.6	2420.00
.05	.00	12.30	.00	.000	.024	.000	.000	2408.65	613.72
.005509	100.	100.	100.	20	8	0	.00	44.56	658.28

#SECNO 2946.500
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2946.500	7.29	2415.87	2415.87	.00	2418.25	2.39	.26	.08	2417.10
2579.0	.0	2579.0	.0	.0	208.0	.0	11.1	2.6	2420.00
.05	.00	12.40	.00	.000	.024	.000	.000	2408.58	613.81
.005628	30.	46.	62.	20	5	0	.00	44.39	658.19

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 3001.800
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3001.800	7.30	2415.80	2415.80	.00	2418.17	2.38	.31	.32	2417.80
2579.0	.0	2579.0	.0	.0	208.5	.0	11.4	2.7	2420.00
.05	.00	12.37	.00	.000	.024	.000	.000	2408.50	613.78
.005588	40.	55.	71.	20	5	0	.00	44.43	658.22

PROFILE FOR STREAM SUPERCRITICAL - OUTFALL

PLOTTED POINTS (BY PRIORITY) E-

ELEVATION SECNO	2409. CUMDIS	2414.	2419.	2424.	2429.	2434.	2439.	2444.	2449.	2454.
146.40	0.						I	W E		
	10.						I	W E		
	20.						I	W E		
	30.						I	W E		
	40.						I	W E		
	50.						I	W E		
200.30	60.						I	W E		
	70.						I	W E		
	80.						I	W E		
	90.						I	W E		
	100.						I	W E		
	110.						I	W E		
	120.						I	W E		
	130.						I	W E		
	140.						I	W E		
	150.						I	W E		
300.30	160.						I	W E		
	170.						I	W E		
	180.						I	W E		
	190.						I	W E		
	200.						I	W E		
	210.						I	W E		
	220.						I	W E		
	230.						I	W E		
	240.						I	W E		
	250.						I	W E		
400.30	260.						I	W E		
	270.						I	W E		
	280.						I	W E		
	290.						I	W E		
	300.						I	W E		
	310.						I	W E		
	320.						I	W E		
	330.						I	W E		
	340.						I	W E		
	350.						I	W E		
500.30	360.						I	W E		
	370.						I	W E		
	380.						I	W E		
	390.						I	W E		
	400.						I	W E.		
	410.						I	W E.		
	420.						I	W E.		
	430.						I	W E.		
	440.						I	WL E.		
	450.						I	W E.		
600.30	460.						I	W E.		
	470.						I	W E.		
	480.						I	W E.		
	490.						I	W E.		
	500.						I	W E.		

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666.80  530.  .  .  .  .  .  .  I  .  W  CL  E  .  .  .  .
        540.  .  .  .  .  .  .  I  .  W  C   E  .  .  .  .
        550.  .  .  .  .  .  .  I  .  W  C   E  .  .  .  .
700.50  560.  .  .  .  .  .  .  I  .  W  C   E  .  .  .  .
        570.  .  .  .  .  .  .  I  .  W  C.  E  .  .  .  .
        580.  .  .  .  .  .  .  I  .  W  C.  E  .  .  .  .
        590.  .  .  .  .  .  .  I  .  W LC.  E  .  .  .  .
        600.  .  .  .  .  .  .  I  .  W LC.  E  .  .  .  .
        610.  .  .  .  .  .  .  I  .  WLC .  E  .  .  .  .
        620.  .  .  .  .  .  .  I  .  WLC .  E  .  .  .  .
        630.  .  .  .  .  .  .  I  .  W C .  E  .  .  .  .
        640.  .  .  .  .  .  .  I  .  W C .  E  .  .  .  .
        650.  .  .  .  .  .  .  I  .  W  C .  E  .  .  .  .
800.50  660.  .  .  .  .  .  .  I  .  W C  . E  .  .  .  .
        670.  .  .  .  .  .  .  I  .  W C  . E  .  .  .  .
        680.  .  .  .  .  .  .  I  .  W C  . E  .  .  .  .
        690.  .  .  .  .  .  .  I  .  LW C  . E  .  .  .  .
        700.  .  .  .  .  .  .  I  .  LWC  . E  .  .  .  .
        710.  .  .  .  .  .  .  I  .  W C  . E  .  .  .  .
        720.  .  .  .  .  .  .  I  .  W C  . E  .  .  .  .
        730.  .  .  .  .  .  .  I  .  LW C  . E  .  .  .  .
        740.  .  .  .  .  .  .  I  .  LW C  . E  .  .  .  .
        750.  .  .  .  .  .  .  I  .  LWC  .E  .  .  .  .
900.50  760.  .  .  .  .  .  .  I  .  W C  .E  .  .  .  .
        770.  .  .  .  .  .  .  I  .  W C  .E  .  .  .  .
        780.  .  .  .  .  .  .  I  .  LW C  .E  .  .  .  .
        790.  .  .  .  .  .  .  I  .  LW C  E  .  .  .  .
        800.  .  .  .  .  .  .  I  .  LWC  E  .  .  .  .
        810.  .  .  .  .  .  .  I  .  W C  E  .  .  .  .
        820.  .  .  .  .  .  .  I  .  W C  E  .  .  .  .
        830.  .  .  .  .  .  .  I.  .  LW C  E  .  .  .  .
        840.  .  .  .  .  .  .  I.  .  LW C  E.  .  .  .  .
        850.  .  .  .  .  .  .  I.  .  W C  E.  .  .  .  .
1000.50 860.  .  .  .  .  .  .  I.  .  W C  E.  .  .  .  .
        870.  .  .  .  .  .  .  I.  .  W C  E.  .  .  .  .
        880.  .  .  .  .  .  I  .  .  LW C  E  .  .  .  .
        890.  .  .  .  .  .  I  .  .  LWC  E  .  .  .  .
        900.  .  .  .  .  .  I  .  .  W C  E  .  .  .  .
        910.  .  .  .  .  .  I  .  .  W C  E  .  .  .  .
        920.  .  .  .  .  .  I  .  .  LW C  E  .  .  .  .
        930.  .  .  .  .  .  I  .  .  LW C  E  .  .  .  .
        940.  .  .  .  .  .  I  .  .  LWC  E  .  .  .  .
        950.  .  .  .  .  .  I  .  .  W.C  E  .  .  .  .
1100.60 960.  .  .  .  .  .  I  .  .  W.C  E  .  .  .  .
        970.  .  .  .  .  .  I  .  .  LW.C  E  .  .  .  .
        980.  .  .  .  .  .  I  .  .  LW.C  E  .  .  .  .
        990.  .  .  .  .  .  I  .  .  LWC  E  .  .  .  .
       1000.  .  .  .  .  .  I  .  .  W C  E  .  .  .  .
       1010.  .  .  .  .  .  I  .  .  W C  E  .  .  .  .
       1020.  .  .  .  .  .  I  .  .  LW C  E  .  .  .  .
       1030.  .  .  .  .  .  I  .  .  LW C  E  .  .  .  .
       1040.  .  .  .  .  .  I  .  .  W C.  E  .  .  .  .
       1050.  .  .  .  .  .  I  .  .  W C.  E  .  .  .  .
1200.40 1060.  .  .  .  .  .  I  .  .  W C.  E  .  .  .  .
       1070.  .  .  .  .  .  I  .  .  LW C.  E  .  .  .  .
       1080.  .  .  .  .  .  I  .  .  LWC .  E  .  .  .  .
       1090.  .  .  .  .  .  I  .  .  W C .  E  .  .  .  .
       1100.  .  .  .  .  .  I  .  .  W C .  E  .  .  .  .
       1110.  .  .  .  .  .  I  .  .  W C .  E  .  .  .  .
       1120.  .  .  .  .  .  I  .  .  LW C .  E  .  .  .  .
       1130.  .  .  .  .  .  I  .  .  LWC  .  E  .  .  .  .
       1140.  .  .  .  .  .  I  .  .  W C  .  E  .  .  .  .
       1150.  .  .  .  .  .  I  .  .  W C  .  E  .  .  .  .
1300.50 1160.  .  .  .  .  .  I  .  .  LW C  .  E  .  .  .  .
       1170.                 I        LW C  .  E
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         1190. .   .   .   .I    .  W C  .E  .   .   .   .   .
         1200. .   .   .   .I    .  W C  .E  .   .   .   .   .
         1210. .   .   .   .I    .  LW C .E  .   .   .   .   .
         1220. .   .   .   .I    .  LWC  .E  .   .   .   .   .
         1230. .   .   .   .I    .  W C  .E  .   .   .   .   .
         1240. .   .   .   .I    .  W C  .E  .   .   .   .   .
         1250. .   .   .   I     .  LW C .E  .   .   .   .   .
1400.40  1260. .   .   .   I     .  LW C  E  .   .   .   .   .
         1270. .   .   .   I     .  LWC  E  .   .   .   .   .
         1280. .   .   .   I     .  W C  E  .   .   .   .   .
         1290. .   .   .   I     .  W C  E  .   .   .   .   .
         1300. .   .   .  I.     .LW C  E  .   .   .   .   .
         1310. .   .   .  I.     .LW C  E. .   .   .   .   .
         1320. .   .   .  I.     .LWC  E. .   .   .   .   .
         1330. .   .   .  I.     .W C  E. .   .   .   .   .
         1340. .   .   .  I.     .W C  E. .   .   .   .   .
         1350. .   .   . I .     LW C  E. .   .   .   .   .
1500.50  1360. .   .   .  I .    LW C  E  .   .   .   .   .
         1370. .   .   .  I .    W C  E  .   .   .   .   .
         1380. .   .   .  I .    W C  E  .   .   .   .   .
         1390. .   .   .  I .    W C  E  .   .   .   .   .
         1400. .   .   .  I  .   LW C  E  .   .   .   .   .
         1410. .   .   .  I  .   LWC  E  .   .   .   .   .
         1420. .   .   .  I  .   W.C  E  .   .   .   .   .
         1430. .   .   .  I  .   W.C  E  .   .   .   .   .
         1440. .   .   .  I  .   LW.C  E .   .   .   .   .
         1450. .   .   .  I  .   LW.C  E  .   .   .   .   .
1600.50  1460. .   .   .  I  .   LWC  E  .   .   .   .   .
         1470. .   .   .  I  .   W C  E  .   .   .   .   .
         1480. .   .   .  I  .   W C  E  .   .   .   .   .
         1490. .   .   .  I  .   LW C  E .   .   .   .   .
         1500. .   .   .  I  .   LW C  E  .   .   .   .   .
         1510. .   .   .  I  .   W C.  E  .   .   .   .   .
         1520. .   .   .  I  .   W C.  E  .   .   .   .   .
         1530. .   .   .  I  .   W C.  E  .   .   .   .   .
         1540. .   .   .  I  .   LW C.  E .   .   .   .   .
         1550. .   .   .  I  .   LW C.  E .   .   .   .   .
1700.90  1560. .   .   .  I  .   W C . E  .   .   .   .   .
         1570. .   .   .  I  .   W C . E  .   .   .   .   .
         1580. .   .   . I   .   RW C . E .   .   .   .   .
         1590. .   .   . I   .   LW C . E .   .   .   .   .
         1600. .   .   . I   .   LWC . E  .   .   .   .   .
         1610. .   .   . I   .   W C . E  .   .   .   .   .
         1620. .   .   . I   .   W C . E  .   .   .   .   .
         1630. .   .   .I    .   LW C . E .   .   .   .   .
         1640. .   .   .I    .   LW C . E .   .   .   .   .
         1650. .   .   .I    .   LWC . E  .   .   .   .   .
1800.90  1660. .   .   .I    .   W C . E  .   .   .   .   .
         1670. .   .   .I    .   W C . E  .   .   .   .   .
         1680. .   .   .I    .  LW C . E  .   .   .   .   .
         1690. .   .   .I    .  LW C .E  .   .   .   .   .
         1700. .   .   .I    .  W C  .E  .   .   .   .   .
         1710. .   .   .I    .  W C  .E  .   .   .   .   .
         1720. .   .   .I    . LW C  .E  .   .   .   .   .
         1730. .   .   I     . LW C  E  .   .   .   .   .
         1740. .   .   I     . LWC  E  .   .   .   .   .
         1750. .   .   I     . W C  E  .   .   .   .   .
1900.80  1760. .   .   I     . W C  E  .   .   .   .   .
         1770. .   .  I.     .LW C  E  .   .   .   .   .
         1780. .   .  I.     .LW C  E. .   .   .   .   .
         1790. .   .  I.     .LWC  E. .   .   .   .   .
         1800. .   .  I.     .W C  E. .   .   .   .   .
         1810. .   .  I.     .W C  E. .   .   .   .   .
         1820. .   . I .     LW C  E. .   .   .   .   .
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         1850.  .     .    I .      W C    E .  .  .  .  .  .  .  .
2000.80  1860.  .     .    I .      W C    E .  .  .  .  .  .  .  .
         1870.  .     .   I  .      LW C   E .  .  .  .  .  .  .  .
         1880.  .     .   I  .      LW C   E  .  .  .  .  .  .  .  .
         1890.  .     .   I  .      W.C    E  .  .  .  .  .  .  .  .
         1900.  .     .   I  .      W.C    E  .  .  .  .  .  .  .  .
         1910.  .     .  I   .      LW.C   E  .  .  .  .  .  .  .  .
         1920.  .     .  I   .      LW.C   E  .  .  .  .  .  .  .  .
         1930.  .     .  I   .      LWC    E  .  .  .  .  .  .  .  .
         1940.  .     .  I   .      W C    E  .  .  .  .  .  .  .  .
         1950.  .     .  I   .      W C    E  .  .  .  .  .  .  .  .
2100.80  1960.  .     .  I   .      LW C   E  .  .  .  .  .  .  .  .
         1970.  .     .  I   .      LW C   E  .  .  .  .  .  .  .  .
         1980.  .     .  I   .      LWC.   E  .  .  .  .  .  .  .  .
         1990.  .     .  I   .      W C.   E  .  .  .  .  .  .  .  .
         2000.  .     .  I   .      W C.   E  .  .  .  .  .  .  .  .
         2010.  .     . I    .     LW C.   E  .  .  .  .  .  .  .  .
         2020.  .     . I    .     LW C.  E   .  .  .  .  .  .  .  .
         2030.  .     . I    .     W C .  E   .  .  .  .  .  .  .  .
         2040.  .     . I    .     W C .  E   .  .  .  .  .  .  .  .
         2050.  .     . I    .     W C .  E   .  .  .  .  .  .  .  .
2200.70  2060.  .     . I    .    LW C .  E   .  .  .  .  .  .  .  .
         2070.  .     . I    .    LWC  .  E   .  .  .  .  .  .  .  .
         2080.  .     . I    .    W C  .  E   .  .  .  .  .  .  .  .
         2090.  .     . I    .    W C  .  E   .  .  .  .  .  .  .  .
         2100.  .     .  I   .    RW C  .  E   .  .  .  .  .  .  .  .
         2110.  .     .  I   .    LW C  .  E   .  .  .  .  .  .  .  .
         2120.  .     .  I   .    LWC   .  E   .  .  .  .  .  .  .  .
         2130.  .     .  I   .    W C   .  E   .  .  .  .  .  .  .  .
         2140.  .     .  I   .    W C   .  E   .  .  .  .  .  .  .  .
         2150.  .     .I     .   LW C   .  E   .  .  .  .  .  .  .  .
2300.70  2160.  .     .I     .   LW C   .E    .  .  .  .  .  .  .  .
         2170.  .     .I     .   LWC    .E    .  .  .  .  .  .  .  .
         2180.  .     .I     .   W C    .E    .  .  .  .  .  .  .  .
         2190.  .     .I     .   W C    .E    .  .  .  .  .  .  .  .
         2200.  .     I      .  LW C    .E    .  .  .  .  .  .  .  .
         2210.  .     I      .  LW C    E     .  .  .  .  .  .  .  .
         2220.  .     I      .  WRC     E     .  .  .  .  .  .  .  .
         2230.  .     I      .  WRC     E     .  .  .  .  .  .  .  .
         2240.  .     I      . LWRC     E     .  .  .  .  .  .  .  .
         2250.  .    I.      . LWRC     E.    .  .  .  .  .  .  .  .
2400.70  2260.  .    I.      . LWRC     E.    .  .  .  .  .  .  .  .
         2270.  .    I.      . W C      E.    .  .  .  .  .  .  .  .
         2280.  .    I.      . W C      E.    .  .  .  .  .  .  .  .
         2290.  .   I .      LW C       E.    .  .  .  .  .  .  .  .
         2300.  .   I .      LW C       E  .  .  .  .  .  .  .  .  .
         2310.  .   I .      LWCR       E  .  .  .  .  .  .  .  .  .
         2320.  .   I .      W CR       E  .  .  .  .  .  .  .  .  .
         2330.  .   I .      W CR       E  .  .  .  .  .  .  .  .  .
         2340.  .  I  .      LW CR      E  .  .  .  .  .  .  .  .  .
         2350.  .  I  .      LW CR      E  .  .  .  .  .  .  .  .  .
2500.70  2360.  .  I  .      LWC R      E  .  .  .  .  .  .  .  .  .
         2370.  .  I  .      W.C R      E  .  .  .  .  .  .  .  .  .
         2380.  .  I  .      W.C R      E  .  .  .  .  .  .  .  .  .
         2390.  .  I  .     LW.C R      E  .  .  .  .  .  .  .  .  .
         2400.  .  I  .     LW.C R      E  .  .  .  .  .  .  .  .  .
         2410.  .  I  .     W C  R      E  .  .  .  .  .  .  .  .  .
         2420.  .  I  .     W C  R      E  .  .  .  .  .  .  .  .  .
         2430.  . I   .     LW C R      E  .  .  .  .  .  .  .  .  .
         2440.  . I   .     LW C  R     E  .  .  .  .  .  .  .  .  .
         2450.  . I   .     LW C  R     E  .  .  .  .  .  .  .  .  .
2600.70  2460.  . I   .     W C.  R     E  .  .  .  .  .  .  .  .  .
         2470.  . I   .     W C.  R     E  .  .  .  .  .  .  .  .  .
         2480.  .I    .    LW C.  R     E  .  .  .  .  .  .  .  .  .
         2490.  .I    .    LW C.  R     E  .  .  .  .  .  .  .  .  .
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THIS RUN EXECUTED 10JAN96 09:40:31

****
HEC2 RELEASE DATED SEP 88 UPDATED JUN 1990

ERROR CORR - 01.02.03.04
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUPERCRITICAL - OUTFALL

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	100XS	VCH	AREA	.01K
	146.400	.00	.00	.00	2434.80	2579.00	2442.04	2442.05	2444.43	56.21	12.40	208.01	343.98
*	200.300	53.86	.00	.00	2434.59	2579.00	2441.89	2441.89	2444.26	55.83	12.35	208.84	345.15
*	300.300	99.95	.00	.00	2434.30	2579.00	2441.58	2441.58	2443.96	56.33	12.39	208.10	343.61
	400.300	100.06	.00	.00	2434.00	2579.00	2441.28	2441.28	2443.66	56.17	12.38	208.32	344.10
*	500.300	100.00	.00	.00	2433.70	2579.00	2440.98	2440.98	2443.36	56.12	12.38	208.39	344.25
*	600.300	99.98	.00	.00	2433.40	2579.00	2440.68	2440.68	2443.06	56.19	12.38	208.29	344.04
*	665.800	65.53	.00	.00	2433.20	2579.00	2440.48	2440.48	2442.86	56.14	12.38	208.36	344.20
*	666.800	1.00	.00	.00	2431.40	2579.00	2436.94	2438.72	2442.53	182.44	18.98	135.87	190.94
	700.500	33.71	.00	.00	2431.10	2579.00	2436.81	2438.35	2441.78	154.68	17.89	144.20	207.36
	800.500	99.96	.00	.00	2430.00	2579.00	2436.15	2437.15	2440.17	114.01	16.10	160.22	241.53
	900.500	100.06	.00	.00	2428.94	2579.00	2435.19	2436.09	2439.02	105.77	15.70	164.24	250.77
	1000.500	99.96	.00	.00	2427.88	2579.00	2434.13	2435.07	2437.96	105.63	15.70	164.31	250.93
	1100.600	100.05	.00	.00	2426.82	2579.00	2433.07	2434.00	2436.90	105.80	15.71	164.19	250.73
	1200.400	99.88	.00	.00	2425.76	2579.00	2432.02	2432.95	2435.84	105.35	15.69	164.40	251.26
	1300.500	100.12	.00	.00	2424.70	2579.00	2430.95	2431.89	2434.79	105.81	15.71	164.16	250.72
	1400.400	99.89	.00	.00	2423.64	2579.00	2429.88	2430.82	2433.73	106.43	15.73	163.91	249.99
	1500.500	100.01	.00	.00	2422.58	2579.00	2428.83	2429.77	2432.66	105.90	15.71	164.18	250.61

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1600.500	100.01	.00	.00	2421.52	2579.00	2427.77	2428.70	2431.60	105.75	15.70	164.22	250.79
	1700.900	100.43	.00	.00	2420.46	2579.00	2426.72	2427.65	2430.54	105.28	15.68	164.46	251.35
	1800.900	100.02	.00	.00	2419.40	2579.00	2425.66	2426.59	2429.48	105.51	15.70	164.31	251.07
	1900.800	99.92	.00	.00	2418.34	2579.00	2424.58	2425.52	2428.42	106.28	15.73	163.98	250.17
	2000.800	100.01	.00	.00	2417.28	2579.00	2423.53	2424.47	2427.36	105.81	15.70	164.22	250.72
	2100.800	99.94	.00	.00	2416.22	2579.00	2422.47	2423.40	2426.30	105.77	15.71	164.21	250.77
	2200.700	99.96	.00	.00	2415.16	2579.00	2421.42	2422.35	2425.24	105.63	15.70	164.29	250.94
	2300.700	100.00	.00	.00	2414.10	2579.00	2420.36	2421.29	2424.19	105.69	15.71	164.21	250.87
	2400.700	99.98	.00	.00	2413.04	2579.00	2419.28	2420.27	2423.12	107.55	15.72	164.02	248.68
	2500.700	99.97	.00	.00	2411.98	2579.00	2418.24	2419.23	2422.05	105.71	15.66	164.69	250.83
	2600.700	99.99	.00	.00	2410.92	2579.00	2417.18	2418.15	2420.99	105.40	15.66	164.73	251.21
	2700.600	99.93	.00	.00	2409.86	2579.00	2416.13	2417.11	2419.93	105.65	15.65	164.74	250.91
	2800.600	99.95	.00	.00	2408.80	2579.00	2415.05	2416.12	2418.87	107.32	15.68	164.47	248.95
*	2900.700	100.10	.00	.00	2408.65	2579.00	2415.98	2415.98	2418.33	55.09	12.30	209.66	347.47
*	2946.500	45.81	.00	.00	2408.58	2579.00	2415.87	2415.87	2418.25	56.28	12.40	208.02	343.77
*	3001.800	55.31	.00	.00	2408.50	2579.00	2415.80	2415.80	2418.17	55.88	12.37	208.47	345.02

SUPERCRITICAL - OUTFALL

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	146.400	2579.00	2442.04	.00	.00	.00	44.36	.00
#	200.300	2579.00	2441.89	.00	-.15	.00	44.56	53.86
#	300.300	2579.00	2441.58	.00	-.31	.00	44.51	99.95
#	400.300	2579.00	2441.28	.00	-.30	.00	44.53	100.06
#	500.300	2579.00	2440.98	.00	-.30	.00	44.53	100.00
#	600.300	2579.00	2440.68	.00	-.30	.00	44.52	99.98
#	665.800	2579.00	2440.48	.00	-.20	.00	44.53	65.53
#	666.800	2579.00	2436.94	.00	-3.55	.00	37.27	1.00
	700.500	2579.00	2436.81	.00	-.13	.00	38.17	33.71
	800.500	2579.00	2436.15	.00	-.66	.00	39.20	99.96
	900.500	2579.00	2435.19	.00	-.96	.00	39.20	100.06
	1000.500	2579.00	2434.13	.00	-1.05	.00	39.20	99.96
	1100.600	2579.00	2433.07	.00	-1.06	.00	39.20	100.05
	1200.400	2579.00	2432.02	.00	-1.05	.00	39.20	99.88
	1300.500	2579.00	2430.95	.00	-1.07	.00	39.20	100.12
	1400.400	2579.00	2429.88	.00	-1.07	.00	39.20	99.89
	1500.500	2579.00	2428.83	.00	-1.05	.00	39.20	100.01
	1600.500	2579.00	2427.77	.00	-1.06	.00	39.20	100.01
	1700.900	2579.00	2426.72	.00	-1.05	.00	39.20	100.43
	1800.900	2579.00	2425.66	.00	-1.06	.00	39.20	100.02
	1900.800	2579.00	2424.58	.00	-1.07	.00	39.20	99.92
	2000.800	2579.00	2423.53	.00	-1.05	.00	39.20	100.01
	2100.800	2579.00	2422.47	.00	-1.06	.00	39.20	99.94
	2200.700	2579.00	2421.42	.00	-1.05	.00	39.20	99.96

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFXWS	TOPWID	XLCH
	2300.700	2579.00	2420.36	.00	-1.06	.00	39.20	100.00
	2400.700	2579.00	2419.28	.00	-1.08	.00	39.81	99.98
	2500.700	2579.00	2418.24	.00	-1.04	.00	39.65	99.97
	2600.700	2579.00	2417.18	.00	-1.05	.00	39.58	99.99
	2700.600	2579.00	2416.13	.00	-1.05	.00	39.68	99.93
	2800.600	2579.00	2415.05	.00	-1.08	.00	40.24	99.95
#	2900.700	2579.00	2415.98	.00	.93	.00	44.56	100.10
#	2946.500	2579.00	2415.87	.00	-.11	.00	44.39	45.81
#	3001.800	2579.00	2415.80	.00	-.07	.00	44.43	55.31

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 200.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 200.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 200.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 300.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 300.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 300.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 400.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 400.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 400.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 500.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 500.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 500.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 600.300 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 600.300 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 600.300 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 665.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 665.800 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 665.800 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 666.800 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2900.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2900.700 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2900.700 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2946.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2946.500 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2946.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 3001.800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3001.800 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3001.800 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

SVE Diversion
Channel & Berm

SOUTHERN VISTA ESTATES DIVERSION CHANNEL AND BERM

SCOPE

Black & Veatch obtained as-built information on the SVE diversion channel and berm from the CCRFCD. This design and construction information was reviewed for structural compliance with the National Flood Insurance Program (NFIP 44CFR 65.10). The influence of the berm and channel on existing downstream flood zones was also verified against the as-built information.

SOUTHERN VISTA ESTATES SITE AND DRAINAGE INFORMATION

Southern Vista Estates includes a 35-acre single family resident (SFR) development and a 15-acre condominium site. The north boundary of the SFR property is adjacent and parallel to the UFWDB discharge channel. The condominium property is south of the SFR development. Both SVE properties are located in the path of drainage basins unaffected by the UFWDB.

In November 1992, Engineers and Surveyors Inc. (ESI) prepared a technical drainage study for the Clark County Department of Public Works. (The drainage study is included in Volume I of this submittal.) ESI identified a 520-acre offsite drainage area, composed of five basins, which impacted the SVE development but were not included in the UFWDB watershed. According to the HEC-1 model presented in the study, the total peak discharge from the five offsite drainage basins during a 100-year storm event is 688 cfs. ESI analyzed the impact on the UFWDB stage and storage capacity if the 688 cfs was diverted to the basin. Their findings, based on the original UFWDB 100-year pool elevation of 2469.6 feet and detained volume of 880 acre-feet, elevated the peak stage to 2470.3 feet and increased the basin volume by 63 acre-feet. The diverted flows increased the impoundment area by approximately five acres. This analysis conservatively assumed that two storms would be centered over both the UFWDB and SVE watersheds simultaneously.

As proposed in the drainage study, a diversion berm and channel was constructed to "extend" the south arm of the UFWDB embankment and divert stormwater runoff from the five offsite drainage basins into the UFWDB. The SVE project consisted of approximately 1100 feet of earthen berm and 1630 feet of trapezoidal earthen channel.

The diversion berm begins at Station 1+70 and is transformed into the diversion channel at Station 12+50. According to ESI's drainage study, three offsite basins (OFF1, OFF2, and OFF3) contribute a peak runoff of 491 cfs to the berm between Stations 1+70 and 6+00 during the 100-year event. An additional 164 cfs from offsite basin OFF4 reaches the berm between Stations 6+00 and 12+50. Runoff from OFF5, 38 cfs, reaches the channel near Station 26+00.

BERM ANALYSIS

The berm was analyzed to verify adequate capacity for conveying the stormwater runoff generated by the SVE offsite basins. The results were compared to the National Flood Insurance Program (NFIP 44CFR 65.10) requirements and CCRFCD *Hydrologic Criteria and Drainage Design Manual* guidelines.

Freeboard Requirements

According to NFIP 44CFR 65.10, the minimum freeboard requirement for riverine levees is three feet above the base flood water surface elevation. However, the upstream end of the levee (Station 1+70) is required to have an additional six inches of freeboard, for a total of 3.5 feet, and then taper to the minimum at the downstream end (Station 12+50). The NFIP minimum freeboard requirements may be reduced to two feet if adequate protection can be provided with the lesser freeboard. The local requirements established by CCRFCD require a minimum freeboard of one foot for a berm or channel.

Berm Performance

Cross sections were taken every 50 feet along the length of the berm and the flow area was calculated to within two feet of the top of the berm. This calculation provided the flow capacity with two feet of freeboard, the minimum allowed by NFIP 44CFR 65.10. To determine the available freeboard for the given flow (491 cfs between Stations 1+70 and 6+00 and 688 cfs from Stations 6+00 to 12+00), a "Depth vs Capacity" curve was plotted and the desired value was interpolated from the graph. The average freeboard for the berm was approximately 2.5 feet; the minimum freeboard provided was approximately 1.8 feet at Station 3+00. The flowline at the berm has a slope of 1.35 percent. To determine the berm capacity, Manning's Equation was applied using an "n" value of 0.032.

ESI based their design of the diversion berm and channel on the CCRFCD guidelines which require a minimum freeboard of one foot. This is considered adequate protection for this berm because the contributing watershed is finite, easily defined, and predictable. Cemented, highly stable soils were exposed in the beds of the existing washes prior to construction of the berm. This signifies that sediment accumulation at the berm would be negligible. In addition, the berm nearly parallels the natural channels at the point of interest. The Depth vs Capacity curves indicate that capacity increases greatly in the top two to three feet of berm height. This increase is typically at least six times the required flow capacity.

CHANNEL ANALYSIS

The channel cross section varies along its 1630-foot alignment, and three riprap-lined drop structures make up the grade differential between the existing ground and the channel flowline. The SVE channel was analyzed to verify adequate capacity to convey the entire 688 cfs generated in the offsite drainage basins. The following table lists the channel characteristics and capacity within the two reaches. Manning's Equation was applied using an "n" value of .035 for each calculation. The flow regime in both reaches is subcritical.

CHANNEL REACH CHARACTERISTICS (Q = 688 cfs)		
STATION	13+13.38 to 21+00.00	21+00.00 to 28+00.00
Slope (%)	0.30	0.30
Bottom Width	10'	20'
Bank Slope	2 : 1	2 : 1
Bank Height	7'	5' East, 4' West
Available Freeboard	1.13'	.42' East, -0.58' West
Velocity	5.39 fps	5.15 fps

According to the results obtained from Manning's equation, the downstream channel reach has inadequate freeboard. The east, or right, bank of the channel provides five inches of freeboard

under the peak flow conditions. The freeboard results published in the ESI drainage study indicate that the minimum freeboard provided on the east bank was 1.26 feet in this reach of the channel. The reason for the difference in freeboard allowances is that, according to the ESI's HEC-2 model input, the channel was analyzed for 491 cfs. This lower flow corresponds to the peak runoff from the three offsite basins which impact the upstream end of the berm. However, ESI's report indicated that the channel would be impacted by the peak runoff of 688 cfs based on the HEC-1 model output presented in the drainage study. The study does not explain the reason for using the lower flowrate in the HEC-2 program.

The berm and channel have the capacity to convey 688 cfs without overtopping the east banks and impacting the downstream development. Although the berm was analyzed for a flow of 491 cfs from Station 1+70 to Station 6+00, it will maintain a freeboard of at least one foot for a flow of 688 cfs along that reach. The peak flow of 688 cfs will exceed the west channel bank between Stations 21+00 and 28+00, but the overflow will be directed toward the UFWDB.

CONCLUSION

The SVE diversion berm and channel is a local drainage facility designed to divert flows from a small watershed into the UFWDB, a regional flood control facility. The SVE project was constructed to extend the south arm of the UFWDB and protect the Southern Vista Estates from offsite drainage. Although the diversion berm does not maintain the minimum freeboard requirements established by the NFIP 44CFR 65.10 for a short reach, the berm was considered adequate to mitigate the flood hazard from this finite and predictable watershed as it affects downstream areas. The minimum available freeboard on the berm is approximately 1.8 feet at Station 3+00 for a flow of 491 cfs; the average available freeboard along the berm is 2.5 feet. The downstream channel has adequate capacity to convey the Base Flood Event (688 cfs) to the UFWDB. The upstream reach of the channel between Stations 12+00 and 21+00 has an available freeboard of just over one foot. The minimum available freeboard for a flow of 688 cfs in the channel is five inches from Station 21+00 to 28+00.

REFERENCES

1. Clark County Regional Flood Control District (1990). "Hydrologic Criteria and Drainage Design Manual," Clark County, Nevada.

2. Federal Emergency Management Agency. "National Flood Insurance Program (Regulations for Floodplain Management and Flood Hazard Insurance)," Revised October 1, 1990.

3. Engineers and Surveyors Inc. (ESI). "Technical Drainage Study for the Southern Vista Temporary Drainage Channel," November 1992, Las Vegas, Nevada.

4. Landmark Engineering. "Drainage Study Southern Vista Estates," July 1992, Las Vegas, Nevada.

OFFSITE DRAINAGE BASINS

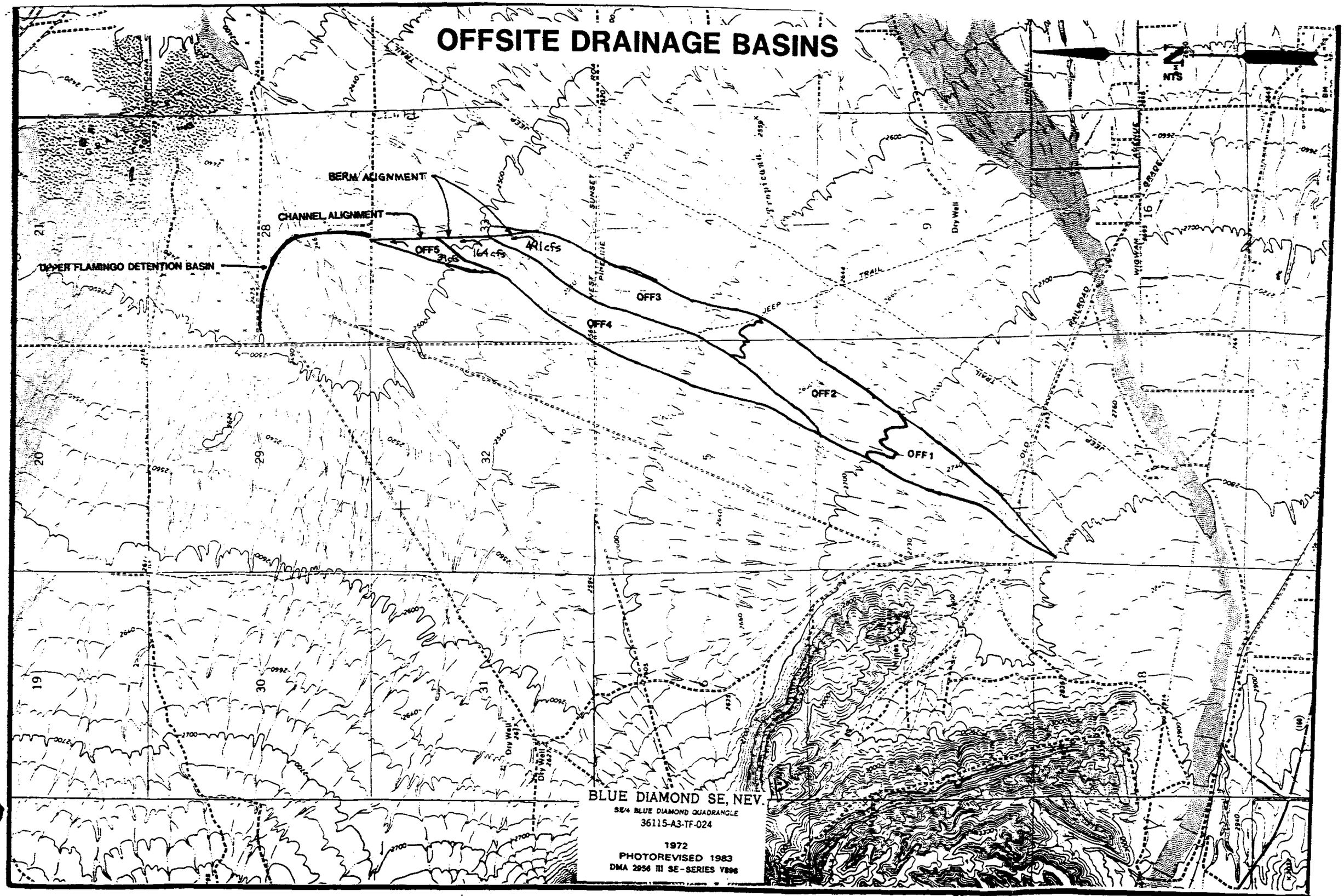


EXHIBIT 8

Average Freeboard Along Berm

Station	Freeboard (ft)	Flow (cfs)
170	2.14	491
200	1.98	491
250	1.93	491
300	1.83	491
350	2.22	491
400	2.10	491
450	1.96	491
500	2.06	491
550	2.52	491
600	3.11	688
650	3.86	688
700	4.07	688
750	3.07	688
800	3.05	688
850	2.22	688
900	1.88	688
950	2.35	688
1000	2.43	688
1050	2.28	688
1100	2.14	688
1150	2.54	688
1200	3.10	688
Average Freeboard =	**2.49**	**ft**

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/20/95

Average Slope = 0.015
Mannings n = 0.035

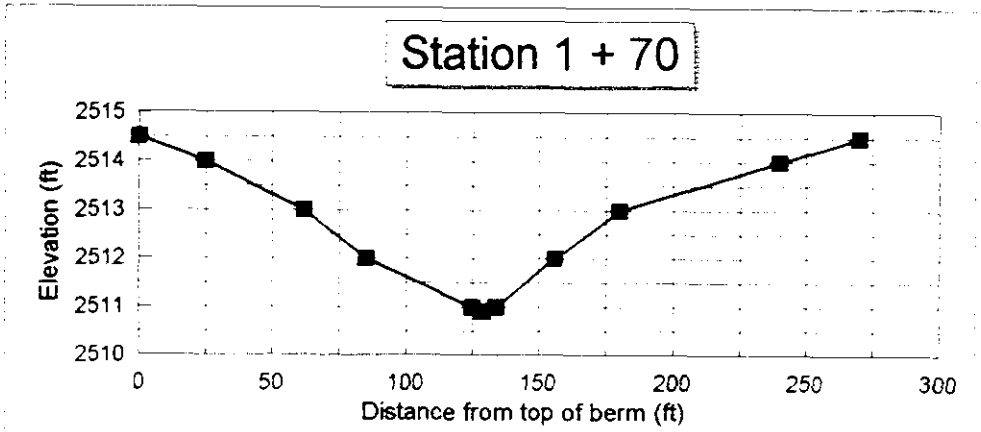
Freeboard min = 2 ft

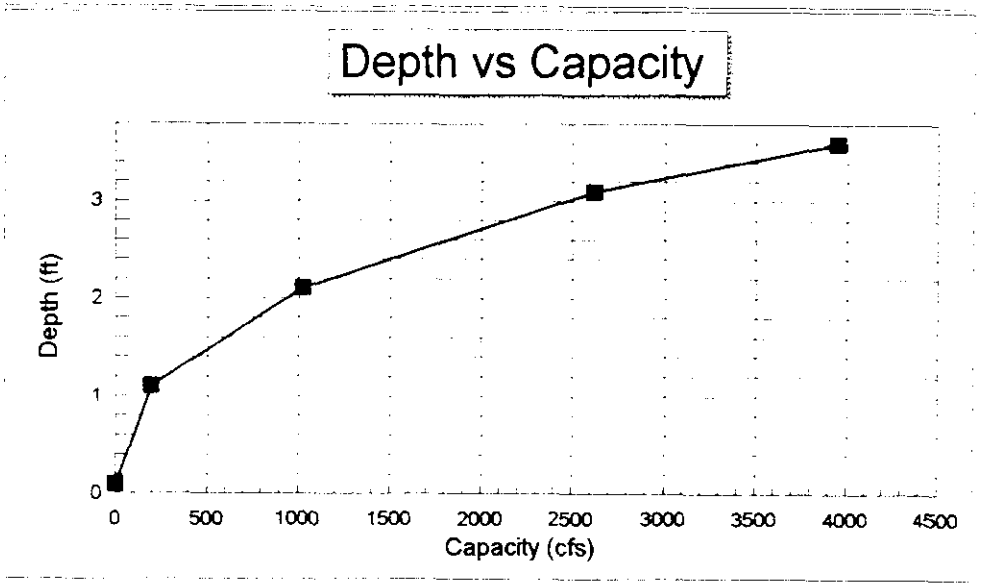
Station	Distance	Elevation
1+70	0	2514.5
	25	2514
	62	2513
	85	2512
	125	2511
	129	2510.9
	134	2511
	156	2512
	180	2513
	240	2514
	270	2514.5

For fb = 2', Q cap = 515.16 cfs
Depth Max = 1.6 ft
Max WSEL = 2512.5
Dist. berm = 73.5
Dist. fan = 168
A(fb) = 41.375
Total A(fb) = 81.825
P(fb) = 23.521
Total P = 94.56
R = 0.87
S = 0.027

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
422.70	3.6	270.11	1.56	3950.28	0
301.45	3.1	215.10	1.40	2617.37	0.5
134.95	2.1	118.08	1.14	1022.76	1.5
40.45	1.1	71.04	0.57	192.67	2.5
0.45	0.1	9.00	0.05	0.42	3.5

For Q = 491 cfs
Depth = 1.46 ft (interpolated)
Available fb = 2.14 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

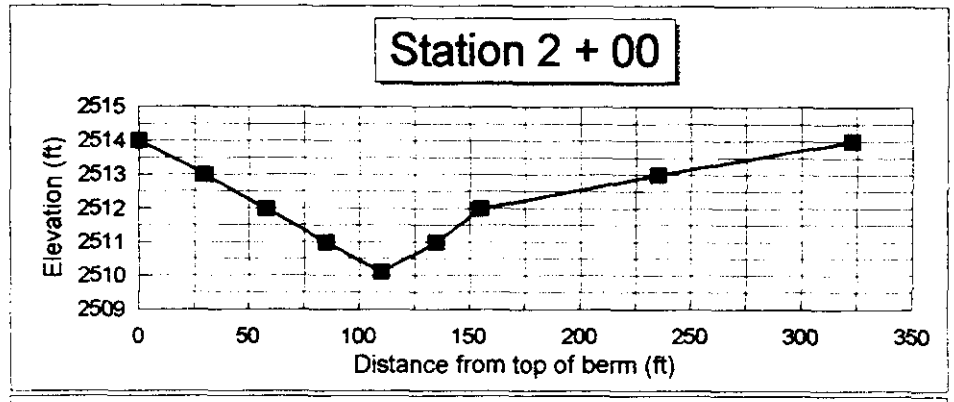
09/16/95

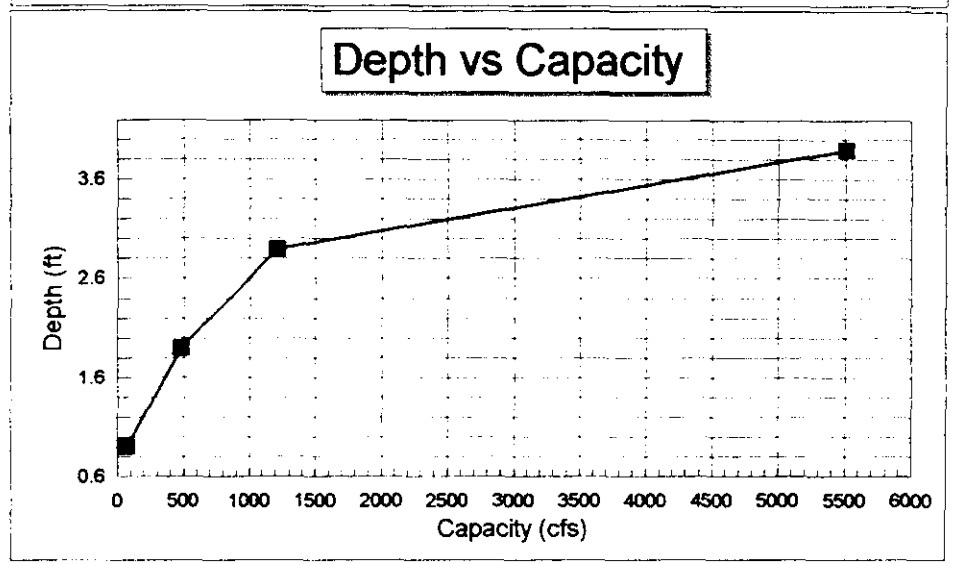
Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

For fb = 2', Q cap = 478.70 cfs

2 + 00	0	2514	Depth Max =	1.9 ft
	30	2513	Max WSEL =	2512
	58	2512	Dist. berm =	58
	85	2511	Dist. fan =	155
	110	2510.1	A(fb) =	73.5
	135	2511	Total A(fb) =	96
	155	2512	P(fb) =	47.043
	235	2513	Total P =	97.08
	323	2514	R =	0.99
			S =	0.014





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
437.25	3.9	110.07	3.97	5509.61	0
173.25	2.9	105.07	1.65	1214.75	1
96.00	1.9	97.08	0.99	478.70	2
22.50	0.9	50.03	0.45	66.35	3

For Q = 491 cfs
Depth = 1.92 ft (interpolated)
Available fb = 1.98 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

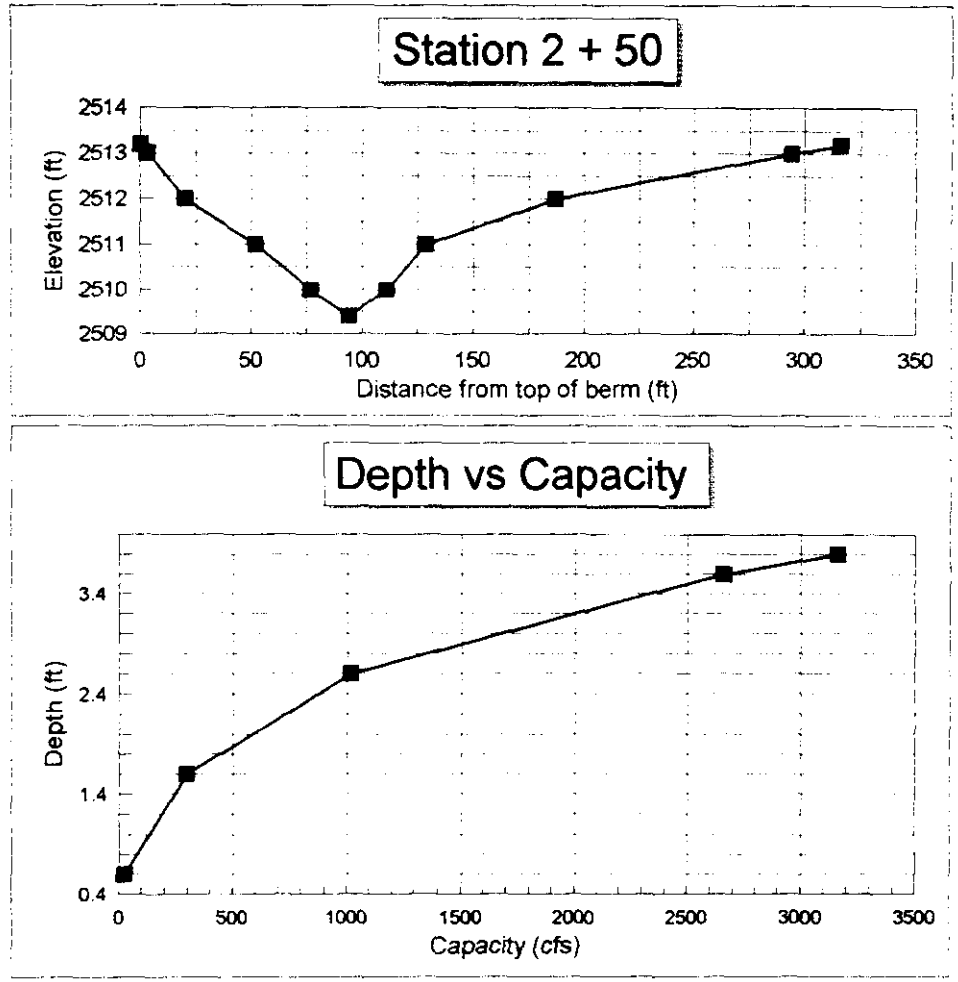
For fb = 2', Q cap = 380.10 cfs

2 + 50	0	2513.2
	3	2513
	20	2512
	52	2511
	77	2510
	94	2509.4
	111	2510
	129	2511
	187	2512
	294.5	2513
	316	2513.2

Depth Max = 1.8 ft
Max WSEL = 2511.2
Dist. berm = 45.6
Dist. fan = 140.6
A(fb) = 17.2
Total A(fb) = 82.9
P(fb) = 18.005
Total P = 95.07
R = 0.87
S = 0.014

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
477.70	3.8	316.13	1.51	3160.04	0
416.95	3.6	291.63	1.43	2658.29	0.2
187.70	2.6	167.09	1.12	1018.94	1.2
65.70	1.6	77.07	0.85	296.74	2.2
10.20	0.6	34.02	0.30	22.95	3.2

For Q = 491 cfs
Depth = 1.87 ft (interpolated)
Available fb = 1.93 ft



LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

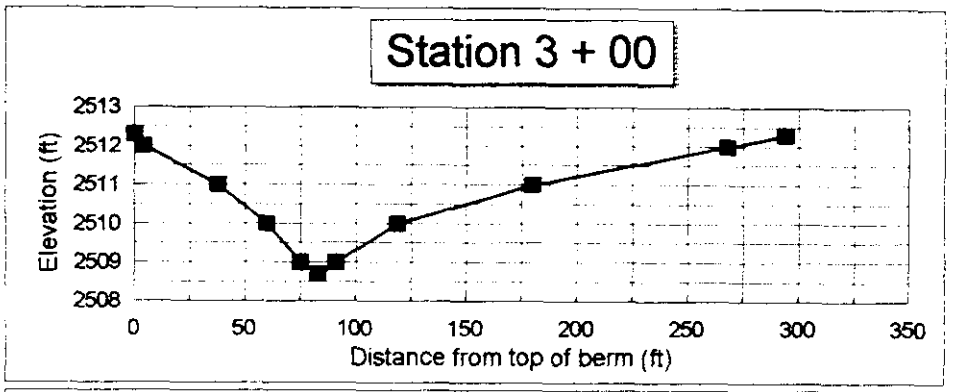
For fb = 2', Q cap = 298.69 cfs

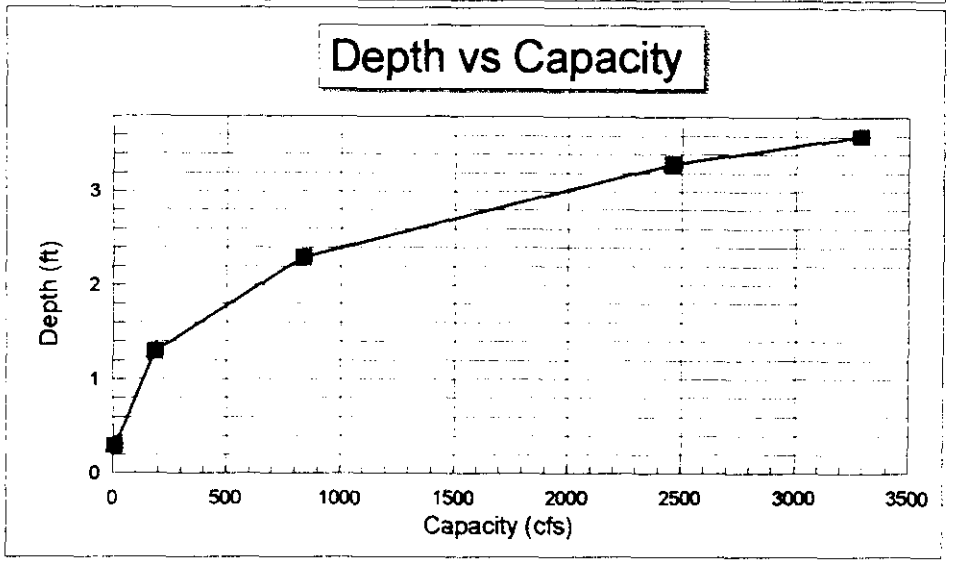
3 + 00	0	2512.3
	4	2512
	38	2511
	60	2510
	75	2509
	83	2508.7
	91	2509
	119	2510
	180	2511
	268	2512
	294	2512.3

Depth Max = 1.6 ft
Max WSEL = 2510.3
Dist. berm = 53.4
Dist. fan = 137.3
A(fb) = 21.435
Total A(fb) = 61.335
P(fb) = 24.909
Total P = 83.97
R = 0.73
S = 0.020

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
427.10	3.6	294.13	1.45	3288.46	0
343.40	3.3	264.11	1.30	2456.25	0.3
140.40	2.3	142.09	0.99	836.30	1.3
39.90	1.3	59.06	0.68	184.45	2.3
2.40	0.3	16.01	0.15	4.07	3.3

For Q = 491 cfs
Depth = 1.77 ft (interpolated)
Available fb = 1.83 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

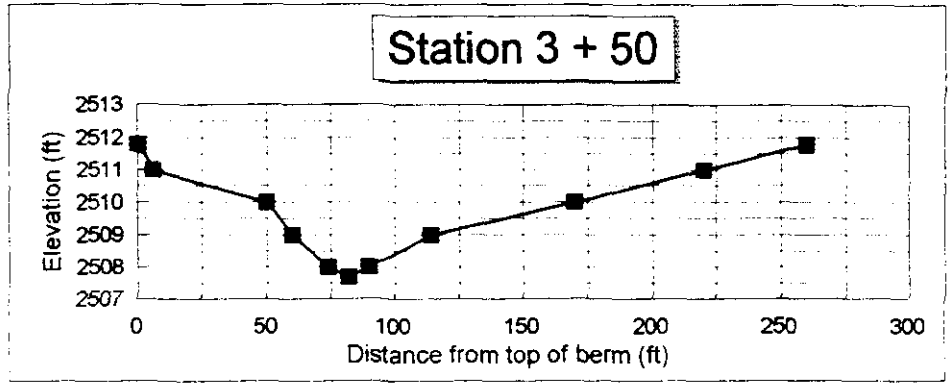
Freeboard min = **2** **ft**

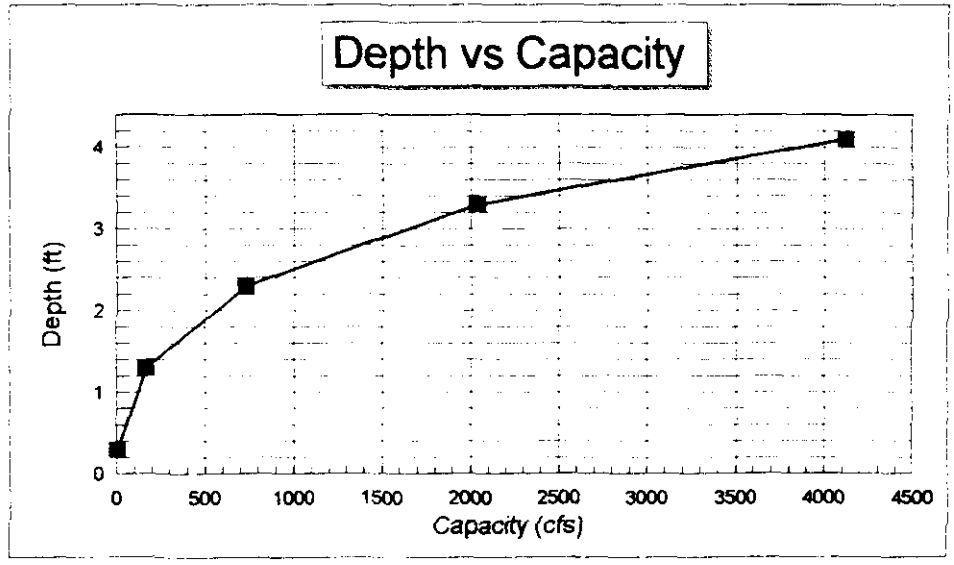
For fb = 2', Q cap = 560.50 cfs
Depth Max = 2.1 ft
Max WSEL = *2509.8*
Dist. berm = 52
Dist. fan = 158.8
A(fb) = 64.32
Total A(fb) = 101.72
P(fb) = 52.847
Total P = 106.91
R = 0.95
S = 0.018

3 + 50	0	2511.8
	6	2511
	50	2510
	60	2509
	74	2508
	82	2507.7
	90	2508
	114	2509
	170	2510
	220	2511
	260	2511.8

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
481.00	4.1	260.21	1.85	4126.80	0
291.40	3.3	214.15	1.36	2038.26	0.8
124.40	2.3	120.13	1.04	725.32	1.8
37.40	1.3	54.07	0.69	166.63	2.8
2.40	0.3	16.01	0.15	3.86	3.8

For Q = 491 cfs
Depth = 1.88 ft *(interpolated)*
Available fb = 2.22 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

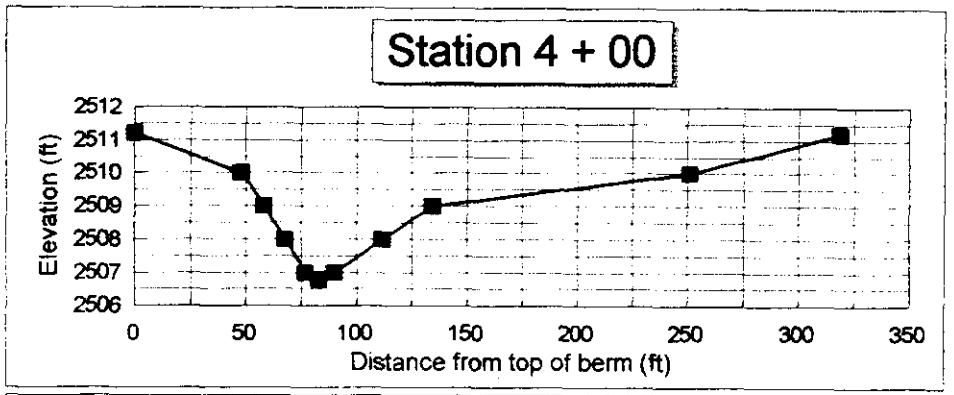
For fb = 2', Q cap = 528.58 cfs

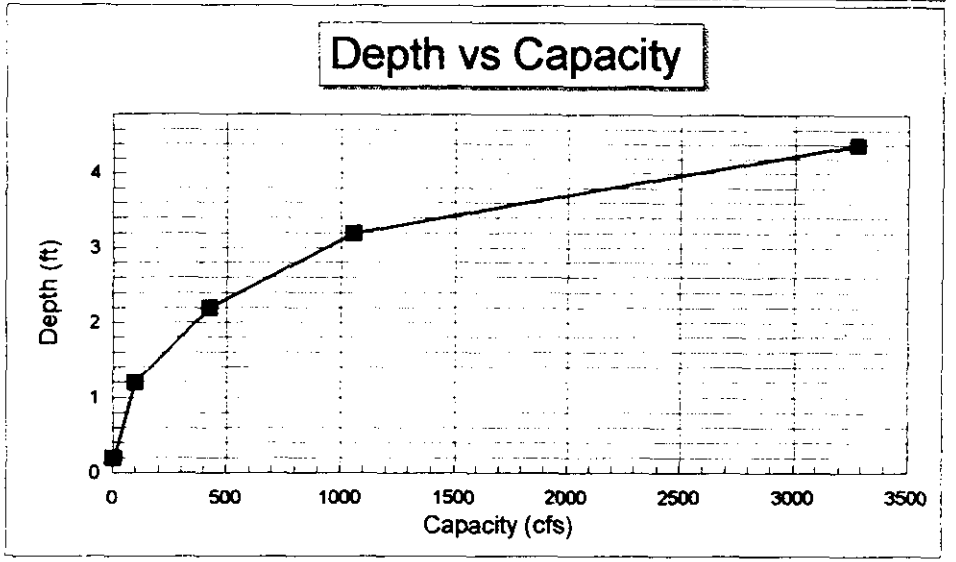
4+00	0	2511.2
	48	2510
	58	2509
	68	2508
	77	2507
	83	2506.8
	90	2507
	112	2508
	134	2509
	251	2510
	319	2511.2

Depth Max = 2.4 ft
Max WSEL = 2509.2
Dist. berm = 56
Dist. fan = 138.4
A(fb) = 15.84
Total A(fb) = 105.64
P(fb) = 6.41
Total P = 82.57
R = 1.28
S = 0.010

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
542.50	4.4	319.24	1.70	3280.01	0
229.30	3.2	203.21	1.13	1055.18	1.2
89.80	2.2	76.16	1.18	425.54	2.2
29.80	1.2	44.08	0.68	97.45	3.2
1.30	0.2	13.01	0.10	1.19	4.2

For Q = 491 cfs
Depth = 2.30 ft (interpolated)
Available fb = 2.10 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

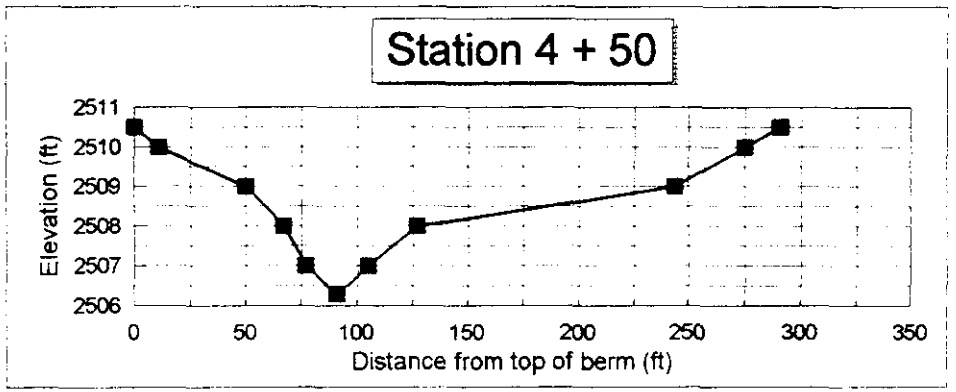
Freeboard min = 2 ft

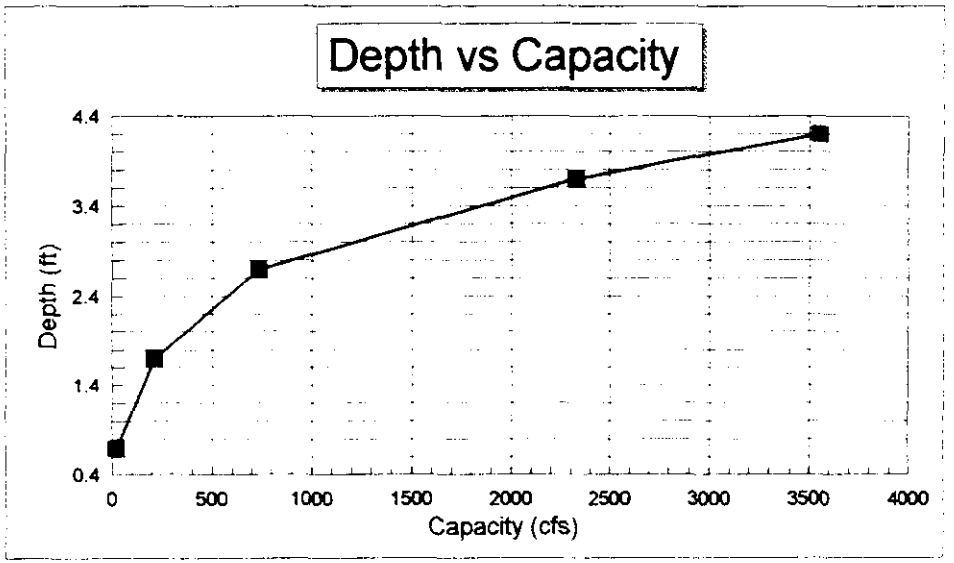
For fb = 2', Q cap = 365.12 cfs

4+50	0	2510.5	Depth Max =	2.2 ft
	11	2510	Max WSEL =	2508.5
	50	2509	Dist. berm =	58.5
	67	2508	Dist. fan =	185.5
	77	2507	A(fb) =	46.75
	91	2506.3	Total A(fb) =	100.55
	105	2507	P(fb) =	67.02
	127	2508	Total P =	127.12
	244	2509	R =	0.79
	275	2510	S =	0.010
	291	2510.5		

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
548.55	4.2	291.19	1.88	3552.45	0
409.80	3.7	264.17	1.55	2331.57	0.5
180.80	2.7	194.14	0.93	732.04	1.5
53.80	1.7	60.11	0.90	212.15	2.5
9.80	0.7	28.03	0.35	20.65	3.5

For Q = 491 cfs
Depth = 2.24 ft *(interpolated)*
Available fb = 1.96 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

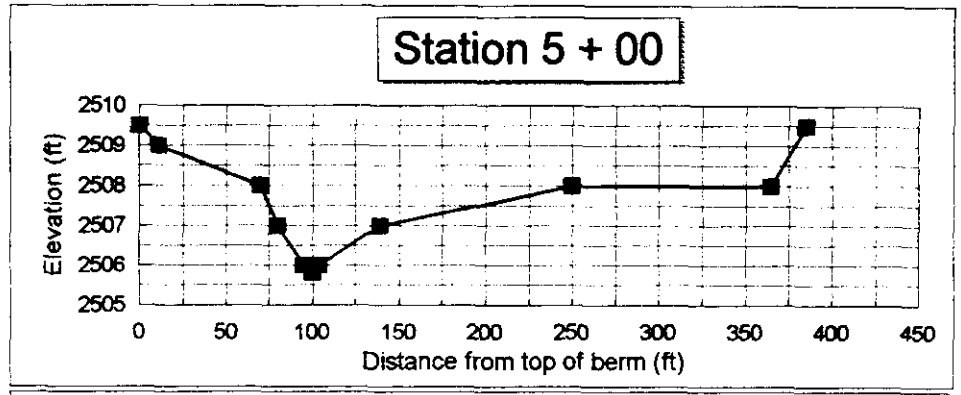
For fb = 2', Q cap = 398.52 *cfs*

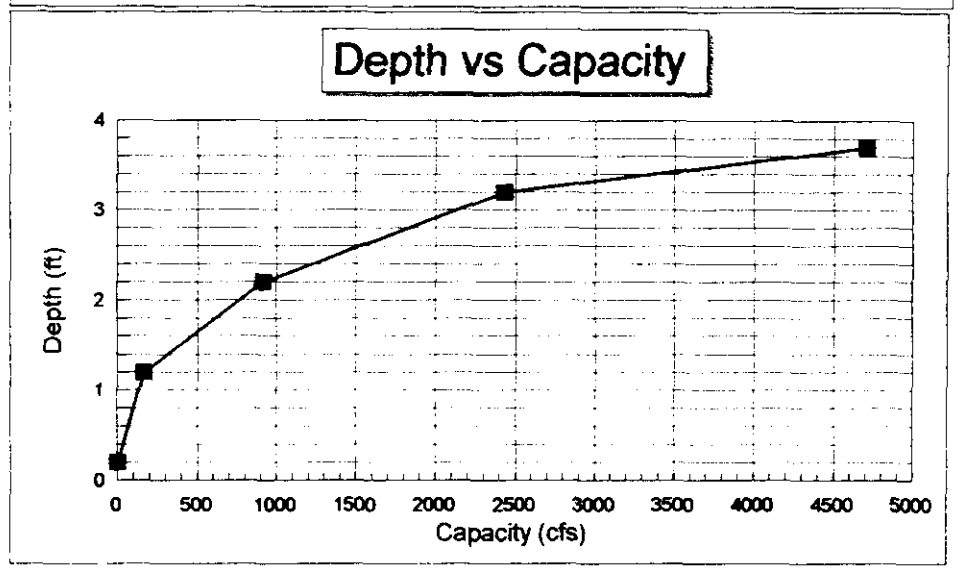
5 + 00	0	2509.5
	11	2509
	70	2508
	80	2507
	95	2506
	100	2505.8
	104	2506
	139	2507
	250	2508
	365	2508
	385	2509.5

Depth Max = 1.7 ft
Max WSEL = 2507.5
Dist. berm = 75
Dist. fan = 194.5
A(fb) = 44.625
Total A(fb) = 79.525
P(fb) = 60.53
Total P = 119.58
R = 0.67
S = 0.024

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
558.65	3.7	385.19	1.45	4708.06	0
363.90	3.2	354.12	1.03	2437.40	0.5
154.40	2.2	180.11	0.86	916.45	1.5
34.90	1.2	59.06	0.59	161.65	2.5
0.90	0.2	9.01	0.10	1.27	3.5

For Q = 491 cfs
Depth = 1.64 ft (interpolated)
Available fb = 2.06 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

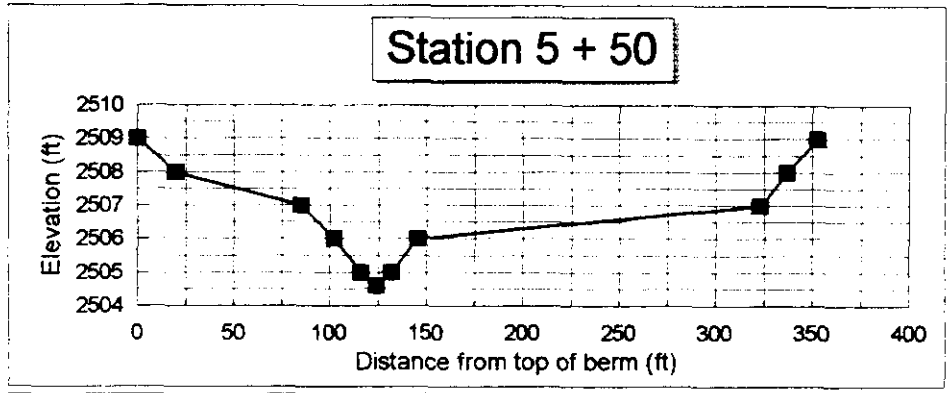
For fb = 2', Q cap = 841.09 cfs

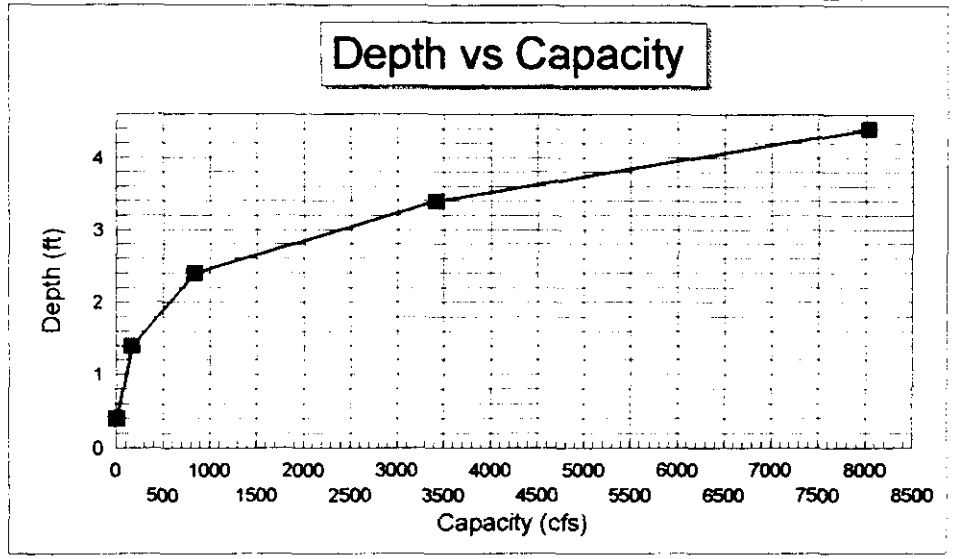
5+50	0	2509
	20	2508
	85	2507
	102	2506
	116	2505
	124	2504.6
	132	2505
	145	2506
	323	2507
	337	2508
	353	2509

Depth Max = 2.4 ft
Max WSEL = 2507
Dist. berm = 85
Dist. fan = 323
A(fb) = 140.5
Total A(fb) = 173.2
P(fb) = 195.03
Total P = 238.13
R = 0.73
S = 0.020

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
785.70	4.4	353.23	2.22	8038.82	0
450.70	3.4	317.17	1.42	3420.46	1
173.20	2.4	238.13	0.73	841.09	2
32.70	1.4	43.09	0.76	163.34	3
3.20	0.4	16.02	0.20	6.57	4

For Q = 491 cfs
Depth = 1.88 ft (interpolated)
Available fb = 2.52 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

10/17/95

Average Slope = 0.015
Mannings n = 0.035

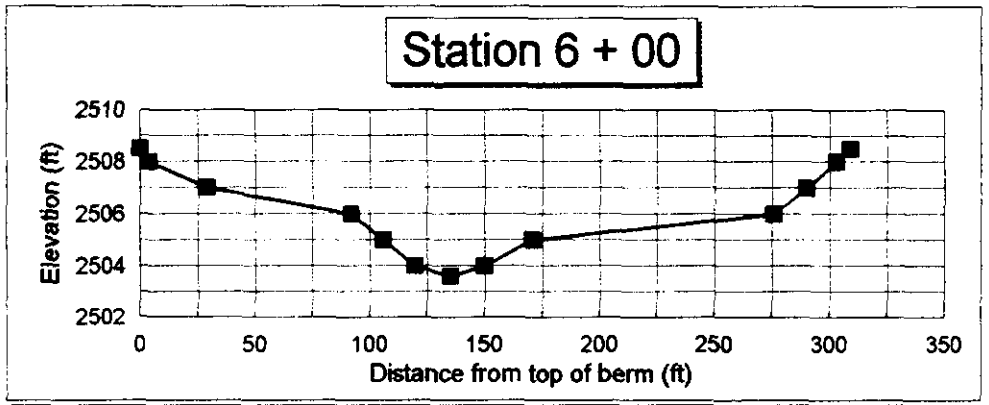
Freeboard min = 2 ft

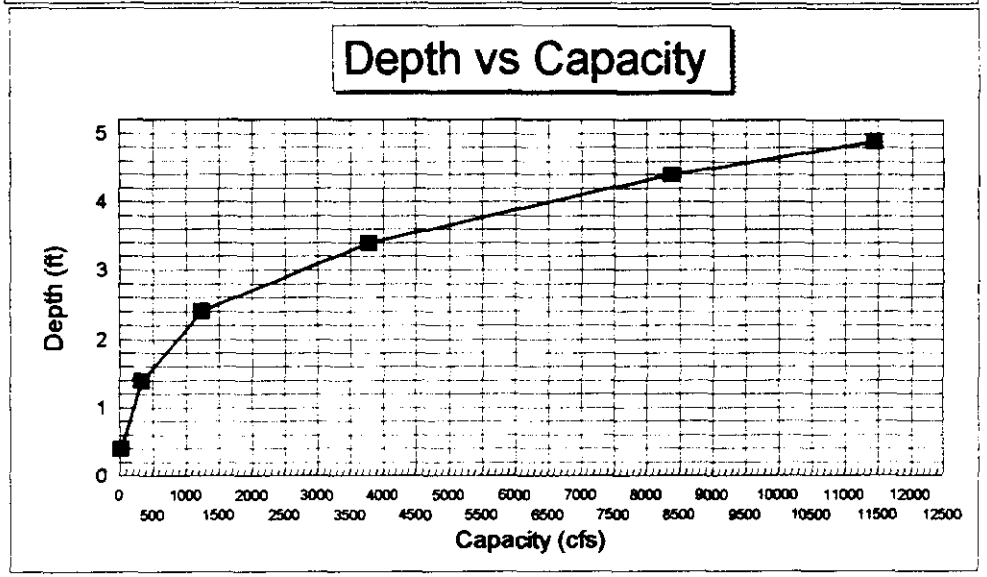
For fb = 2', Q cap = 2312.58 cfs
Depth Max = 2.9 ft
Max WSEL = 2506.5
Dist. berm = 60.5
Dist. fan = 283
A(fb) = 101.63
Total A(fb) = 279.62
P(fb) = 38.52
Total P = 222.63
R = 1.26
S = 0.028

6 + 00	0	2508.5
	4	2508
	29	2507
	92	2506
	106	2505
	120	2504
	135	2503.6
	150	2504
	171	2505
	276	2506
	290	2507
	303	2508
	309	2508.5

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
832.50	4.9	309.26	2.69	11445.03	0
680.50	4.4	299.21	2.27	8360.97	0.5
400.50	3.4	261.15	1.53	3783.87	1.5
178.00	2.4	184.11	0.97	1236.45	2.5
53.50	1.4	65.07	0.82	333.58	3.5
6.00	0.4	30.01	0.20	14.57	4.5

For Q = 688 cfs
Depth = 1.79 ft (interpolated)
Available fb = 3.11 ft





LOMR –

Capacity Behind Berm - Station 1+70 to Station 12+50

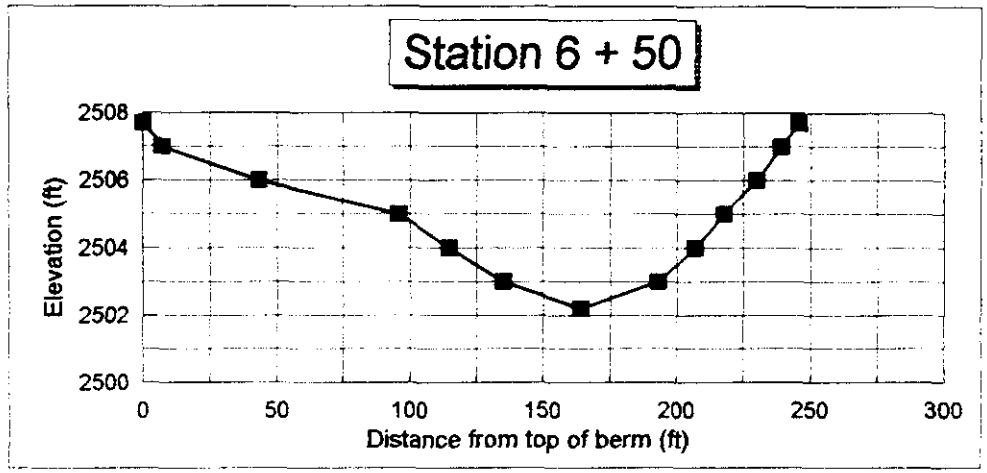
10/17/95

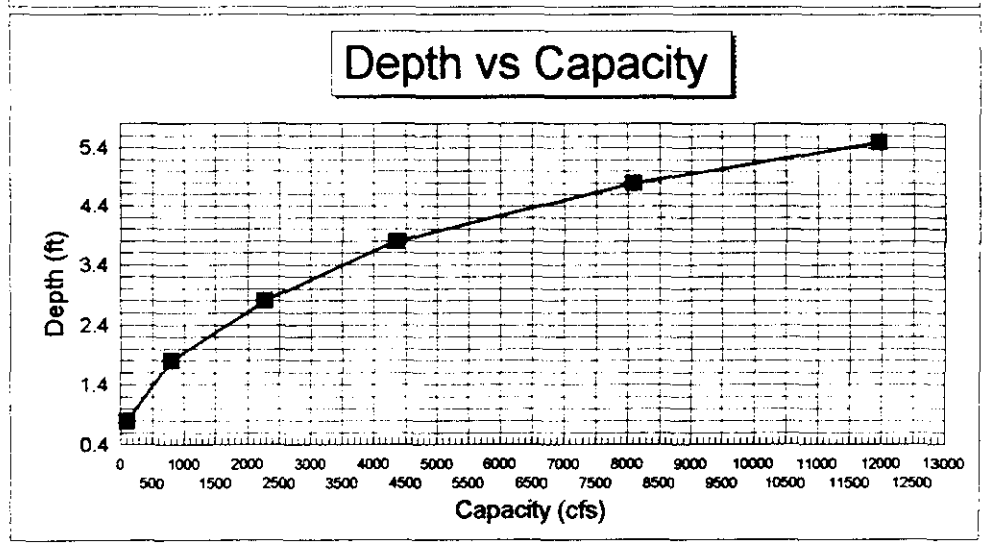
Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

For fb = 2', Q cap = 3587.53 cfs
Depth Max = 3.5 ft
Max WSEL = 2505.7
Dist. berm = 58.9
Dist. fan = 226.4
A(fb) = 101.32
Total A(fb) = 306.52
P(fb) = 45.54
Total P = 167.69
R = 1.83
S = 0.034

6 + 50	0	2507.7
	7	2507
	43	2506
	96	2505
	115	2504
	135	2503
	164	2502.2
	193	2503
	207	2504
	218	2505
	230	2506
	239	2507
	246	2507.7





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
736.50	5.5	246.34	2.99	11966.02	0
569.20	4.8	232.27	2.45	8099.60	0.7
359.70	3.8	187.21	1.92	4352.23	1.7
205.20	2.8	122.15	1.68	2270.11	2.7
98.20	1.8	92.08	1.07	802.46	3.7
23.20	0.8	58.02	0.40	98.58	4.7

For Q = 688 cfs
Depth = 1.64 ft (interpolated)
Available fb = 3.86 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

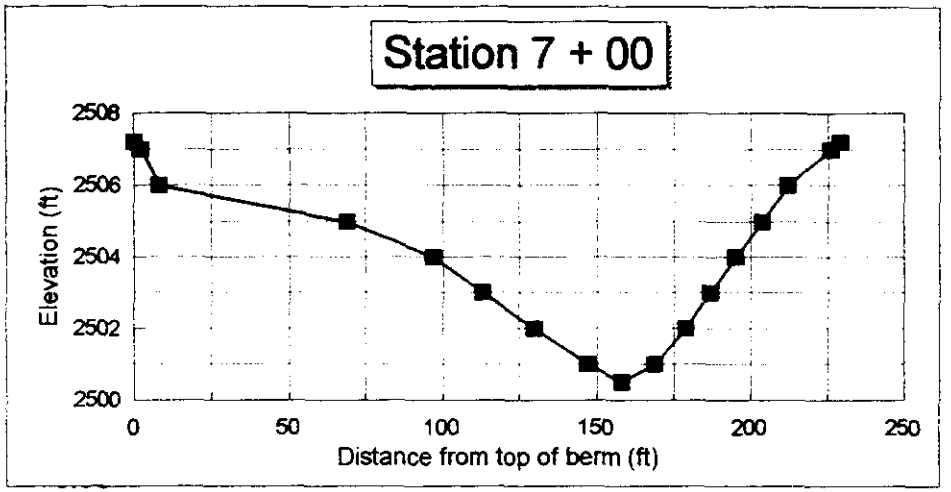
Average Slope = 0.015
Mannings n = 0.035

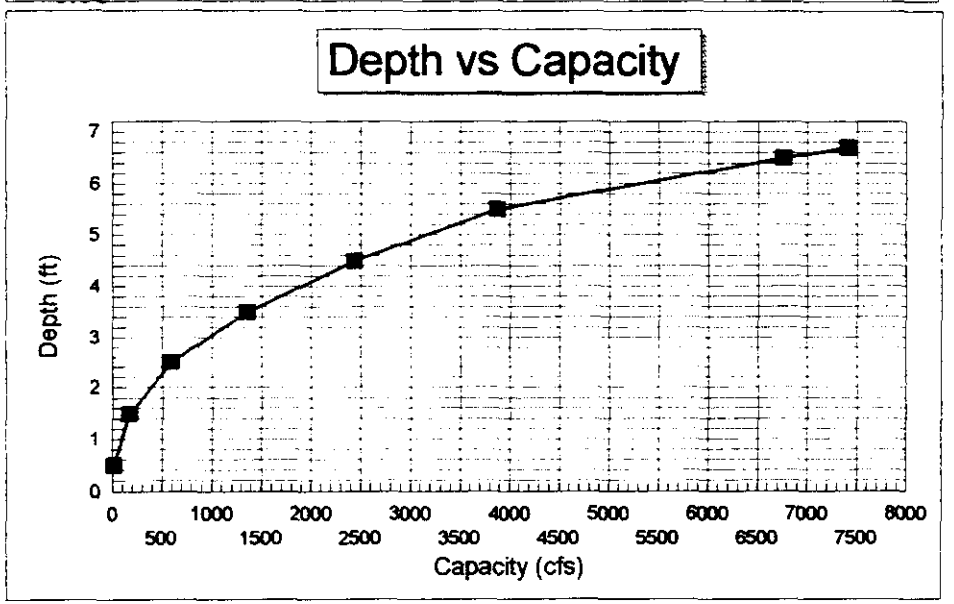
Freeboard min = 2 ft

For fb = 2', Q cap = 2650.40 cfs

Depth Max =	4.7	ft
Max WSEL =	2505.2	
Dist. berm =	56.8	
Dist. fan =	205.6	
A(fb) =	28.38	
Total A(fb) =	333.38	
P(fb) =	13.81	
Total P =	149.17	
R =	2.23	
S =	0.012	

7 + 00	0	2507.2
	2	2507
	8	2506
	69	2505
	97	2504
	113	2503
	130	2502
	147	2501
	158	2500.5
	169	2501
	179	2502
	187	2503
	195	2504
	204	2505
	212	2506
	226	2507
	229	2507.2





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
733.80	6.7	229.57	3.20	7405.70	0
688.50	6.5	224.55	3.07	6758.34	0.2
474.50	5.5	204.43	2.32	3868.75	1.2
305.00	4.5	135.36	2.25	2438.07	2.2
188.50	3.5	98.29	1.92	1353.31	3.2
102.50	2.5	74.19	1.38	591.34	4.2
41.00	1.5	49.10	0.83	169.09	5.2
5.50	0.5	22.02	0.25	10.14	6.2

For Q = 688 cfs
Depth = 2.63 ft (interpolated)
Available fb = 4.07 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

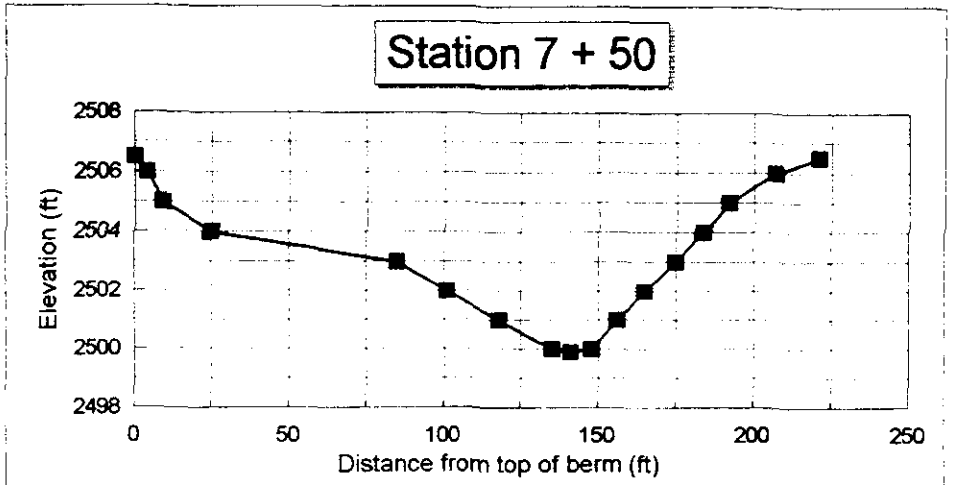
Freeboard min = 2 ft

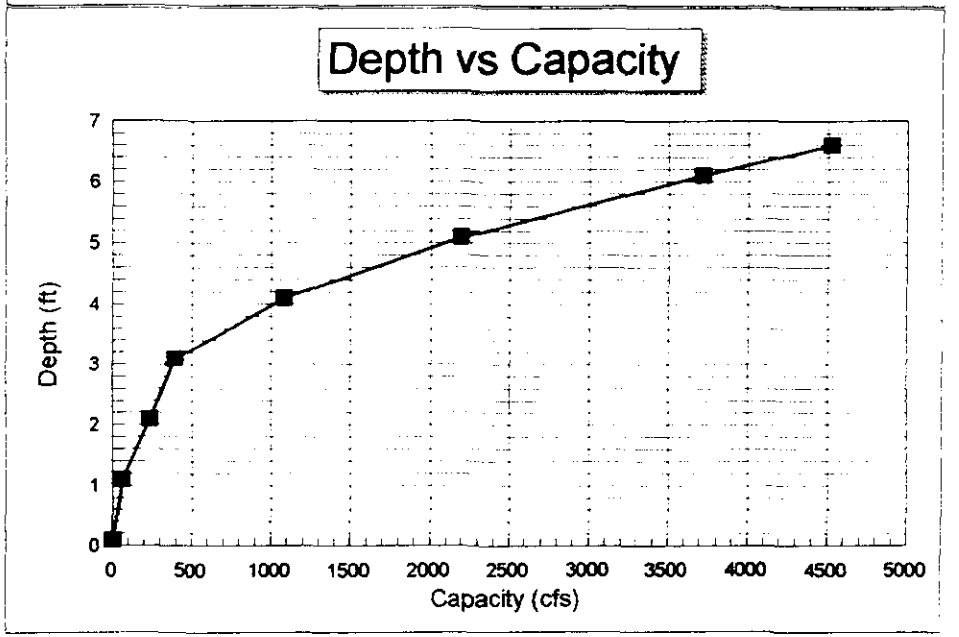
For fb = 2', Q cap = 1594.06 cfs
Depth Max = 4.6 ft
Max WSEL = 2504.5
Dist. berm = 17
Dist. fan = 188
A(fb) = 82.5
Total A(fb) = 361.15
P(fb) = 12.05
Total P = 171.37
R = 2.11
S = 0.004

7+50	0	2506.5
	4	2506
	9	2505
	25	2504
	85	2503
	101	2502
	118	2501
	135	2500
	141	2499.9
	148	2500
	156	2501
	165	2502
	175	2503
	184	2504
	192	2505
	207	2506
	221	2506.5

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
748.65	6.6	221.59	3.38	4526.34	0
642.65	6.1	203.55	3.16	3713.87	0.5
449.65	5.1	183.42	2.45	2195.23	1.5
278.65	4.1	159.32	1.75	1086.16	2.5
154.15	3.1	166.30	0.93	393.51	3.5
77.15	2.1	64.18	1.20	234.22	4.5
26.15	1.1	38.09	0.69	54.64	5.5
0.65	0.1	13.00	0.05	0.24	6.5

For Q = 688 cfs
Depth = 3.53 ft (interpolated)
Available fb = 3.07 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

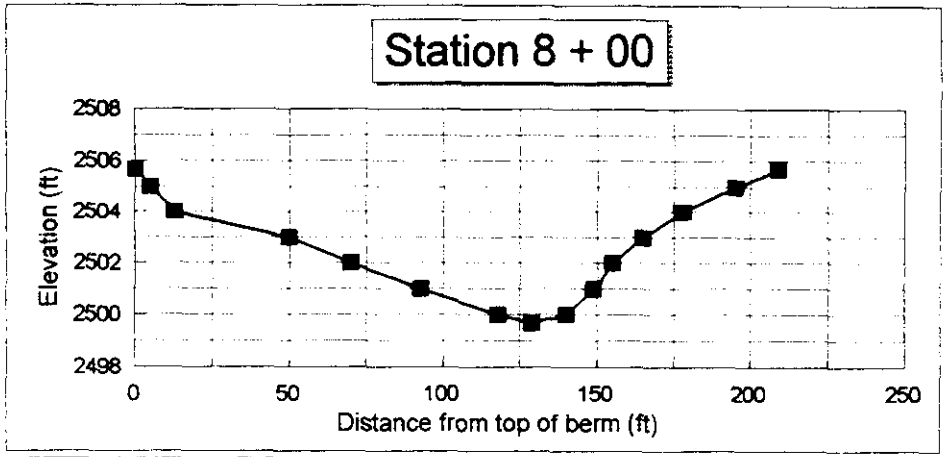
09/16/95

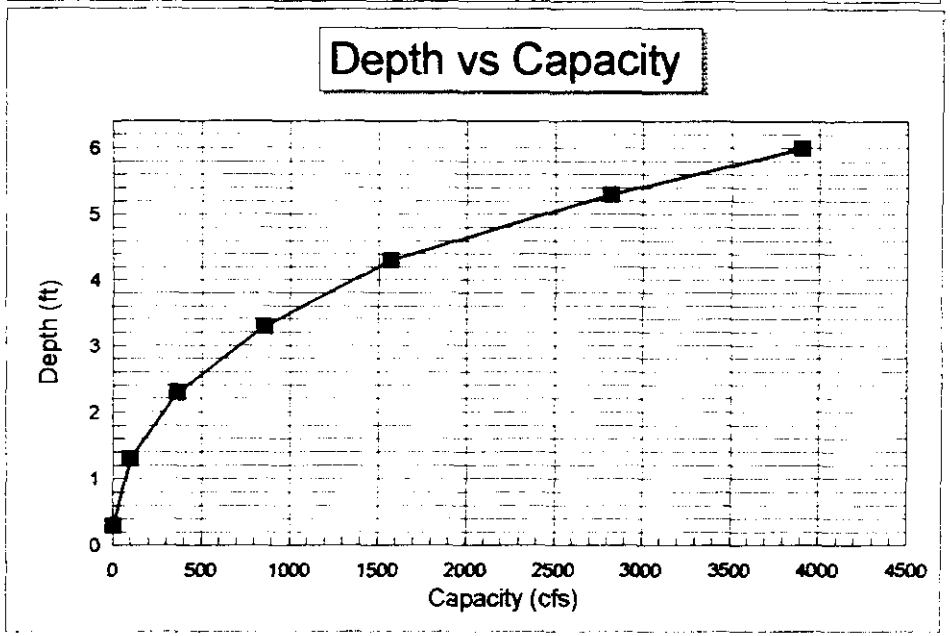
Average Slope = 0.015
Mannings n = 0.035

Freeboard *min* = **2** **ft**

For fb = 2', Q cap = 1316.68 cfs
Depth Max = 4 ft
Max WSEL = 2503.7
Dist. berm = 24.1
Dist. fan = 174.1
A(fb) = 92.75
Total A(fb) = 305.55
P(fb) = 35.04
Total P = 150.30
R = 2.03
S = 0.004

8+00	0	2505.7
	5	2505
	13	2504
	50	2503
	70	2502
	93	2501
	118	2500
	129	2499.7
	140	2500
	149	2501
	155	2502
	165	2503
	178	2504
	195	2505
	209	2505.7





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
669.95	6	209.47	3.20	3905.11	0
530.30	5.3	190.41	2.79	2818.79	0.7
352.80	4.3	165.31	2.13	1570.32	1.7
212.80	3.3	115.26	1.85	859.95	2.7
112.80	2.3	85.19	1.32	365.24	3.7
42.30	1.3	56.08	0.75	94.11	4.7
3.30	0.3	22.01	0.15	2.50	5.7

For Q = 688 cfs
Depth = 2.95 ft (interpolated)
Available fb = 3.05 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

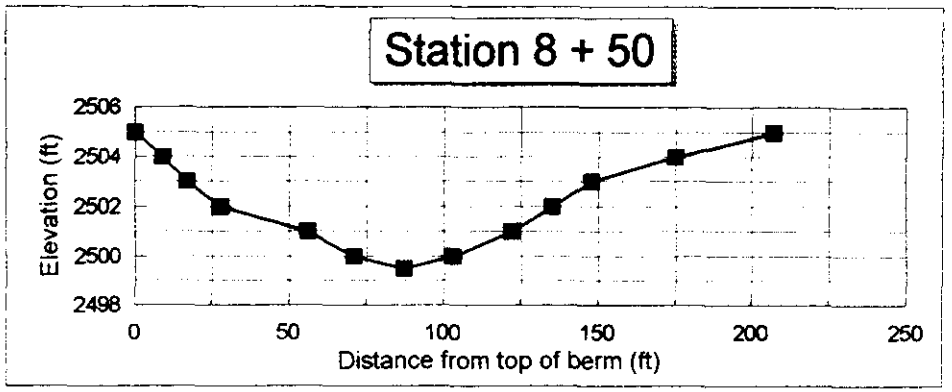
Freeboard min = 2 ft

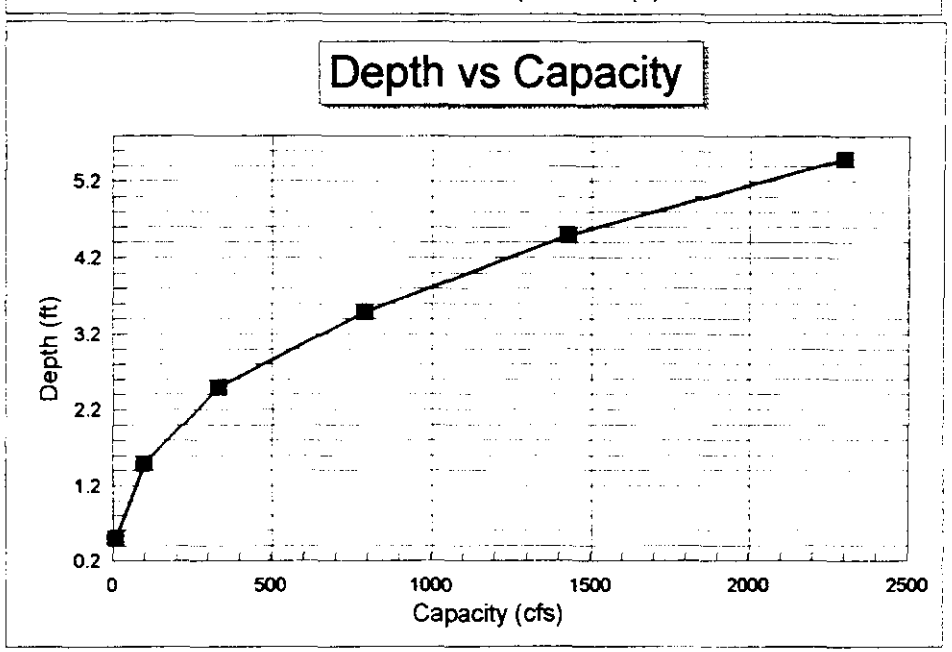
For fb = 2', Q cap = 791.33 cfs
Depth Max = 3.5 ft
Max WSEL = 2503
Dist. berm = 17
Dist. fan = 148
A(fb) = 119
Total A(fb) = 262.5
P(fb) = 24.08
Total P = 131.22
R = 2.00
S = 0.002

8 + 50	0	2505
	9	2504
	17	2503
	28	2502
	56	2501
	71	2500
	87	2499.5
	103	2500
	122	2501
	135	2502
	148	2503
	175	2504
	207	2505

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
597.50	5.5	207.37	2.88	2297.22	0
411.00	4.5	166.30	2.47	1426.53	1
262.50	3.5	131.22	2.00	791.33	2
143.50	2.5	107.13	1.34	331.09	3
57.00	1.5	66.08	0.86	98.08	4
8.00	0.5	32.02	0.25	6.03	5

For Q = 688 cfs
Depth = 3.28 ft (interpolated)
Available fb = 2.22 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

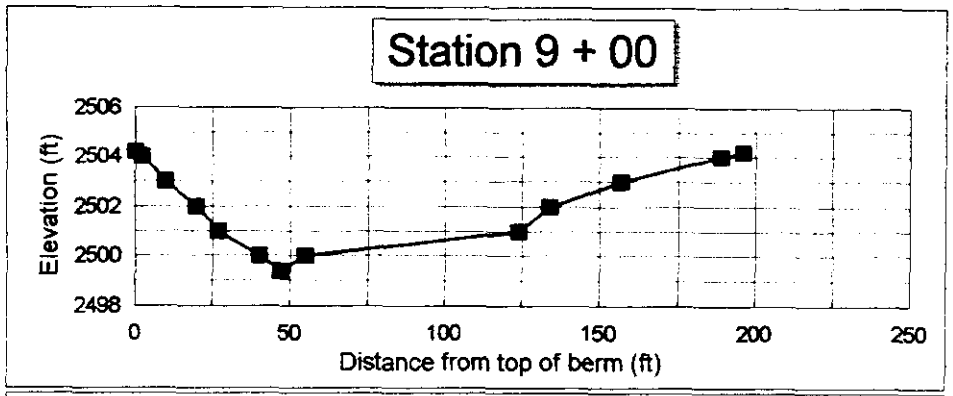
For fb = 2', Q cap = 594.65 cfs

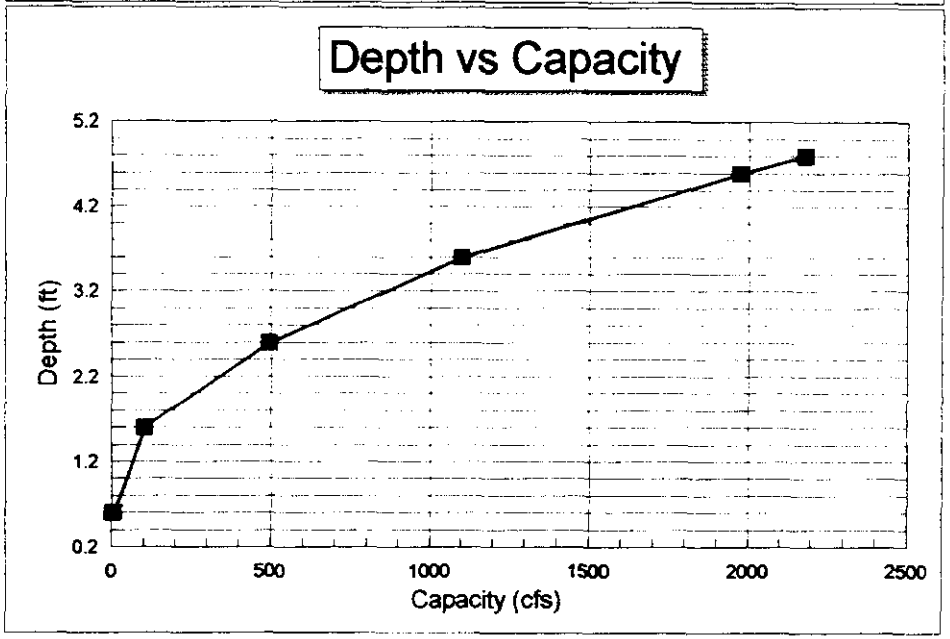
9 + 00	0	2504.2
	2	2504
	10	2503
	20	2502
	27	2501
	40	2500
	47	2499.4
	55	2500
	124	2501
	134	2502
	157	2503
	189	2504
	196	2504.2

Depth Max = 2.8 ft
Max WSEL = 2502.2
Dist. berm = 18
Dist. fan = 138.6
A(fb) = 23.46
Total A(fb) = 189.46
P(fb) = 6.61
Total P = 120.83
R = 1.57
S = 0.003

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
501.80	4.8	196.38	2.56	2181.07	0
463.50	4.6	187.36	2.47	1971.53	0.2
296.50	3.6	147.29	2.01	1099.29	1.2
166.00	2.6	114.21	1.45	495.31	2.2
60.50	1.6	97.09	0.62	102.64	3.2
4.50	0.6	15.05	0.30	4.68	4.2

For Q = 688 cfs
Depth = 2.92 ft (interpolated)
Available fb = 1.88 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

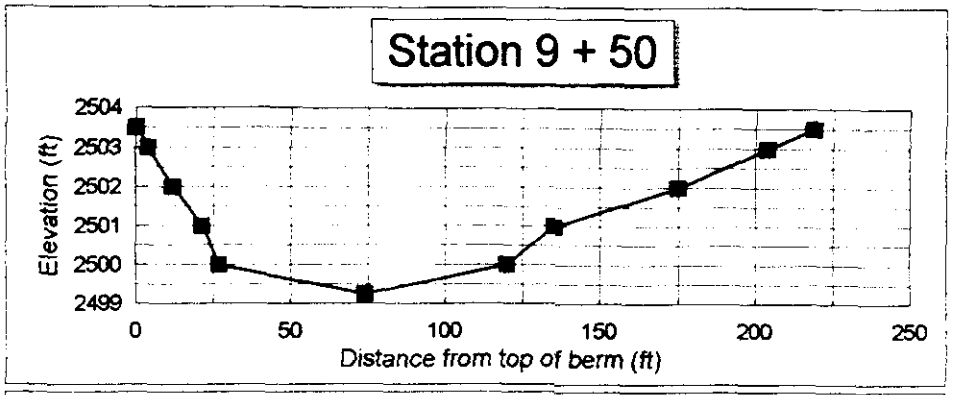
Freeboard min = 2 ft

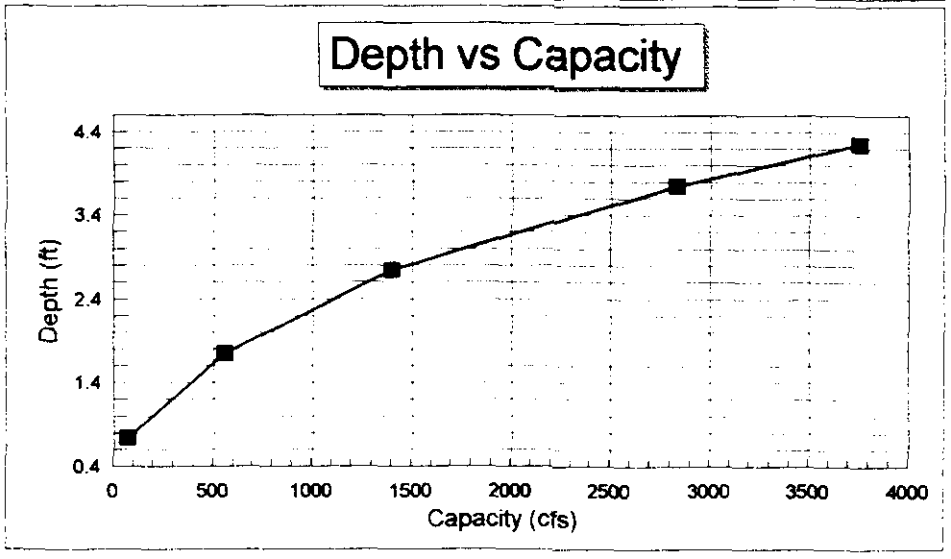
For fb = 2', Q cap = 918.30 cfs
Depth Max = 2.25 ft
Max WSEL = 2501.5
Dist. berm = 16.5
Dist. fan = 155
A(fb) = 63.125
Total A(fb) = 201.5
P(fb) = 24.534
Total P = 138.66
R = 1.45
S = 0.007

9 + 50	0	2503.5
	4	2503
	12	2502
	21	2501
	27	2500
	74	2499.25
	120	2500
	135	2501
	175	2502
	204	2503
	219	2503.5

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
563.13	4.25	219.31	2.57	3750.84	0
458.38	3.75	200.28	2.29	2827.80	0.5
276.88	2.75	163.20	1.70	1399.05	1.5
138.38	1.75	114.13	1.21	558.90	2.5
34.88	0.75	93.01	0.37	64.42	3.5

For Q = 688 cfs
Depth = 1.90 ft (interpolated)
Available fb = 2.35 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

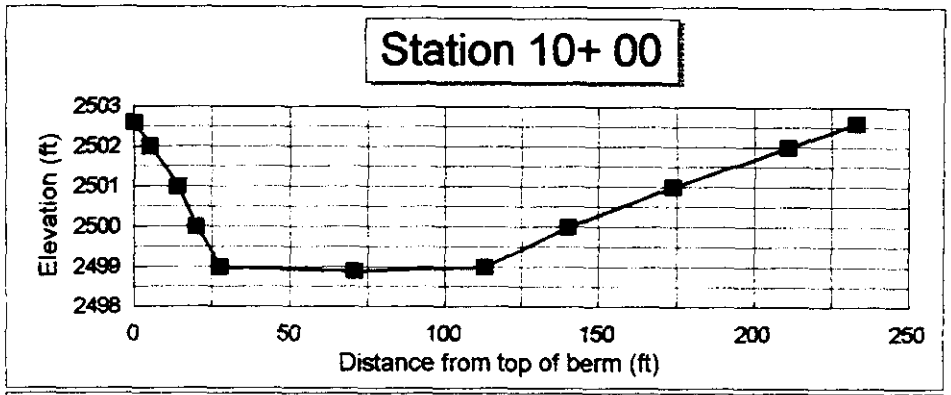
Average Slope = 0.015
Mannings n = 0.035

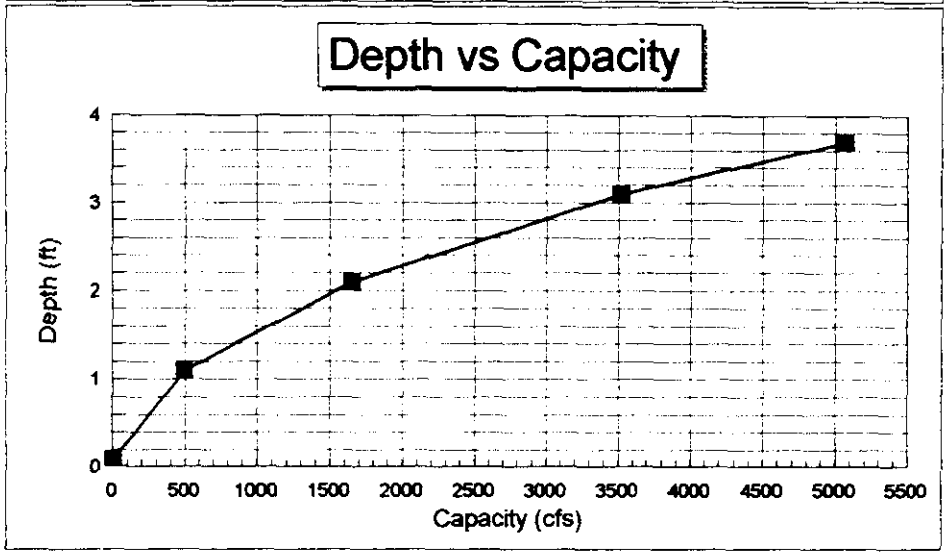
Freeboard min = 2 ft

For fb = 2', Q cap = 1109.49 cfs

10 + 00	0	2502.6
	5	2502
	14	2501
	20	2500
	28	2499
	71	2498.9
	113	2499
	140	2500
	174	2501
	211	2502
	233	2502.6

Depth Max = 1.7 ft
Max WSEL = 2500.6
Dist. berm = 17.6
Dist. fan = 160.4
A(fb) = 78.84
Total A(fb) = 185.59
P(fb) = 22.883
Total P = 142.96
R = 1.30
S = 0.014





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
561.45	3.7	233.29	2.41	5065.25	0
429.75	3.1	206.25	2.08	3521.94	0.6
246.75	2.1	160.18	1.54	1653.38	1.6
106.75	1.1	120.08	0.89	495.81	2.6
4.25	0.1	85.00	0.05	2.90	3.6

For Q = 688 cfs
Depth = 1.27 ft (interpolated)
Available fb = 2.43 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

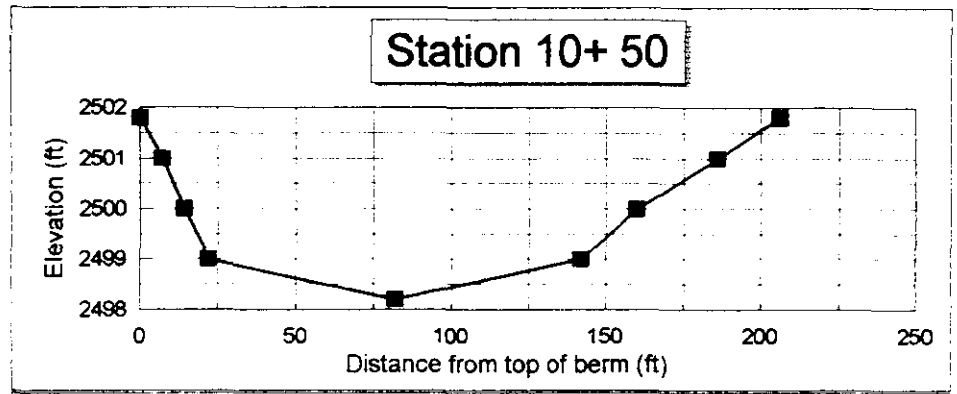
Freeboard min = 2 ft

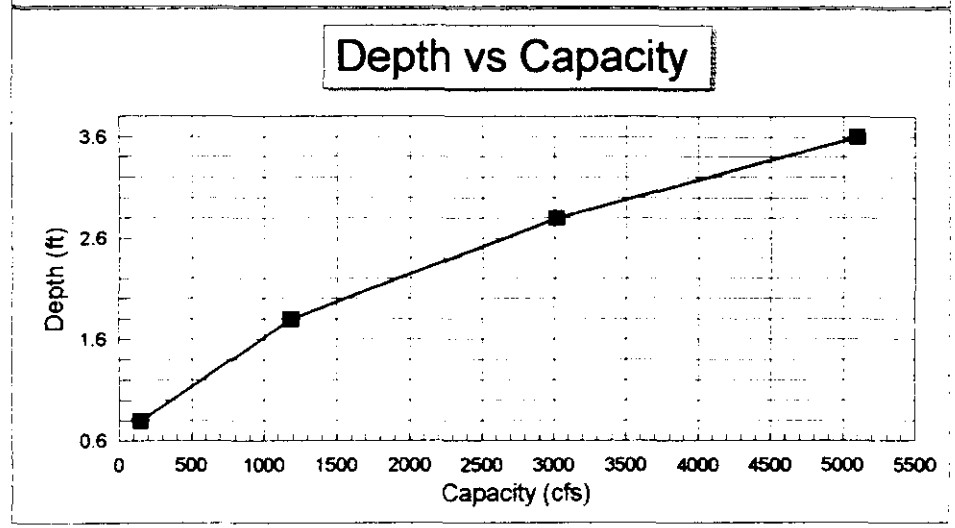
For fb = 2', Q cap = 913.99 cfs
Depth Max = 1.6 ft
Max WSEL = 2499.8
Dist. berm = 15.6
Dist. fan = 156.4
A(fb) = 104.32
Total A(fb) = 152.32
P(fb) = 20.872
Total P = 140.88
R = 1.08
S = 0.018

10 + 50	0	2501.8
	7	2501
	14	2500
	22	2499
	82	2498.2
	142	2499
	160	2500
	186	2501
	206	2501.8

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
497.50	3.6	206.25	2.41	5096.94	0
343.50	2.8	179.19	1.92	3019.40	0.8
181.00	1.8	146.10	1.24	1189.28	1.8
48.00	0.8	120.01	0.40	148.43	2.8

For Q = 688 cfs
Depth = 1.32 ft (interpolated)
Available fb = 2.28 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

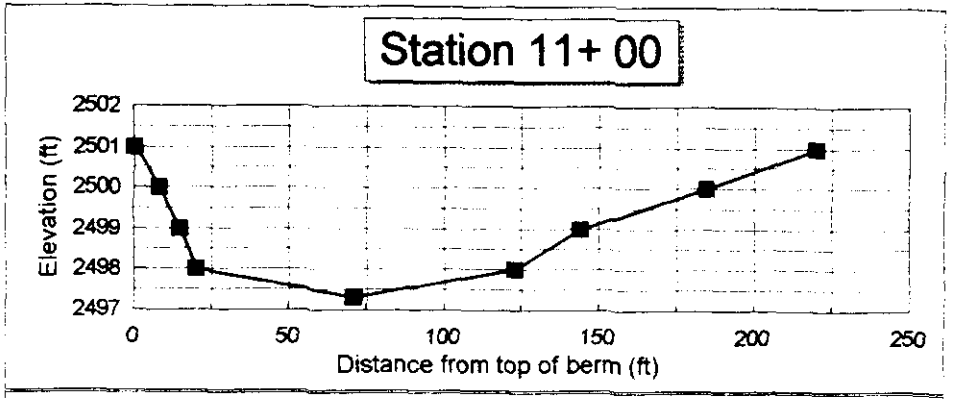
Average Slope = 0.015
Mannings n = 0.035

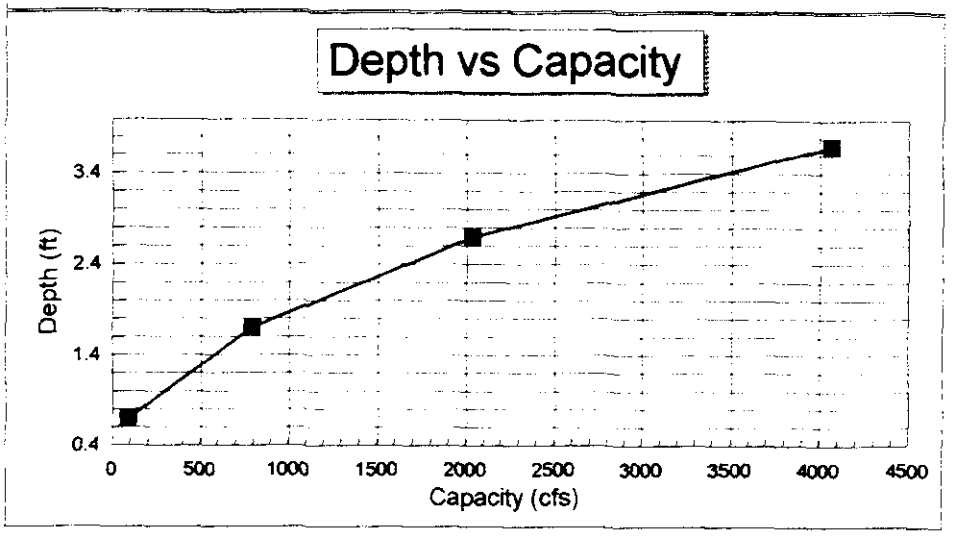
Freeboard min = 2 ft

For fb = 2', Q cap = 788.55 cfs

11 + 00	0	2501
	8	2500
	15	2499
	20	2498
	71	2497.3
	123	2498
	144	2499
	185	2500
	220	2501

Depth Max = 1.7 ft
Max WSEL = 2499
Dist. berm = 15
Dist. fan = 144
A(fb) = 116
Total A(fb) = 152.05
P(fb) = 26.123
Total P = 129.13
R = 1.18
S = 0.012





Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
503.55	3.7	220.29	2.29	4063.93	0
305.05	2.7	177.22	1.72	2037.79	1
152.05	1.7	129.13	1.18	788.55	2
36.05	0.7	103.01	0.35	83.27	3

For Q = 688 cfs
Depth = 1.56 ft (interpolated)
Available fb = 2.14 ft

LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

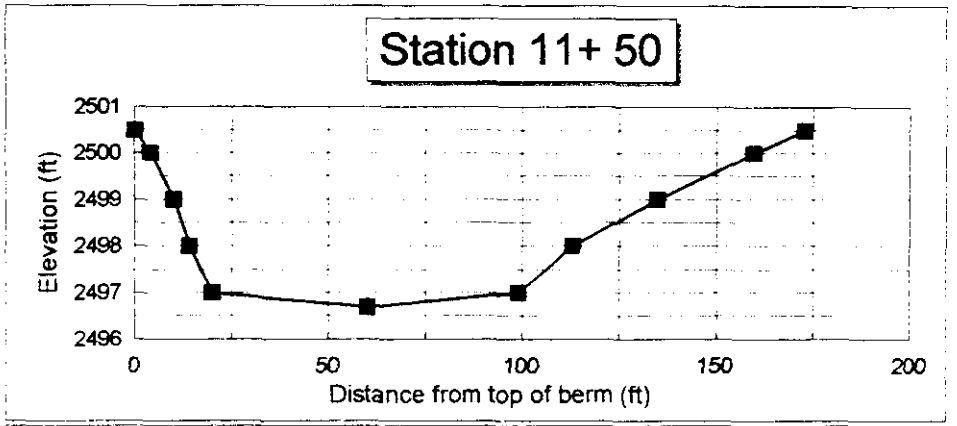
Freeboard min = 2 ft

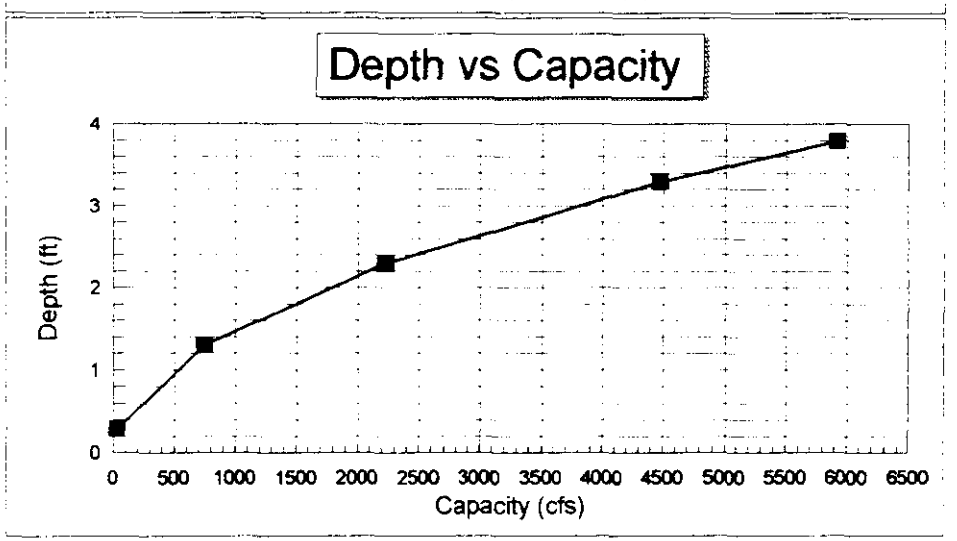
For fb = 2', Q cap = 1392.68 cfs
Depth Max = 1.8 ft
Max WSEL = 2498.5
Dist. berm = 12
Dist. fan = 124
A(fb) = 52.75
Total A(fb) = 153.6
P(fb) = 13.073
Total P = 112.19
R = 1.37
S = 0.030

11 + 50	0	2500.5
	4	2500
	10	2499
	14	2498
	20	2497
	60	2496.7
	99	2497
	113	2498
	135	2499
	160	2500
	173	2500.5

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
435.60	3.8	173.41	2.51	5919.36	0
353.35	3.3	156.37	2.26	4474.58	0.5
212.85	2.3	125.27	1.70	2228.83	1.5
100.85	1.3	99.12	1.02	750.23	2.5
11.85	0.3	79.00	0.15	24.60	3.5

For Q = 688 cfs
Depth = 1.26 ft (interpolated)
Available fb = 2.54 ft





LOMR

Capacity Behind Berm - Station 1+70 to Station 12+50

09/16/95

Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

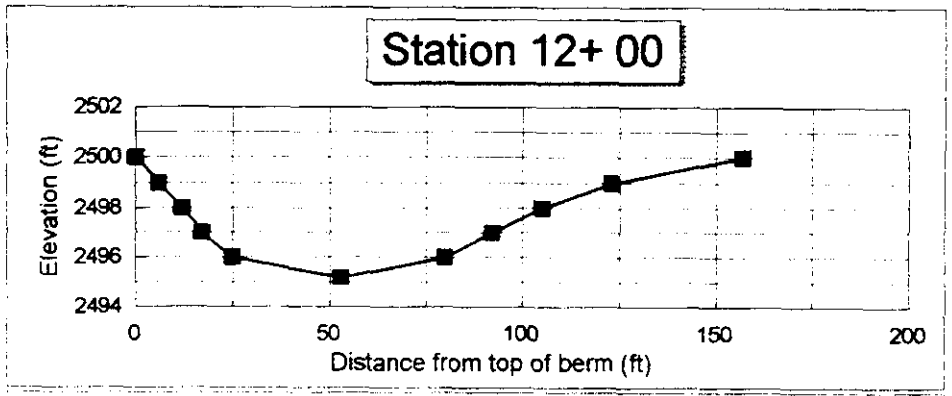
For fb = 2', Q cap = 2005.42 cfs

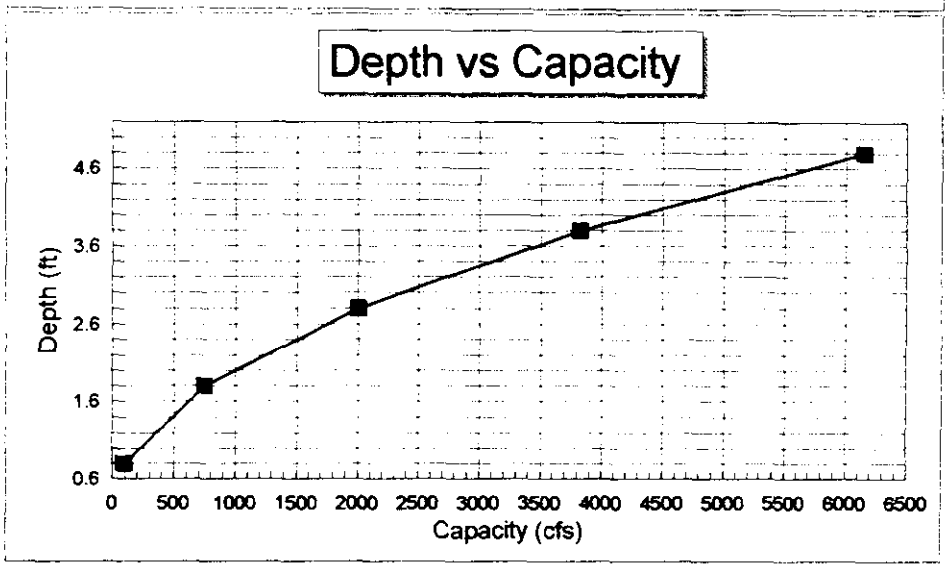
12 + 00	0	2500
	6	2499
	12	2498
	17	2497
	25	2496
	53	2495.2
	80	2496
	92	2497
	105	2498
	123	2499
	157	2500

Depth Max = 2.8 ft
Max WSEL = 2498
Dist. berm = 12
Dist. fan = 105
A(fb) = 84
Total A(fb) = 171
P(fb) = 18.137
Total P = 93.26
R = 1.83
S = 0.034

Area	Depth	Wetted Perimeter	Hydraulic Radius	Capacity	fb
413.00	4.8	157.47	2.62	6148.99	0
276.00	3.8	117.38	2.35	3820.80	1
171.00	2.8	93.26	1.83	2005.42	2
87.00	1.8	75.13	1.16	751.09	3
22.00	0.8	55.02	0.40	93.48	4

For Q = 688 cfs
Depth = 1.70 ft (interpolated)
Available fb = 3.10 ft





LOMR

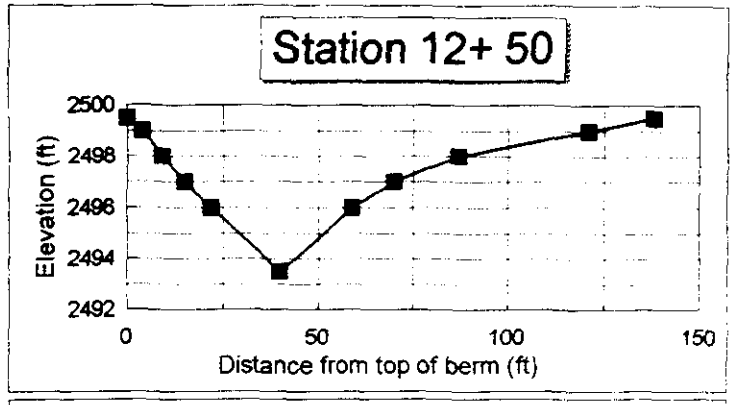
Capacity Behind Berm - Station 1+70 to Station 12+50

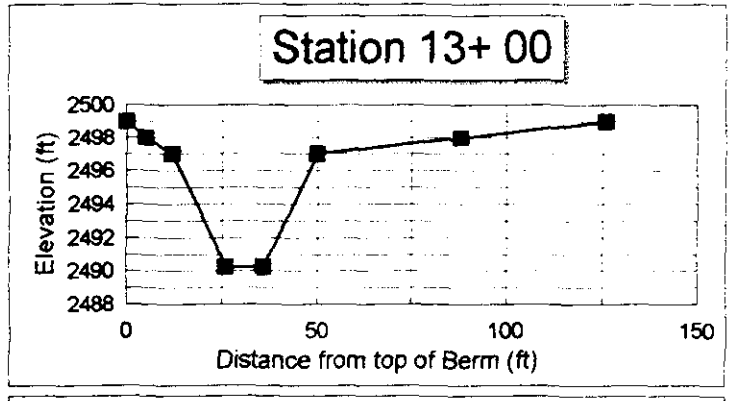
09/16/95

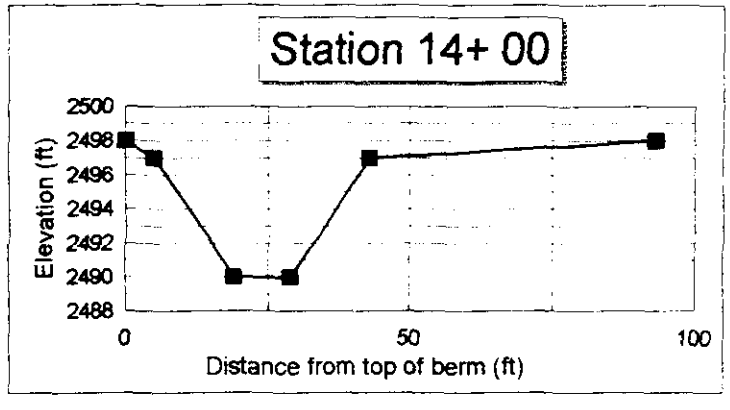
Average Slope = 0.015
Mannings n = 0.035

Freeboard min = 2 ft

12 + 50	0	2499.5
	4	2499
	9	2498
	15	2497
	22	2496
	40	2493.5
	59	2496
	70	2497
	87	2498
	121	2499
	138	2499.5
13 + 00	0	2499
	5	2498
	12	2497
	26	2490.24
	36	2490.24
	50	2497
	88	2498
	126	2499
14 + 00	0	2498
	5	2497
	19	2490
	29	2490
	43	2497
	93	2498



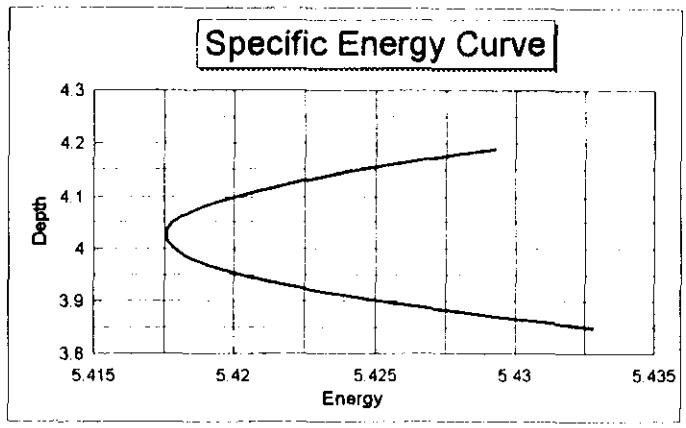




Specific Energy - y critical

Channel configuration	b	z
Flow (cfs) 688	10	2

Depth	Area	Velocity	Energy
3.850	68.15	10.10	5.43279
3.860	68.40	10.06	5.43105
3.870	68.65	10.02	5.42942
3.880	68.91	9.98	5.42790
3.890	69.16	9.95	5.42648
3.900	69.42	9.91	5.42518
3.910	69.68	9.87	5.42399
3.920	69.93	9.84	5.42290
3.930	70.19	9.80	5.42191
3.940	70.45	9.77	5.42103
3.950	70.71	9.73	5.42025
3.960	70.96	9.70	5.41957
3.970	71.22	9.66	5.41899
3.980	71.48	9.62	5.41851
3.990	71.74	9.59	5.41812
4.000	72.00	9.56	5.41784
4.010	72.26	9.52	5.41764
4.020	72.52	9.49	5.41755
4.030	**72.78**	**9.45**	**5.41754**
4.040	73.04	9.42	5.41763
4.050	73.31	9.39	5.41780
4.060	73.57	9.35	5.41807
4.070	73.83	9.32	5.41843
4.080	74.09	9.29	5.41887
4.090	74.36	9.25	5.41940
4.100	74.62	9.22	5.42002
4.110	74.88	9.19	5.42072
4.120	75.15	9.16	5.42151
4.130	75.41	9.12	5.42238
4.140	75.68	9.09	5.42333
4.150	75.95	9.06	5.42436
4.160	76.21	9.03	5.42547
4.170	76.48	9.00	5.42667
4.180	76.74	8.96	5.42794
4.190	77.01	8.93	5.42929



Normal Depth

Trial & Error Solution

Stations 13+13.38 to 21+00.00

Flow (cfs)	688
n =	0.035
S =	0.0030
b =	10
z =	2

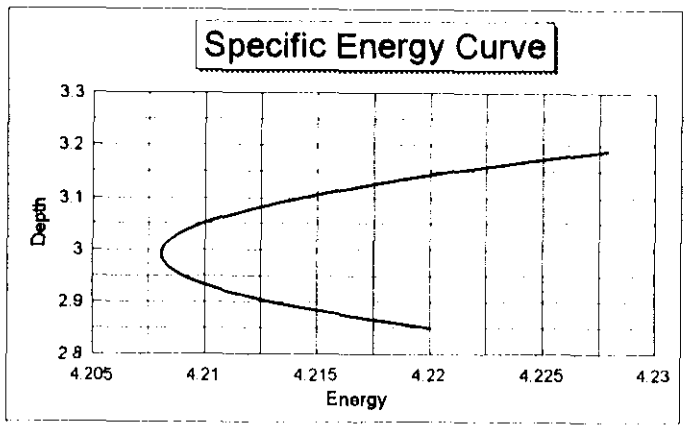
AR^(2/3) = (nQ)/(1.486*S^.5) RHS = **295.85**

Y	A	V	P	R	LHS	Fr
5.750	123.63	5.57	35.71	3.46	282.89	0.51
5.760	123.96	5.55	35.76	3.47	283.91	0.50
5.770	124.29	5.54	35.80	3.47	284.94	0.50
5.780	124.62	5.52	35.85	3.48	285.96	0.50
5.790	124.95	5.51	35.89	3.48	286.99	0.50
5.800	125.28	5.49	35.94	3.49	288.03	0.50
5.810	125.61	5.48	35.98	3.49	289.06	0.50
5.820	125.94	5.46	36.03	3.50	290.10	0.49
5.830	126.28	5.45	36.07	3.50	291.13	0.49
5.840	126.61	5.43	36.12	3.51	292.18	0.49
5.850	126.95	5.42	36.16	3.51	293.22	0.49
5.860	127.28	5.41	36.21	3.52	294.26	0.49
5.870	**127.61**	**5.39**	**36.25**	**3.52**	**295.31**	**0.49**
5.880	127.95	5.38	36.30	3.53	296.36	0.49
5.890	128.28	5.36	36.34	3.53	297.41	0.48
5.900	128.62	5.35	36.39	3.53	298.47	0.48
5.910	128.96	5.34	36.43	3.54	299.52	0.48
5.920	129.29	5.32	36.48	3.54	300.58	0.48
5.930	129.63	5.31	36.52	3.55	301.64	0.48
5.940	129.97	5.29	36.56	3.55	302.70	0.48
5.950	130.31	5.28	36.61	3.56	303.77	0.47
5.960	130.64	5.27	36.65	3.56	304.83	0.47
5.970	130.98	5.25	36.70	3.57	305.90	0.47
5.980	131.32	5.24	36.74	3.57	306.98	0.47
5.990	131.66	5.23	36.79	3.58	308.05	0.47
6.000	132.00	5.21	36.83	3.58	309.12	0.47
6.010	132.34	5.20	36.88	3.59	310.20	0.46
6.020	132.68	5.19	36.92	3.59	311.28	0.46
6.030	133.02	5.17	36.97	3.60	312.36	0.46
6.040	133.36	5.16	37.01	3.60	313.45	0.46
6.050	133.71	5.15	37.06	3.61	314.54	0.46
6.060	134.05	5.13	37.10	3.61	315.62	0.46
6.070	134.39	5.12	37.15	3.62	316.72	0.46
6.080	134.73	5.11	37.19	3.62	317.81	0.45
6.090	135.08	5.09	37.24	3.63	318.91	0.45

Specific Energy - y critical

Channel configuration	b	z
Flow (cfs) 688	20	2

Depth	Area	Velocity	Energy
2.850	73.25	9.39	4.22005
2.860	73.56	9.35	4.21837
2.870	73.87	9.31	4.21682
2.880	74.19	9.27	4.21541
2.890	74.50	9.23	4.21413
2.900	74.82	9.20	4.21297
2.910	75.14	9.16	4.21194
2.920	75.45	9.12	4.21104
2.930	75.77	9.08	4.21026
2.940	76.09	9.04	4.20960
2.950	76.41	9.00	4.20906
2.960	76.72	8.97	4.20864
2.970	77.04	8.93	4.20834
2.980	77.36	8.89	4.20814
2.990	**77.68**	**8.86**	**4.20806**
3.000	78.00	8.82	4.20810
3.010	78.32	8.78	4.20824
3.020	78.64	8.75	4.20849
3.030	78.96	8.71	4.20885
3.040	79.28	8.68	4.20931
3.050	79.61	8.64	4.20987
3.060	79.93	8.61	4.21054
3.070	80.25	8.57	4.21131
3.080	80.57	8.54	4.21218
3.090	80.90	8.50	4.21314
3.100	81.22	8.47	4.21420
3.110	81.54	8.44	4.21536
3.120	81.87	8.40	4.21661
3.130	82.19	8.37	4.21796
3.140	82.52	8.34	4.21940
3.150	82.85	8.30	4.22092
3.160	83.17	8.27	4.22254
3.170	83.50	8.24	4.22424
3.180	83.82	8.21	4.22603
3.190	84.15	8.18	4.22791



Normal Depth

Trial & Error Solution

Stations 21+00 to 28+00

Flow (cfs)	688
n =	0.035
S =	0.0030
b =	20
z =	2

AR^(2/3) = (nQ)/(1.486*S^.5) RHS = **295.85**

Y	A	V	P	R	LHS	Fr
4.500	130.50	5.27	40.12	3.25	286.47	0.50
4.510	130.88	5.26	40.17	3.26	287.65	0.50
4.520	131.26	5.24	40.21	3.26	288.83	0.50
4.530	131.64	5.23	40.26	3.27	290.01	0.50
4.540	132.02	5.21	40.30	3.28	291.20	0.49
4.550	132.41	5.20	40.35	3.28	292.39	0.49
4.560	132.79	5.18	40.39	3.29	293.58	0.49
4.570	133.17	5.17	40.44	3.29	294.77	0.49
4.580	**133.55**	**5.15**	**40.48**	**3.30**	**295.97**	**0.49**
4.590	133.94	5.14	40.53	3.30	297.17	0.48
4.600	134.32	5.12	40.57	3.31	298.37	0.48
4.610	134.70	5.11	40.62	3.32	299.57	0.48
4.620	135.09	5.09	40.66	3.32	300.78	0.48
4.630	135.47	5.08	40.71	3.33	301.99	0.48
4.640	135.86	5.06	40.75	3.33	303.20	0.48
4.650	136.25	5.05	40.80	3.34	304.41	0.47
4.660	136.63	5.04	40.84	3.35	305.63	0.47
4.670	137.02	5.02	40.88	3.35	306.85	0.47
4.680	137.40	5.01	40.93	3.36	308.07	0.47
4.690	137.79	4.99	40.97	3.36	309.29	0.47
4.700	138.18	4.98	41.02	3.37	310.52	0.46
4.710	138.57	4.97	41.06	3.37	311.75	0.46
4.720	138.96	4.95	41.11	3.38	312.98	0.46
4.730	139.35	4.94	41.15	3.39	314.21	0.46
4.740	139.74	4.92	41.20	3.39	315.45	0.46
4.750	140.13	4.91	41.24	3.40	316.69	0.46
4.760	140.52	4.90	41.29	3.40	317.93	0.45
4.770	140.91	4.88	41.33	3.41	319.17	0.45
4.780	141.30	4.87	41.38	3.41	320.42	0.45
4.790	141.69	4.86	41.42	3.42	321.67	0.45
4.800	142.08	4.84	41.47	3.43	322.92	0.45
4.810	142.47	4.83	41.51	3.43	324.17	0.45
4.820	142.86	4.82	41.56	3.44	325.43	0.44
4.830	143.26	4.80	41.60	3.44	326.69	0.44
4.840	143.65	4.79	41.65	3.45	327.95	0.44

FEDERAL EMERGENCY MANAGEMENT AGENCY
REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM

O.M.B. Burden No. 3067-0148
Expires July 31, 1997

FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. OVERVIEW

1. The basis for this revision request is (are): *(check all that apply)*
   - ☒ Physical change
     - ☒ Existing
     - ☐ Proposed
   - ☐ Improved methodology
   - ☐ Improved data
   - ☐ Floodway revision
   - ☒ Other Investigation of assumed flow diversion from Red Rock Wash to Flamingo Wash.
     Explain Response to FEMA Case No. 93-09-407R letter dated 7-26-93.
2. Flooding Source: Upper Flamingo Wash and Red Rock Wash.
3. Project Name/Identifier: Upper Flamingo Wash Detention Basin (UFWDB)
4. FEMA zone designations affected: A
   (example: A, AH, AO, A1-A30, A99, AE, V, V1-30, VE, B, C, D, X)
5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX: 480301	Katy, City	Harris, Fort Bend	TX	480301	0005D	02/08/83
480287	Harris County	Harris	TX	48201C	0220G	09/28/90
320003	Clark County Unincorporated Areas	Clark County	NV	32003C	2535D	08/16/95

6. The area of revision encompasses the following types of flooding, structures, and associated disciplines: *(check all that apply)*

Types of Flooding	Structures	Disciplines*
☐ Riverine	☒ Channelization	☒ Water Resources
☐ Coastal	☐ Levee/Floodwall	☒ Hydrology
☒ Alluvial Fan	☐ Bridge/Culvert	☒ Hydraulics
☐ Shallow Flooding *(e.g. Zones AO and AH)*	☒ Dam	☒ Sediment Transport
☐ Lakes	☐ Coastal	☐ Interior Drainage
Affected by wind/wave action	☐ Fill	☒ Structural
☐ Yes	☐ Pump Station	☒ Geotechnical
☒ No	☐ None	☐ Land Surveying
	☐ Channel Relocation	☐ Other *(describe)*
	☐ Excavation	
	☐ Other *(describe)*	

☐ Other(describe)

* **Attach completed "Certification by Registered Professional Engineer and/or Land Surveyor" Form for each discipline checked. (Form 2)**

2. FLOODWAY INFORMATION

7. Does the affected flooding source have a floodway designated on the effective FIRM or FBFM? ☒ Yes ☐ No
8. Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM ☒ Yes ☐ No
   If yes, give reason: Operation of UFWDB will reduce downstream floodway.

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

9. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP? ☐ Yes ☒ No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

3. PROPOSED ENCROACHMENTS

10. With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other development in the floodway? ☒ Yes ☐ No

1B. If yes, does the development cause the 100-year water surface elevation to increase at any location by more than 0.000 feet? ☒ Yes ☐ No Water surface elevation is only increased within limits of detention basin impoundment area, therefore, documentation required under 65.12 has not been provided.

11. Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other development in the 100-year floodplain? ☐ Yes ☐ No

2B. If yes, does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the 100-year water surface elevation to increase at any location by more than one foot (*or other surcharge limit if community or state has adopted more stringent criteria*)? ☐ Yes ☐ No

If the answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

4. REVISION REQUESTOR ACKNOWLEDGMENT

12. Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, and 72, I believe that the proposed revision ☒ is ☐ is not in compliance with the requirements of the aforementioned NFIP Regulations.

5. COMMUNITY OFFICIAL ACKNOWLEDGMENT

13. Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? ☒ Yes ☐ No

14. Does this revision request have the endorsement of the community? ☒ Yes ☐ No

If no to either of the above questions, please explain: _____

Please note that community acknowledgment and /or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

6. OPERATION AND MAINTENANCE

15. Does the physical change involve a flood control structure (e.g., levees, floodwalls, channelization, basins, dams)? ☒ Yes ☐ No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by Clark County Department of Public Works (entity) with a maximum interval of 12 months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by Clark County Department of Public Works. (entity) to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, ☒ has ☐ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for ☒ performing ☒ overseeing compliance with the maintenance and operation plans of the Upper Flamingo Wash Detention Basin. (Name)

flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

7. REQUESTED RESPONSE FROM FEMA

16. After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A guide for Community Officials," dated January 1990, this request is for a:

_____a.	CLOMR	*A letter from FEMA commenting on whether a proposed project, if built as proposed, would* justify a map revision *(LOMR or PMR)*, or proposed hydrology changes *(see 44 CFR Ch. I, Parts 60, 65, and 72).*
X b.	LOMR	A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. *(See 44 CFR Ch. I Parts 60 and 65.)*
_____c.	PMR	A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. *(See 44 CFR Ch. I, Parts 60 and 65.)*
_____d.	Other:	Describe_____

8. FORMS INCLUDED

17. Form 2 entitled, "Certification By Registered Professional Engineer and/or Land Surveyor" must be submitted.

The following forms should be included with this request if (check the included forms):

• Hydrologic analysis for flooding source differs from that used to develop FIRM	☒ Hydrologic Analysis Form (Form 3)
• Hydraulic analysis for riverine flooding differs from that used to develop FIRM	☐ Riverine Hydraulic Analysis Form (Form 4)
• The request is based on updated topographic information or a revised floodplain or floodway delineation is requested	☐ Riverine /Coastal Mapping Form (Form 5)
• The request involves any type of channel modification	☒ Channelization Form (Form 6)
• The request involves new bridge or culvert or revised analysis of an existing bridge or culvert	☐ Bridge/Culvert Form (Form 7)
• The request involves a new revised levee/floodwall system	☒ Levee/Floodwall System Analysis Form (Form 8)
• The request involves analysis of coastal flooding	☐ Coastal Analysis Form (Form 9)
• The request involves coastal structures credited as providing protection from the 100-year flood	☐ Coastal Structures (Form 10)
• The request involves an existing, proposed, or modified dam	☒ Dam Form (Form 11)
• The request involves structures credited as providing protection from the 100-year flood on an alluvial fan	☐ Alluvial Fan Flooding Form (Form 12)

9. INITIAL REVIEW FEE

18. The minimum initial review fee for the appropriate request category has been included. ☐ Yes ☒ No

Initial fee amount: $ _____

Check or money order only. Make check or money order payable to : **National Flood Insurance Program**. If paying by Visa or Mastercard please refer to the credit card information form which follows this form.

or

19. This request is for a project that is for public benefit and is primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☒ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

Note: I understand that my signature indicates that all information submitted in support of this request is correct.

Signature of Revision Requester

Steven D. Canney, P.E., Project Manager
Printed Name and Title of Revision Requester

Black & Veatch
Company Name

(702) 732-0448
Telephone No.

11/13/95
Date

Note: Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.

Signature of Community Official

Kevin Eubanks, P.E.
Asst. General Manager
Clark County Regional Flood Control District
Printed Name and Title of Community Official

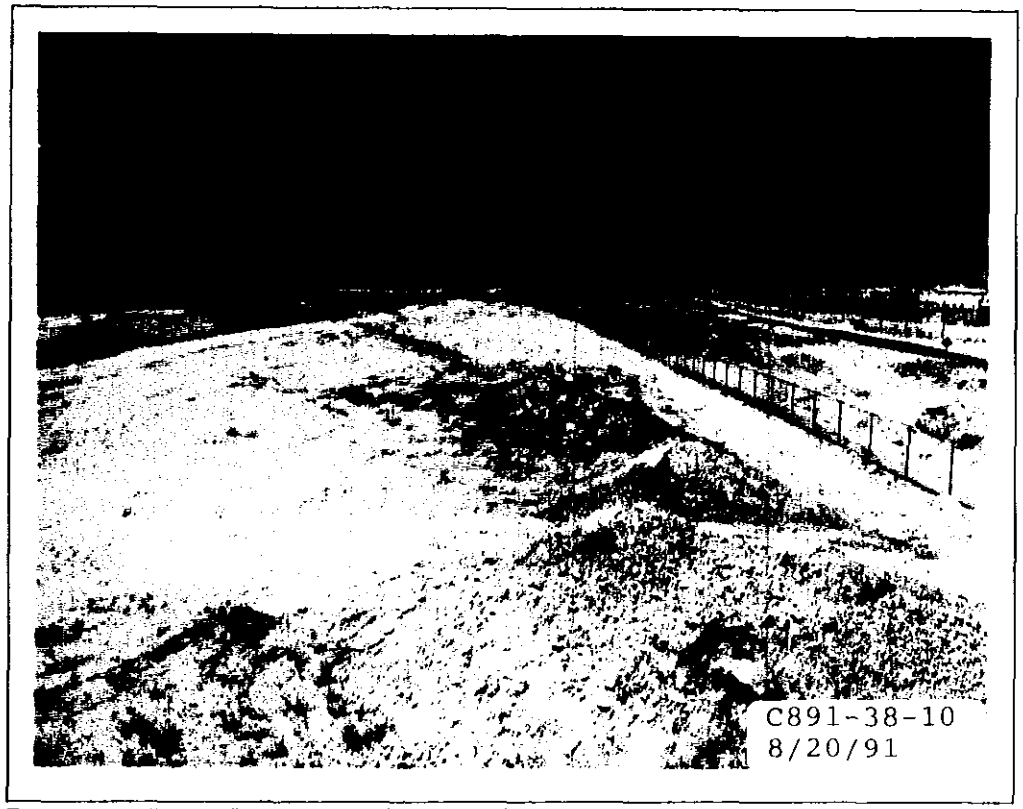
Clark County, NV
Community Name

11-17-95
Date

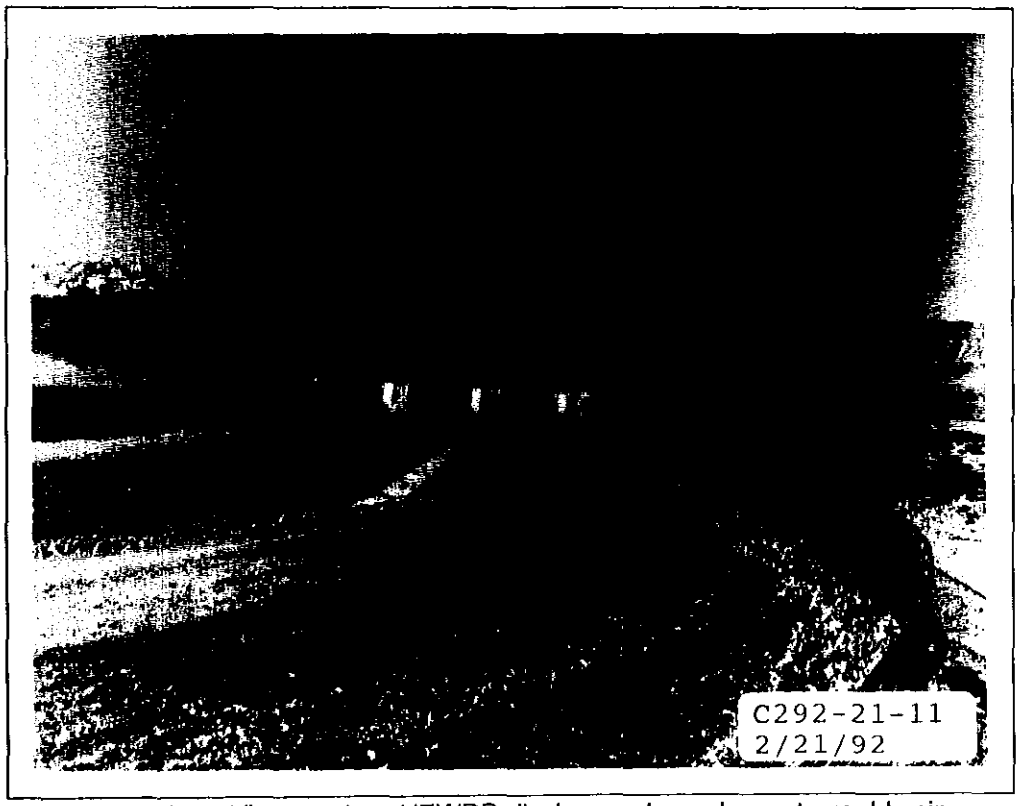
Does this request impact any other communities? ☐ Yes ☒ No

If yes, attach letters from all affected jurisdictions acknowledging revision request and approving changes to floodway, if applicable.

Note: Although a photograph of physical changes is not required, it may be helpful for FEMA's review.



Preconstruction - View west up UFWDB discharge channel area toward basin outlet.



Postconstruction - View west up UFWDB discharge channel area toward basin outlet.

95 OCT 5 P3:53 RECEIVED

Federal Emergency Management Agency

Washington, D.C. 20472

SEP 27 1995

Mr. Kevin Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District
301 East Clark Avenue
Suite 301
Las Vegas, Nevada 89101

Dear Mr. Eubanks:

This is in response to your letter dated September 14, 1995, regarding the August 27, 1993, Conditional Letter of Map Revision (CLOMR) to the effective Flood Insurance Rate Map (FIRM) for the unincorporated areas of Clark County, Nevada. In the August 27 CLOMR, we identified the additional information required for us to revise the FIRM to represent the Upper Flamingo Wash Detention Basin (UFWDB) and the proposed diversion channel as providing protection against the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

One of the items identified in the CLOMR was an officially adopted maintenance and operation plan for the UFWDB. The CLOMR indicated this plan may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation and should include information regarding the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished. With your letter, you submitted a copy of the Interlocal Contract, Annual Maintenance Program, executed by and between the Clark County Regional Flood Control District (CCRFCD) Board of Directors and Clark County for the current year (Fiscal Year 95/96). The contract states maintenance will be performed in accordance with the CCRFCD Operations and Maintenance Manual. You indicated the UFWDB is included in Item CLA12, Detention Basins, of Exhibit A to the contract, which allocates maintenance funding. You also provided information identifying the Project Manager responsible for the maintenance.

The submitted contract addresses the issue of maintenance of the UFWDB for the current year. Upon receipt of the additional required data, as listed in the CLOMR, we will make a final determination on revising the effective FIRM. If the additional data are provided after the expiration date of the current contract, June 30, 1996, we will require a copy of the contract in effect at the time the data are submitted.

If you have any questions regarding this matter, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Mr. Robert B. Thompson, P.E.
Civil Engineer III
Clark County Department of Public Works

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT



Gale Wm. Fraser, II, P.E.
General Manager / Chief Engineer

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City of Henderson

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Clark County

September 14, 1995

William R. Locke, Chief
Risk Studies Division
Federal Insurance Administration
Federal Emergency Management Agency
500 C Street
Washington, D.C 20472

Upper Flamingo Wash Detention Basin CLOMR
Case No.: 93-09-407R

Dear Mr. Locke:

This letter is written in response to the Conditional Letter of Map Revision (CLOMR) dated August 27,1993, for the above-referenced case. A condition of the CLOMR is submittal of a maintenance and operation plan for the Upper Flamingo Wash Detention Basin (UFWDB). The following is offered to address that condition.

The Clark County Regional Flood Control District (CCRFCD) has established a master plan of facilities to control stormwater runoff within Clark County. Projects identified within the master plan are eligible for maintenance funding provided by the CCRFCD. The UFWDB is included on the master plan and has its maintenance and operation funded by the CCRFCD.

The various governmental entities within Clark County take the lead in procuring and expending CCRFCD funds for design, right-of-way acquisition, construction, and maintenance and operation of the facilities included on the master plan. Each project "belongs" to the individual entity who owns the rights-of-way on which they are constructed. Maintenance work plans and interlocal funding contracts are developed annually by each entity in support of their request to the CCRFCD Board of Directors for maintenance and operation funds.

Enclosed please find a copy of the Interlocal Contract, Annual Maintenance Program executed by the CCRFCD Board of Directors for the current year (FY 95/96) for Clark County. Exhibit A, Page 3, Item CLA12 of the County's contract provides maintenance funding for detention basins which includes the UFWDB.

301 E. Clark Avenue, Suite 301 • Las Vegas, Nevada 89101
(702) 455-3139 • FAX: (702) 455-3870

I hope this information adequately addresses the issue of continued maintenance of this important flood control facility. A copy of this letter will be included in a package of technical data to be submitted at a later date which addresses the remaining conditions stated in the subject CLOMR. If I can be of any further assistance, please call.

Sincerely,

Kevin Eubanks, P.E.
Assistant General Manager

KLE:jwp

Enclosure

cc: Steve Canney, Black & Veatch

UFDB LOMR

INTERLOCAL CONTRACT

ANNUAL MAINTENANCE PROGRAM

THIS CONTRACT, made and entered into this 13th day of July, 1995, by and between the County of Clark, a political subdivision of the State of Nevada, hereinafter referred to as "County", and the CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT, hereinafter referred to as "District".

WITNESSETH

WHEREAS, pursuant to Chapter 543 of the Nevada Revised Statutes, the District may approve and fund projects to maintain flood control improvements; and

WHEREAS, The County desires to maintain flood control improvements located in (see Exhibit "A") accordance with the maintenance program set forth herein, and hereinafter referred to as "Project"; and

WHEREAS, the facility upon which maintenance will be done is a facility described in the District's Master Plan.

NOW, THEREFORE, in consideration of the covenants, conditions, agreements, and promises of the parties hereto, the District authorizes the Project as it is mutually understood and agreed as follows:

SECTION I - SCOPE OF PROJECT

This Interlocal Contract applies to the maintenance of flood control facilities, which are identified in the District's Master Plan facilities including updates and amendments subsequently approved. The basic maintenance to the facilities will be in accordance with

performance standards of the Operations and Maintenance Manual. The Project is more specifically described in Exhibit "A" which is attached hereto and by this reference incorporated herein.

SECTION II - PROJECT COSTS

The District agrees to provide reimbursement for Project costs within the limits specified below:

1. The Project costs shall not exceed $1,301,700.00. The amounts allocated to each individual facility within the Project must be specified in Exhibit "A". Any changes to said allocated amounts must be approved by the District's Chief Engineer.

   A written request must be made to the District and a Supplemental Interlocal Contract approved to increase the amount noted above prior to payment of any additional funds.

2. The County and District will comply with Section 4.12 of the Operation and Maintenance Manual. In accordance with said manual the County shall submit invoices together with a detailed summary report of the maintenance service performed. The County shall submit an Invoice Voucher prepared in duplicate in the manner prescribed by the District. The vouchers shall include such information as is necessary for the District to determine the nature of all expenditures. Each voucher will clearly indicate that it is for services rendered in performance under this contract. Each voucher will also be accompanied by a written certification from the County stating that it is for performance of maintenance activities under this contract and is composed of completed elements set forth in the annual work program.

All invoices must be submitted for payment to:

Clark County Regional Flood Control District
301 E. Clark Avenue, Suite 301
Las Vegas, Nevada 89101
Attn: Gale Wm. Fraser, P.E.
General Manager/Chief Engineer

Payment shall be considered timely if made by the District within 45 days. Pursuant to Section IV, Paragraph 6, the District may, in its sole discretion, withhold payments to the County for services rendered if the County fails to satisfactorily comply with any term or condition of this contract and/or the District's Operation and Maintenance Manual.

SECTION III - PROJECT TIME

The County agrees to perform the Project to the satisfaction of the District prior to June 30, 1996. The District may grant extensions or terminate this contract and require all sums advanced to the County to be repaid if the County fails to perform by said date.

SECTION IV - GENERAL

1. The County will complete the Project as set forth in Exhibit "A". The County staff personnel responsible for coordination work under this contract are as listed below:
M. J. Manning, Director of Public Works, or his designee:
It is understood that staff named above will be responsible for work coordination throughout the period of this contract unless the District is informed in writing of changes in these personnel assignments.

2. In addition to the specific terms set forth in this Contract the parties hereto shall be subject to and governed by the District's Operation and Maintenance Manual, and any applicable portions of the Policies and Procedures adopted by the District.

3. It is the intent of the District that scheduling of maintenance and repair of drainage and flood control facilities in general and Master Plan Facilities specifically be coordinated among entities. Therefore, in those cases where Master Plan approved,

and District - funded projects have regional flood control significance impacting more than one entity, the County will allow all impacted entities an opportunity to review the maintenance schedule in order to coordinate maintenance efforts.

4. The Chief Engineer of the District shall be responsible for monitoring the performance of the County, approval for payment of billings and expenses submitted by the County, and the acceptance of any reports provided by the County. The County shall be responsible for monitoring performance of County staff or private contractors, and the County shall maintain detailed records of all payments made to contractors and make such records available to the District upon request.

5. The County shall provide right of access to its facilities to the District or Chief Engineer at all reasonable times, in order to monitor and evaluate performance, compliance, and/or quality assurance under this contract.

6. In the event the County fails to perform the maintenance according to the standards specified in this contract and in the District's Operation and Maintenance Manual, the District may perform or cause to be performed the maintenance necessary to assure proper operation of the facility. Cost incurred by the District shall be reimbursed by the County or be deducted from the amount authorized by this contract. The District may not exercise this right without giving the County specific written notice of the maintenance required and allowing the County 60 days within which to perform said maintenance.

The notice required by this provision must be sent to:

M. J. Manning, Director
Department of Public Works
6655 W. Sahara Ave. Bldg. C-204
Las Vegas, Nevada 89102

7. The records of the County and/or private contractors pertaining to the subject matter of this contract shall at all reasonable times be subject to inspection and audit by the District, County Auditor or an Agent of the District.

8. If any provision of this contract shall be deemed in conflict with any statute or rule of law, such provision shall be deemed modified to be in conformance with said statute or rule of law.

9. All parties to this contract shall comply with applicable local, state, and federal laws.

10. Any costs found to be improperly allocated in the project will be refunded by the County to the District.

11. It is specifically understood and agreed to by and between the parties hereto that it is not intended by any of the provisions of any part of this contract to create in the public or any member thereof a third party beneficiary hereunder, or to authorize anyone not a party to this contract to maintain a suit for personal injuries or property damage pursuant to the terms of provisions of this contract.

12. The County hereby indemnifies and shall defend and hold harmless the District, its representatives and their employees (or their authorized representatives) from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorney's fees, costs and expenses whatsoever of any kind or nature whether arising before or after completion of the work hereunder and in any manner directly or indirectly caused, occasioned or contributed to in whole or in

part, by reason of any act, omission, fault or negligence whether active or passive of the County, of anyone acting under its direction or control, or on its behalf in connection with or incident to the performance of this Contract. The County's aforesaid indemnity and hold harmless obligations, or portions or applications thereof, shall apply to the fullest extent permitted by law, but in no event shall they apply to liability caused by the sole negligence or willful misconduct of the party indemnified or held harmless.

IN WITNESS WHEREOF: The parties have caused this contract to be executed the day and year first above written.

ATTEST:

LORETTA BOWMAN, County Clerk

CLARK COUNTY
BOARD OF COUNTY COMMISSIONERS

BY
YVONNE ATKINSON GATES, Chair 6/20/95 BCC

DATE OF DISTRICT ACTION: JUL 13 1995

ATTEST:

DEANNA LEFKO,
Secretary to the Board

REGIONAL FLOOD CONTROL DISTRICT

BY:
IRIS BLETSCH
Chairman

Approved as to Legality and Form:

BY:
CHRISTOPHER FIGGINS
Deputy District Attorney

CLARK COUNTY FISCAL YEAR 1995-96 MAINTENANCE WORK PROGRAM BUDGET REQUEST

		CLA01 FLAMINGO WASH	CLA02 LAS VEGAS WASH	CLA03 DUCK CREEK	CLA05 LV RANGE WASH	CLA06 TROPICANA WASH	PAGE TOTALS
0005	CLEAN/INSP IN/OUTLET STRUCTURES	4,500	2,000	3,500	2,000	1,700	13,700
0010	INSPECTION (CHANNELS)	5,000	2,500	3,000	3,000	2,000	15,500
0015	CLEAN STORM SEWER LINES						
0020	VEGETATION CONTROL	45,000	40,000	36,400	8,000	4,000	133,400
0025	STORM SEWER REPAIR						
0030	CLEAN & RESHAPE CHANNELS	245,000		265,000	5,000		515,000
0035	CLEAN/INSPECT DET BASINS						
0040	REPAIR LINED CHANNELS	10,000	10,000	30,000	5,000		55,000
0045	VEGETATION CNTRL/DET BASIN						
0050	CLEAN/FLUSH PIPES/CULVERTS						
0055	PROVIDE/MAINT EROSION CONTROL	50,000					50,000
0060	DEBRIS REMOVAL		5,000				5,000
0065	EROSION REPAIR	50,000					50,000
0070	FENCE REPAIR	1,500	1,000	1,500	3,000		7,000
0075	REPAIR IN/OUTLET STRUCTURE	20,000	10,000	10,000		5,000	45,000
0080	MISCELLANEOUS	5,500	1,500	4,500	7,700		19,200
0085	MAINTAIN ACCESS ROADS	20,000	1,000	3,000	3,000	1,000	28,000
0095	DESIGN/ENGINEERING	18,500		20,000			38,500
		$475,000	$ 73,000	$ 376,900	$36,700	$ 13,700	$ 975,300

EXHIBIT A

CLARK COUNTY FISCAL YEAR 1995-96 MAINTENANCE WORK PROGRAM BUDGET REQUEST

		CLA07 AIRPORT CHANNEL	CLA08 MONSON CHANNEL	CLA09 RAWHIDE CHANNEL	CLA10 VAN BUSKIRK CHANNEL	CLA11 FLAM WASH NO FORK	PAGE TOTALS
0005	CLEAN/INSP IN/OUTLET STRUCTURES	2,000	2,000	2,000	1,500	1,500	9,000
0010	INSPECTION (CHANNELS)	2,000	1,500	2,000	2,000	2,000	9,500
0015	CLEAN STORM SEWER LINES						
0020	VEGETATION CONTROL	3,000	6,000	4,000	2,000	3,000	18,000
0025	STORM SEWER REPAIR						
0030	CLEAN & RESHAPE CHANNELS					18,000	18,000
0035	CLEAN/INSPECT DET BASINS						
0040	REPAIR LINED CHANNELS		20,000	5,000			25,000
0045	VEGETATION CNTRL/DET BASIN						
0050	CLEAN/FLUSH PIPES/CULVERTS						
0055	PROVIDE/MAINT EROSION CONTROL			147,400			147,400
0060	DEBRIS REMOVAL						
0065	EROSION REPAIR						
0070	FENCE REPAIR	1,000	1,500	1,000	1,000	1,500	6,000
0075	REPAIR IN/OUTLET STRUCTURE			5,000			5,000
0080	MISCELLANEOUS	5,000		3,000	3,000	3,000	14,000
0085	MAINTAIN ACCESS ROADS	1,000	1,000	1,000		2,000	5,000
0095	DESIGN / ENGINEERING			14,000			14,000
		$ 14,000	$ 32,000	$184,400	$9,500	$31,000	$270,900

CLARK COUNTY FISCAL YEAR 1995-96 MAINTENANCE WORK PROGRAM BUDGET REQUEST

		CLA12 DETENTION BASINS	CLA14 LAUGHLIN WASHES	CLA15 OVERTON TOWN WASH	CLA16 BLUE DIAMOND WASH		1995/96 BUDGET REQUEST TOTALS
0005	CLEAN/INSP IN/OUTLET STRUCTURES	1,500	3,500	2,500	500		30,700
0010	INSPECTION (CHANNELS)	1,000	3,000	2,000	500		31,500
0015	CLEAN STORM SEWER LINES						
0020	VEGETATION CONTROL	1,000	1,000	2,000			155,400
0025	STORM SEWER REPAIR						
0030	CLEAN & RESHAPE CHANNELS						533,000
0035	CLEAN/INSPECT DET BASINS	6,500					6,500
0040	REPAIR LINED CHANNELS						80,000
0045	VEGETATION CNTRL/DET BASIN						
0050	CLEAN/FLUSH PIPES/CULVERTS						
0055	PROVIDE/MAINT EROSION CONTROL						197,400
0060	DEBRIS REMOVAL		22,000				27,000
0065	EROSION REPAIR						50,000
0070	FENCE REPAIR			500			13,500
0075	REPAIR IN/OUTLET STRUCTURE						50,000
0080	MISCELLANEOUS	3,000		1,000			37,200
0085	MAINTAIN ACCESS ROADS	1,000	1,000	2,000			37,000
0095	DESIGN / ENGINEERING						52,500
		$ 14,000	$ 30,500	$10,000	$ 1,000		$1,301,700

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: FLAMINGO WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN # AMOUNT	AMENDED WORK PLAN # AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	4,500			
	INSPECTION (CHANNELS)	0010	5,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	45,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030	245,000			
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	10,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055	50,000			
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065	50,000			
	FENCE REPAIR	0070	1,500			
	REPAIR IN/OUTLET STRUCTURE	0075	20,000			
	MISCELLANEOUS	0080	5,500			
	MAINTAIN ACCESS ROADS	0085	20,000			
	DESIGN/ENGINEERING	0095	18,500			
		TOTAL	$478,000	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 **DATE PREPARED:** MARCH 10, 1995

PROJECT: LAS VEGAS WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,000			
	INSPECTION (CHANNELS)	0010	2,500			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	40,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	10,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060	5,000			
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,000			
	REPAIR IN/OUTLET STRUCTURE	0075	10,000			
	MISCELLANEOUS	0080	1,500			
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$73,000	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW **PHONE NUMBER:** 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: DUCK CREEK

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	3,500			
	INSPECTION (CHANNELS)	0010	3,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	36,400			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030	285,000			
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	30,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,500			
	REPAIR IN/OUTLET STRUCTURE	0075	10,000			
	MISCELLANEOUS	0080	4,500			
	MAINTAIN ACCESS ROADS	0085	3,000			
	DESIGN/ENGINEERING	0095	20,000			
		TOTAL	$376,900	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: LAS VEGAS RANGE WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,000			
	INSPECTION (CHANNELS)	0010	3,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	8,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030	5,000			
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	5,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	3,000			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	7,700			
	MAINTAIN ACCESS ROADS	0085	3,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$36,700	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 **DATE PREPARED:** MARCH 10, 1995

PROJECT: TROPICANA WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	1,700	$		
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	4,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070				
	REPAIR IN/OUTLET STRUCTURE	0075	5,000			
	MISCELLANEOUS	0080				
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
	TOTAL		$13,700	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW **PHONE NUMBER:** 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: AIRPORT CHANNEL

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,000	$		
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	3,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,000			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	6,000			
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$14,000	$		

DELAYS OR PROBLEM AREAS:

-

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 **DATE PREPARED:** MARCH 10, 1995

PROJECT: MONSON CHANNEL

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,000	$		
	INSPECTION (CHANNELS)	0010	1,500			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	6,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	20,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,500			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080				
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
	TOTAL		$32,000	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW **PHONE NUMBER:** 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: RAWHIDE CHANNEL

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,000	$		
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	4,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040	5,000			
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055	147,400			
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,000			
	REPAIR IN/OUTLET STRUCTURE	0075	5,000			
	MISCELLANEOUS	0080	3,000			
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095	14,000			
	TOTAL		$184,400	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: VAN BUSKIRK CHANNEL

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	1,500	$		
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	2,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,000			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	3,000			
	MAINTAIN ACCESS ROADS	0085				
	DESIGN/ENGINEERING	0095				
	TOTAL		$9,500	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 **DATE PREPARED:** MARCH 10, 1995

PROJECT: FLAMINGO WASH - NORTH FORK

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	1,500	$0		
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	3,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030	18,000			
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	1,500			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	3,000			
	MAINTAIN ACCESS ROADS	0085	2,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$31,000			

DELAYS OR PROBLEM AREAS:

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WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW **PHONE NUMBER:** 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: DETENTION BASINS

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	1,500			
	INSPECTION (CHANNELS)	0010	1,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	1,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035	6,500			
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070				
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	3,000			
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$14,000			

DELAYS OR PROBLEM AREAS:

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WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: LAUGHLIN WASHES

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	3,500			
	INSPECTION (CHANNELS)	0010	3,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	1,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060	22,000			
	EROSION REPAIR	0065				
	FENCE REPAIR	0070				
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080				
	MAINTAIN ACCESS ROADS	0085	1,000			
	DESIGN/ENGINEERING	0095				
		TOTAL	$30,500			

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

ENTITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

PROJECT: OVERTON TOWN WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	2,500			
	INSPECTION (CHANNELS)	0010	2,000			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020	2,000			
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070	500			
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080	1,000			
	MAINTAIN ACCESS ROADS	0085	2,000			
	DESIGN/ENGINEERING	0095				
	TOTAL		$10,000	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM STATUS REPORT

.TITY: CLARK COUNTY 1995-96 DATE PREPARED: MARCH 10, 1995

ROJECT: BLUE DIAMOND WASH

FORCE ACCOUNT/ CONTRACT	ACTIVITY		APPROVED WORK PLAN $ AMOUNT	AMENDED WORK PLAN $ AMOUNT	PERCENT COMPLETE	SCHEDULED COMPLETION DATE
	CLEAN & INSPECT IN/OUTLET STRUCTURES	0005	500	$		
	INSPECTION (CHANNELS)	0010	500			
	CLEAN STORM SEWER LINES	0015				
	VEGETATION CONTROL	0020				
	STORM SEWER REPAIR	0025				
	CLEAN & RESHAPE CHANNELS	0030				
	CLEAN/INSPECT DETENTION BASINS	0035				
	REPAIR LINED CHANNELS	0040				
	VEGETATION CONTROL/DETENSION BASINS	0045				
	CLEAN/FLUSH PIPES/CULVERTS	0050				
	PROVIDE/MAINTAIN EROSION CONTROL	0055				
	DEBRIS REMOVAL	0060				
	EROSION REPAIR	0065				
	FENCE REPAIR	0070				
	REPAIR IN/OUTLET STRUCTURE	0075				
	MISCELLANEOUS	0080				
	MAINTAIN ACCESS ROADS	0085				
	DESIGN/ENGINEERING	0095				
		TOTAL	$1,000	$		

DELAYS OR PROBLEM AREAS:

WORK TO BE COMPLETED DURING CURRENT QUARTER:

WORK TO BE COMPLETED DURING NEXT QUARTER:

CONSULTANT/CONTRACTOR:

PROJECT MANAGER: GIL SUCKOW PHONE NUMBER: 455-8569

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average . 23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067- 0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2
2. I am licensed with an expertise in geotechnical engineering.
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 8 years experience in the expertise listed above.
4. I have ☐ prepared ☒ reviewed the attached supporting data and analyses related to my expertise.
5. I ☒ have ☐ have not visited and physically viewed the project.
6. In my opinion, the following analyses and /or designs, is/are being certified:

   Engineering analysis, design, and construction of the Upper Flamingo Wash Detention Basin.
7. Base upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. ☒ Viewed all phases of actual construction.
   b. ☒ Compared plans and specifications with as-built survey information.
   c. ☒ Examined plans and specifications and compared with completed projects.
   d. ☐ Other _____
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Steven D. Canney (please print or type)

Title: Project Manager (please print or type)

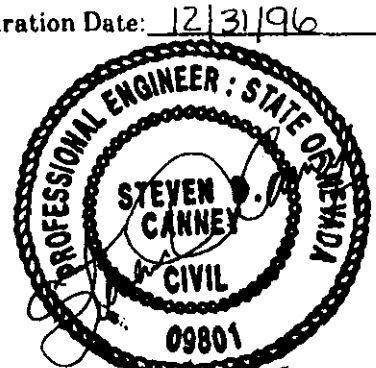
Registration No. 9801 Expiration Date: 12/31/96

State Nevada

Type of License Civil

Steven D. Canney
Signature

11/13/95
Date



11/13/96
Seal (Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM

O.M.B. Burden No. 3067-0148
Expires July 31, 1997

FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average . 23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067- 0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2
2. I am licensed with an expertise in structural engineering.
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 8 years experience in the expertise listed above.
4. I have ☐ prepared ☒ reviewed the attached supporting data and analyses related to my expertise.
5. I ☒ have ☐ have not visited and physically viewed the project.
6. In my opinion, the following analyses and /or designs, is/are being certified:

   Engineering analysis, design, and construction of the Upper Flamingo Wash Detention Basin.
7. Base upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. ☒ Viewed all phases of actual construction.
   b. ☒ Compared plans and specifications with as-built survey information.
   c. ☒ Examined plans and specifications and compared with completed projects.
   d. ☐ Other _____
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Steven D. Canney
(please print or type)

Title: Project Manager
(please print or type)

Registration No. 9801 Expiration Date: 12/31/96

State Nevada

Type of License Civil

Signature

11/13/95
Date

PROFESSIONAL ENGINEER : STATE OF NEVADA
STEVEN D. CANNEY
CIVIL
09801
11/13/95
Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average . 23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067- 0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2
2. I am licensed with an expertise in water resources (hydrology, hydraulics, sediment transport) [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 8 years experience in the expertise listed above.
4. I have ☐ prepared ☒ reviewed the attached supporting data and analyses related to my expertise.
5. I ☒ have ☐ have not visited and physically viewed the project.
6. In my opinion, the following analyses and /or designs, is/are being certified: Engineering analysis, design, and construction of the Upper Flamingo Wash Detention Basin
7. Base upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. ☒ Viewed all phases of actual construction.
   b. ☒ Compared plans and specifications with as-built survey information.
   c. ☒ Examined plans and specifications and compared with completed projects.
   d. ☐ Other _____
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Steven D. Canney (please print or type)

Title: Project Manager (please print or type)

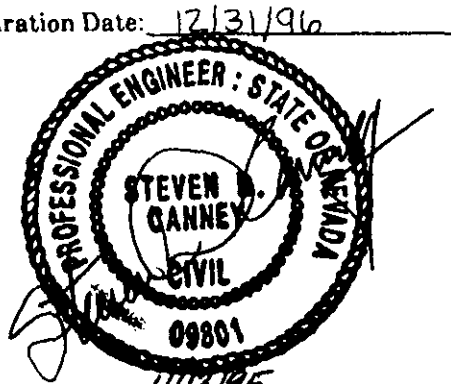
Registration No. 9801 Expiration Date: 12/31/96

State Nevada

Type of License Civil

Steven D. Canney
Signature

11/13/95
Date



11/13/95
Seal (Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Clark County, NV

Flooding Source: Flamingo Wash and Red Rock Wash
(One form for each flooding source)

Project Name /Identifier: Upper Flamingo Wash Detention Basin (UFWDB)

1. HYDROLOGIC ANALYSIS IN FIS

- ☐ Approximate study stream (Zone A)
- ☒ Detailed study stream (briefly explain methodology) HEC-1 computer model.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- ☐ No existing analysis
- ☐ Improved data *(see data revision on page 3)*
- ☒ Changed physical conditions of watershed *(explain)* (1) Upper Flamingo Wash Detention Basin has been constructed on the Flamingo Wash. (2) Per FEMA letter dated 7-26-93, diversion of flows from Red Rock Wash to the UFWDB are assumed to occur.
- ☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*
- ☐ Evaluation of proposed conditions (CLOMRs only) (explain)
- ☐ Other

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- ☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Clark County Regional Flood Control District. See letter dated 9-14-95.)
  Attach evidence of approval.
- ☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: Upper Flamingo Wash

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Project site per FEMA map dated 8-16-95	unknown	unknown	
UFWDB inflow	87.6		6660
UFWDB outflow			2,579

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot. (Note: BFEs not indicated on FEMA map #32003C2535D dtd. 8-16-95.)

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

None

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
Drainage Area	☐	☒	USGS maps & JMM models
Subbasin Routing	☐	☒	USGS maps & CCRFCD manual
Depth Area Reduction Factor	☐	☒	CCRFCD manual
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful. See attached.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

_____

ATTACHMENT A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

ATTACHMENT B: REGIONAL REGRESSION EQUATIONS

1. Bibliographical Reference:

N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☒ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS: (JMM model)	Revised
1.	Method or model used:	HEC-1	HEC-1
	Version:	4.0	4.0
	Date:	9/90	9/90
2.	Source of rainfall depth:	NOAA Atlas 2	JMM model
3.	Source of rainfall distribution:	CCRFCD manual	JMM model
4.	Rainfall duration:	6 hours	6 hours
5.	Areal adjustment to precipitation (%):	0.81 (CCRFCD)	0.62 (CCRFCD)
6.	Maximum overland flow length	CCRFCD manual	JMM model
7.	Hydrograph development method:	SCS	JMM model
8.	Loss rate method:	SCS Curve Number	JMM model
	Source of soils information:	SCS Soils map	JMM model
	Source of land use information		
9.	Channel routing method:	Muskingum	Muskingum
10.	Reservoir routing:	☒ Yes ☐ No	☒ Yes ☐ No
11.	Baseflow considerations:	☐ Yes ☒ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

N/A

12.	Snowmelt considerations:	☐ Yes ☒ No	☐ Yes ☒ No
13.	Model calibration:	☒ Yes ☐ No	☐ Yes ☒ No

If yes, explain how calibration was performed Calibration of FIS models with COE flows by James M. Montgomery Engineers. See attached documentation.

14. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides. See report for revised HEC-1 printouts and hydrologic model discussion.

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Clark County Regional Flood Control District

Las Vegas Valley Flood Insurance Study Hydrology Report

September 1991

JMM James M. Montgomery
Consulting Engineers, Inc.

chapter. A separately bound Technical Appendix contains HEC-1 routing diagrams and input/output printouts for 100-year flood simulations.

BASIC DATA AND ASSUMPTIONS

The key previous studies referenced in this work which affect the overall Las Vegas Valley study area are:

Hydrologic Documentation for Feasibility Study, Las Vegas Wash and Tributaries, U.S. Army Corps of Engineers, Los Angeles District, 1986
Clark County Flood Insurance Study (draft), JMM, 1985
Clark County Flood Control Master Plan, JMM, 1986
Special Flood Hazard Study, Las Vegas Wash and Tributaries, U.S. Army Corps of Engineers, Los Angeles District, 1988

The Master Plan utilized hydrologic modeling data from the FIS in drainage areas beyond the anticipated development boundary. The Corps of Engineers (COE) Special Flood Hazard Study, which was prepared as a supplement to the Feasibility Study for Las Vegas Wash and Tributaries, incorporated much of the Master Plan modeling information.

Existing land use information was based on digitized land use data provided by Clark County Comprehensive Planning (1986), supplemented by information obtained from an April 1990 aerial photograph. Thus land use conditions are considered accurate as of April 1990. Soils data were obtained from the SCS Soil Survey for Las Vegas Valley (1985). Subbasin boundaries were adopted from previous studies to the greatest extent possible; where necessary, additional subbasins were delineated based on 7.5 minute USGS maps, recent drainage studies, and aerial photos.

Modeling methods were selected to be consistent with the CCRFCD manual. Design storms were 6-hour events with depths as given in the manual. Storm distributions were SDN #3 (for areas under 10 square miles) and SDN #5 (for areas over 10 square miles), as developed by the COE. Point precipitation was reduced by depth-area reduction factors (DARF's) given in the CCRFCD Manual. Unique DARF's were computed for each concentration point of interest based on contributing drainage area or assumed upstream storm area. Hydrographs were computed from rainfall excess using the SCS unit hydrograph method, except in subbasins where kinematic runoff parameters were already available. The Muskingum routing method was used for channel routing except where improved channels were involved, in which case the kinematic method was used. Losses were computed using the SCS curve number (CN) method, based on standard CN tables provided in the CCRFCD manual.

HEC-1 models were executed using the 1988 version of the program. Although this program version is provisional and contains some "bugs" associated with use of the kinematic routing routine (although not in the kinematic algorithm itself), it was selected because it was the most recent version of the program being distributed and because it gives results which should agree better with the recently released 1990 HEC-1 version than would the 1985 version.

Because the new FIS modeling was based primarily on the COE existing conditions analysis, and because local entities generally accept the COE results, one of the objectives of the new analysis was to produce results consistent with the COE flows at common points of interest. The CCRFCD has adopted 100-year COE flows for Las Vegas Wash, Range Wash, Flamingo Wash, Tropicana Wash, Duck Creek, Blue Diamond Wash, Pittman Wash, and C-1 Channel

as official "regulatory discharges" (see Appendix A). Certain COE flows for Range Wash, Flamingo Wash, Tropicana Wash, Blue Diamond Wash, Pittman Wash and C-1 Channel were identified as "interim discharges" due to concerns over their accuracy. It was hoped that conversion of the uniform loss rate method used by the COE to the curve number method recommended by CCRFCD, and other necessary model modifications, would produce results directly consistent with the COE discharges. At most model concentration points this was the case. At the remaining concentration points, model parameters (e.g., curve numbers and routing parameters) had to be adjusted within an acceptable range of values in order to better reproduce the COE flows. Thus, FIS flows were "calibrated" to the COE flows in order to assure reasonableness. Comparison within 10 percent was considered acceptable, although reasonable efforts were made to gain agreement to within 5 percent. It was felt that agreement of FIS flows at concentration points common to the COE study would allow discharges at non-COE concentration points to be computed which would be consistent with the COE flood frequency results. At the direction of CCRFCD, if modeled flows agree with regulatory discharges to within 10 percent, then the regulatory discharges will be adopted as FIS discharges.

The aggressive program of CCRFCD and each of the local agencies to design and construct major flood control facilities in Las Vegas Valley has lead to a "moving target" situation with regard to the definition of existing facilities. The proposed projects included in this FIS Hydrology study are based on information available in early 1991. When actual floodplain mapping is performed for FIS purposes, it will be important to assure that the assumed "existing conditions" in this hydrology study are correct; if not, the hydrology models will have to be revised accordingly.

In the remainder of this report, the terms "FIS Hydrology" and "FIS Model" refer to the flows and modeling developed for the present study, rather than to the 1985 draft Clark County Flood Insurance Study. Any differences in this terminology are clearly identified.

CLARK COUNTY

REGIONAL FLOOD CONTROL DISTRICT



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

Prepared by:

WRC ENGINEERING, INC.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CHANNELIZATION FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	**FEMA USE ONLY**

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Clark County, NV

Flooding Source: Flamingo Wash and Red Rock Wash

Project Name/Identifier: Upper Flamingo Wash Detention Basin (UFWDB)

1. EXTENT OF CHANNELIZATION

Downstream limit: Hacienda Avenue box culvert

Upstream limit: UFWDB outfall

2. CHANNEL DESCRIPTION

1. **Describe the inlet to the channel.** Discharge through an 8'x7' uncontrolled orifice in lower portion of UFWDB spillway wall.

2. **Briefly describe the shape of the channel** ***(both cross sectional and planimetric configuration)*** **and its lining** ***(channel bottom and sides)*** Trapezoidal channel with 20' bottom width and 2H:1V side slopes. The 2,900-foot long channel has a 6-ft wide concrete low-flow channel w/curbs. The remaining channel is lined w/gabion mattresses in heights ranging from 6.0' to 8.5'.

3. **Describe the outlet from the channel.** Discharge into existing box culvert at Hacienda Avenue.

4. **The channelization includes:**

   - ☐ **Levees** ***(Attach Levee Form)***
   - ☒ **Drop structures** One 1.77-foot gabion drop structure @ Sta. 6+65.00
   - ☒ **Superelevated sections** Right bank only from Sta. 23+12.25 to Sta. 30+12.05
   - ☐ **Transitions in cross sectional geometry**
   - ☐ **Debris basin/detention basin**
   - ☒ **Energy dissipater** baffle blocks on spillway apron prior to channel inlet.
   - ☐ **Other**

5. **Attach the following:**
   As-Built drawings, sheets 1-23, included.

   a. **Certified engineering drawings showing channel alignment and locations of inlet, outlet, and items checked in item 4**

   b. **Typical cross sections and profiles of channel banks and invert**

3. HYDRAULIC CONSIDERATIONS

1. What is the 100-year discharge? ..... 2579 cfs
2. Do the cross sections in the hydraulic model match the typical cross sections in the plans? ☒ Yes ☐ No
3. Are the channel banks higher than the 100- year flood elevations everywhere? ..... ☐ Yes ☒ No
4. Are the channel banks higher than the 100-year flood energy grade lines everywhere? .. ☐ Yes ☒ No
5. Is the land on both sides of the channel above the adjacent 100-year flood elevation at all points along the channel? ..... ☐ Yes ☒ No
6. What is the range of freeboard? ..... -0.45' - +0.59 feet
7. What is the range of the 100-year flood velocities? ..... 7.61 - 15.46 ft/sec
8. What is the lining type? (both bottom and sides) concrete low-flow channel w/gabion mattress lining.

   Explain how the channel lining prevents erosion and maintains channel stability *(attach documentation)*

   Channel cross section is uniform, curb on low-flow channel, gabion mattresses underlined w/geotextile fabric. (Design for erosion & stability control based on 100-yr. peak discharge of 1225 cfs.)
9. What is the design elevation in the channel based on? (Design flow = 1225 cfs)
   - ☒ Subcritical flow - Sta. 1+46.44 to Sta. 6+65.00 and Sta. 28+00.00 to Sta. 30+43.62
   - ☐ Critical flow
   - ☒ Supercritical flow - Sta. 6+65.00 to Sta. 28+00.00
   - ☐ Energy grade line

   Is 100-year flood profile based on the above type of flow? ..... ☒ Yes ☐ No

   If no, explain: _____
10. Is there the potential for a hydraulic jump at the following locations?

    Inlet to channel ..... ☐ Yes ☒ No
    Outlet of channel ..... ☐ Yes ☒ No
    At Drop Structures ..... ☐ Yes ☒ No
    At Transitions ..... ☐ Yes ☒ No
    Other locations. Explain: Sta. 28+00.00 where flow regime changes from supercritical to subcritical.

    If the answer to any of the above is yes, please explain how the hydraulic jump is controlled and the effects of the hydraulic jump on the stability of the channel.

    Explain: The potential hydraulic jump is not controlled under the revised peak flow conditions. Channel stability may be impacted since flow may exceed gabion lining height and may not be contained in the channel.

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year water surface elevations and/or the capacity of the channel? ..... ☐ Yes ☒ No

   B. Based on the conditions of the watershed and stream bed, is there a potential for sediment transport (including scour and deposition) to affect the 100-year water surface elevations and /or the capacity of the channel? ..... ☒ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (bed) load?
   _____cfs (attach gradation curve)

   Explain method used to estimate load. The estimated sediment load was not determined since the majority of sediment will remain in the detention basin. See report for sediment loading on detention basin.

   B. Is the 100-year flood velocity anywhere within the channel less than the 100-year flood velocity of the inlet? ☒ Yes ☐ No

   C. Will sediment accumulate anywhere within the channel? ☒ Yes ☐ No
   Upstream of Hacienda Ave. box culvert.

   D. Will deposition or scour occur at or near the inlet? ☒ Yes ☐ No
   Deposition will occur within the detention basin.

   E. Will deposition or scour occur at or near the outlet? ☒ Yes ☐ No
   Upstream of Hacienda Ave. box culvert.

   Attach documentation showing affects on the Hydrologic and Hydraulic analyses
   See report.

FEDERAL EMERGENCY MANAGEMENT AGENCY **LEVEE/FLOODWALL SYSTEM ANALYSES FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Clark County, NV

Flooding Source: Unnamed minor tributary to Flamingo Wash

Project Name/Identifier: Southern Vista Estates Diversion Berm and Channel

REACH TO BE REVISED

Downstream limit: Hacienda Avenue and Buffalo Drive intersection

Upstream limit: 0.86 sq. mi. drainage area tributary to Southern Vista Estates development

This Levee/Floodwall analysis is based on:

- ☐ upgrading of an existing levee/floodwall system
- ☒ a newly constructed levee/floodwall system
- ☐ reanalysis of an existing levee/floodwall system

LEVEE/FLOODWALL SYSTEM ELEMENTS

1. Levee elements and locations are:

☒ earthen embankment, dike, berm etc.	Station 1+70 to 12+50
☐ structural floodwall	Station _____ to _____
☒ other (describe) channel (earthen)	Station 12+50 to 29+00

Structural Type:

- ☐ monolithic cast-in place reinforced concrete
- ☐ reinforced concrete masonry block
- ☐ sheet piling
- ☒ other (describe) earthen berm & channel w/riprap lined drop structures

2. Has this levee/floodwall system been certified by a Federal agency to provide protection against the 100-year flood event?

☐ Yes ☒ No

If yes, by which agency? _____

If yes, complete only the interior drainage section on pages 7 and 8 of this form and the operation and maintenance section of Revision Requestor and Community Official Form.

LEVEE/FLOODWALL SYSTEM ELEMENTS (Con'd)

3. Attach certified drawings containing the following information (indicate drawing sheet numbers):

a. Plan of the levee embankment and floodwall structures. Sheet Numbers 2-3

b. A profile of the levee/floodwall system showing the 100-year water surface elevations, levee and/or wall crest and foundation, and closure locations for the total levee system. Sheet Numbers 2-3

c. A profile of the 100-year water surface elevation, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure device. Sheet Numbers N/A

d. A layout detail for the embankment protection measures. Sheet Numbers N/A

e. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations. Sheet Numbers N/A

FREEBOARD

1. The minimum freeboard provided above the 100-year water surface elevation is:

Riverine

3.0 feet or more at the downstream end and throughout		☐ Yes	☒ No
3.5 feet or more at the upstream end		☐ Yes	☒ No
4.0 feet immediately upstream and downstream of all structures and constrictions	N/A	☐ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave for the 100-year stillwater surge elevation or maximum wave runup (whichever is greater).	N/A	☐ Yes	☐ No
2.0 feet above 100-year stillwater surge elevation	N/A	☐ Yes	☐ No

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Part 65.10 (b) (1) (ii) of the National Flood Insurance Program regulations. Please see report.

If no is answered to any of the above, please explain where and why: Diversion berm and channel designed by ESI Engineers based on local practice (CCRFCD Manual)

2. Is there an indication from historical records that ice-jamming can effect the 100-year water surface elevation?
☐ Yes ☒ No If yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Tabulate the elevations at critical locations (tabulate values at each levee crest grade change)

Station	Location	100-Year Water Surface Elevation	(East side) Levee Crest	(East side) Freeboard (ft.)
1+70 (Q=491 cfs)	Upper end berm	2512.9	2514.5	2.1
6+00 (Q=688 cfs)	Added offsite flow	2505.4	2508.5	3.1
12+00 "	Lower end berm	2496.9	2500.0	3.1
13+13 (to 21+00) "	Upper end channel bottom width = 10 ft.	2496.1	2497.2	1.1
21+65 (to 24+50) "	Upper end channel bottom width = 20 ft.	2486.6	2489.0	2.4
26+00 (to 29+00) "	Lower end	2485.2	2485.6	0.4

(Extend table on an added sheet as needed and reference)

SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year water surface elevations?

☐ Yes ☒ No

B. Based on the conditions (such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions), is there a potential for debris and sediment transport (including scour and deposition) to affect the 100-year water surface elevations and/or the freeboard for the levee/floodwall?

☐ Yes ☒ No

2. If the answer to either 1A or 1B is yes:

A. What is the estimated sediment (bed material) load?

_____cfs (attach gradation curve)

Explain method used to estimate the sediment transport and the depth of scour and/or deposition

_____

_____

_____

_____

_____

B. Will sediment accumulate anywhere along the levee/floodwall (such as along any bends in the channel)?

☐ Yes ☐ No

If yes, what is the minimum freeboard at these locations?_____feet.

CLOSURES

1. Openings through the levee system:

☐ exist ☒ do not exist

If openings exist, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as neded and reference)

Geotechnical and geologic data: See ESI Technical Drainage Study

In addition to the required detail analysis reports, data obtained during field and laboratory investigations and used in the design analysis should be submitted in a tabulated summary form for the following levee system features. (Reference U.S. Army Corps of Engineers EM-1110-2-1906 Form 2086).

EMBANKMENT PROTECTION

1. **The maximum levee slope landside is** berm: 2H:1V channel: 2H:1V

2. **The maximum levee slope floodside is** berm: 2H:1V channel: 2H:1V

3. **The range of 100-year riverine flood velocities along the levee?** 3.0 fps **(min.)** to 5.4 fps **(max.)**

4. **Embankment material is protected by (describe the kind):** The earthen berm is not protected. The three drop structures are lined with riprap, bottom and sides, in the channel portion. From Station 21+65 to Station 29+00, the channel sides are lined with riprap beginning at the limits of the caliche layer in the channel bed. Natural caliche layer protects most of the channel bottom and berm flow line.

5. **Riprap Design Parameters: (Include references)** Not known ☐ **Velocity;** ☐ **Tractive stress**
See ESI Technical Drainage Study and drawings.

Reach	Sideslope	Flow depth	Velocity	Curve or Straight	Stone Riprap D_{100}	Stone Riprap D_{50}	Stone Riprap Thickness	Depth of Toedown
Sta_____to_____								
Sta_____to_____								
Sta_____to_____								

(Extend table on an added sheet as needed and reference)

6. **Has a bedding/filter analysis and design been included** ☐ **Yes** ☒ **No**

7. **Describe the analysis for other kinds of protection used** *(include copies of the design analysis)*:

Note: **Attach engineering analysis to support construction plans.**
See ESI Technical Drainage Study.

1. Identify locations and describe the basis for selection of critical locations for analyses: N/A
(Maximum height of berm approximately 3 feet)

☐ Overall height: Sta 1+70 to Sta 12+00 height approx. 3.0 ft.

N/A ☐ Limiting foundation soil strength:

Sta _____, depth _____ to _____

strength Ø = _____ degrees, c = _____ psf

N/A ☐ slope: SS = _____ (h) to _____ (v)

(Repeat as needed on an added sheet for additional slopes and locations)

2. Specify the embankment stability analyses methodology used (e.g. circular arc, sliding block, infinite slope, etc.): N/A - Berm designed by ESI based on engineering judgement.

3. Summary of stability analysis results: N/A

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction	_____	1.3
II	Sudden drawdown	_____	1.0
III	Critical flood stage	_____	1.4
IV	Steady seepage at flood stage	_____	1.4
VI	Earthquake (Case I)	_____	1.0

(Reference: U.S. Army Corps of Engineers EM-1110-2-1913 Table 6-1)

4. Was a seepage analysis for the embankment performed? Not known ☐ Yes ☐ No

Describe methodology used: _____

5. Was a seepage analysis for the foundation performed? Not known ☐ Yes ☐ No

Were uplift pressures at the embankment landside toe checked? Not known ☐ Yes ☐ No

Were seepage exit gradients checked for piping potential? Not known ☐ Yes ☐ No

6. The duration of 100-year flood hydrograph against the embankment is 8.33 Hrs.
(Base width of hydrograph)

Note: Attach engineering analysis to support construction plans. See ESI Technical Drainage Study

1. Describe analysis submittal based on Code: N/A

☐ UBC (1988) or ☐ Other (specify)_____

2. Stability analysis submitted provides for: N/A

☐ Overturning; ☐ Sliding; If not, explain_____

_____

3. Loading included in the analyses were: N/A

☐ Lateral earth @ P_A = _____psf; P_p = _____psf

☐ Surcharge--Slope @_____, ☐ surface_____psf

☐ Wind @ P_w = _____psf

☐ Seepage (Uplift) _____ ☐ Earthquake @ P_{eq} = _____%g

☐ 100-year significant wave height_____ft.

☐ 100-year significant wave period_____sec.

4. N/A Summary of Stability Analysis Results: Factors of Safety. Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min) Overturn	Criteria (Min) Sliding	Sta_____ To_____ Overturn	Sta_____ To_____ Sliding	Sta_____ To_____ Overturn	Sta_____ To_____ Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood & Impact	1.5	1.5				
Dead, Soil & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; COE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

5. Foundation bearing strength for each soil type: N/A

Bearing Pressure	Sustained Load	Short Term Load
Computed design maximum	_____psf	_____psf
Maximum allowable	_____psf	_____psf

6. Foundation scour protection ☐ is, ☒ is not provided, (describe)

N/A

Note: Attach engineering analysis to support construction plans.

SETTLEMENT

1. Anticipated potential settlement has been determined and incorporated into the specified construction elevations to maintain the established freeboard margin.
   ☐ Yes ☒ No
2. The computed range of settlement is N/A ft. to _____ ft.
3. Settlement of the levee crest is determined to be primarily from: N/A
   - ☐ Foundation consolidation
   - ☐ Embankment compression
   - ☐ Other (describe) _____
4. Differential settlement of floodwalls N/A
   ☐ has ☒ has not been accommodated in the structural design and construction.

Note: Attach engineering analysis to support construction plans. N/A

INTERIOR DRAINAGE N/A

1. Specify size of each interior watershed
   - Draining to pressure conduit: N/A
   - Draining to ponding area: N/A
2. Relationships Established
   - Ponding elevation vs. storage: ☐ Yes ☒ No
   - Ponding elevation vs. gravity flow: ☐ Yes ☒ No
   - Differential head vs. gravity flow: ☐ Yes ☒ No
3. The river flow duration curve is enclosed: ☐ Yes ☒ No
4. Specify the discharge capacity of the head pressure conduit: N/A
5. Which Flooding Conditions Were Analyzed?
   - Gravity flow (Interior Watershed): ☐ Yes ☒ No
   - Common storm (River Watershed): ☐ Yes ☒ No
   - Historical ponding probability: ☐ Yes ☒ No
   - Coastal wave overtopping: ☐ Yes ☒ No

   If no, explain why: The Southern Vista Estates Diversion Berm is not a riverine levee system.
6. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection.
   ☐ Yes ☒ No

   If no, explain why: The Southern Vista Estates Diversion Berm is not a riverine levee system.
7. The rate of seepage through the levee system for the 100-year flood is N/A cfs

INTERIOR DRAINAGE (Cont'd) N/A

1. The length of levee system used to drive this seepage rate is _____ ft.

9. Will a pumping plant(s) be used for interior drainage? ☐ Yes ☐ No

If yes, include the number of pumping plants: _____

For each pumping plant, list:	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operations be automatic? ☐ Yes ☐ No

If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: U.S. Army Corps of Engineers EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Note: Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

OTHER DESIGN CRITERIA

1. The following items have been addressed as stated:

Liquifaction ☐ is ☒ is not a problem.
Hydrocompaction ☐ is ☒ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☒ is not a problem.

2. For each of these problems, state the basic facts and corrective action taken.

N/A

If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?

☐ Yes ☒ No

Note: Attach supporting documentation N/A

The planned/installed works are in full compliance with NFIP regulations, Section 44 CFR Ch. 1. 65.10

☐ Yes ☒ No

OPERATIONAL PLAN AND CRITERIA

1. The operation plan incorporates all the provisions for closure devices as required in Section 65.10 (c) (1), of the NFIP regulations N/A

☐ Yes ☐ No

2. The operation plan incorporates all the provisions for interior drainage as required in Section 65.10 (c) (2), of the NFIP regulations N/A

☐ Yes ☐ No

If no to either of the above, please explain.

The Southern Vista Estates Diversion Berm is not a riverine levee system.

FEDERAL EMERGENCY MANAGEMENT AGENCY **DAM FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	**FEMA USE ONLY**

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 0.5 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. *Send comments regarding the accuracy of the burden estimate and any* suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Clark County, NV

Flooding Source: Flamingo Wash and Red Rock Wash

Project Name/Identifier: Upper Flamingo Wash Detention Basin

IDENTIFIER

Name of Dam: Upper Flamingo Wash Detention Basin Embankment

Location of dam along flood source (in terms of stream distance or cross section identifier):

Stream distance or cross section identifier = N/A. Physical location is SW 1/4, Section 28, T21S, R60E, Mount Diablo Meridian.

Check one of the following:

- ☐ Existing dam
- ☒ New dam
- ☐ *Modifications of existing dam (describe modifications)*

Was the dam designed by _____Federal agency _____State agency

_X_Local government agency _____*Private organization?*

BACKGROUND

Does the dam have dedicated flood control storage? ☒ Yes ☐ No

Does the project involve revised hydrology? ☒ Yes ☐ No

If yes, complete Hydrologic Analysis Form and include calculations of the 100-year inflow flood hydrograph routed through the dam with the beginning pool at the normal pool elevation (spillway crest elevation for ungated spillway). Include any inflow hydrograph bulking by watershed sediment yield and provide necessary debris and sediment yield analysis.

Does the revised hydrology affect the 100-year water-surface elevation behind the dam or downstream of the dam? ☒ Yes ☐ No

If yes, complete the Riverine Hydraulic Analysis Form and complete the table shown on the following page.

Note: Channelization Form (Form 6) completed in lieu of Riverine Hydraulic Analysis Form for downstream analysis.

	Stillwater Elevation Behind the Dam JMM model FIS (see attached)	Revised (see report)
10-year	2458.38	–
50-year	2464.51	–
100-year	2466.85	2471.00
500-year	N/A	N/A
Normal Pool Elevation (empty Reservoir)	2448 ±	2448 ±

Was long term sediment accumulation taken into consideration in determining the normal pool elevation? ☒ Yes ☐ No

Was the dam designed to withstand the hydrostatic and hydrodynamic forces associated with floods greater than the 100-year flood? ☒ Yes ☐ No

If no, and the dam has a reasonable probability of failure during the 100-year flood, please attach dam break analysis.

Provide the following data on the dam:

Dimensional Height: 0' to 38' maximum section
Crest Elevation of top of dam: 2480.0
100-year flood storage capacity: 1056.4 ac-ft
Freeboard (measured from 100-year water surface elevation): 9.0'

Spillway(s):

Type: ☐ gated ☒ ungated

Dimensional Width: 272'
Dimensional Height: 24.5'
Crest Elevation of top of spillway: 2470.50

Outlet(s):

Type: ☐ gated ☒ ungated

Width: 8'-0"
Height 7'-0"
Diameter: N/A
Invert Elevation: 2445.99

Explain flow regulation plan: Uncontrolled - dam function is temporary detention storage. Outlet and spillway discharges are functions of reservoir stage.

Are the project features, including the emergency spillway, designed to accommodate the 100-year flood discharge without overtopping the dam? ☒ Yes ☐ No

Was the dam designed in accordance with all currently applicable local, State, and Federal regulations? ☒ Yes ☐ No

If no, please provide explanation.

FEMA may request a list of regulations that have been complied with and supporting documentation demonstrating compliance with these regulations.

Attach copy of formal operation and maintenance plan – See Form 1 attachment

Answer N/A to any questions which are not applicable

Clark County Regional Flood Control District

Las Vegas Valley Flood Insurance Study Hydrology Report

Technical Appendix Volume 2 of 4

Duck Creek/Blue Diamond; Northern Las Vegas Wash

September 1991

James M. Montgomery,
Consulting Engineers, Inc.

HYDROGRAPH A	F3	2.60	1	FLOW	552.	382.	284.	14.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO	F5	2.60	1	FLOW	492.	340.	254.	218.
				TIME	4.17	4.17	4.17	4.17
HYDROGRAPH AT	F4	1.30	1	FLOW	222.	149.	108.	91.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO	F5	1.30	1	FLOW	192.	130.	94.	80.
				TIME	4.58	4.58	4.58	4.58
HYDROGRAPH AT	F5N	4.04	1	FLOW	382.	238.	157.	126.
				TIME	5.17	5.58	5.92	6.17
HYDROGRAPH AT	F5S	2.00	1	FLOW	172.	109.	72.	57.
				TIME	5.17	5.42	5.75	5.92
2 COMBINED AT	F5	6.04	1	FLOW	554.	345.	227.	181.
				TIME	5.17	5.58	5.92	6.08
5 COMBINED AT	F5	15.85	1	FLOW	1806.	1252.	905.	768.
				TIME	5.25	5.42	5.50	5.50
ROUTED TO	UFL.DB	15.85	1	FLOW	834.	691.	549.	482.
				TIME	6.58	6.50	6.58	6.58
			** PEAK STAGES IN FEET **					
			1	STAGE	2458.38	2455.34	2453.32	2452.43
				TIME	6.58	6.50	6.58	6.58
ROUTED TO	F5R	15.85	1	FLOW	834.	691.	549.	482.
				TIME	6.67	6.58	6.67	6.67
HYDROGRAPH AT	F6A	.55	1	FLOW	108.	75.	56.	48.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO	F6B	.55	1	FLOW	97.	67.	50.	43.
				TIME	4.08	4.17	4.17	4.17
HYDROGRAPH AT	F6B	.85	1	FLOW	168.	116.	85.	73.
				TIME	3.67	3.67	3.67	3.75
2 COMBINED AT	F6B	1.40	1	FLOW	218.	149.	110.	94.
				TIME	3.75	3.83	3.83	3.92
ROUTED TO	F7	1.40	1	FLOW	208.	143.	107.	92.
				TIME	4.17	4.17	4.17	4.17
HYDROGRAPH AT	F7	1.50	1	FLOW	129.	79.	50.	39.
				TIME	5.17	5.42	5.75	5.92
2 COMBINED AT	F7	2.90	1	FLOW	276.	188.	131.	109.
				TIME	5.25	5.33	5.33	5.33
3 COMBINED AT	F7	92.01	1	FLOW	3170.	2353.	1822.	1593.
				TIME	6.17	6.42	6.67	6.83
ROUTED TO	F7R	92.01	1	FLOW	3169.	2352.	1821.	1592.
				TIME	6.17	6.42	6.67	6.83

10-yr
A = 15.85
Darf = 0.81
Stage = 2458.38

YDROGRAPH AT	F3	2.60	1	FLOW	1175.	877.	700.	.25.
				TIME	3.75	3.75	3.75	3.75
)UTED TO	F5	2.60	1	FLOW	1050.	783.	625.	558.
				TIME	4.17	4.17	4.17	4.17
YDROGRAPH AT	F4	1.30	1	FLOW	492.	362.	285.	253.
				TIME	3.83	3.83	3.83	3.83
)UTED TO	F5	1.30	1	FLOW	429.	314.	247.	219.
				TIME	4.50	4.50	4.50	4.58
'DROGRAPH AT	F5N	4.04	1	FLOW	957.	628.	494.	438.
				TIME	4.33	4.67	5.00	5.08
'DROGRAPH AT	F5S	2.00	1	FLOW	478.	298.	221.	198.
				TIME	4.17	4.42	5.00	5.08
' COMBINED AT	F5	6.04	1	FLOW	1405.	905.	715.	636.
				TIME	4.33	4.67	5.00	5.08
COMBINED AT	F5	15.85	1	FLOW	3640.	2770.	2265.	2046.
				TIME	4.42	5.25	5.25	5.25
UTED TO	UFL.DB	15.85	1	FLOW	1081.	983.	929.	904.
				TIME	6.83	6.75	6.67	6.58
			** PEAK STAGES IN FEET **					
			1	STAGE	2464.51	2461.93	2460.51	2459.88
				TIME	6.83	6.75	6.67	6.58
UTED TO	F5R	15.85	1	FLOW	1081.	983.	929.	904.
				TIME	6.92	6.83	6.75	6.67
)ROGRAPH AT	F6A	.55	1	FLOW	230.	171.	137.	122.
				TIME	3.75	3.75	3.75	3.75
)TED TO	F6B	.55	1	FLOW	207.	154.	123.	110.
				TIME	4.08	4.08	4.08	4.08
)ROGRAPH AT	F6B	.85	1	FLOW	362.	269.	214.	191.
				TIME	3.67	3.67	3.67	3.67
COMBINED AT	F6B	1.40	1	FLOW	473.	350.	278.	247.
				TIME	3.75	3.75	3.75	3.75
)TED TO	F7	1.40	1	FLOW	448.	332.	264.	235.
				TIME	4.08	4.08	4.08	4.08
)ROGRAPH AT	F7	1.50	1	FLOW	328.	203.	166.	148.
				TIME	4.17	5.00	5.00	5.08
COMBINED AT	F7	2.90	1	FLOW	772.	515.	372.	316.
				TIME	4.08	4.25	4.25	4.25
COMBINED AT	F7	92.01	1	FLOW	7682.	4719.	3890.	3530.
				TIME	8.25	5.50	5.83	6.00
TED TO	F7R	92.01	1	FLOW	7675.	4716.	3888.	3528.
				TIME	8.33	5.58	5.92	.08

50-yr.
A = 15.85
Dsrf = 0.01

∴ Stage = 2464.51

HYDROGRAPH	P3	2.60	1	FLOW	1459.	1107.	89[illegible]	..
				TIME	3.75	3.75	3.75	3.75
ROUTED TO	P5	2.60	1	FLOW	1304.	990.	802.	721.
				TIME	4.17	4.17	4.17	4.17
HYDROGRAPH AT	P4	1.30	1	FLOW	618.	462.	370.	331.
				TIME	3.75	3.83	3.83	3.83
ROUTED TO	P5	1.30	1	FLOW	538.	402.	321.	287.
				TIME	4.50	4.50	4.50	4.50
HYDROGRAPH AT	P5N	4.04	1	FLOW	1319.	877.	644.	567.
				TIME	4.17	4.42	4.58	4.83
HYDROGRAPH AT	P5S	2.00	1	FLOW	665.	436.	308.	261.
				TIME	4.08	4.17	4.33	4.50
2 COMBINED AT	P5	6.04	1	FLOW	1960.	1290.	935.	818.
				TIME	4.17	4.33	4.58	4.83
5 COMBINED AT	P5	15.85	1	FLOW	4565.	3427.	2831.	2576.
				TIME	4.33	5.17	5.25	5.25
ROUTED TO	UFL.DB	15.85	1	FLOW	1159.	1059.	990.	962.
				TIME	6.92	6.83	6.75	6.75
			** PEAK STAGES IN FEET **					
			1	STAGE	2466.85	2463.92	2462.11	2461.37
				TIME	6.92	6.83	6.75	6.75
OUTED TO	F5R	15.85	1	FLOW	1159.	1059.	990.	962.
				TIME	7.00	6.92	6.83	6.83
YDROGRAPH AT	P6A	.55	1	FLOW	285.	216.	176.	158.
				TIME	3.75	3.75	3.75	3.75
OUTED TO	F6B	.55	1	FLOW	257.	195.	158.	142.
				TIME	4.08	4.08	4.08	4.08
YDROGRAPH AT	P6B	.85	1	FLOW	452.	342.	276.	248.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT	P6B	1.40	1	FLOW	591.	445.	359.	322.
				TIME	3.75	3.75	3.75	3.75
UTED TO	F7	1.40	1	FLOW	558.	422.	340.	306.
				TIME	4.08	4.08	4.08	4.08
YDROGRAPH AT	F7	1.50	1	FLOW	459.	296.	210.	191.
				TIME	4.08	4.17	4.42	5.00
COMBINED AT	F7	2.90	1	FLOW	1017.	714.	533.	458.
				TIME	4.08	4.17	4.17	4.25
COMBINED AT	F7	92.01	1	FLOW	12975.	6239.	4816.	4384.
				TIME	7.75	8.50	5.50	5.58
TED TO	F7R	92.01	1	FLOW	12943.	6222.	4812.	4384.
				TIME	7.83	8.50	5.50	5.67

100-yr
@ UFWDB
A = 15.85 mi²
DARF = 0.81
see model header
∴ Stage = 2466.85

100yr

HYDROGRAPH AT	RR22	2.15	1	FLOW	623.
				TIME	4.00
ROUTED TO	R5	2.15	1	FLOW	572.
				TIME	4.75
HYDROGRAPH AT	R5	5.77	1	FLOW	525.
				TIME	5.17
5 COMBINED AT	R5	71.75	1	FLOW	3681.
				TIME	5.25
HYDROGRAPH AT	F1	4.63	1	FLOW	1200.
				TIME	4.17
ROUTED TO	F5	4.63	1	FLOW	1180.
				TIME	5.25
HYDROGRAPH AT	F2	1.28	1	FLOW	470.
				TIME	3.83
ROUTED TO	F5	1.28	1	FLOW	407.
				TIME	4.58
HYDROGRAPH AT	F3	2.60	1	FLOW	949.
				TIME	3.75
ROUTED TO	F5	2.60	1	FLOW	848.
				TIME	4.17
HYDROGRAPH AT	F4	1.30	1	FLOW	393.
				TIME	3.83
ROUTED TO	F5	1.30	1	FLOW	341.
				TIME	4.50
HYDROGRAPH AT	F5N	4.04	1	FLOW	697.
				TIME	4.58
HYDROGRAPH AT	F5S	2.00	1	FLOW	339.
				TIME	4.33
2 COMBINED AT	F5	6.04	1	FLOW	1014.
				TIME	4.50
6 COMBINED AT	F5	87.60	1	FLOW	6660.
				TIME	5.25
ROUTED TO	UFL,DD	87.60	1	FLOW	2579.
				TIME	7.25

Revised 100-yr
DARF = .62
Stage = 2471.0
(See Report)

** PEAK STAGES IN FEET **

1	STAGE	2471.00
	TIME	7.25

ROUTED TO	F5R	87.60	1	FLOW	2570.
				TIME	7.25

Federal Emergency Management Agency

Washington, D.C. 20472

SEP 27 1995

Mr. Kevin Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District
301 East Clark Avenue
Suite 301
Las Vegas, Nevada 89101

Dear Mr. Eubanks:

This is in response to your letter dated September 14, 1995, regarding the August 27, 1993, Conditional Letter of Map Revision (CLOMR) to the effective Flood Insurance Rate Map (FIRM) for the unincorporated areas of Clark County, Nevada. In the August 27 CLOMR, we identified the additional information required for us to revise the FIRM to represent the Upper Flamingo Wash Detention Basin (UFWDB) and the proposed diversion channel as providing protection against the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

One of the items identified in the CLOMR was an officially adopted maintenance and operation plan for the UFWDB. The CLOMR indicated this plan may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation and should include information regarding the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished. With your letter, you submitted a copy of the Interlocal Contract, Annual Maintenance Program, executed by and between the Clark County Regional Flood Control District (CCRFCD) Board of Directors and Clark County for the current year (Fiscal Year 95/96). The contract states maintenance will be performed in accordance with the CCRFCD Operations and Maintenance Manual. You indicated the UFWDB is included in Item CLA12, Detention Basins, of Exhibit A to the contract, which allocates maintenance funding. You also provided information identifying the Project Manager responsible for the maintenance.

The submitted contract addresses the issue of maintenance of the UFWDB for the current year. Upon receipt of the additional required data, as listed in the CLOMR, we will make a final determination on revising the effective FIRM. If the additional data are provided after the expiration date of the current contract, June 30, 1996, we will require a copy of the contract in effect at the time the data are submitted.

If you have any questions regarding this matter, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Mr. Robert B. Thompson, P.E.
Civil Engineer III
Clark County Department of Public Works

C L A R K C O U N T Y
REGIONAL FLOOD CONTROL DISTRICT



Gale Wm. Fraser, II, P.E.
General Manager / Chief Engineer

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September 14, 1995

William R. Locke, Chief
Risk Studies Division
Federal Insurance Administration
Federal Emergency Management Agency
500 C Street
Washington, D.C 20472

Upper Flamingo Wash Detention Basin CLOMR
Case No.: 93-09-407R

Dear Mr. Locke:

This letter is written in response to the Conditional Letter of Map Revision (CLOMR) dated August 27,1993, for the above-referenced case. A condition of the CLOMR is submittal of a maintenance and operation plan for the Upper Flamingo Wash Detention Basin (UFWDB). The following is offered to address that condition.

The Clark County Regional Flood Control District (CCRFCD) has established a master plan of facilities to control stormwater runoff within Clark County. Projects identified within the master plan are eligible for maintenance funding provided by the CCRFCD. The UFWDB is included on the master plan and has its maintenance and operation funded by the CCRFCD.

The various governmental entities within Clark County take the lead in procuring and expending CCRFCD funds for design, right-of-way acquisition, construction, and maintenance and operation of the facilities included on the master plan. Each project "belongs" to the individual entity who owns the rights-of-way on which they are constructed. Maintenance work plans and interlocal funding contracts are developed annually by each entity in support of their request to the CCRFCD Board of Directors for maintenance and operation funds.

Enclosed please find a copy of the Interlocal Contract, Annual Maintenance Program executed by the CCRFCD Board of Directors for the current year (FY 95/96) for Clark County. Exhibit A, Page 3, Item CLA12 of the County's contract provides maintenance funding for detention basins which includes the UFWDB.

301 E. Clark Avenue, Suite 301 • Las Vegas, Nevada 89101
(702) 455-3139 • FAX: (702) 455-3870

I hope this information adequately addresses the issue of continued maintenance of this important flood control facility. A copy of this letter will be included in a package of technical data to be submitted at a later date which addresses the remaining conditions stated in the subject CLOMR. If I can be of any further assistance, please call.

Sincerely,

Kevin Eubanks, P.E.
Assistant General Manager

KLE:jwp

Enclosure

cc: Steve Canney, Black & Veatch

UFDB LOMR

TECHNICAL DRAINAGE STUDY FOR THE SOUTHERN VISTA TEMPORARY DRAINAGE CHANNEL

ESI ENGINEERS AND SURVEYORS INC

TECHNICAL DRAINAGE STUDY FOR THE SOUTHERN VISTA TEMPORARY DRAINAGE CHANNEL

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Southern Vista Estates Temp. Channel **Date:** November 2, 1992

Location of Development: a) Descriptive Northwest Quarter
b) Sect. 33 Twn. 21 S. Rng. 60 E.

Name of Owner: Morgan Development **Assessors Parcel No:** N/A

Contact Person-Name: Tom Davy **Telephone No:** (702) 363-6415

Firm: Engineers & Surveyors, Inc.

Address: 7018 West Charleston Blvd. Las Vegas Nevada 89117

Type of Land Development/Land Disturbance Process:

- ☐ Rezoning
- ☐ Parcel Map
- ☐ Large Parcel Map
- ☐ Subdivision Map
- ☐ Planned Unit Development
- ☐ Building Permit
- ☐ Clearing and Grading Only
- ☒ Other (Please specify below) open channel

1. Total Owned Land Area: At Site: N/A Being Developed/Disturbed: _____
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES* (NO)
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? (YES*) NO
4. Proposed type of development (Residential, Commercial, Etc.)? open channel
5. Approximate upstream land area which drains to the subject site? 520 acres
6. Has the site drainage been evaluated in the past? (YES) NO. If yes, please identify documentation: Hydrology study for Southern Vista Estates Condominiums
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Upper Flamingo Detention Basin
8. Briefly describe your proposed schedule for the subject project: A.S.A.P.

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
11-3-92
DANIEL J. WONDERS
CIVIL
No. 6950
Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

* Review and concurrence of the Clark County Regional Flood Control District is required.

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

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Impacts on detention basin	6
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APPENDIX

A HEC1 runs
B HEC2 tributary files
C HEC2 postdevelopment files
D Geotechnical report
E Freeboard calcs

BACKGROUND:

In August, 1992 a drainage study titled Hydrology Study for Southern Vista Estates Condominiums, CCPW PN # 92-08-10-01 ZC # 27-91, was prepared by this firm and submitted to Clark County Public Works for review. The objective of that report was to identify the offsite drainage area that impacts the Southern Vista Estates 15 acre condominium site. The study quantified the amount of storm water that would be generated within the offsite basin during a 10 and 100 year design storm. Also presented in the report was a proposal to construct an open channel that would intercept the offsite storm water and convey it North past the condominium site, discharging into the Upper Flamingo Detention Basin outfall channel. The proposed channel was to be constructed along the Western property boundary of Southern Vista Estates, within Clark County right of way, and would have extended approximately 660 feet South of the Southwest corner of the project and 1000 feet North of the Northwest corner of the project to the existing outfall channel.

In September, 1992 a set of channel improvement plans and a supporting hydraulic analysis were submitted to the County for review. ESI received the initial set of review comments from Willdan and Associates in early October. Since that time the channel alignment proposed in the August submittal has been abandoned.

On October 8, 1992 a meeting was held at Clark County Public Works to discuss an alternate channel alignment, present at the meeting were Dan Wonders and Tom Davy of ESI, the developer Max Morgan and Robert Thompson of Clark County Public Works. The alternate alignment would also intercept the storm water generated within the basin discussed in the August study, but would discharge into the detention basin rather than the outfall channel. Neither CCPW or CCRFCD had any objections to the proposed alignment discussed in the meeting.

The purpose of this submittal is to provide the County with a revised analysis for the new channel alignment.

GENERAL:

Project location:

The location of the proposed diversion channel lies along the Western 50 feet of the East Half (E 1/2) of the East Half (E 1/2) of the Southeast Quarter (SE 1/4) of the Northwest Quarter (NW 1/4) and the East Half (E 1/2) of the Southeast Quarter (SE 1/4) of the Northeast (NE 1/4) of the Northwest Quarter (NW 1/4) of Section 33, Township 21 South, Range 60 East, M.D.B.& M., Clark County, Nevada. The channel is to be constructed within a portion of three-five acre BLM parcels and one five acre private parcel. Acquisition of the necessary easements from both the BLM and the private land owner are currently ongoing. See exhibits 1 and 2 for the vicinity map and land ownership exhibit.

Flood Hazard Zone:

A review of Flood Insurance Rate Map, Community Panel 320003 1211-B, effective date: September 29, 1989, indicates that the proposed channel lies in an area which has been classified as Zone X, an area determined to be outside the 500-year flood plain. See exhibit 3 for the project delineation on the Flood Map.

Regional Flood Control Facilities:

Refer to exhibit 4 for the location of the project site relative to regional facilities. The channel is proposed to discharge into the Upper Flamingo Detention Basin. An analysis which assess the impacts of the channel on the detention basin is included within the body of this report.

Project Description:

The proposed improvements include approximately 2000 feet of temporary open channel/earth berm which will convey storm water from the confluence of two existing washes, near Patrick Lane and the intersection of the channel alignment, North to the Upper Flamingo Detention Basin.

The collection system at the Southern end of the project consists of an earth berm that diverts storm water from the existing wash and directs it into the upstream end of the channel. Since the improvements are intended to be temporary, an earth berm will only be provided on the East bank of the channel. Fully riprap lined, sloping drop structures are proposed at several locations to make up the grade differential between existing ground and the channel flow line. The drop structures also aid in keeping the invert of the channel above a caliche layer which has been determined to be within five feet of the surface. The slope of the channel is maintained at a rate of four tenths percent to keep flow velocities at a minimum. Rip rap protection is also being proposed at the outlet of the channel into the detention basin.

The channel alignment abuts a private parcel of land along its Western boundary for the Northern most 660 feet of channel. To prevent inundation of this parcel from water contained within the channel, it will be necessary to construct an earth berm along the Western bank of the channel for a portion of this frontage. Since the improvements are of a temporary nature a single 12 foot access road is being proposed for construction along the East side of the channel. The berm/access road is proposed to tie into the existing detention basin access road at the Southeast corner of the detention basin and has been detailed on the channel improvement plans.

METHODOLOGY:

In order to estimate peak runoff values from drainage basins that discharge toward the project site, the HEC-1 Flood Hydrograph package developed by the Army Corps of Engineers Hydrologic Engineering Center was used to model a 6-hour, 100-year storm event. Infiltration rates were developed using the Soil Conservation Service (SCS) Soil Survey of the Las Vegas Valley Area. Curve numbers are based on weighted averages of each soil unit and on the percent composition of each soil unit within the drainage area (see exhibits 5, 6, & 7).

The HEC2 Water Surface Profile model was used to ascertain water surface elevations for both pre and post development conditions.

OFFSITE DRAINAGE ANALYSIS:

The offsite basin delineated on exhibit 8 is the area that was modeled to determine the 100 year design flow for the channel. The offsite basin is a portion of the offsite basin delineated on exhibit 10 of the previously submitted Hydrology Study for Southern Vista Estates. The revised basin takes into account an additional 24 acres in the extreme Northwest portion of the basin but is decreased roughly 76 acres in the Northeast portion. Hydrologic parameters for the revised basin were derived from four hundred scale topographic maps similar to the four hundred scale map provided to Willdan and Associates for reference to the Southern Vista Estates Study. Time of concentration calcs can be found in appendix A for subbasins OFF1 through OFF5. The input and output HEC1 files for the revised basin are also located in appendix A. Results from the HEC1 model indicate that a total offsite flow rate of 688 cfs will impact the channel.

Exhibit 9 depicts the channel alignment, on a 400 scale topographic map, relative to the revised offsite basins.

HEC2 ANALYSIS:

Pre-Development:

Appendix B contains the predevelopment HEC2 runs upstream of Patrick Lane. Each wash was modeled separately from the confluence of the tributaries, upstream approximately 600 feet. Exhibit 10 shows the locations of the HEC2 cross sections for both the Southeast and Southwest tributary. Both super and sub-critical flow regimes were run. The results indicate that under existing conditions the 100 year flow within both tributaries tends to flow at critical depth. The flow remains within the tributary banks. Upon convergence of the tributaries at Patrick Lane the resulting wash travels to the East of the Project alignment and did not require modeling North of Patrick Lane.

Post-Development:

Super and subcritical HEC2 runs for the developed condition are contained in Appendix C. The cross section stationing used within the HEC2 models can be referenced directly from the improvement plans for the Southern Vista Estates Temporary Channel. Cross sections used within the HEC2 model at the transition of the existing wash to the proposed channel, at the South end of the project, have also been incorporated within the models. Results of the models indicate that the flow regime remains subcritical for all portions of the channel accept the drop structures, the expansion at station 21+00, and at the terminus of the channel at the detention basin, station 28+00. At these locations the flow regime is super critical

Migration of the existing tributaries, North of the confluence point, is not expected to be significant due to the incision of the existing thalweg.

Erosion Protection:

A geotechnical study of the channel alignment was performed by Geotechnical & Environmental Services, Inc., the results of which are contained in appendix D. The geotechnical report indicates that a erosion resistant caliche layer underlies the channel alignment at a depth of roughly five to six and one half feet. The invert of the channel is maintained at or above this layer unless the results of the borings allow otherwise.

Riprap protection is proposed for the entire East bank of the channel, the drop structures and the outlet into the detention basin. Riprap sizing calculations are also provided in appendix D. The riprap protection along the East bank is proposed to extend to a minimum depth of three feet at the toe of the bank, or to the first caliche layer. The drop structures are proposed to be fully riprap lined. Riprap erosion protection is also being proposed for the bottom and East bank of the channel outlet at the detention basin.

Freeboard Protection:

Freeboard calculations are provided for all of the unique sections of channel and are listed in appendix E. The required amount of freeboard has been provided for on the East side of the channel.

Water Surface Profile:

The water surface profile for the entire channel length has been plotted on the profile portion of the channel improvement plans.

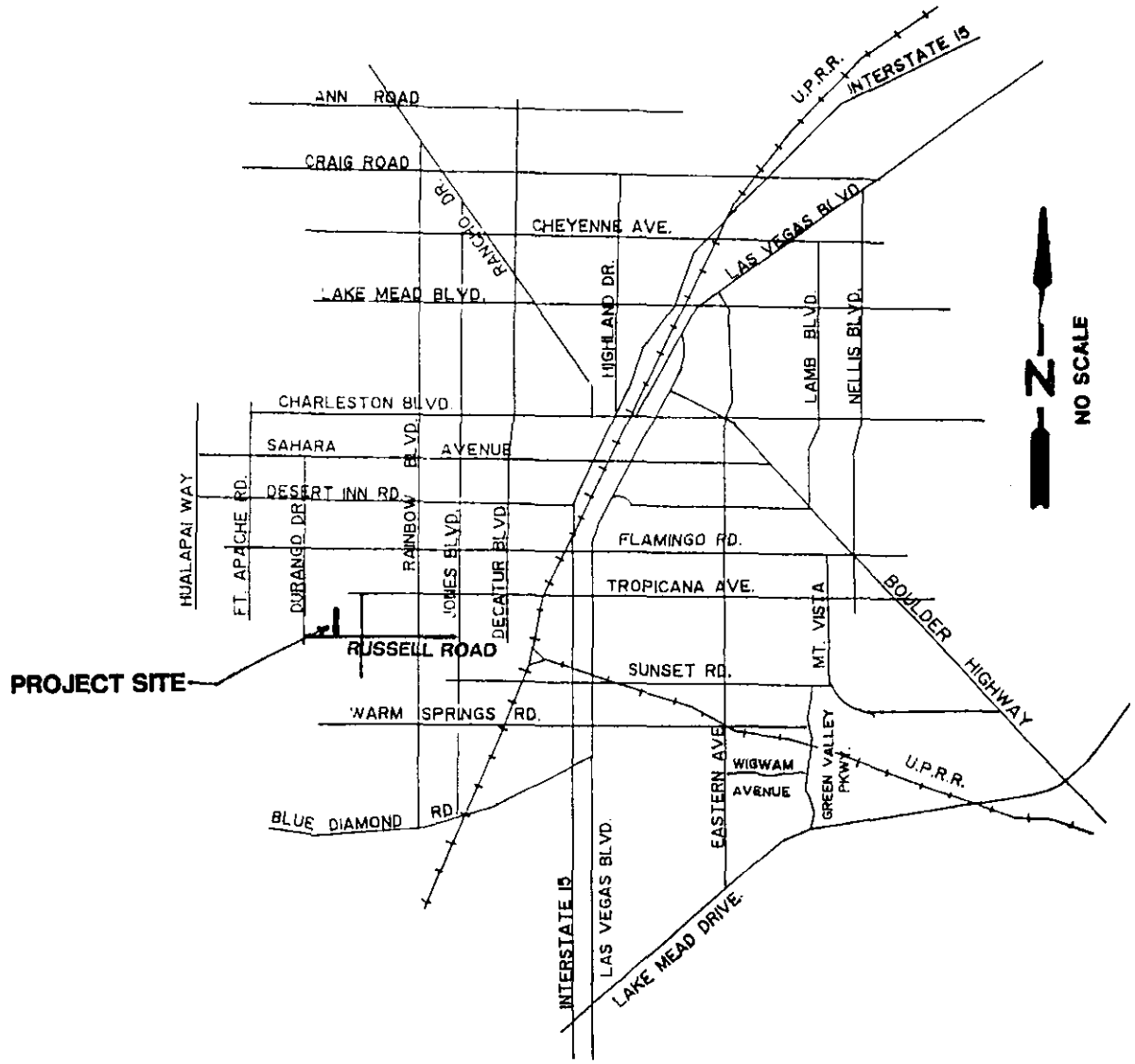
Impacts on Upper Flamingo Detention Basin:

The existing impoundment area of the Upper Flamingo Detention Basin for the 100 year 6 hour storm has a surface area of 89.5 acres, a ponding elevation of 2469.6 and a total detained volume of 880 acre feet, reference Upper Flamingo Detention Basin and Discharge Channel, by Black & Veatch Engineers, June, 1989. A total additional volume of 63 acre feet will be diverted into the detention basin with the development of the Southern Vista Channel (reference the HEC1 output files in appendix A).

The effects of this increase will be negligible on the the capacity of the basin. Exhibit 11 shows the relative differences in ponding elevation and area versus storage. The post development ponding elevation is expected to increase roughly seven tenths of a foot to an elevation of 2470.3, the total detained volume will increase to 943 acre feet. The addition of 63 acre feet to the basin will have a negligible effect on the surface area within the basin.

CONCLUSION

This study will comply with the CCRFCD Criteria Standards. A copy of this study and all subsequent addenda will be provided to Clark County Regional Flood Control upon approval by the County.



VICINITY MAP

EXHIBIT 1

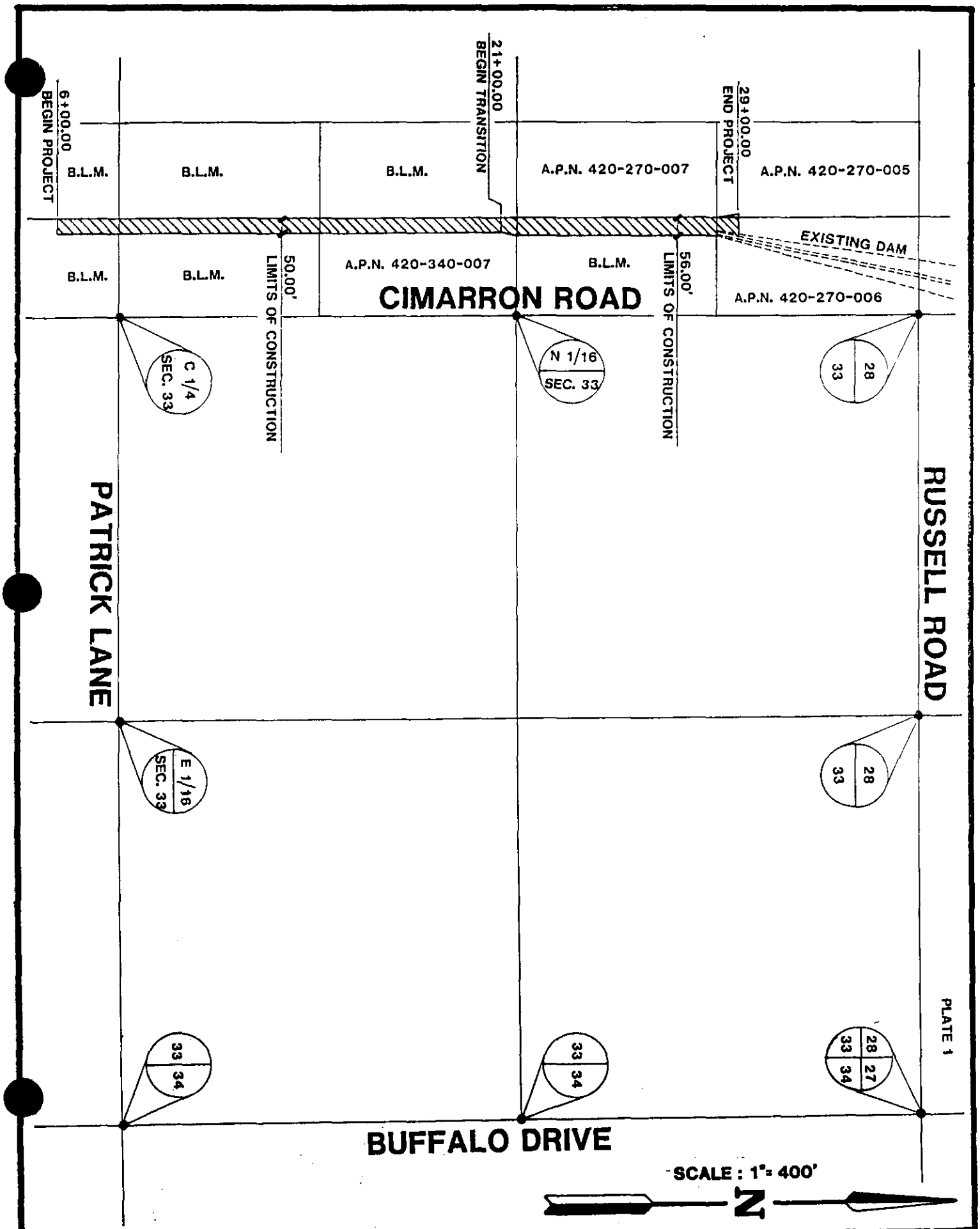


PLATE 1

EXHIBIT 2

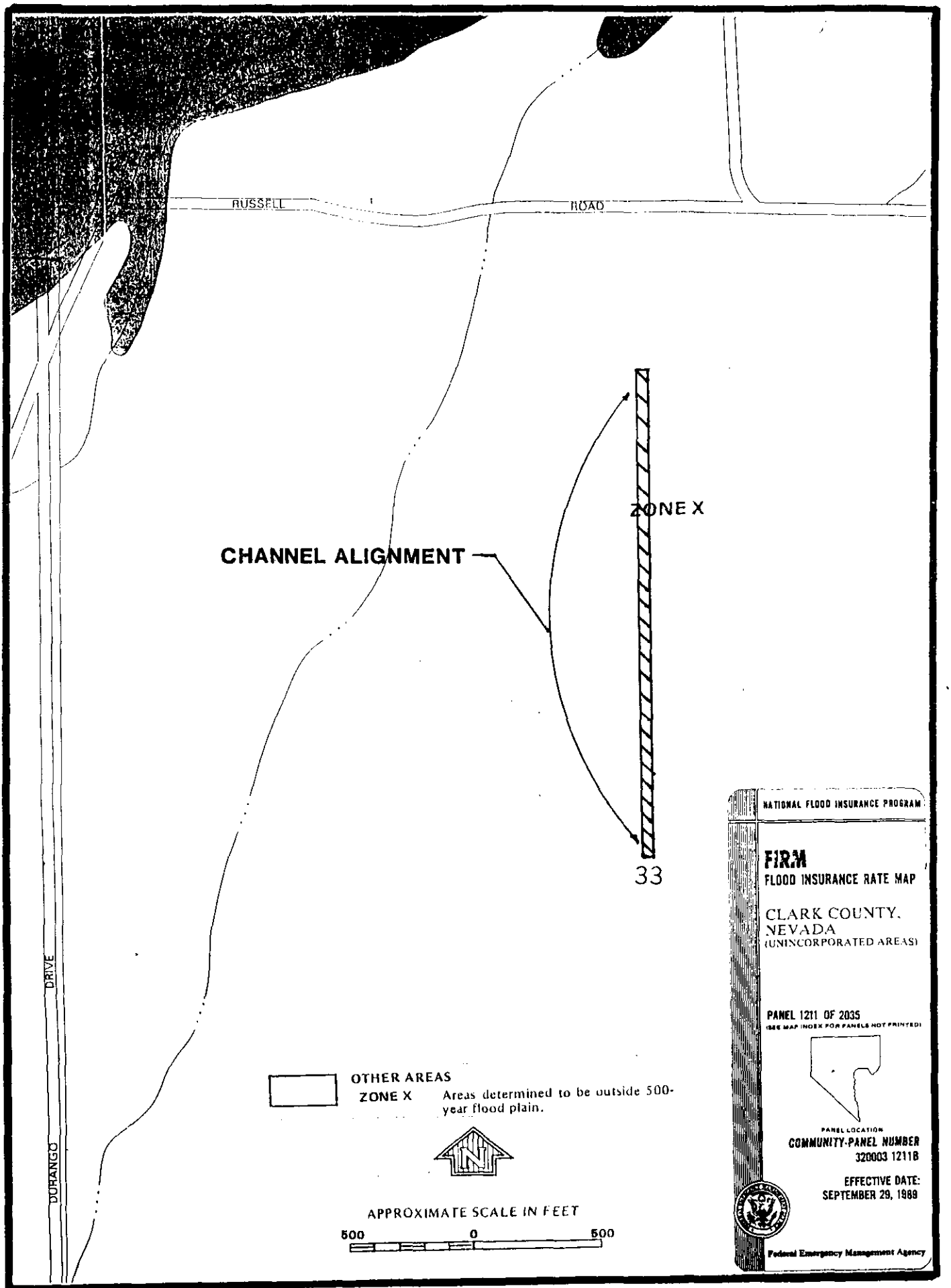
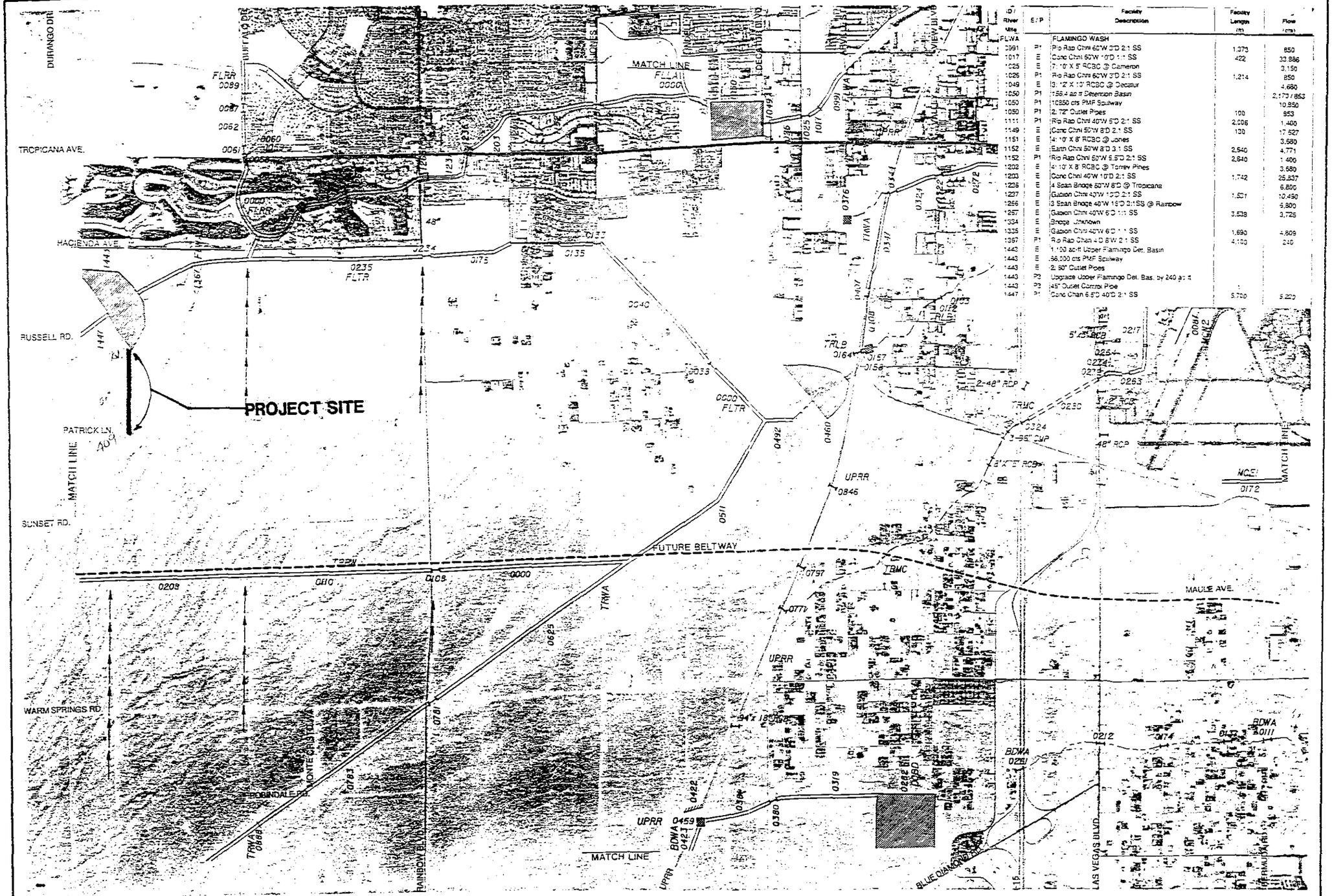

RUSSELL
ROAD
DURANGO
DRIVE
CHANNEL ALIGNMENT
ZONE X
33
OTHER AREAS
ZONE X
Areas determined to be outside 500-year flood plain.
N
APPROXIMATE SCALE IN FEET
500
0
500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA
(UNINCORPORATED AREAS)
PANEL 1211 OF 2035
(SEE MAP INDEX FOR PANELS NOT PRINTED)
PANEL LOCATION
COMMUNITY-PANEL NUMBER
320003 1211B
EFFECTIVE DATE:
SEPTEMBER 29, 1989
Federal Emergency Management Agency

EXHIBIT 3



ID / River Mile	E / P	Facility Description	Facility Length (ft)	Flow (cfs)
FLWA		FLAMINGO WASH		
0991	P1	Rip Rap Chnl 60'W 3'D 2:1 SS	1,373	850
1017	E	Conc Chnl 50'W 10'D 1:1 SS	422	33,886
1025	E	7: 10' X 5' RCBC @ Cameron		3,150
1025	P1	Rip Rap Chnl 60'W 3'D 2:1 SS	1,214	850
1049	E	3: 12' X 10' RCBC @ Decatur		4,660
1050	P1	156.4 ac-ft Detension Basin		2,179 / 853
1050	P1	10850 cfs PMF Spillway		10,850
1050	P1	2: 72" Outlet Pipes	100	853
1111	P1	Rip Rap Chnl 40'W 3'D 2:1 SS	2,006	1,400
1149	E	Conc Chnl 50'W 8'D 2:1 SS	130	17,527
1151	E	14: 10' X 8' RCBC @ Jones		3,580
1152	E	Earth Chnl 50'W 8'D 3:1 SS	2,540	4,771
1152	P1	Rip Rap Chnl 50'W 5.5'D 2:1 SS	2,640	1,400
1202	E	4: 10' X 8' RCBC @ Torrey Pines		3,580
1203	E	Conc Chnl 40'W 10'D 2:1 SS	1,742	25,837
1225	E	4 Span Bridge 80'W 8'D @ Tropicana		6,800
1227	E	Gabion Chnl 40'W 10'D 2:1 SS	1,631	10,490
1266	E	3 Span Bridge 40'W 18'D 2:1SS @ Rainbow		9,800
1267	E	Gabion Chnl 40'W 6'D 1:1 SS	3,538	3,725
1304	E	Bridge Unknown		
1335	E	Gabion Chnl 40'W 6'D 1:1 SS	1,690	4,809
1367	P1	Rip Rap Chan 4.0 6'W 2:1 SS	4,100	240
1442	E	1,100 ac-ft Upper Flamingo Det. Basin		
1443	E	56,000 cfs PMF Spillway		
1443	E	2: 50" Outlet Pipes		
1443	P3	Upgrade Upper Flamingo Det. Bas. by 240 ac-ft		
1443	P3	45" Outlet Control Pipe		
1447	P1	Conc Chan 6.5'D 40'D 2:1 SS	5,750	9,229

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

1991 FLOOD CONTROL MASTER PLAN UPDATE LAS VEGAS VALLEY

LEGEND

- EXISTING MASTER PLAN FACILITIES
- LOCAL OR UNSTUDIED FACILITIES
- PROPOSED MASTER PLAN FACILITIES
- BRIDGE
- CULVERT
- DEBRIS BASIN
- DETENTION BASIN
- DIKE / LEVEE
- PIPELINE
- NATURAL WASH
- FLOODWAY
- UNLINED IMPROVED CHANNEL
- LINED CHANNEL
- DROP STRUCTURE
- SECONDARY FACILITY
- ENVIRONMENTAL AREAS

0 1500 3000 4500
(APPROXIMATE)

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
	25	26	

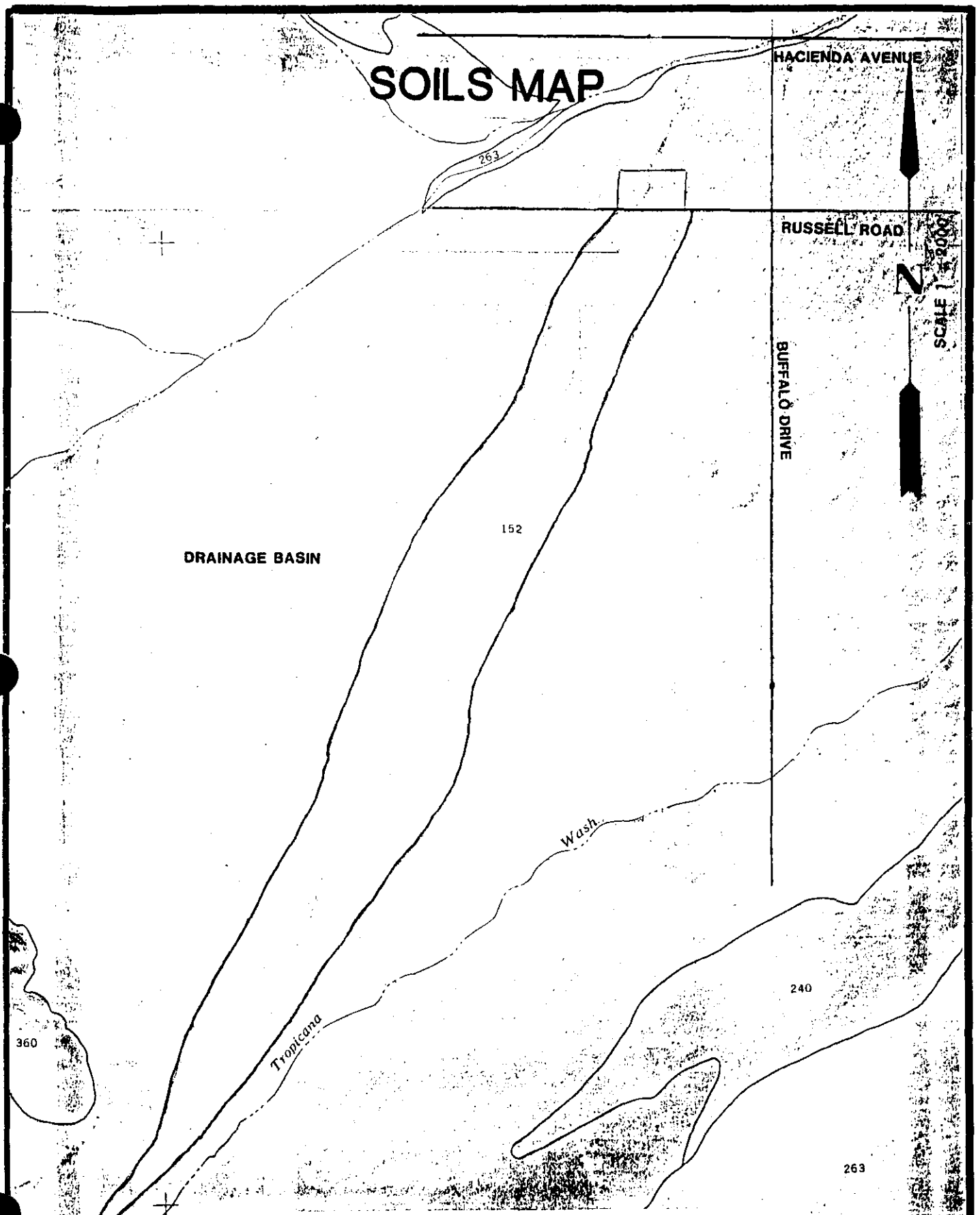
FLOOD CONTROL FACILITIES AND ENVIRONMENTAL AREAS

FIGURE F-18

JMM James M. Montgomery Consulting Engineers, Inc.
Las Vegas, Nevada

EXHIBIT 4

SOILS MAP



SHEET NO. 9

SOIL SURVEY OF LAS VEGAS VALLEY AREA, NEVADA

PART OF CLARK COUNTY

(BLUE DIAMOND SE QUADRANGLE)

EXHIBIT 5

CURVE NUMBER DETERMINATION

(For Arid to Semiarid Rangelands)

Cave gravelly fine sandy loam, Unit No. 152

Soil	Hydrologic Group	Curve No.	Percent	Weighted
Arizo	A	63	5	3.15
Canutio	B	77	5	3.85
Grapevine	B	77	5	3.85
Cave	D	88	85	74.8
			Total	85.65

EXHIBIT 7

RUNOFF CURVE NUMBERS
(SEMIARID RANGELANDS[1])

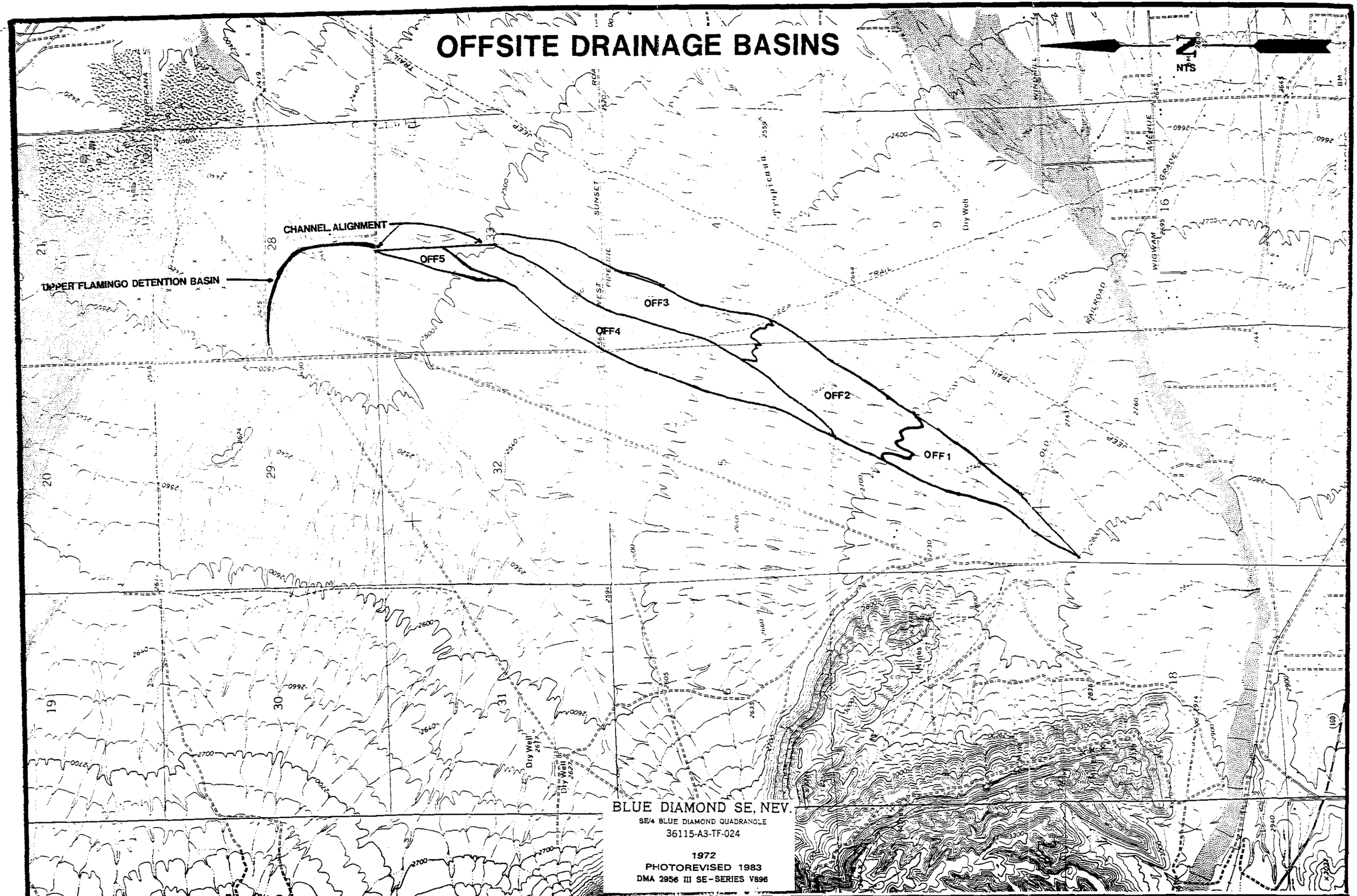
Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition[2]	A[3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: >70% ground cover.

[3]Curve numbers for group A have been developed only for desert shrub.

OFFSITE DRAINAGE BASINS



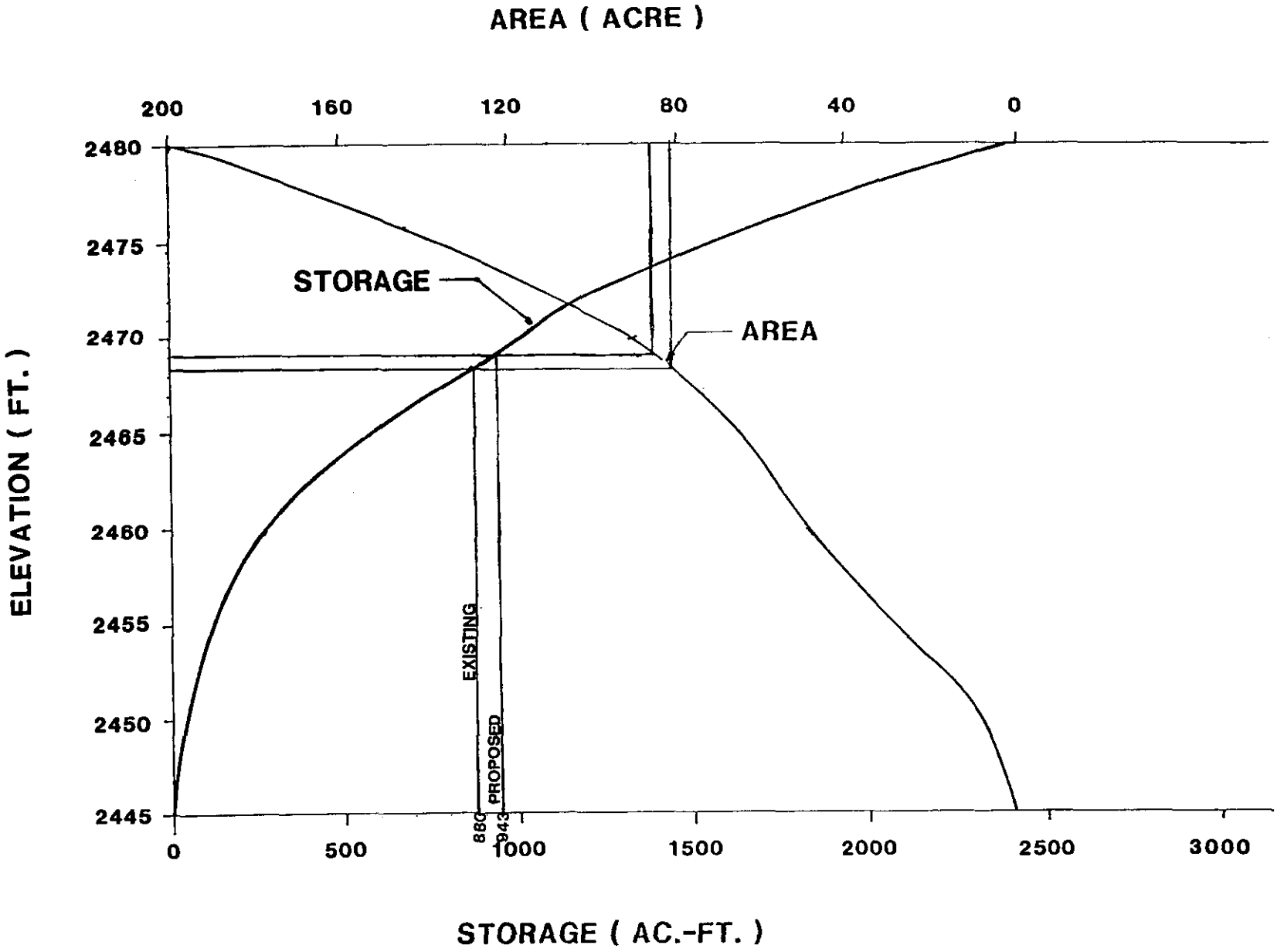
CIMARRON ROAD

39 cfs

OFF5

OFF4

OFF3



STAGE-STORAGE & STAGE-AREA CURVES

EXHIBIT 11

REFERENCES

1. Brater, Ernest F. and King, Horace W., Handbook of Hydraulics, McGraw-Hill Inc., 1976.

2. Burak, Mark H., HYDRAPAK Procedural Outline Manual, Burak Software, Version 1.2, 1988.

3. Clark County Regional Flood Control District, Master Plan, James M. Montgomery, Consulting Engineers, Inc., Volume II August, 1991.

4. Clark County Regional Flood Control District, Hydrologic Criteria and Drainage Design Manual, WRC Engineering, Inc., October, 1990.

5. HEC-1 Flood Hydrograph Package Users Manual, U.S. Army Corps of Engineers, The Hydrologic Engineering Center, Davis, CA, revised January, 1985.

6. HEC-2 Water surface profile package, U.S. Army Corps of Engineers, The Hydrologic Engineering Center, Davis, CA, revised January, 1985.

7. Hydrology Study for Southern Vista Estates, ESI Inc., August, 1992.

8. Upper Flamingo Wash Detention Basin Improvement Plans, Black & Veatch Engineers, June, 1989.

APPENDIX A

TIME OF CONCENTRATION

UPSTREAM OF DETENSION BASIN

DEVELOPMENT SOUTHERN VISTA CHANNEL

CACULATED BY T. DAVY DATE 10-10-92

SUB-BASIN DATA			INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)				t_c CHECK (URBANIZED BASINS)		FINAL t_c	REMARKS
DESIG: (1)	K (2)	AREA Ac (3)	LENGTH Ft (4)	SLOPE % (5)	t_i Min (6)	LENGTH Ft (7)	SLOPE % (8)	VEL. FPS (9)	t_t Min (10)	TOTAL LENGTH Ft (11)	$t_c = (L/180)+10$ Min (12)	Min (13)	
OFF 1	0.7399	124	500	0.75	15.95	4650	2.26	6.15	12.60		28.55		
OFF 2	0.7399	136	500	0.87	15.18	4800	1.67	5.00	16.00		31.18		
OFF 3	0.7399	111	300	0.79	12.14	5340	1.80	6.50	13.69		25.83		
OFF 4	0.7399	125	275	0.79	11.63	8450	1.78	5.62	25.06		36.69		
OFF 5	0.7399	24	150	0.79	8.59	3200	1.56	3.91	13.64		22.23		

$t_i = 1.8\,(1.1 - K)\,L^{1/2} / S^{1/3}$ $\qquad t_c = t_i + t_t$

****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1,1985

U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616

****

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS, AND THE NUMBER OF PLANS ARE REDUCED TO 3

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID
  2       ID
  3       ID                          OFFSITE HYDROLOGIC MODEL
  4       ID                                FOR THE
  5       ID                          SOUTHERN VISTA ESTATES
  6       ID                            DIVERSION CHANNEL
  7       ID
  8       ID
  9       ID
 10       ID
 11       ID                          ENGINEERS & SURVEYORS, INC.
 12       ID                            OCTOBER 10, 1992
 13       ID
 14       ID
 15       ID       RATIO 1=100 YR.  RATIO 2=10 YR.
 16       ID
 17       ID
          *DIAGRAM
 18       IT      5                     300
 19       IN      5
 20       IO      5       0
 21       JR    PREC     1.0    0.57

 22       KK    OFF1
 23       KM    RUNOFF FROM DRAINAGE BASIN OFF1
 24       BA     .194
 25       PB    2.77
 26       PC       0   .0200   .0570   .0700   .0870   .1080   .1240   .1300   .1300   .1300
 27       PC   .1300   .1300   .1300   .1330   .1400   .1420   .1480   .1580   .1720   .1810
 28       PC   .1900   .1970   .1990   .2000   .2010   .2040   .2140   .2290   .2410   .2490
 29       PC   .2510   .2560   .2700   .2780   .2810   .2830   .2950   .3220   .3520   .4090
 30       PC   .4990   .5900   .7100   .7440   .7810   .8120   .8190   .8350   .8510   .8560
 31       PC   .8600   .8680   .8760   .8880   .9100   .9260   .9370   .9500   .9700   .9760
 32       PC   .9820   .9850   .9870   .9890   .9900   .9930   .9930   .9940   .9950   .9980
 33       PC   .9980   .9990  1.000
 34       LS      0    85.6
 35       UD   .2855

 36       KK   RT1
 37       KM   ROUTE OFF1 RUNOFF THROUGH OFF2
 38       RK    4800   .0167    .035          TRAP      10       5

 39       KK   OFF2
 40       KM   RUNOFF FROM DRAINAGE BASIN OFF2
 41       BA    .212
 42       LS      0    85.6
 43       UD   .3118

 44       KK   COM1
 45       KM   COMBINE OFF1 WITH OFF2 RUNOFF
 46       HC      2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  47      KK  RT2
  48      KM  ROUTE OFF1 AND OFF2 RUNOFF THROUGH OFF3
  49      RK   5340   .0180   .035          TRAP     10      5

  50      KK  OFF3
  51      KM  RUNOFF FROM DRAINAGE BASIN OFF3
  52      BA   .173
  53      LS      0   85.6
  54      UD  .2583

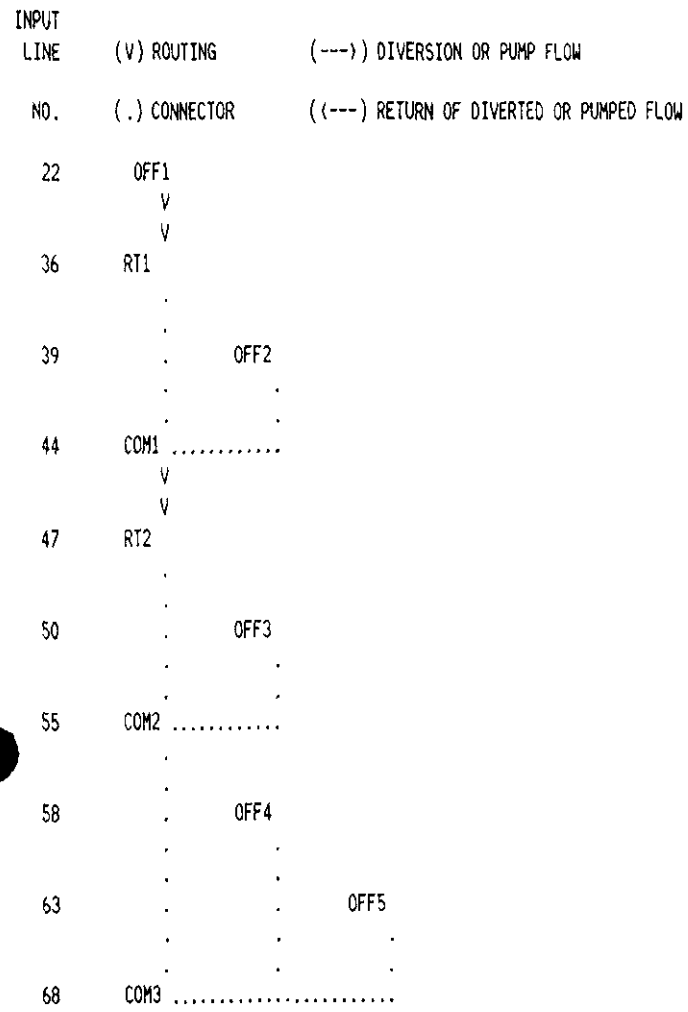
  55      KK  COM2
  56      KM  COMBINE RUNOFF FROM BASINS OFF1, OFF2 WITH OFF3
  57      HC      2

  58      KK  OFF4
  59      KM  RUNOFF FROM DRAINAGE BASIN OFF4
  60      BA  .1953
  61      LS      0   85.6
  62      UD  .3669

  63      KK  OFF5
  64      KM  RUNOFF FROM DRAINAGE BASIN OFF5
  65      BA  .0375
  66      LS      0   85.6
  67      UD  .2223

  68      KK  COM3
  69      KM  TOTAL RUNOFF FROM ALL BASINS
  70      HC      3
  71      KO      2
  72      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1,1985
U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616
****

OFFSITE HYDROLOGIC MODEL
FOR THE
SOUTHERN VISTA ESTATES
DIVERSION CHANNEL

ENGINEERS & SURVEYORS, INC.
OCTOBER 10, 1992

RATIO 1=100 YR. RATIO 2=10 YR.

20 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN		5	MINUTES IN COMPUTATION INTERVAL
IDATE	1	0	STARTING DATE
ITIME		0000	STARTING TIME
NQ		300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2	0	ENDING DATE
NDTIME		0055	ENDING TIME

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

JP MULTI-PLAN OPTION

NPLAN	1	NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
1.00 .57

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

*** *** *** *

1	0205	26	10.	*	1	0820	101	1.	*	1	1435	176	0.	*	1	2050	251	0.
1	0210	27	10.	*	1	0825	102	1.	*	1	1440	177	0.	*	1	2055	252	0.
1	0215	28	12.	*	1	0830	103	1.	*	1	1445	178	0.	*	1	2100	253	0.
1	0220	29	16.	*	1	0835	104	1.	*	1	1450	179	0.	*	1	2105	254	0.
1	0225	30	21.	*	1	0840	105	0.	*	1	1455	180	0.	*	1	2110	255	0.
1	0230	31	25.	*	1	0845	106	0.	*	1	1500	181	0.	*	1	2115	256	0.
1	0235	32	27.	*	1	0850	107	0.	*	1	1505	182	0.	*	1	2120	257	0.
1	0240	33	29.	*	1	0855	108	0.	*	1	1510	183	0.	*	1	2125	258	0.
1	0245	34	31.	*	1	0900	109	0.	*	1	1515	184	0.	*	1	2130	259	0.
1	0250	35	34.	*	1	0905	110	0.	*	1	1520	185	0.	*	1	2135	260	0.
1	0255	36	36.	*	1	0910	111	0.	*	1	1525	186	0.	*	1	2140	261	0.
1	0300	37	37.	*	1	0915	112	0.	*	1	1530	187	0.	*	1	2145	262	0.
1	0305	38	40.	*	1	0920	113	0.	*	1	1535	188	0.	*	1	2150	263	0.
1	0310	39	49.	*	1	0925	114	0.	*	1	1540	189	0.	*	1	2155	264	0.
1	0315	40	69.	*	1	0930	115	0.	*	1	1545	190	0.	*	1	2200	265	0.
1	0320	41	108.	*	1	0935	116	0.	*	1	1550	191	0.	*	1	2205	266	0.
1	0325	42	175.	*	1	0940	117	0.	*	1	1555	192	0.	*	1	2210	267	0.
1	0330	43	280.	*	1	0945	118	0.	*	1	1600	193	0.	*	1	2215	268	0.
1	0335	44	418.	*	1	0950	119	0.	*	1	1605	194	0.	*	1	2220	269	0.
1	0340	45	569.	*	1	0955	120	0.	*	1	1610	195	0.	*	1	2225	270	0.
1	0345	46	688.	*	1	1000	121	0.	*	1	1615	196	0.	*	1	2230	271	0.
1	0350	47	669.	*	1	1005	122	0.	*	1	1620	197	0.	*	1	2235	272	0.
1	0355	48	663.	*	1	1010	123	0.	*	1	1625	198	0.	*	1	2240	273	0.
1	0400	49	605.	*	1	1015	124	0.	*	1	1630	199	0.	*	1	2245	274	0.
1	0405	50	525.	*	1	1020	125	0.	*	1	1635	200	0.	*	1	2250	275	0.
1	0410	51	441.	*	1	1025	126	0.	*	1	1640	201	0.	*	1	2255	276	0.
1	0415	52	363.	*	1	1030	127	0.	*	1	1645	202	0.	*	1	2300	277	0.
1	0420	53	270.	*	1	1035	128	0.	*	1	1650	203	0.	*	1	2305	278	0.
1	0425	54	224.	*	1	1040	129	0.	*	1	1655	204	0.	*	1	2310	279	0.
1	0430	55	196.	*	1	1045	130	0.	*	1	1700	205	0.	*	1	2315	280	0.
1	0435	56	184.	*	1	1050	131	0.	*	1	1705	206	0.	*	1	2320	281	0.
1	0440	57	182.	*	1	1055	132	0.	*	1	1710	207	0.	*	1	2325	282	0.
1	0445	58	184.	*	1	1100	133	0.	*	1	1715	208	0.	*	1	2330	283	0.
1	0450	59	188.	*	1	1105	134	0.	*	1	1720	209	0.	*	1	2335	284	0.
1	0455	60	192.	*	1	1110	135	0.	*	1	1725	210	0.	*	1	2340	285	0.
1	0500	61	193.	*	1	1115	136	0.	*	1	1730	211	0.	*	1	2345	286	0.
1	0505	62	186.	*	1	1120	137	0.	*	1	1735	212	0.	*	1	2350	287	0.
1	0510	63	172.	*	1	1125	138	0.	*	1	1740	213	0.	*	1	2355	288	0.
1	0515	64	152.	*	1	1130	139	0.	*	1	1745	214	0.	*	2	0000	289	0.
1	0520	65	131.	*	1	1135	140	0.	*	1	1750	215	0.	*	2	0005	290	0.
1	0525	66	110.	*	1	1140	141	0.	*	1	1755	216	0.	*	2	0010	291	0.
1	0530	67	91.	*	1	1145	142	0.	*	1	1800	217	0.	*	2	0015	292	0.
1	0535	68	76.	*	1	1150	143	0.	*	1	1805	218	0.	*	2	0020	293	0.
1	0540	69	63.	*	1	1155	144	0.	*	1	1810	219	0.	*	2	0025	294	0.
1	0545	70	53.	*	1	1200	145	0.	*	1	1815	220	0.	*	2	0030	295	0.
1	0550	71	45.	*	1	1205	146	0.	*	1	1820	221	0.	*	2	0035	296	0.
1	0555	72	39.	*	1	1210	147	0.	*	1	1825	222	0.	*	2	0040	297	0.
1	0600	73	34.	*	1	1215	148	0.	*	1	1830	223	0.	*	2	0045	298	0.
1	0605	74	30.	*	1	1220	149	0.	*	1	1835	224	0.	*	2	0050	299	0.
1	0610	75	26.	*	1	1225	150	0.	*	1	1840	225	0.	*	2	0055	300	0.
				*					*					*					

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 688.	3.75		127.	32.	31.	31.
		(INCHES)	1.456	1.460	1.460	1.460
		(AC-FT)	63.	63.	63.	63.

CUMULATIVE AREA = .81 SQ MI

****

HYDROGRAPH AT STATION COM3
SUM OF 3 HYDROGRAPHS
PLAN 1, RATIO = .57

****

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0615	76	12.	*	1		1230	151	0.	*	1		1845	226	0.
1		0005	2	0.	*	1		0620	77	10.	*	1		1235	152	0.	*	1		1850	227	0.
1		0010	3	0.	*	1		0625	78	9.	*	1		1240	153	0.	*	1		1855	228	0.
1		0015	4	0.	*	1		0630	79	7.	*	1		1245	154	0.	*	1		1900	229	0.
1		0020	5	0.	*	1		0635	80	6.	*	1		1250	155	0.	*	1		1905	230	0.
1		0025	6	0.	*	1		0640	81	5.	*	1		1255	156	0.	*	1		1910	231	0.
1		0030	7	0.	*	1		0645	82	5.	*	1		1300	157	0.	*	1		1915	232	0.
1		0035	8	0.	*	1		0650	83	4.	*	1		1305	158	0.	*	1		1920	233	0.
1		0040	9	0.	*	1		0655	84	3.	*	1		1310	159	0.	*	1		1925	234	0.
1		0045	10	0.	*	1		0700	85	3.	*	1		1315	160	0.	*	1		1930	235	0.
1		0050	11	0.	*	1		0705	86	3.	*	1		1320	161	0.	*	1		1935	236	0.
1		0055	12	0.	*	1		0710	87	2.	*	1		1325	162	0.	*	1		1940	237	0.
1		0100	13	0.	*	1		0715	88	2.	*	1		1330	163	0.	*	1		1945	238	0.
1		0105	14	0.	*	1		0720	89	2.	*	1		1335	164	0.	*	1		1950	239	0.
1		0110	15	0.	*	1		0725	90	2.	*	1		1340	165	0.	*	1		1955	240	0.
1		0115	16	0.	*	1		0730	91	1.	*	1		1345	166	0.	*	1		2000	241	0.
1		0120	17	0.	*	1		0735	92	1.	*	1		1350	167	0.	*	1		2005	242	0.
1		0125	18	0.	*	1		0740	93	1.	*	1		1355	168	0.	*	1		2010	243	0.
1		0130	19	0.	*	1		0745	94	1.	*	1		1400	169	0.	*	1		2015	244	0.
1		0135	20	0.	*	1		0750	95	1.	*	1		1405	170	0.	*	1		2020	245	0.
1		0140	21	0.	*	1		0755	96	1.	*	1		1410	171	0.	*	1		2025	246	0.
1		0145	22	0.	*	1		0800	97	1.	*	1		1415	172	0.	*	1		2030	247	0.
1		0150	23	0.	*	1		0805	98	1.	*	1		1420	173	0.	*	1		2035	248	0.
1		0155	24	0.	*	1		0810	99	1.	*	1		1425	174	0.	*	1		2040	249	0.
1		0200	25	0.	*	1		0815	100	1.	*	1		1430	175	0.	*	1		2045	250	0.
1		0205	26	0.	*	1		0820	101	1.	*	1		1435	176	0.	*	1		2050	251	0.
1		0210	27	0.	*	1		0825	102	0.	*	1		1440	177	0.	*	1		2055	252	0.
1		0215	28	0.	*	1		0830	103	0.	*	1		1445	178	0.	*	1		2100	253	0.
1		0220	29	0.	*	1		0835	104	0.	*	1		1450	179	0.	*	1		2105	254	0.
1		0225	30	0.	*	1		0840	105	0.	*	1		1455	180	0.	*	1		2110	255	0.
1		0230	31	1.	*	1		0845	106	0.	*	1		1500	181	0.	*	1		2115	256	0.

1	0235	32	1.	*	1	0850	107	0.	*	1	1505	182	0.	*	1	2120	257	0.
1	0240	33	1.	*	1	0855	108	0.	*	1	1510	183	0.	*	1	2125	258	0.
1	0245	34	2.	*	1	0900	109	0.	*	1	1515	184	0.	*	1	2130	259	0.
1	0250	35	2.	*	1	0905	110	0.	*	1	1520	185	0.	*	1	2135	260	0.
1	0255	36	3.	*	1	0910	111	0.	*	1	1525	186	0.	*	1	2140	261	0.
1	0300	37	3.	*	1	0915	112	0.	*	1	1530	187	0.	*	1	2145	262	0.
1	0305	38	4.	*	1	0920	113	0.	*	1	1535	188	0.	*	1	2150	263	0.
1	0310	39	6.	*	1	0925	114	0.	*	1	1540	189	0.	*	1	2155	264	0.
1	0315	40	11.	*	1	0930	115	0.	*	1	1545	190	0.	*	1	2200	265	0.
1	0320	41	22.	*	1	0935	116	0.	*	1	1550	191	0.	*	1	2205	266	0.
1	0325	42	42.	*	1	0940	117	0.	*	1	1555	192	0.	*	1	2210	267	0.
1	0330	43	74.	*	1	0945	118	0.	*	1	1600	193	0.	*	1	2215	268	0.
1	0335	44	115.	*	1	0950	119	0.	*	1	1605	194	0.	*	1	2220	269	0.
1	0340	45	157.	*	1	0955	120	0.	*	1	1610	195	0.	*	1	2225	270	0.
1	0345	46	195.	*	1	1000	121	0.	*	1	1615	196	0.	*	1	2230	271	0.
1	0350	47	224.	*	1	1005	122	0.	*	1	1620	197	0.	*	1	2235	272	0.
1	0355	48	233.	*	1	1010	123	0.	*	1	1625	198	0.	*	1	2240	273	0.
1	0400	49	222.	*	1	1015	124	0.	*	1	1630	199	0.	*	1	2245	274	0.
1	0405	50	197.	*	1	1020	125	0.	*	1	1635	200	0.	*	1	2250	275	0.
1	0410	51	170.	*	1	1025	126	0.	*	1	1640	201	0.	*	1	2255	276	0.
1	0415	52	144.	*	1	1030	127	0.	*	1	1645	202	0.	*	1	2300	277	0.
1	0420	53	121.	*	1	1035	128	0.	*	1	1650	203	0.	*	1	2305	278	0.
1	0425	54	103.	*	1	1040	129	0.	*	1	1655	204	0.	*	1	2310	279	0.
1	0430	55	91.	*	1	1045	130	0.	*	1	1700	205	0.	*	1	2315	280	0.
1	0435	56	86.	*	1	1050	131	0.	*	1	1705	206	0.	*	1	2320	281	0.
1	0440	57	84.	*	1	1055	132	0.	*	1	1710	207	0.	*	1	2325	282	0.
1	0445	58	84.	*	1	1100	133	0.	*	1	1715	208	0.	*	1	2330	283	0.
1	0450	59	84.	*	1	1105	134	0.	*	1	1720	209	0.	*	1	2335	284	0.
1	0455	60	85.	*	1	1110	135	0.	*	1	1725	210	0.	*	1	2340	285	0.
1	0500	61	85.	*	1	1115	136	0.	*	1	1730	211	0.	*	1	2345	286	0.
1	0505	62	82.	*	1	1120	137	0.	*	1	1735	212	0.	*	1	2350	287	0.
1	0510	63	77.	*	1	1125	138	0.	*	1	1740	213	0.	*	1	2355	288	0.
1	0515	64	69.	*	1	1130	139	0.	*	1	1745	214	0.	*	2	0000	289	0.
1	0520	65	61.	*	1	1135	140	0.	*	1	1750	215	0.	*	2	0005	290	0.
1	0525	66	52.	*	1	1140	141	0.	*	1	1755	216	0.	*	2	0010	291	0.
1	0530	67	45.	*	1	1145	142	0.	*	1	1800	217	0.	*	2	0015	292	0.
1	0535	68	38.	*	1	1150	143	0.	*	1	1805	218	0.	*	2	0020	293	0.
1	0540	69	32.	*	1	1155	144	0.	*	1	1810	219	0.	*	2	0025	294	0.
1	0545	70	28.	*	1	1200	145	0.	*	1	1815	220	0.	*	2	0030	295	0.
1	0550	71	24.	*	1	1205	146	0.	*	1	1820	221	0.	*	2	0035	296	0.
1	0555	72	21.	*	1	1210	147	0.	*	1	1825	222	0.	*	2	0040	297	0.
1	0600	73	18.	*	1	1215	148	0.	*	1	1830	223	0.	*	2	0045	298	0.
1	0605	74	16.	*	1	1220	149	0.	*	1	1835	224	0.	*	2	0050	299	0.
1	0610	75	14.	*	1	1225	150	0.	*	1	1840	225	0.	*	2	0055	300	0.
				*					*					*					

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	233.	3.92		46.	12.	11.	11.
			(INCHES)	.527	.528	.528	.528
			(AC-FT)	23.	23.	23.	23.

CUMULATIVE AREA = .81 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO PRECIPITATION	
OPERATION	STATION	AREA	PLAN		RATIO 1	RATIO 2
					1.00	.57
HYDROGRAPH AT						
+	OFF1	.19	1	FLOW	182.	68.
				TIME	3.75	3.75
ROUTED TO						
+	RT1	.19	1	FLOW	182.	63.
				TIME	3.83	3.92
HYDROGRAPH AT						
+	OFF2	.21	1	FLOW	193.	71.
				TIME	3.75	3.75
2 COMBINED AT						
+	COM1	.41	1	FLOW	370.	129.
				TIME	3.75	3.83
ROUTED TO						
+	RT2	.41	1	FLOW	369.	124.
				TIME	3.92	4.00
HYDROGRAPH AT						
+	OFF3	.17	1	FLOW	171.	63.
				TIME	3.67	3.75
2 COMBINED AT						
+	COM2	.58	1	FLOW	491.	166.
				TIME	3.75	3.92
HYDROGRAPH AT						
+	OFF4	.20	1	FLOW	164.	61.
				TIME	3.83	3.83
HYDROGRAPH AT						
+	OFF5	.04	1	FLOW	39.	15.
				TIME	3.67	3.67
3 COMBINED AT						
+	COM3	.81	1	FLOW	688.	233.
				TIME	3.75	3.92

*** NORMAL END OF HEC-1 ***

APPENDIX B

```
1**************************************************
*  WATER SURFACE PROFILES                        *
*  VERSION OF NOVEMBER 1976                      *
 *  UPDATED MAY 1984                             *
 *  IBM-PC-XT VERSION AUGUST 1985                *
 *  RUN DATE  11-02-92   TIME  14:45:31            *
*
 **************************************************
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**************************************
*  U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D        *
*  DAVIS, CALIFORNIA 95616           *
   *  (916) 440-2105 (FTS) 448-2105

**************************************
```


SUB-CRITICAL
SOUTHEAST TRIBUTARY

```
X    X  XXXXXXX   XXXXX            XXXXX
X    X  X        X    X          X    X
X    X  X        X                    X
XXXXXXX  XXXX    X         XXXXX   XXXXX
X    X  X        X                   X
X    X  X        X    X              X
X    X  XXXXXXX   XXXXX              XXXXXXX
```

THIS RUN EXECUTED 11-02-92

```
**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY 1984
 ERROR CORR - 01,02,03,04,05,06
 MODIFICATION - 50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
**************************************************
```

T1 SOUTHERN VISTA ESTATES
T2 OCTOBER 20, 1992
T3 SUBCRITICAL FLOW SOUTHEAST TRIBUTARY

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	.000000	.00	1.0	491.	506.200	.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	.000	.000	.000	.000	.000	.000	-1.000	.000	.000	.000

NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
QT	1.000	491.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	9.000	11.000	.000	400.000	.000	.000	.000	.000	.000	.000
GR	510.000	.000	509.000	22.000	508.000	45.000	507.000	160.000	506.000	250.000
GR	505.000	265.000	504.000	276.000	505.000	291.000	506.000	307.000	507.000	330.000
GR	510.000	400.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	8.000	12.000	.000	450.000	125.000	95.000	75.000	.000	.000	.000
GR	512.000	.000	511.000	65.000	510.000	110.000	509.000	160.000	508.000	244.000
GR	507.000	265.000	506.000	285.000	507.000	296.000	508.000	307.000	509.000	358.000
GR	510.000	400.000	512.000	450.000	.000	.000	.000	.000	.000	.000
X1	7.000	10.000	.000	400.000	55.000	112.000	87.000	.000	.000	.000
GR	512.000	.000	511.000	80.000	510.000	140.000	509.000	205.000	508.000	248.000
GR	507.000	271.000	508.000	284.000	509.000	289.000	510.000	303.000	512.000	400.000
X1	6.000	10.000	.000	420.000	50.000	70.000	45.000	.000	.000	.000
GR	513.000	.000	512.000	72.000	511.000	140.000	510.000	253.000	509.000	276.000
GR	508.000	310.000	509.000	318.000	510.000	330.000	511.000	386.000	512.000	420.000
X1	5.000	9.000	.000	408.000	35.000	80.000	62.000	.000	.000	.000
GR	513.000	.000	512.000	80.000	511.000	240.000	510.000	267.000	509.000	292.000
GR	510.000	309.000	511.000	331.000	512.000	370.000	513.000	408.000	.000	.000
X1	4.000	7.000	.000	380.000	45.000	150.000	117.000	.000	.000	.000
GR	513.000	.000	512.000	235.000	511.000	260.000	512.000	290.000	513.000	315.000
GR	514.000	341.000	515.000	380.000	.000	.000	.000	.000	.000	.000

X1	3.000	8.000	.000	402.000	100.000	50.000	55.000	.000	.000	.000
GR	515.000	.000	514.000	180.000	513.000	235.000	512.000	260.000	513.000	300.000
GR	514.000	338.000	515.000	370.000	516.000	402.000	.000	.000	.000	.000
X1	2.000	11.000	.000	480.000	122.000	90.000	105.000	.000	.000	.000
GR	518.000	.000	517.000	83.000	516.000	190.000	515.000	296.000	514.000	307.000
GR	513.000	319.000	514.000	358.000	515.000	389.000	516.000	420.000	517.000	450.000
GR	518.000	480.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	1.000	12.000	.000	508.000	75.000	60.000	65.000	.000	.000	.000
GR	520.000	.000	519.000	72.000	518.000	155.000	517.000	254.000	516.000	353.000
GR	515.000	369.000	514.000	378.000	514.000	383.000	515.000	420.000	516.000	448.000
GR	517.000	476.000	518.000	508.000	.000	.000	.000	.000	.000	.000
ED	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 9.000
3720 CRITICAL DEPTH ASSUMED

9.00	2.46	506.46	506.46	506.20	506.90	.43	.00	.00	510.00
491.	0.	491.	0.	0.	93.	0.	0.	0.	510.00
.00	.00	5.28	.00	.035	.035	.035	.000	504.00	208.39
.019253	0.	0.	0.	0	7	0	.00	109.24	317.63

0
*SECNO 8.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.00	2.35	508.35	508.35	.00	508.78	.43	1.45	.00	512.00
491.	0.	491.	0.	0.	93.	0.	0.	0.	512.00
.00	.00	5.27	.00	.035	.035	.035	.000	506.00	214.36
.019431	125.	75.	95.	0	11	0	.00	110.64	325.00

0
*SECNO 7.000

7.00	2.54	509.54	509.11	.00	509.75	.21	.94	.02	512.00
491.	0.	491.	0.	0.	134.	0.	0.	0.	512.00
.01	.00	3.66	.00	.035	.035	.035	.000	507.00	170.27
.006863	55.	87.	112.	1	11	0	.00	126.21	296.48

0
*SECNO 6.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

6.00	2.10	510.10	510.10	.00	510.57	.48	.47	.08	513.00
491.	0.	491.	0.	0.	89.	0.	1.	1.	512.00
.01	.00	5.53	.00	.035	.035	.035	.000	508.00	242.08
.018208	50.	45.	70.	0	12	0	.00	93.33	335.41

0
*SECNO 5.000

5.00	2.25	511.25	511.03	.00	511.53	.28	.94	.02	513.00
491.	0.	491.	0.	0.	116.	0.	1.	1.	513.00
.02	.00	4.22	.00	.035	.035	.035	.000	509.00	200.10
.012719	35.	62.	80.	3	8	0	.00	140.63	340.73

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.000

4.00	1.79	512.79	512.67	.00	512.95	.16	1.41	.01	513.00
491.	0.	491.	0.	0.	154.	0.	1.	1.	515.00
.03	.00	3.19	.00	.035	.035	.035	.000	511.00	47.58
.011464	45.	117.	150.	3	14	0	.00	262.36	309.94

0

*SECNO 3.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3.00	1.67	513.67	513.67	.00	514.07	.39	.82	.07	515.00
491.	0.	491.	0.	0.	97.	0.	1.	1.	516.00
.03	.00	5.04	.00	.035	.035	.035	.000	512.00	197.96
.020250	100.	55.	50.	0	11	0	.00	127.63	325.59

0

*SECNO 2.000

2.00	2.22	515.22	514.88	.00	515.47	.26	1.39	.01	518.00
491.	0.	491.	0.	0.	121.	0.	1.	2.	518.00
.04	.00	4.06	.00	.035	.035	.035	.000	513.00	272.84
.009320	122.	105.	90.	2	8	0	.00	122.93	395.77

0

*SECNO 1.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1.00	1.97	515.87	515.87	.00	516.34	.47	.80	.06	520.00
491.	0.	491.	0.	0.	89.	0.	2.	2.	518.00
.04	.00	5.49	.00	.035	.035	.035	.000	514.00	355.02
.016798	75.	65.	60.	0	14	0	.00	89.45	444.47

0

1

PROFILE FOR STREAM SUBCRITICAL FLOW S

PLOTTED POINTS (BY PRICRITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION  504.    506.    508.    510.    512.    514.    516.    518.    520.    522.
   SECNO  CUMDIS

    9.00     0. I      .W E    .      L      .       .       .       .       .       .
            10. .I     .  W E  .      .L     .       .       .       .       .       .
            20. .  I   .   W E .      .  L   .       .       .       .       .       .
            30. .   I  .    W E.      .   L  .       .       .       .       .       .
            40. .    I .     W  E      .    L .       .       .       .       .       .
            50. .     I.      W.E      .     L.       .       .       .       .       .
            60. .      I.      W E     .      L.      .       .       .       .       .
            70. .       I.     .W E    .       L.     .       .       .       .       .
    8.00    80. .        I     . W E   .        L     .       .       .       .       .
            90. .        .I    . W E   .        L     .       .       .       .       .
           100. .        .I    .  W E  .        L     .       .       .       .       .
           110. .        . I   .  CW E  .        L     .       .       .       .       .
           120. .        . I   .  CW E  .        L     .       .       .       .       .
           130. .        .  I  .   CW E .        L     .       .       .       .       .
           140. .        .  I  .   C WE .        L     .       .       .       .       .
           150. .        .   I .    CW E.        L     .       .       .       .       .
           160. .        .   I .    C WE.        L     .       .       .       .       .
    7.00   170. .        .   I .    C WE.        L     .       .       .       .       .
           180. .        .    I.     CW E        RL    .       .       .       .       .
           190. .        .    I.     CW.E        R L   .       .       .       .       .
           200. .        .    I.     CWE         R  L  .       .       .       .       .
    6.00   210. .        .     I     .W E        R   L .       .       .       .       .
           220. .        .     .I    .W  E       .R  L .       .       .       .       .
           230. .        .     . I   . W E       . R L .       .       .       .       .
           240. .        .     . I   .  W E      . R L .       .       .       .       .
           250. .        .     .  I  .   W E     . R L .       .       .       .       .
           260. .        .     .   I .   CW E    .  RL .       .       .       .       .
    5.00   270. .        .     .    I.   CW E    .   L .       .       .       .       .
           280. .        .     .    I.   CWE     .   LR.       .       .       .       .
           290. .        .     .    I.   CWE.    .   L R.      .       .       .       .
           300. .        .     .     I.  CWE.    .   L R.      .       .       .       .
           310. .        .     .     I.  CWE     .   L R.      .       .       .       .
           320. .        .     .      I. CWE     .   L  R.     .       .       .       .
           330. .        .     .      I  CWE     .   L   R     .       .       .       .
           340. .        .     .      .I CWE     .   L  .R     .       .       .       .
           350. .        .     .      . I.CWE    .   L  . R    .       .       .       .
           360. .        .     .      .  I.CWE   .   L  .  R   .       .       .       .
           370. .        .     .      .   I. CWEL .      .  R   .       .       .       .
           380. .        .     .      .   I. CEL  .      .  R   .       .       .       .
    4.00   390. .        .     .      .    I. CWE .      .   R  .       .       .       .
           400. .        .     .      .     I. CWEL.      .   R  .       .       .       .
           410. .        .     .      .      I. CWE L.     .   R .       .       .       .
           420. .        .     .      .       I. WE L      .   R.       .       .       .
           430. .        .     .      .        I. WE.L     .    R.      .       .       .
           440. .        .     .      .         I  WE  L    .    R      .       .       .
```

```
3.00  450.  .  .  .  .  I    W E  L  R     .  .  .  .
      460.  .  .  .  .  I     W.E  L  .R    .  .  .  .
      470.  .  .  .  .  .I     W E   L . R   .  .  .  .
      480.  .  .  .  .  .I     CWE    L. R   .  .  .  .
      490.  .  .  .  .  . I    .W E    .L R   .  .  .  .
      500.  .  .  .  .  . I    .CW E   . L R  .  .  .  .
      510.  .  .  .  .  .  I   . CWE   .  L R .  .  .  .
      520.  .  .  .  .  .  I   . C WE   .  L R .  .  .  .
      530.  .  .  .  .  .  I   . CW E   .  L R .  .  .  .
      540.  .  .  .  .  .  I   .  CWE   .   LR.  .  .  .
2.00  550.  .  .  .  .  .  I   .  C WE  .    L   .  .  .
      560.  .  .  .  .  .   I  .  C WE .    R L   .  .  .
      570.  .  .  .  .  .   I  .   CW E.    R  L  .  .  .
      580.  .  .  .  .  .   I  .    CWE.    R   L .  .  .
      590.  .  .  .  .  .    I .    CW E     R   L .  .  .
      600.  .  .  .  .  .    I.     CW.E     R    L.  .  .
      610.  .  .  .  .  .    I      W.E      R     L.  .  .
1.00  620.  .  .  .  .  .    I      W. E     R      L  .  .
```

THIS RUN EXECUTED 11-02-92

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************
```

```
1**************************************************
*  WATER SURFACE PROFILES                        *
*  VERSION OF NOVEMBER 1976                      *
*  UPDATED MAY 1984                              *
*  IBM-PC-XT VERSION AUGUST 1985                 *
*  RUN DATE  10-20-92   TIME  14:24:56            *
*
**************************************************
```


```
**************************************
*  U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D        *
*  DAVIS, CALIFORNIA 95616           *
   *  (916) 440-2105 (FTS) 448-2105
**************************************
```


SUPER-CRITICAL

SOUTHEAST TRIBUTARY

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 10-20-92

```
**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
**************************************************
```

T1 SOUTHERN VISTA ESTATES
T2 OCTOBER 20, 1992
T3 SUPERCRITICAL FLOW SOUTHEAST TRIBUTARY

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	1.	.000000	.00	1.0	491.	516.100	.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	.000	.000	.000	.000	.000	.000	-1.000	.000	.000	.000

NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
QT	1.000	491.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	1.000	12.000	.000	508.000	75.000	60.000	65.000	.000	.000	.000
GR	520.000	.000	519.000	72.000	518.000	155.000	517.000	254.000	516.000	353.000
GR	515.000	369.000	514.000	378.000	514.000	383.000	515.000	420.000	516.000	448.000
GR	517.000	476.000	518.000	508.000	.000	.000	.000	.000	.000	.000
X1	2.000	11.000	.000	480.000	122.000	90.000	105.000	.000	.000	.000
GR	518.000	.000	517.000	83.000	516.000	190.000	515.000	296.000	514.000	307.000
GR	513.000	319.000	514.000	358.000	515.000	389.000	516.000	420.000	517.000	450.000
GR	518.000	480.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	3.000	8.000	.000	402.000	100.000	50.000	55.000	.000	.000	.000
GR	515.000	.000	514.000	180.000	513.000	235.000	512.000	260.000	513.000	300.000
GR	514.000	338.000	515.000	370.000	516.000	402.000	.000	.000	.000	.000
X1	4.000	7.000	.000	380.000	45.000	150.000	117.000	.000	.000	.000
GR	513.000	.000	512.000	235.000	511.000	260.000	512.000	290.000	513.000	315.000
GR	514.000	341.000	515.000	380.000	.000	.000	.000	.000	.000	.000
X1	5.000	9.000	.000	408.000	35.000	80.000	62.000	.000	.000	.000
GR	513.000	.000	512.000	80.000	511.000	240.000	510.000	267.000	509.000	292.000
GR	510.000	309.000	511.000	331.000	512.000	370.000	513.000	408.000	.000	.000
X1	6.000	10.000	.000	420.000	50.000	70.000	45.000	.000	.000	.000
GR	513.000	.000	512.000	72.000	511.000	140.000	510.000	253.000	509.000	276.000
GR	508.000	310.000	509.000	318.000	510.000	330.000	511.000	386.000	512.000	420.000

X1	7.000	10.000	.000	400.000	55.000	112.000	87.000	.000	.000	.000
GR	512.000	.000	511.000	80.000	510.000	140.000	509.000	205.000	508.000	248.000
GR	507.000	271.000	508.000	284.000	509.000	289.000	510.000	303.000	512.000	400.000
X1	8.000	12.000	.000	450.000	125.000	95.000	75.000	.000	.000	.000
GR	512.000	.000	511.000	65.000	510.000	110.000	509.000	160.000	508.000	244.000
GR	507.000	265.000	506.000	285.000	507.000	296.000	508.000	307.000	509.000	358.000
GR	510.000	400.000	512.000	450.000	.000	.000	.000	.000	.000	.000
X1	9.000	11.000	.000	400.000	.000	.000	.000	.000	.000	.000
GR	510.000	.000	509.000	22.000	508.000	45.000	507.000	160.000	506.000	250.000
GR	505.000	265.000	504.000	276.000	505.000	291.000	506.000	307.000	507.000	330.000
GR	510.000	400.000	.000	.000	.000	.000	.000	.000	.000	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED

1.00	1.35	515.85	515.85	516.10	516.34	.49	.00	.00	520.00
491.	0.	491.	0.	0.	87.	0.	0.	0.	518.00
.00	.00	5.64	.00	.035	.035	.035	.000	514.00	355.42
.017978	0.	0.	0.	0	15	0	.00	88.34	443.76

0
*SECNO 2.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.88	514.88	514.88	.00	515.38	.49	1.17	.67	518.00
491.	0.	491.	0.	0.	87.	0.	0.	0.	518.00
.00	.00	5.64	.00	.035	.035	.035	.000	513.00	297.27
.017995	75.	65.	60.	20	5	0	.00	88.14	385.41

0
*SECNO 3.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.00	1.67	513.67	513.67	.00	514.07	.39	2.00	1.39	515.00
491.	0.	491.	0.	0.	97.	0.	0.	0.	516.00
.01	.00	5.04	.00	.035	.035	.035	.000	512.00	197.91
.020187	122.	105.	90.	20	15	0	.00	127.72	325.63

0
*SECNO 4.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.00	1.66	512.66	512.66	.00	512.92	.26	1.14	.76	513.00
491.	0.	491.	0.	0.	121.	0.	0.	1.	515.00
.01	.00	4.07	.00	.035	.035	.035	.000	511.00	79.73
.021357	100.	55.	50.	20	6	0	.00	226.78	306.52

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.00	2.03	511.03	511.03	.00	511.49	.46	2.30	1.17	513.00
491.	0.	491.	0.	0.	90.	0.	1.	1.	513.00
.02	.00	5.46	.00	.035	.035	.035	.000	509.00	235.87
.018109	45.	117.	150.	20	11	0	.00	96.13	332.01

0
*SECNO 6.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

6.00	2.10	510.10	510.10	.00	510.57	.47	1.12	.48	513.00
491.	0.	491.	0.	0.	89.	0.	1.	1.	512.00
.02	.00	5.52	.00	.035	.035	.035	.000	508.00	241.78
.018155	35.	62.	80.	20	8	0	.00	93.78	335.56

0
*SECNO 7.000

7.00	2.01	509.01	509.12	.00	509.62	.61	.94	.01	512.00
491.	0.	491.	0.	0.	78.	0.	1.	1.	512.00
.02	.00	6.28	.00	.035	.035	.035	.000	507.00	204.82
.024172	50.	45.	70.	3	5	0	.00	84.22	289.04

0
*SECNO 8.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.00	2.35	508.35	508.35	.00	508.78	.43	1.88	.73	512.00
491.	0.	491.	0.	0.	93.	0.	1.	1.	512.00
.03	.00	5.28	.00	.035	.035	.035	.000	506.00	214.45
.019482	55.	87.	112.	20	8	0	.00	110.49	324.94

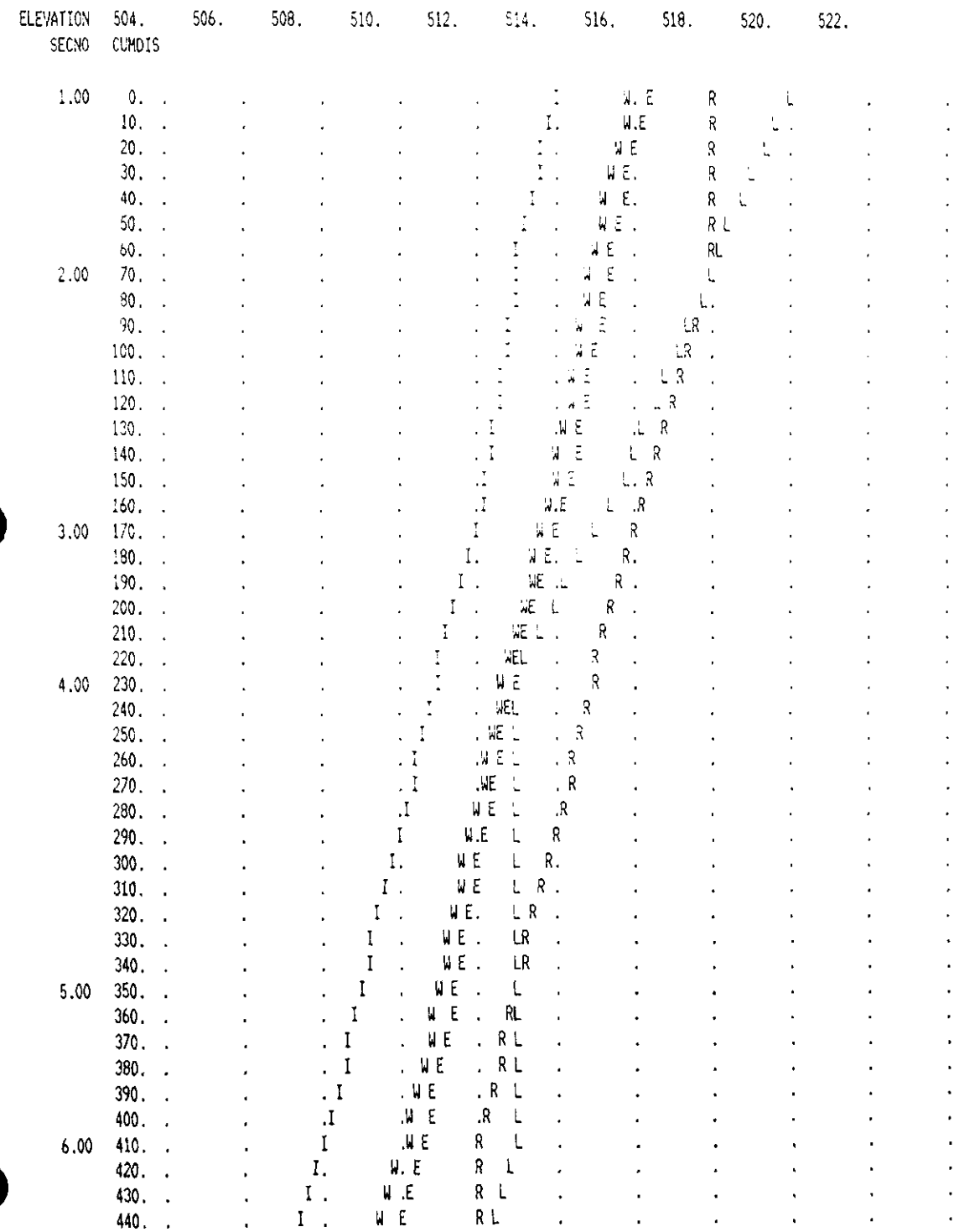
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*SECNO 9.000

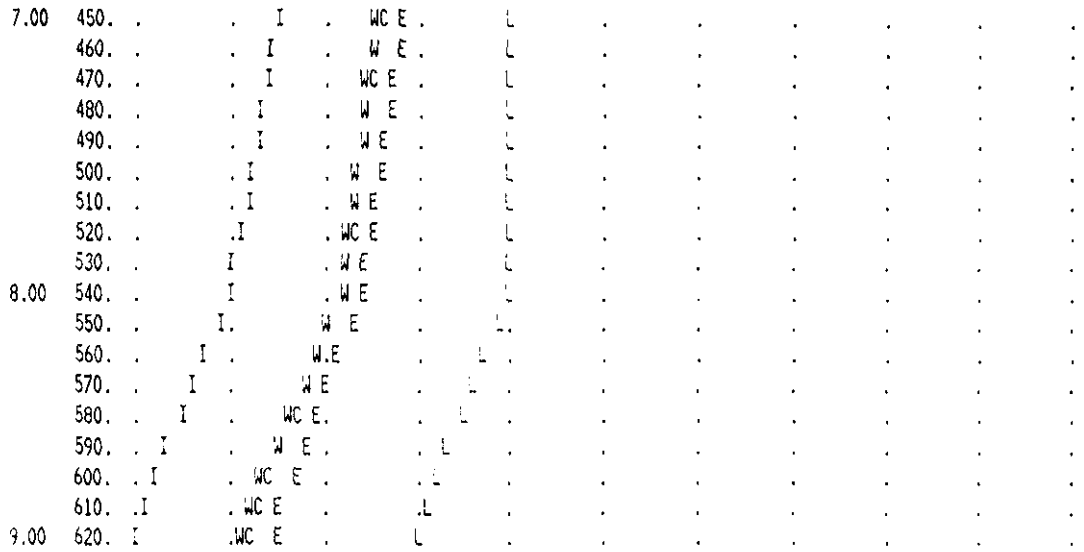
9.00	2.28	506.28	506.45	.00	506.96	.68	1.80	.02	510.00
491.	0.	491.	0.	0.	74.	0.	1.	2.	510.00
.03	.00	6.62	.00	.035	.035	.035	.000	504.00	225.52
.030462	125.	75.	95.	3	8	0	.00	87.74	313.26

0

PROFILE FOR STREAM SUPERCRITICAL FLOW

PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA




7.00
450.
460.
470.
480.
490.
500.
510.
520.
530.
8.00
540.
550.
560.
570.
580.
590.
600.
610.
9.00
620.

THIS RUN EXECUTED 10-20-92

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************
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1*********************************************************
*  WATER SURFACE PROFILES                               *
*  VERSION OF NOVEMBER 1976                             *
*  UPDATED MAY 1984                                     *
*  IBM-PC-XT VERSION AUGUST 1985                        *
*  RUN DATE  10-21-92   TIME  11:54:05                    *
*
*********************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
   *  (916) 440-2105 (FTS) 448-2105
*****************************************
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SUB-CRITICAL
SOUTHWEST TRIBUTARY

```
X    X  XXXXXXX   XXXXX            XXXXX
X    X  X        X     X          X     X
X    X  X        X                      X
XXXXXXX  XXXX    X          XXXXX   XXXXX
X    X  X        X                X
X    X  X        X     X          X
X    X  XXXXXXX   XXXXX            XXXXXXX
```

THIS RUN EXECUTED 10-21-92

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************
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T1 SOUTHERN VISTA ESTATES
T2 OCTOBER 21, 1992
T3 SUBCRITICAL FLOW SOUTHWEST TRIBUTARY

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	.000000	.00	1.0	164.	505.200	.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	.000	.000	.000	.000	.000	.000	-1.000	.000	.000	.000

NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
QT	1.000	164.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	13.000	9.000	.000	265.000	.000	.000	.000	.000	.000	.000
GR	509.000	.000	508.000	40.000	507.000	75.000	506.000	86.000	505.000	99.000
GR	504.000	113.000	505.000	150.000	505.000	225.000	506.000	265.000	.000	.000
X1	12.000	9.000	.000	270.000	32.000	68.000	40.000	.000	.000	.000
GR	510.000	.000	509.000	23.000	508.000	72.000	507.000	85.000	506.000	96.000
GR	505.000	112.000	506.000	155.000	507.000	200.000	508.000	270.000	.000	.000
X1	11.000	8.000	.000	246.000	56.000	50.000	55.000	.000	.000	.000
GR	510.000	.000	509.000	23.000	508.000	35.000	507.000	47.000	506.000	62.000
GR	507.000	110.000	508.000	175.000	509.000	246.000	.000	.000	.000	.000
X1	10.000	8.000	.000	305.000	64.000	10.000	50.000	.000	.000	.000
GR	512.000	.000	511.000	44.000	510.000	72.000	509.000	85.000	508.000	102.000
GR	507.000	120.000	508.000	185.000	509.000	305.000	.000	.000	.000	.000
X1	9.000	10.000	.000	240.000	113.000	109.000	110.000	.000	.000	.000
GR	514.000	.000	513.000	55.000	512.000	85.000	511.000	106.000	510.000	123.000
GR	509.000	140.000	508.000	160.000	509.000	181.000	510.000	199.000	511.000	240.000
X1	8.000	10.000	.000	374.000	77.000	146.000	108.000	.000	.000	.000
GR	514.000	.000	513.000	78.000	512.000	105.000	511.000	125.000	510.000	150.000
GR	511.000	167.000	512.000	190.000	513.000	215.000	514.000	252.000	515.000	374.000
X1	7.000	13.000	.000	300.000	155.000	133.000	143.000	.000	.000	.000
GR	517.000	.000	516.000	25.000	515.000	62.000	514.000	87.000	513.000	96.000
GR	512.000	103.000	511.000	110.000	512.000	130.000	513.000	149.000	514.000	167.000
GR	515.000	186.000	516.000	251.000	517.000	300.000	.000	.000	.000	.000

X1	6.000	15.000	.000	302.000	123.000	108.000	120.000	.000	.000	.000
GR	520.000	.000	519.000	36.000	518.000	67.000	517.000	100.000	516.000	131.000
GR	515.000	136.000	514.000	141.000	513.000	146.000	512.000	151.000	513.000	167.000
GR	514.000	182.000	515.000	191.000	516.000	211.000	517.000	245.000	518.000	302.000
X1	5.000	13.000	.000	300.000	37.000	25.000	34.000	.000	.000	.000
GR	519.000	.000	518.000	52.000	517.000	85.000	516.000	95.000	515.000	100.000
GR	514.000	105.000	513.000	109.000	514.000	129.000	515.000	144.000	516.000	159.000
GR	517.000	181.000	518.000	247.000	519.000	300.000	.000	.000	.000	.000
X1	4.000	11.000	.000	245.000	22.000	17.000	20.000	.000	.000	.000
GR	520.000	.000	519.000	40.000	518.000	94.000	517.000	105.000	516.000	113.000
GR	515.000	121.000	514.000	130.000	515.000	150.000	516.000	168.000	517.000	183.000
GR	518.000	245.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	3.000	10.000	.000	210.000	70.000	60.000	65.000	.000	.000	.000
GR	520.000	.000	519.000	47.000	518.000	73.000	517.000	85.000	516.000	98.000
GR	515.000	110.000	516.000	121.000	517.000	131.000	518.000	142.000	519.000	210.000
X1	2.000	9.000	.000	240.000	70.000	52.000	58.000	.000	.000	.000
GR	520.000	.000	519.000	49.000	518.000	83.000	517.000	95.000	516.000	105.000
GR	517.000	112.000	518.000	117.000	519.000	135.000	520.000	240.000	.000	.000
X1	1.000	8.000	.000	190.000	48.000	55.000	58.000	.000	.000	.000
GR	520.000	.000	519.000	40.000	518.000	50.000	517.000	62.000	518.000	72.000
GR	519.000	80.000	520.000	90.000	521.000	190.000	.000	.000	.000	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300

*SECNO 13.000

13.00	1.20	505.20	505.18	505.20	505.36	.16	.00	.00	509.00
164.	0.	164.	0.	0.	52.	0.	0.	0.	506.00
.00	.00	3.17	.00	.035	.035	.035	.000	504.00	96.40
.020322	0.	0.	0.	0	5	0	.00	136.60	233.00

0

*SECNO 12.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

12.00	1.13	506.13	506.13	.00	506.42	.29	.85	.04	510.00
164.	0.	164.	0.	0.	38.	0.	0.	0.	508.00
.00	.00	4.34	.00	.035	.035	.035	.000	505.00	94.55
.022210	32.	40.	68.	0	11	0	.00	66.39	160.94

0

*SECNO 11.000

11.00	1.21	507.21	507.11	.00	507.40	.20	.97	.01	510.00
164.	0.	164.	0.	0.	46.	0.	0.	0.	509.00
.01	.00	3.55	.00	.035	.035	.035	.000	506.00	44.51
.014260	56.	55.	50.	2	8	0	.00	78.99	123.50

0

*SECNO 10.000

10.00	1.02	508.02	507.99	.00	508.24	.22	.84	.01	512.00
164.	0.	164.	0.	0.	43.	0.	0.	0.	509.00
.01	.00	3.79	.00	.035	.035	.035	.000	507.00	101.64
.019848	64.	50.	10.	2	15	0	.00	85.93	187.57

0

*SECNO 9.000

9.00	1.52	509.52	509.31	.00	509.71	.19	1.46	.00	514.00
164.	0.	164.	0.	0.	46.	0.	0.	0.	511.00
.02	.00	3.53	.00	.035	.035	.035	.000	508.00	131.18
.009540	113.	110.	109.	4	11	0	.00	59.16	190.34

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.00	1.30	511.30	511.30	.00	511.63	.33	1.48	.04	514.00
164.	0.	164.	0.	0.	35.	0.	0.	1.	515.00
.03	.00	4.63	.00	.035	.035	.035	.000	510.00	119.04
.021313	77.	108.	146.	0	15	0	.00	54.81	173.85

0
*SECNO 7.000

7.00	1.94	512.94	512.55	.00	513.11	.16	1.46	.02	517.00
164.	0.	164.	0.	0.	51.	0.	1.	1.	517.00
.04	.00	3.23	.00	.035	.035	.035	.000	511.00	96.37
.005956	155.	143.	133.	4	11	0	.00	51.64	148.00

0
*SECNO 6.000

6.00	1.85	513.85	513.71	.00	514.18	.33	1.02	.05	520.00
164.	0.	164.	0.	0.	35.	0.	1.	1.	518.00
.05	.00	4.63	.00	.035	.035	.035	.000	512.00	141.77
.013153	123.	120.	108.	2	15	0	.00	37.91	179.68

0
*SECNO 5.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.00	1.63	514.63	514.63	.00	515.06	.44	.54	.03	519.00
164.	0.	164.	0.	0.	31.	0.	1.	1.	519.00
.05	.00	5.30	.00	.035	.035	.035	.000	513.00	101.87
.019583	37.	34.	25.	0	15	0	.00	36.53	138.39

0
*SECNO 4.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.00	1.51	515.51	515.51	.00	515.90	.40	.40	.00	520.00
164.	0.	164.	0.	0.	32.	0.	1.	1.	518.00
.05	.00	5.05	.00	.035	.035	.035	.000	514.00	116.96
.020123	22.	20.	17.	0	11	0	.00	42.13	159.09

0
*SECNO 3.000

3.00	1.71	516.71	516.65	.00	517.08	.37	1.17	.00	520.00
164.	0.	164.	0.	0.	34.	0.	1.	1.	519.00
.05	.00	4.87	.00	.035	.035	.035	.000	515.00	88.75
.016270	70.	65.	60.	1	8	0	.00	39.36	128.11

0

SECNO	DEPTH	CWSEL	CRIWS	WSELX	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

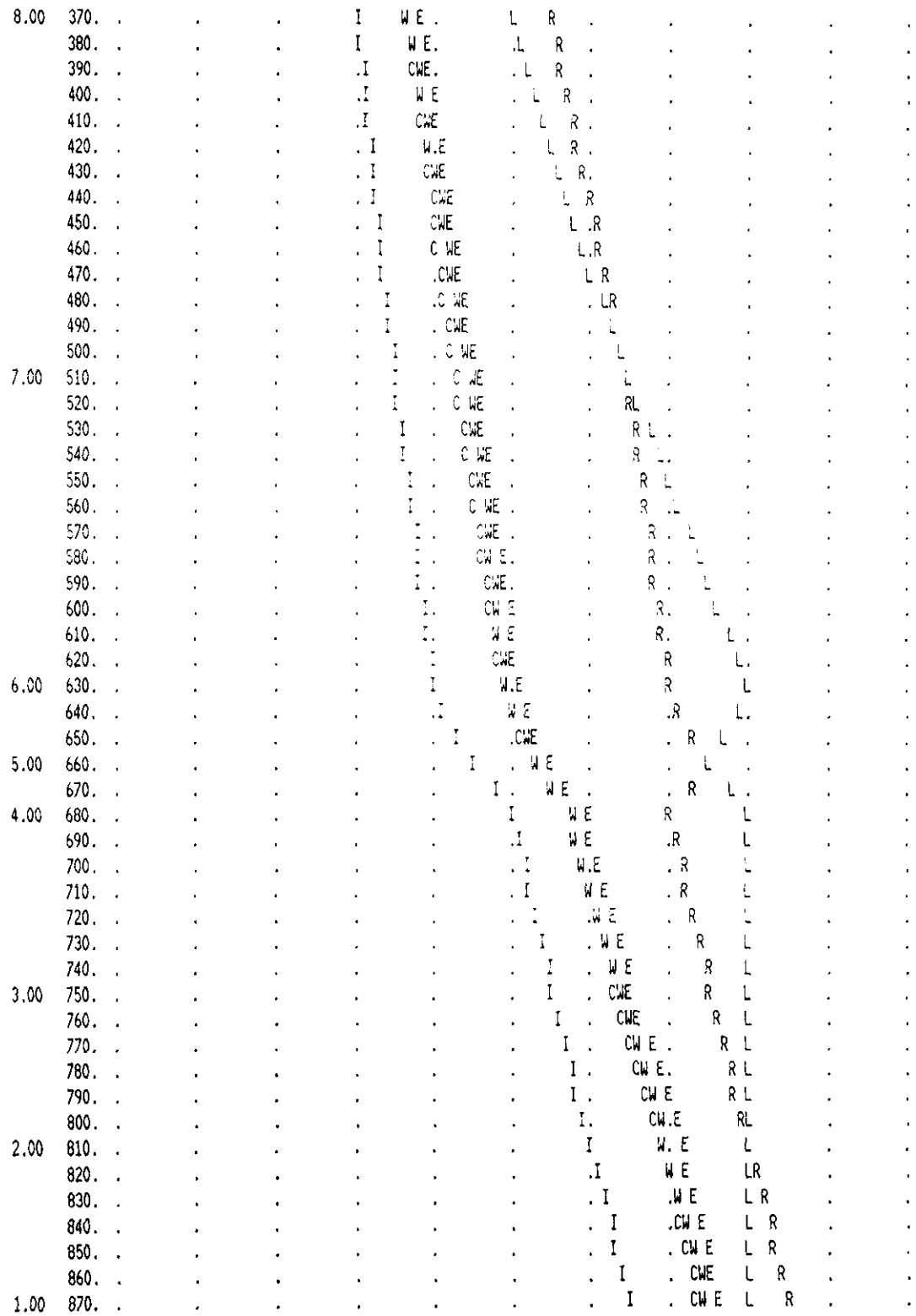
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*SECNO 2.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.00     1.86   517.86   517.86      .00   518.34      .48     1.02      .03   520.00
     164.       0.     164.       0.       0.     30.       0.       1.       1.   520.00
      .05      .00     5.56      .00     .035     .035     .035     .000   516.00    94.64
   .019005      70.      58.      52.       0        8        0      .00    31.68   116.32
0
 *SECNO 1.000
     1.00     1.88   518.88   518.69      .00   519.18      .30      .82      .02   520.00
     164.       0.     164.       0.       0.     37.       0.       1.       1.   521.00
      .06      .00     4.40      .00     .035     .035     .035     .000   517.00    41.22
   .011024      48.      58.      55.        1       15        0      .00    37.81    79.03
0
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PROFILE FOR STREAM SUBCRITICAL FLOW S

PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

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ELEVATION  504.     506.     508.     510.     512.     514.     516.     518.     520.     522.
   SECNO  CUMDIS

   13.00     0.  I    WE  R        .   L    .        .        .        .        .        .        .
            10.  .I    WE  .  R        .    L   .        .        .        .        .        .        .
            20.  .  I   WE.    R    .        L   .        .        .        .        .        .        .
            30.  .  I   W.E      R  .        L.       .        .        .        .        .        .
   12.00    40.  .   I    .WE       R         L       .        .        .        .        .        .
            50.  .    I   . WE      .R        L       .        .        .        .        .        .
            60.  .     I  . CWE     . R       L       .        .        .        .        .        .
            70.  .      I . CWE     .  R      L       .        .        .        .        .        .
            80.  .       I.  CWE    .   R     L       .        .        .        .        .        .
            90.  .        I   CWE   .    R    L       .        .        .        .        .        .
   11.00   100.  .        I    WE   .    R    L       .        .        .        .        .        .
           110.  .        .I   CWE  .    R    .L      .        .        .        .        .        .
           120.  .        . I  CWE  .    R    .  L    .        .        .        .        .        .
           130.  .        .  I  WE  .    R    .    L  .        .        .        .        .        .
           140.  .        .   I  WE  .   R    .     L .        .        .        .        .        .
   10.00   150.  .        .    I  WE .   R    .      L        .        .        .        .        .
           160.  .        .    I  .WE .  R    .       L       .        .        .        .        .
           170.  .        .     I .W E .  R   .        .L      .        .        .        .        .
           180.  .        .     I  . WE .  R  .        . L     .        .        .        .        .
           190.  .        .      I . CWE .  R.         .  L    .        .        .        .        .
           200.  .        .      I . CWE .  R          .   L   .        .        .        .        .
           210.  .        .       I .  WE .  R         .   L   .        .        .        .        .
           220.  .        .       I .  CWE . .R        .    L  .        .        .        .        .
           230.  .        .        I.  CWE  . R        .     L .        .        .        .        .
           240.  .        .        I.  CWE  . R        .      L.        .        .        .        .
           250.  .        .         I   CWE .  R       .       L.       .        .        .        .
    9.00   260.  .        .         I    CWE.  R       .       L        .        .        .        .
           270.  .        .         .I   CWE.   MR      .       L        .        .        .        .
           280.  .        .         . I  CWE     MR.     .       L        .        .        .        .
           290.  .        .         .  I CWE     M.R     .       L        .        .        .        .
           300.  .        .         .   I CWE    .MR     .       L        .        .        .        .
           310.  .        .         .    I .CWE  . M R   .       L        .        .        .        .
           320.  .        .         .     I . CWE . M  R  .       L        .        .        .        .
           330.  .        .         .     I . W E .  M  R L       .        .        .        .        .
           340.  .        .         .      I . WE .   M  L        .        .        .        .        .
           350.  .        .         .       I .  WE .    M L R    .        .        .        .        .
           360.  .        .         .        I.   WE .    ML  R    .        .        .        .        .
```


8.00 370. I W E . L R
380. I W E. .L R
390. .I CWE. . L R
400. .I W E . L R
410. .I CWE . L R.
420. . I W.E . L R.
430. . I CWE . L R.
440. . I CWE . L R
450. . I CWE . L .R
460. . I C WE . L.R
470. . I .CWE . L R
480. . I .C WE . . LR
490. . I . CWE . . L
500. . I . C WE . . L
7.00 510. . I . C WE . . L
520. . I . C WE . . RL
530. . I . CWE . . R L
540. . I . C WE . . R L
550. . I . CWE . . R L
560. . I . C WE . . R L
570. . I . CWE . . R . L
580. . I . CW E. . R . L
590. . I . CWE. . R . L
600. . I. CW E . R. L
610. . I. W E . R. L
620. . I CWE . R L.
6.00 630. . I W.E . R L
640. . .I W E . .R L.
650. . . I .CWE . . R L
5.00 660. . . I . W E . . L
670. . . I . W E . . R L
4.00 680. . . I W E R L
690. . . .I W E .R L
700. . . . I W.E . R L
710. . . . I W E . R L
720. . . . I .W E . R L
730. . . . I . W E . R L
740. . . . I . W E . R L
3.00 750. . . . I . CWE . R L
760. . . . I . CWE . R L
770. . . . I . CW E . R L
780. . . . I . CW E. R L
790. . . . I . CW E R L
800. . . . I. CW.E RL
2.00 810. . . . I W. E L
820. . . . .I W E LR
830. . . . . I .W E L R
840. . . . . I .CW E L R
850. . . . . I . CW E L R
860. . . . . I . CWE L R
1.00 870. . . . . I . CW E L R

THIS RUN EXECUTED 10-21-92

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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
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1*************************************************
* WATER SURFACE PROFILES                        *
* VERSION OF NOVEMBER 1976                      *
* UPDATED MAY 1984                              *
* IBM-PC-XT VERSION AUGUST 1985                 *
* RUN DATE  11-02-92   TIME  14:31:35            *
*
*************************************************
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*************************************************
* U.S. ARMY CORPS OF ENGINEERS                  *
* THE HYDROLOGIC ENGINEERING CENTER             *
* 609 SECOND STREET, SUITE D                    *
* DAVIS, CALIFORNIA 95616                       *
  * (916) 440-2105 (FTS) 448-2105
*************************************************
```


SUPER-CRITICAL
SOUTHWEST TRIBUTARY

THIS RUN EXECUTED 11-02-92

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************


T1           SOUTHERN VISTA ESTATES
T2           OCTOBER 21, 1992
T3           SUPERCRITICAL FLOW SOUTHWEST TRIBUTARY

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.       2.        0.        1.   .000000       .00      1.0     164.   518.700      .000

J2  XPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLOC     IBW       CHNIM     ITRACE

      .000      .000      .000      .000      .000      .000    -1.000      .000      .000      .000


NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
QT     1.000   164.000      .000      .000      .000      .000      .000      .000      .000      .000
X1     1.000     8.000      .000   190.000    48.000    55.000    58.000      .000      .000      .000
GR   520.000      .000   519.000    40.000   518.000    50.000   517.000    62.000   518.000    72.000
GR   519.000    80.000   520.000    90.000   521.000   190.000      .000      .000      .000      .000

X1     2.000     9.000      .000   240.000    70.000    52.000    58.000      .000      .000      .000
GR   520.000      .000   519.000    49.000   518.000    83.000   517.000    95.000   516.000   105.000
GR   517.000   112.000   518.000   117.000   519.000   135.000   520.000   240.000      .000      .000

X1     3.000    10.000      .000   210.000    70.000    60.000    65.000      .000      .000      .000
GR   520.000      .000   519.000    47.000   518.000    73.000   517.000    85.000   516.000    98.000
GR   515.000   110.000   516.000   121.000   517.000   131.000   518.000   142.000   519.000   210.000

X1     4.000    11.000      .000   245.000    22.000    17.000    20.000      .000      .000      .000
GR   520.000      .000   519.000    40.000   518.000    94.000   517.000   105.000   516.000   113.000
GR   515.000   121.000   514.000   130.000   515.000   150.000   516.000   168.000   517.000   183.000
GR   518.000   245.000      .000      .000      .000      .000      .000      .000      .000      .000

X1     5.000    13.000      .000   300.000    37.000    25.000    34.000      .000      .000      .000
GR   519.000      .000   518.000    52.000   517.000    85.000   516.000    95.000   515.000   100.000
GR   514.000   105.000   513.000   109.000   514.000   129.000   515.000   144.000   516.000   159.000
GR   517.000   181.000   518.000   247.000   519.000   300.000      .000      .000      .000      .000

X1     6.000    15.000      .000   302.000   123.000   108.000   120.000      .000      .000      .000
GR   520.000      .000   519.000    36.000   518.000    67.000   517.000   100.000   516.000   131.000
GR   515.000   136.000   514.000   141.000   513.000   146.000   512.000   151.000   513.000   167.000
GR   514.000   182.000   515.000   191.000   516.000   211.000   517.000   245.000   518.000   302.000
```

X1	7.000	13.000	.000	300.000	155.000	133.000	143.000	.000	.000	.000
GR	517.000	.000	516.000	25.000	515.000	62.000	514.000	87.000	513.000	96.000
GR	512.000	103.000	511.000	110.000	512.000	130.000	513.000	149.000	514.000	167.000
GR	515.000	186.000	516.000	251.000	517.000	300.000	.000	.000	.000	.000
X1	8.000	10.000	.000	374.000	77.000	146.000	108.000	.000	.000	.000
GR	514.000	.000	513.000	78.000	512.000	105.000	511.000	125.000	510.000	150.000
GR	511.000	167.000	512.000	190.000	513.000	215.000	514.000	252.000	515.000	374.000
X1	9.000	10.000	.000	240.000	113.000	109.000	110.000	.000	.000	.000
GR	514.000	.000	513.000	55.000	512.000	85.000	511.000	106.000	510.000	123.000
GR	509.000	140.000	508.000	160.000	509.000	181.000	510.000	199.000	511.000	240.000
X1	10.000	8.000	.000	305.000	64.000	10.000	50.000	.000	.000	.000
GR	512.000	.000	511.000	44.000	510.000	72.000	509.000	85.000	508.000	102.000
GR	507.000	120.000	508.000	185.000	509.000	305.000	.000	.000	.000	.000
X1	11.000	8.000	.000	246.000	56.000	50.000	55.000	.000	.000	.000
GR	510.000	.000	509.000	23.000	508.000	35.000	507.000	47.000	506.000	62.000
GR	507.000	110.000	508.000	175.000	509.000	246.000	.000	.000	.000	.000
X1	12.000	9.000	.000	270.000	32.000	68.000	40.000	.000	.000	.000
GR	510.000	.000	509.000	23.000	508.000	72.000	507.000	85.000	506.000	96.000
GR	505.000	112.000	506.000	155.000	507.000	200.000	508.000	270.000	.000	.000
X1	13.000	9.000	.000	265.000	.000	.000	.000	.000	.000	.000
GR	509.000	.000	508.000	40.000	507.000	75.000	506.000	86.000	505.000	99.000
GR	504.000	113.000	505.000	150.000	505.000	225.000	506.000	265.000	.000	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED

1.00	1.69	518.69	518.69	518.70	519.14	.45	.00	.00	520.00
164.	0.	164.	0.	0.	30.	0.	0.	0.	521.00
.00	.00	5.41	.00	.035	.035	.035	.000	517.00	43.14
.019271	0.	0.	0.	0	4	0	.00	34.35	77.49

0
*SECNO 2.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.87	517.87	517.87	.00	518.34	.48	1.11	.66	520.00
164.	0.	164.	0.	0.	30.	0.	0.	0.	520.00
.00	.00	5.54	.00	.035	.035	.035	.000	516.00	84.60
.018837	48.	58.	55.	20	8	0	.00	31.73	116.33

0
*SECNO 3.000

3.00	1.58	516.58	516.65	.00	517.09	.51	1.25	.00	520.00
164.	0.	164.	0.	0.	29.	0.	0.	0.	519.00
.01	.00	5.71	.00	.035	.035	.035	.000	515.00	90.46
.024893	70.	58.	52.	3	15	0	.00	36.35	126.80

0
*SECNO 4.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.00	1.51	515.51	515.51	.00	515.90	.40	1.45	.94	520.00
164.	0.	164.	0.	0.	32.	0.	0.	0.	518.00
.01	.00	5.05	.00	.035	.035	.035	.000	514.00	116.96
.020089	70.	65.	60.	20	11	0	.00	42.14	159.10

0
*SECNO 5.000

5.00	1.34	514.34	514.63	.00	515.24	.90	.61	.05	519.00
164.	0.	164.	0.	0.	22.	0.	0.	0.	519.00
.01	.00	7.61	.00	.035	.035	.035	.000	513.00	103.26
.052408	22.	20.	17.	5	8	0	.00	30.96	134.22

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

6.00	1.72	513.72	513.72	.00	514.16	.44	1.02	.16	520.00
164.	0.	164.	0.	0.	31.	0.	0.	0.	518.00
.01	.00	5.35	.00	.035	.035	.035	.000	512.00	142.42
.019362	37.	34.	25.	20	11	0	.00	35.31	177.73

0
*SECNO 7.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

7.00	1.55	512.55	512.55	.00	512.95	.40	2.36	1.50	517.00
164.	0.	164.	0.	0.	32.	0.	0.	0.	517.00
.02	.00	5.09	.00	.035	.035	.035	.000	511.00	99.16
.020039	123.	120.	108.	20	15	0	.00	41.28	140.43

0
*SECNO 8.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.00	1.30	511.30	511.30	.00	511.63	.33	2.96	1.72	514.00
164.	0.	164.	0.	0.	35.	0.	0.	0.	515.00
.03	.00	4.63	.00	.035	.035	.035	.000	510.00	119.04
.021327	155.	143.	133.	20	15	0	.00	54.81	173.85

0
*SECNO 9.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.00	1.31	509.31	509.31	.00	509.65	.34	2.26	.09	514.00
164.	0.	164.	0.	0.	35.	0.	0.	1.	511.00
.03	.00	4.68	.00	.035	.035	.035	.000	508.00	134.68
.020548	77.	108.	146.	20	5	0	.00	51.96	186.64

0
*SECNO 10.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	VV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

10.00	.99	507.99	507.99	.00	508.24	.25	2.39	1.36	512.00
164.	0.	164.	0.	0.	41.	0.	1.	1.	509.00
.04	.00	4.03	.00	.035	.035	.035	.000	507.30	102.17
.022979	113.	110.	109.	20	15	0	.00	82.21	184.39

0

*SECNO 11.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

11.00	1.11	507.11	507.11	.00	507.39	.28	1.13	.64	510.00
164.	0.	164.	0.	0.	39.	0.	1.	1.	509.00
.04	.00	4.21	.00	.035	.035	.035	.000	506.30	45.67
.022126	64.	50.	10.	20	8	0	.00	71.54	117.21

0

*SECNO 12.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

12.00	1.14	506.14	506.14	.00	506.42	.29	1.20	.75	510.00
164.	0.	164.	0.	0.	38.	0.	1.	1.	508.00
.05	.00	4.29	.00	.035	.035	.035	.000	505.00	94.47
.021456	56.	55.	50.	20	5	0	.00	66.80	161.26

0

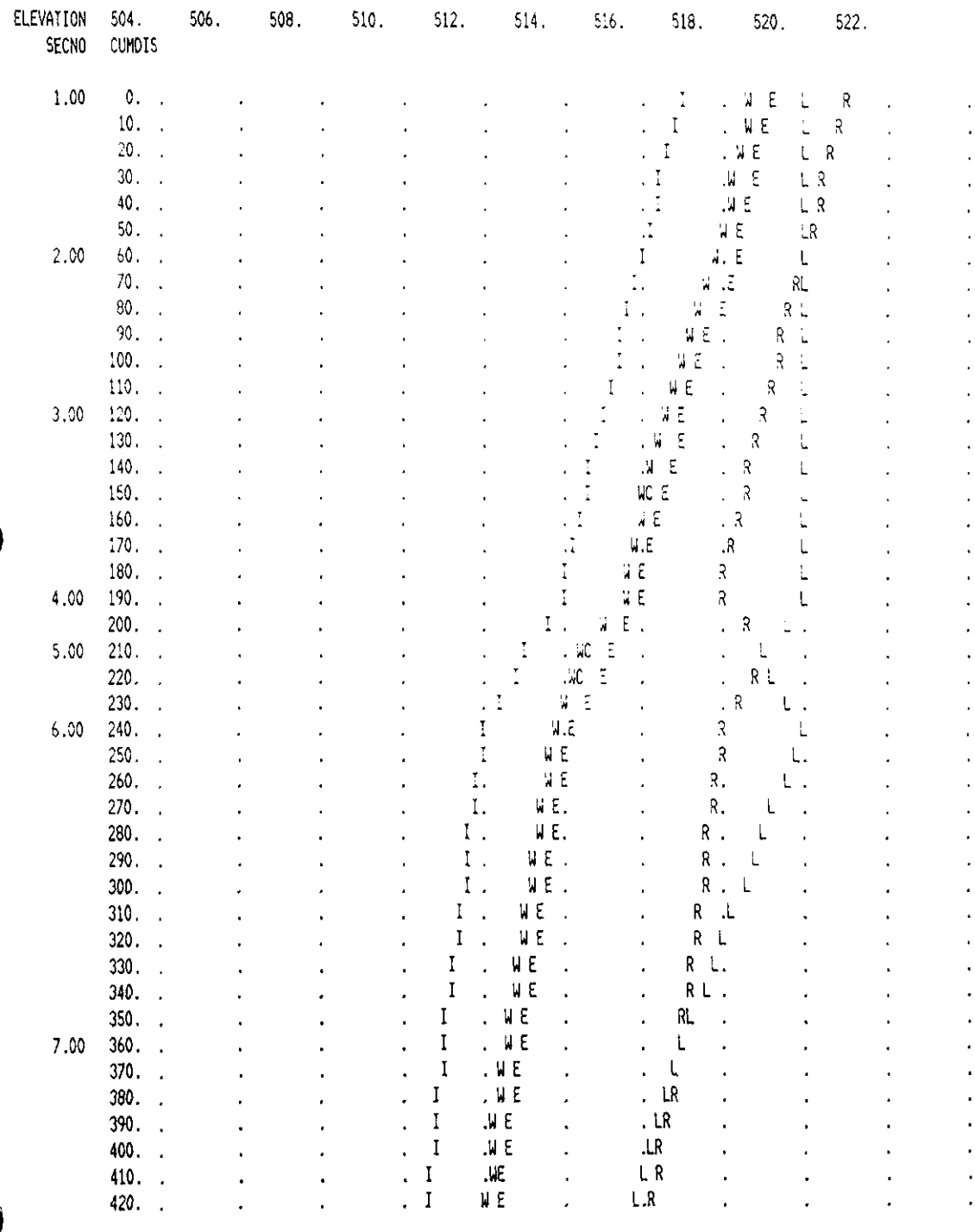
*SECNO 13.000

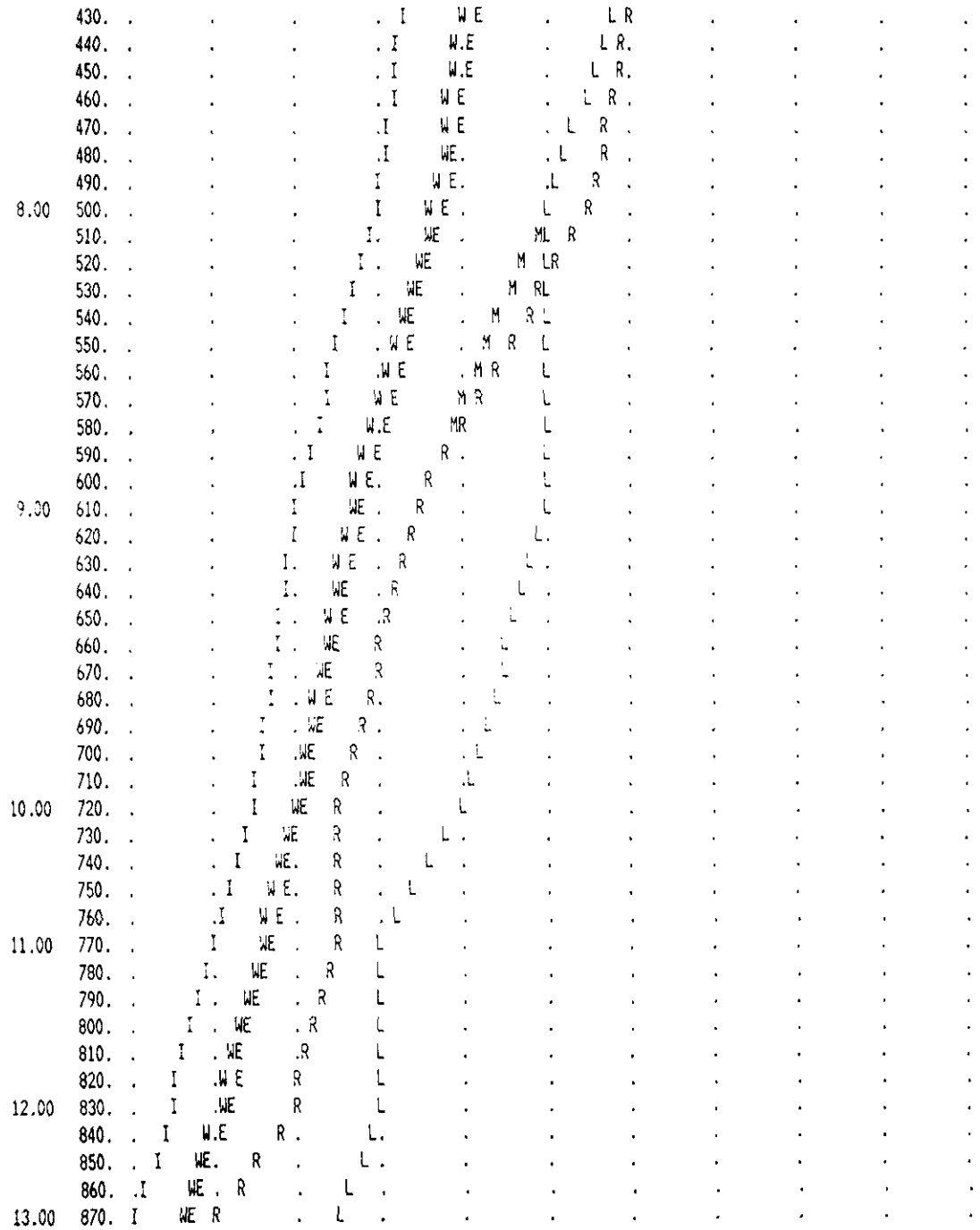
13.00	1.14	505.14	505.16	.00	505.35	.21	1.05	.02	509.00
164.	0.	164.	0.	0.	45.	0.	1.	1.	506.00
.05	.00	3.68	.00	.035	.035	.035	.000	504.00	97.10
.032672	32.	40.	68.	2	8	0	.00	133.76	230.86

0

PROFILE FOR STREAM SUPERCRITICAL FLOW

PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA




8.00
9.00
10.00
11.00
12.00
13.00

THIS RUN EXECUTED 11-02-92

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
**************************************************
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APPENDIX C

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**********************************************************
*  WATER SURFACE PROFILES                                *
*  VERSION OF NOVEMBER 1976                              *
*  UPDATED MAY 1984                                      *
*  IBM-PC-XT VERSION AUGUST 1985                         *
*  RUN DATE  10-29-92   TIME  12:36:55                     *
*                                                        *
**********************************************************
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```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616             *
*  (916) 440-2105 (FTS) 448-2105       *
****************************************
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SUB-CRITICAL

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X          X     X
X     X  X        X                      X
XXXXXXX  XXXX     X          XXXXX   XXXXX
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXXXXXX
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THIS RUN EXECUTED 10-29-92

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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
**************************************************

T1          SOUTHERN VISTA ESTATES
T2          OCTOBER 23, 1992
T3          SUBCRITICAL RUN

J1  ICHECK    INQ      NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.       2.        0.        0.   .000000       .00       1.0     700.   481.000      .000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1.000      .000      .000      .000      .000      .000    -1.000      .000      .000      .000


NC      .025      .025      .025      .300      .500      .000      .000      .000      .000      .000
QT     1.000   700.000      .000      .000      .000      .000      .000      .000      .000      .000
X1  2875.000     5.000      .000   113.000      .000      .000      .000      .000      .000      .000
GR   481.060      .000   481.060    66.000   479.600    69.000   479.600   110.000   482.800   113.000

X1  2850.000     5.000      .000   113.000    25.000    25.000    25.000      .000      .000      .000
GR   483.000      .000   483.000    70.000   479.860    76.000   479.860   104.000   485.600   113.000

X1  2800.000     5.000      .000   113.000    50.000    50.000    50.000      .000      .000      .000
GR   485.400      .000   484.600    75.000   480.600    83.000   480.600   103.000   486.600   113.000

X1  2700.000     5.000      .000   113.000   100.000   100.000   100.000      .000      .000      .000
GR   485.500      .000   485.000    75.000   481.000    83.000   481.000   103.000   486.000   113.000

X1  2600.000     5.000      .000   113.000   100.000   100.000   100.000      .000      .000      .000
GR   485.800      .000   485.400    75.000   481.420    83.000   481.400   103.000   486.420   113.000

X1  2500.000     5.000      .000   113.000   100.000   100.000   100.000      .000      .000      .000
GR   487.000      .000   486.000    74.600   481.800    83.000   481.800   103.000   486.800   113.000

X1  2400.000     5.000      .000   113.000   100.000   100.000   100.000      .000      .000      .000
GR   486.300      .000   486.000    75.400   482.200    83.000   482.200   103.000   487.200   113.000

NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
X1  2365.000     5.000      .000   113.000    35.000    35.000    35.000      .000      .000      .000
GR   487.000      .000   486.600    75.000   482.340    83.000   482.340   103.000   487.000   113.000

X1  2350.000     5.000      .000   113.000    15.000    15.000    15.000      .000      .000      .000
GR   487.100      .000   486.700    74.400   482.400    83.000   482.400   103.000   487.400   113.000
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X1	2340.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	487.200	.000	486.900	76.000	482.440	83.000	482.440	103.000	487.440	113.000
X1	2320.000	5.000	.000	113.000	20.000	20.000	20.000	.000	.000	.000
GR	487.400	.000	487.200	75.000	483.320	83.000	483.320	103.000	488.320	113.000
X1	2300.000	5.000	.000	113.000	20.000	20.000	20.000	.000	.000	.000
GR	487.700	.000	487.500	76.400	484.200	83.000	484.200	103.000	489.200	113.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	2290.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	487.750	.000	487.520	76.000	484.240	83.000	484.240	103.000	489.240	113.000
X1	2200.000	5.000	.000	113.000	90.000	90.000	90.000	.000	.000	.000
GR	489.000	.000	488.300	75.600	484.600	83.000	484.600	103.000	489.600	113.000
NC	.025	.025	.025	.300	.500	.000	.000	.000	.000	.000
X1	2150.000	5.000	.000	113.000	50.000	50.000	50.000	.000	.000	.000
GR	489.500	.000	489.100	74.400	484.800	83.000	484.800	103.000	489.800	113.000
X1	2140.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	489.740	.000	489.220	75.000	484.840	83.000	484.840	101.000	490.240	113.000
X1	2125.000	5.000	.000	111.000	15.000	15.000	15.000	.000	.000	.000
GR	489.920	.000	489.440	75.000	484.900	83.000	484.900	98.000	490.900	111.000
X1	2110.000	5.000	.000	110.000	15.000	15.000	15.000	.000	.000	.000
GR	490.120	.000	489.640	74.000	484.960	83.000	484.960	95.000	491.560	110.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	2100.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	490.300	.000	489.700	73.800	485.000	83.000	485.000	93.000	492.100	107.000
X1	2000.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	492.000	.000	491.000	72.800	485.400	88.000	485.400	93.000	492.500	107.000
X1	1900.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	496.000	.000	492.200	70.200	485.800	83.000	485.800	93.000	492.800	107.000
X1	1800.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	494.400	.000	492.900	70.200	486.200	83.000	486.200	93.000	493.300	107.000
X1	1700.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	496.000	.000	494.500	69.000	486.600	83.000	486.600	93.000	493.600	107.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	1615.000	5.000	.000	107.000	85.000	85.000	85.000	.000	.000	.000
GR	495.500	.000	493.800	69.400	486.940	83.000	486.940	93.000	493.940	107.000

X1	1600.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	495.700	.000	493.600	70.800	487.000	83.000	487.000	93.000	494.100	107.000
X1	1590.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	495.600	.000	493.600	71.800	487.040	83.000	487.040	93.000	494.040	107.000
X1	1570.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	495.400	.000	493.700	72.600	488.520	83.000	488.520	93.000	495.520	107.000
X1	1550.000	6.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	495.400	.000	494.000	48.000	493.700	75.800	490.000	83.000	490.000	93.000
GR	498.000	107.000	.000	.000	.000	.000	.000	.000	.000	.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	1540.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	495.300	.000	494.000	75.000	490.040	83.000	490.040	93.000	497.040	107.000
X1	1500.000	5.000	.000	107.000	40.000	40.000	40.000	.000	.000	.000
GR	496.000	.000	494.900	73.600	490.200	83.000	490.200	93.000	497.200	107.000
X1	1400.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	498.500	.000	497.000	70.800	490.600	83.000	490.600	93.000	497.700	107.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	1315.000	5.000	.000	107.000	85.000	85.000	85.000	.000	.000	.000
GR	499.600	.000	497.900	69.000	490.940	83.000	490.940	93.000	497.940	107.000
X1	1300.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	499.600	.000	498.100	69.000	491.000	83.000	491.000	93.000	498.100	107.000
X1	1290.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	500.400	.000	498.500	69.000	491.040	83.000	491.040	93.000	498.040	107.000
X1	1270.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	500.000	.000	498.400	71.000	492.320	83.000	492.320	93.000	499.320	107.000
X1	1250.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	500.000	.000	498.800	73.000	493.600	83.000	493.600	93.000	500.700	107.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	1240.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	500.400	.000	498.600	73.000	493.640	83.000	493.640	93.000	503.640	107.000
X1	1200.000	5.000	.000	107.000	40.000	40.000	40.000	.000	.000	.000
GR	501.000	.000	499.200	73.000	493.800	83.000	493.800	93.000	500.900	107.000
X1	1100.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	501.800	.000	499.700	72.000	494.200	83.000	494.200	93.000	501.200	107.000

NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	1065.000	5.000	.000	107.000	45.000	45.000	45.000	.000	.000	.000
GR	501.900	.000	501.100	69.000	494.340	83.000	494.340	93.000	501.300	107.000
X1	1050.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	502.000	.000	500.400	71.200	494.400	83.000	494.400	93.000	501.500	107.000
X1	1040.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	502.000	.000	500.350	69.000	494.440	83.000	494.440	93.000	501.440	107.000
X1	1020.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	502.000	.000	500.600	73.000	495.400	83.000	495.400	93.000	502.400	107.000
X1	1000.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	502.300	.000	501.000	74.000	496.400	83.000	496.400	93.000	503.480	107.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	990.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	502.400	.000	501.200	73.600	496.440	83.000	496.440	93.000	503.440	107.000
X1	900.000	5.000	.000	113.000	90.000	90.000	90.000	.000	.000	.000
GR	504.800	.000	503.500	68.600	496.800	83.000	496.800	93.000	502.000	113.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	875.000	5.000	.000	107.000	25.000	25.000	25.000	.000	.000	.000
GR	505.500	.000	503.700	69.400	496.900	83.000	496.900	93.000	502.000	107.000
X1	850.000	5.000	.000	107.000	25.000	25.000	25.000	.000	.000	.000
GR	505.000	.000	504.000	69.000	497.000	83.000	497.000	93.000	505.000	107.000
X1	800.000	12.000	.000	136.000	50.000	50.000	50.000	.000	.000	.000
GR	507.000	.000	506.000	30.000	505.000	50.000	504.000	68.000	503.000	76.000
GR	498.800	83.000	498.800	98.000	501.000	100.000	502.000	108.000	503.000	116.000
GR	504.000	126.000	505.000	136.000	.000	.000	.000	.000	.000	.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	790.000	5.000	.000	135.000	10.000	10.000	10.000	.000	.000	.000
GR	506.900	.000	503.000	77.000	499.720	83.000	499.720	100.000	505.000	135.000
X1	750.000	10.000	.000	138.000	40.000	40.000	40.000	.000	.000	.000
GR	507.300	.000	506.000	40.000	504.000	65.000	500.000	88.000	500.000	100.000
GR	501.000	105.000	502.000	112.000	503.000	118.000	504.000	128.000	505.000	138.000
X1	700.000	13.000	.000	135.000	50.000	50.000	50.000	.000	.000	.000
GR	507.400	.000	507.000	15.000	506.000	32.000	505.000	41.000	504.000	49.000
GR	503.000	58.000	502.000	66.000	501.000	75.000	501.000	98.000	502.000	110.000
GR	503.000	120.000	504.000	126.000	505.000	135.000	.000	.000	.000	.000

X1	650.000	11.000	.000	212.000	50.000	50.000	50.000	.000	.000	.000
GR	510.000	.000	509.000	25.000	508.000	55.000	507.000	72.000	506.000	90.000
GR	505.000	103.000	504.000	114.000	503.000	130.000	503.000	185.000	504.000	204.000
GR	505.000	212.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	600.000	9.000	.000	263.000	50.000	50.000	50.000	.000	.000	.000
GR	507.000	.000	506.000	17.000	505.000	70.000	505.000	122.000	504.000	141.000
GR	504.000	173.000	505.000	185.000	506.000	200.000	507.000	263.000	.000	.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .300 CEHV= .500
*SECNO 2875.000
3280 CROSS SECTION 2875.00 EXTENDED .49 FEET

3720 CRITICAL DEPTH ASSUMED

2875.00	1.95	481.55	481.55	481.00	482.10	.55	.00	.00	481.06
700.	0.	700.	0.	0.	118.	0.	0.	0.	482.80
.00	.00	5.94	.00	.025	.025	.025	.000	479.50	.00
.009507	0.	0.	0.	0	13	0	.00	111.83	111.83

0
*SECNO 2850.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2850.00	2.53	482.39	482.39	.00	483.52	1.13	.21	.29	483.00
700.	0.	700.	0.	0.	82.	0.	0.	0.	485.60
.00	.00	8.52	.00	.025	.025	.025	.000	479.86	71.16
.007401	25.	25.	25.	0	11	0	.00	36.82	107.97

0
*SECNO 2800.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2800.00	3.04	483.64	483.64	.00	484.90	1.26	.37	.07	485.40
700.	0.	700.	0.	0.	78.	0.	0.	0.	486.60
.00	.00	9.02	.00	.025	.025	.025	.000	480.60	76.93
.007262	50.	50.	50.	0	11	0	.00	31.13	108.06

0
*SECNO 2700.000

2700.00	3.85	484.85	484.01	.00	485.52	.67	.44	.18	485.50
700.	0.	700.	0.	0.	107.	0.	0.	0.	486.00
.01	.00	6.56	.00	.025	.025	.025	.000	481.00	75.30
.002990	100.	100.	100.	6	5	0	.00	35.41	110.70

0
*SECNO 2600.000

2600.00	3.74	485.14	484.42	.00	485.87	.72	.32	.03	485.80
700.	0.	700.	0.	0.	103.	0.	1.	0.	486.42
.01	.00	6.83	.00	.025	.025	.025	.000	481.40	75.52
.003355	100.	100.	100.	2	15	0	.00	34.94	110.45

0

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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 2500.000
  2500.00     3.67   485.47   484.81      .00   486.23      .76      .35      .02   487.30
     700.        0.      700.        0.        0.      100.        0.       1.        0.    486.80
      .01      .00     6.99      .00     .025     .025     .025     .000   481.80    75.67
   .003581     100.      100.      100.        2       15        0      .00    34.66   110.33
0
*SECNO 2400.000
  2400.00     3.63   485.83   485.22      .00   486.61      .78      .37      .01   486.30
     700.        0.      700.        0.        0.       99.        0.       1.        0.    487.20
      .02      .00     7.09      .00     .025     .025     .025     .000   482.20    75.76
   .003740     100.      100.      100.        2       12        0      .00    34.49   110.24
0
CCHV=    .100 CEHV=    .300
*SECNO 2365.000
  2365.00     3.71   486.05   485.35      .00   486.78      .73      .17      .00   487.00
     700.        0.      700.        0.        0.      102.        0.       1.        0.    487.00
      .02      .00     6.86      .00     .035     .035     .035     .000   482.34    76.03
   .006685      35.       35.       35.        2       15        0      .00    34.94   110.97
0
*SECNO 2350.000
  2350.00     3.78   486.18   485.41      .00   486.88      .70      .10      .00   487.10
     700.        0.      700.        0.        0.      104.        0.       1.        0.    487.40
      .02      .00     6.72      .00     .035     .035     .035     .000   482.40    75.44
   .006282      15.       15.       15.        2       15        0      .00    35.12   110.56
0
*SECNO 2340.000
  2340.00     3.78   486.22   485.48      .00   486.96      .74      .06      .01   487.20
     700.        0.      700.        0.        0.      101.        0.       1.        0.    487.44
      .02      .00     6.92      .00     .035     .035     .035     .000   482.44    77.06
   .006574      10.       10.       10.        0       15        0      .00    33.50   110.56
0
*SECNO 2320.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2320.00     3.01   486.33   486.33      .00   487.56     1.23      .19      .15   487.40
     700.        0.      700.        0.        0.       79.        0.       1.        0.    488.32
      .02      .00     8.92      .00     .035     .035     .035     .000   483.32    76.80
   .014227      20.       20.       20.        0       15        0      .00    32.22   109.01
0
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 *SECNO 2300.000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2300.00     3.02   487.22   487.22      .00   488.45     1.24      .28      .00   487.70
      700.       0.     700.       0.       0.      78.       0.       1.       0.    489.20
       .02      .00     8.92      .00     .035     .035     .035     .000   484.20    76.97
   .014172      20.      20.      20.        0        5        0      .00    32.06   109.03
0
 CCHV=    .100 CEHV=    .300
 *SECNO 2290.000
 3280 CROSS SECTION   2290.00 EXTENDED       .59 FEET

   2290.00     4.10   488.34   487.22      .00   488.60      .26      .05      .10   487.75
      700.       0.     700.       0.       0.     170.       0.       1.       0.    489.24
       .02      .00     4.13      .00     .025     .025     .025     .000   484.24      .00
   .002826      10.      10.      10.       16        5        0      .00   111.20   111.20
0
 *SECNO 2200.000
   2200.00     3.68   488.28   487.62      .00   489.03      .75      .28      .15   489.00
      700.       0.     700.       0.       0.     101.       0.       2.       1.    489.60
       .03      .00     6.95      .00     .025     .025     .025     .000   484.60    75.63
   .003521      90.      90.      90.        3       12        0      .00    34.73   110.37
0
 CCHV=    .300 CEHV=    .500
 *SECNO 2150.000
   2150.00     3.65   488.45   487.81      .00   489.22      .77      .18      .01   489.50
      700.       0.     700.       0.       0.     100.       0.       2.       1.    489.80
       .03      .00     7.02      .00     .025     .025     .025     .000   484.80    75.70
   .003632      50.      50.      50.        2       15        0      .00    34.60   110.30
0
 *SECNO 2140.000
   2140.00     3.56   488.40   488.01      .00   489.35      .94      .04      .09   489.74
      700.       0.     700.       0.       0.      90.       0.       2.       1.    490.24
       .03      .00     7.79      .00     .025     .025     .025     .000   484.84    76.49
   .004712      10.      10.      10.        2       11        0      .00    32.44   108.92
0
 *SECNO 2125.000
 7185 MINIMUM SPECIFIC ENERGY
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

2125.00	3.47	488.37	488.37	.00	489.70	1.33	.09	.19	489.92
700.	0.	700.	0.	0.	76.	0.	2.	1.	490.90
.03	.00	9.25	.00	.025	.025	.025	.000	484.90	76.89
.007144	15.	15.	15.	0	8	0	.00	28.63	105.52

0

*SECNO 2110.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2110.00	3.76	488.72	488.72	.00	490.08	1.36	.11	.02	490.12
700.	0.	700.	0.	0.	75.	0.	2.	1.	491.56
.03	.00	9.37	.00	.025	.025	.025	.000	484.96	75.77
.007186	15.	15.	15.	0	8	0	.00	27.77	103.54

0

CCHV= .100 CEHV= .300

*SECNO 2100.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2100.00	4.06	489.06	489.06	.00	490.49	1.43	.07	.02	490.30
700.	0.	700.	0.	0.	73.	0.	2.	1.	492.10
.03	.00	9.58	.00	.025	.025	.025	.000	485.00	75.05
.007206	10.	10.	10.	0	8	0	.00	25.96	101.01

0

*SECNO 2000.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2000.00	4.66	490.06	490.06	.00	491.44	1.39	.72	.00	492.00
700.	0.	700.	0.	0.	74.	0.	2.	1.	492.50
.03	.00	9.45	.00	.025	.025	.025	.000	485.40	75.36
.007155	100.	100.	100.	0	8	0	.00	26.82	102.18

0

*SECNO 1900.000

1900.00	5.51	491.31	489.85	.00	491.88	.57	.35	.08	496.00
700.	0.	700.	0.	0.	116.	0.	2.	1.	492.80
.04	.00	6.06	.00	.025	.025	.025	.000	485.80	72.00
.002082	100.	100.	100.	3	11	0	.00	32.00	104.00

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1800.000

1800.00	5.27	491.47	490.28	.00	492.14	.67	.23	.03	494.40
700.	0.	700.	0.	0.	107.	0.	2.	1.	493.30
.04	.00	6.57	.00	.025	.025	.025	.000	486.20	72.94
.002560	100.	100.	100.	2	15	0	.00	30.45	103.39

0

*SECNO 1700.000

1700.00	5.07	491.67	490.69	.00	492.45	.77	.28	.03	496.00
700.	0.	700.	0.	0.	99.	0.	3.	1.	493.60
.05	.00	7.04	.00	.025	.025	.025	.000	486.80	74.00
.003058	100.	100.	100.	2	15	0	.00	29.15	103.15

0

CCHV= .100 CEHV= .300

*SECNO 1615.000

1615.00	5.15	492.09	490.99	.00	492.79	.70	.34	.01	495.50
700.	0.	700.	0.	0.	104.	0.	3.	1.	493.94
.05	.00	6.71	.00	.035	.035	.035	.000	486.94	72.79
.005363	85.	85.	85.	2	15	0	.00	30.52	103.30

0

*SECNO 1600.000

1600.00	5.15	492.15	491.08	.00	492.88	.73	.08	.01	495.70
700.	0.	700.	0.	0.	102.	0.	3.	1.	494.10
.05	.00	6.85	.00	.035	.035	.035	.000	487.00	73.48
.005580	15.	15.	15.	0	15	0	.00	29.68	103.16

0

*SECNO 1590.000

1590.00	5.15	492.19	491.14	.00	492.94	.75	.06	.01	495.60
700.	0.	700.	0.	0.	101.	0.	3.	1.	494.04
.05	.00	6.95	.00	.035	.035	.035	.000	487.04	74.20
.005735	10.	10.	10.	0	15	0	.00	29.10	103.31

0

*SECNO 1570.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1570.00	4.04	492.56	492.56	.00	493.98	1.42	.17	.20	495.40
700.	0.	700.	0.	0.	73.	0.	3.	1.	495.52
.05	.00	9.56	.00	.035	.035	.035	.000	488.52	74.88
.014155	20.	20.	20.	0	15	0	.00	26.21	101.09

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1550.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1550.00	4.44	494.44	494.44	.00	495.20	.76	.31	.07	495.40
700.	0.	700.	0.	0.	100.	0.	3.	1.	498.00
.05	.00	6.99	.00	.035	.035	.035	.000	490.00	32.87
.016834	20.	20.	20.	0	8	0	.00	67.90	100.77

0
CCHV= .100 CEHV= .300
*SECNO 1540.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1540.00	4.57	494.61	494.61	.00	495.40	.79	.11	.01	495.30
700.	0.	700.	0.	0.	98.	0.	3.	1.	497.04
.05	.00	7.13	.00	.025	.025	.025	.000	490.04	39.68
.008214	10.	10.	10.	0	8	0	.00	62.46	102.14

*SECNO 1500.000

1500.00	4.47	494.67	494.25	.00	495.73	1.06	.25	.08	496.00
700.	0.	700.	0.	0.	85.	0.	3.	1.	497.20
.05	.00	8.26	.00	.025	.025	.025	.000	490.20	74.06
.004843	40.	40.	40.	2	12	0	.00	27.89	101.94

0
*SECNO 1400.000

1400.00	4.59	495.19	494.67	.00	496.20	1.01	.47	.00	498.50
700.	0.	700.	0.	0.	87.	0.	3.	1.	497.70
.06	.00	8.07	.00	.025	.025	.025	.000	490.60	74.25
.004481	100.	100.	100.	3	11	0	.00	27.80	102.05

0
CCHV= .100 CEHV= .300
*SECNO 1315.000

1315.00	4.95	495.89	494.99	.00	496.67	.78	.45	.02	499.60
700.	0.	700.	0.	0.	99.	0.	3.	1.	497.94
.06	.00	7.10	.00	.035	.035	.035	.000	490.94	73.05
.006290	85.	85.	85.	3	11	0	.00	29.84	102.89

0
*SECNO 1300.000

1300.00	4.99	495.99	495.06	.00	496.77	.78	.09	.00	499.60
700.	0.	700.	0.	0.	99.	0.	4.	1.	498.10
.06	.00	7.08	.00	.035	.035	.035	.000	491.00	73.17
.006187	15.	15.	15.	2	15	0	.00	29.66	102.83

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1290.000

1290.00	5.00	496.04	495.11	.00	496.83	.79	.06	.00	500.40
700.	0.	700.	0.	0.	98.	0.	4.	1.	498.04
.06	.00	7.12	.00	.035	.035	.035	.000	491.04	73.63
.006241	10.	10.	10.	1	15	0	.00	29.36	102.99

0

*SECNO 1270.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1270.00	4.05	496.37	496.37	.00	497.79	1.42	.18	.19	500.00
700.	0.	700.	0.	0.	73.	0.	4.	1.	499.32
.06	.00	9.58	.00	.035	.035	.035	.000	492.32	75.01
.014160	20.	20.	20.	0	15	0	.00	26.10	101.10

0

*SECNO 1250.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1250.00	4.08	497.68	497.68	.00	499.10	1.42	.28	.00	500.00
700.	0.	700.	0.	0.	73.	0.	4.	1.	500.70
.06	.00	9.57	.00	.035	.035	.035	.000	493.60	75.16
.014040	20.	20.	20.	0	5	0	.00	25.87	101.04

0

CCHV= .100 CEHV= .300

*SECNO 1240.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1240.00	4.17	497.81	497.81	.00	499.30	1.49	.10	.02	500.40
700.	0.	700.	0.	0.	71.	0.	4.	1.	503.64
.06	.00	9.81	.00	.025	.025	.025	.000	493.64	74.60
.007289	10.	10.	10.	0	8	0	.00	24.24	98.84

0

*SECNO 1200.000

1200.00	4.92	498.72	497.89	.00	499.56	.84	.19	.07	501.00
700.	0.	700.	0.	0.	95.	0.	4.	1.	500.90
.06	.00	7.34	.00	.025	.025	.025	.000	493.80	73.90
.003444	40.	40.	40.	4	8	0	.00	28.79	102.69

0

```
    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 *SECNO 1100.000
   1100.00     4.89   499.09   498.25      .00   499.90      .81      .34      .00   501.80
      700.       0.     700.       0.       0.     97.       0.       4.       1.   501.20
       .07      .00     7.23      .00     .025     .025     .025     .000   494.20    73.21
   .003365     100.     100.     100.        2       15        0      .00    29.57   102.79
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1065.000
   1065.00     5.04   499.38   498.37      .00   500.11      .73      .19      .01   501.90
      700.       0.     700.       0.       0.     102.      0.       4.       1.   501.30
       .07      .00     6.84      .00     .035     .035     .035     .000   494.34    72.55
   .005714      45.      45.      45.        2       15        0      .00    30.59   103.15
0
 *SECNO 1050.000
   1050.00     5.05   499.45   498.46      .00   500.20      .75      .09      .01   502.00
      700.       0.     700.       0.       0.     100.      0.       4.       1.   501.50
       .07      .00     6.97      .00     .035     .035     .035     .000   494.40    73.09
   .005924      15.      15.      15.        0       15        0      .00    29.86   102.94
0
 *SECNO 1040.000
   1040.00     5.22   499.66   498.41      .00   500.27      .61      .05      .01   502.00
      700.       0.     700.       0.       0.     112.      0.       4.       1.   501.44
       .07      .00     6.26      .00     .035     .035     .035     .000   494.44    70.62
   .004630      10.      10.      10.        2       15        0      .00    32.83   103.45
0
 *SECNO 1020.000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   1020.00     4.06   499.46   499.46      .00   500.89     1.43      .15      .25   502.00
      700.       0.     700.       0.       0.     73.       0.       4.       1.   502.40
       .07      .00     9.60      .00     .035     .035     .035     .000   495.40    75.19
   .014165      20.      20.      20.        0       15        0      .00    25.93   101.12
0
 *SECNO 1000.000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   1000.00     4.06   500.46   500.46      .00   501.89     1.42      .28      .00   502.30
      700.       0.     700.       0.       0.     73.       0.       4.       1.   503.48
       .07      .00     9.57      .00     .035     .035     .035     .000   496.40    75.05
   .014092      20.      20.      20.        0        5        0      .00    25.99   101.04
0
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 990.000
990.00 4.56 501.00 500.49 .00 502.00 1.00 .07 .04 502.40
700. 0. 700. 0. 0. 87. 0. 4. 1. 503.44
.07 .00 8.03 .00 .025 .025 .025 .000 496.44 73.98
.004463 10. 10. 10. 8 5 0 .00 28.16 102.14
0
*SECNO 900.000
900.00 5.04 501.84 500.51 .00 502.31 .48 .26 .05 504.80
700. 0. 700. 0. 0. 126. 0. 4. 2. 502.00
.08 .00 5.54 .00 .025 .025 .025 .000 496.80 72.18
.001997 90. 90. 90. 3 15 0 .00 40.19 112.37
0
CCHV= .100 CEHV= .300
*SECNO 875.000
875.00 4.86 501.76 500.81 .00 502.46 .69 .08 .06 505.50
700. 0. 700. 0. 0. 105. 0. 4. 2. 502.00
.08 .00 6.68 .00 .035 .035 .035 .000 496.90 73.27
.005748 25. 25. 25. 2 15 0 .00 33.09 106.36
0
*SECNO 850.000
850.00 4.76 501.76 501.10 .00 502.70 .94 .17 .07 505.00
700. 0. 700. 0. 0. 90. 0. 5. 2. 505.00
.08 .00 7.77 .00 .035 .035 .035 .000 497.00 73.48
.007814 25. 25. 25. 2 15 0 .00 27.85 101.33
0
*SECNO 800.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
800.00 3.69 502.49 502.49 .00 503.66 1.17 .52 .07 507.00
700. 0. 700. 0. 0. 81. 0. 5. 2. 505.00
.08 .00 8.66 .00 .035 .035 .035 .000 498.80 76.85
.014786 50. 50. 50. 0 15 0 .00 35.08 111.93
0
CCHV= .100 CEHV= .300
*SECNO 790.000
790.00 3.38 503.10 502.65 .00 503.78 .68 .07 .05 506.90
700. 0. 700. 0. 0. 106. 0. 5. 2. 505.00
.08 .00 6.60 .00 .025 .025 .025 .000 499.72 74.94
.004352 10. 10. 10. 3 16 0 .00 47.50 122.43
0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 750.000

750.00	3.23	503.23	503.03	.00	504.01	.78	.20	.03	507.30
700.	0.	700.	0.	0.	99.	0.	5.	2.	505.00
.08	.00	7.09	.00	.025	.025	.025	.000	500.00	69.47
.005934	40.	40.	40.	2	11	0	.00	50.75	120.22

0

*SECNO 700.000

700.00	2.90	503.90	503.20	.00	504.24	.34	.19	.04	507.40
700.	0.	700.	0.	0.	149.	0.	5.	2.	505.00
.09	.00	4.70	.00	.025	.025	.025	.000	501.00	49.85
.002552	50.	50.	50.	2	14	0	.00	75.59	125.44

0

*SECNO 650.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

650.00	1.44	504.44	504.44	.00	505.03	.59	.22	.07	510.00
700.	0.	700.	0.	0.	114.	0.	5.	2.	505.00
.09	.00	6.15	.00	.025	.025	.025	.000	503.00	109.18
.008832	50.	50.	50.	0	8	0	.00	98.33	207.51

0

*SECNO 600.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

600.00	1.63	505.63	505.63	.00	506.06	.43	.46	.02	507.00
700.	0.	700.	0.	0.	134.	0.	5.	2.	507.00
.09	.00	5.24	.00	.025	.025	.025	.000	504.00	36.53
.009698	50.	50.	50.	0	8	0	.00	157.95	194.47

0

PROFILE FOR STREAM SUBCRITICAL RUN

PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION  475.    480.    485.    490.    495.    500.    505.    510.    515.    520.
  SECNO  CUMDIS

2875.00     0.  .    I. LWE R  .       .       .       .       .       .       .       .
            5.  .    I. W E R  .       .       .       .       .       .       .       .
           10.  .    I.  WE  R .       .       .       .       .       .       .       .
           15.  .     I  W E  R.       .       .       .       .       .       .       .
           20.  .     I  WLE  R        .       .       .       .       .       .       .
2850.00    25.  .     I   WLE  .R      .       .       .       .       .       .       .
           30.  .     I   WLE  .R      .       .       .       .       .       .       .
           35.  .     I   W LE . R     .       .       .       .       .       .       .
           40.  .     I    WLE . R     .       .       .       .       .       .       .
           45.  .     I    W E . R     .       .       .       .       .       .       .
           50.  .     I    W E . R     .       .       .       .       .       .       .
           55.  .     .I   W  E. R     .       .       .       .       .       .       .
           60.  .     .I    W E.  R    .       .       .       .       .       .       .
           65.  .     .I    W EL  R    .       .       .       .       .       .       .
           70.  .     .I    W  E  R    .       .       .       .       .       .       .
2800.00    75.  .     .I    W  EL R    .       .       .       .       .       .       .
           80.  .     .I    W  EL R    .       .       .       .       .       .       .
           85.  .     .I    CW EL R    .       .       .       .       .       .       .
           90.  .     .I    CW EL R    .       .       .       .       .       .       .
           95.  .     .I    CW EL R    .       .       .       .       .       .       .
          100.  .     .I    CW EL R    .       .       .       .       .       .       .
          105.  .     .I     W EL R    .       .       .       .       .       .       .
          110.  .     .I     W EL R    .       .       .       .       .       .       .
          115.  .     . I    W EL R    .       .       .       .       .       .       .
          120.  .     . I    W EL R    .       .       .       .       .       .       .
          125.  .     . I    W EL R    .       .       .       .       .       .       .
          130.  .     . I    CWEL R    .       .       .       .       .       .       .
          135.  .     . I    CW.ER     .       .       .       .       .       .       .
          140.  .     . I    CW.ER     .       .       .       .       .       .       .
          145.  .     . I    CW.ER     .       .       .       .       .       .       .
          150.  .     . I    CW.ER     .       .       .       .       .       .       .
          155.  .     . I    CW.ER     .       .       .       .       .       .       .
          160.  .     . I    CW.ER     .       .       .       .       .       .       .
          165.  .     . I    CW.ER     .       .       .       .       .       .       .
          170.  .     . I    C WER     .       .       .       .       .       .       .
2700.00   175.  .     . I    C WER     .       .       .       .       .       .       .
          180.  .     . I    C WER     .       .       .       .       .       .       .
          185.  .     . I    C WER     .       .       .       .       .       .       .
          190.  .     . I    C WER     .       .       .       .       .       .       .
          195.  .     . I    C WER     .       .       .       .       .       .       .
          200.  .     . I    C WER     .       .       .       .       .       .       .
          205.  .     . I    C WER     .       .       .       .       .       .       .
          210.  .     . I    C WER     .       .       .       .       .       .       .
          215.  .     . I    C WER     .       .       .       .       .       .       .
          220.  .     . I    C WER     .       .       .       .       .       .       .
          225.  .     . I    C WER     .       .       .       .       .       .       .
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        230.  .       . I    C WER     .  .  .  .  .  .  .  .
        235.  .       . I     CWE R    .  .  .  .  .  .  .  .
        240.  .       .  I    CWE R    .  .  .  .  .  .  .  .
        245.  .       .  I    CWLER    .  .  .  .  .  .  .  .
        250.  .       .  I    CWLER    .  .  .  .  .  .  .  .
        255.  .       .  I    CWLER    .  .  .  .  .  .  .  .
        260.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        265.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        270.  .       .  I    CW ER    .  .  .  .  .  .  .  .
2600.00 275.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        280.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        285.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        290.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        295.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        300.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        305.  .       .  I    CW ER    .  .  .  .  .  .  .  .
        310.  .       .  I    C.WER    .  .  .  .  .  .  .  .
        315.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        320.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        325.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        330.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        335.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        340.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        345.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        350.  .       .  I    C.WEL    .  .  .  .  .  .  .  .
        355.  .       .  I    C.WERL   .  .  .  .  .  .  .  .
        360.  .       .  I     CWERL   .  .  .  .  .  .  .  .
        365.  .       .   I    CWEML   .  .  .  .  .  .  .  .
        370.  .       .   I    CWE L   .  .  .  .  .  .  .  .
2500.00 375.  .       .   I    CWE L   .  .  .  .  .  .  .  .
        380.  .       .   I    CWE L   .  .  .  .  .  .  .  .
        385.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        390.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        395.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        400.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        405.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        410.  .       .   I    CW EL   .  .  .  .  .  .  .  .
        415.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        420.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        425.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        430.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        435.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        440.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        445.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        450.  .       .   I    CW ER   .  .  .  .  .  .  .  .
        455.  .       .   I    C WER   .  .  .  .  .  .  .  .
        460.  .       .   I    C WER   .  .  .  .  .  .  .  .
        465.  .       .   I    C WER   .  .  .  .  .  .  .  .
        470.  .       .   I    C WER   .  .  .  .  .  .  .  .
2400.00 475.  .       .   I    C WER   .  .  .  .  .  .  .  .
        480.  .       .   I    C WER   .  .  .  .  .  .  .  .
        485.  .       .   I    .CWER   .  .  .  .  .  .  .  .
        490.  .       .    I   .CWER   .  .  .  .  .  .  .  .
        495.  .       .    I   .CWER   .  .  .  .  .  .  .  .
        500.  .       .    I   .CWEL   .  .  .  .  .  .  .  .
        505.  .       .    I   .CW E   .  .  .  .  .  .  .  .
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2365.00  510.  .  .  I   .CW E    .  .  .  .  .  .  .  .
         515.  .  .  I   .CW E    .  .  .  .  .  .  .  .
         520.  .  .  I   .CW ER   .  .  .  .  .  .  .  .
2350.00  525.  .  .  I   .CW ER   .  .  .  .  .  .  .  .
         530.  .  .  I   .CW ER   .  .  .  .  .  .  .  .
2340.00  535.  .  .  I   .CW ER   .  .  .  .  .  .  .  .
         540.  .  .  I   .CW EL   .  .  .  .  .  .  .  .
         545.  .  .   I  . CW ER  .  .  .  .  .  .  .  .
         550.  .  .   I  . CW ER  .  .  .  .  .  .  .  .
2320.00  555.  .  .    I . W E R .  .  .  .  .  .  .  .
         560.  .  .    I . W LER .  .  .  .  .  .  .  .
         565.  .  .     I .  WLE R.  .  .  .  .  .  .  .
         570.  .  .     I .  WLE R.  .  .  .  .  .  .  .
2300.00  575.  .  .     I .  WL ER.  .  .  .  .  .  .  .
         580.  .  .     I .  CLWER.  .  .  .  .  .  .  .
2290.00  585.  .  .     I .  C LER.  .  .  .  .  .  .  .
         590.  .  .      I.  C LE R.  .  .  .  .  .  .  .
         595.  .  .      I.   CLE R.  .  .  .  .  .  .  .
         600.  .  .      I.   CLE R.  .  .  .  .  .  .  .
         605.  .  .      I.   CLE R.  .  .  .  .  .  .  .
         610.  .  .      I.   CLE R.  .  .  .  .  .  .  .
         615.  .  .      I.   CLE R.  .  .  .  .  .  .  .
         620.  .  .      I.   CLWER.  .  .  .  .  .  .  .
         625.  .  .      I.   C WER.  .  .  .  .  .  .  .
         630.  .  .      I.   C WER.  .  .  .  .  .  .  .
         635.  .  .      I.   C WER.  .  .  .  .  .  .  .
         640.  .  .      I.   C WER.  .  .  .  .  .  .  .
         645.  .  .      I.   C WER.  .  .  .  .  .  .  .
         650.  .  .      I.   C WER.  .  .  .  .  .  .  .
         655.  .  .      I.   C WER.  .  .  .  .  .  .  .
         660.  .  .      I.   C WER.  .  .  .  .  .  .  .
         665.  .  .      I.   C WER.  .  .  .  .  .  .  .
         670.  .  .      I.   C WER.  .  .  .  .  .  .  .
2200.00  675.  .  .      I.   C WER.  .  .  .  .  .  .  .
         680.  .  .      I.   C WER.  .  .  .  .  .  .  .
         685.  .  .      I.   C WER.  .  .  .  .  .  .  .
         690.  .  .      I.   C WER.  .  .  .  .  .  .  .
         695.  .  .      I.   C WER.  .  .  .  .  .  .  .
         700.  .  .      I.   C WEL.  .  .  .  .  .  .  .
         705.  .  .      I.   C WEL.  .  .  .  .  .  .  .
         710.  .  .      I.    CWEL.  .  .  .  .  .  .  .
         715.  .  .       I    CWELR  .  .  .  .  .  .  .
         720.  .  .       I    CWELR  .  .  .  .  .  .  .
2150.00  725.  .  .       I    CWELR  .  .  .  .  .  .  .
         730.  .  .       I    CW ER  .  .  .  .  .  .  .
2140.00  735.  .  .       I    CW ER  .  .  .  .  .  .  .
         740.  .  .       I    CW ELR .  .  .  .  .  .  .
         745.  .  .       I     W ELR .  .  .  .  .  .  .
2125.00  750.  .  .       I     W EL R.  .  .  .  .  .  .
         755.  .  .       I     W  E R.  .  .  .  .  .  .
         760.  .  .       I     W  E  R  .  .  .  .  .  .
2110.00  765.  .  .       I     W  E  R  .  .  .  .  .  .
         770.  .  .       I      W LE  R .  .  .  .  .  .
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00.00  775.  .  .  I   W .E  R  .  .  .  .  .  .  .
       780.  .  .  I   W .E  R  .  .  .  .  .  .  .
       785.  .  .  I   W .E  R  .  .  .  .  .  .  .
       790.  .  .  I   W .E  R  .  .  .  .  .  .  .
       795.  .  .  I    W.E  R  .  .  .  .  .  .  .
       800.  .  .  I    W.E  R  .  .  .  .  .  .  .
       805.  .  .  I    W. E R  .  .  .  .  .  .  .
       810.  .  .  I    W. E R  .  .  .  .  .  .  .
       815.  .  .  I    W. E  R .  .  .  .  .  .  .
       820.  .  .  I    W. E  R .  .  .  .  .  .  .
       825.  .  .  I    W. E  R .  .  .  .  .  .  .
       830.  .  .  I    W. E  R .  .  .  .  .  .  .
       835.  .  .  I    W. EL R .  .  .  .  .  .  .
       840.  .  .  .I   W. EL R .  .  .  .  .  .  .
       845.  .  .  .I    W EL R .  .  .  .  .  .  .
       850.  .  .  .I    W EL R .  .  .  .  .  .  .
       855.  .  .  .I    W  E R .  .  .  .  .  .  .
       860.  .  .  .I    W  E R .  .  .  .  .  .  .
       865.  .  .  .I    W  ELR .  .  .  .  .  .  .
       870.  .  .  .I    W  ELR .  .  .  .  .  .  .
2000.00875.  .  .  .I    W  ELR .  .  .  .  .  .  .
       880.  .  .  .I    W  ELR .  .  .  .  .  .  .
       885.  .  .  .I    W  EML .  .  .  .  .  .  .
       890.  .  .  .I    W  EML .  .  .  .  .  .  .
       895.  .  .  .I    CW EMRL .  .  .  .  .  .  .
       900.  .  .  .I    CW EMRL .  .  .  .  .  .  .
       905.  .  .  .I    CW EMRL .  .  .  .  .  .  .
       910.  .  .  .I    CW E R L .  .  .  .  .  .  .
       915.  .  .  .I    CW E R L .  .  .  .  .  .  .
       920.  .  .  .I    CW E R  L .  .  .  .  .  .  .
       925.  .  .  .I    CW E R  L .  .  .  .  .  .  .
       930.  .  .  .I    CW E R  L .  .  .  .  .  .  .
       935.  .  .  .I    C WE R  L.  .  .  .  .  .  .
       940.  .  .  .I    C WE R  L.  .  .  .  .  .  .
       945.  .  .  .I    C WE R   L  .  .  .  .  .  .
       950.  .  .  .I    C W ER   L  .  .  .  .  .  .
       955.  .  .  .I    C W ER   L  .  .  .  .  .  .
       960.  .  .  .I    C W EMR  .L  .  .  .  .  .  .
       965.  .  .  . I   C W EMR  .L  .  .  .  .  .  .
       970.  .  .  . I   C W E R  . L  .  .  .  .  .  .
1900.00975.  .  .  . I   C  WE R  . L  .  .  .  .  .  .
       980.  .  .  . I   C  WE R  . L  .  .  .  .  .  .
       985.  .  .  . I   C  WE R  . L  .  .  .  .  .  .
       990.  .  .  . I   C  WE R  . L  .  .  .  .  .  .
       995.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1000.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1005.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1010.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1015.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1020.  .  .  . I   C  WE R  .L  .  .  .  .  .  .
      1025.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1030.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1035.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1040.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1045.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1050.  .  .  . I   C  WE R  L  .  .  .  .  .  .
      1055.  .  .  . I   C  WE R L.  .  .  .  .  .  .
      1060.  .  .  . I   C  WE R L.  .  .  .  .  .  .
      1065.  .  .  . I   C  WE  R L.  .  .  .  .  .  .
      1070.  .  .  . I   .C WE  R L.  .  .  .  .  .  .
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1800.00 1075. .  .  . I    .C WE  R L.  .  .  .  .  .  .
        1080. .  .  . I    .C WE  R L.  .  .  .  .  .  .
        1085. .  .  . I    .C WE  R L.  .  .  .  .  .  .
        1090. .  .  . I    .C WE  R L.  .  .  .  .  .  .
        1095. .  .  . I    .C WE  R L.  .  .  .  .  .  .
        1100. .  .  . I    .C WE  R L   .  .  .  .  .  .
        1105. .  .  . I    .C WE  R L   .  .  .  .  .  .
        1110. .  .  . I    .C WE  R L   .  .  .  .  .  .
        1115. .  .  . I    .C W E R L   .  .  .  .  .  .
        1120. .  .  . I    .C W E R L   .  .  .  .  .  .
        1125. .  .  . I    .C W E R L   .  .  .  .  .  .
        1130. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1135. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1140. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1145. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1150. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1155. .  .  . I    .C W E R .L  .  .  .  .  .  .
        1160. .  .  . I    .C W E R . L .  .  .  .  .  .
        1165. .  .  . I    .C W E R . L .  .  .  .  .  .
        1170. .  .  . I    .C W E R . L .  .  .  .  .  .
1700.00 1175. .  .  . I    .C W E R . L .  .  .  .  .  .
        1180. .  .  . I    .C W E R . L .  .  .  .  .  .
        1185. .  .  . I    .C W E R . L .  .  .  .  .  .
        1190. .  .  . I    .C  WE R . L .  .  .  .  .  .
        1195. .  .  . I    . C WE R . L .  .  .  .  .  .
        1200. .  .  . I    . C WE R . L .  .  .  .  .  .
        1205. .  .  . I    . C WE R . L .  .  .  .  .  .
        1210. .  .  . I    . C WE R . L .  .  .  .  .  .
        1215. .  .  .  I   . C WE  R . L .  .  .  .  .  .
        1220. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1225. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1230. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1235. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1240. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1245. .  .  .  I   . C WE  R .L  .  .  .  .  .  .
        1250. .  .  .  I   . C W E R .L  .  .  .  .  .  .
        1255. .  .  .  I   . C W E R .L  .  .  .  .  .  .
1615.00 1260. .  .  .  I   . C W E R .L  .  .  .  .  .  .
        1265. .  .  .  I   . C W E R .L  .  .  .  .  .  .
        1270. .  .  .  I   . C W E R .L  .  .  .  .  .  .
1600.00 1275. .  .  .  I   . C W E R .L  .  .  .  .  .  .
        1280. .  .  .  I   . C W E R .L  .  .  .  .  .  .
1590.00 1285. .  .  .  I   . C W E R .L  .  .  .  .  .  .
        1290. .  .  .   I  . C WE  R.L  .  .  .  .  .  .
        1295. .  .  .    I . CW E MRL  .  .  .  .  .  .
        1300. .  .  .    I . CW E  RL  .  .  .  .  .  .
1570.00 1305. .  .  .     I .  W  E .L  .  .  .  .  .  .
        1310. .  .  .      I.   W  E.LR  .  .  .  .  .  .
        1315. .  .  .       I.    W E.L  R  .  .  .  .  .  .
        1320. .  .  .       I.     W EL  R  .  .  .  .  .  .
1550.00 1325. .  .  .        I      WEL   R  .  .  .  .  .  .
        1330. .  .  .        I      W.E   R  .  .  .  .  .  .
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1540.00 1335. .  .  .  I  W.E  R  .  .  .  .  .  .
        1340. .  .  .  I  W.E  R  .  .  .  .  .  .
        1345. .  .  .  I  W.E  R  .  .  .  .  .  .
        1350. .  .  .  I  W.E  R  .  .  .  .  .  .
        1355. .  .  .  I  W.E  R  .  .  .  .  .  .
        1360. .  .  .  I  W.E  R  .  .  .  .  .  .
        1365. .  .  .  I  W.EL R  .  .  .  .  .  .
        1370. .  .  .  I  W.EL R  .  .  .  .  .  .
1500.00 1375. .  .  .  I  W.EL R  .  .  .  .  .  .
        1380. .  .  .  I  W. E R  .  .  .  .  .  .
        1385. .  .  .  I  W. EL R  .  .  .  .  .  .
        1390. .  .  .  .I  W. EL R  .  .  .  .  .  .
        1395. .  .  .  .I  CW EL R  .  .  .  .  .  .
        1400. .  .  .  .I  CW EL R  .  .  .  .  .  .
        1405. .  .  .  .I  CW EMLR  .  .  .  .  .  .
        1410. .  .  .  .I  CW EMLR  .  .  .  .  .  .
        1415. .  .  .  .I  CW EMLR  .  .  .  .  .  .
        1420. .  .  .  .I  CW E LR  .  .  .  .  .  .
        1425. .  .  .  .I  CW E ML  .  .  .  .  .  .
        1430. .  .  .  .I  CW E ML  .  .  .  .  .  .
        1435. .  .  .  .I  CW E ML  .  .  .  .  .  .
        1440. .  .  .  .I  CW E ML  .  .  .  .  .  .
        1445. .  .  .  .I  CW E MSL  .  .  .  .  .  .
        1450. .  .  .  .I  CW E  RL  .  .  .  .  .  .
        1455. .  .  .  .I  CW E  RL  .  .  .  .  .  .
        1460. .  .  .  .I  CW E  RL  .  .  .  .  .  .
        1465. .  .  .  .I  CW E  R L  .  .  .  .  .  .
        1470. .  .  .  .I  CW E  R L  .  .  .  .  .  .
1400.00 1475. .  .  .  .I  CW E  R L  .  .  .  .  .  .
        1480. .  .  .  .I  CW E  R L  .  .  .  .  .  .
        1485. .  .  .  .I  C.W E R L  .  .  .  .  .  .
        1490. .  .  .  .I  C.W E R L  .  .  .  .  .  .
        1495. .  .  .  .I  C.W E  R L  .  .  .  .  .  .
        1500. .  .  .  .I   CW E  R L  .  .  .  .  .  .
        1505. .  .  .  .I   CW E  R L  .  .  .  .  .  .
        1510. .  .  .  .I   CW E  R L  .  .  .  .  .  .
        1515. .  .  .  . I   CW E  R L  .  .  .  .  .  .
        1520. .  .  .  . I   CW E  R L  .  .  .  .  .  .
        1525. .  .  .  . I   CW E  R L  .  .  .  .  .  .
        1530. .  .  .  . I   CW E  R L  .  .  .  .  .  .
        1535. .  .  .  . I   CW E  R  L.  .  .  .  .  .
        1540. .  .  .  . I   CW E  R  L.  .  .  .  .  .
        1545. .  .  .  . I   C WE  R  L.  .  .  .  .  .
        1550. .  .  .  . I   C WE  R  L.  .  .  .  .  .
        1555. .  .  .  . I   C WE  R  L.  .  .  .  .  .
1315.00 1560. .  .  .  . I   C WE  R  L.  .  .  .  .  .
        1565. .  .  .  . I   C WE  R  L.  .  .  .  .  .
        1570. .  .  .  . I   C WE  R  L.  .  .  .  .  .
1300.00 1575. .  .  .  . I   C W E R  L.  .  .  .  .  .
        1580. .  .  .  . I   C W E R  L  .  .  .  .  .  .
1290.00 1585. .  .  .  . I   C W E R  .L  .  .  .  .  .
        1590. .  .  .  .  I   .CW E  R  .L  .  .  .  .  .
        1595. .  .  .  . I   .CW  E R  L  .  .  .  .  .
        1600. .  .  .  .  I   . CW E  R L  .  .  .  .  .
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1270.00 1605.  .  .  .  .  I  . W E RL  .  .  .  .  .
        1610.  .  .  .  .  I  . W E RL  .  .  .  .  .
        1615.  .  .  .  .   I  . W E ML  .  .  .  .  .
        1620.  .  .  .  .   I  .  W E LR  .  .  .  .  .
1250.00 1625.  .  .  .  .   I  .  W E LR  .  .  .  .  .
        1630.  .  .  .  .   I  .  W E L  R  .  .  .  .  .
1240.00 1635.  .  .  .  .   I  .  W E.L  R  .  .  .  .  .
        1640.  .  .  .  .   I  .  W E.L  R  .  .  .  .  .
        1645.  .  .  .  .   I  .  W E.L  R  .  .  .  .  .
        1650.  .  .  .  .   I  .  W E.L  R  .  .  .  .  .
        1655.  .  .  .  .   I  .  CW E.L  R  .  .  .  .  .
        1660.  .  .  .  .   I  .  CW E.ML R  .  .  .  .  .
        1665.  .  .  .  .    I .  CW E. LR  .  .  .  .  .
        1670.  .  .  .  .    I .  CW E. L  .  .  .  .  .
1200.00 1675.  .  .  .  .    I .  CW E. L  .  .  .  .  .
        1680.  .  .  .  .    I .  CW E. L  .  .  .  .  .
        1685.  .  .  .  .    I .  CW E. L  .  .  .  .  .
        1690.  .  .  .  .    I .  C WE. L  .  .  .  .  .
        1695.  .  .  .  .    I .  C WE. L  .  .  .  .  .
        1700.  .  .  .  .    I .  C WE. L  .  .  .  .  .
        1705.  .  .  .  .    I .  C WE. L  .  .  .  .  .
        1710.  .  .  .  .    I .  C WE. RL  .  .  .  .  .
        1715.  .  .  .  .    I .  C WE. RL  .  .  .  .  .
        1720.  .  .  .  .    I .  C WE. RL  .  .  .  .  .
        1725.  .  .  .  .    I .  C WE. RL  .  .  .  .  .
        1730.  .  .  .  .    I .  C WE. RL  .  .  .  .  .
        1735.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1740.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1745.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1750.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1755.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1760.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1765.  .  .  .  .    I .  C W E RL  .  .  .  .  .
        1770.  .  .  .  .    I .  C W E R L  .  .  .  .  .
1100.00 1775.  .  .  .  .    I .  CW E R L  .  .  .  .  .
        1780.  .  .  .  .    I .  CW E R L  .  .  .  .  .
        1785.  .  .  .  .    I .  CW E R L  .  .  .  .  .
        1790.  .  .  .  .    I .  CW E R L  .  .  .  .  .
        1795.  .  .  .  .     I.  CW E R L  .  .  .  .  .
        1800.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1805.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1810.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1815.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
1065.00 1820.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1825.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1830.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
1050.00 1835.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
        1840.  .  .  .  .     I.  C WE  RL  .  .  .  .  .
1040.00 1845.  .  .  .  .     I.  C W.E RL  .  .  .  .  .
        1850.  .  .  .  .     I.  C W.E RL  .  .  .  .  .
        1855.  .  .  .  .      I  CW.E ML  .  .  .  .  .
        1860.  .  .  .  .      I  CW.E  L  .  .  .  .  .
1020.00 1865.  .  .  .  .     .I  W. E LR  .  .  .  .  .
        1870.  .  .  .  .     .I  W. E LR  .  .  .  .  .
        1875.  .  .  .  .     . I  W EL R  .  .  .  .  .
        1880.  .  .  .  .     . I  W EL R  .  .  .  .  .
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1000.00 1885. .  .  .  .  . I    .W EL R .  .  .  .  .
        1890. .  .  .  .  . I    .W EL R .  .  .  .  .
 990.00 1895. .  .  .  .  . I    .CW EL R .  .  .  .  .
        1900. .  .  .  .  . I    .CW EL R .  .  .  .  .
        1905. .  .  .  .  . I    .CW EL R .  .  .  .  .
        1910. .  .  .  .  . I    .CW EML  .  .  .  .  .
        1915. .  .  .  .  . I    .CW EML  .  .  .  .  .
        1920. .  .  .  .  . I    .CW EML  .  .  .  .  .
        1925. .  .  .  .  . I    .C WEML  .  .  .  .  .
        1930. .  .  .  .  . I    .C WE RL .  .  .  .  .
        1935. .  .  .  .  . I    .C WE RL .  .  .  .  .
        1940. .  .  .  .  . I    .C WER L .  .  .  .  .
        1945. .  .  .  .  . I    .C WER L .  .  .  .  .
        1950. .  .  .  .  . I    .C WER  L.  .  .  .  .
        1955. .  .  .  .  . I    .C WER  L.  .  .  .  .
        1960. .  .  .  .  . I    .C WER  L.  .  .  .  .
        1965. .  .  .  .  . I    .C WER  L.  .  .  .  .
        1970. .  .  .  .  . I    .C WRE  L.  .  .  .  .
        1975. .  .  .  .  .  I   .C WRE  L.  .  .  .  .
        1980. .  .  .  .  .  I   .C  WE  L.  .  .  .  .
 900.00 1985. .  .  .  .  .  I   .C  WE   L  .  .  .  .
        1990. .  .  .  .  .  I   .C  WE   L  .  .  .  .
        1995. .  .  .  .  .  I   .C  WE   L  .  .  .  .
        2000. .  .  .  .  .  I   .C  WE   L  .  .  .  .
        2005. .  .  .  .  .  I   . C WE   .L  .  .  .  .
 875.00 2010. .  .  .  .  .  I   . C WE   .L  .  .  .  .
        2015. .  .  .  .  .  I   . C WE   .L  .  .  .  .
        2020. .  .  .  .  .  I   . C WER  .L  .  .  .  .
        2025. .  .  .  .  .  I   . C WE  R L  .  .  .  .
        2030. .  .  .  .  .  I   . C WE  RL   .  .  .  .
 850.00 2035. .  .  .  .  .  I   . C WE   L  .  .  .  .
        2040. .  .  .  .  .  I   . C W E  L  .  .  .  .
        2045. .  .  .  .  .  I   .  CW E  RL  .  .  .  .
        2050. .  .  .  .  .  I   .  CW E  RL  .  .  .  .
        2055. .  .  .  .  .  I   .  CW E  R L .  .  .  .
        2060. .  .  .  .  .   I  .  W E  R L  .  .  .  .
        2065. .  .  .  .  .   I  .  W  E R L  .  .  .  .
        2070. .  .  .  .  .    I .  CW E  R L .  .  .  .
        2075. .  .  .  .  .    I .  CW E  R L .  .  .  .
        2080. .  .  .  .  .    I .   W E  R  L .  .  .  .
 800.00 2085. .  .  .  .  .     I.   W E  R  L .  .  .  .
        2090. .  .  .  .  .      I.  CWE  R  L .  .  .  .
 790.00 2095. .  .  .  .  .      I.  CW E R  L .  .  .  .
        2100. .  .  .  .  .       I  CW E R  L .  .  .  .
        2105. .  .  .  .  .       I  CW E R  L .  .  .  .
        2110. .  .  .  .  .       I   W E R  L .  .  .  .
        2115. .  .  .  .  .       I   W E R  L .  .  .  .
        2120. .  .  .  .  .       I   W E R  L .  .  .  .
        2125. .  .  .  .  .       I   W E R  L .  .  .  .
        2130. .  .  .  .  .       I   W E R   L .  .  .  .
 750.00 2135. .  .  .  .  .       I   W E R   L .  .  .  .
        2140. .  .  .  .  .       I   CWE R  L .  .  .  .
        2145. .  .  .  .  .       I   CWE R  L .  .  .  .
        2150. .  .  .  .  .       .I  CWE R  L .  .  .  .
        2155. .  .  .  .  .       .I  CWE R  L .  .  .  .
        2160. .  .  .  .  .       .I  CWE R  L .  .  .  .
        2165. .  .  .  .  .       .I  CWE R  L .  .  .  .
        2170. .  .  .  .  .       .I  CWE R  L .  .  .  .
        2175. .  .  .  .  .       . I C E R  L .  .  .  .
        2180. .  .  .  .  .       . I C E R  L .  .  .  .
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/00.00 2185. .  .  .  .  .  .I  C E R   L   .  .  .  .
       2190. .  .  .  .  .  .I   CWER   L   .  .  .  .
       2195. .  .  .  .  .  . I  CWER    L  .  .  .  .
       2200. .  .  .  .  .  . I  CWER    L  .  .  .  .
       2205. .  .  .  .  .  .  I CWER     L .  .  .  .
       2210. .  .  .  .  .  .  I  WER     L .  .  .  .
       2215. .  .  .  .  .  .  I  WER      L.  .  .  .
       2220. .  .  .  .  .  .   I CWE      L.  .  .  .
       2225. .  .  .  .  .  .   I CWE       L  .  .  .
       2230. .  .  .  .  .  .    I WE       L. .  .  .
650.00 2235. .  .  .  .  .  .    I WE        L .  .  .
       2240. .  .  .  .  .  .    I WE       L. .  .  .
       2245. .  .  .  .  .  .    I WER      L. .  .  .
       2250. .  .  .  .  .  .     I WE     L  .  .  .  .
       2255. .  .  .  .  .  .     I WER    L  .  .  .  .
       2260. .  .  .  .  .  .     I WER   L  .  .  .  .
       2265. .  .  .  .  .  .     I WER  L   .  .  .  .
       2270. .  .  .  .  .  .     I .WER L   .  .  .  .
       2275. .  .  .  .  .  .      I .WER L  .  .  .  .
       2280. .  .  .  .  .  .      I .WE RL  .  .  .  .
600.00 2285. .  .  .  .  .  .      I .WE L    .  .  .  .
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THIS RUN EXECUTED 10-29-92

****
HEC2 RELEASE DATED NOV 76 UPDATED MAY 1984
ERROR CORR - 01,02,03,04,05,06
MODIFICATION - 50,51,52,53,54,55,56
IBM-PC-XT VERSION AUGUST 1985
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUBCRITICAL RUN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2875.000	.00	.00	.00	479.60	700.00	481.55	481.55	482.10	95.07	5.94	117.81	71.79
*	2850.000	25.00	.00	.00	479.86	700.00	482.39	482.39	483.52	74.01	8.52	82.14	81.37
*	2800.000	50.00	.00	.00	480.60	700.00	483.64	483.64	484.90	72.62	9.02	77.64	82.14
	2700.000	100.00	.00	.00	481.00	700.00	484.85	484.01	485.52	29.90	6.56	106.72	128.02
	2600.000	100.00	.00	.00	481.40	700.00	485.14	484.42	485.87	33.55	6.83	102.51	120.85
	2500.000	100.00	.00	.00	481.80	700.00	485.47	484.81	486.23	35.81	6.99	100.19	116.98
	2400.000	100.00	.00	.00	482.20	700.00	485.83	485.22	486.61	37.40	7.09	98.68	114.47
	2365.000	35.00	.00	.00	482.34	700.00	486.05	485.35	486.78	66.85	6.86	101.99	85.61
	2350.000	15.00	.00	.00	482.40	700.00	486.18	485.41	486.88	62.82	6.72	104.15	88.32
	2340.000	10.00	.00	.00	482.44	700.00	486.22	485.48	486.96	65.74	6.92	101.16	86.34
*	2320.000	20.00	.00	.00	483.32	700.00	486.33	486.33	487.56	142.27	8.92	78.52	58.69
*	2300.000	20.00	.00	.00	484.20	700.00	487.22	487.22	488.45	141.72	8.92	78.49	58.80
	2290.000	10.00	.00	.00	484.24	700.00	488.34	487.22	488.60	28.26	4.13	169.53	131.69
	2200.000	90.00	.00	.00	484.60	700.00	488.28	487.62	489.03	35.21	6.95	100.78	117.96
	2150.000	50.00	.00	.00	484.80	700.00	488.45	487.81	489.22	36.32	7.02	99.69	116.14
	2140.000	10.00	.00	.00	484.84	700.00	488.40	488.01	489.35	47.12	7.79	89.91	101.98
*	2125.000	15.00	.00	.00	484.90	700.00	488.37	488.37	489.70	71.44	9.25	75.69	82.82

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	2110.000	15.00	.00	.00	484.96	700.00	488.72	488.72	490.08	71.86	9.37	74.72	82.58
*	2100.000	10.00	.00	.00	485.00	700.00	489.06	489.06	490.49	72.06	9.58	73.05	82.46
*	2000.000	100.00	.00	.00	485.40	700.00	490.06	490.06	491.44	71.55	9.45	74.09	82.76
	1900.000	100.00	.00	.00	485.80	700.00	491.31	489.85	491.88	20.82	6.06	115.52	153.40
	1800.000	100.00	.00	.00	486.20	700.00	491.47	490.28	492.14	25.60	6.57	106.56	138.35
	1700.000	100.00	.00	.00	486.60	700.00	491.67	490.69	492.45	30.58	7.04	99.38	126.59
	1615.000	85.00	.00	.00	486.94	700.00	492.09	490.99	492.79	53.63	6.71	104.39	95.58
	1600.000	15.00	.00	.00	487.00	700.00	492.15	491.08	492.88	55.80	6.85	102.22	93.71
	1590.000	10.00	.00	.00	487.04	700.00	492.19	491.14	492.94	57.35	6.95	100.75	92.43
*	1570.000	20.00	.00	.00	488.52	700.00	492.56	492.56	493.98	141.55	9.56	73.21	58.84
	1550.000	20.00	.00	.00	490.00	700.00	494.44	494.44	495.20	168.34	6.99	100.10	53.95
*	1540.000	10.00	.00	.00	490.04	700.00	494.61	494.61	495.40	82.14	7.13	98.18	77.24
	1500.000	40.00	.00	.00	490.20	700.00	494.67	494.25	495.73	48.43	8.26	84.70	100.58
	1400.000	100.00	.00	.00	490.60	700.00	495.19	494.67	496.20	44.81	8.07	86.74	104.57
	1315.000	85.00	.00	.00	490.94	700.00	495.89	494.99	496.67	62.90	7.10	98.56	88.26
	1300.000	15.00	.00	.00	491.00	700.00	495.99	495.06	496.77	61.87	7.08	98.89	88.99
	1290.000	10.00	.00	.00	491.04	700.00	496.04	495.11	496.83	62.41	7.12	98.32	88.61
*	1270.000	20.00	.00	.00	492.32	700.00	496.37	496.37	497.79	141.60	9.58	73.10	58.82
*	1250.000	20.00	.00	.00	493.60	700.00	497.68	497.68	499.10	140.40	9.57	73.11	59.08
*	1240.000	10.00	.00	.00	493.64	700.00	497.81	497.81	499.30	72.89	9.81	71.36	81.99
	1200.000	40.00	.00	.00	493.80	700.00	498.72	497.89	499.56	34.44	7.34	95.32	119.28
	1100.000	100.00	.00	.00	494.20	700.00	499.09	498.25	499.90	33.65	7.23	96.81	120.67
	1065.000	45.00	.00	.00	494.34	700.00	499.38	498.37	500.11	57.14	6.84	102.39	92.61
	1050.000	15.00	.00	.00	494.40	700.00	499.45	498.46	500.20	59.24	6.97	100.46	90.95
	1040.000	10.00	.00	.00	494.44	700.00	499.66	498.41	500.27	46.30	6.26	111.90	102.88
*	1020.000	20.00	.00	.00	495.40	700.00	499.46	499.46	500.89	141.65	9.60	72.95	58.81

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	1000.000	20.00	.00	.00	496.40	700.00	500.46	500.46	501.89	140.92	9.57	73.12	58.97
	990.000	10.00	.00	.00	496.44	700.00	501.00	500.49	502.00	44.63	8.03	87.19	104.78
	900.000	90.00	.00	.00	496.80	700.00	501.84	500.51	502.31	19.97	5.54	126.35	156.65
	875.000	25.00	.00	.00	496.90	700.00	501.76	500.81	502.46	57.48	6.68	104.84	92.33
	850.000	25.00	.00	.00	497.00	700.00	501.76	501.10	502.70	78.14	7.77	90.08	79.19
*	800.000	50.00	.00	.00	498.80	700.00	502.49	502.49	503.66	147.86	8.66	80.80	57.57
	790.000	10.00	.00	.00	499.72	700.00	503.10	502.65	503.78	43.52	6.60	106.08	106.11
	750.000	40.00	.00	.00	500.00	700.00	503.23	503.03	504.01	59.34	7.09	98.77	90.87
	700.000	50.00	.00	.00	501.00	700.00	503.90	503.20	504.24	25.52	4.70	148.83	138.56
*	650.000	50.00	.00	.00	503.00	700.00	504.44	504.44	505.03	88.32	6.15	113.78	74.49
	600.000	50.00	.00	.00	504.00	700.00	505.63	505.63	506.06	96.98	5.24	133.70	71.08

SUBCRITICAL RUN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	2875.000	700.00	481.55	.00	.00	.55	111.83	.00
*	2850.000	700.00	482.39	.00	.84	.00	36.82	25.00
*	2800.000	700.00	483.64	.00	1.24	.00	31.13	50.00
	2700.000	700.00	484.85	.00	1.22	.00	35.41	100.00
	2600.000	700.00	485.14	.00	.29	.00	34.94	100.00
	2500.000	700.00	485.47	.00	.33	.00	34.66	100.00
	2400.000	700.00	485.83	.00	.35	.00	34.49	100.00
	2365.000	700.00	486.05	.00	.23	.00	34.94	35.00
	2350.000	700.00	486.18	.00	.13	.00	35.12	15.00
	2340.000	700.00	486.22	.00	.03	.00	33.50	10.00
*	2320.000	700.00	486.33	.00	.11	.00	32.22	20.00
*	2300.000	700.00	487.22	.00	.89	.00	32.06	20.00
	2290.000	700.00	488.34	.00	1.12	.00	111.20	10.00
	2200.000	700.00	488.28	.00	-.06	.00	34.73	90.00
	2150.000	700.00	488.45	.00	.17	.00	34.60	50.00
	2140.000	700.00	488.40	.00	-.05	.00	32.44	10.00
*	2125.000	700.00	488.37	.00	-.03	.00	28.63	15.00
*	2110.000	700.00	488.72	.00	.35	.00	27.77	15.00
*	2100.000	700.00	489.06	.00	.34	.00	25.96	10.00
*	2000.000	700.00	490.06	.00	.99	.00	26.82	100.00
	1900.000	700.00	491.31	.00	1.25	.00	32.00	100.00
	1800.000	700.00	491.47	.00	.16	.00	30.45	100.00
	1700.000	700.00	491.67	.00	.21	.00	29.15	100.00
	1615.000	700.00	492.09	.00	.42	.00	30.52	85.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1600.000	700.00	492.15	.00	.06	.00	29.68	15.00
	1590.000	700.00	492.19	.00	.04	.00	29.10	10.00
*	1570.000	700.00	492.56	.00	.37	.00	26.21	20.00
*	1550.000	700.00	494.44	.00	1.88	.00	67.90	20.00
*	1540.000	700.00	494.61	.00	.17	.00	62.46	10.00
	1500.000	700.00	494.67	.00	.06	.00	27.89	40.00
	1400.000	700.00	495.19	.00	.52	.00	27.80	100.00
	1315.000	700.00	495.89	.00	.70	.00	29.84	85.00
	1300.000	700.00	495.99	.00	.10	.00	29.66	15.00
	1290.000	700.00	496.04	.00	.06	.00	29.36	10.00
	1270.000	700.00	496.37	.00	.33	.00	26.10	20.00
*	1250.000	700.00	497.68	.00	1.31	.00	25.87	20.00
*	1240.000	700.00	497.81	.00	.13	.00	24.24	10.00
	1200.000	700.00	498.72	.00	.92	.00	28.79	40.00
	1100.000	700.00	499.09	.00	.37	.00	29.57	100.00
	1065.000	700.00	499.38	.00	.29	.00	30.59	45.00
	1050.000	700.00	499.45	.00	.07	.00	29.86	15.00
	1040.000	700.00	499.66	.00	.21	.00	32.83	10.00
*	1020.000	700.00	499.46	.00	-.20	.00	25.93	20.00
*	1000.000	700.00	500.46	.00	1.00	.00	25.99	20.00
	990.000	700.00	501.00	.00	.54	.00	28.16	10.00
	900.000	700.00	501.84	.00	.83	.00	40.19	90.00
	875.000	700.00	501.76	.00	-.07	.00	33.09	25.00
	850.000	700.00	501.76	.00	-.01	.00	27.85	25.00
*	800.000	700.00	502.49	.00	.73	.00	35.08	50.00
	790.000	700.00	503.10	.00	.61	.00	47.50	10.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	750.000	700.00	503.23	.00	.13	.00	50.75	40.00
	700.000	700.00	503.90	.00	.67	.00	75.59	50.00
*	650.000	700.00	504.44	.00	.54	.00	98.33	50.00
*	600.000	700.00	505.63	.00	1.19	.00	157.95	50.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2875.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 2850.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2850.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2800.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2800.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2320.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2320.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2300.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2300.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2125.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2125.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2110.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2110.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2100.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2100.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2000.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2000.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1570.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1570.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1550.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1550.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1540.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1540.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1270.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1270.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1250.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1250.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1240.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1240.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1020.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1020.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1000.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1000.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 800.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 800.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 650.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 650.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 600.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 600.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

THIS RUN EXECUTED 10-29-92

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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
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**********************************************
*ATER SURFACE PROFILES                       *
* VERSION OF NOVEMBER 1976                   *
* UPDATED MAY 1984                           *
* IBM-PC-XT VERSION AUGUST 1985              *
* RUN DATE  10-29-92   TIME  11:52:51          *
*
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**************************************
* U.S. ARMY CORPS OF ENGINEERS       *
* THE HYDROLOGIC ENGINEERING CENTER  *
* 609 SECOND STREET, SUITE D         *
* DAVIS, CALIFORNIA 95616            *
  * (916) 440-2105 (FTS) 448-2105

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SUPER-CRITICAL

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X    X  XXXXXXX   XXXXX            XXXXX
X    X  X        X     X          X     X
X    X  X        X                      X
XXXXXXX  XXXX    X         XXXXX   XXXXX
X    X  X        X                X
X    X  X        X     X          X
X    X  XXXXXXX  XXXXX            XXXXXXX
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THIS RUN EXECUTED 10-29-92

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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
 IBM-PC-XT VERSION AUGUST 1985
**************************************************

T1          SOUTHERN VISTA ESTATES
T2          OCTOBER 23, 1992
T3          SUPERCRITICAL RUN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.       2.        0.        1.   .000000       .00       1.0     700.   505.600      .000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     -1.000      .000      .000      .000      .000      .000    -1.000      .000      .000      .000

      .025      .025      .025      .100      .300      .000      .000      .000      .000      .000
QT   1.000   700.000      .000      .000      .000      .000      .000      .000      .000      .000
X1 600.000     9.000      .000   263.000    50.000    50.000    50.000      .000      .000      .000
GR 507.000      .000   506.000    17.000   505.000    70.000   505.000   122.000   504.000   141.000
GR 504.000   173.000   505.000   185.000   506.000   200.000   507.000   263.000      .000      .000

X1 650.000    11.000      .000   212.000    50.000    50.000    50.000      .000      .000      .000
GR 510.000      .000   509.000    25.000   508.000    55.000   507.000    72.000   506.000    90.000
GR 505.000   103.000   504.000   114.000   503.000   130.000   503.000   185.000   504.000   204.000
GR 505.000   212.000      .000      .000      .000      .000      .000      .000      .000      .000

X1 700.000    13.000      .000   135.000    50.000    50.000    50.000      .000      .000      .000
GR 507.400      .000   507.000    15.000   506.000    32.000   505.000    41.000   504.000    49.000
GR 503.000    58.000   502.000    66.000   501.000    75.000   501.000    98.000   502.000   110.000
GR 503.000   120.000   504.000   126.000   505.000   135.000      .000      .000      .000      .000

X1 750.000    10.000      .000   138.000    40.000    40.000    40.000      .000      .000      .000
GR 507.300      .000   506.000    40.000   504.000    65.000   500.000    88.000   500.000   100.000
GR 501.000   105.000   502.000   112.000   503.000   118.000   504.000   128.000   505.000   138.000

NC    .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
X1 790.000     5.000      .000   135.000    10.000    10.000    10.000      .000      .000      .000
GR 506.900      .000   503.000    77.000   499.720    83.000   499.720   100.000   505.000   135.000

X1 800.000    12.000      .000   136.000    50.000    50.000    50.000      .000      .000      .000
   507.000      .000   506.000    30.000   505.000    50.000   504.000    68.000   503.000    76.000
GR 498.800    83.000   498.800    98.000   501.000   100.000   502.000   108.000   503.000   116.000
GR 504.000   126.000   505.000   136.000      .000      .000      .000      .000      .000      .000
```

NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	850.000	5.000	.000	107.000	25.000	25.000	25.000	.000	.000	.000
GR	505.000	.000	504.000	69.000	497.000	83.000	497.000	93.000	505.000	107.000
X1	875.000	5.000	.000	107.000	25.000	25.000	25.000	.000	.000	.000
GR	505.500	.000	503.700	74.000	496.900	83.000	496.900	93.000	502.000	107.000
X1	900.000	5.000	.000	113.000	90.000	90.000	90.000	.000	.000	.000
GR	504.800	.000	503.500	68.600	496.800	83.000	496.800	93.000	502.000	113.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	990.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	502.400	.000	501.200	73.600	496.440	83.000	496.440	93.000	503.440	107.000
X1	1000.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	502.300	.000	501.000	74.000	496.400	83.000	496.400	93.000	503.480	107.000
X1	1020.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	502.000	.000	500.600	73.000	495.400	83.000	495.400	93.000	502.400	107.000
X1	1040.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	502.000	.000	500.350	69.000	494.440	83.000	494.440	93.000	501.440	107.000
X1	1050.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	502.000	.000	500.400	71.200	494.400	83.000	494.400	93.000	501.500	107.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	1065.000	5.000	.000	107.000	45.000	45.000	45.000	.000	.000	.000
GR	501.900	.000	501.100	69.000	494.300	83.000	494.300	93.000	501.300	107.000
X1	1100.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	501.800	.000	499.700	72.000	494.200	83.000	494.200	93.000	501.200	107.000
X1	1200.000	5.000	.000	107.000	40.000	40.000	40.000	.000	.000	.000
GR	501.000	.000	499.200	73.000	493.800	83.000	493.800	93.000	500.900	107.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	1240.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	500.400	.000	498.600	73.000	493.640	83.000	493.640	93.000	503.640	107.000
X1	1250.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	500.000	.000	498.800	73.000	493.600	83.000	493.600	93.000	500.700	107.000
X1	1270.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	500.000	.000	498.400	71.000	492.320	83.000	492.320	93.000	499.320	107.000
X1	1290.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	500.400	.000	498.500	69.000	491.040	83.000	491.040	93.000	498.040	107.000

X1	1300.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	499.600	.000	498.100	69.000	491.000	83.000	491.000	93.000	498.100	107.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	1315.000	5.000	.000	107.000	85.000	85.000	85.000	.000	.000	.000
GR	499.600	.000	497.900	69.000	490.940	83.000	490.940	93.000	497.940	107.000
X1	1400.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	498.500	.000	497.000	70.800	490.600	83.000	490.600	93.000	497.700	107.000
X1	1500.000	5.000	.000	107.000	40.000	40.000	40.000	.000	.000	.000
GR	496.000	.000	494.900	73.600	490.200	83.000	490.200	93.000	497.200	107.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	1540.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	495.300	.000	494.000	75.000	490.040	83.000	490.040	93.000	497.040	107.000
X1	1550.000	6.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
GR	495.400	.000	494.000	48.000	493.700	75.800	490.000	83.000	490.000	93.000
GR	498.000	107.000	.000	.000	.000	.000	.000	.000	.000	.000
X1	1570.000	5.000	.000	107.000	20.000	20.000	20.000	.000	.000	.000
[redacted]	495.400	.000	493.700	72.600	488.520	83.000	488.520	93.000	495.520	107.000
X1	1590.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
GR	495.600	.000	493.600	71.800	487.040	83.000	487.040	93.000	494.040	107.000
X1	1600.000	5.000	.000	107.000	15.000	15.000	15.000	.000	.000	.000
GR	495.700	.000	493.600	70.800	487.000	83.000	487.000	93.000	494.100	107.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	1615.000	5.000	.000	107.000	85.000	85.000	85.000	.000	.000	.000
GR	495.500	.000	493.800	69.400	486.940	83.000	486.940	93.000	493.940	107.000
X1	1700.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	496.000	.000	494.500	69.000	486.600	83.000	486.600	93.000	493.600	107.000
X1	1800.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	494.400	.000	492.900	70.200	486.200	83.000	486.200	93.000	493.300	107.000
X1	1900.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	496.000	.000	492.200	70.200	485.800	83.000	485.800	93.000	492.800	107.000
X1	2000.000	5.000	.000	107.000	100.000	100.000	100.000	.000	.000	.000
GR	492.000	.000	491.000	72.800	485.400	88.000	485.400	93.000	492.500	107.000
NC	.025	.025	.025	.300	.500	.000	.000	.000	.000	.000
X1	2100.000	5.000	.000	107.000	10.000	10.000	10.000	.000	.000	.000
[redacted]	490.300	.000	489.700	73.800	485.000	83.000	485.000	93.000	492.100	107.000

X1	2110.000	5.000	.000	110.000	15.000	15.000	15.000	.000	.000	.000
GR	490.120	.000	489.640	74.000	484.960	83.000	484.960	95.000	491.560	110.000
X1	2125.000	5.000	.000	111.000	15.000	15.000	15.000	.000	.000	.000
GR	489.920	.000	489.440	75.000	484.900	83.000	484.900	98.000	490.900	111.000
X1	2140.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	489.740	.000	489.220	75.000	484.840	83.000	484.840	101.000	490.240	113.000
X1	2150.000	5.000	.000	113.000	50.000	50.000	50.000	.000	.000	.000
GR	489.500	.000	489.100	74.400	484.800	83.000	484.800	103.000	489.800	113.000
X1	2200.000	5.000	.000	113.000	90.000	90.000	90.000	.000	.000	.000
GR	489.000	.000	488.300	75.600	484.600	83.000	484.600	103.000	489.600	113.000
NC	.035	.035	.035	.100	.300	.000	.000	.000	.000	.000
X1	2290.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	487.750	.000	487.520	76.000	484.240	83.000	484.240	103.000	489.240	113.000
X1	2300.000	5.000	.000	113.000	20.000	20.000	20.000	.000	.000	.000
GR	487.700	.000	487.500	76.400	484.200	83.000	484.200	103.000	489.200	113.000
	2320.000	5.000	.000	113.000	20.000	20.000	20.000	.000	.000	.000
	487.400	.000	487.200	75.000	483.320	83.000	483.320	103.000	488.320	113.000
X1	2340.000	5.000	.000	113.000	10.000	10.000	10.000	.000	.000	.000
GR	487.200	.000	486.900	76.000	482.440	83.000	482.440	103.000	487.440	113.000
X1	2350.000	5.000	.000	113.000	15.000	15.000	15.000	.000	.000	.000
GR	487.100	.000	486.700	74.400	482.400	83.000	482.400	103.000	487.400	113.000
NC	.025	.025	.025	.100	.300	.000	.000	.000	.000	.000
X1	2365.000	5.000	.000	113.000	35.000	35.000	35.000	.000	.000	.000
GR	487.000	.000	486.600	75.000	482.380	83.000	482.380	103.000	487.000	113.000
X1	2400.000	5.000	.000	113.000	100.000	100.000	100.000	.000	.000	.000
GR	486.300	.000	486.000	75.400	482.200	83.000	482.200	103.000	487.200	113.000
X1	2500.000	5.000	.000	113.000	100.000	100.000	100.000	.000	.000	.000
GR	487.000	.000	486.000	74.600	481.800	83.000	481.800	103.000	486.800	113.000
X1	2600.000	5.000	.000	113.000	100.000	100.000	100.000	.000	.000	.000
GR	485.800	.000	485.400	75.000	481.420	83.000	481.400	103.000	486.420	113.000
X1	2700.000	5.000	.000	113.000	100.000	100.000	100.000	.000	.000	.000
GR	485.500	.000	485.000	75.000	481.000	83.000	481.000	103.000	486.000	113.000
X1	2800.000	5.000	.000	113.000	50.000	50.000	50.000	.000	.000	.000
	485.400	.000	484.600	75.000	480.600	83.000	480.600	103.000	486.600	113.000

X1	2850.000	5.000	.000	113.000	25.000	25.000	25.000	.000	.000	.000
GR	483.000	.000	483.000	70.000	479.860	76.000	479.860	104.000	485.600	113.000
X1	2875.000	5.000	.000	113.000	.000	.000	.000	.000	.000	.000
GR	481.060	.000	481.060	66.000	479.600	69.000	479.600	110.000	482.800	113.000
EJ	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 600.000
600.00 1.60 505.60 505.63 505.60 506.26 .46 .00 .00 507.30
700. 0. 700. 0. 0. 129. 0. 0. 0. 507.00
.00 .00 5.44 .00 .025 .025 .025 .000 504.00 38.20
.010800 0. 0. 0. 0 4 0 .00 155.80 194.00
0
*SECNO 650.000
650.00 1.12 504.12 504.44 .00 505.23 1.11 .77 .07 510.00
700. 0. 700. 0. 0. 83. 0. 0. 0. 505.00
.00 .00 8.46 .00 .025 .025 .025 .000 503.00 112.76
.023410 50. 50. 50. 6 11 0 .00 92.14 204.90
0
*SECNO 700.000
700.00 1.80 502.80 503.20 .00 504.17 1.38 1.03 .03 507.40
700. 0. 700. 0. 0. 74. 0. 0. 0. 505.00
.00 .00 9.41 .00 .025 .025 .025 .000 501.00 59.61
.018245 50. 50. 50. 9 17 0 .00 58.37 117.98
0
*SECNO 750.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
750.00 3.04 503.04 503.04 .00 503.98 .95 .56 .24 507.30
700. 0. 700. 0. 0. 90. 0. 0. 0. 505.00
.00 .00 7.82 .00 .025 .025 .025 .000 500.00 70.55
.007595 50. 50. 50. 20 14 0 .00 47.81 118.35
0
CCHV= .100 CEHV= .300
*SECNO 790.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
790.00 2.93 502.65 502.65 .00 503.68 1.03 .41 .21 506.90
700. 0. 700. 0. 0. 86. 0. 0. 0. 505.00
.01 .00 8.15 .00 .035 .035 .035 .000 499.72 77.65
.014491 40. 40. 40. 20 8 0 .00 41.75 119.39
0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 800.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

800.00	3.69	502.49	502.49	.00	503.66	1.17	.15	.14	507.00
700.	0.	700.	0.	0.	81.	0.	0.	0.	505.00
.01	.00	8.68	.00	.035	.035	.035	.000	498.80	76.85
.014845	10.	10.	10.	20	11	0	.00	35.05	111.90

0
CCHV= .100 CEHV= .300
*SECNO 850.000

1645 INT SEC ADDED BY RAISING SEC 850.30, .900FT AND MULTIPLYING BY 1.147

1.01	3.30	501.20	501.70	.00	503.23	2.03	.34	.09	505.90
700.	0.	700.	0.	0.	61.	0.	0.	0.	505.90
.01	.00	11.44	.00	.025	.025	.025	.000	497.90	87.61
.012509	25.	25.	25.	6	8	0	.00	25.65	113.26

1645 INT SEC ADDED BY RAISING SEC 1.01, -.900FT AND MULTIPLYING BY .872

850.00	3.40	500.40	501.10	.00	502.85	2.45	.34	.04	505.00
700.	0.	700.	0.	0.	56.	0.	0.	0.	505.00
.01	.00	12.56	.00	.025	.025	.025	.000	497.00	76.19
.014886	25.	25.	25.	3	11	0	.00	22.76	98.96

0
*SECNO 875.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

875.00	3.87	500.77	500.93	.00	502.36	1.59	.28	.25	505.50
700.	0.	700.	0.	0.	69.	0.	1.	0.	502.00
.01	.00	10.12	.00	.025	.025	.025	.000	496.90	77.88
.008557	25.	25.	25.	20	11	0	.00	25.75	103.63

0
*SECNO 900.000

900.00	3.09	499.89	500.53	.00	502.02	2.14	.28	.05	504.80
700.	0.	700.	0.	0.	60.	0.	1.	0.	502.00
.01	.00	11.74	.00	.025	.025	.025	.000	496.80	76.35
.015338	25.	25.	25.	14	8	0	.00	28.55	104.90

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 990.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

990.00	4.05	500.49	500.49	.00	501.91	1.42	1.32	.52	502.40
700.	0.	700.	0.	0.	73.	0.	1.	0.	503.44
.01	.00	9.57	.00	.035	.035	.035	.000	496.44	75.00
.014123	90.	90.	90.	20	11	0	.00	26.11	101.11

0
*SECNO 1000.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1000.00	4.07	500.47	500.47	.00	501.89	1.42	.14	.14	502.30
700.	0.	700.	0.	0.	73.	0.	1.	0.	503.48
.01	.00	9.57	.00	.035	.035	.035	.000	496.40	75.04
[redacted]14062	10.	10.	10.	20	5	0	.00	26.00	101.04

*SECNO 1020.000

3301 HV CHANGED MORE THAN HVINS

1020.00	3.23	498.63	499.47	.00	501.34	2.71	.42	.13	502.00
700.	0.	700.	0.	0.	53.	0.	1.	0.	502.40
.01	.00	13.20	.00	.035	.035	.035	.000	495.40	76.77
.034127	20.	20.	20.	6	5	0	.00	22.71	99.48

0
*SECNO 1040.000

1040.00	3.00	497.44	498.42	.00	500.54	3.10	.76	.04	502.00
700.	0.	700.	0.	0.	50.	0.	1.	0.	501.44
.01	.00	14.13	.00	.035	.035	.035	.000	494.44	75.90
.043051	20.	20.	20.	6	11	0	.00	23.09	98.99

0
*SECNO 1050.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3710 WSEL ASSUMED BASED ON MIN DIFF

1050.00	3.81	498.21	498.46	.00	499.92	1.70	.27	.44	502.00
700.	0.	700.	0.	0.	67.	0.	1.	0.	501.50
.01	.00	10.48	.00	.035	.035	.035	.000	494.40	75.50
.018066	10.	10.	10.	20	11	0	.00	25.02	100.52

0
CCHV= .100 CEHV= .300
*SECNO 1065.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1065.00	4.03	498.33	498.33	.00	499.75	1.41	.16	.21	501.90
700.	0.	700.	0.	0.	73.	0.	1.	0.	501.30
.01	.00	9.54	.00	.025	.025	.025	.000	494.30	74.69
.007218	15.	15.	15.	20	8	0	.00	26.37	101.07

0
*SECNO 1100.000
[redacted] 20 TRIALS ATTEMPTED WSEL,CWSEL
[redacted] PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1100.00	4.05	498.25	498.25	.00	499.67	1.41	.32	.23	501.80
700.	0.	700.	0.	0.	73.	0.	1.	1.	501.20
.01	.00	9.54	.00	.025	.025	.025	.000	494.20	74.89
.007163	45.	45.	45.	20	5	0	.00	26.22	101.11

0
*SECNO 1200.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1200.00	4.09	497.89	497.89	.00	499.32	1.43	.72	.41	501.00
700.	0.	700.	0.	0.	73.	0.	1.	1.	500.90
.02	.00	9.60	.00	.025	.025	.025	.000	493.80	75.42
.007154	100.	100.	100.	20	5	0	.00	25.65	101.07

0
CCHV= .100 CEHV= .300
*SECNO 1240.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1240.00	4.19	497.83	497.83	.00	499.30	1.48	.39	.24	500.40
700.	0.	700.	0.	0.	72.	0.	1.	1.	503.64
.02	.00	9.75	.00	.035	.035	.035	.000	493.64	74.56
.014048	40.	40.	40.	20	5	0	.00	24.30	98.86

0

*SECNO 1250.000

1250.00	3.86	497.46	497.68	.00	499.13	1.67	.16	.02	500.00
700.	0.	700.	0.	0.	68.	0.	1.	1.	500.70
.02	.00	10.36	.00	.035	.035	.035	.000	493.60	75.58
.017437	10.	10.	10.	5	8	0	.00	25.03	100.61

0

*SECNO 1270.000

3301 HV CHANGED MORE THAN HVINS

1270.00	3.08	495.40	496.37	.00	498.48	3.08	.51	.14	500.00
700.	0.	700.	0.	0.	50.	0.	1.	1.	499.32
.02	.00	14.07	.00	.035	.035	.035	.000	492.32	76.91
.040938	20.	20.	20.	10	8	0	.00	22.26	99.17

0

*SECNO 1290.000

1290.00	2.95	493.99	495.11	.00	497.53	3.54	.90	.05	500.40
700.	0.	700.	0.	0.	46.	0.	1.	1.	498.04
.02	.00	15.11	.00	.035	.035	.035	.000	491.04	77.47
.049365	20.	20.	20.	5	11	0	.00	21.43	98.90

0

*SECNO 1300.000

3301 HV CHANGED MORE THAN HVINS

1300.00	3.31	494.31	495.06	.00	496.84	2.53	.39	.31	499.60
700.	0.	700.	0.	0.	55.	0.	1.	1.	498.10
.02	.00	12.76	.00	.035	.035	.035	.000	491.00	76.46
.031091	10.	10.	10.	5	11	0	.00	23.08	99.54

0

CCHV= .100 CEHV= .300

*SECNO 1315.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 3710 WSEL ASSUMED BASED ON MIN DIFF
   1315.00     3.84   494.78   494.98      .00   496.43     1.65      .23      .24   499.60
      700.       0.     700.       0.       0.      68.       0.       1.       1.   497.94
       .02      .00    10.29      .00     .025     .025     .025     .000   490.94    75.27
   .008845      15.      15.      15.       20       11        0      .00    25.41   100.68
0
 *SECNO 1400.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   1400.00     4.07   494.67   494.67      .00   496.10     1.43      .68      .39   498.50
      700.       0.     700.       0.       0.      73.       0.       1.       1.   497.70
       .02      .00     9.61      .00     .025     .025     .025     .000   490.60    75.24
   .007227      85.      85.      85.       20        8        0      .00    25.78   101.03
0
 *SECNO 1500.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 [redacted] PROBABLE MINIMUM SPECIFIC ENERGY
 [redacted] CRITICAL DEPTH ASSUMED
   1500.00     4.05   494.25   494.25      .00   495.67     1.42      .72      .41   496.00
      700.       0.     700.       0.       0.      73.       0.       2.       1.   497.20
       .03      .00     9.56      .00     .025     .025     .025     .000   490.20    74.91
   .007222      100.     100.     100.       20        5        0      .00    26.18   101.09
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1540.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   1540.00     4.57   494.61   494.61      .00   495.40      .79      .41      .03   495.30
      700.       0.     700.       0.       0.      98.       0.       2.       1.   497.04
       .03      .00     7.13      .00     .035     .035     .035     .000   490.04    39.66
   .016094      40.      40.      40.       20       12        0      .00    62.48   102.15
0
 *SECNO 1550.000
   1550.00     4.34   494.34   494.46      .00   495.21      .88      .18      .01   495.40
      700.       0.     700.       0.       0.      93.       0.       2.       1.   498.00
       .03      .00     7.51      .00     .035     .035     .035     .000   490.00    36.48
   .019849      10.      10.      10.        4        8        0      .00    64.11   100.59
0
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1570.000

3301 HV CHANGED MORE THAN HVINS

1570.00	3.18	491.70	492.56	.00	494.50	1.80	.52	.19	495.40
700.	0.	700.	0.	0.	52.	0.	2.	1.	495.52
.03	.00	13.43	.00	.035	.035	.035	.000	488.52	76.61
.036077	20.	20.	20.	6	11	0	.00	22.76	99.37

0

*SECNO 1590.000

1590.00	2.97	490.01	491.15	.00	493.58	3.58	.84	.08	495.60
700.	0.	700.	0.	0.	46.	0.	2.	1.	494.04
.03	.00	15.17	.00	.035	.035	.035	.000	487.04	77.92
.049140	20.	20.	20.	5	11	0	.00	21.02	98.95

0

*SECNO 1600.000

3301 HV CHANGED MORE THAN HVINS

1600.00	3.32	490.32	491.09	.00	492.90	2.57	.39	.30	495.70
700.	0.	700.	0.	0.	54.	0.	2.	1.	494.10
.03	.00	12.87	.00	.035	.035	.035	.000	487.00	76.85
.031482	10.	10.	10.	5	11	0	.00	22.70	99.56

0

CCHV= .100 CEHV= .300

*SECNO 1615.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

1615.00	3.85	490.79	490.99	.00	492.44	1.65	.23	.27	495.50
700.	0.	700.	0.	0.	68.	0.	2.	1.	493.94
.03	.00	10.30	.00	.025	.025	.025	.000	486.94	75.37
.008845	15.	15.	15.	20	11	0	.00	25.32	100.69

0

*SECNO 1700.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1700.00	4.09	490.69	490.69	.00	492.14	1.45	.68	.39	496.00
700.	0.	700.	0.	0.	73.	0.	2.	1.	493.60
.03	.00	9.65	.00	.025	.025	.025	.000	486.60	75.75
.007234	85.	85.	85.	20	8	0	.00	25.44	101.18

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1800.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1800.00	4.07	490.27	490.27	.00	491.70	1.43	.72	.41	494.40
700.	0.	700.	0.	0.	73.	0.	2.	1.	493.30
.03	.00	9.61	.00	.025	.025	.025	.000	486.20	75.23
.007226	100.	100.	100.	20	5	0	.00	25.80	101.02

0
*SECNO 1900.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1900.00	4.05	489.85	489.85	.00	491.27	1.42	.72	.41	496.00
700.	0.	700.	0.	0.	73.	0.	2.	1.	492.80
.04	.00	9.56	.00	.025	.025	.025	.000	485.80	74.91
.007219	100.	100.	100.	20	5	0	.00	26.18	101.09

*SECNO 2000.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2000.00	4.66	490.06	490.06	.00	491.44	1.38	.72	.47	492.00
700.	0.	700.	0.	0.	74.	0.	2.	1.	492.50
.04	.00	9.44	.00	.025	.025	.025	.000	485.40	75.36
.007147	100.	100.	100.	20	8	0	.00	26.83	102.18

0
CCHV= .300 CEHV= .500
*SECNO 2100.000

2100.00	3.82	488.82	489.06	.00	490.53	1.72	.81	.10	490.30
700.	0.	700.	0.	0.	67.	0.	3.	1.	492.10
.04	.00	10.51	.00	.025	.025	.025	.000	485.00	75.55
.009295	100.	100.	100.	3	12	0	.00	24.96	100.51

0
*SECNO 2110.000

2110.00	3.19	488.15	488.70	.00	490.29	2.15	.11	.13	490.12
700.	0.	700.	0.	0.	60.	0.	3.	1.	491.56
.04	.00	11.75	.00	.025	.025	.025	.000	484.96	76.87
.013501	10.	10.	10.	14	5	0	.00	25.37	102.24

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2125.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

2125.00	3.43	488.33	488.36	.00	489.75	1.37	.15	.56	489.92
700.	0.	700.	0.	0.	75.	0.	3.	1.	490.90
.04	.00	9.40	.00	.025	.025	.025	.000	484.90	76.96
.007470	15.	15.	15.	20	8	0	.00	28.47	105.43

0
*SECNO 2140.000

2140.00	2.73	487.57	488.01	.00	489.41	1.85	.14	.14	489.74
700.	0.	700.	0.	0.	64.	0.	3.	1.	490.24
.04	.00	10.90	.00	.025	.025	.025	.000	484.84	78.02
.012386	15.	15.	15.	7	11	0	.00	29.05	107.06

0
*SECNO 2150.000

2150.00	2.92	487.72	487.82	.00	489.06	1.34	.10	.25	489.50
700.	0.	700.	0.	0.	75.	0.	3.	1.	489.80
.04	.00	9.28	.00	.025	.025	.025	.000	484.80	77.16
.008121	10.	10.	10.	3	8	0	.00	31.67	108.84

0
*SECNO 2200.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2200.00	3.01	487.61	487.61	.00	488.85	1.24	.38	.30	489.00
700.	0.	700.	0.	0.	78.	0.	3.	1.	489.60
.05	.00	8.93	.00	.025	.025	.025	.000	484.60	76.98
.007260	50.	50.	50.	20	8	0	.00	32.05	109.02

0
CCHV= .100 CEHV= .300
*SECNO 2290.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2290.00	2.98	487.22	487.22	.00	488.47	1.25	.90	.39	487.75
700.	0.	700.	0.	0.	78.	0.	3.	1.	489.24
.05	.00	8.96	.00	.035	.035	.035	.000	484.24	76.63
.014544	90.	90.	90.	20	5	0	.00	32.34	108.97

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2300.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2300.00	3.02	487.22	487.22	.00	488.45	1.23	.14	.12	487.70
700.	0.	700.	0.	0.	79.	0.	3.	1.	489.20
.05	.00	8.90	.00	.035	.035	.035	.000	484.20	76.96
.014091	10.	10.	10.	20	5	0	.00	32.08	109.04

0
*SECNO 2320.000

3301 HV CHANGED MORE THAN HVINS

2320.00	2.34	485.66	486.33	.00	487.93	2.27	.42	.10	487.40
700.	0.	700.	0.	0.	58.	0.	3.	1.	488.32
.05	.00	12.09	.00	.035	.035	.035	.000	483.32	78.18
.034593	20.	20.	20.	6	5	0	.00	29.50	107.68

*SECNO 2340.000

2340.00	2.31	484.75	485.48	.00	487.19	2.44	.72	.02	487.20
700.	0.	700.	0.	0.	56.	0.	3.	1.	487.44
.05	.00	12.54	.00	.035	.035	.035	.000	482.44	79.37
.037206	20.	20.	20.	2	11	0	.00	28.26	107.63

0
*SECNO 2350.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

2350.00	2.89	485.29	485.41	.00	486.66	1.37	.24	.31	487.10
700.	0.	700.	0.	0.	75.	0.	3.	1.	487.40
.05	.00	9.39	.00	.035	.035	.035	.000	482.40	77.22
.016445	10.	10.	10.	20	11	0	.00	31.57	108.78

0
CCHV= .100 CEHV= .300
*SECNO 2365.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 3720 CRITICAL DEPTH ASSUMED
   2365.00      3.01    485.39    485.39       .00    486.62     1.23       .16       .07    487.00
      700.        0.      700.        0.        0.       79.        0.        3.        1.    487.00
       .05       .00      8.92       .00      .025      .025      .025      .000    482.38     77.30
   .007263       15.       15.       15.        20         8         0       .00     32.21    109.51
0
 *SECNO 2400.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2400.00      3.02    485.22    485.22       .00    486.45     1.23       .25       .15    486.30
      700.        0.      700.        0.        0.       79.        0.        3.        1.    487.20
       .05       .00      8.91       .00      .025      .025      .025      .000    482.20     76.97
   .007220       35.       35.       35.        20         5         0       .00     32.07    109.03
0
 *SECNO 2500.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2500.00      3.01    484.81    484.81       .00    486.05     1.24       .72       .37    487.00
      700.        0.      700.        0.        0.       78.        0.        3.        1.    486.80
       .05       .00      8.92       .00      .025      .025      .025      .000    481.80     76.97
   .007239      100.      100.      100.        20         5         0       .00     32.06    109.03
0
 *SECNO 2600.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2600.00      3.03    484.43    484.43       .00    485.66     1.23       .72       .00    485.80
      700.        0.      700.        0.        0.       79.        0.        3.        2.    486.42
       .06       .00      8.91       .00      .025      .025      .025      .000    481.40     76.96
   .007219      100.      100.      100.        20         5         0       .00     32.07    109.03
0
 *SECNO 2700.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2700.00      3.01    484.01    484.01       .00    485.25     1.24       .72       .37    485.50
      700.        0.      700.        0.        0.       78.        0.        4.        2.    486.00
       .06       .00      8.93       .00      .025      .025      .025      .000    481.00     76.98
   .007258      100.      100.      100.        20         5         0       .00     32.05    109.02
0
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2800.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2800.00	3.04	483.64	483.64	.00	484.90	1.25	.72	.37	485.40
700.	0.	700.	0.	0.	78.	0.	4.	2.	486.60
.06	.00	8.99	.00	.025	.025	.025	.000	480.60	76.91
.007199	100.	100.	100.	20	5	0	.00	31.16	108.07

0
*SECNO 2850.000

1645 INT SEC ADDED BY RAISING SEC 2850.00, .370FT AND MULTIPLYING BY .979

3301 HV CHANGED MORE THAN HVINS

1.01	1.94	482.07	482.80	.00	484.49	2.42	.30	.12	483.37
700.	0.	700.	0.	0.	56.	0.	4.	2.	485.97
.06	.00	12.48	.00	.025	.025	.025	.000	480.23	70.94
.023202	25.	25.	25.	8	9	0	.00	33.66	104.59

0

1645 INT SEC ADDED BY RAISING SEC 1.01, -.370FT AND MULTIPLYING BY 1.022

2850.00	1.93	481.79	482.40	.00	483.86	2.07	.52	.10	483.00
700.	0.	700.	0.	0.	61.	0.	4.	2.	485.60
.07	.00	11.55	.00	.025	.025	.025	.000	479.86	72.31
.018664	25.	25.	25.	4	11	0	.00	34.73	107.03

0
*SECNO 2875.000

2875.00	1.34	480.94	481.56	.00	483.24	2.31	.59	.02	481.06
700.	0.	700.	0.	0.	57.	0.	4.	2.	482.80
.07	.00	12.19	.00	.025	.025	.025	.000	479.60	66.26
.031208	25.	25.	25.	7	5	0	.00	45.00	111.25

0

LE FOR STREAM SUPERCRITICAL RUN

PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

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ELEVATION  475.    480.    485.    490.    495.    500.    505.    510.    515.    520.
   SECNO  CUMDIS
 600.00     0.  .       .       .       .       .       .       I .WE L .       .       .       .
            5.  .       .       .       .       .       .       I .WE RL.       .       .       .
           10.  .       .       .       .       .       .       I .WER L.       .       .       .
           15.  .       .       .       .       .       .       I  WCER L.      .       .       .
           20.  .       .       .       .       .       .       I  WER  L.      .       .       .
           25.  .       .       .       .       .       .       I  WER   L.     .       .       .
           30.  .       .       .       .       .       .       I WCER   L.     .       .       .
           35.  .       .       .       .       .       .       I WCE    L.     .       .       .
           40.  .       .       .       .       .       .       I W.E     L.    .       .       .
           45.  .       .       .       .       .       .       I WRE     L.    .       .       .
 650.00    50.  .       .       .       .       .       .       I WCE      L    .       .       .
           55.  .       .       .       .       .       .       I WCE     L.    .       .       .
           60.  .       .       .       .       .       .       I W E     L.    .       .       .
           65.  .       .       .       .       .       .       I WC E    L     .       .       .
           70.  .       .       .       .       .       .       I WC E    L.    .       .       .
           75.  .       .       .       .       .       .       I WCER    L     .       .       .
           80.  .       .       .       .       .       .       I W ER    L     .       .       .
           85.  .       .       .       .       .       .       I WC ER   L     .       .       .
           90.  .       .       .       .       .       .       I WC ER   L     .       .       .
           95.  .       .       .       .       .       .       I WC ER   L     .       .       .
 700.00   100.  .       .       .       .       .       .       I W E R   L     .       .       .
          105.  .       .       .       .       .       .       I W E R   L     .       .       .
          110.  .       .       .       .       .       .       I W E R   L     .       .       .
          115.  .       .       .       .       .       .       I W E R   L     .       .       .
          120.  .       .       .       .       .       .       I W E R   L     .       .       .
          125.  .       .       .       .       .       .       I W E R   L     .       .       .
          130.  .       .       .       .       .       .       I W E R   L     .       .       .
          135.  .       .       .       .       .       .       I W E R   L     .       .       .
          140.  .       .       .       .       .       .       I  W E R  L     .       .       .
          145.  .       .       .       .       .       .       I  W E R  L     .       .       .
 750.00   150.  .       .       .       .       .       .       I  W E R  L     .       .       .
          155.  .       .       .       .       .       .       I  W E R  L     .       .       .
          160.  .       .       .       .       .       .       I  W E R  L     .       .       .
          165.  .       .       .       .       .       .       I  W E R  L     .       .       .
          170.  .       .       .       .       .       .       I  W E R  L     .       .       .
          175.  .       .       .       .       .       .       I  W E R  L     .       .       .
          180.  .       .       .       .       .       .       I  W E R  L     .       .       .
          185.  .       .       .       .       .       .       I  W E R  L     .       .       .
 790.00   190.  .       .       .       .       .       .       I. W E R  L     .       .       .
          195.  .       .       .       .       .       .       I. W E R  L     .       .       .
 800.00   200.  .       .       .       .       .       .       I . W E R  L    .       .       .
          205.  .       .       .       .       .       .       I . WC E R  L   .       .       .
          210.  .       .       .       .       .       .       I . W  E .R L   .       .       .
          215.  .       .       .       .       .       .       I . WC E .R L   .       .       .
          220.  .       .       .       .       .       .       I . WC E .RL    .       .       .
    1.01  225.  .       .       .       .       .       .       I . WC E . L    .       .       .
          230.  .       .       .       .       .       .       I . WC E .L     .       .       .
          235.  .       .       .       .       .       .       I . WC E .L     .       .       .
          240.  .       .       .       .       .       .       I .W C E .L     .       .       .
          245.  .       .       .       .       .       .       I .WC  E  L     .       .       .
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```
850.00  250.  .  .  .  .  .  I    .WC  E  L  .  .  .  .
        255.  .  .  .  .  .  I    .WC  E  RL .  .  .  .
        260.  .  .  .  .  .  I    .WC  E  R L  .  .  .  .
        265.  .  .  .  .  .  I    .WC  ER  .L  .  .  .  .
        270.  .  .  .  .  .  I    .WC  E   .L  .  .  .  .
875.00  275.  .  .  .  .  .  I    . W RE   .L  .  .  .  .
        280.  .  .  .  .  .  I    .WC RE   .L  .  .  .  .
        285.  .  .  .  .  .  I    .WC E    L  .  .  .  .
        290.  .  .  .  .  .  I    WC  E    L  .  .  .  .
        295.  .  .  .  .  .  I    WC  E    L  .  .  .  .
900.00  300.  .  .  .  .  .  I    WC  E    L  .  .  .  .
        305.  .  .  .  .  .  I    WC  E    L. .  .  .  .
        310.  .  .  .  .  .  I    WC  E    L. .  .  .  .
        315.  .  .  .  .  .  I    WC  E    L. .  .  .  .
        320.  .  .  .  .  .  I    WC  ER   L. .  .  .  .
        325.  .  .  .  .  .  I    WC  ER  L . .  .  .  .
        330.  .  .  .  .  .  I    WC  ER  L . .  .  .  .
        335.  .  .  .  .  .  I    WC  ER  L . .  .  .  .
        340.  .  .  .  .  .  I    WC  ER L  . .  .  .  .
        345.  .  .  .  .  .  I    WC  ER L  . .  .  .  .
        350.  .  .  .  .  .  I    WC  E RL . .  .  .  .
        355.  .  .  .  .  .  I    .W  E RL . .  .  .  .
        360.  .  .  .  .  .  I    .W  EML  . .  .  .  .
        365.  .  .  .  .  .  I    .W  EML  . .  .  .  .
        370.  .  .  .  .  .  I    .W  EML  . .  .  .  .
        375.  .  .  .  .  .  I    .W  EML  . .  .  .  .
        380.  .  .  .  .  .  I    .W  EL R . .  .  .  .
        385.  .  .  .  .  .  I    .W  EL R . .  .  .  .
990.00  390.  .  .  .  .  .  I    .W  EL R . .  .  .  .
        395.  .  .  .  .  .  I    .W  EL R . .  .  .  .
1000.00 400.  .  .  .  .  .  I    .W  EL R . .  .  .  .
        405.  .  .  .  .  . I     W   E R . .  .  .  .
        410.  .  .  .  .  . I    WC  EL R . .  .  .  .
        415.  .  .  .  .  .I     WC. ELR  .  .  .  .  .
1020.00 420.  .  .  .  .  .I    W C. ELR  .  .  .  .  .
        425.  .  .  .  .  I     WC . E L  .  .  .  .  .
        430.  .  .  .  .  I    W C . EML  .  .  .  .  .
        435.  .  .  .  . I.    W C  .E RL  .  .  .  .  .
1040.00 440.  .  .  .  . I.    W C  .E RL  .  .  .  .  .
        445.  .  .  .  . I.     WC  E  RL  .  .  .  .  .
1050.00 450.  .  .  .  . I.     WC  E  RL  .  .  .  .  .
        455.  .  .  .  . I.      W  E  RL  .  .  .  .  .
        460.  .  .  .  . I.      W  E  RL  .  .  .  .  .
1065.00 465.  .  .  .  . I.      W  E  RL  .  .  .  .  .
        470.  .  .  .  . I.      W E.  RL  .  .  .  .  .
        475.  .  .  .  . I.      W E.  RL  .  .  .  .  .
        480.  .  .  .  . I.      W E.  RL  .  .  .  .  .
        485.  .  .  .  . I.      W E.  RL  .  .  .  .  .
        490.  .  .  .  .I .      W E. R L  .  .  .  .  .
        495.  .  .  .  .I .      W E. R L  .  .  .  .  .
        500.  .  .  .  .I .      W E. R L  .  .  .  .  .
        505.  .  .  .  .I .      W E. R L  .  .  .  .  .
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```
1100.00  510.  .  .  .  .  .  I .    W E. R L  .  .  .  .  .
         515.  .  .  .  .  .  I .   W  E. R L  .  .  .  .  .
         520.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         525.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         530.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         535.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         540.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         545.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         550.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         555.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         560.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         565.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         570.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         575.  .  .  .  .  .  I .   W  E. RL   .  .  .  .  .
         580.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         585.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         590.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         595.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         600.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         605.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
1200.00  610.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         615.  .  .  .  .  .  I .   W  E. L    .  .  .  .  .
         620.  .  .  .  .  .  I .   W  E. LR   .  .  .  .  .
         625.  .  .  .  .  .  I  .   W  E.ML R  .  .  .  .  .
         630.  .  .  .  .  .  I  .   W  E.L  R  .  .  .  .  .
         635.  .  .  .  .  .  I  .   W  E.L  R  .  .  .  .  .
         640.  .  .  .  .  .  I  .   W  E.L   R  .  .  .  .  .
         645.  .  .  .  .  .  I  .   W  E.L    R .  .  .  .  .
1240.00  650.  .  .  .  .  .  I  .   W  E.L    R .  .  .  .  .
         655.  .  .  .  .  .  I  .  WC E L  R    .  .  .  .  .
1250.00  660.  .  .  .  .  .  I  .   W  E LR     .  .  .  .  .
         665.  .  .  .  .  .  I  .  WC  E LR     .  .  .  .  .
         670.  .  .  .  .  .  I  . WC  EML       .  .  .  .  .
         675.  .  .  .  .  .  I  . WC  E RL      .  .  .  .  .
1270.00  680.  .  .  .  .  .  I  .W C  E RL      .  .  .  .  .
         685.  .  .  .  .  .  I  W C  E R L       .  .  .  .  .
         690.  .  .  .  .  .  I W.C  ER  L        .  .  .  .  .
         695.  .  .  .  .  .  I W.C  ER  .L       .  .  .  .  .
1290.00  700.  .  .  .  .  . I W C  ER  .L        .  .  .  .  .
         705.  .  .  .  .  .  I W C  E R  L        .  .  .  .  .
1300.00  710.  .  .  .  .  . I  WC  E R L.        .  .  .  .  .
         715.  .  .  .  .  .  I  WC E R L.         .  .  .  .  .
         720.  .  .  .  .  .  I  WC E R L.         .  .  .  .  .
1315.00  725.  .  .  .  .  .  I   W E R L.         .  .  .  .  .
         730.  .  .  .  .  .  I   W E R L.         .  .  .  .  .
         735.  .  .  .  .  .  I   W E R L.         .  .  .  .  .
         740.  .  .  .  .  .  I   W E R L.         .  .  .  .  .
         745.  .  .  .  .  .  I   W E R L.         .  .  .  .  .
         750.  .  .  .  .  .  I  WC E R L.         .  .  .  .  .
         755.  .  .  .  .  .  I  WC E R L .        .  .  .  .  .
         760.  .  .  .  .  .  I  WC E R L .        .  .  .  .  .
         765.  .  .  .  .  .  I  WC E R L .        .  .  .  .  .
         770.  .  .  .  .  .  I  WC E R L .        .  .  .  .  .
         775.  .  .  .  .  .I    WC E  R L .       .  .  .  .  .
         780.  .  .  .  .  .I    WC E  R L .       .  .  .  .  .
         785.  .  .  .  .  .I    WC E  R L .       .  .  .  .  .
         790.  .  .  .  .  .I    W. E  R L .       .  .  .  .  .
         795.  .  .  .  .  .I    W. E R L  .       .  .  .  .  .
         800.  .  .  .  .  .I    W. E R L  .       .  .  .  .  .
         805.  .  .  .  .  .I    W. E R L  .       .  .  .  .  .
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1400.00  810.  .  .  .  .I    W. E  R L  .  .  .  .  .  .
         815.  .  .  .  .I    W. E  R L  .  .  .  .  .  .
         820.  .  .  .  .I    W. E  R L  .  .  .  .  .  .
         825.  .  .  .  .I    W. E  RL   .  .  .  .  .  .
         830.  .  .  .  .I    W. E  RL   .  .  .  .  .  .
         835.  .  .  .  .I    W. E  RL   .  .  .  .  .  .
         840.  .  .  .  .I    W. E MRL   .  .  .  .  .  .
         845.  .  .  .  .I    W. E ML    .  .  .  .  .  .
         850.  .  .  .  .I    W. E ML    .  .  .  .  .  .
         855.  .  .  .  .I    W. E ML    .  .  .  .  .  .
         860.  .  .  .  .I    W. E ML    .  .  .  .  .  .
         865.  .  .  .  .I    W. E LR    .  .  .  .  .  .
         870.  .  .  .  .I    W. EMLR    .  .  .  .  .  .
         875.  .  .  .  .I    W. EMLR    .  .  .  .  .  .
         880.  .  .  .  .I    W. EMLR    .  .  .  .  .  .
         885.  .  .  .  .I    W. EL R    .  .  .  .  .  .
         890.  .  .  .  .I    W. EL R    .  .  .  .  .  .
         895.  .  .  .  .I    W.E L R    .  .  .  .  .  .
         900.  .  .  .  .I    W.EML R    .  .  .  .  .  .
         905.  .  .  .  .I    W.EL R     .  .  .  .  .  .
1500.00  910.  .  .  .  .I    W.EL R     .  .  .  .  .  .
         915.  .  .  .  .I    W.EL R     .  .  .  .  .  .
         920.  .  .  .  .I    W.EL R     .  .  .  .  .  .
         925.  .  .  .  .I    W.E  R     .  .  .  .  .  .
         930.  .  .  .  .I    W.E  R     .  .  .  .  .  .
         935.  .  .  .  .I    W.E  R     .  .  .  .  .  .
         940.  .  .  .  .I    W.E  R     .  .  .  .  .  .
         945.  .  .  .  .I    W.E  R     .  .  .  .  .  .
1540.00  950.  .  .  .  .I    W.E  R     .  .  .  .  .  .
         955.  .  .  .  .I    W.E   R    .  .  .  .  .  .
1550.00  960.  .  .  .  .I    WEL   R    .  .  .  .  .  .
         965.  .  .  .  .I.    WC EL  R   .  .  .  .  .  .
         970.  .  .  .  .I.   WC  EL  R   .  .  .  .  .  .
         975.  .  .  .  . I .  WC  E.LR   .  .  .  .  .  .
1570.00  980.  .  .  .  .I  . W C  E.L    .  .  .  .  .  .
         985.  .  .  .  . I  . WC   ERL    .  .  .  .  .  .
         990.  .  .  .  . I  . W C  EMRL   .  .  .  .  .  .
         995.  .  .  .  .  I  .W C   ER.L   .  .  .  .  .  .
1590.00 1000.  .  .  .  .I   W C   ER .L   .  .  .  .  .  .
        1005.  .  .  .  .I   W C   E R .L   .  .  .  .  .  .
1600.00 1010.  .  .  .  .I   .WC   E R .L   .  .  .  .  .  .
        1015.  .  .  .  .I   .WC  E  R .L   .  .  .  .  .  .
        1020.  .  .  .  .I   .WC  E  R .L   .  .  .  .  .  .
1615.00 1025.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1030.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1035.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1040.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1045.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1050.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1055.  .  .  .  .I   . W  E  R .L   .  .  .  .  .  .
        1060.  .  .  .  .I   .WC  E  R .L   .  .  .  .  .  .
        1065.  .  .  .  .I   .WC  E  R .L   .  .  .  .  .  .
        1070.  .  .  .  .I   .WC  E  R . L   .  .  .  .  .  .
        1075.  .  .  .  . I  .WC  E R  . L   .  .  .  .  .  .
        1080.  .  .  .  . I  .WC E  R  . L   .  .  .  .  .  .
        1085.  .  .  .  . I  .WC E  R  . L   .  .  .  .  .  .
        1090.  .  .  .  . I  .WC E  R  . L   .  .  .  .  .  .
        1095.  .  .  .  . I  .W  E  R  . L   .  .  .  .  .  .
        1100.  .  .  .  . I  .W  E  R  . L   .  .  .  .  .  .
        1105.  .  .  .  . I  .W  E  R  . L   .  .  .  .  .  .
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1700.00 1110. .  .  . I  .W E R .L  .  .  .  .  .  .
        1115. .  .  . I  .W E R .L  .  .  .  .  .  .
        1120. .  .  . I  .W E R .L  .  .  .  .  .  .
        1125. .  .  . I  .W E R .L  .  .  .  .  .  .
        1130. .  .  . I  .W E R .L  .  .  .  .  .  .
        1135. .  .  . I  .W E R .L  .  .  .  .  .  .
        1140. .  .  . I  .W E R .L  .  .  .  .  .  .
        1145. .  .  . I  .W E R .L  .  .  .  .  .  .
        1150. .  .  . I  .W E R .L  .  .  .  .  .  .
        1155. .  .  . I  .W E R .L  .  .  .  .  .  .
        1160. .  .  . I  .W E R L   .  .  .  .  .  .
        1165. .  .  . I  .W E R L   .  .  .  .  .  .
        1170. .  .  . I  .W E R L   .  .  .  .  .  .
        1175. .  .  . I  .W E R L   .  .  .  .  .  .
        1180. .  .  . I  .W E R L   .  .  .  .  .  .
        1185. .  .  . I  .W E R L   .  .  .  .  .  .
        1190. .  .  . I  .W E R L.  .  .  .  .  .  .
        1195. .  .  . I  .W E R L.  .  .  .  .  .  .
        1200. .  .  .I   .W E  R L. .  .  .  .  .  .
        1205. .  .  .I   .W E  R L. .  .  .  .  .  .
1800.00 1210. .  .  .I   .W E  R L. .  .  .  .  .  .
        1215. .  .  .I   W E  R L.  .  .  .  .  .  .
        1220. .  .  .I   W E  R L.  .  .  .  .  .  .
        1225. .  .  .I   W E R L.   .  .  .  .  .  .
        1230. .  .  .I   W E R L.   .  .  .  .  .  .
        1235. .  .  .I   W E R  L   .  .  .  .  .  .
        1240. .  .  .I   W E R  L   .  .  .  .  .  .
        1245. .  .  .I   W E R  L   .  .  .  .  .  .
        1250. .  .  .I   W E R  L   .  .  .  .  .  .
        1255. .  .  .I   W E R  L   .  .  .  .  .  .
        1260. .  .  .I   W E R  L   .  .  .  .  .  .
        1265. .  .  .I   W E R .L   .  .  .  .  .  .
        1270. .  .  .I   W E R .L   .  .  .  .  .  .
        1275. .  .  .I   W E R .L   .  .  .  .  .  .
        1280. .  .  .I   W E R .L   .  .  .  .  .  .
        1285. .  .  .I   W E R .L   .  .  .  .  .  .
        1290. .  .  .I   W E R .L   .  .  .  .  .  .
        1295. .  .  .I   W E R . L  .  .  .  .  .  .
        1300. .  .  .I   W E R . L  .  .  .  .  .  .
        1305. .  .  .I   W E R . L  .  .  .  .  .  .
1900.00 1310. .  .  .I   W E R . L  .  .  .  .  .  .
        1315. .  .  .I   W E R . L  .  .  .  .  .  .
        1320. .  .  .I   W E MR .L  .  .  .  .  .  .
        1325. .  .  .I   W E MR .L  .  .  .  .  .  .
        1330. .  .  .I   W E R  L   .  .  .  .  .  .
        1335. .  .  .I   W E R  L   .  .  .  .  .  .
        1340. .  .  .I   W E R  L   .  .  .  .  .  .
        1345. .  .  .I   W E R  L.  .  .  .  .  .  .
        1350. .  .  .I   W E R  L.  .  .  .  .  .  .
        1355. .  .  .I   W E R L.  .  .  .  .  .  .
        1360. .  .  .I   W E R L.  .  .  .  .  .  .
        1365. .  .  .I   W E R L.  .  .  .  .  .  .
        1370. .  .  .I   W E R L.  .  .  .  .  .  .
        1375. .  .  .I   W E R L.  .  .  .  .  .  .
        1380. .  .  .I   W EMRL.   .  .  .  .  .  .
        1385. .  .  .I   W EMRL.   .  .  .  .  .  .
        1390. .  .  .I   W EMRL.   .  .  .  .  .  .
        1395. .  .  .I   W EML.    .  .  .  .  .  .
        1400. .  .  .I   W EML.    .  .  .  .  .  .
        1405. .  .  .I   W ELR.    .  .  .  .  .  .
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2000.00 1410. . . .I      W  ELR . . . . . .
        1415. . . .I      W  ELR . . . . . .
        1420. . . .I      W  ELR . . . . . .
        1425. . . .I      W  E R . . . . . .
        1430. . . .I      W  E R . . . . . .
        1435. . . .I     WC EL R . . . . . .
        1440. . . .I     WC EL R . . . . . .
        1445. . . .I     W. EL R . . . . . .
        1450. . . I      W. EL R . . . . . .
        1455. . . I      W. E  R . . . . . .
        1460. . . I      W. E  R . . . . . .
        1465. . . I      W. E  R . . . . . .
        1470. . . I      W. E  R . . . . . .
        1475. . . I     WC. E R . . . . . .
        1480. . . I     WC. E R . . . . . .
        1485. . . I     WC.LE R . . . . . .
        1490. . . I     WC.E  R . . . . . .
        1495. . . I     W .E  R . . . . . .
        1500. . . I     W .E  R . . . . . .
        1505. . . I     W .E  R . . . . . .
2100.00 1510. . . I     W .E  R . . . . . .
        1515. . . I    WC LE  R . . . . . .
2110.00 1520. . . I    WC  LE R . . . . . .
        1525. . . I    WC  E  R . . . . . .
        1530. . . I     W  E R  . . . . . .
2125.00 1535. . . I     W EL R  . . . . . .
        1540. . . I    W  ELR   . . . . . .
        1545. . . I    W  ELR   . . . . . .
2140.00 1550. . . I   WC  ER    . . . . . .
        1555. . . I   WC ELR    . . . . . .
2150.00 1560. . . I   WC ELR    . . . . . .
        1565. . . I   WC ELR    . . . . . .
        1570. . . I   WC ELR    . . . . . .
        1575. . . I.  WC EL.    . . . . . .
        1580. . . I.  W  EL.    . . . . . .
        1585. . . I.  W  EL.    . . . . . .
        1590. . . I.  W  ER.    . . . . . .
        1595. . . I.  W  ER.    . . . . . .
        1600. . . I.  W  ER.    . . . . . .
        1605. . . I.  W  ER.    . . . . . .
2200.00 1610. . . I.  W  ER.    . . . . . .
        1615. . . I.  W  ER.    . . . . . .
        1620. . . I.  W  ER.    . . . . . .
        1625. . . I.  W  ER.    . . . . . .
        1630. . . I.  W LER.    . . . . . .
        1635. . . I.  W E R.    . . . . . .
        1640. . . I.  W E R.    . . . . . .
        1645. . . I.  W E R.    . . . . . .
        1650. . . I.  W E R.    . . . . . .
        1655. . . I.  W E R.    . . . . . .
        1660. . . I.  W E R.    . . . . . .
        1665. . . I.  WLE R.    . . . . . .
        1670. . . I.  WLE R.    . . . . . .
        1675. . . I.  WLE R.    . . . . . .
        1680. . . I.  WLE R.    . . . . . .
        1685. . . I.  WLE R.    . . . . . .
        1690. . . I.  WLE R.    . . . . . .
        1695. . . I. W LE R.    . . . . . .
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2290.00 1700.  .     .     I  .  W LER  .     .     .     .     .     .     .
        1705.  .     .     I  .  WL ER  .     .     .     .     .     .     .
2300.00 1710.  .     .     I  .  WL ER  .     .     .     .     .     .     .
        1715.  .     .     I  .  WL ER  .     .     .     .     .     .     .
        1720.  .     .     I  .  WCLE R .     .     .     .     .     .     .
        1725.  .     .     I  . WC LER  .     .     .     .     .     .     .
2320.00 1730.  .     .     I  .W C LER  .     .     .     .     .     .     .
        1735.  .     .     I  .WC  ER   .     .     .     .     .     .     .
        1740.  .     .     I  W C  ER   .     .     .     .     .     .     .
        1745.  .     .     I  WC   E    .     .     .     .     .     .     .
2340.00 1750.  .     .     I  WC  ER    .     .     .     .     .     .     .
        1755.  .     .     I  WC  ER    .     .     .     .     .     .     .
2350.00 1760.  .     .     I  .W ELR    .     .     .     .     .     .     .
        1765.  .     .     I  .W ELR    .     .     .     .     .     .     .
        1770.  .     .     I  .W EL     .     .     .     .     .     .     .
2365.00 1775.  .     .     I  .W EL     .     .     .     .     .     .     .
        1780.  .     .     I  .W EL     .     .     .     .     .     .     .
        1785.  .     .     I  .W EL     .     .     .     .     .     .     .
        1790.  .     .     I  .W ER     .     .     .     .     .     .     .
        1795.  .     .     I  .W ER     .     .     .     .     .     .     .
        1800.  .     .     I  .W ER     .     .     .     .     .     .     .
        1805.  .     .  I     W  ER     .     .     .     .     .     .     .
2400.00 1810.  .     .  I     W  ER     .     .     .     .     .     .     .
        1815.  .     .  I     W  ER     .     .     .     .     .     .     .
        1820.  .     .  I     W  ER     .     .     .     .     .     .     .
        1825.  .     .  I     W  ER     .     .     .     .     .     .     .
        1830.  .     .  I     W  ER     .     .     .     .     .     .     .
        1835.  .     .  I     W  ER     .     .     .     .     .     .     .
        1840.  .     .  I     W  ER     .     .     .     .     .     .     .
        1845.  .     .  I     W  ER     .     .     .     .     .     .     .
        1850.  .     .  I     W  ER     .     .     .     .     .     .     .
        1855.  .     .  I     W  ER     .     .     .     .     .     .     .
        1860.  .     .  I     W  ER     .     .     .     .     .     .     .
        1865.  .     .  I     W ELR     .     .     .     .     .     .     .
        1870.  .     .  I     W ELR     .     .     .     .     .     .     .
        1875.  .     .  I     W EML     .     .     .     .     .     .     .
        1880.  .     .  I     W EML     .     .     .     .     .     .     .
        1885.  .     .  I     W EML     .     .     .     .     .     .     .
        1890.  .     .  I     W EML     .     .     .     .     .     .     .
        1895.  .     .  I     W EML     .     .     .     .     .     .     .
        1900.  .     .  I     W E L     .     .     .     .     .     .     .
        1905.  .     .  I     W E L     .     .     .     .     .     .     .
2500.00 1910.  .     .  I     W E L     .     .     .     .     .     .     .
        1915.  .     .  I     W E L     .     .     .     .     .     .     .
        1920.  .     .  I     W EML     .     .     .     .     .     .     .
        1925.  .     .  I     W ERL     .     .     .     .     .     .     .
        1930.  .     .  I     W. ERL    .     .     .     .     .     .     .
        1935.  .     .  I     W. EL     .     .     .     .     .     .     .
        1940.  .     .  I     W. EL     .     .     .     .     .     .     .
        1945.  .     .  I     W. EL     .     .     .     .     .     .     .
        1950.  .     .  I     W. EL     .     .     .     .     .     .     .
        1955.  .     .  I     W. EL     .     .     .     .     .     .     .
        1960.  .     .  I     W. EL     .     .     .     .     .     .     .
        1965.  .     .  I     W. EL     .     .     .     .     .     .     .
        1970.  .     .  I     W. EL     .     .     .     .     .     .     .
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        1975.  .     . I    W. ER  .  .  .  .  .  .  .  .
        1980.  .     . I    W. ER  .  .  .  .  .  .  .  .
        1985.  .     . I    W. ER  .  .  .  .  .  .  .  .
        1990.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        1995.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2000.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2005.  .     . I    W.ELR  .  .  .  .  .  .  .  .
2600.00 2010.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2015.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2020.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2025.  .     . I    W.ELR  .  .  .  .  .  .  .  .
        2030.  .     . I    W.E R  .  .  .  .  .  .  .  .
        2035.  .     . I    W.E R  .  .  .  .  .  .  .  .
        2040.  .     . I    W.E R  .  .  .  .  .  .  .  .
        2045.  .     . I    W.E R  .  .  .  .  .  .  .  .
        2050.  .     .I     W.E R  .  .  .  .  .  .  .  .
        2055.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2060.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2065.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2070.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2075.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2080.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2085.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2090.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2095.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2100.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2105.  .     .I    W .ER   .  .  .  .  .  .  .  .
?00.00  2110.  .     .I    W .ER   .  .  .  .  .  .  .  .
        2115.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2120.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2125.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2130.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2135.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2140.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2145.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2150.  .     .I    W ELR   .  .  .  .  .  .  .  .
        2155.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2160.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2165.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2170.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2175.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2180.  .     .I    W EL R  .  .  .  .  .  .  .  .
        2185.  .     .I    W  EL R .  .  .  .  .  .  .  .
        2190.  .     .I    W  EL R .  .  .  .  .  .  .  .
        2195.  .     .I    W  EL R .  .  .  .  .  .  .  .
        2200.  .     .I    W  EL R .  .  .  .  .  .  .  .
        2205.  .     .I    W  EL R .  .  .  .  .  .  .  .
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2800.00 2210.  .      .I    W  EL R  .  .  .  .  .  .  .  .
        2215.  .      .I    W  E  R  .  .  .  .  .  .  .  .
        2220.  .      .I    WC E.  R  .  .  .  .  .  .  .  .
        2225.  .      .I   WC LE. R  .  .  .  .  .  .  .  .
        2230.  .      .I   WC LE. R  .  .  .  .  .  .  .  .
   1.01 2235.  .      I   W CL E. R  .  .  .  .  .  .  .  .
        2240.  .      I   WC L E. R  .  .  .  .  .  .  .  .
        2245.  .      I   WCL E . R  .  .  .  .  .  .  .  .
        2250.  .      I   WCL E .R   .  .  .  .  .  .  .  .
        2255.  .      I   WCL E .R   .  .  .  .  .  .  .  .
2850.00 2260.  .      I   WCL E .R   .  .  .  .  .  .  .  .
        2265.  .      I  WCL E  R    .  .  .  .  .  .  .  .
        2270.  .      I  WC  E R.    .  .  .  .  .  .  .  .
        2275.  .     I.  WC  ER .    .  .  .  .  .  .  .  .
        2280.  .     I. WC   E  .    .  .  .  .  .  .  .  .
2875.00 2285.  .     I. WC  E   .    .  .  .  .  .  .  .  .
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THIS RUN EXECUTED 10-29-92

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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUPERCRITICAL RUN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	600.000	.00	.00	.00	504.00	700.00	505.60	505.63	506.06	108.00	5.44	128.74	67.36
	650.000	50.00	.00	.00	503.00	700.00	504.12	504.44	505.23	234.10	8.46	82.74	45.75
	700.000	50.00	.00	.00	501.00	700.00	502.80	503.20	504.17	182.45	9.41	74.35	51.82
*	750.000	50.00	.00	.00	500.00	700.00	503.04	503.04	503.98	75.95	7.82	89.56	80.32
*	790.000	40.00	.00	.00	499.72	700.00	502.65	502.65	503.68	144.91	8.15	85.94	58.15
*	800.000	10.00	.00	.00	498.80	700.00	502.49	502.49	503.66	148.45	8.68	80.67	57.45
*	850.000	50.00	.00	.00	497.00	700.00	500.40	501.10	502.85	148.86	12.56	55.75	57.37
*	875.000	25.00	.00	.00	496.90	700.00	500.77	500.93	502.36	85.57	10.12	69.20	75.67
	900.000	25.00	.00	.00	496.80	700.00	499.89	500.53	502.02	153.38	11.74	59.65	56.52
*	990.000	90.00	.00	.00	496.44	700.00	500.49	500.49	501.91	141.23	9.57	73.18	58.90
*	1000.000	10.00	.00	.00	496.40	700.00	500.47	500.47	501.89	140.62	9.57	73.18	59.03
	1020.000	20.00	.00	.00	495.40	700.00	498.63	499.47	501.34	341.27	13.20	53.01	37.89
	1040.000	20.00	.00	.00	494.44	700.00	497.44	498.42	500.54	430.51	14.13	49.55	33.74
*	1050.000	10.00	.00	.00	494.40	700.00	498.21	498.46	499.92	180.66	10.48	66.80	52.08
	1065.000	15.00	.00	.00	494.30	700.00	498.33	498.33	499.75	72.18	9.54	73.37	82.39
*	1100.000	45.00	.00	.00	494.20	700.00	498.25	498.25	499.67	71.63	9.54	73.41	82.71
*	1200.000	100.00	.00	.00	493.80	700.00	497.89	497.89	499.32	71.54	9.60	72.94	82.76

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	SG	10K*S	VCH	AREA	.01K
*	1240.000	40.00	.00	.00	493.64	700.00	497.83	497.83	499.30	140.48	9.75	71.80	59.06
	1250.000	10.00	.00	.00	493.60	700.00	497.46	497.68	499.13	174.37	10.36	67.56	53.01
	1270.000	20.00	.00	.00	492.32	700.00	495.40	496.37	498.48	409.38	14.07	49.74	34.60
	1290.000	20.00	.00	.00	491.04	700.00	493.99	495.11	497.53	493.65	15.11	46.33	31.51
	1300.000	10.00	.00	.00	491.00	700.00	494.31	495.06	496.84	310.91	12.76	54.87	39.70
*	1315.000	15.00	.00	.00	490.94	700.00	494.78	494.98	496.43	88.45	10.29	68.00	74.43
*	1400.000	85.00	.00	.00	490.60	700.00	494.67	494.67	496.10	72.27	9.61	72.83	82.34
*	1500.000	100.00	.00	.00	490.20	700.00	494.25	494.25	495.67	72.22	9.56	73.19	82.37
*	1540.000	40.00	.00	.00	490.04	700.00	494.61	494.61	495.40	160.94	7.13	98.20	55.18
	1550.000	10.00	.00	.00	490.00	700.00	494.34	494.46	495.21	198.49	7.51	93.15	49.69
	1570.000	20.00	.00	.00	488.52	700.00	491.70	492.56	494.50	360.77	13.43	52.12	36.85
	1590.000	20.00	.00	.00	487.04	700.00	490.01	491.15	493.58	491.40	15.17	46.13	31.58
	1600.000	10.00	.00	.00	487.00	700.00	490.32	491.09	492.90	314.82	12.87	54.37	39.45
*	1615.000	15.00	.00	.00	486.94	700.00	490.79	490.99	492.44	88.45	10.30	67.93	74.43
*	1700.000	85.00	.00	.00	486.60	700.00	490.69	490.69	492.14	72.34	9.65	72.51	82.30
*	1800.000	100.00	.00	.00	486.20	700.00	490.27	490.27	491.70	72.26	9.61	72.84	82.35
*	1900.000	100.00	.00	.00	485.80	700.00	489.85	489.85	491.27	72.19	9.56	73.20	82.39
*	2000.000	100.00	.00	.00	485.40	700.00	490.06	490.06	491.44	71.47	9.44	74.12	82.80
	2100.000	100.00	.00	.00	485.00	700.00	488.82	489.06	490.53	92.95	10.51	66.58	72.61
	2110.000	10.00	.00	.00	484.96	700.00	488.15	488.70	490.29	135.01	11.75	59.55	60.25
*	2125.000	15.00	.00	.00	484.90	700.00	488.33	488.36	489.70	74.70	9.40	74.51	80.99
	2140.000	15.00	.00	.00	484.84	700.00	487.57	488.01	489.41	123.86	10.90	64.19	62.90
	2150.000	10.00	.00	.00	484.80	700.00	487.72	487.82	489.06	81.21	9.28	75.41	77.68
*	2200.000	50.00	.00	.00	484.60	700.00	487.61	487.61	488.85	72.60	8.93	78.38	82.16
	2290.000	90.00	.00	.00	484.24	700.00	487.22	487.22	488.47	145.44	8.96	78.08	58.04
*	2300.000	10.00	.00	.00	484.20	700.00	487.22	487.22	488.45	140.91	8.90	78.64	58.97

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2320.000	20.00	.00	.00	483.32	700.00	485.66	486.33	487.93	345.93	12.09	57.92	37.64
	2340.000	20.00	.00	.00	482.44	700.00	484.75	485.48	487.19	372.06	12.54	55.84	36.29
*	2350.000	10.00	.00	.00	482.40	700.00	485.29	485.41	486.66	164.45	9.39	74.56	54.59
*	2365.000	15.00	.00	.00	482.38	700.00	485.39	485.39	486.62	72.63	8.92	78.50	82.14
*	2400.000	35.00	.00	.00	482.20	700.00	485.22	485.22	486.45	72.20	8.91	78.52	82.38
*	2500.000	100.00	.00	.00	481.80	700.00	484.81	484.81	486.05	72.39	8.92	78.45	82.27
*	2600.000	100.00	.00	.00	481.40	700.00	484.43	484.43	485.66	72.19	8.91	78.53	82.39
*	2700.000	100.00	.00	.00	481.00	700.00	484.01	484.01	485.25	72.58	8.93	78.38	82.16
*	2800.000	100.00	.00	.00	480.60	700.00	483.64	483.64	484.90	71.99	8.99	77.87	82.50
*	2850.000	50.00	.00	.00	479.86	700.00	481.79	482.40	483.86	186.64	11.55	60.63	51.24
	2875.000	25.00	.00	.00	479.60	700.00	480.94	481.56	483.24	312.08	12.19	57.41	39.62

SUPERCRITICAL RUN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	600.000	700.00	505.60	.00	.00	.00	155.80	.00
	650.000	700.00	504.12	.00	-1.48	.00	92.14	50.00
	700.000	700.00	502.80	.00	-1.32	.00	58.37	50.00
*	750.000	700.00	503.04	.00	.24	.00	47.81	50.00
*	790.000	700.00	502.65	.00	-.39	.00	41.75	40.00
*	800.000	700.00	502.49	.00	-.16	.00	35.05	10.00
*	850.000	700.00	500.40	.00	-.80	.00	22.76	50.00
*	875.000	700.00	500.77	.00	.37	.00	25.75	25.00
	900.000	700.00	499.89	.00	-.89	.00	28.55	25.00
*	990.000	700.00	500.49	.00	.61	.00	26.11	90.00
*	1000.000	700.00	500.47	.00	-.03	.00	26.00	10.00
	1020.000	700.00	498.63	.00	-1.83	.00	22.71	20.00
	1040.000	700.00	497.44	.00	-1.20	.00	23.09	20.00
*	1050.000	700.00	498.21	.00	.78	.00	25.02	10.00
*	1065.000	700.00	498.33	.00	.12	.00	26.37	15.00
*	1100.000	700.00	498.25	.00	-.08	.00	26.22	45.00
*	1200.000	700.00	497.89	.00	-.36	.00	25.65	100.00
*	1240.000	700.00	497.83	.00	-.07	.00	24.30	40.00
	1250.000	700.00	497.46	.00	-.37	.00	25.03	10.00
	1270.000	700.00	495.40	.00	-2.06	.00	22.26	20.00
	1290.000	700.00	493.99	.00	-1.41	.00	21.43	20.00
	1300.000	700.00	494.31	.00	.33	.00	23.08	10.00
*	1315.000	700.00	494.78	.00	.47	.00	25.41	15.00
*	1400.000	700.00	494.67	.00	-.11	.00	25.78	85.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1500.000	700.00	494.25	.00	-.42	.00	26.18	100.00
*	1540.000	700.00	494.61	.00	.37	.00	62.48	40.00
	1550.000	700.00	494.34	.00	-.27	.00	64.11	10.00
	1570.000	700.00	491.70	.00	-2.64	.00	22.76	20.00
	1590.000	700.00	490.01	.00	-1.69	.00	21.02	20.00
	1600.000	700.00	490.32	.00	.31	.00	22.70	10.00
*	1615.000	700.00	490.79	.00	.46	.00	25.32	15.00
*	1700.000	700.00	490.69	.00	-.09	.00	25.44	85.00
*	1800.000	700.00	490.27	.00	-.42	.00	25.80	100.00
*	1900.000	700.00	489.85	.00	-.42	.00	26.18	100.00
*	2000.000	700.00	490.06	.00	.21	.00	26.83	100.00
	2100.000	700.00	488.82	.00	-1.24	.00	24.96	100.00
	2110.000	700.00	488.15	.00	-.67	.00	25.37	10.00
*	2125.000	700.00	488.33	.00	.18	.00	28.47	15.00
	2140.000	700.00	487.57	.00	-.76	.00	29.05	15.00
	2150.000	700.00	487.72	.00	.15	.00	31.67	10.00
*	2200.000	700.00	487.61	.00	-.11	.00	32.05	50.00
*	2290.000	700.00	487.22	.00	-.39	.00	32.34	90.00
*	2300.000	700.00	487.22	.00	.00	.00	32.08	10.00
	2320.000	700.00	485.66	.00	-1.56	.00	29.50	20.00
	2340.000	700.00	484.75	.00	-.91	.00	28.26	20.00
*	2350.000	700.00	485.29	.00	.54	.00	31.57	10.00
*	2365.000	700.00	485.39	.00	.10	.00	32.21	15.00
*	2400.000	700.00	485.22	.00	-.17	.00	32.07	35.00
*	2500.000	700.00	484.81	.00	-.40	.00	32.06	100.00
*	2600.000	700.00	484.43	.00	-.39	.00	32.07	100.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	2700.000	700.00	484.01	.00	-.41	.00	32.05	100.00
*	2800.000	700.00	483.64	.00	-.37	.00	31.16	100.00
*	2850.000	700.00	481.79	.00	-.27	.00	34.73	50.00
	2875.000	700.00	480.94	.00	-.86	.00	45.00	25.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 750.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 750.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 750.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 790.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 790.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 790.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 800.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 800.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 800.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 850.000 PROFILE= 1 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 875.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 875.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 990.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 990.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 990.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1000.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1000.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1000.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1050.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1050.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1065.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1065.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1065.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1100.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1100.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1100.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1200.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1200.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1200.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1240.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1240.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1240.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1315.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1315.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1400.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1400.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1400.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1500.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1500.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1500.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 1540.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1615.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 1615.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 1900.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 2000.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2000.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 2290.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2300.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2300.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2300.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2350.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
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CAUTION SECNO= 2365.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2400.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2400.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2400.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 2500.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 2600.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 2700.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 2700.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 2800.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2800.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2850.000 PROFILE= 1 INTERPOLATED XSECTIONS USED

THIS RUN EXECUTED 10-29-92

****
HEC2 RELEASE DATED NOV 76 UPDATED MAY 1984
ERROR CORR - 01,02,03,04,05,06
MODIFICATION - 50,51,52,53,54,55,56
IBM-PC-XT VERSION AUGUST 1985
****

APPENDIX D

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

7516 Westcliff Drive
Las Vegas, Nevada 89128
(702) 228-1490
Fax: (702) 363-4142

October 30, 1992
Project No. 834-G008

Mr. Max Morgan
Morgan Development
20341 Irvine Avenue, Suite D-3
Santa Ana Heights, CA 92707

Re: Soils Exploration at Proposed Southern Vista Channel Site, Clark County, Nevada.

Dear Mr. Morgan:

At your authorization, Geotechnical & Environmental Services, Inc. (GES, Inc.) has performed soils exploration along the proposed alignment of the Southern Vista Channel to evaluate soils and subsurface conditions as related to a scour analysis. The information obtained from this evaluation will be utilized by Engineers & Surveyors, Inc. for their soil scour evaluation of the channel. It is our understanding that the pertinent information which is needed is a grain size distribution and the depth to caliche or cemented soils. The grain size diameter at which 90 percent and 50 percent passes (D_{90} and D_{50}, respectively) is necessary for the soil scour modelling analysis.

The section of the proposed Southern Vista Channel which is being evaluated is located in Clark County, Nevada in Section 33, T21S, R60E on the south end of an existing Detention Basin and extends from approximately 672 feet south of the intersection of the alignments of Russell Road and Cimarron Road at the Southern tip of the detention basin dam to the south approximately 2,000 feet up the proposed channel alignment. Plate 1, enclosed, shows the proposed location of the channel in relation to the surrounding area.

Field exploration was performed by drilling four borings at the locations shown on Plate 1 utilizing a Mayhew 600 air rotary drill rig. Due to the presence of cemented sand and gravel deposits, it was not possible to perform backhoe excavations to obtain representative composite soil samples for sieve analysis testing.
The subsurface explorations were performed under the direction and supervision of a GES, Inc. representative who visually inspected the site, maintained detailed logs of the subsurface conditions, identified the depths of cemented caliche deposits, and classified the soils encountered. The soils encountered were classified in the field through observation of drill cuttings.

The subsurface conditions are relatively consistent at the site. Generally, a loose surface layer of sandy silty gravel overlies layers of very hard and strongly cemented sand and gravel caliche interbedded with medium dense to dense non-cemented sand and gravel. A relatively consistent layer of cemented sand and gravel caliche was encountered at a depth of 5 to 6 1/2 feet with an average thickness of approximately 2 feet. Figure 2 shows a soil profile indicating the relative locations of the borings and the depths and thicknesses of subsurface layers encountered.

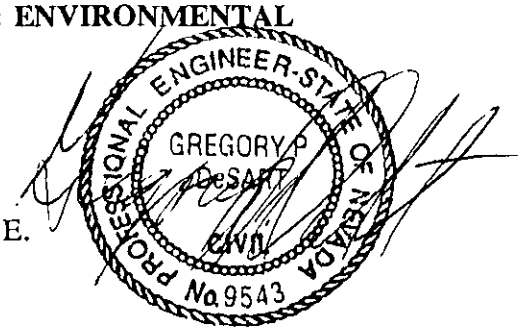
Based upon the results of our field exploration, we feel that soil scour will not occur below strongly cemented sand and gravel layers greater than 1 foot in thickness. For the scour evaluation, we recommend a D_{90} of 20 mm and a D_{50} of 5 mm. These recommended grain sizes are conservative estimates based upon the type of soils classified by the cuttings observed during drilling.

Based upon this information, we recommend that the bottom of the channel be no more than 5 feet below existing site grade. This is intended to limit soil scour to a depth of approximately 2 feet or to the top of the lowest caliche layer encountered during our exploration, whichever is less.

We appreciate this opportunity to provide our services. If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

GEOTECHNICAL & ENVIRONMENTAL SERVICES, INC.

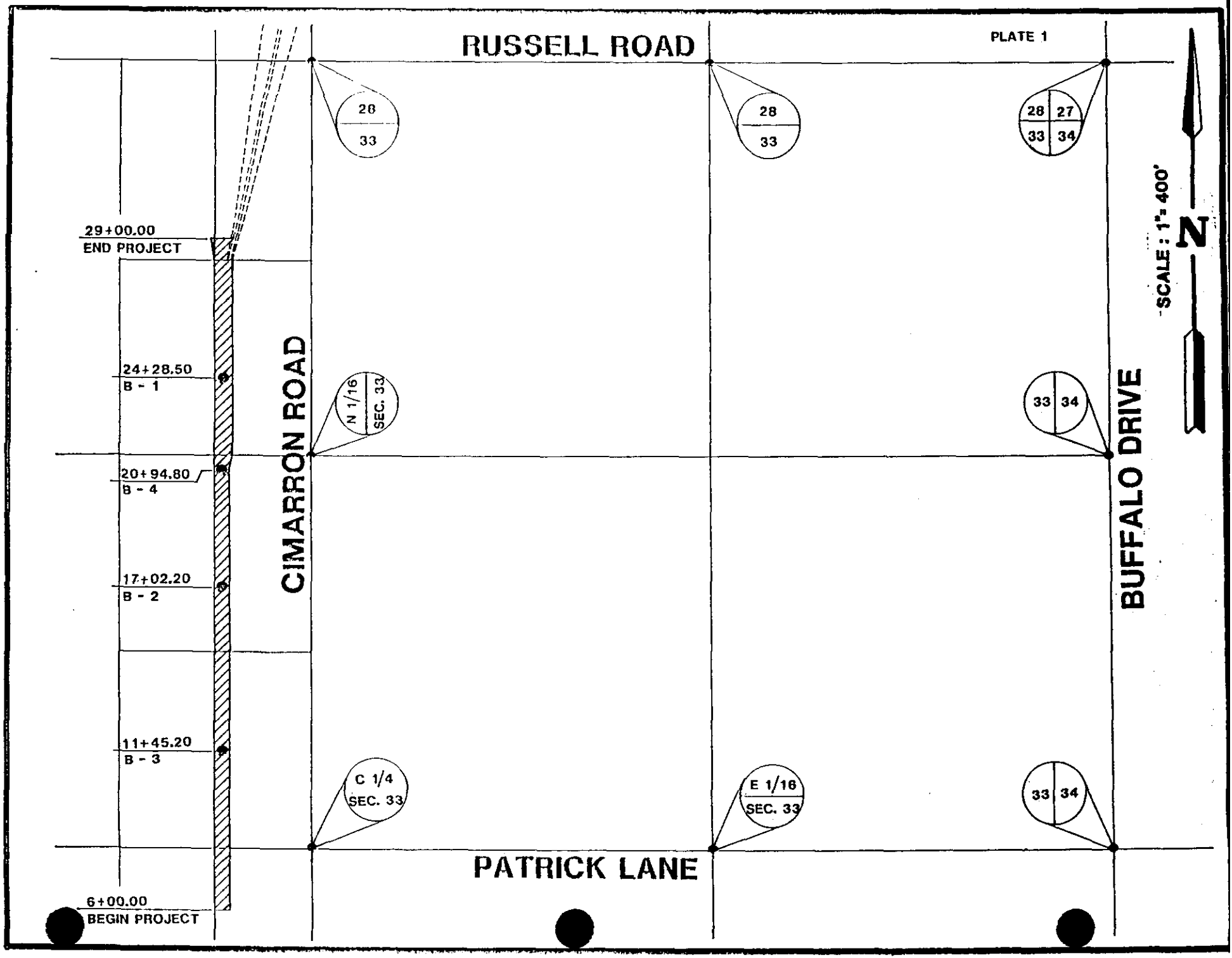


Gregory P. DeSart, P.E.
General Manager

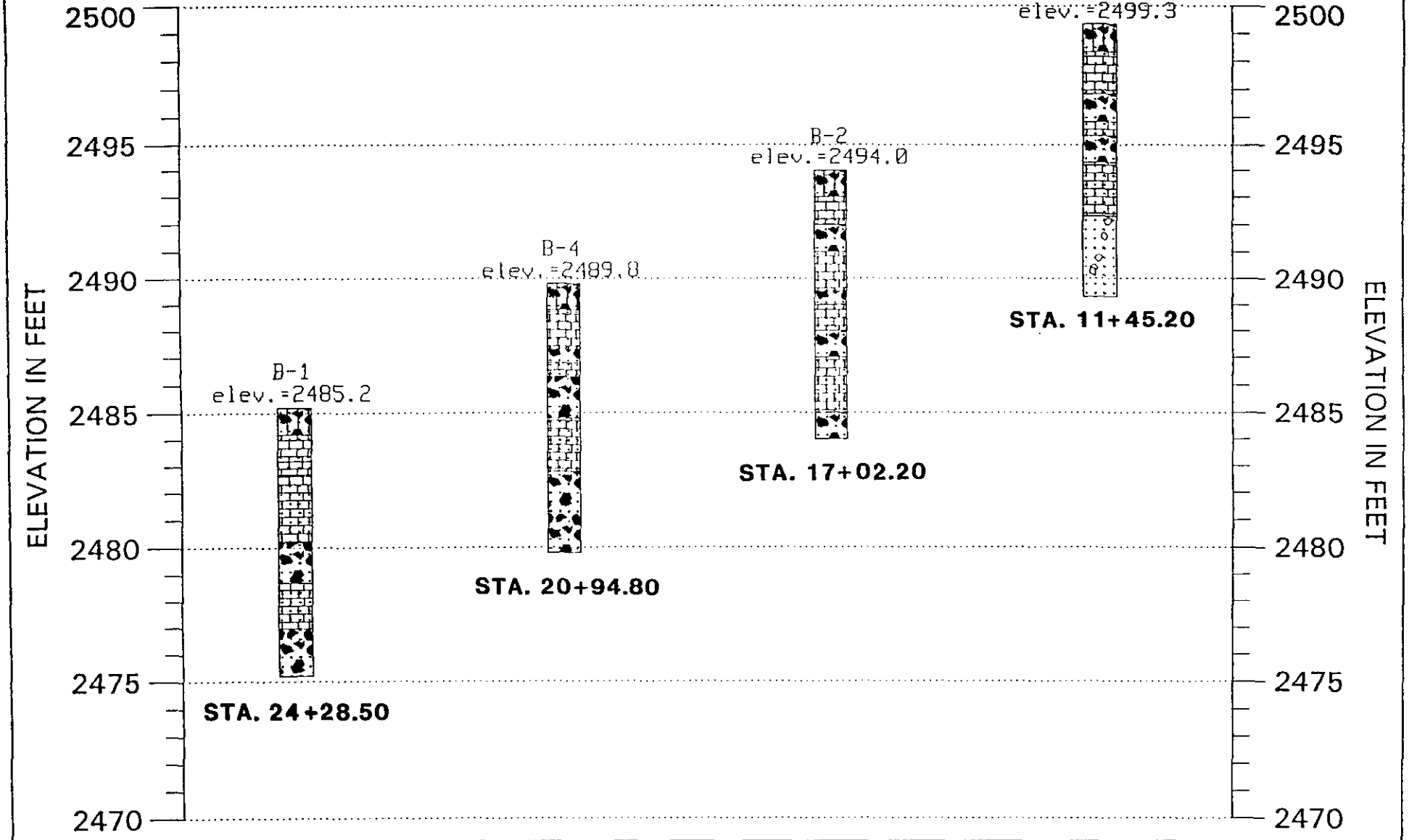
Enclosures

10-30-92

CC: Dan Wonders - Engineers & Surveyors, Inc.


PLATE 1
RUSSELL ROAD
PATRICK LANE
CIMARRON ROAD
BUFFALO DRIVE
SCALE : 1" = 400'
N
28
33
28
33
28
27
33
34
29+00.00
END PROJECT
24+28.50
B - 1
20+94.80
B - 4
17+02.20
B - 2
11+45.20
B - 3
6+00.00
BEGIN PROJECT
N 1/16
SEC. 33
33
34
C 1/4
SEC. 33
E 1/16
SEC. 33
33
34

PROFILE LOG OF BORINGS



Project No.:	Date:
834-G008	10/23/1992
Project: SOUTHERN VISTA CHANNEL	
Location: SOUTH OF EXISTING DETENTION BASIN	
Plate: 2	Scale: 5 feet/in.

Strata symbols

- Silty sandy gravel, loose to medium dense, dry.
- Cemented sand and gravel Caliche, mod. hard to hard.
- Fractured Sand and Gravel Caliche
- Sandy gravel, dense, dry.
- Sand with gravel, medium dense, dry.

RIPRAP CALCULATIONS

DROP STRUCTURES

EQUATION 7.18 FROM CCRFCD DESIGN MANUAL

$V = 3(d_{50}^{0.5})(S_s - 1)/S^{0.17}$

$V = 11.50$ ft/sec
$S = 5.7\%$

$$d_{50} = \frac{V S^{0.17}}{3(S_s - 1)}$$

$$= \left(\frac{(11.50)(0.057)^{0.17}}{3(2.7-1)}\right)^2$$

$d_{50} = 1.92$ ft.

USE 2' diameter ←

EAST BANK PROTECTION

$S = 0.4\%$
$V = 8$

$$d_{50} = \left(\frac{8(.004)^{.17}}{3(1.7)}\right)^2$$

$d_{50} = 0.38'$

USE 6" diameter ←

OUTLET PROTECTION

$S = 0.4\%$
$V = 12$ ft/sec

$$d_{50} = \left(\frac{12(0.004)^{.17}}{3(1.7}\right)^2$$

$d_{50} = 0.85'$

USE 10" diameter ←

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

APPENDIX E

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

FREEBOARD CALCULATIONS

FOR SUBCRITICAL FLOW USE EQUATION 723 IN THE CCRFCD DESIGN MANUAL: $F_b = 0.5 + V^2/2g$

FOR SUPERCRITICAL FLOW USE EQUATION 729 IN THE CCRFCD DESIGN MANUAL: $F_b = 1.0 + 0.025\ V(d)^{1/3}$

WHERE F_b = FREEBOARD HEIGHT (FEET)
V = VELOCITY (FEET PER SECOND)
d = DEPTH OF FLOW (FEET)
g = ACCELERATION OF GRAVITY (FEET PER SECOND SQUARED)

STATION	FLOW REGIME	VELOCITY (ft/sec)	DEPTH (ft)	Fb (ft)
6+00 TO 6+50	SUP	6.15	1.40	1.17
7+00 TO 7+90	SUB	7.09	—	1.28
8+00 TO 9+50	SUP	12.56	3.40	1.47
9+50 TO 10+00	SUB	8.03	—	1.50
10+00 TO 10+50	SUP	14.13	3.00	1.51
10+50 TO 12+50	SUB	7.34	—	1.33
12+50 TO 13+00	SUP	15.11	2.95	1.54
13+00 TO 15+50	SUB	8.26	—	1.56
15+50 TO 16+00	SUP	15.17	2.97	1.54
16+00 TO 21+00	SUB	7.04	—	1.27
21+00 TO 21+50	SUP	11.75	3.14	1.43
21+50 TO 23+00	SUB	7.02	—	1.26
23+00 TO 23+50	SUP	12.59	2.31	1.41
23+50 TO 28+50	SUB	7.09	—	1.28
28+50 TO 29+75	SUP	12.19	1.34	1.33

REFERENCE HEC2 OUTPUT FILES FOR VELOCITY AND DEPTH.

ESI ENGINEERS AND SURVEYORS INC.
CIVIL ENGINEERS • CONSULTING ENGINEERS • SURVEYORS

November 23, 1992

Clark County, Nevada
Department of Public Works
401 South 4th Street
Las Vegas, Nevada 89101

ATTN: Mr. Robert Thompson

RE: Technical Drainage Study for the Southern Vista
Temporary Drainage Channel

Dear Mr. Thompson:

The following is a response to the memorandum, from Willdan and Associates, dated November 12, 1992 regarding comments to the above referenced drainage study.

Comment 1. It appears that the proposed channel berm will not divert the entire 491 cfs from basin OFF3 as shown on Exhibit 9. A field investigation and review of existing topo shows that extending the proposed channel/berm south will enable the entire 491 cfs to be diverted north along the proposed channel berm.

Response. The berm, as shown on the improvement plans, on the East bank of the channel has been extended roughly 400 feet to the South to assure that the entire 491 cfs is intercepted.

7018 W. CHARLESTON BLVD • LAS VEGAS, NEVADA 89117 • (702) 363-6415 FAX 363-4142

Comment 2. The HEC2 models, which appear to correctly analyze the proposed project, indicate that the entire stretch of channel/berm is flowing at an erosive velocity. While the entire channel bottom will be protected by the caliche from excessive scour, the channel side slopes will not be protected. As indicated in the Clark County Regional Flood Control District's Hydrologic Criteria and Drainage Design Manual, Table 702 "Maximum Permissible Mean Channel Velocities," the channel side slopes must be protected as indicated with grouted riprap for velocities over 10-feet-per-second, and loose riprap for velocities under 10-feet-per-second.

Response. Loose riprap protection will be provided along both banks of the channel for the entire length with the exception of the drop structures. The drop structures will be grouted riprap.

Comment 3. An analysis of the deposition and erosive impact for the point at which the southeast and southwest tributaries combine, has not been included.

Response. As per our meeting on November 19, 1992 at Willdan and Associates. The issue of erosion analysis at the confluence of the tributaries was resolved.

Comment 4. The impact on the existing upper Flamingo Detention Basin outlet flows must be analyzed to determine if any adverse impact will occur due to the additional detention basin depth.

Response. Exhibit 1 is an analysis of the Upper Flamingo Detention Basin outfall. An increase of 21 cfs is expected to be contributed to the outfall channel. The increase to the outfall channel will have a negligible effect on the outfall channel. The increase to the water surface elevation within the basin does not breach the spillway weir.

Comment 5. At the request of Clark County Public Works, Grading Plans for the proposed development have been reviewed for compliance to permitting requirements according to section 34.030 of the "Uniform Regulations for the Control of Drainage," revised November 12, 1990. The plans submitted do not meet the minimum requirements and must be revised prior to Drainage Study approval, to address the following.

a. Legal description of project location.
b. Abbreviations
c. The following note must be added to all grading plans. All work performed within public right of way and outside of the project boundary shall be performed under a separate encroachment permit issued by the controlling authority.

Response. The above requirements have been added to the grading plan.

Comment 6. A copy of this memo is being submitted to Clark County Regional Flood Control District at their request. As a condition of final approval, the applicant must submit this study and all addenda to Clark County Regional Flood Control District for concurrence.

Response. Upon approval of this study by Clark County a copy of the original study and all subsequent addenda will be submitted to CCRFCD for concurrence.

This concludes my response to the comments. If you should have any questions regarding these comments please contact me.

Sincerely,

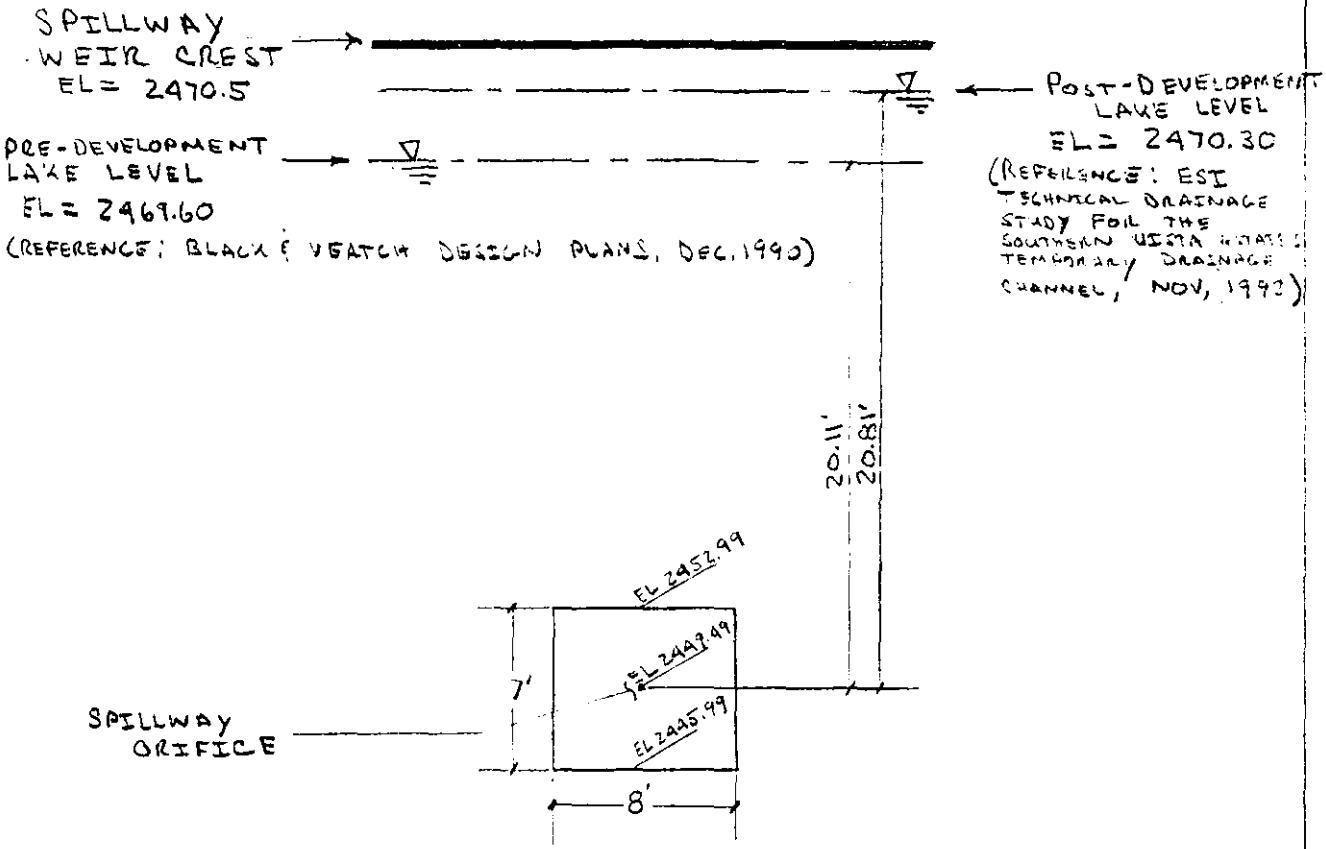
Thomas E. Davy

Thomas E. Davy, E.I.T.
Associate Engineer

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
11-23-92
DANIEL J. WONDERS
CIVIL

Daniel J. Wonders, P.E.
Engineering Manager

UPPER FLAMINGO DETENSION BASIN OUTFALL ANALYSIS



ORIFICE EQUATION $Q = CA\sqrt{2(g)(h)}$

PRE-DEVELOPMENT

$$Q = (.6)(56)\sqrt{2(32.2)(20.11)} = 1209 \text{ cfs}$$

POST-DEVELOPMENT

$$Q = (.6)(56)\sqrt{2(32.2)(20.81)} = 1230 \text{ cfs}$$

RELATIVE INCREASE TO OUTFALL CHANNEL = 21 cfs

ESI ENGINEERS AND SURVEYORS INC

August 30, 1995
WO# 834-A580

Clark County Regional Flood Control District
301 East Clark Avenue, Suite 301
Las Vegas, Nevada 89101

ATT: Kevin Eubanks, P.E.
Assistant General Manager

RE: Flamingo Wash Diversion Channel

Dear Mr. Eubanks,

This letter is to certify that the Flamingo Wash Diversion Channel is in place, and appears to have been constructed in conformance with the approved channel improvement plans entitled, *"Improvement Plans of Southern Vista Estates, Drainage Channel,"* completed by Engineers and Surveyors, Inc., February 1993.

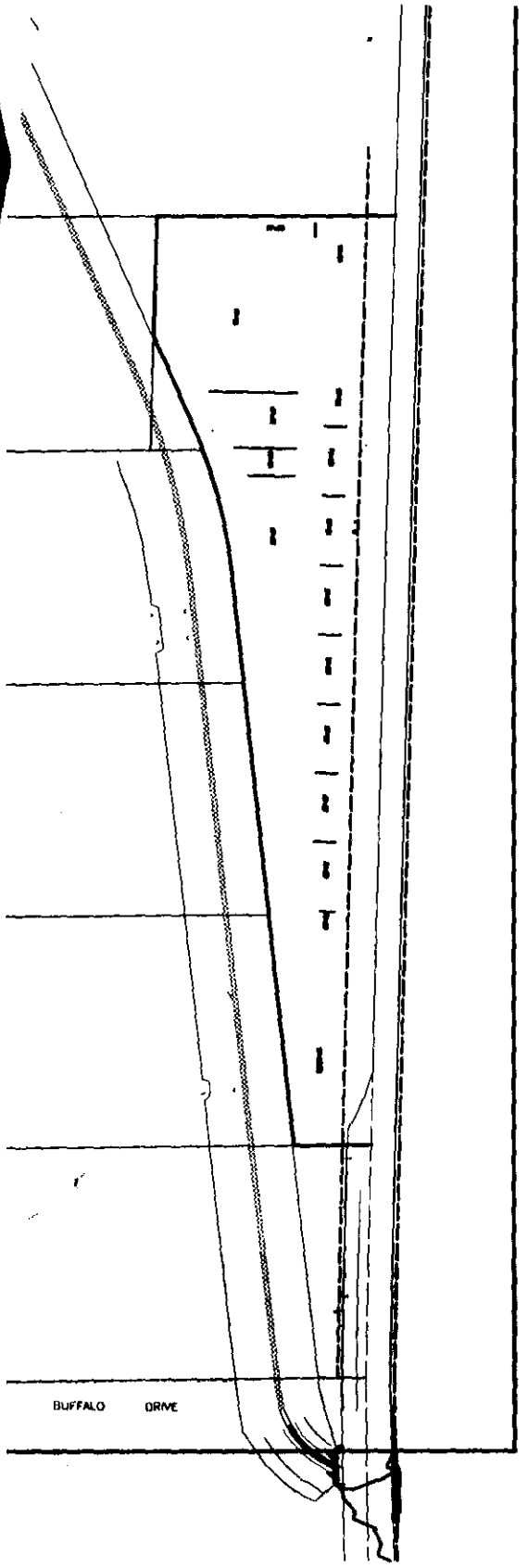
A recent field investigation was completed to certify the channel's location, cross sectional geometry and plan elevations. Depth of rip rap was unable to be verified. Soil borings were completed on the project prior to construction. These soil borings revealed a caliche layer was encountered three to six feet below the surface.

If you have any questions or comments regarding this project, please call me at (702) 248-6415.

Sincerely,
Engineers and Surveyors, Inc.

Byron J. Glenn, P.E.
Manager, Stormwater Management Division

7548 W. SAHARA AVE. • LAS VEGAS, NEVADA 89117 • (702) 248-6415 FAX 248-0626


BUFFALO
DRIVE

LOMR
UPPER FLAMINGO WASH DETENTION BASIN
DISCHARGE CHA
REVISED FLOOD AIN MAP

BLACK MATCH

Legend

Cross Section ID
See Table
OB
142
IEC 2 Cross Section Limits
OB
Channel Centerline
Revised Floodplain Limits or Drainage Boundaries

Gross Section Table

No.	Station	No.	Station
1		18	16+00
2	2+00	19	17+00
3	3+00	20	18+00
4	3+60	21	19+00
5	4+00	22	20+00
6	5+65	23	21+00
7	6+66	24	22+00
8	7+00	25	23+00
9	8+00	26	24+00
10	9+00	27	25+00
11	10+00	28	26+00
12	11+00	29	27+00
13	12+00	30	28+00
14	13+00	31	29+00
15	14+00	32	30+00
16	15+00		

Abbreviations

LOB	Overbank
ROB	Upper Flamingo Wash Detention Basin
UFWDB	Engineers and Surveyors Inc
ESI	Offsite Drainage Basins
OFB's	

N

0 ft 500 ft

Scale

ESI OFF 3
Q = 491 cfs

BEGIN ESI DIVERSION BERM STA. 1+70

ESI OFF 4
Q = 164 cfs

ESI OFF 5
Q = 39 cfs

BEGIN ESI DIVERSION CHANNEL
STA. 12+50

BEGIN UFWDB EMBANKMENT
STA. 0+00
END ESI DIVERSION CHANNEL
STA. 29+00

LIMITS OF STUDY

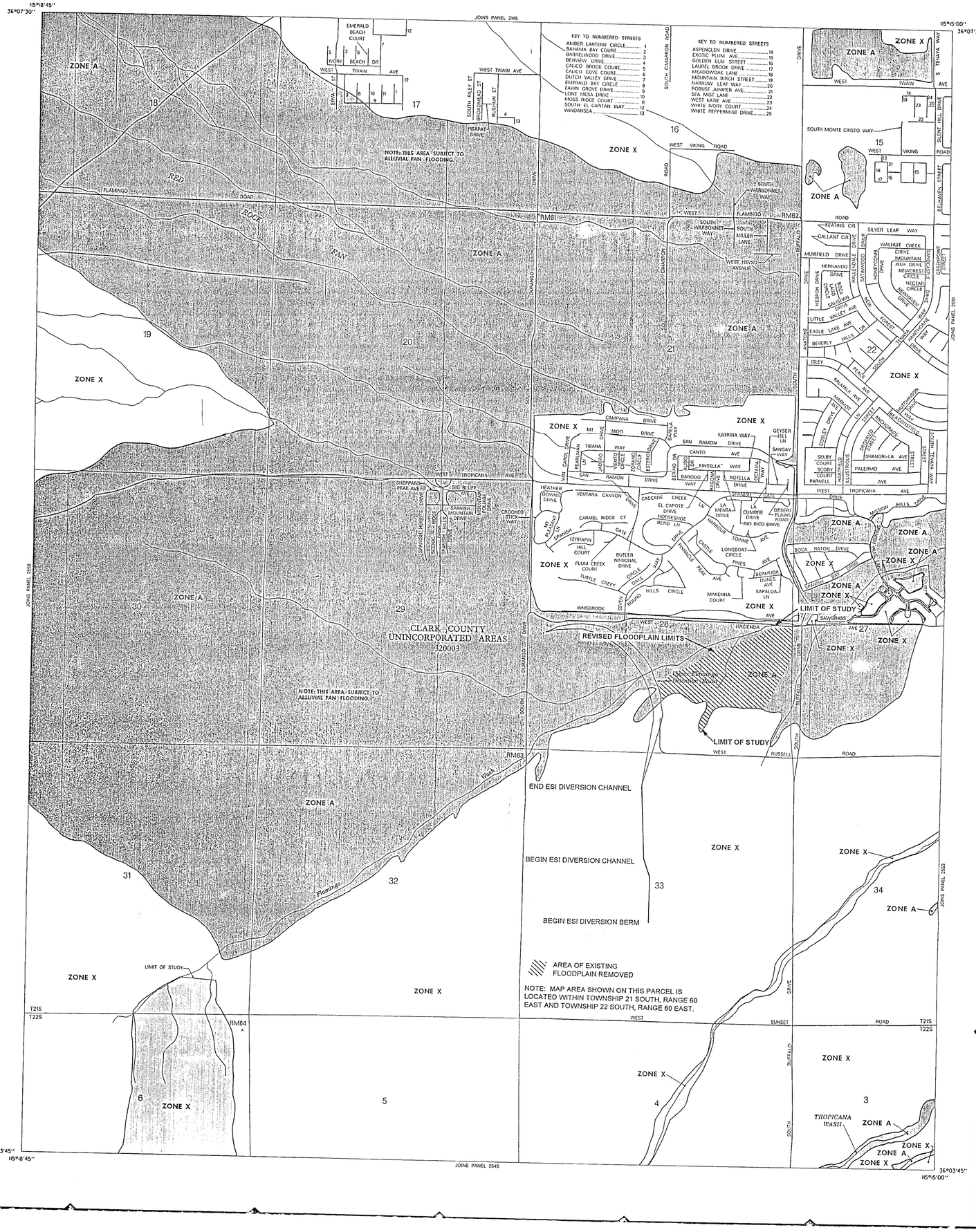
REVISED FLOODPLAIN LIMITS

LIMIT OF STUDY

HACIENDA AVENUE

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM61	2551.32	BM C105W16/railroad spike in power pole #15/11. Pile is 50 feet south and 35 feet from the intersection of Flamingo Road and Durango Drive.
RM62	2446.50	BM C105W15/Concrete nail in AC pavement at the intersection of Flamingo Road and Buffalo Drive. Section Corner.
RM63	2484.35	Township 21 South, Range 60 East, BM C105W32/BLM brass cap in large rock mound. East side of dirt road running north and south. Section Corner.
RM64	2588.01	Township 21 South Range 60 East, BM C105W32/BLM brass cap about 200 feet north of Pipeline Road with large rock mound. Section Corner.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AE — Base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined; for areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year floodplain.
- ZONE D — Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Flood Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevations Datum.
- (D) (D) — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.
- RM7 × — Elevation Reference Mark
- M2 — River Mile
- 97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
AUGUST 16,1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 2535 OF 4020
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY UNINCORPORATED AREAS	320003	2535	D

MAP NUMBER
32003C2535 D

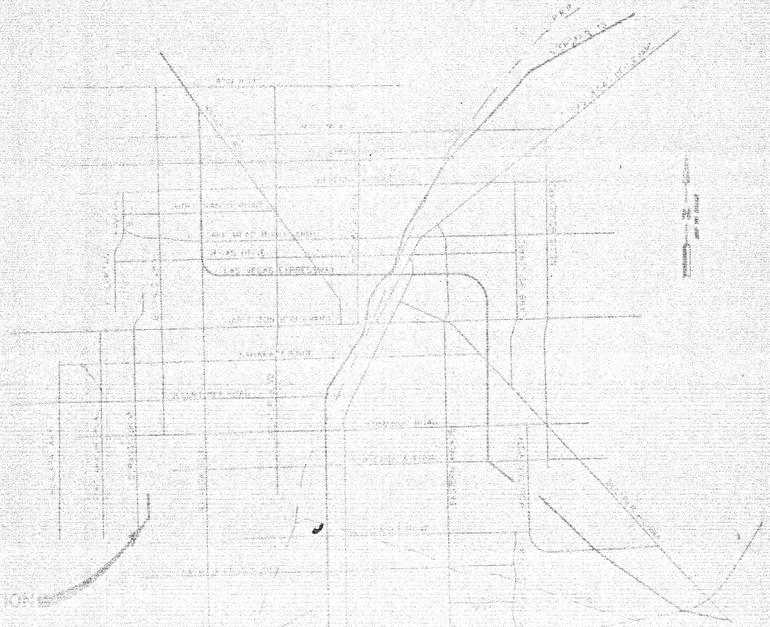
EFFECTIVE DATE:
AUGUST 16,1995

Federal Emergency Management Agency

IMPROVEMENT PLANS
OF
SOUTHERN VISTA ESTATES
DRAINAGE CHANNEL
CLARK COUNTY, NEVADA

GENERAL NOTES

1. POWER POLES AND/OR OTHER FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON SHALL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY.
2. CONTRACTOR SHALL ESTABLISH ALL NECESSARY HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION BETWEEN MONUMENTS AS SHOWN ON THESE PLANS. ALL ACCESS MUST CONFORM TO CLARK COUNTY ENGINEER.
3. UNDERGROUND UTILITIES ARE LOCATED, AS THE PLANS FROM THE BEST AVAILABLE INFORMATION AT THE TIME PLANS WERE PREPARED AND ARE SHOWN ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL BEAR ALL RESPONSIBILITY FOR THE PHYSICAL LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON PLANS OR NOT IN THE LOCATION SHOWN ON PLANS.
4. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST ISSUE OF UNIFORM STANDARD SPECIFICATIONS AND DRAWINGS FOR THE CLARK COUNTY AREA OF NEVADA.
5. ALL WORK PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENT HAVE BEEN OBTAINED FROM THE PRIVATE OWNER.
6. BACKFILL MATERIAL SHALL BE PLACED IN UNIFORM HORIZONTAL LAYERS NOT EXCEEDING EIGHT (8) INCHES IN LOOSE THICKNESS BEFORE COMPACTION AND SHALL BE BROUGHT TO UNIFORM MOISTURE OVER ALL PARTS OF THE STRUCTURE OR IMPROVEMENT. EACH LAYER OF BACKFILL SHALL BE MOISTENED AS NECESSARY AND THOROUGHLY COMPACTED UNTIL NINETY (90) PERCENT OF THE MAXIMUM DENSITY IS ACHIEVED.
7. ALL WORK PERFORMED WITHIN PUBLIC RIGHT OF WAY AND OUTSIDE OF THE PROJECT BOUNDARY SHALL BE PERFORMED UNDER SEPARATE ENCROACHMENT PERMIT ISSUED BY THE CONTROLLING AUTHORITY.



VICINITY MAP

SHEET INDEX

1. COVER SHEET
2. CHANNEL PLAN & PROFILE – STA. 0+00 TO STA. 9+00
3. CHANNEL PLAN & PROFILE – STA. 9+00 TO STA. 19+00
4. CHANNEL PLAN & PROFILE – STA. 19+00 TO STA. 28+00

QUANTITY ESTIMATE

EXCAVATION	5,800 C.Y.
RIP-RAP	1,700 C.Y.
FILL	3,680 C.Y.

APPROVAL

CLARK COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ACCEPTANCE OF PLANS FOR FILING
BY _____
ACCEPTANCE OF THESE PLANS FOR
PUBLIC USE DOES NOT CONSTITUTE
OR BE CONSTRUED FOR OR AS APPROVAL
OF ANY VIOLATION OF ANY OF THE
PROVISIONS OF THE STATE OF NEVADA
LAWS AND/OR REGULATIONS, NOR FROM
FROM DAMAGES WHICH MAY RESULT FROM
THE CONSTRUCTION OF THE IMPROVEMENTS
FROM THE ENGINEERING DESIGN DEPICTED
HEREIN.

NOTE: POWER POLES AND/OR OTHER
EXISTING FACILITIES NOT IN PROPER
LOCATION BASED ON PROPOSED IMPROVEMENTS
SHOWN HEREON SHALL BE RELOCATED AT NO
EXPENSE TO CLARK COUNTY.

OWNER & DEVELOPER

HOMMAS DEVELOPMENT
17320 IRVINE AVENUE, SUITE D-13
SANTA ANA HEIGHTS, CALIFORNIA 92707
(714) 558-0848

BENCHMARK

CITY OF HENDERSON
BRASS CAP @ RAINBOW ROAD
& BUFFALO DRIVE
ELEVATION = 3,470.55

LEGAL DESCRIPTION

The above mentioned proposed diversion channel lies along the northern portion of the East Half (E 1/2) of the East Half (E 1/2) of the Northeast Quarter (NE 1/4) of the Northeast Quarter (NE 1/4) and the East Half (E 1/2) of the Southeast Quarter (SE 1/4) of the Northeast Quarter (NE 1/4) of the Northeast Quarter (NE 1/4) of Section 10, Township 21 South, Range 63 East, M.D.B. & M., Clark County, Nevada.

S. 10 T. 21 R. 63 E.

SOUTHERN VISTA ESTATES

COVER SHEET

DRAINAGE CHANNEL

DRAINAGE CHANNEL

APPROXIMATE UPPER LIMIT OF CALICHE LAYER

EXIST. GRADE @ ℄ CONTROL LINE

FINISH GRADE @ ℄ CONTROL LINE

100 YEAR WATER SURFACE

TOP OF BERM (EASTSIDE ACCESS ROAD)

TOP OF BERM (WESTSIDE OF CHANNEL

EXIST. TOE OF DAM (ACCESS ROAD)

SEE NOTE BELOW

R = 0.30%

2500

2490

2480

2470

SCALE: 1" = 40'

Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT

A.P.N. NO. 420-270-007

A.P.N. NO. 420-270-005

A.P.N. NO. 420-270-006

A.P.N. NO. 420-340-007

B.L.M.

5' CHAIN LINK FENCE (TYP.)

18' ACCESS ROAD

PARTIAL RIPRAP ON TOP OF CALICHE (NORTH OF ℄ 4+00)
SEE SECTION "D" & PROFILE

TORTOISE CONTROL FENCE
4' HIGH STEEL POST EVERY 10'
15" HIGH MESH FENCING

RIPRAP D50=10"

EXIST. TOE OF DAM

EXIST ACCESS ROAD

PROPOSED TOE OF DAM

PROPERTY LINE

R/W

℄ CONTROL LINE

LEGEND & ABBREVIATIONS

FG FINISH GRADE
EX EXISTING
℄ CENTERLINE
A.P.N. ASSESSORS PARCEL NUMBER
B.L.M. BUREAU OF LAND MANAGEMENT

NOTE:
REPAIR TO EXTEND TO 5' MIN. BELOW LOWEST LAYER.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY.

CLARK COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

ACCEPTANCE OF PLANS FOR FILING
BY:
ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS. CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THIS IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

ESI ENGINEERS & SURVEYORS INC.

SUBMITTED BY:

CHANNEL PLAN & PROFILE

DRAINAGE CHANNEL

FEB 26 1993

TITLE

WO NO. 834 A&O
BY DWE/TG II
DATE JAN 1993
SCALE HORIZ 1"=40'
VERT 1"=4'

SHEET 4 OF 4 SHEETS

DRAWING CHANGES

Flamingo Wash - A

```
1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  26-APR-88 TIME   21:25:47          *
 *************************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1


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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
**************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY      25-YEAR EVENT
T3      FLAMINGO WASH UPSTREAM REACH (Rainbow-Cameron)   DMH 10/6/87

J1   ICHECK     INQ       NINV      IDIR       STRT      METRIC     HVINS      Q          WSEL       FQ

          0.        2.        0.        0.  0.000000      0.00       0.3        0.  2223.470      0.000

J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

        1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

QT       4.000   4100.000   7000.000  10500.000  35000.000      0.000      0.000      0.000      0.000      0.000
NC       0.060      0.045      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
         ####  Starting Water Surface at 10.13 based on Peach 2 analysis  ####
         ####  Centerline =  2530
X1      13.130     23.000   2489.000   2587.000    350.000    500.000    470.000      0.000      0.000      0.000
GR    2235.000   1150.000   2232.000   1180.000   2228.000   1350.000   2228.000   1350.000   2224.000   1860.000
GR    2221.700   2000.000   2220.900   2097.000   2224.500   2111.000   2224.400   2288.000   2222.700   2373.000
GR    2224.400   2483.000   2221.300   2504.000   2221.300   2521.000   2218.800   2547.000   2217.200   2569.000
GR    2217.200   2578.000   2225.600   2587.000   2225.600   2614.000   2234.700   2638.000   2237.000   2796.000
GR    2237.300   2947.000   2240.300   2959.000   2241.000   3083.000      0.000      0.000      0.000      0.000

NC       0.045      0.045      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
         ####  Centerline =  2300
X1      13.310     18.000   2129.000   2319.000    920.000    920.000    920.000      0.000      0.000      0.000
GR    2248.000   1550.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000
GR    2242.300   2000.000   2235.900   2129.000   2230.400   2214.000   2226.000   2236.000   2224.900   2248.000
```

GR	2224.900	2299.000	2236.400	2319.000	2237.900	2410.000	2242.200	2474.000	2241.300	2531.000
GR	2242.100	2584.000	2244.500	2630.000	2248.000	2810.000	0.000	0.000	0.000	0.000
NC	1.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

DECATUR BOULEVARD
Special Bridge Routine
Centerline = 2370

X1	10.330	12.000	2350.000	2388.000	110.000	110.000	110.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2241.000	2241.000	0.000
GR	2248.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2060.000	2238.000	2350.000	2230.000	2350.000	2230.000	2388.000	2238.000	2388.000
GR	2243.000	2650.000	2248.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

1

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SB	1.250	1.500	2.000	0.000	37.400	9.400	294.000	0.000	2230.500	2230.000
X1	10.340	12.000	2350.000	2388.000	95.000	95.000	95.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	2241.000	2242.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2242.000	2242.000	0.000
X4	1.000	2242.000	2300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	1.000	0.000	2248.000	0.000	470.000	2244.000	0.000	610.000	2242.300	0.000
RT	780.000	2242.000	0.000	1080.000	2243.000	0.000	1250.000	2244.500	0.000	1430.000
RT	2248.000	0.000	1510.000	2252.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2244.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2060.000	2235.000	2350.000	2230.500	2350.000	2230.500	2388.000	2242.000	2388.000
GR	2243.000	2650.000	2248.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2610

X1	10.490	26.000	2475.000	2537.000	650.000	710.000	790.000	0.000	0.000	0.000
GR	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000
GR	2266.900	2000.000	2272.200	2234.000	2270.600	2283.000	2265.500	2389.000	2261.900	2475.000
GR	2239.900	2501.000	2241.500	2547.000	2239.100	2570.000	2239.100	2617.000	2240.300	2648.000
GR	2242.100	2701.000	2241.300	2724.000	2240.600	2754.000	2238.400	2771.000	2238.400	2754.000
GR	2243.900	2799.000	2243.000	2945.000	2242.900	2888.000	2244.400	2987.000	2248.300	3092.000
GR	2270.000	3220.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	3.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
GT	4.000	3700.000	5000.000	9400.000	34000.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2150

X1	10.700	19.000	2052.000	2489.000	1110.000	1150.000	1110.000	0.000	0.000	0.000
GR	2280.000	1270.000	2280.000	1270.000	2290.000	1270.000	2268.000	1270.000	2280.000	1270.000
GR	2272.300	2000.000	2271.600	2052.000	2252.800	2112.000	2252.800	2198.000	2253.100	2233.000
GR	2253.500	2294.000	2253.600	2370.000	2253.600	2436.000	2253.600	2473.000	2256.600	2489.000
GR	2256.500	2553.000	2259.800	2605.000	2259.500	2654.000	2280.000	2740.000	0.000	0.000
ST	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1900.000	2840.000
NC	5.000	0.180	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2690

X1	10.960	31.000	2613.000	2840.000	1430.000	1280.000	1365.000	0.000	0.000	0.000
GR	2284.000	120.000	2280.000	800.000	2272.000	630.000	2272.000	1330.000	2276.000	1360.000
GR	2266.100	1520.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000
GR	2276.300	2000.000	2279.900	2083.000	2278.700	2174.000	2275.900	2353.000	2273.200	2358.000
GR	2268.300	2446.000	2270.600	2613.000	2267.500	2620.000	2267.500	2647.000	2264.700	2670.000
GR	2263.000	2580.000	2263.000	2696.000	2265.800	2702.000	2273.800	2736.000	2267.800	2761.000
GR	2267.900	2734.000	2272.900	2926.000	2275.600	2840.000	2275.600	2976.000	2274.100	2948.000
GR	2284.000	3590.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2560

X1	11.150	23.000	2521.000	2637.000	1035.000	985.000	1010.000	0.000	0.000	0.000
GR	2281.000	1020.000	2280.000	1190.000	2289.000	1430.000	2289.000	1570.000	2286.000	1710.000
GR	2292.300	2000.000	2290.400	2039.000	2285.400	2140.000	2284.600	2282.000	2282.900	2350.000
GR	2242.000	2399.000	2280.000	2404.000	2281.800	2420.000	2278.600	2521.000	2269.400	2530.000
GR	2264.400	2566.000	2273.700	2598.000	2280.500	2607.000	2281.800	2633.000	2280.300	2655.000
GR	2275.300	2663.000	2279.300	2683.000	2279.000	2710.000	2279.000	2731.000	2280.700	2751.000

GR	2284.000	3050.000	2283.000	3250.000	2292.000	3400.000	0.000	0.000	0.000	0.000

NC	0.345	0.140	0.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	Centerline = 2460								
X1	11.280	18.000	2416.000	2523.000	655.000	640.000	645.000	0.000	0.000	0.000
X4	3.000	2300.000	760.000	2296.000	920.000	2300.000	1750.000	0.000	0.000	0.000
GR	2301.000	700.000	2294.000	1060.000	2294.000	1290.000	2298.000	1400.000	2295.500	1600.000
GR	2304.500	2000.000	2302.300	2066.000	2303.000	2258.000	2300.500	2304.000	2292.100	2376.000
GR	2288.500	2416.000	2273.900	2439.000	2273.900	2502.000	2288.100	2523.000	2288.100	2556.000
GR	2284.300	2587.000	2292.000	2690.000	2296.000	3060.000	2300.000	3630.000	0.000	0.000
NC	0.300	0.000	0.031	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.100	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000
	##########	##########	##########	##########	##########	##########	##########			
	####	JONES BOULEVARD					####			
	####	Special Bridge Routine					####			
	##########	##########	##########	##########	##########	##########	##########			
	####	Centerline = 2725								
X1	11.310	16.000	2704.000	2746.000	180.000	200.000	180.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2288.400	2288.400	0.000
GR	2300.000	1000.000	2297.000	1200.000	2297.000	1500.000	2299.400	1760.000	2298.200	1980.000
GR	2300.000	2110.000	2300.000	2600.000	2292.000	2682.000	2283.000	2704.000	2280.000	2746.000
GR	2288.100	2768.000	2292.000	2800.000	2292.000	2920.000	2296.000	3100.000	2300.000	3420.000
GR	2301.400	3870.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	41.500	13.500	224.000	0.000	2280.400	2280.000
ET	0.100	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000
	####	Centerline RT cards = 1690								
X1	11.320	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.400	0.000
X2	0.100	0.000	1.000	2288.400	2291.400	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	2291.400	2291.400	0.000
RT	12.000	0.000	2300.000	0.000	460.000	2299.700	0.000	710.000	2299.600	0.000
RT	1050.000	2296.000	0.000	1200.000	2294.300	0.000	1380.000	2293.000	0.000	1580.000
RT	2292.000	0.000	1650.000	2291.400	0.000	1750.000	2292.000	0.000	1920.000	2292.400
RT	0.000	2150.000	2296.000	0.000	2230.000	2300.000	0.000	0.000	0.000	0.000
NC	0.140	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	Centerline = 2370								
X1	11.450	20.000	2311.000	2429.000	675.000	655.000	660.000	0.000	0.000	0.000
GR	2308.500	500.000	2304.000	1070.000	2307.000	1360.000	2302.500	1630.000	2304.900	1760.000
GR	2304.100	2000.000	2302.900	2129.000	2302.900	2170.000	2305.900	2250.000	2303.200	2311.000
GR	2288.900	2335.000	2288.900	2392.000	2296.900	2408.000	2301.600	2428.000	2301.600	2444.000
GR	2302.200	2478.000	2304.400	2572.000	2304.500	2720.000	2307.500	3040.000	2308.000	3600.000
NC	0.300	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####	Centerline = 2330								
X1	11.540	13.000	2283.000	2372.000	1000.000	1000.000	1000.000	0.000	0.000	0.000
X4	1.000	2312.200	2180.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2316.000	560.000	2314.300	870.000	2315.000	1220.000	2315.000	1370.000	2315.000	1660.000
GR	2312.000	1800.000	2312.000	2104.000	2311.700	2261.000	2310.400	2283.000	2297.400	2297.000
GR	2297.400	2357.000	2305.100	2372.000	2307.700	2401.000	2308.600	2496.000	2312.600	2712.000
GR	2315.000	2950.000	2310.000	3290.000	2320.000	3600.000	0.000	0.000	0.000	0.000

	####	Centerline = 2360								
X1	11.780	20.000	2292.000	2399.000	810.000	810.000	810.000	0.000	0.000	0.000
GR	2326.200	40.000	2324.000	210.000	2320.000	970.000	2320.000	970.000	2321.300	1360.000
GR	2318.700	2000.000	2318.600	2149.000	2319.200	2282.000	2315.700	2308.000	2306.000	2329.000
GR	2306.000	2348.000	2309.300	2381.000	2316.900	2399.000	2317.700	2427.000	2317.700	2458.000
GR	2319.300	2569.000	2321.200	2656.000	2320.400	2686.000	2324.000	3260.000	2328.000	3510.000

```
NC      0.000       0.000       0.040       0.500       0.500       0.000       0.000       0.000       0.000       0.000
        ##########################################################################################
        ####                                                                                  ####
        ####                        TORREY PINES DRIVE                                        ####
        ####                    Special Bridge Routine                                        ####
        ##########################################################################################
X1     11.820      14.000    3289.000    3331.500     120.000     160.000     155.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000    2319.000    2319.000
GR   2326.000    1000.000    2321.300    2200.000    2321.000    2520.000    2320.800    2800.000    2320.000    3240.000
GR   2318.000    3289.000    2310.000    3289.500    2310.000    3331.000    2318.000    3331.500    2320.000    3380.000
GR   2321.200    3630.000    2323.000    3850.000    2324.000    4000.000    2328.000    4320.000       0.000       0.000

SB      1.250       1.500       2.630       0.000      41.500      13.500     224.000       0.000    2311.000    2310.000
X1     11.340      11.000    3289.000    3331.500      75.000      75.000      75.000       0.000       0.000       0.000
X2      0.000       0.000       1.000    2319.000    2320.700       0.000       0.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000    2320.700    2320.700
X4      1.000    2324.000    1300.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
RT      4.000    3000.000    2321.100       0.000    3260.000    2320.700       0.000    3380.000    2321.000       0.000
RT   3600.000    2321.400       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR   2326.000    1000.000    2323.300    1650.000    2324.000    1650.000    2324.000    1900.000    2324.000    3240.000
GR   2319.500    3289.000    2311.500    3289.500    2311.500    3331.000    2319.500    3331.500    2324.000    3380.000
GR   2328.000    3460.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.140       0.045       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
        ####          Centerline = 10300.
X1     11.870      13.000    2290.000    2400.000     300.000      70.000     160.000       0.000       1.500       0.000
GR   2336.000    1000.000    2332.000    1750.000    2328.000    2058.000    2324.000    2280.000    2320.000    2300.000
GR   2313.500    2315.000    2313.500    2360.000    2316.000    2370.000    2320.000    2380.000    2324.000    2400.000
GR   2329.000    2500.000    2330.600    3600.000    2332.000    3700.000       0.000       0.000       0.000       0.000

NC      0.000       0.000       0.000       0.100       0.300       0.000       0.000       0.000       0.000       0.000
        ####  Centerline =   2220
X1     11.990      17.000    2154.000    2270.000     470.000     650.000     645.000       0.000       0.000       0.000
GR   2344.000     540.000    2340.000     980.000    2340.000     980.000    2340.000     980.000    2336.000    1680.000
GR   2330.300    2000.000    2330.900    2154.000    2320.900    2183.000    2320.900    2233.000    2322.600    2247.000
GR   2331.100    2251.000    2332.900    2270.000    2331.700    2294.000    2333.800    2416.000    2332.000    2780.000
GR   2332.000    2450.000    2336.000    3170.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.140       0.045       0.031       0.000       0.000       0.000       0.000       0.000       0.000       0.000
        ####  Centerline =   2310
X1     12.130      24.000    2264.000    2371.000     485.000     565.000     580.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR   2348.000     650.000    2340.000    1180.000    2339.800    1530.000    2335.000    1850.000    2336.000    1940.000
GR   2334.700    2000.000    2332.100    2079.000    2332.900    2104.000    2332.500    2122.000    2332.500    2136.000
GR   2334.300    2147.000    2335.300    2264.000    2326.000    2288.000    2326.000    2349.000    2337.500    2371.000
GR   2337.400    2435.000    2338.700    2486.000    2336.000    2537.000    2337.000    2578.000    2337.500    2650.000
GR   2337.500    3000.000    2340.000    3030.000    2344.000    3140.000    2346.000    3260.000       0.000       0.000
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NC      0.000       0.000       0.000       0.300       0.500       0.000       0.000       0.000       0.000       0.000
        ##########################################################################################
        ####                                                                                  ####
        ####                        TROPICANA AVENUE                                          ####
        ####                    Normal Bridge Routine                                         ####
        ##########################################################################################
        ####  Centerline = 10000
X1     12.150      21.000    9832.000   10068.000     280.000     300.000     300.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
X4      2.000    2337.000    9450.000    2337.000    9850.000       0.000       0.000       0.000       0.000       0.000
GR   2348.000    9263.000    2344.000    9810.000    2340.000    9379.000    2338.500    9932.000    2327.000    9954.500
GR   2327.000    9954.600    2327.000    9960.500    2327.000    9960.600    2327.000    9997.000    2327.000    9997.100
GR   2327.000   10003.000    2327.000   10003.100    2327.000   10039.500    2327.000   10039.600    2327.000   10045.500
GR   2327.000   10045.600    2338.500   10068.000    2340.000   10420.000    2344.000   10730.000    2348.000   10850.000
GR   2350.000   10870.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

X1     12.150      21.000    9954.500   10045.600       1.000       1.000       1.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
```

```
BT      14.000      9932.000      2338.500      2335.500      9954.500      2341.000      2337.000      9954.600      2341.000      2338.000
BT    9960.500      2341.000      2339.000      9960.600      2341.000      2338.000      9997.000      2341.000      2338.000      9997.100
BT    2341.000      2337.000  10003.000      2341.000      2337.000  10003.100      2341.000      2337.000  10039.500      2341.000
BT    2337.000  10039.600      2341.000      2337.000  10045.500      2341.000      2337.000  10045.600      2341.000      2337.000
BT   10065.000      2338.500      2338.500         0.000         0.000         0.000         0.000         0.000         0.000         0.000
GR    2348.000      8260.000      2344.000      8810.000      2340.000      9370.000      2338.500      9932.000      2327.000      9954.500
GR    2337.000      9954.600      2327.000      9960.500      2327.000      9960.600      2327.000      9997.000      2337.000      9997.100
GR    2327.000  10003.000      2327.000  10003.100      2327.000  10039.500      2327.000  10039.600      2327.000  10045.500
GR    2327.000  10045.600      2338.500  10065.000      2340.000  10420.000      2344.000  10730.000      2348.000  10850.000
GR    2350.000  10970.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000

X1      12.160         0.000         0.000         0.000        50.000        50.000        50.000         0.000         0.500         0.000
X2       0.000         0.000         0.000         0.000         0.000         0.000         1.000         0.000         0.000         0.000
X3      10.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000

X1      12.160        21.000      9932.000  10968.000         1.000         1.000         1.000         0.000         0.500         0.000
X3      10.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000
GR    2348.000      8260.000      2344.000      8810.000      2340.000      9370.000      2338.500      9932.000      2327.000      9954.500
GR    2327.000      9954.600      2327.000      9960.500      2327.000      9960.600      2327.000      9997.000      2327.000      9997.100
GR    2327.000  10003.000      2327.000  10003.100      2327.000  10039.500      2327.000  10039.600      2327.000  10045.500
GR    2327.000  10045.600      2338.500  10065.000      2340.000  10420.000      2344.000  10730.000      2348.000  10850.000
GR    2350.000  10970.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000

ET      0.000         9.100         9.100         9.100         0.000         0.000         0.000         0.000      1530.000      2756.000
NC      0.060         0.045         0.035         0.000         0.000         0.000         0.000         0.000         0.000         0.000
        ####  Centerline =  2240
X1      12.320        25.000      2199.000      2319.000       750.000       750.000       800.000         0.000         0.000         0.000
X3      10.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000
X4       5.000      2348.000       940.000      2346.000       940.000      2346.000      1460.000      2344.000      1605.000      2345.500
X4    1670.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000
GR    2360.000      -710.000      2354.400        70.000      2352.000       320.000      2344.000      1530.000      2340.000      1580.000
GR    2346.100      2000.000      2347.100      2199.000      2334.700      2227.000      2334.700      2234.000      2337.300      2242.000
GR    2337.900      2258.000      2337.900      2278.000      2346.200      2308.000      2347.400      2319.000      2347.400      2334.000
GR    2347.900      2348.000      2351.300      2364.000      2352.200      2451.000      2350.400      2463.000      2349.200      2486.000
GR    2344.600      2494.000      2343.600      2509.000      2350.100      2524.000      2354.400      2634.000      2356.700      2756.000
```



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NC      0.000         0.000         0.040         0.100         0.300         0.000         0.000         0.000         0.000         0.000
NH      4.000         0.140       760.000         0.060      2320.000         0.040      2477.000         0.045      3320.000         0.000
ET      0.000         9.100         9.100         9.100         0.000         0.000         0.000         0.000      1600.000      2477.000
        ####  Centerline =  2360
X1      12.427        19.000      2320.000      2477.000       535.000       535.000       550.000         0.000         0.000         0.000
X3      10.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000         0.000
X4       3.000      2352.000      1120.000      2351.200      1310.000      2348.000      1740.000         0.000         0.000         0.000
GR    2364.000      -130.000      2366.000       760.000      2350.000      1600.000      2346.000      1690.000      2350.000      1650.000
GR    2348.300      2000.000      2348.700      2152.000      2348.400      2288.000      2350.600      2320.000      2340.700      2358.000
GR    2340.700      2384.000      2352.300      2426.000      2360.200      2477.000      2360.200      2531.000      2360.500      2733.000
GR    2356.900      2826.000      2356.100      2919.000      2364.000      3100.000      2368.000      3320.000         0.000         0.000

ET      0.000         9.100         9.100         9.100         0.000         0.000         0.000         0.000      1300.000      2730.000
NC      0.000         0.000         0.000         0.300         0.500         0.000         0.000         0.000         0.000         0.000
NH      4.000         0.140      1490.000         0.140      2165.000         0.040      2235.100         0.045      2730.000         0.000
        ##########################################################################
        ####                                                                  ####
        ####                    RAINBOW BOULEVARD                             ####
        ####                  Normal Bridge Routine                           ####
        ####  ET cards used at bridge xsecs to confine 825, 850 and 9100      ####
        ####  in LOB to  Tropicana Eve grade, based on upstream width.        ####
        ##########################################################################
        ####  Centerline = 2200  ####
X1      12.490        19.000      2165.000      2235.100       280.000       300.000       290.000         0.000         0.000         0.000
X3      10.000         0.000         0.000         0.000         0.000         0.000         0.000      2353.000      2353.000         0.000
X4       2.000      2360.000       600.000      2356.000      1000.000         0.000         0.000         0.000         0.000         0.000
GR    2364.000         0.000      2352.000      1200.000      2349.000      1490.000      2349.200      1590.000      2349.400      1690.000
GR    2364.500      2165.000      2343.600      2178.000      2343.500      2175.000      2343.500      2175.000      2343.500      2175.000
GR    2343.500      2175.100      2343.500      2195.000      2343.500      2195.100      2343.500      2205.000      2343.500      2205.100
```

GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2160.000	0.040	2240.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.491	24.000	2160.000	2240.100	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	2160.000	2360.000	2358.500	2175.000	2360.000	2358.500	2187.000	2362.500	2358.500
BT	2195.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2349.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2187.000	2360.000	2187.100	2360.000	2188.000	2343.500	2188.100
GR	2343.500	2217.000	2360.000	2217.100	2360.000	2218.000	2343.500	2218.100	2343.500	2218.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2175.000	0.040	2225.000	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.490	24.000	2160.000	2240.100	90.000	90.000	90.000	0.000	0.500	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	2160.000	2360.000	2358.500	2175.000	2360.000	2358.500	2190.000	2362.500	2358.500
BT	2191.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2349.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000

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GR	2343.500	2175.100	2343.500	2195.000	2360.000	2185.100	2360.000	2190.000	2343.500	2190.100
GR	2343.500	2215.000	2360.000	2215.100	2360.000	2220.000	2343.500	2220.100	2343.500	2220.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2165.000	0.040	2235.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.491	18.000	2165.000	2235.100	1.000	1.000	1.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
GR	2368.000	100.000	2356.000	1330.000	2351.000	1490.000	2354.000	1590.000	2353.000	1690.000
GR	2358.500	2165.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2195.000	2343.500	2195.100	2343.500	2205.000	2343.500	2205.100
GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1330.000	0.140	2283.000	0.035	2375.000	0.045	2661.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1710.000	2462.000
	####	Centerline =	2310							
X1	12.550	14.000	2283.000	2375.000	310.000	310.000	310.000	0.000	0.000	0.000
GR	2372.000	460.000	2364.000	1110.000	2360.000	1330.000	2360.000	1520.000	2360.000	1710.000
GR	2360.000	2000.000	2355.600	2283.000	2346.200	2305.000	2346.200	2352.000	2358.100	2375.000
GR	2366.500	2421.000	2367.500	2462.000	2366.500	2568.000	2365.400	2681.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 18.130

3265 DIVIDED FLOW

```
          ####  Starting water surface at 10.15 based on Reach 2 analysis  ####
          ####  Centerline =  2530
     10.15        6.27   2223.47   2223.42   2223.47   2224.36      0.89      0.00      0.00   2224.40
     4100.     1191.      2919.        0.       354.      335.       0.        0.        0.   2225.60
      0.22        3.34      8.71      0.00      0.060     0.040     0.045     0.000  2217.20   1852.26
  0.010116       350.       470.      500.         0         5         0      0.00    357.00   2584.72
)
 CCHV=   0.100  CEHV=   0.300
 *SECND 10.312
          ####  Centerline =  2300
     10.31        5.17   2231.07      0.00      0.00   2232.20      1.12      7.77      0.37   2235.90
     4100.        0.      4100.        0.        0.      492.      12.        5.        0.   2235.40
      0.03        0.00      8.50      0.00      0.045     0.040     0.045     0.000  2224.90   2203.59
  0.007151       920.       920.      923.         2         8         0      1.00    106.15   2309.74
)
 CCHV=   0.300  CEHV=   0.500
 *SECND 10.330

 1645 INT SEC ADDED BY RAISING SEC     10.33,  -3.825FT AND MULTIPLYING BY   1.792

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.01        4.81   2230.99   2230.99      0.00   2233.42      2.43      0.29      0.66   2234.18
     4100.        0.      4100.        0.        0.      328.       0.       13.        5.   2234.18
      0.03        0.00     12.52      0.00      0.045     0.040     0.045     0.000  2226.18   2975.49
  0.015668        28.        28.       23.         4        15         0      0.00     68.09   3043.58
)

 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.275FT AND MULTIPLYING BY   0.853

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XAL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.02        5.36   2232.81   2232.81      0.00   2235.51      2.70      0.46      0.13   2235.45
     4100.        0.      4100.        0.        0.      311.       0.       13.        5.   2235.45
      0.03        0.00     13.18      0.00      0.045     0.040     0.045     0.000  2227.45   2766.99
  0.016836        28.        28.       28.         2         8         0      0.00     58.06   2825.05
)

 1645 INT SEC ADDED BY RAISING SEC      1.02,   1.275FT AND MULTIPLYING BY   0.827

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.03        6.28   2234.81   2234.81      0.00   2237.87      3.06      0.47      0.18   2236.73
     4100.        0.      4100.        0.        0.      292.       1.       13.        5.   2236.73
      0.03        0.00     14.03      0.00      0.045     0.040     0.045     0.000  2228.73   2559.50
  0.017356        28.        28.       29.         2         8         0      0.00     48.03   2606.53
)

 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.275FT AND MULTIPLYING BY   0.791
```

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

```
##############################################################################
####                    DECATUR BOULEVARD                                 ####
####                 Special Bridge Routine                               ####
##############################################################################
####  Centerline = 2370
```

10.33	7.12	2237.12	2237.12	0.00	2240.69	3.56	0.49	0.25	2238.00
4100.	0.	4100.	0.	0.	271.	0.	13.	5.	2238.00
0.03	0.00	15.15	0.00	0.045	0.040	0.045	0.000	2230.00	2350.00
0.018543	29.	28.	28.	20	8	0	0.00	38.00	2388.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2234.87 ,NOT 2237.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	PWC	PWP	PAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.80	0.00	37.40	8.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESS FLOW BECAUSE EGLWC OF 2247.17 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
2241.65	2247.17	0.00	0.	4100.	294.	294.	2241.00	2242.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2242.00 ELREA= 2242.00

10.34	8.84	2239.34	0.00	0.00	2241.65	2.31	0.97	0.00	2235.00
4100.	0.	4100.	0.	0.	336.	0.	14.	6.	2242.00
0.03	0.00	12.20	0.00	0.045	0.040	0.045	0.000	2230.50	2350.00
0.008812	95.	95.	95.	4	2	0	0.00	38.00	2388.00

*SECNO 10.490

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.925FT AND MULTIPLYING BY 0.339

3301 HV CHANGED MORE THAN HVINS

1.01	9.96	2242.46	0.00	0.00	2242.64	0.18	0.35	0.64	2255.99
4100.	0.	3997.	103.	0.	1150.	72.	17.	6.	2239.48
0.05	0.00	3.48	1.43	0.045	0.040	0.045	0.000	2232.48	2140.11

0.000734	163.	198.	178.	3	0	0	0.00	204.03	2544.14

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.645

1.02	8.22	2242.67	0.00	0.00	2242.80	0.13	0.14	0.02	2257.95
4100.	0.	4065.	35.	0.	1411.	37.	23.	7.	2240.45
0.07	0.00	2.89	0.84	0.045	0.040	0.045	0.000	2234.45	2258.22
0.000709	163.	198.	178.	2	0	0	0.00	309.92	2568.15

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.394

1.03	6.43	2242.95	0.00	0.00	2243.02	0.16	0.20	0.02	2259.93
4100.	0.	4099.	1.	0.	1272.	2.	30.	9.	2242.43
0.09	0.00	3.22	0.46	0.045	0.040	0.045	0.000	2236.43	2377.30
0.001550	163.	198.	178.	2	0	0	0.00	352.33	2769.63

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.282

3265 DIVIDED FLOW

Centerline = 2610

10.49	4.37	2243.27	0.00	0.00	2243.58	0.31	0.49	0.07	2261.90
4100.	0.	4100.	0.	0.	921.	0.	35.	11.	2244.40
0.10	0.00	4.45	0.00	0.045	0.040	0.045	0.000	2238.40	2497.02
0.004503	163.	198.	178.	3	0	0	0.00	382.23	2912.20

CCHV= 3.100 CSHV= 3.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.300FT AND MULTIPLYING BY 0.669

3331 HV CHANGED MORE THAN HVINS

1.01	2.85	2244.85	0.00	0.00	2245.59	0.74	1.88	0.13	2260.80
4000.	0.	4000.	0.	0.	580.	0.	39.	13.	2245.80
0.11	0.00	6.89	0.00	0.045	0.040	0.045	0.000	2242.00	1826.60
0.011530	278.	278.	290.	3	0	0	0.00	254.63	2081.23

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.165

1.02	2.59	2248.19	0.00	0.00	2248.85	0.66	3.25	0.01	2264.40
3900.	0.	3900.	0.	0.	600.	0.	43.	14.	2249.40

```
      0.12        0.00        6.50        0.00        0.045       0.040       0.045       0.000    2245.60    1919.34
 0.011924         278.        278.        290.           3           0           0        0.00     295.05    2214.39
 )

 1645 INT SEC ADDED BY RAISING SEC      1.02,   3.600FT AND MULTIPLYING BY   1.142

      1.03        2.40     2251.60        0.00        0.00     2252.18        0.58        3.33        0.01    2268.00
      3800.          0.        3800.          0.          0.         620.          0.         47.        16.     2253.00
      0.13        0.00        6.13        0.00        0.045       0.040       0.045       0.000    2249.20    2012.09
 0.012046         278.        278.        290.           3           0           0        0.00     335.46    2347.55
 )

 1645 INT SEC ADDED BY RAISING SEC      1.03,   3.600FT AND MULTIPLYING BY   1.124

           ####  Centerline =   2150
     10.70        2.23     2255.03        0.00        0.00     2255.56        0.53        3.37        0.01    2271.60
      3700.          0.        3700.          0.          0.         635.          0.         51.        19.     2256.60
      0.15        0.00        5.83        0.00        0.045       0.040       0.045       0.000    2252.80    2104.88
 0.012266         278.        278.        290.           3           0           0        0.00     375.76    2480.64
 )
 *SECNO 10.960

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 3470 ENCROACHMENT STATIONS=     1900.0     2840.0  TYPE=      1  TARGET=      940.000
           ####  Centerline =   2680
     10.96        6.56     2259.56     2269.60        0.00     2270.66        1.09       14.93        0.17    2270.60
      3700.         52.        3648.          0.         30.         432.          0.         68.        28.   100000.00
      0.18        1.72        9.45        0.00        0.045       0.033       0.180       0.000    2263.00    2437.66
 0.009809        1430.       1385.       1280.          13          20           0        0.00     243.17    2797.98
 )
 1
```



```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VCL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *SECNO 11.150
           ####  Centerline =   2560
     11.15        6.21     2275.61        0.00        0.00     2276.78        1.17        6.10        0.02    2278.60
      3700.          0.        3700.          0.          0.         426.          0.         78.        32.     2281.80
      0.23        0.00        8.68        0.00        0.045       0.033       0.180       0.000    2269.40    2523.92
 0.004091        1035.       1010.        985.           3           0           0        0.00      77.33    2601.25
 )
 *SECNO 11.280

 3301 HV CHANGED MORE THAN HVINS

           ####  Centerline =   2460
     11.24        4.90     2279.80        0.00        0.00     2280.59        1.78        3.62        0.18    2288.60
      3700.          0.        3700.          0.          0.         346.          0.         84.        33.     2288.10
      0.24        0.00       10.71        0.00        0.045       0.033       0.140       0.000    2273.90    2431.33
 0.008154         555.        645.        640.           3           0           0        0.00      77.92    2509.25
 )
 CCHV=    0.300  CEHV=    0.500
 *SECNO 11.310

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
```

3695 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2288.40 ELREA= 2288.40

```
##########################################################
####                  JONES BOULEVARD                 ####
####              Special Bridge Routine              ####
##########################################################
####  Centerline = 2725
```

11.31	6.20	2286.20	2286.20	0.00	2289.33	3.13	1.43	0.68	2280.00
3700.	0.	3700.	0.	0.	261.	0.	85.	34.	2280.00
0.25	0.00	14.20	0.00	0.045	0.031	0.140	0.000	2280.00	2704.00
0.007698	130.	130.	200.	20	11	0	0.00	42.00	2746.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2293.99 ,NOT 2286.20 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEF	RDLEN	RWC	RWP	RAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.90	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
PRESS FLOW BECAUSE EGLWC OR 2296.20 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2292.31	2296.20	0.00	153.	3513.	224.	224.	2288.40	2291.40

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000
Centerline BT cards = 1690

11.32	11.12	2291.52	0.00	0.00	2292.16	0.64	2.83	0.00	2280.40
3700.	310.	3205.	185.	113.	467.	195.	86.	34.	2280.40
0.25	2.73	6.86	0.95	0.045	0.031	0.140	0.000	2280.40	2693.61
0.000825	70.	70.	70.	2	0	2	0.00	109.37	2792.98

•SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2370

11.45	4.80	2293.70	2293.70	0.00	2295.83	2.13	1.36	0.74	2303.20
3700.	0.	3700.	0.	0.	316.	0.	95.	35.	2301.60
1.26	0.00	11.72	0.00	0.145	0.135	0.160	0.000	2288.00	2326.95
0.011624	675.	660.	655.	20	14	0	0.00	74.65	2401.59

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 11.640

3301 HV CHANGED MORE THAN HVINS

Centerline = 2330

11.64	5.58	2302.98	0.00	0.00	2304.44	1.46	8.54	0.07	2310.40
3700.	0.	3700.	0.	0.	382.	0.	103.	37.	2305.10
0.29	0.00	9.70	0.00	0.140	0.035	0.160	0.000	2297.40	2290.99
0.006533	1000.	1000.	1000.	4	8	0	0.00	76.57	2367.96

*SECNO 11.790

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2360

11.79	5.77	2311.77	2311.77	0.00	2313.37	2.20	6.90	0.22	2319.20
3700.	0.	3700.	0.	0.	311.	0.	109.	38.	2316.90
0.31	0.00	11.90	0.00	0.140	0.035	0.160	0.000	2306.00	2316.50
0.011576	810.	810.	810.	3	8	0	0.00	71.76	2388.27

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

TORREY PINES DRIVE
Special Bridge Routine

11.82	6.23	2316.23	2316.23	0.00	2319.35	3.12	2.20	0.46	2318.30
3700.	0.	3700.	0.	0.	261.	0.	110.	38.	2314.00
0.52	0.00	14.17	0.00	0.140	0.040	0.150	0.000	2310.00	3269.11
0.017799	120.	155.	160.	20	8	0	0.00	42.28	3331.39

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2313.99 ,NOT 2316.23 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.340
PRESS FLOW BECAUSE EGLWC OF 2326.79 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2322.59	2326.79	0.00	378.	3326.	224.	224.	2319.00	2320.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.34	7.97	2319.47	0.00	0.00	2321.37	1.90	2.02	0.00	2319.50
3700.	0.	3700.	0.	0.	335.	0.	111.	39.	2319.50
0.32	0.00	11.05	0.00	0.140	0.040	0.160	0.000	2311.50	3289.00
0.008444	75.	75.	75.	4	0	4	0.00	42.50	3331.50

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

Centerline = 10000.

11.87	5.30	2321.30	0.00	0.00	2322.64	1.34	1.10	0.17	2325.50
3700.	0.	3700.	0.	0.	399.	0.	112.	39.	2325.50
0.32	0.00	9.23	0.00	0.140	0.035	0.045	0.000	2315.50	2300.44
0.005752	309.	160.	70.	3	0	0	0.00	79.08	2379.52

CCHV= 3.100 CEHV= 0.300
*SECNO 11.880

Centerline = 2220

11.88	4.38	2325.78	0.00	0.00	2327.58	1.80	4.80	0.14	2330.30
3700.	0.	3700.	0.	0.	344.	0.	117.	40.	2332.90
0.34	0.00	10.76	0.00	0.140	0.035	0.045	0.000	2320.90	2168.70
0.010015	470.	645.	650.	3	0	0	0.00	83.55	2252.24

SECNO	DEPTH	QWSEL	QRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.10	4.83	2333.83	0.00	0.00	2332.60	1.76	5.01	0.00	2335.30
3700.	0.	3700.	0.	0.	347.	0.	122.	41.	2337.50
0.35	0.00	10.65	0.00	0.140	0.031	0.045	0.000	2326.00	2275.52
0.007531	485.	580.	565.	1	0	0	0.00	82.72	2358.25

CCHV= 3.300 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

```
##########################################################
####                TROPICANA AVENUE                  ####
####            Normal Bridge Routine                 ####
##########################################################
####  Centerline = 10000
```

12.15	6.31	2333.31	0.00	0.00	2333.81	0.50	0.84	0.38	2338.50
3700.	0.	3700.	0.	0.	652.	2.	125.	42.	2339.50
0.37	0.00	5.67	0.00	0.140	0.031	0.045	0.000	2327.00	9942.16
0.001446	280.	300.	300.	2	0	0	0.00	115.72	10057.88

*SECNO 12.151

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2339.50 MAX ELLC= 2339.50

12.15	6.09	2333.09	0.00	0.00	2334.04	0.95	0.00	0.23	2327.00
3700.	38.	3544.	118.	36.	445.	35.	125.	42.	2327.00
0.37	1.05	7.97	3.26	0.140	0.031	0.045	0.000	2327.00	9942.58
0.004262	1.	1.	1.	2	0	0	0.00	96.95	10057.46

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.152

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2339.50 MAX ELLC= 2339.00

12.16	5.76	2333.26	0.00	0.00	2334.33	1.07	0.23	0.06	2327.50
3700.	36.	3554.	110.	32.	421.	32.	126.	42.	2327.50
0.37	1.10	9.45	3.41	0.140	0.031	0.045	0.000	2327.50	9943.22
0.005033	50.	50.	50.	2	0	0	0.00	95.65	10056.83

*SECNO 12.153

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

12.16	6.56	2334.06	0.00	0.00	2334.52	0.46	0.00	0.19	2339.00
3700.	0.	3700.	0.	0.	681.	1.	126.	42.	2339.00
0.37	0.00	5.43	0.00	0.140	0.031	0.045	0.000	2327.50	9941.67
0.001244	1.	1.	1.	2	0	0	0.00	116.71	10058.33

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PRORABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

Centerline = 2240

12.32	7.36	2341.76	2341.76	0.00	2343.80	2.04	2.31	0.79	2347.10
3700.	0.	3700.	3.	0.	323.	0.	135.	44.	2347.40
0.39	0.00	11.47	0.00	0.060	0.035	0.045	0.000	2334.70	2211.05
0.012002	750.	800.	750.	20	8	0	0.00	80.91	2251.96

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

Centerline = 2360

12.42	7.25	2347.95	0.00	0.00	2349.39	1.44	5.52	0.86	2350.60
3700.	0.	3700.	0.	0.	385.	0.	140.	45.	100000.00
0.41	0.00	9.62	0.00	0.060	0.040	0.045	0.000	2340.70	2330.16
0.008523	535.	560.	595.	2	0	0	0.00	80.10	2410.26

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.430

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

RAINBOW BOULEVARD
Normal Bridge Routine
ET cards used at bridge xsecs to confine Q25, Q50 and Q100 in LOB to Tropicana Ave grade, based on upstream width.
Centerline = 2200

12.43	5.71	2350.21	0.00	0.00	2351.21	1.60	2.34	0.98	2358.50
3700.	0.	3700.	0.	0.	364.	0.	142.	46.	2360.00
0.41	0.00	10.16	0.00	0.060	0.040	0.045	0.000	2343.50	2170.53
0.007648	280.	290.	300.	3	0	0	0.00	58.58	2229.11

1490 NH CARD USED
*SECNO 12.431

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	6.73	2350.23	0.00	0.00	2351.82	1.60	0.01	0.00	2358.50
3700.	0.	3700.	0.	0.	365.	0.	142.	45.	2360.30
0.41	0.00	10.14	0.00	0.060	0.040	0.045	0.000	2343.50	2168.28
0.012096	1.	1.	1.	1	0	0	0.00	60.83	2231.15

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	7.34	2351.34	0.00	0.00	2353.13	1.79	1.21	0.10	2359.00
3700.	0.	3700.	0.	0.	345.	0.	143.	45.	2360.50
0.42	0.00	10.74	0.00	0.060	0.045	0.045	0.000	2344.00	2167.66
0.015162	90.	90.	90.	3	0	0	0.00	54.04	2231.72

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	8.40	2352.40	0.00	0.00	2353.38	0.99	0.01	0.24	2359.00
3700.	0.	3700.	0.	0.	465.	0.	143.	45.	2360.50
0.42	0.00	7.97	0.00	0.060	0.040	0.045	0.000	2344.00	2169.41
0.003680	1.	1.	1.	3	0	0	0.00	60.73	2230.14

1490 NH CARD USED
*SECNO 12.550

3470 ENCROACHMENT STATIONS= 1710.0 2462.0 TYPE= 1 TARGET= 752.000
Centerline = 2310

12.55	7.31	2353.51	0.00	0.00	2354.52	1.01	1.13	0.21	2355.60
3700.	0.	3700.	0.	0.	459.	0.	146.	46.	2358.10
0.43	0.00	8.07	0.00	0.060	0.035	0.045	0.000	2346.20	2287.86
0.003608	310.	310.	310.	2	0	0	0.00	78.29	2366.15

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**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
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T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 1      50-YEAR FLOODPLAIN RUN

J1  ICHECK     INQ       NINV      IDIR       STRT      METRIC    HVINS     Q          WSEL      FQ
       0.        3.        0.        0.  0.000037      0.00      0.3       0.  2224.460     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS   BANK ELEV
   Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      WLOB      VCH       VROB      XAL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

*PROF 2

CCHV=   0.100  CEHV=   0.300
*SECNO 10.132

3265 DIVIDED FLOW

          ####  Starting Water Surface at 10.13 based on Reach 2 analysis  ####
          ####  Centerline =   2530
     10.13        7.26   2224.46   2224.45   2224.46   2225.40      0.84      0.00      0.00   2224.40
     7100.        2879.     4121.        0.       756.      429.        0.        0.        0.   2225.60
      0.00        3.81      9.62      0.00      0.062     0.040     0.045     0.000  2217.20   1801.35
 0.029668         350.      470.      500.         9         4         0      0.00    713.47   2585.79

CCHV=   0.100  CEHV=   0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC     10.31,  -5.133FT AND MULTIPLYING BY    0.803

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.01        7.81   2227.59   2227.58      0.00   2230.14      2.56      3.57      0.49   2230.77
     7000.        0.     7000.        0.        0.      545.        0.        6.        3.   2231.27
      0.01       0.00     12.83      0.00     0.045     0.040     0.045     0.000  2219.77   2056.56
 0.014297         307.      307.      307.         9         8         0      0.00    107.87   2164.42

1645 INT SEC ADDED BY RAISING SEC      1.01,   2.567FT AND MULTIPLYING BY    1.123
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3301 HV CHANGED MORE THAN HVINS

1.02	9.36	2231.70	0.00	0.00	2232.83	1.14	2.55	0.14	2233.33
7000.	0.	7000.	0.	0.	819.	0.	11.	4.	2233.83
0.02	0.00	8.55	0.00	0.045	0.040	0.045	0.000	2222.33	2095.82
0.005441	307.	307.	307.	3	0	0	0.00	145.12	2240.94

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.567FT AND MULTIPLYING BY 1.109

Centerline = 2300

10.31	8.53	2233.43	0.00	0.00	2234.68	1.25	1.91	0.03	2235.90
7000.	0.	7000.	0.	0.	780.	0.	17.	5.	2236.40
0.03	0.00	8.97	0.00	0.045	0.040	0.045	0.000	2224.90	2167.18
0.006450	307.	307.	307.	3	0	0	0.00	146.65	2313.83

CCHV= 0.300 CEHV= 0.500
*SECNO 10.330

1645 INT SEC ADDED BY RAISING SEC 10.33, -3.925FT AND MULTIPLYING BY 2.055

3301 HV CHANGED MORE THAN HVINS

1.01	6.75	2232.93	0.00	0.00	2235.66	2.73	2.24	0.74	2234.18
7000.	0.	7000.	0.	0.	528.	0.	17.	5.	2234.18
0.03	0.00	13.26	0.00	0.045	0.040	0.045	0.000	2226.18	3183.49
0.012336	28.	28.	28.	3	0	0	0.00	78.09	3261.57

2

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.275FT AND MULTIPLYING BY 0.825

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	7.11	2234.56	2234.56	0.00	2238.15	3.59	0.36	0.43	2235.45
7000.	0.	7000.	0.	0.	460.	0.	17.	5.	2235.45
0.03	0.00	15.21	0.00	0.045	0.040	0.045	0.000	2227.45	2905.65
0.015976	28.	28.	28.	20	8	0	0.00	64.73	2970.38

3

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.275FT AND MULTIPLYING BY 0.794

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	10.39	2239.12	2239.12	0.00	2240.75	1.63	0.24	0.59	2236.73
7000.	521.	5914.	565.	187.	534.	202.	18.	5.	2236.73
0.03	2.79	11.08	2.79	0.045	0.040	0.045	0.000	2228.73	2471.64
0.005632	28.	28.	28.	20	15	0	0.00	376.87	2848.51

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.275FT AND MULTIPLYING BY 0.740

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 2241.00 ELREA= 2241.00

DECATUR BOULEVARD
Special Bridge Routine
Centerline = 2370

10.33	10.25	2240.25	2240.25	0.00	2245.27	5.01	0.25	1.69	2238.00
7000.	0.	7000.	0.	0.	390.	0.	18.	5.	2238.00
0.03	0.00	17.97	0.00	0.045	0.040	0.045	0.000	2230.00	2350.00
0.016788	28.	28.	28.	20	8	0	0.00	38.00	2388.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2236.95 ,NOT 2240.25 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	COPAR	TOPWID	ENDST

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.00	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESS FLOW BECAUSE EGLWC OF 2254.24 EXCEEDS 1.5 DEPTH
5870 D.S. ENERGY OF 2245.27 HIGHER THAN COMPUTED ENERGY OF 2244.02

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2253.46	2254.24	0.00	3261.	3742.	294.	294.	2241.00	2242.00

10.34	14.46	2244.96	0.00	0.00	2245.27	0.31	0.00	0.00	2235.00
7000.	2255.	3313.	1432.	942.	549.	728.	21.	6.	2242.00
0.03	2.39	6.03	1.97	0.045	0.040	0.045	0.000	2230.50	1856.91

0.001195	95.	95.	95.	4	0	6	0.00	879.25	2736.06

*SECNO 10.490

Centerline = 2610

10.49	7.58	2245.53	0.00	0.00	2246.14	0.15	0.83	0.05	2261.90
7000.	0.	6970.	30.	0.	2204.	34.	59.	18.	2244.40
0.10	0.00	3.16	0.39	0.045	0.040	0.045	0.000	2238.40	2493.81
0.000997	650.	790.	710.	4	0	0	0.00	535.86	3029.67

CCHV= 0.100 CEHV= 0.300

*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -3.600FT AND MULTIPLYING BY 0.872

3301 HV CHANGED MORE THAN HVINS

1.01	3.09	2246.29	0.00	0.00	2247.27	0.98	0.89	0.25	2262.00
6667.	0.	6667.	0.	0.	838.	0.	72.	22.	2247.00
0.11	0.00	7.95	0.00	0.045	0.040	0.045	0.000	2243.20	1995.35
0.013473	370.	370.	387.	4	0	0	0.00	333.95	2329.29

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.800FT AND MULTIPLYING BY 1.074

1.00	3.14	2251.04	0.00	0.00	2251.34	0.30	4.55	0.02	2266.30
6333.	0.	6333.	0.	0.	883.	0.	80.	25.	2251.80
0.13	0.00	7.17	0.00	0.045	0.040	0.045	0.000	2249.00	2048.88
0.011227	370.	370.	397.	2	0	0	0.00	358.15	2407.03

1645 INT SEC ADDED BY RAISING SEC 1.02, 4.800FT AND MULTIPLYING BY 1.069

Centerline = 2150

10.70	2.75	2255.55	0.00	0.00	2256.36	0.81	4.51	0.00	2271.60
6000.	0.	6000.	0.	0.	831.	0.	67.	28.	2256.60
0.14	0.00	7.22	0.00	0.045	0.040	0.045	0.000	2252.80	2103.22
0.013349	370.	370.	387.	3	0	0	0.00	350.19	2493.41

*SECNO 10.967

3255 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1903.0 2847.0 TYPE= 1 TARGET= 940.000

Centerline = 2600

10.96	7.61	2270.61	2270.61	2269.56	2271.76	1.15	14.22	0.10	2270.60
6000.	483.	5517.	0.	170.	619.	0.	112.	40.	100000.00
0.19	2.83	8.93	0.00	0.045	0.033	0.130	0.000	2263.00	2426.22
0.008329	1430.	1365.	1280.	10	23	0	0.00	377.76	2806.79

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

Centerline = 2560

11.15	7.48	2276.88	0.00	2275.61	2278.90	2.02	6.98	0.26	2278.60
6000.	0.	6000.	0.	0.	526.	0.	129.	45.	2281.80
0.21	0.00	11.41	0.00	0.045	0.033	0.180	0.000	2269.40	2522.69
0.005643	1035.	1010.	985.	2	0	0	0.00	80.07	2602.74

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*SECNO 11.299

Centerline = 2460

11.29	6.96	2280.76	0.00	2279.30	2282.96	2.20	4.00	0.06	2288.60
6000.	0.	6000.	0.	0.	504.	0.	135.	46.	2288.10
0.23	0.00	11.91	0.00	0.045	0.033	0.190	0.000	2273.60	2428.27
0.005834	555.	545.	540.	3	0	0	0.00	83.87	2512.14

)

CCHV= 0.300 CEHV= 0.500

*SECNO 11.310

5301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.00

JONES BOULEVARD

Special Bridge Routine

Centerline = 2725

11.31	8.49	2289.49	2289.49	2286.20	2291.72	3.24	1.13	0.52	2280.00
6000.	397.	5395.	208.	66.	356.	100.	137.	47.	2281.00
0.23	6.32	15.14	2.09	0.045	0.031	0.140	0.000	2280.00	2688.44
0.005762	190.	180.	200.	20	17	0	0.00	83.44	2771.38

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2285.50 ,NOT 2286.49 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDSG	RDLEN	RWC	RWP	SAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.49	2280.00

*SECNO 11.320

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

EGPRS	EGLWC	K3	QWEIR	QPR	BAREA	TRAPEZOID	ELLC	ELTRD

2305.86	2301.13	0.00	2723.	3292.	224.	AREA 224.	2269.40	2291.40	

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

Centerline BT cards = 1590

11.32	11.88	2292.28	0.00	2291.52	2293.72	1.44	1.99	0.00	2280.40
6000.	530.	5140.	329.	129.	499.	234.	138.	47.	2280.40
0.23	4.10	10.30	1.41	0.045	0.031	0.140	0.000	2280.40	2682.22
0.001703	70.	70.	70.	3	0	6	0.00	116.83	2799.05

*SECNO 11.450

3301 HV CHANGED MORE THAN HVIAS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2370

11.45	6.49	2295.39	2295.39	2293.70	2293.18	2.79	2.30	0.68	2303.20
6000.	0.	6000.	0.	0.	447.	0.	148.	48.	2301.60
0.25	0.00	13.42	0.00	0.140	0.035	0.160	0.000	2288.90	2324.11
0.010771	575.	660.	655.	20	11	0	0.00	80.96	2404.98

CCHV= 0.100 CEHV= 0.300
*SECNO 11.540

3301 HV CHANGED MORE THAN HVIAS

Centerline = 2330

11.64	7.23	2304.68	0.00	2302.98	2306.77	2.19	5.52	0.97	2310.40
6000.	0.	6000.	0.	0.	517.	0.	159.	50.	2305.10
0.27	0.00	11.61	0.00	0.140	0.035	0.150	0.000	2297.40	2289.16
0.006906	1000.	1000.	1000.	3	0	0	0.00	82.02	2371.18

*SECNO 11.780

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVIAS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2360

11.79	7.53	2313.53	2313.53	2311.77	2316.37	2.84	6.89	0.23	2315.20
6000.	0.	6000.	0.	0.	443.	0.	168.	52.	2316.90
0.29	0.00	13.53	0.00	0.140	0.035	0.150	0.000	2306.00	2312.70
0.010725	810.	810.	810.	3	3	0	0.00	79.24	2391.94

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVIAS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

11.82	8.60	2318.60	2318.60	2316.23	2322.87	4.27	2.08	0.71	2318.00
6000.	3.	5997.	3.	4.	362.	0.	170.	52.	2318.00
0.29	0.62	16.59	0.00	0.140	0.040	0.160	0.000	2310.00	3274.28
0.017191	120.	155.	160.	20	8	0	0.00	57.22	3331.50

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2315.50 ,NOT 2318.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SS	XK	XKOR	COEG	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.84

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

6270 D.S. ENERGY OF 2322.87 HIGHER THAN COMPUTED ENERGY OF 2322.56
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QBR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2335.31	2332.76	0.00	3089.	2921.	224.	224.	2319.50	2320.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.44	8.82	2320.32	2320.04	2319.47	2324.38	4.06	1.24	-1.24	2319.50
6000.	3.	5997.	3.	4.	371.	0.	170.	52.	2319.50
0.29	0.73	16.13	0.00	0.140	0.040	0.150	0.000	2311.50	3280.11
0.015817	75.	75.	75.	20	5	0	0.00	51.39	3331.50

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

Centerline = 10000,

11.87	10.24	2325.28	0.00	2321.30	2326.18	0.90	0.95	0.95	2325.50
6000.	3.	5999.	3.	2.	787.	3.	173.	52.	2325.50
0.35	0.00	7.62	0.00	0.140	0.035	0.045	0.000	2315.00	2291.12
0.002652	300.	160.	72.	3	0	0	0.00	117.77	2398.88

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2220

11.97	6.25	2327.15	2327.15	2325.73	2329.76	2.61	3.06	0.51	2330.90
6000.	3.	5999.	3.	2.	453.	3.	182.	54.	2332.90

0.31	0.00	12.97	0.00	0.140	0.035	0.045	0.000	2326.98	2164.68
0.010864	470.	645.	650.	4	14	0	0.00	99.82	2254.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.10	6.50	2332.50	0.00	2330.93	2334.81	2.32	5.02	0.03	2335.30
6000.	0.	6000.	0.	0.	491.	0.	188.	55.	2337.50
0.32	0.00	12.21	0.00	0.140	0.031	0.045	0.000	2326.00	2271.23
0.007357	485.	580.	565.	2	0	0	0.00	90.20	2361.43

CCHV= 0.300 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.50 ELREA= 2338.50

TROPICANA AVENUE
Normal Bridge Routine
Centerline = 10000

12.15	8.43	2335.43	0.00	2333.31	2336.11	0.68	0.81	0.49	2339.50
6000.	0.	6000.	0.	0.	907.	0.	193.	56.	2339.50
0.34	0.00	6.62	0.00	0.140	0.031	0.045	0.000	2327.00	9938.01
0.001402	280.	300.	300.	3	0	0	0.00	124.01	10062.02

*SECNO 12.151

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NBD= 14 MIN ELTRD= 2338.50 MAX ELLO= 2339.50

12.15	9.10	2335.10	0.00	2333.09	2336.44	1.34	0.00	0.33	2327.00
6000.	86.	6946.	267.	64.	592.	64.	193.	56.	2327.00
0.34	1.35	9.54	4.19	0.140	0.031	0.045	0.000	2327.00	9938.65
0.004797	1.	1.	1.	2	0	0	0.00	104.93	10061.35

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.160

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	7.79	2335.29	0.00	2333.26	2336.76	1.46	0.25	0.06	2327.50
6000.	83.	5662.	255.	59.	569.	59.	194.	56.	2327.50
0.34	1.39	9.94	4.31	0.140	0.031	0.045	0.000	2327.50	9939.25
0.005370	50.	50.	50.	2	0	0	0.00	103.71	10060.79

*SECNO 12.160

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

12.16	8.92	2336.42	0.00	2334.06	2337.02	0.60	0.00	0.26	2339.00
6000.	0.	6000.	0.	0.	368.	0.	194.	56.	2339.00
0.34	0.00	6.20	0.00	0.140	0.031	0.045	0.000	2327.50	9937.05
0.001153	1.	1.	1.	3	0	0	0.00	125.92	10062.57

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

Centerline = 2240

12.32	8.73	2343.43	2343.43	2341.76	2346.01	2.58	2.10	0.99	2347.10
6000.	0.	6000.	1.	0.	465.	0.	207.	58.	2347.40
0.36	0.00	12.89	0.00	0.060	0.035	0.045	0.000	2334.70	2207.30
0.010841	750.	800.	750.	20	8	0	0.00	90.68	2297.97

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROR	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROR	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLORR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1493 NH CARD USED
*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

Centerline = 2360

12.42	8.83	2349.63	0.00	2347.95	2351.62	1.99	5.56	0.06	2350.60
6000.	0.	6000.	0.	0.	530.	0.	213.	59.	100000.00
0.37	0.00	11.33	0.00	0.060	0.040	0.045	0.000	2340.70	2323.73
0.009405	535.	550.	595.	2	0	0	0.00	92.60	2416.33

CCHV= 0.300 CEHV= 0.500

1490 NH CARD USED
*SECNO 12.490

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

```
        ##########################################################################
        ####                    RAINBOW BOULEVARD                             ####
        ####                 Normal Bridge Routine                            ####
        #### ET cards used at bridge xsecs to confine Q25, Q50 and Q100       ####
        #### in LOB to  Tropicana Ave grade, based on upstream width.         ####
        ##########################################################################
        ####          Centerline = 2200          ####
```

12.49	8.56	2352.06	0.00	2350.21	2354.54	2.48	2.68	0.24	2358.50
6000.	0.	6000.	0.	0.	475.	0.	217.	60.	2360.00
0.38	0.00	12.63	0.00	0.060	0.040	0.045	0.000	2343.50	2169.29
0.009052	290.	290.	300.	2	0	0	0.00	60.99	2230.24

1490 NH CARD USED
*SECNO 12.491

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2359.50

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	8.93	2352.43	0.00	2350.23	2354.63	2.20	0.01	0.09	2358.50
6000.	0.	6000.	0.	0.	504.	0.	217.	60.	2360.00
0.38	0.00	11.91	0.00	0.060	0.040	0.045	0.000	2343.50	2166.07
0.013206	1.	1.	1.	3	0	0	0.00	65.11	2233.17

1490 NH CARD USED
*SECNO 12.492

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2359.50

3685 20 TRIALS ATTEMPTED WSEL,CWSE=
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	8.93	2352.93	2352.19	2351.34	2355.92	2.98	1.52	0.39	2359.50
6000.	0.	6000.	0.	0.	433.	0.	217.	60.	2360.50
0.38	0.00	13.96	0.00	0.140	0.045	0.045	0.000	2344.00	2166.07

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.491

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=			1300.0	2730.0	TYPE= 1	TARGET=	1430.000		
12.49	11.79	2356.79	0.00	2352.40	2356.58	0.79	0.81	0.66	2359.00
5000.	303.	5197.	0.	977.	678.	0.	218.	66.	2360.50
0.39	0.82	7.66	0.00	0.140	0.040	0.045	0.000	2344.00	1352.83
0.002390	1.	1.	1.	6	0	0	0.00	599.73	2232.21

1490 NH CARD USED

*SECNO 12.550

3470 ENCROACHMENT STATIONS=			1710.0	2462.0	TYPE= 1	TARGET=	752.000		
#### Centerline = 2310									
12.55	10.21	2356.41	0.00	2353.51	2357.54	1.13	0.79	0.17	2355.60
5000.	6.	5994.	0.	21.	702.	0.	226.	62.	2358.10
0.38	0.30	8.54	0.00	0.140	0.035	0.045	0.000	2346.20	2231.09
0.002742	310.	310.	310.	3	0	0	0.00	140.64	2371.73

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 21,22,23,24,25
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 James M. Montgomery Consulting Engineers, Inc.
T3 Flamingo Wash Reach 1 100-YEAR FLOODPLAIN RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.000000	0.00	0.3	0.	2225.161	0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV

Q	WLOB	WCH	WROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COBAR	TOPWID	ENDST	

*PROF 3

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
Starting Water Surface at 10.13 based on Reach 2 analysis
Centerline = 2530

10.13	7.96	2225.16	2225.10	2225.16	2226.16	1.00	0.00	0.00	2224.40
10500.	5253.	5247.	0.	1257.	496.	0.	0.	0.	2225.60
0.00	4.15	10.57	0.00	0.060	0.040	0.045	0.000	2217.20	1712.11
0.009717	350.	470.	500.	0	4	0	0.00	874.42	2586.53

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.782

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	9.76	2226.88	2226.88	0.00	2231.34	2.96	2.64	0.59	2230.13
10500.	0.	10500.	0.	0.	751.	0.	7.	3.	2230.63
0.00	0.00	13.80	0.00	0.045	0.040	0.045	0.000	2219.13	2020.11
0.013775	230.	230.	230.	23	11	0	0.00	131.22	2151.33

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.093

3301 HV CHANGED MORE THAN HVINS

1.02	11.40	2232.45	0.00	0.00	2233.90	1.45	1.91	0.15	2232.05
10500.	1.	10499.	0.	1.	1086.	0.	12.	3.	2232.55
0.01	0.84	9.67	0.00	0.045	0.040	0.045	0.000	2221.05	2039.51
0.005558	230.	230.	230.	4	0	0	0.00	169.14	2208.65

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COBAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.925FT AND MULTIPLYING BY 1.085

1.03	10.80	2233.78	0.00	0.00	2235.26	1.49	1.35	0.01	2233.98
10500.	0.	10500.	0.	0.	1073.	0.	17.	4.	2234.48
0.02	0.00	9.78	0.00	0.045	0.040	0.045	0.000	2222.98	2090.56
0.006224	230.	230.	230.	3	0	0	0.00	172.21	2262.77

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.925FT AND MULTIPLYING BY 1.078

Centerline = 2300

10.31	10.34	2235.24	0.00	0.00	2236.72	1.48	1.46	0.00	2235.90
10500.	0.	10500.	0.	0.	1075.	0.	23.	5.	2236.40
0.02	0.00	9.77	0.00	0.045	0.040	0.045	0.000	2224.90	2139.10

```
 0.006444      230.      230.      230.         2         0         0      0.00    177.99   2316.99
]
 CCHV=   0.300  CEHV=   0.500
 *SECNO 10.332
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##################################################################
      ####                    DECATUR BOULEVARD                     ####
      ####                 Special Bridge Routine                   ####
      ##################################################################
      ####  Centerline = 2370
   10.33     12.52   2242.52   2242.52      0.00   2244.00      1.48      0.69      0.00   2238.00
  10500.      2204.      5907.      2389.      495.       476.      536.       26.         6.   2238.00
    0.03       4.45      12.41       4.45     0.045     0.340     0.045     0.000   2230.00   2131.32
 0.006130       110.       110.       110.        20        19         0      0.00    493.76   2625.08
]

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS    2239.11 .NOT    2242.52 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COBAR     TOPWID       ENDST

 SB  XK          XKOR        CQFG        RQLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.50        2.80        0.00       37.40        9.40      294.00       0.00     2230.50     2230.00

 *SECNO 10.340

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       HF        QWEIR       QPR         BAREA     TRAPEZOID AREA      ELLC        ELTRD
    2272.23     2256.51        0.00        7542.       3035.       294.        294.      2241.00     2242.00


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
    10.34     13.92   2244.42   2244.33      0.00   2245.54      1.13      0.47     -0.47   2235.00
  10500.      3039.      5772.      1719.      691.       529.      547.       30.         8.   2242.00
    0.03       4.36      10.81       3.14     0.045     0.040     0.045     0.000   2230.50   1909.25
 0.004118         95.        95.        95.        25         9         0      0.00    803.14   2712.39
]
 *SECNO 10.490

 1545 INT SEC ADDED BY RAISING SEC      10.49,  -5.925FT AND MULTIPLYING BY    0.324

 3301 HV CHANGED MORE THAN HVINS

      1.01     13.11   2245.58        0.00        0.00   2246.14        0.56        0.43        0.17   2255.98
  10500.          0.      9834.       665.          0.     1604.       186.         37.         10.   2238.48
    0.04        0.00       6.13       3.59     0.045     0.040     0.045     0.000   2232.48   2130.50
 0.001422        163.       198.       173.         2         0         0      0.00    202.15   2333.05
]
```

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.695

1.02	11.71	2246.16	0.00	0.00	2246.43	0.28	0.20	0.09	2257.95
10500.	0.	10006.	494.	0.	2336.	223.	47.	11.	2240.45
0.05	0.00	4.28	2.22	0.045	0.040	0.045	0.000	2234.45	2250.60
0.000798	163.	198.	178.	2	0	0	0.00	337.22	2587.82

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.410

1.03	9.95	2246.38	0.00	0.00	2246.61	0.23	0.17	0.01	2259.93
10500.	0.	10246.	254.	0.	2615.	163.	59.	13.	2242.43
0.07	0.00	3.92	1.56	0.045	0.040	0.045	0.000	2236.43	2371.38
0.000884	163.	198.	178.	3	0	0	0.00	465.83	2637.21

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.291

Centerline = 2610

10.49	8.18	2246.58	0.00	0.00	2246.85	0.27	0.22	0.02	2261.90
10500.	0.	10414.	86.	0.	2498.	64.	71.	15.	2244.40
0.08	0.00	4.17	1.34	0.045	0.040	0.045	0.000	2238.40	2493.11
0.001472	163.	198.	178.	2	0	0	0.00	552.56	3045.67

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.800FT AND MULTIPLYING BY 0.881

3301 HV CHANGED MORE THAN HVINS

1.01	4.35	2246.95	0.00	0.00	2247.65	0.70	0.67	0.13	2260.80
10225.	0.	10047.	178.	0.	1484.	74.	94.	15.	2245.80
0.09	0.00	6.77	2.39	0.045	0.040	0.045	0.000	2242.00	1997.69
0.004793	278.	278.	291.	3	0	0	0.00	418.92	2416.51

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.045

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	3.48	2249.08	2249.08	0.00	2250.55	1.47	2.24	0.23	2264.40
9950.	0.	9950.	0.	0.	1023.	53.	20.	2.	2249.40
0.10	0.00	9.72	0.00	0.045	0.040	0.045	0.000	2245.60	2034.84
0.016798	278.	278.	291.	4	19	0	0.00	355.72	2390.55

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.043

3301 HV CHANGED MORE THAN HVINS

1.03	3.87	2253.07	0.00	0.00	2254.06	0.98	3.46	0.05	2268.00
9675.	0.	9672.	3.	0.	1216.	5.	100.	23.	2253.00
0.11	0.00	7.35	0.61	0.045	0.040	0.045	0.000	2249.20	2066.64
0.009541	278.	279.	290.	2	0	0	0.00	436.66	2503.30

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.041

Centerline = 2150

10.70	3.36	2256.15	0.00	0.00	2257.38	1.22	3.25	0.07	2271.60
9400.	0.	9400.	3.	0.	1060.	0.	107.	26.	2256.60
0.12	0.00	8.86	0.00	0.045	0.040	0.045	0.000	2252.80	2101.31
0.014809	278.	278.	290.	2	0	0	0.00	385.30	2486.60

*SECNO 10.960
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1900.0 2840.0 TYPE= 1 TARGET= 940.000

Centerline = 2580

10.95	8.45	2271.45	2271.45	2269.56	2272.86	1.41	15.01	0.06	2270.60
9400.	1430.	7570.	1.	331.	793.	1.	141.	38.	100000.00
0.16	4.32	10.19	0.00	0.045	0.033	0.180	0.000	2263.00	2417.06
0.008432	1430.	1365.	1280.	10	17	0	0.00	396.78	2813.84

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

Centerline = 2560

11.15	8.86	2278.25	0.00	2275.61	2291.63	3.37	9.18	0.59	2278.60
9400.	0.	9400.	0.	0.	638.	0.	162.	44.	2281.80
0.18	0.00	14.72	0.00	0.045	0.033	0.180	0.000	2269.40	2521.33
0.007795	1035.	1010.	985.	2	0	0	0.00	93.04	2604.37

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.280

3301 HV CHANGED MORE THAN HVINS

Centerline = 2460

11.28	9.44	2283.34	0.00	2278.80	2285.91	2.57	4.20	0.08	2288.60
9400.	0.	9400.	0.	0.	731.	0.	172.	45.	2289.10
0.19	0.00	12.86	0.00	0.045	0.033	0.140	0.000	2273.90	2424.22
0.005549	655.	645.	640.	2	0	0	0.00	91.75	2515.97

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2101.0 3870.0 TYPE= 1 TARGET= 1770.000

JONES BOULEVARD
Special Bridge Routine
Centerline = 2725

11.31	10.83	2290.83	2290.33	2286.20	2295.26	4.44	1.03	0.93	2280.00
9400.	759.	8177.	455.	107.	455.	182.	175.	45.	2280.00
0.20	7.15	17.98	2.49	0.045	0.031	0.140	0.000	2280.00	2684.15
0.005871	180.	180.	200.	20	8	0	0.00	106.48	2790.63

3

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2287.42 ,YOT 2290.83 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
5870 D.S. ENERGY OF 2295.26 HIGHER THAN COMPUTED ENERGY OF 2294.74
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENCST

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	FB	QWEIR	OPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2333.49	2303.42	0.00	5556.	2849.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 2101.0 3870.0 TYPE= 1 TARGET= 1770.000
Centerline BT cards = 1590

11.32	11.20	2291.60	2291.44	2291.52	2295.68	4.08	2.39	-0.39	2280.40
9400.	791.	8133.	476.	115.	471.	200.	176.	45.	2280.40
0.21	6.98	17.28	2.39	0.045	0.031	0.140	0.000	2280.40	2683.46
0.005183	70.	70.	70.	20	15	0	0.00	110.18	2793.63

3
*SECNO 11.450
3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2370

11.45	8.58	2297.48	2297.48	2293.70	2300.99	3.51	4.64	0.17	2303.20
9400.	0.	9400.	0.	0.	625.	0.	197.	47.	2301.60
0.21	0.00	15.04	0.00	0.140	0.035	0.150	0.000	2288.90	2320.60
0.010369	675.	660.	655.	5	15	0	0.00	89.87	2410.47

3
CCHV= 0.100 CEHV= 0.300
*SECNO 11.640

3301 HV CHANGED MORE THAN HVIAS

####	Centerline =	2330							
11.64	9.18	2306.59	0.10	2302.98	2309.57	2.99	8.53	0.25	2310.40
9400.	0.	9392.	8.	0.	676.	12.	202.	45.	2305.10
0.23	0.00	13.89	0.55	0.140	0.035	0.160	0.000	2297.40	2287.11
0.007315	1000.	1000.	1000.	2	0	0	0.00	101.38	2388.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.790

3301 HV CHANGED MORE THAN HVIAS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	Centerline =	2360							
11.79	9.64	2315.64	2315.64	2311.77	2319.21	3.56	6.89	0.17	2319.20
9400.	0.	9400.	0.	0.	620.	0.	214.	51.	2316.90
0.24	0.00	15.15	0.00	0.140	0.035	0.160	0.000	2306.00	2308.13
0.010006	810.	810.	810.	3	3	0	0.00	88.24	2396.37

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVIAS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
####	TORREY PINES DRIVE								####
####	Special Bridge Routine								####
#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
11.82	12.78	2322.78	2322.78	2316.23	2323.96	1.08	0.92	0.75	2319.00
9400.	2774.	5736.	890.	2554.	539.	879.	221.	54.	2318.00
0.25	1.09	10.54	1.01	0.140	0.040	0.150	0.000	2310.00	1923.13
0.004154	120.	155.	160.	2	16	0	0.00	1999.61	3822.64

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2317.42 ,YOT 2322.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840
PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	F3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2363.79	2335.67	0.00	7784.	1618.	224.	224.	2319.00	2320.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

11.84	14.02	2325.52	2325.52	2319.47	2325.59	1.07	0.28	-0.28	2319.50
9400.	3065.	6085.	253.	3495.	592.	206.	228.	58.	2319.50
0.25	0.88	10.28	1.22	0.140	0.040	0.160	0.000	2311.50	1072.29
0.003424	75.	75.	75.	20	9	0	0.00	2338.07	3410.36

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

Centerline = 10000.

11.87	10.87	2325.87	0.00	2321.30	2327.73	1.86	0.75	0.40	2325.50
9400.	1.	9398.	1.	4.	658.	2.	243.	66.	2325.50
0.26	0.24	10.96	0.75	0.140	0.035	0.045	0.000	2315.00	2259.00
0.005013	300.	160.	70.	4	0	0	0.00	150.13	2409.13

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

3301 HV CHANGED MORE THAN HVINS

Centerline = 2220

11.99	8.38	2329.28	0.00	2325.78	2332.39	3.11	4.29	0.37	2330.30
9400.	0.	9400.	0.	0.	664.	0.	255.	68.	2332.90
0.27	0.00	14.15	0.00	0.140	0.035	0.045	0.000	2320.90	2158.45
0.009249	470.	645.	551.	3	0	0	0.00	99.56	2258.00

*SECNO 12.100
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.10	9.12	2334.12	2334.12	2330.83	2337.43	3.31	4.94	0.96	2335.30
9400.	0.	9400.	0.	0.	643.	0.	263.	69.	2337.50
0.23	0.00	14.61	0.00	0.140	0.031	0.045	0.000	2326.00	2267.04
0.007862	485.	590.	565.	2	8	0	0.00	97.49	2364.53

CCHV= 0.300 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

TROPICANA AVENUE
Normal Bridge Routine
Centerline = 10000

12.15	11.08	2333.09	0.00	2333.31	2338.96	0.88	0.80	0.73	2338.50
9400.	0.	9400.	0.	0.	1246.	0.	270.	70.	2339.50
0.29	0.00	7.53	0.00	0.140	0.031	0.045	0.000	2327.00	9932.92
0.001329	280.	300.	300.	3	0	0	0.00	134.36	10067.19

*SECNO 12.151

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 *SECNO 12.151
 3301 HV CHANGED MORE THAN HVINS

 3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.50

     12.15     10.59   2337.59      0.00   2333.09   2339.47      1.98      0.00      0.50   2327.00
     9400.       191.      8618.      591.      107.      755.      107.      270.       70.   2327.00
       0.28      1.78     11.40      5.64      0.140     0.931     0.045     0.000  2327.00   9933.79
  0.008135         1.        1.        1.         3         0         0    -33.66    132.44  10066.22
)
 *SECNO 12.152
 3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

     12.16     10.49   2337.99      0.00   2333.26   2339.69      1.90      0.41      0.01   2327.50
     9400.       194.      8606.      601.      106.      752.      105.      271.       70.   2327.50
       0.29      1.83     11.45      5.69      0.140     0.931     0.045     0.000  2327.50   9933.98
  0.008251        50.       50.       50.         2         0         0    -27.32    132.05  10066.03
)
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROP       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST

 *SECNO 12.160
 3301 HV CHANGED MORE THAN HVINS

     12.16     12.12   2339.52      0.10   2334.06   2340.24      0.72      0.00      0.35   2339.00
     9400.         7.      9380.      13.       51.     1377.       32.      271.       70.   2339.00
       0.29      0.13      6.81      0.42      0.140     0.931     0.045     0.000  2327.50   9736.89
  0.000973         1.        1.        1.         3         0         0      0.00    453.31  10190.20
)
 *SECNO 12.320
 3695 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     1530.0     2756.0  TYPE=      1  TARGET=     1226.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      2347.10 ELREA=      2347.40

          #### Centerline =  2240
     12.32     12.45   2347.15   2347.15   2341.76   2347.90      0.75      1.21      0.02   2347.10
     9400.      2593.      6807.         1.      1095.       946.         0.       302.       31.   2347.40
       0.33      2.37      6.25      0.00      0.060     0.035     0.045     0.000  2334.71   1530.00
  0.002713       750.      800.      750.        20        10         0      0.00    786.69   2316.69
)
 CCHV=    0.100 CEHV=    0.300
 1490 NH CARD USED
 *SECNO 12.420
 3695 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     1600.0     2477.0  TYPE=      1  TARGET=      877.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      2350.60 ELREA=    100000.00

          #### Centerline =  2360
     12.42     10.39   2350.79   2350.79   2347.95   2351.42      0.63      1.83      0.01   2350.60
```

9400.	4145.	5255.	0.	1500.	642.	1.	327.	81.	100000.00
0.35	2.76	8.19	0.00	0.060	0.040	0.045	0.000	2340.70	1600.00
0.004247	535.	560.	595.	20	16	0	0.00	820.52	2420.52

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.480

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVTAS

3625 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

```
##########################################################################
####                    RAINBOW BOULEVARD                             ####
####                  Normal Bridge Routine                           ####
#### ET cards used at bridge xsecs to confine Q25, Q50 and Q100       ####
#### in LOB to  Tropicana Ave grade, based on upstream width.         ####
##########################################################################
####          Centerline = 2200          ####
```

12.48	9.53	2353.03	2353.03	2350.21	2354.45	1.42	1.52	0.39	2358.50
9400.	3165.	6234.	1.	1689.	535.	1.	341.	95.	2360.00
0.35	1.97	11.66	0.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.006883	280.	290.	300.	20	12	0	0.00	641.68	2230.83

1490 NH CARD USED
*SECNO 12.471

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVTAS

3370 NORMAL BRIDGE,NPD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

12.48	10.71	2354.21	0.00	2350.23	2354.73	0.52	0.01	0.27	2358.50
9400.	4533.	4867.	1.	2402.	623.	1.	341.	95.	2360.00
0.35	1.39	7.91	0.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.004932	1.	1.	1.	E	2	0	0.00	706.96	2234.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000
12.49 10.80 2354.80 0.30 2351.34 2355.24 0.44 0.49 0.02 2359.00
9400. 5241. 4159. 3. 2462. 543. 0. 347. 97. 2360.50
0.37 2.13 7.66 0.00 0.140 0.045 0.045 0.000 2344.00 1300.00
0.006147 90. 90. 90. 2 0 0 0.00 703.79 2234.88
)
1490 NH CARD USED
*SECNO 12.491

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000
12.49 11.32 2355.32 2355.32 2352.40 2357.69 2.38 0.01 0.97 2359.00
9400. 950. 8450. 3. 739. 648. 0. 347. 97. 2360.50
0.37 1.29 13.05 0.00 0.140 0.040 0.045 0.000 2344.00 1367.87
0.007191 1. 1. 1. 20 8 0 0.00 543.50 2231.93
)
1490 NH CARD USED
*SECNO 12.550

3470 ENCROACHMENT STATIONS= 1711.0 2462.0 TYPE= 1 TARGET= 752.000
Centerline = 2310
12.55 11.17 2357.37 2355.42 2353.51 2359.53 2.16 1.77 0.06 2355.60
9400. 67. 9333. 3. 190. 788. 0. 355. 100. 2358.10
0.39 0.67 11.85 0.00 0.140 0.035 0.045 0.000 2346.20 2169.29
0.004654 310. 310. 310. 4 15 0 0.00 204.29 2373.58
)
1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 James M. Montgomery Consulting Engineers, Inc.
T3 Flamingo Wash Reach 1 500-YEAR FLOODPLAIN RUN

J1 ICHECK INQ NINV IDIR STRT METRIC HVINS Q WSEL FQ
0. 5. 3. 0. 0.000000 0.00 0.3 0. 2227.590 0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE
15.000 0.000 -1.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
Starting Water Surface at 10.13 based on Reach 2 analysis
Centerline = 2530

10.13	10.39	2227.58	0.00	2227.58	2229.21	1.63	0.00	0.00	2224.40
35000.	23452.	11223.	325.	3521.	733.	59.	0.	0.	2225.60
0.00	6.66	15.30	5.55	0.060	0.040	0.045	0.000	2217.28	1403.54
0.012199	350.	470.	500.	0	0	0	0.00	1215.68	2619.22

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.759

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSE
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	17.61	2236.74	2236.74	0.00	2240.08	3.35	1.95	0.52	2230.13
35000.	1969.	29362.	3668.	334.	1860.	556.	19.	4.	2230.63
0.00	5.89	15.79	6.59	0.045	0.040	0.045	0.000	2219.13	1889.21
0.006235	230.	230.	230.	20	14	0	0.00	453.81	2343.32

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.106

3301 HV CHANGED MORE THAN HVINS

1.02	17.70	2238.75	0.00	0.00	2241.42	2.67	1.27	0.07	2232.05
35000.	2020.	29235.	3745.	380.	2071.	635.	34.	7.	2232.55
0.01	5.31	14.11	5.38	0.045	0.040	0.045	0.000	2221.05	1921.79
0.004899	230.	230.	230.	2	0	0	0.00	505.66	2427.45

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.925FT AND MULTIPLYING BY 1.056

3265 DIVIDED FLOW

1.03	16.85	2239.42	0.00	0.00	2242.67	2.84	1.19	0.05	2233.98
35000.	1537.	30410.	3002.	317.	2121.	498.	50.	10.	2234.48
0.01	5.31	14.34	6.03	0.045	0.040	0.045	0.000	2222.98	1974.85

```
 0.000559      230.      230.      230.         4         0         0      0.00    472.94   2486.27
)

 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.925FT AND MULTIPLYING BY   1.097

          ####  Centerline =  2300
     10.31     16.21   2241.11      0.00      0.00   2243.98      2.87      1.31      0.01   2235.90
    35000.     1299.     31171.    2530.     272.      2182.      435.       65.       12.    2236.40
      0.32      4.77      14.28      5.81    0.045     0.040     0.045     0.000   2224.90   2024.24
 0.000855       230.      230.      230.         3         0         0      0.00    433.36   2457.59
)
 CCHV=   0.300 CEHV=   0.500
 *SECNO 10.330

 1645 INT SEC ADDED BY RAISING SEC     10.33,  -3.825FT AND MULTIPLYING BY   2.907

 3280 CROSS SECTION      1.01 EXTENDED      0.60 FEET

 3301 HV CHANGED MORE THAN HVINS

      1.01     18.61   2244.78      0.00      0.00   2244.34      0.06      0.01      0.84   2234.18
    35000.     15379.     6621.    13001.    10837.     2055.     8159.      73.       13.    2234.18
      0.02      1.42      3.22      1.59    0.045     0.040     0.045     0.000   2226.18   1560.00
 0.000183       28.       28.       28.         3         0         0      0.00   3808.51   5369.51
)

 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.275FT AND MULTIPLYING BY   0.781

      1.02     17.26   2244.73      0.00      0.00   2244.91      0.17      0.01      0.06   2235.45
    35000.     14116.     6040.    12844.     6161.     1492.     4959.      84.       15.    2235.45
      0.03      2.29      5.39      2.53    0.045     0.040     0.045     0.000   2227.45   1717.67
 0.000599       28.       28.       28.         2         0         0      0.00   2746.85   4464.52
)
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCP      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XAL       XNCH      XNP       WTN       SLMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAP     TOPWID     ENDST


 1645 INT SEC ADDED BY RAISING SEC      1.02,   1.275FT AND MULTIPLYING BY   0.720

 3301 HV CHANGED MORE THAN HVINS

      1.03     15.75   2244.48      0.00      0.00   2245.22      0.75      0.03      0.29   2236.72
    35000.     12255.    10326.    12410.     2816.      979.     2525.      80.       17.    2236.72
      0.03      4.36     10.54      4.92    0.045     0.040     0.045     0.000   2228.72   1918.19
 0.002763       28.       28.       28.         3         0         0      0.00   1623.01   3541.20
)

 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.275FT AND MULTIPLYING BY   0.611

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##########################################################################
      ####                    DECATUR BOULEVARD                             ####
      ####                 Special Bridge Routine                           ####
      ##########################################################################
```

Centerline = 2570

10.33	15.75	2245.75	2245.75	0.00	2247.58	1.83	0.12	0.54	2238.00
35000.	12546.	9754.	12700.	1718.	598.	1541.	93.	19.	2239.00
0.03	7.30	16.30	8.24	0.045	0.040	0.045	0.000	2230.00	1779.59
0.007791	28.	28.	23.	20	5	0	0.00	991.31	2770.90

SPECIAL BRIDGE

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHL	ELCHD
	1.25	1.50	2.83	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	FR	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2575.85	2250.16	2.58	32019.	2988.	294.	294.	2241.00	2242.00

3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

10.34	16.51	2247.01	2247.01	0.00	2248.60	1.59	0.69	-0.69	2235.00
35000.	14855.	9842.	10303.	2162.	627.	1536.	102.	20.	2242.00
0.03	6.87	16.69	6.71	0.045	0.040	0.045	0.000	2230.50	1656.33
0.006773	95.	95.	95.	20	9	0	0.00	1170.19	2926.53

*SECNO 10.490

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.267FT AND MULTIPLYING BY 0.396

3301 HV CHANGED MORE THAN HVINS

1.01	14.79	2247.93	0.33	0.00	2250.85	2.92	1.58	0.67	2256.63
35000.	0.	32263.	2737.	0.	2294.	313.	121.	24.	2239.13
0.34	0.00	14.06	8.76	0.045	0.040	0.045	0.000	2233.13	2168.12
0.005989	217.	263.	237.	3	0	0	0.00	251.91	2419.63

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.633FT AND MULTIPLYING BY 1.762

3301 HV CHANGED MORE THAN HVINS

1.02	15.59	2251.35	0.33	0.00	2252.17	0.81	0.68	0.63	2259.27
35000.	0.	32955.	2305.	0.	4322.	627.	143.	26.	2241.77
0.35	0.00	7.43	4.63	0.045	0.040	0.045	0.000	2235.77	2326.84
0.001459	217.	263.	237.	2	0	0	0.00	447.64	2773.69

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.633FT AND MULTIPLYING BY 1.432

Centerline = 2610

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
10.49	13.61	2252.01	0.00	0.00	2252.59	0.59	0.36	0.07	2261.90
35000.	0.	32693.	2307.	0.	5195.	634.	176.	23.	2244.40
0.06	0.00	6.29	3.54	0.045	0.040	0.045	0.000	2238.48	2486.69
0.001291	217.	263.	237.	3	0	0	0.00	627.16	3113.86

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.800FT AND MULTIPLYING BY 0.999

3301 HV CHANGED MORE THAN HVINS

1.01	10.25	2252.25	0.00	0.00	2253.17	0.93	0.48	0.10	2260.80
34750.	0.	30599.	4151.	0.	3804.	856.	209.	33.	2245.80
0.07	0.00	8.04	4.35	0.045	0.040	0.045	0.000	2242.00	2078.35
0.002413	278.	278.	293.	2	0	0	0.00	588.87	2667.24

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	6.90	2252.50	2252.60	0.00	2255.14	2.63	1.26	0.51	2264.40
34500.	0.	32640.	1860.	0.	2455.	280.	233.	36.	2249.40
0.07	0.00	13.29	6.54	0.045	0.040	0.045	0.000	2245.60	2089.33
0.011395	278.	278.	293.	5	14	0	0.00	547.05	2653.78

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	6.86	2256.07	2256.17	0.00	2258.70	2.63	3.18	0.00	2263.00
34250.	0.	32427.	1823.	0.	2441.	275.	250.	40.	2253.00
0.08	0.00	13.28	6.54	0.045	0.040	0.045	0.000	2249.20	2089.77
0.011469	278.	278.	293.	2	5	0	0.00	540.15	2654.16

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2150

10.70	6.83	2259.63	2259.63	0.00	2262.26	2.63	3.29	0.00	2271.60
34000.	0.	32215.	1785.	0.	2426.	269.	268.	43.	2256.60
0.09	0.00	13.28	6.53	0.045	0.040	0.045	0.000	2252.80	2090.22
0.011562	278.	278.	290.	2	5	0	0.00	532.92	2654.53

*SECNO 10.960

1645 INT SEC ADDED BY RAISING SEC 10.96, -7.650FT AND MULTIPLYING BY 4.079

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	8.55	2263.90	0.00	0.00	2264.34	0.45	1.87	0.22	2262.95
34000.	13318.	20682.	0.	4007.	3266.	0.	307.	56.	2267.95
0.10	3.32	6.33	0.00	0.045	0.033	0.180	0.000	2255.35	5468.86
0.003145	358.	341.	320.	2	0	0	0.00	2559.31	11110.82

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.550FT AND MULTIPLYING BY -.748

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	8.04	2265.94	2265.94	0.00	2267.10	1.16	1.75	0.21	2265.50
34000.	12382.	21618.	0.	2369.	2140.	0.	365.	74.	2270.50
0.12	5.23	10.10	0.00	0.045	0.033	0.180	0.000	2257.90	4147.46
0.009306	358.	341.	320.	22	11	8	0.00	1822.76	8332.59

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.550FT AND MULTIPLYING BY 0.664

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	8.84	2268.29	2268.29	0.00	2270.76	1.47	3.30	0.09	2268.05
34000.	13821.	20179.	0.	2251.	1744.	0.	389.	86.	2273.05
0.13	6.14	11.57	0.00	0.045	0.033	0.180	0.000	2260.45	2767.58
0.009714	358.	341.	320.	2	9	8	0.00	1307.86	5585.04

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.550FT AND MULTIPLYING BY 0.494

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2680

10.86	10.53	2273.63	2273.53	0.00	2275.03	1.40	3.00	0.01	2270.60
34000.	18503.	15492.	0.	3158.	1239.	0.	423.	98.	2275.60
0.14	5.85	12.50	0.00	0.045	0.033	0.180	0.000	2263.00	603.53
0.007639	358.	341.	320.	7	8	0	0.00	1492.92	2529.78

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNP	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.150

1645 INT SEC ADDED BY RAISING SEC 11.15, -4.300FT AND MULTIPLYING BY 1.430

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	15.14	2279.74	2279.74	0.00	2281.99	2.24	1.35	0.25	2273.80
34000.	5661.	25037.	2332.	1550.	1807.	1514.	451.	106.	2277.00
0.14	4.30	13.84	1.22	0.045	0.033	0.180	0.000	2264.60	1144.86
0.003899	258.	253.	246.	20	15	0	0.00	1416.99	3961.99

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.600FT AND MULTIPLYING BY 0.900

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	15.47	2281.67	2281.57	0.00	2284.06	2.38	1.02	0.24	2275.40
34000.	7291.	24197.	2512.	1586.	1674.	1915.	481.	114.	2279.60
0.15	4.60	14.45	1.31	0.045	0.033	0.180	0.000	2266.20	1125.52
0.004132	259.	253.	246.	20	9	0	0.00	1332.23	3688.29

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.600FT AND MULTIPLYING BY 0.889

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1.03	15.92	2283.72	2283.72	0.00	2286.18	2.46	1.06	0.02	2277.00
34000.	8125.	23135.	2739.	1655.	1545.	1943.	511.	122.	2280.20
0.16	4.91	14.98	1.41	0.045	0.033	0.180	0.000	2267.50	1105.60
0.004272	259.	253.	246.	20	8	0	0.00	1250.69	3416.51

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.600FT AND MULTIPLYING BY 0.875

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2560

11.15	16.47	2285.87	2285.87	0.00	2288.39	2.52	1.10	0.02	2278.60
34000.	9127.	21879.	2994.	1734.	1413.	1973.	541.	129.	2281.80
0.16	5.26	15.49	1.52	0.045	0.033	0.180	0.000	2269.40	1096.06
0.004378	259.	253.	245.	20	8	0	0.00	1166.09	3143.55

*SECNO 11.280

1645 INT SEC ADDED BY RAISING SEC 11.28, -3.375FT AND MULTIPLYING BY 0.984

3381 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	18.04	2289.57	2289.57	0.00	2295.08	5.51	0.76	0.03	2285.23
34000.	453.	32549.	998.	105.	1691.	593.	555.	132.	2284.73
0.16	4.31	15.24	1.58	0.045	0.033	0.140	0.000	2270.52	2341.34
0.005310	164.	161.	160.	20	8	0	0.00	401.85	2743.19

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1.02	18.37	2290.52	2290.52	0.00	2296.15	5.63	0.82	0.04	2286.35
34000.	410.	32661.	929.	97.	1682.	552.	563.	133.	2285.85
0.17	4.20	19.42	1.58	0.045	0.033	0.140	0.000	2271.65	2352.00
0.005173	164.	161.	160.	4	8	0	0.00	396.20	2738.19

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	18.65	2291.42	2291.42	0.00	2297.21	5.79	0.85	0.05	2287.48

```
    34000.      359.     3279.      851.       88.     1665.      506.      572.      134.     2256.98
      0.17      4.36     19.66      1.68    0.045     0.033     0.140     0.000   2272.77     2362.99
  0.005392       164.      161.       160.        4         6         0      0.00    366.64     2729.63
)

 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.125FT AND MULTIPLYING BY   1.006

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
         ####  Centerline =  2460
     11.28     18.71   2292.61   2292.61      0.00   2288.28      5.67      0.86      0.01   2288.60
    34000.       372.     3275.       871.       91.     1584.      522.      580.      136.     2288.10
      0.17      4.07     19.45      1.57    0.045     0.033     0.140     0.000   2273.90     2371.64
  0.005249       164.      161.       160.        4         5         0      0.00    374.73     2746.37
)
 CCHV=   0.300 CEHV=   0.500
 *SECNO 11.310

 1645 INT SEC ADDED BY RAISING SEC     11.31,  -4.575FT AND MULTIPLYING BY   1.857

 3280 CROSS SECTION      1.01 EXTENDED      4.43 FEET

 3301 HV CHANGED MORE THAN HVINS

      1.31     24.49   2299.91      0.00      0.00   2299.97      0.06      0.01      1.68   2275.43
    34000.     20630.     7107.     6263.    19391.     1909.    14995.      601.      139.   2275.43
      0.13      1.06      3.72      0.42    0.045     0.031     0.140     0.000   2275.43   1000.00
  0.000095        45.       45.       50.        4         0         0      0.00   5329.74   6329.74
)
 1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       QLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB       ACH       AROB      VOL      TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL        XNCH      XNR       WTN      ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR    TOPWID      ENDST


 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.525FT AND MULTIPLYING BY   0.846

 3280 CROSS SECTION      1.02 EXTENDED      2.91 FEET

      1.02     22.31   2299.86      0.00      0.00   2300.03      0.17      0.01      0.06   2276.95
    34000.     18548.     9059.     6393.    12209.     1512.     9913.      634.      144.   2276.95
      0.13      1.52      5.99      0.54    0.045     0.031     0.140     0.000   2276.95   1000.00
  0.000240        45.       45.       50.        3         0         0      0.00   4509.83   5509.83
)
 1645 INT SEC ADDED BY RAISING SEC      1.02,   1.525FT AND MULTIPLYING BY   0.513

 3280 CROSS SECTION      1.03 EXTENDED      1.11 FEET

 3301 HV CHANGED MORE THAN HVINS

      1.03     21.10   2299.58      0.00      0.00   2300.36      0.77      0.02      0.30   2278.48
    34000.     14566.    12770.     6664.     6043.     1140.     5529.      653.      149.   2278.48
      0.13      2.41     11.28      1.21    0.045     0.031     0.140     0.000   2278.48   1000.00
  0.000936        45.       45.       50.        3         0         0      0.00   3570.95   4570.95
)
 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.525FT AND MULTIPLYING BY   0.779

 3280 CROSS SECTION     11.31 EXTENDED      0.89 FEET
```

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3593 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                                                                  ####
          ####                        JONES BOULEVARD                           ####
          ####                    Special Bridge Routine                        ####
          ##########################################################################
          ####  Centerline = 2725
    11.31      20.89   2300.89   2300.89      0.00   2302.39      1.50      0.06      0.36   2280.00
 34000.      13874.    13405.     6720.     4321.      877.     4079.      665.      152.    2280.00
     0.19       3.21      15.28      1.55     0.045     0.031     0.140     0.000  2280.00   1000.00
0.001766         45.       45.        50.        20         6         0      0.00  2705.98   3705.98
```

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2297.48 .NOT 2300.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	PAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.47	2280.00

•SECNO 11.320
6870 D.S. ENERGY OF 2302.39 HIGHER THAN COMPUTED ENERGY OF 2301.27
3280 CROSS SECTION 11.32 EXTENDED 0.87 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	FB	QWEIR	QPR	BAREA	TRAPEZOIDAL AREA	ELLC	ELTRD
2858.38	2337.43	0.00	33201.	888.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
Centerline XT cards = 1590

```
    11.32      20.87   2301.27      0.00      0.00   2302.79      1.52      0.00      0.00   2280.40
 34000.      13816.    13499.     6725.     4289.      877.     4060.      660.      156.    2280.40
     0.19       3.22      15.35      1.56     0.045     0.031     0.140     0.000  2280.40   1000.00
0.001795         70.       70.        70.        20         0         8      0.00  2699.78   3699.78
```

•SECNO 11.450

1645 INT SEC ADDED BY RAISING SEC 11.45, -5.666FT AND MULTIPLYING BY 0.626

3280 CROSS SECTION 1.01 EXTENDED 1.70 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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    1.01      20.30   2304.03   2304.03      0.00   2306.56      2.52      0.57      0.50   2297.53
34000.       9726.    20412.     3663.     5035.     1246.     2533.      726.      168.    2295.23
```

0.20	1.93	15.54	1.52	0.140	0.035	0.160	0.000	2283.23	600.00
0.003996	225.	220.	218.	20	5	0	0.00	1876.88	2476.88

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.833FT AND MULTIPLYING BY 1.299

3280 CROSS SECTION 1.02 EXTENDED 3.93 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	20.03	2306.10	2306.10	0.00	2308.27	2.17	0.79	0.11	2300.37
34000.	9417.	22428.	3155.	5469.	1545.	2557.	773.	178.	2299.77
0.20	1.54	14.52	1.23	0.140	0.035	0.160	0.000	2286.07	600.00
0.003148	225.	220.	218.	20	10	0	0.00	2438.44	3038.44

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.833FT AND MULTIPLYING BY 1.230

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2370

11.45	18.21	2307.91	2307.91	0.00	2310.21	2.29	0.68	0.06	2303.20
34000.	5577.	25148.	2275.	5013.	1732.	1958.	820.	192.	2301.60
0.21	1.31	14.11	1.16	0.140	0.035	0.160	0.000	2288.90	670.32
0.003141	225.	220.	218.	20	12	0	0.00	2830.97	3501.29

CCHV= 0.100 CSHV= 0.300
•SECNO 11.640
3280 CROSS SECTION 11.64 EXTENDED 0.10 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2330

11.64	18.70	2316.10	2316.10	0.00	2318.47	2.37	3.14	0.02	2310.40
34000.	4341.	22822.	6817.	3649.	1516.	4573.	1032.	258.	2306.10
0.24	1.20	15.06	1.49	0.140	0.035	0.160	0.000	2297.40	660.00
0.003174	1000.	1000.	1000.	20	5	0	0.00	2919.10	3479.10

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

•SECNO 11.790

1646 INT SEC ADDED BY RAISING SEC 11.79, -4.300FT AND MULTIPLYING BY 0.964

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	18.05	2319.75	2319.75	0.00	2321.59	1.84	1.36	0.05	2314.90
34000.	10155.	20908.	3037.	6712.	1500.	2355.	1126.	266.	2312.60
0.25	1.51	13.87	1.29	0.140	0.035	0.150	0.000	2301.70	200.44
0.003573	405.	405.	405.	20	10	0	0.00	2947.89	3148.33

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.300FT AND MULTIPLYING BY 1.037

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2360

11.79	17.64	2323.64	2323.64	0.00	2325.76	2.13	1.54	0.09	2319.20
34000.	9312.	21909.	2780.	6123.	1507.	2100.	1221.	313.	2316.90
0.25	1.52	14.54	1.32	0.140	0.035	0.150	0.000	2306.00	278.58
0.004076	405.	405.	405.	20	5	0	0.00	2923.51	3202.40

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

1645 INT SEC ADDED BY RAISING SEC 11.82, -2.667FT AND MULTIPLYING BY 1.681

3280 CROSS SECTION 1.01 EXTENDED 3.02 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	18.02	2326.35	0.00	0.00	2326.42	0.07	0.04	0.62	2315.33
34000.	20819.	6452.	6730.	26072.	1352.	8924.	1245.	317.	2315.33
0.27	1.20	4.77	0.58	0.140	0.040	0.150	0.000	2307.33	1000.00
0.000413	40.	52.	53.	3	0	0	0.00	5581.03	6581.03

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.333FT AND MULTIPLYING BY 0.797

3280 CROSS SECTION 1.02 EXTENDED 1.64 FEET

1.02	17.64	2326.31	0.00	0.00	2326.53	0.22	0.03	0.07	2316.67
34000.	20312.	7621.	6367.	16572.	1000.	6099.	1275.	322.	2316.67
0.27	1.21	7.62	1.04	0.140	0.040	0.160	0.000	2308.67	1000.00
0.001254	40.	52.	53.	3	0	0	0.00	4412.00	5412.00

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.333FT AND MULTIPLYING BY 0.746

3280 CROSS SECTION 11.82 EXTENDED 0.03 FEET

3301 HV CHANGED MORE THAN HVINS

11.82	16.03	2326.03	0.00	0.00	2327.01	0.98	0.11	0.38	2318.00
34000.	19315.	9775.	5911.	8684.	577.	3111.	1254.	326.	2318.00
0.27	2.11	14.43	1.90	0.140	0.040	0.150	0.000	2310.00	1000.00
0.005630	40.	92.	53.	4	0	0	0.00	3162.72	4162.71

SPECIAL BRIDGE

SB	XK	XKOR	CDFG	BDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840
3280 CROSS SECTION 11.84 EXTENDED 2.18 FEET

PRESSURE AND WEIR FLOW

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	FR	QWEIR	QBR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2862.65	2328.53	1.52	31616.	2389.	224.	224.	2319.00	2320.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

11.84	16.68	2328.18	0.00	0.00	2329.57	1.39	0.00	0.00	2319.50
34000.	21640.	11326.	1034.	9576.	705.	497.	1314.	331.	2319.50
0.28	2.26	16.06	2.13	0.140	0.040	0.150	0.000	2311.50	1000.00
0.006619	75.	75.	75.	20	0	7	0.00	2460.00	3460.00

*SECNO 11.870
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 10000.

11.87	17.95	2332.95	2332.95	0.00	2334.62	1.68	0.79	0.14	2325.50
34000.	2500.	21809.	9690.	1698.	1707.	2931.	1360.	342.	2325.50
0.28	1.47	12.77	3.31	0.140	0.035	0.045	0.000	2315.00	1791.55
0.002720	300.	160.	70.	20	8	0	0.00	1868.88	3660.43

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990
3280 CROSS SECTION 11.99 EXTENDED 0.04 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2220

11.99	15.14	2336.04	2336.04	0.00	2337.70	1.67	2.00	0.00	2330.90
34000.	2912.	18995.	12093.	1768.	1417.	2766.	1444.	365.	2332.90
0.30	1.65	13.40	4.37	0.140	0.035	0.045	0.000	2320.90	1673.72
0.003719	470.	645.	650.	20	10	0	0.00	1496.28	3170.00

*SECNO 12.100
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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          ####  Centerline =  2310
    12.15     14.79  2340.79  2340.79      0.00  2342.44      1.65      1.86      0.00  2335.30
 34000.      6886.    18415.     8693.    4050.     1344.    2177.     1527.      386.    2337.50
     0.32       1.70     13.70     4.00    0.140     0.031    0.045     0.000  2326.50  1127.90
0.002953        435.      580.      565.       20         6        0      0.00  1923.72  3051.63

CCHV=    0.300  CEHV=    0.500
*SECNO 12.150

1645 INT SEC ADDED BY RAISING SEC     12.15,  -0.750FT AND MULTIPLYING BY   0.825

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.01     15.90  2342.05  2342.05      0.00  2344.61      2.56      0.23      0.45  2337.75
 34000.      5148.    23741.     5111.    2993.     1560.    1282.     1538.      388.    2337.75
     0.32       1.72     15.22     3.99    0.140     0.031    0.045     0.000  2326.25  8852.30
0.003252        70.       75.       75.       20         8        0      0.00  1369.02 10221.32

1645 INT SEC ADDED BY RAISING SEC      1.01,   0.250FT AND MULTIPLYING BY   1.071

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
     1.02     17.65  2344.15  2341.94      0.00  2345.20      1.15      0.15      0.45  2338.00
 34000.      5249.    19913.     7833.    4977.     1993.    2412.     1550.      391.    2338.00
     0.32       1.26     10.52     3.25    0.140     0.031    0.045     0.000  2326.50  8666.60
0.001305        70.       75.       75.       22         5        0      0.00  1792.68 10459.29

1645 INT SEC ADDED BY RAISING SEC      1.02,   0.250FT AND MULTIPLYING BY   1.066

     1.03     17.65  2344.40     0.00      0.00  2345.33      0.93      0.09      0.04  2338.25
 34000.      5236.    19847.     7817.    5306.     2018.    2572.     1566.      394.    2338.25
     0.33       1.19     9.99     3.04    0.140     0.031    0.045     0.000  2326.75  8693.34
0.001143        70.       75.       75.        6         0        0      0.00  1911.11 10604.45

1645 INT SEC ADDED BY RAISING SEC      1.03,   0.250FT AND MULTIPLYING BY   1.062
```



```
          ##########################################################################
          ####                    TROPICANA AVENUE                              ####
          ####                Normal Bridge Routine                             ####
          ##########################################################################
          ####  Centerline = 10000
    12.15     17.59  2344.59     0.00      0.00  2345.43      0.85      0.08      0.02  2338.50
 34000.      5187.    20102.     7711.    5564.     2134.    2625.     1563.      397.    2338.50
     0.33       1.11     9.42     2.37    0.140     0.031    0.045     0.000  2327.00  8729.37
0.001037        70.       75.       75.        2         0        0      0.00  2018.23 10747.59

*SECNO 12.151

3301 HV CHANGED MORE THAN HVINS
```

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.50

12.15	18.21	2345.21	0.00	0.00	2345.58	0.37	0.00	0.14	2327.00
34000.	9112.	7384.	17504.	5486.	1157.	3351.	1583.	397.	2327.00
0.33	1.56	6.38	5.22	0.140	0.031	0.045	0.000	2327.00	8643.33
0.003072	1.	1.	1.	3	0	0	-411.70	2123.04	10766.37

*SECNO 12.160

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	17.65	2345.35	0.00	0.00	2345.78	0.43	0.17	0.03	2327.50
34000.	8786.	8236.	16979.	5025.	1170.	3097.	1594.	400.	2327.50
0.33	1.75	7.04	5.48	0.140	0.031	0.045	0.000	2327.50	8693.18
0.003646	50.	50.	50.	2	0	0	-354.92	2062.31	10755.49

*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

12.16	17.54	2346.04	0.00	0.00	2346.09	1.04	0.00	0.31	2339.00
34000.	4307.	21525.	8167.	4424.	2128.	2659.	1595.	400.	2339.00
0.33	0.97	10.11	3.07	0.140	0.031	0.045	0.000	2327.50	8734.74
0.001199	1.	1.	1.	2	0	0	0.00	2011.68	10746.42

*SECNO 12.320

1645 INT SEC ADDED BY RAISING SEC 12.32, -3.600FT AND MULTIPLYING BY 1.230

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	15.22	2346.32	0.00	0.00	2346.84	0.52	0.60	0.16	2343.50
34000.	21063.	12612.	325.	7224.	1450.	149.	1673.	418.	2343.80
0.36	2.92	8.70	2.18	0.060	0.035	0.045	0.000	2331.10	889.00
0.002956	375.	400.	375.	4	0	0	0.00	2236.29	3266.25

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 0.313

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2240

12.32	14.25	2348.95	2348.95	0.00	2350.42	1.47	1.27	0.47	2347.10
34000.	19102.	14748.	149.	4371.	1062.	51.	1736.	435.	2347.40
0.37	4.37	13.99	2.93	0.060	0.035	0.045	0.000	2334.70	716.03
0.006112	375.	400.	375.	20	10	0	0.00	1660.18	2512.54

CCHV= 0.100 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.420

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 2360.20

Centerline = 2360

12.42	12.34	2353.04	0.00	0.00	2354.24	1.20	3.80	0.03	2350.60
34000.	22494.	11506.	0.	4152.	873.	0.	1801.	454.	2360.20
0.39	5.42	17.10	0.00	0.060	0.040	0.045	0.000	2340.70	1026.37
0.008145	535.	550.	595.	3	0	0	0.00	1404.40	2430.78

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOPL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.480

1645 INT SEC ADDED BY RAISING SEC 12.48, -2.10FT AND MULTIPLYING BY 1.172

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.20 ELREA= 2358.40

1.01	12.79	2354.19	2354.19	0.00	2356.47	2.27	0.67	0.53	2356.40
34000.	18627.	15373.	0.	5630.	872.	0.	1810.	456.	2357.90
0.39	3.31	17.62	0.00	0.140	0.040	0.045	0.000	2341.40	1137.48
0.010976	70.	75.	75.	2	6	0	0.00	1342.80	2616.52

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1645 INT SEC ADDED BY RAISING SEC 1.01, 0.700FT AND MULTIPLYING BY 0.951

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.80 ELREA= 2356.60

1.02	13.38	2355.18	2355.18	0.00	2357.36	2.18	0.77	0.03	2357.10
34000.	19115.	14885.	0.	5700.	851.	0.	1820.	456.	2358.60
0.39	3.35	17.50	0.00	0.140	0.040	0.045	0.000	2342.10	1050.45
0.010748	70.	75.	75.	2	6	0	0.00	1325.26	2489.08

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.700FT AND MULTIPLYING BY 0.949

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	13.22	2356.02	2356.02	0.00	2358.26	2.24	0.78	0.03	2357.90
34000.	19400.	14600.	0.	5581.	817.	0.	1831.	460.	2359.30
0.39	3.48	17.97	0.00	0.140	0.040	0.045	0.000	2342.80	980.98
0.011275	70.	93.	75.	0	5	0	0.00	1280.78	2361.14

1645 INT SEC ADDED BY RAISING SEC 1.03, 0.700FT AND MULTIPLYING BY 0.946

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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##########################################################################
####                    RAINBOW BOULEVARD                             ####
####                 Normal Bridge Routine                            ####
#### FT cards used at bridge xsecs to confine Q25, Q50 and Q100        ####
#### in LOB to  Tropicana Ave grade, based on upstream width.          ####
##########################################################################
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12.48	13.42	2356.92	2356.92	0.00	2359.17	2.25	0.21	0.01	2358.50
34000.	19762.	14238.	0.	5510.	786.	0.	1941.	452.	2360.00
0.39	3.59	19.11	0.00	0.140	0.040	0.045	0.000	2343.50	907.31
0.011636	70.	93.	75.	2	5	0	0.00	1241.99	2233.22

1490 NH CARD USED
*SECNO 12.481

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3370 NORMAL BRIDGE,NPD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2225.00 2240.10

12.48	15.96	2359.46	0.00	0.00	2359.76	0.30	0.01	0.58	2358.50
34000.	25776.	7224.	0.	8933.	949.	1.	1941.	462.	2360.00
0.40	3.00	7.61	0.00	0.140	0.040	0.045	0.000	2343.50	653.96
0.005760	1.	1.	1.	5	0	0	-60.74	1583.94	2239.61

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NBD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2225.00 2240.10

12.49	16.12	2360.12	0.00	0.00	2360.33	0.20	0.54	0.03	2359.00
34000.	29294.	4706.	0.	9423.	806.	0.	1962.	466.	2360.50
0.40	3.11	5.94	0.00	0.140	0.045	0.045	0.000	2344.00	583.50
0.006143	93.	60.	93.	3	0	0	-87.41	1646.45	2239.76

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

12.49	16.46	2360.46	2360.46	0.00	2362.49	2.03	0.01	0.91	2359.00
34000.	17762.	16238.	0.	6806.	996.	0.	1962.	466.	2360.50
0.40	2.61	16.31	0.00	0.140	0.040	0.045	0.000	2344.00	572.90
0.007511	1.	1.	1.	20	9	0	0.00	1662.18	2235.08

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRITWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	TWA	LEFT/RIGHT
TIME	XLOB	XCH	XROB	ALOB	ACH	AROB	VOL	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.551

1645 INT SEC ADDED BY RAISING SEC 12.55, -1.467FT AND MULTIPLYING BY 0.954

3301 HV CHANGED MORE THAN HVINS

1.01	18.75	2363.49	2361.42	0.00	2364.07	0.58	1.15	0.43	2354.13
34000.	22597.	11056.	347.	6163.	1269.	109.	1879.	469.	2356.63
0.41	4.39	8.71	3.23	0.140	0.140	0.140	0.000	2344.73	548.56
0.018087	103.	103.	103.	12	5	0	0.00	1178.62	2127.58

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.733FT AND MULTIPLYING BY 1.086

3265 DIVIDED FLOW

3280 CROSS SECTION 1.02 EXTENDED 0.49 FEET

1.02	19.69	2365.15	0.00	0.00	2365.49	0.34	1.35	0.07	2354.87
34000.	23799.	9795.	407.	6703.	1467.	164.	1997.	472.	2357.37
0.41	3.55	6.72	2.49	0.140	0.140	0.137	0.000	2345.47	520.34
0.009867	103.	103.	103.	2	0	0	0.00	1400.75	2519.14

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.733FT AND MULTIPLYING BY 1.079

3301 HV CHANGED MORE THAN HVINS

Centerline = 2310

12.55	19.06	2365.26	0.00	0.00	2366.03	0.78	0.32	0.22	2355.60

34000.	15349.	15239.	412.	5415.	1513.	139.	1916.	476.	2359.10	
0.42	2.86	10.37	2.97	0.064	0.045	0.045	0.000	2346.20	1007.66	
0.001509	103.	103.	103.	2	0	0	0.00	1406.08	2413.75	

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH UPSTREAM R

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	10.130	0.00	0.00	0.00	2217.20	4100.00	2223.47	2223.42	2224.34	101.16	8.71	688.76	407.65
	10.130	0.00	0.00	0.00	2217.20	7000.00	2224.46	2224.45	2225.40	96.68	9.62	1184.32	711.92
	10.130	0.00	0.00	0.00	2217.20	10500.00	2225.16	2225.10	2226.16	97.17	10.57	1763.44	1065.16
	10.130	0.00	0.00	0.00	2217.20	35000.00	2227.59	0.00	2229.21	121.99	15.30	4312.75	3168.87
	10.310	920.00	0.00	0.00	2224.90	4100.00	2231.37	0.00	2232.20	71.51	8.50	482.20	484.84
*	10.310	920.00	0.00	0.00	2224.90	7000.00	2233.43	0.00	2234.68	64.50	8.97	779.96	871.60
*	10.310	920.00	0.00	0.00	2224.90	10500.00	2235.24	0.00	2236.72	64.44	9.77	1074.79	1307.97
*	10.310	920.00	0.00	0.00	2224.90	35000.00	2241.11	0.00	2243.98	58.55	14.28	2889.74	4574.13
*	10.330	110.00	0.00	0.00	2230.00	4100.00	2237.12	2237.12	2240.69	185.43	15.15	270.68	301.09
*	10.330	110.00	0.00	0.00	2230.00	7000.00	2240.25	2240.25	2245.27	167.98	17.97	389.52	540.26
*	10.330	110.00	0.00	0.00	2230.00	10500.00	2242.52	2242.52	2244.00	61.30	12.41	1506.95	1341.10
*	10.330	110.00	0.00	0.00	2230.00	35000.00	2245.75	2245.75	2247.59	77.91	16.30	3857.45	3965.20
*	10.340	95.00	2242.00	2241.00	2230.50	4100.00	2238.34	0.00	2241.65	88.12	12.20	336.01	436.77
*	10.340	95.00	2242.00	2241.00	2230.50	7000.00	2244.86	0.00	2245.27	11.95	6.03	2218.74	2024.59
*	10.340	95.00	2242.00	2241.00	2230.50	10500.00	2244.42	2244.38	2245.54	41.18	10.91	1766.33	1636.23
*	10.340	95.00	2242.00	2241.00	2230.50	35000.00	2247.01	2247.01	2248.60	67.73	15.69	4325.68	4252.35
*	10.490	790.00	0.00	0.00	2238.40	4100.00	2243.27	0.00	2243.58	45.03	4.45	921.02	610.99
	10.490	790.00	0.00	0.00	2238.40	7000.00	2245.88	0.00	2246.14	9.97	3.16	2238.28	2216.83
*	10.490	790.00	0.00	0.00	2238.40	10500.00	2246.59	0.00	2246.85	14.72	4.17	2561.67	2737.11
*	10.490	790.00	0.00	0.00	2238.40	35000.00	2252.01	0.00	2252.59	12.91	6.29	5829.43	9741.15
*	10.700	1110.00	0.00	0.00	2252.80	3700.00	2255.03	0.00	2255.56	122.66	5.83	634.63	334.08
*	10.700	1110.00	0.00	0.00	2252.80	6000.00	2255.55	0.00	2256.36	133.49	7.22	830.90	519.31
*	10.700	1110.00	0.00	0.00	2252.80	9400.00	2256.16	0.00	2257.38	148.00	8.86	1060.40	772.67
*	10.700	1110.00	0.00	0.00	2252.80	34000.00	2259.63	2259.63	2262.24	115.92	13.29	2695.39	3163.33
	10.960	1365.00	0.00	0.00	2263.00	3700.00	2269.56	2269.50	2270.66	98.09	9.45	461.84	373.58
*	10.960	1365.00	0.00	0.00	2263.00	6000.00	2270.61	2270.61	2271.76	83.28	9.93	788.26	657.48
*	10.960	1365.00	0.00	0.00	2263.00	9400.00	2271.45	2271.45	2272.86	84.32	10.18	1114.14	1023.67
*	10.960	1365.00	0.00	0.00	2263.00	34000.00	2273.63	2273.63	2275.03	76.39	12.50	4397.18	3890.17

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K

	11.150	1010.00	0.00	0.00	2269.40	3700.00	2275.61	0.00	2276.78	40.91	8.68	426.22	578.48
	11.150	1010.00	0.00	0.00	2269.40	6000.00	2276.88	0.00	2278.90	56.63	11.41	526.03	797.29
	11.150	1010.00	0.00	0.00	2269.40	9400.00	2279.26	0.00	2281.63	77.55	14.72	638.44	1067.41
*	11.150	1010.00	0.00	0.00	2269.40	34000.00	2285.87	2285.87	2288.39	43.78	15.49	5119.36	5138.31
	11.230	645.00	0.00	0.00	2273.90	3700.00	2278.80	0.00	2280.58	81.54	10.71	345.53	409.75
	11.230	645.00	0.00	0.00	2273.90	6000.00	2280.76	0.00	2282.96	68.34	11.91	503.63	725.78
	11.230	645.00	0.00	0.00	2273.90	9400.00	2283.34	0.00	2285.91	55.49	12.86	731.04	1261.92
*	11.230	645.00	0.00	0.00	2273.90	34000.00	2292.61	2292.61	2296.28	52.49	19.45	2297.71	4692.89
*	11.310	180.00	0.00	0.00	2280.00	3700.00	2286.20	2286.20	2289.33	76.98	14.20	260.55	421.70
*	11.310	180.00	0.00	0.00	2280.00	6000.00	2288.49	2288.49	2291.72	57.62	15.14	521.98	790.46
*	11.310	180.00	0.00	0.00	2280.00	9400.00	2290.83	2290.83	2295.26	58.71	17.98	744.52	1226.84
*	11.310	180.00	0.00	0.00	2280.00	34000.00	2300.89	2300.89	2302.39	17.66	15.28	9277.15	8091.66
*	11.320	70.00	2291.40	2288.40	2280.40	3700.00	2291.52	0.00	2292.16	8.25	6.86	776.25	1288.27
*	11.320	70.00	2291.40	2288.40	2280.40	6000.00	2292.28	0.00	2293.72	17.03	10.30	862.01	1453.86
*	11.320	70.00	2291.40	2288.40	2280.40	9400.00	2291.60	2291.44	2295.68	51.83	17.28	785.22	1305.63
*	11.320	70.00	2291.40	2288.40	2280.40	34000.00	2301.27	0.00	2302.79	17.85	15.35	9224.98	8047.19
*	11.450	660.00	0.00	0.00	2288.90	3700.00	2293.70	2293.70	2295.83	116.24	11.72	315.76	343.19
*	11.450	660.00	0.00	0.00	2288.90	6000.00	2295.39	2295.39	2298.19	107.71	13.42	447.22	578.13
*	11.450	660.00	0.00	0.00	2288.90	9400.00	2297.48	2297.48	2300.99	100.68	15.04	624.90	936.82
*	11.450	660.00	0.00	0.00	2288.90	34000.00	2307.91	2307.91	2310.21	31.41	14.11	8752.62	6066.25
	11.640	1000.00	0.00	0.00	2297.40	3700.00	2302.98	0.00	2304.44	65.38	9.70	381.61	457.61
	11.640	1000.00	0.00	0.00	2297.40	6000.00	2304.68	0.00	2306.77	69.06	11.61	516.92	722.01
	11.640	1000.00	0.00	0.00	2297.40	9400.00	2306.58	0.00	2309.57	73.15	13.89	688.26	1099.08
*	11.640	1000.00	0.00	0.00	2297.40	34000.00	2316.10	2316.10	2318.47	31.74	15.06	9736.05	6034.78
*	11.790	810.00	0.00	0.00	2306.00	3700.00	2311.77	2311.77	2313.97	115.76	11.90	310.83	343.90
*	11.790	810.00	0.00	0.00	2306.00	6000.00	2313.53	2313.53	2316.37	107.25	13.53	443.45	579.36
*	11.790	810.00	0.00	0.00	2306.00	9400.00	2315.64	2315.64	2319.21	100.06	15.15	620.48	939.74
*	11.790	810.00	0.00	0.00	2306.00	34000.00	2323.64	2323.64	2325.76	40.76	14.54	9730.73	5325.71
*	11.820	155.00	0.00	0.00	2310.00	3700.00	2316.23	2316.23	2319.35	177.98	14.17	261.06	277.34
*	11.820	155.00	0.00	0.00	2310.00	6000.00	2319.60	2318.60	2322.87	171.91	16.59	365.96	457.62
*	11.820	155.00	0.00	0.00	2310.00	9400.00	2322.78	2322.78	2323.86	41.54	10.64	3972.14	1458.49
*	11.820	155.00	0.00	0.00	2310.00	34000.00	2326.03	0.00	2327.01	56.30	14.43	12472.39	4531.16
*	11.840	75.00	2320.70	2319.00	2311.50	3700.00	2319.47	0.00	2321.37	64.44	11.05	334.78	402.65
*	11.840	75.00	2320.70	2319.00	2311.50	6000.00	2320.32	2320.04	2324.38	158.17	16.18	374.31	477.08
*	11.840	75.00	2320.70	2319.00	2311.50	9400.00	2325.52	2325.52	2326.59	34.24	10.28	4292.51	1606.46
*	11.840	75.00	2320.70	2319.00	2311.50	34000.00	2328.19	0.00	2329.57	66.18	16.06	10767.68	4179.49
	11.870	150.00	0.00	0.00	2315.00	3700.00	2321.30	0.00	2322.64	57.52	5.28	358.56	487.84
	11.870	150.00	0.00	0.00	2315.00	6000.00	2325.28	0.00	2326.18	26.52	7.62	787.19	1165.19
	11.870	150.00	0.00	0.00	2315.00	9400.00	2325.97	0.00	2327.73	50.13	10.96	863.08	1327.66
*	11.870	150.00	0.00	0.00	2315.00	34000.00	2332.95	2332.95	2334.62	27.20	12.77	6335.91	6519.53

	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	WCH	AREA	.01K
	11.990	645.00	0.00	0.00	2320.90	3700.00	2325.75	0.00	2327.58	100.15	10.76	343.90	369.73
*	11.990	645.00	0.00	0.00	2320.90	6000.00	2327.15	2327.15	2329.76	108.64	12.97	462.67	575.66
*	11.990	645.00	0.00	0.00	2320.90	9400.00	2329.29	0.00	2332.39	92.48	14.15	664.15	977.45
*	11.990	645.00	0.00	0.00	2320.90	34000.00	2336.04	2336.04	2337.70	37.18	13.40	5951.43	5575.94
	12.100	580.00	0.00	0.00	2326.00	3700.00	2330.83	0.00	2332.60	75.31	10.65	347.42	426.36
	12.100	580.00	0.00	0.00	2326.00	6000.00	2332.50	0.00	2334.81	78.57	12.21	491.25	714.22
*	12.100	580.00	0.00	0.00	2326.00	9400.00	2334.12	2334.12	2337.43	78.62	14.61	643.48	1060.11
*	12.100	580.00	0.00	0.00	2326.00	34000.00	2340.79	2340.79	2342.44	29.58	13.70	7571.25	6251.58
	12.150	300.00	0.00	0.00	2327.00	3700.00	2333.31	0.00	2333.81	14.46	5.67	652.21	973.18
	12.150	300.00	0.00	0.00	2327.00	6000.00	2335.43	0.00	2336.11	14.02	6.62	906.63	1602.33

12.150	300.00	0.00	0.00	2327.00	9400.00	2338.08	0.00	2338.92	13.28	7.53	1248.93	2578.99	
* 12.150	300.00	0.00	0.00	2327.00	34000.00	2344.59	0.00	2345.43	10.37	9.42	10373.07	10556.24	
12.151	1.00	2339.50	2338.50	2327.00	3700.00	2333.09	0.00	2334.04	42.62	7.97	516.99	566.73	
12.151	1.00	2339.50	2338.50	2327.00	6000.00	2335.10	0.00	2336.44	47.50	9.54	720.11	866.91	
12.151	1.00	2339.50	2338.50	2327.00	9400.00	2337.59	0.00	2339.47	81.35	11.40	969.62	1042.17	
12.151	1.00	2339.50	2338.50	2327.00	34000.00	2345.21	0.00	2345.58	30.72	6.38	9994.00	6134.38	
12.152	50.00	2339.50	2339.00	2327.50	3700.00	2333.26	0.00	2334.33	50.33	8.45	485.40	521.53	
12.152	50.00	2339.50	2339.00	2327.50	6000.00	2335.29	0.00	2336.76	63.70	9.54	688.09	818.74	
12.152	50.00	2339.50	2339.00	2327.50	9400.00	2337.99	0.00	2339.89	82.51	11.45	963.00	1034.82	
12.152	50.00	2339.50	2339.00	2327.50	34000.00	2345.35	0.00	2345.78	36.86	7.04	9292.10	5599.85	
12.150	1.00	0.00	0.00	2327.50	3700.00	2334.06	0.00	2334.52	12.64	5.43	681.48	1040.63	
12.150	1.00	0.00	0.00	2327.50	6000.00	2336.42	0.00	2337.02	11.53	6.20	967.89	1767.09	
12.150	1.00	0.00	0.00	2327.50	9400.00	2339.52	0.00	2340.24	9.73	6.81	1459.23	3013.41	
12.150	1.00	0.00	0.00	2327.50	34000.00	2345.04	0.00	2346.09	11.99	10.11	9211.35	9817.35	
* 12.320	600.00	0.00	0.00	2334.70	3700.00	2341.76	2341.76	2343.80	120.02	11.47	322.64	337.73	
* 12.320	800.00	0.00	0.00	2334.70	6000.00	2343.43	2343.43	2346.01	108.81	12.89	465.36	575.19	
* 12.320	800.00	0.00	0.00	2334.70	9400.00	2347.15	2347.15	2347.90	27.13	8.05	1941.26	1804.53	
* 12.320	800.00	0.00	0.00	2334.70	34000.00	2348.95	2348.95	2350.42	61.12	13.88	5484.24	4348.87	
12.420	550.00	0.00	0.00	2340.70	3700.00	2347.55	0.00	2349.39	85.28	9.62	384.81	400.67	
12.420	550.00	0.00	0.00	2340.70	6000.00	2349.63	0.00	2351.62	94.06	11.33	529.53	618.65	
* 12.420	550.00	0.00	0.00	2340.70	9400.00	2350.79	2350.79	2351.42	42.47	8.19	2141.56	1442.40	
12.420	550.00	0.00	0.00	2340.70	34000.00	2353.04	0.00	2354.24	81.45	13.10	5030.29	3767.24	
12.430	290.00	0.00	0.00	2343.50	3700.00	2351.21	0.00	2351.81	76.48	10.16	364.34	423.09	
12.430	290.00	0.00	0.00	2343.50	6000.00	2352.06	0.00	2354.54	90.52	12.63	475.05	630.63	
* 12.430	290.00	0.00	0.00	2343.50	9400.00	2353.03	2353.03	2354.45	68.80	11.66	2223.60	1133.24	
* 12.430	290.00	0.00	0.00	2343.50	34000.00	2356.92	2356.92	2359.17	116.36	18.11	6256.52	3151.87	
12.431	1.00	2360.00	2358.50	2343.50	3700.00	2350.23	0.00	2351.82	120.96	10.14	364.78	336.42	
12.431	1.00	2360.00	2358.50	2343.50	6000.00	2352.43	0.00	2354.63	132.06	11.91	503.99	522.12	
12.431	1.00	2360.00	2358.50	2343.50	9400.00	2354.21	0.00	2354.73	49.32	7.81	3025.21	1338.49	
* 12.431	1.00	2360.00	2358.50	2343.50	34000.00	2359.46	0.00	2359.76	57.60	7.61	9881.64	4479.32	

SECNO	XLOH	ELTRO	ELLO	ELMIN	Q	QWSEL	QRIWS	EQ	10K*S	VOH	AREA	.01K
12.490	90.00	2360.00	2358.50	2344.00	3700.00	2351.34	0.00	2353.13	151.62	10.74	344.55	300.48
* 12.490	90.00	2360.00	2358.50	2344.00	6000.00	2352.93	2352.19	2355.92	223.64	13.86	432.95	401.22
* 12.490	90.00	2360.00	2358.50	2344.00	9400.00	2354.90	0.00	2355.24	61.47	7.66	3002.75	1198.94
* 12.490	90.00	2360.00	2358.50	2344.00	34000.00	2360.12	0.00	2360.33	61.43	5.84	10228.41	4338.12
12.491	1.00	0.00	0.00	2344.00	3700.00	2352.40	0.00	2353.39	86.80	7.97	464.53	609.91
12.491	1.00	0.00	0.00	2344.00	6000.00	2355.79	0.00	2356.59	23.80	7.66	1655.27	1229.99
* 12.491	1.00	0.00	0.00	2344.00	9400.00	2355.32	2355.32	2357.69	71.91	13.05	1386.59	1108.52
* 12.491	1.00	0.00	0.00	2344.00	34000.00	2360.46	2360.46	2362.49	75.11	16.31	7801.54	3923.14
12.550	310.00	0.00	0.00	2346.20	3700.00	2353.51	0.00	2354.52	36.08	8.07	458.74	615.97
12.550	310.00	0.00	0.00	2346.20	6000.00	2356.41	0.00	2357.54	27.42	8.54	722.53	1145.93
12.550	310.00	0.00	0.00	2346.20	9400.00	2357.37	2355.42	2359.53	46.54	11.85	888.21	1377.84
* 12.550	310.00	0.00	0.00	2346.20	34000.00	2365.26	0.00	2366.03	15.08	10.07	8868.35	8755.75

FLAMINGO WASH UPSTREAM R

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10.130	4100.00	2223.47	0.00	0.00	0.00	397.00	0.00
	10.130	7000.00	2224.46	0.99	0.00	0.00	713.47	0.00
	10.130	10500.00	2225.16	0.70	0.00	0.00	874.42	0.00
	10.130	35000.00	2227.58	2.42	0.00	0.00	1215.68	0.00
	10.310	4100.00	2231.07	0.00	7.60	0.00	106.15	920.00
*	10.310	7000.00	2233.43	2.36	1.73	0.00	146.65	920.00
*	10.310	10500.00	2235.24	1.81	1.46	0.00	177.89	920.00
*	10.310	35000.00	2241.11	5.87	1.28	0.00	433.36	920.00
*	10.330	4100.00	2237.12	0.00	2.31	0.00	38.00	110.00
*	10.330	7000.00	2240.25	3.13	1.14	0.00	38.00	110.00
*	10.330	10500.00	2242.52	2.27	7.29	0.00	493.76	110.00
*	10.330	35000.00	2245.75	3.22	1.27	0.00	991.31	110.00
*	10.340	4100.00	2239.34	0.00	2.22	0.00	38.00	95.00
*	10.340	7000.00	2244.96	5.62	4.71	0.00	879.25	95.00
*	10.340	10500.00	2244.42	-0.54	1.89	0.00	903.14	95.00
*	10.340	35000.00	2247.01	2.59	1.26	0.00	1170.19	95.00
*	10.490	4100.00	2243.27	0.00	0.41	0.00	382.23	790.00
	10.490	7000.00	2245.98	2.72	1.03	0.00	535.86	790.00
*	10.490	10500.00	2246.58	0.60	2.28	0.00	552.56	790.00
*	10.490	35000.00	2252.01	5.42	0.65	0.00	627.16	790.00
*	10.700	3700.00	2255.03	0.00	3.43	0.00	375.76	1110.00
*	10.700	6000.00	2255.55	0.52	4.50	0.00	380.19	1110.00
*	10.700	9400.00	2256.16	0.61	3.09	0.00	385.30	1110.00
*	10.700	34000.00	2259.63	3.47	3.56	0.00	532.92	1110.00
	10.960	3700.00	2269.56	0.00	14.53	0.00	243.17	1365.00
*	10.960	6000.00	2270.51	1.05	15.97	1.05	377.76	1365.00
*	10.960	9400.00	2271.45	2.84	15.30	1.89	396.78	1365.00
*	10.960	34000.00	2273.63	2.19	4.34	0.00	1492.92	1365.00
	11.150	3700.00	2275.61	0.00	6.05	0.00	77.33	1010.00
	11.150	6000.00	2276.89	1.27	6.27	1.27	90.07	1010.00
	11.150	9400.00	2278.26	1.38	6.91	2.65	83.04	1010.00
*	11.150	34000.00	2285.87	7.61	2.15	0.00	1166.08	1010.00
	11.280	3700.00	2278.80	0.00	3.19	0.00	77.92	645.00
	11.280	6000.00	2280.76	1.95	3.88	1.95	93.87	645.00
	11.280	9400.00	2283.34	2.58	5.08	4.54	91.75	645.00
*	11.280	34000.00	2292.61	9.27	1.15	0.00	374.73	645.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	11.310	3700.00	2286.20	0.00	7.40	0.00	42.00	180.00
*	11.310	6000.00	2288.48	2.28	7.73	2.28	83.44	180.00
*	11.310	9400.00	2290.83	2.34	7.49	4.63	106.48	180.00
*	11.310	34000.00	2300.89	10.06	1.31	0.00	2705.98	180.00
*	11.320	3700.00	2291.52	0.00	5.31	0.00	109.37	70.00
*	11.320	6000.00	2292.28	0.76	3.80	0.76	116.83	70.00
*	11.320	9400.00	2291.60	-0.68	0.78	0.09	110.18	70.00
*	11.320	34000.00	2301.27	9.67	0.38	0.00	2699.78	70.00
*	11.450	3700.00	2293.70	0.00	2.13	0.00	74.65	660.00
*	11.450	6000.00	2295.39	1.69	3.11	1.69	93.86	660.00
*	11.450	9400.00	2297.48	2.09	5.23	3.78	89.87	660.00
*	11.450	34000.00	2307.91	10.43	1.92	0.00	2831.97	660.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	11.540	3700.00	2302.98	0.00	5.29	0.00	76.87	1000.00
	11.540	6000.00	2304.68	1.70	9.29	1.70	82.02	1000.00
	11.540	9400.00	2306.58	1.90	9.10	3.60	101.35	1000.00
*	11.540	34000.00	2316.10	9.52	8.19	0.00	2916.10	1000.00
*	11.790	3700.00	2311.77	0.00	8.80	0.00	71.76	810.00
*	11.790	6000.00	2313.53	1.76	8.95	1.76	79.24	810.00
*	11.790	9400.00	2315.64	2.11	9.06	3.87	88.24	810.00
*	11.790	34000.00	2327.64	8.00	3.89	0.00	2923.51	810.00
*	11.820	3700.00	2316.23	0.00	4.46	0.00	42.28	155.00
*	11.820	6000.00	2318.60	2.37	5.07	2.37	57.22	155.00
*	11.820	9400.00	2322.78	4.18	7.13	6.54	1999.51	155.00
*	11.820	34000.00	2326.03	3.26	-0.27	0.00	3162.72	155.00
*	11.840	3700.00	2319.47	0.00	3.24	0.00	42.50	75.00
*	11.840	6000.00	2320.32	0.85	1.72	0.85	51.39	75.00
*	11.840	9400.00	2325.52	5.20	2.74	6.05	2338.07	75.00
*	11.840	34000.00	2328.18	2.66	2.15	0.00	2460.00	75.00
	11.870	3700.00	2321.30	0.00	1.83	0.00	79.09	160.00
	11.870	6000.00	2325.28	3.98	4.96	3.98	117.77	160.00
	11.870	9400.00	2325.87	0.59	0.35	4.56	150.13	160.00
*	11.870	34000.00	2332.95	7.08	4.76	0.00	1868.99	160.00
	11.930	3700.00	2325.79	0.00	4.48	0.00	83.55	645.00
*	11.930	6000.00	2327.15	1.37	1.87	1.37	89.82	645.00
	11.930	9400.00	2329.29	2.13	3.42	3.50	99.56	645.00
*	11.930	34000.00	2336.04	6.75	3.09	0.00	1496.28	645.00
	12.100	3700.00	2330.33	0.00	5.05	0.00	82.72	580.00
	12.100	6000.00	2332.50	1.66	5.34	1.66	90.20	580.00
*	12.100	9400.00	2334.12	1.62	4.84	3.29	97.49	580.00
*	12.100	34000.00	2340.79	6.67	4.75	0.00	1923.72	580.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	12.150	3700.00	2333.31	0.00	2.48	0.00	115.72	300.00
	12.150	6000.00	2335.43	2.12	2.93	2.12	124.01	300.00
	12.150	9400.00	2338.06	2.66	3.96	4.77	134.36	300.00
*	12.150	34000.00	2344.59	6.50	0.18	0.00	2018.23	300.00
	12.151	3700.00	2333.09	0.00	-0.22	0.00	96.85	1.00
	12.151	6000.00	2335.10	2.01	-0.33	2.01	104.93	1.00
	12.151	9400.00	2337.59	2.49	-0.50	4.50	132.44	1.00
	12.151	34000.00	2345.21	7.63	0.63	0.00	2123.04	1.00
	12.160	3700.00	2333.26	0.00	0.17	0.00	95.65	50.00
	12.160	6000.00	2335.29	2.03	0.19	2.03	103.71	50.00
	12.160	9400.00	2337.99	2.69	0.40	4.73	132.05	50.00
	12.160	34000.00	2345.35	7.36	0.14	0.00	2062.31	50.00
	12.150	3700.00	2334.06	0.00	0.30	0.00	116.71	1.00
	12.150	6000.00	2336.42	2.35	1.13	2.35	125.92	1.00
	12.150	9400.00	2339.52	3.10	1.53	5.46	453.31	1.00
	12.150	34000.00	2345.04	5.52	-0.39	0.00	2011.68	1.00
*	12.320	3700.00	2341.76	0.00	7.70	0.00	80.91	800.00
*	12.320	6000.00	2343.43	1.66	7.00	1.66	90.69	800.00
*	12.320	9400.00	2347.15	3.72	7.63	5.39	786.68	800.00
*	12.320	34000.00	2349.95	1.91	2.63	0.00	1668.19	800.00
	12.420	3700.00	2347.85	0.00	6.19	0.00	80.19	550.00
	12.420	6000.00	2349.63	1.68	6.23	1.68	92.60	550.00

*	12.420	9400.00	2350.79	1.15	3.64	2.53	829.52	550.00
	12.420	34000.00	2353.04	2.25	4.08	0.00	1404.40	550.00
	12.480	3700.00	2350.21	0.00	2.26	0.00	58.58	290.00
	12.480	6000.00	2352.06	1.85	2.43	1.85	60.95	290.00
*	12.480	9400.00	2353.03	2.97	2.24	2.82	641.68	290.00
*	12.480	34000.00	2356.92	3.89	0.90	0.00	1241.98	290.00
	12.481	3700.00	2350.23	0.00	0.01	0.00	60.83	1.00
	12.481	6000.00	2352.43	2.21	0.37	2.21	65.11	1.00
	12.481	9400.00	2354.21	1.77	1.18	3.98	706.96	1.00
*	12.481	34000.00	2359.46	5.25	2.54	0.00	1583.94	1.00
	12.490	3700.00	2351.34	0.00	1.12	0.00	54.04	90.00
*	12.490	6000.00	2352.93	1.59	0.50	1.59	57.13	90.00
	12.490	9400.00	2354.80	1.87	0.59	3.46	703.79	90.00
*	12.490	34000.00	2360.12	5.33	0.66	0.00	1646.45	90.00
	12.491	3700.00	2352.40	0.00	1.05	0.00	60.73	1.00
	12.491	6000.00	2355.79	3.39	2.85	3.39	599.73	1.00
*	12.491	9400.00	2355.32	-0.47	0.52	2.92	543.50	1.00
*	12.491	34000.00	2360.46	5.14	0.34	0.00	1662.18	1.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
12.550	3700.00	2353.51	0.00	1.12	0.00	78.29	310.00
12.550	6000.00	2356.41	2.89	0.62	2.89	140.64	310.00
12.550	9400.00	2357.37	3.96	2.05	3.85	204.29	310.00
* 12.550	34000.00	2365.26	7.99	0.10	0.00	1406.09	310.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 10.310 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.310 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.310 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.330 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.330 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.330 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.330 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.330 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 10.330 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.340 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.340 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 10.340 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 10.340 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.340 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 10.490 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.490 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.490 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.700 PROFILE= 1 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.700 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.700 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.700 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.960 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.960 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.960 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.960 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.960 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.150 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.280 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.310 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.320 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.320 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.320 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.320 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.320 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.320 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.320 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.320 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.450 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.450 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.450 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.640 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.640 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.640 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.790 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 11.820 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.840 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.840 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.840 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.840 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.840 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.840 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.870 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.870 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.870 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.990 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.990 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.990 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.990 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.990 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.100 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.100 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.100 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.100 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.100 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.150 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.320 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.420 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.420 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.420 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.480 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.480 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.480 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.480 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.481 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 12.490 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 12.490 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.490 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 12.491 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.491 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.491 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.491 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.491 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.491 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.550 PROFILE= 4 INTERPOLATED XSECTIONS USED

1
26-APR-88 21:27:13 PAGE 1

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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EOF..

342

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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  26-APR-88 TIME   21:25:47          *
*************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
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X      X  XXXXXXX   XXXXX                XXXXX
X      X  X        X     X            X      X
X      X  X        X                  X      X
XXXXXXXX  XXXX     X           XXXXX   XXXXX
X      X  X        X                  X
X      X  X        X     X            X
X      X  XXXXXXX   XXXXX              XXXXXXX
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1
26-APR-88 21:25:47


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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  1,2,3,4,5
  MODIFICATION -  50,51,52,53,54,55
*************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY          25-YEAR EVENT
T3      FLAMINGO WASH UPSTREAM REACH (RAINBOW-CAMERON)   DMF 10/6/87

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      G          WSEL       FQ

        0.         2.         3.         0.  0.000000       0.00        0.3        0.  2223.470      0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

GT      4.000   4100.000   7000.000  10500.000  35000.000      0.000      0.000      0.000      0.000      0.000
NC      0.06       0.45       0.340      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####  STARTING WATER SURFACE AT 10.13 BASED ON REACH 2 ANALYSIS  ####
        ####  CENTERLINE =   2530
X1     10.130     23.000   2489.000   2587.000    350.000    500.000    470.000      0.000      0.000      0.000
GR   2236.000   1150.000   2232.000   1181.000   2228.000   1350.000   2228.000   1350.000   2224.000   1860.000
GR   2221.700   2000.000   2220.900   2497.000   2224.600   2111.200   2224.400   2288.000   2222.700   2373.000
GR   2224.400   2489.000   2221.300   2504.000   2221.300   2521.000   2218.800   2547.000   2217.200   2569.000
GR   2217.200   2578.000   2225.600   2587.000   2225.600   2614.000   2234.700   2638.000   2237.000   2796.000
GR   2237.600   2947.000   2240.300   2959.000   2241.200   3083.000      0.000      0.000      0.000      0.000

NC      0.045      0.045      0.140      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####  CENTERLINE =   2530
X1     10.310     18.000   2129.000   2319.000    920.000    920.000    920.000      0.000      0.000      0.000
GR   2248.000    155.000   2244.000   1950.000   2244.000   1550.000   2244.000   1950.000   2244.000   1950.000
GR   2242.300    200.000   2235.900   2129.000   2230.400   2214.000   2226.000   2236.000   2224.900   2248.000
```

GR	2224.900	2299.000	2236.400	2319.000	2237.900	2410.000	2242.200	2474.000	2241.300	2531.000
GR	2242.100	2584.000	2244.500	2630.000	2248.000	2510.000	0.000	0.000	0.000	0.000
AC	-.000	.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

DECATUR BOULEVARD
SPECIAL BRIDGE ROUTINE

CENTERLINE = 2370

X1	10.330	12.000	2350.000	2388.000	110.000	110.000	110.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2241.000	2241.000	0.000
GR	2248.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2160.000	2238.000	2358.000	2230.000	2350.000	2230.000	2388.000	2238.000	2388.000
GR	2243.000	2650.000	2248.000	2370.000	0.000	0.000	0.000	0.000	0.000	0.000

SD	1.250	1.500	2.500	0.000	37.400	9.400	294.000	0.000	2230.500	2230.000
X1	10.340	12.000	2350.000	2388.000	95.000	95.000	95.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	2241.000	2242.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2242.000	2242.000	0.000
X4	1.000	2242.000	2300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	0.000	0.000	2248.000	0.000	470.000	2244.000	0.000	610.000	2242.300	0.000
BT	760.000	2242.000	0.000	1080.000	2243.000	0.000	1280.000	2244.500	0.000	1430.000
BT	2242.000	0.000	1510.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2246.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2160.000	2235.000	2358.000	2230.500	2350.000	2230.500	2388.000	2242.000	2388.000
GR	2243.000	2650.000	2243.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2610

X1	10.490	26.000	2475.000	2687.000	650.000	710.000	750.000	0.000	0.000	0.000
GR	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000
GR	2288.900	2000.000	2272.200	2234.000	2270.600	2283.000	2265.500	2389.000	2261.900	2475.000
GR	2239.900	2511.000	2241.500	2547.000	2239.100	2570.000	2239.100	2617.000	2240.300	2648.000
GR	2242.100	2701.000	2241.300	2724.000	2240.500	2754.000	2238.400	2771.000	2238.400	2794.000
GR	2245.500	2799.000	2243.000	2845.000	2242.900	2888.000	2244.400	2987.000	2248.300	3092.000
GR	2272.000	3220.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	-.000	.000	0.000	.100	0.300	0.000	0.000	0.000	0.000	0.000
GT	4.000	370.000	6000.000	9400.000	34000.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2150

X1	10.700	19.000	2052.000	2489.000	1110.000	1160.000	1110.000	0.000	0.000	0.000
GR	2281.000	1270.000	2281.000	1270.000	2280.000	1270.000	2280.000	1270.000	2280.000	1270.000
GR	2272.300	2000.000	2271.900	2052.000	2252.900	2112.000	2252.800	2198.000	2253.100	2233.000
GR	2253.600	2284.000	2253.600	2370.000	2253.600	2436.000	2253.600	2473.000	2256.600	2489.000
GR	2256.600	2553.000	2259.300	2608.000	2255.500	2654.000	2280.000	2740.000	0.000	0.000
ET	.000	9.100	8.100	9.100	0.000	0.000	0.000	0.000	1900.000	2840.000
NC	.000	.100	.133	.100	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2680

X1	10.960	31.000	2513.000	2840.000	1430.000	1280.000	1365.000	0.000	0.000	0.000
GR	2284.000	1220.000	2283.000	1220.000	2272.000	630.000	2272.000	1330.000	2276.000	1360.000
GR	2266.000	1520.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000
GR	2276.900	2000.000	2279.900	2098.000	2278.700	2174.000	2275.900	2353.000	2273.200	2398.000
GR	2268.000	2446.000	2270.600	2611.000	2267.500	2628.000	2267.500	2647.000	2264.700	2670.000
GR	2263.000	2538.000	2263.000	2686.000	2265.000	2702.000	2270.000	2736.000	2267.800	2761.000
GR	2267.900	2734.000	2272.900	2926.000	2275.600	2840.000	2275.600	2876.000	2274.100	2948.000
GR	2284.000	3595.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2560

X1	11.150	29.000	2521.000	2844.000	1335.000	985.000	1010.000	0.000	0.000	0.000
GR	2259.000	1020.000	2280.000	1020.000	2288.000	1430.000	2289.000	1570.000	2286.000	1710.000
GR	2292.800	2000.000	2290.400	2033.000	2288.400	2140.000	2284.600	2282.000	2282.900	2380.000
GR	2282.000	2398.000	2283.000	2414.000	2281.900	2429.000	2278.600	2521.000	2269.400	2530.000
GR	2269.400	2538.000	2273.000	2559.000	2281.000	2567.000	2281.000	2633.000	2280.300	2655.000
GR	2279.300	2663.000	2273.300	2668.000	2279.000	2710.000	2279.000	2731.000	2286.700	2791.000

GR	2284.000	3050.000	2283.000	3250.000	2292.000	3400.000	0.000	0.000	0.000	0.000

NC	0.045	0.140	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2460

X1	11.280	13.000	2416.000	2823.000	655.000	640.000	645.000	0.000	0.000	0.000
X4	3.000	2300.000	760.000	2296.000	2200.000	2300.000	1750.000	0.000	0.000	0.000
GR	2301.600	700.000	2264.000	1060.000	2294.000	1280.000	2298.000	1400.000	2296.500	1600.000
GR	2304.500	2000.000	2302.300	2066.000	2303.000	2258.000	2300.500	2304.000	2292.100	2376.000
GR	2288.600	2416.000	2273.900	2439.000	2273.900	2502.000	2288.100	2523.000	2288.100	2556.000
GR	2288.800	2537.000	2292.000	2690.000	2296.000	3060.000	2300.000	3430.000	0.000	0.000

NC	0.000	0.000	0.031	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000

JONES BOULEVARD
SPECIAL BRIDGE ROUTINE

CENTERLINE = 2725

X1	11.310	16.000	2704.000	2746.000	180.000	200.000	180.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2288.400	2288.400	0.000
GR	2300.000	1000.000	2297.000	1200.000	2297.000	1600.000	2299.400	1760.000	2298.200	1980.000
GR	2300.000	2110.000	2300.000	2600.000	2292.000	2682.000	2280.000	2704.000	2280.000	2746.000
GR	2288.400	2768.000	2292.000	2800.000	2292.000	2920.000	2296.000	3100.000	2300.000	3420.000
GR	2301.400	3370.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SB	1.250	1.560	2.800	0.000	41.500	13.500	224.000	0.000	2280.400	2280.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000

CENTERLINE BT CARDS = 1690

X1	11.320	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.400	0.000
X2	0.000	0.000	1.000	2283.400	2291.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2291.400	2291.400	0.000
BT	12.000	0.000	2300.000	0.000	460.000	2299.700	0.000	710.000	2299.600	0.000
BT	1050.000	2296.000	0.000	1210.000	2294.300	0.000	1280.000	2293.000	0.000	1580.000
BT	2292.000	0.000	1660.000	2291.400	0.000	1750.000	2292.000	0.000	1820.000	2292.400
BT	0.000	2150.000	2296.000	0.000	2230.000	2300.000	0.000	0.000	0.000	0.000

NC	.14	.16	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2370

X1	11.450	20.000	2311.000	2428.000	675.000	655.000	660.000	0.000	0.000	0.000
GR	2326.600	600.000	2304.000	1070.000	2307.000	1360.000	2302.500	1630.000	2304.800	1780.000
GR	2314.100	2000.000	2302.800	2129.000	2312.800	2170.000	2305.900	2260.000	2303.200	2311.000
GR	2286.900	2335.000	2283.900	2392.000	2296.900	2408.000	2301.600	2428.000	2301.600	2444.000
GR	2302.200	2478.000	2304.400	2572.000	2304.500	2720.000	2307.500	3040.000	2308.000	3600.000

NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2330

X1	11.640	15.000	2283.000	2372.000	1000.000	1000.000	1000.000	0.000	0.000	0.000
X4	1.000	2312.200	2180.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2316.000	50.000	2314.300	870.000	2315.000	1220.000	2315.000	1370.000	2315.000	1660.000
GR	2312.000	1800.000	2312.000	2104.000	2311.700	2251.000	2310.400	2283.000	2297.400	2297.000
GR	2297.400	2357.300	2305.100	2372.000	2307.700	2401.000	2308.600	2496.000	2312.600	2712.000
GR	2315.000	2957.000	2310.000	3291.000	2320.000	3600.000	0.000	0.000	0.000	0.000

CENTERLINE = 2360

X1	11.790	21.000	2282.000	2393.000	810.000	810.000	810.000	0.000	0.000	0.000
GR	2326.200	40.000	2324.300	210.000	2320.000	970.000	2320.000	970.000	2321.300	1360.000
GR	2316.700	2000.000	2313.600	2149.000	2319.200	2282.000	2315.700	2308.000	2306.000	2329.000
GR	2306.000	2348.000	2306.300	2381.000	2316.900	2399.000	2317.700	2427.000	2317.700	2458.000
GR	2319.800	2569.000	2321.200	2656.000	2320.400	2688.000	2324.000	3260.000	2328.000	3510.000

NC	0.000	0.000	0.040	0.300	0.500	0.000	0.000	0.000	0.000	0.000

TORREY PINES DRIVE
SPECIAL BRIDGE ROUTINE

X1	11.820	14.000	3289.000	3331.500	120.000	160.000	155.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2319.000	2319.000
GR	2326.000	1000.000	2321.300	2200.000	2321.000	2520.000	2320.800	2800.000	2320.000	3240.000
GR	2318.500	3239.000	2310.000	3289.500	2310.000	3331.500	2318.500	3331.500	2320.000	3380.000
GR	2321.200	3630.000	2323.000	3350.000	2324.000	4000.000	2328.000	4320.000	0.000	0.000

SB	1.250	1.500	2.630	0.000	41.500	13.500	224.000	0.000	2311.000	2310.000
X1	11.840	11.000	3289.000	3331.500	75.000	75.000	75.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	2319.000	2320.700	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2320.700	2320.700
X4	1.000	2324.000	1300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	4.000	3000.000	2321.100	0.000	3260.000	2320.700	0.000	3380.000	2321.000	0.000
BT	3600.000	2321.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2326.000	1000.000	2325.300	1650.000	2324.000	1850.000	2324.000	1900.000	2324.000	3240.000
GR	2319.500	3239.000	2311.500	3289.500	2311.500	3331.500	2319.500	3331.500	2324.000	3380.000
GR	2328.000	3450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.140	0.045	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 10000,

X1	11.870	13.000	2280.000	2400.000	300.000	70.000	160.000	0.000	1.500	0.000
GR	2336.000	1000.000	2332.000	1750.000	2328.000	2150.000	2324.000	2280.000	2320.000	2300.000
GR	2313.500	2315.000	2313.500	2360.000	2316.000	2370.000	2320.000	2380.000	2324.000	2400.000
GR	2325.000	2500.000	2330.500	3500.000	2332.000	3700.000	0.000	0.000	0.000	0.000

NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2220

X1	11.990	17.000	2154.000	2270.000	470.000	650.000	645.000	0.000	0.000	0.000
GR	2344.000	540.000	2340.000	980.000	2340.000	980.000	2340.000	980.000	2336.000	1680.000
GR	2330.300	2000.000	2330.800	2154.000	2320.900	2163.000	2320.900	2233.000	2322.600	2247.000
GR	2331.100	2251.000	2332.900	2270.000	2331.700	2294.000	2333.800	2416.000	2332.000	2780.000
GR	2332.000	2950.000	2335.000	3170.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.140	0.045	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2310

X1	12.100	24.000	2264.000	2371.000	495.000	565.000	580.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2348.000	650.000	2340.000	1180.000	2336.800	1530.000	2336.000	1850.000	2336.000	1940.000
GR	2334.700	2000.000	2332.100	2079.000	2332.900	2104.000	2332.500	2122.000	2332.500	2136.000
GR	2334.300	2147.000	2335.300	2264.000	2326.000	2288.000	2326.000	2345.000	2337.500	2371.000
GR	2337.400	2435.000	2338.700	2489.000	2336.000	2537.000	2337.000	2578.000	2337.500	2650.000
GR	2337.500	3000.000	2340.000	3130.000	2344.100	3140.000	2346.000	3260.000	0.000	0.000

NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

TROPICANA AVENUE
NORMAL BRIDGE ROUTINE

CENTERLINE = 10000

X1	12.150	21.000	9932.000	10068.000	280.000	300.000	300.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	2.000	2337.000	9450.000	2337.000	9851.000	0.000	0.000	0.000	0.000	0.000
GR	2348.000	3260.000	2344.000	6810.000	2340.000	9370.000	2338.500	9932.000	2327.000	9954.500
GR	2327.000	9954.500	2327.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100
GR	2327.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500
GR	2327.000	10045.500	2338.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	12.151	21.000	9954.500	10045.600	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

BT	14.000	9932.000	2338.500	2338.500	9954.500	2341.000	2337.000	9954.600	2341.000	2338.000
BT	9960.500	2341.000	2338.500	9960.600	2341.000	2338.000	9997.000	2341.000	2338.000	9997.100
BT	2341.000	2337.000	10003.000	2341.000	2327.000	10003.100	2341.000	2337.000	10039.500	2341.000
BT	2337.000	10039.600	2341.000	2337.000	10045.500	2341.000	2337.000	10045.600	2341.000	2337.000
BT	10068.000	2338.500	2338.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2348.000	3260.000	2344.000	8810.000	2340.000	9370.000	2338.500	9932.000	2327.000	9554.500
GR	2337.000	9954.500	2337.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100
GR	2337.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500
GR	2327.000	10045.500	2338.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	12.160	0.000	1.000	0.000	50.000	50.000	50.000	0.000	0.500	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	12.160	21.000	9932.000	10068.000	1.000	1.000	1.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2348.000	3260.000	2344.000	8810.000	2340.000	9370.000	2338.500	9932.000	2327.000	9554.500
GR	2337.000	9954.500	2327.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100
GR	2327.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500
GR	2327.000	10045.500	2338.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1530.000	2756.000
NC	0.000	0.045	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE = 2240								
X1	12.320	25.000	2199.000	2319.000	750.000	750.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	5.000	2343.000	840.000	2346.000	940.000	2346.000	1460.000	2344.000	1605.000	2345.500
X4	1670.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2360.000	-710.000	2354.400	70.000	2352.000	320.000	2344.000	1530.000	2340.000	1580.000
GR	2346.100	2200.000	2347.100	2159.000	2334.700	2227.000	2334.700	2234.000	2327.300	2242.000
GR	2337.900	2258.000	2337.900	2278.000	2346.200	2308.000	2347.400	2319.000	2347.400	2334.000
GR	2347.900	2348.100	2351.300	2364.000	2352.200	2451.000	2350.400	2463.000	2349.200	2486.000
GR	2345.600	2494.000	2348.600	2509.000	2350.100	2524.000	2354.400	2534.000	2356.700	2756.000

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NC	0.000	0.000	0.045	0.100	0.300	0.000	0.100	0.000	0.000	0.000
NH	4.000	0.140	760.000	0.140	2320.000	0.140	2477.000	0.045	3320.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1800.000	2477.000
	####	CENTERLINE = 2360								
X1	12.420	19.000	2320.000	2477.000	535.000	595.000	550.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	3.000	2352.000	1120.000	2351.200	1310.000	2348.000	1740.000	0.000	0.000	0.000
GR	2364.000	-132.000	2355.000	760.000	2355.000	1600.000	2346.000	1690.000	2250.000	1850.000
GR	2346.600	2000.000	2343.700	2152.000	2348.400	2285.000	2350.600	2320.000	2340.700	2358.000
GR	2347.700	2384.000	2352.300	2426.000	2360.200	2477.000	2360.200	2531.000	2360.500	2732.000
GR	2356.900	2826.000	2355.100	2919.000	2364.100	3100.000	2368.000	3320.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
NC	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000
NH	4.000	0.140	1490.200	0.140	2165.000	0.140	2235.100	0.045	2730.000	0.000

RAINBOW BOULEVARD
NORMAL BRIDGE ROUTINE
ET CARDS USED AT BRIDGE XSECS TO CONFINE G25, G50 AND G100
IN LOG TO TROPICANA AVE GRADE, BASED ON UPSTREAM WIDTH.

CENTERLINE = 2200

X1	12.460	19.000	2165.000	2235.100	280.000	300.000	290.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	140.000	2349.000	0.000	0.000	0.000	0.000
GR	2364.000	-132.000	2355.000	760.000	2355.000	1490.000	2346.000	1590.000	2349.400	1690.000
GR	2356.500	2165.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2195.000	2343.500	2195.000	2343.500	2205.000	2343.500	2205.100

GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2160.000	0.040	2240.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.481	24.000	2160.000	2240.100	1.000	1.000	1.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	2160.000	2360.000	2358.500	2175.000	2360.000	2358.500	2187.000	2362.500	2358.500
BT	2195.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2249.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2187.000	2360.000	2187.100	2360.000	2188.000	2343.500	2188.100
GR	2343.500	2217.000	2360.000	2217.100	2360.000	2218.000	2343.500	2218.100	2343.500	2218.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2175.000	0.040	2225.000	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.499	24.000	2160.000	2240.100	90.000	90.000	90.000	0.000	0.500	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	6.000	2160.000	2360.000	2358.500	2175.000	2360.000	2358.500	2190.000	2362.500	2358.500
BT	2190.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2249.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000

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GR	2343.500	2175.100	2343.500	2185.000	2360.000	2185.100	2360.000	2190.000	2343.500	2190.100
GR	2343.500	2215.000	2360.000	2215.100	2360.000	2220.000	2343.500	2220.100	2343.500	2220.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2165.000	0.040	2225.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.491	19.000	2165.000	2235.100	1.000	1.000	1.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
GR	2360.000	100.000	2356.000	1330.000	2351.300	1490.000	2354.000	1590.000	2353.000	1690.000
GR	2358.500	2165.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2195.100	2343.500	2195.100	2343.500	2205.000	2343.500	2205.100
GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1330.000	0.140	2283.300	0.035	2375.000	0.045	2681.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1710.000	2462.000
	#####	CENTERLINE =	2310							
X1	12.551	14.000	2283.000	2375.000	310.000	310.000	310.000	0.000	0.000	0.000
GR	2372.000	460.000	2364.000	1110.000	2360.000	1330.000	2360.000	1520.000	2360.000	1710.000
GR	2360.000	2000.000	2355.600	2283.000	2346.200	2305.000	2346.200	2352.000	2358.100	2375.000
GR	2366.500	2421.000	2367.500	2462.000	2366.500	2568.000	2365.400	2631.000	0.000	0.000
EO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CHSEL	CRIWS	*SELK	EG	HV	HL	CLOSS BANK ELEV
C	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID ENDST

*PROF 4

CCH V= 0.100 CEHV= 0.300
*SECNO 10.130

3265 DIVIDED FLOW

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          ####   STARTING WATER SURFACE AT 10.13 BASED ON REACH 2 ANALYSIS   ####
          ####   CENTERLINE =   2330
     10.13        6.27   2223.47   2223.42   2223.47   2224.36      0.89      0.00      0.00   2224.40
     4100.        1161.     2939.        0.       354.      335.       0.        0.        0.   2225.60
      0.08        3.34      3.71      0.00      0.060     0.040     0.045     0.000  2217.20   1892.26
  0.010116         350.      470.      500.         3         5         0      0.00    397.00   2584.72

CCHN=    0.10  CEHV=    0.300
*SECNO 10.310
          ####   CENTERLINE =   2300
     10.31        6.17   2231.07      0.00      0.00   2232.20      1.12      7.77      0.07   2235.90
     4100.           .      4100.        .         .       482.       0.       12.        5.   2236.40
      0.03        0.00      8.50      0.00     0.045     0.040     0.045     0.000  2224.60   2203.59
  0.007151         920.      920.      920.         2         0         0      0.00    106.15   2309.74

CCHN=    0.300 CEHV=    0.500
*SECNO 10.330

1645 INT SEC ADDED BY RAISING SEC      10.33,  -3.625FT AND MULTIPLYING BY    1.792

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      1.01        4.61   2230.99   2230.99      0.00   2233.42      2.43      0.29      0.66   2234.18
     4100.           .      4100.        .         .       328.       0.       13.        5.   2234.18
      0.03        0.00     12.52      0.00     0.045     0.040     0.045     0.000  2226.18   2975.49
  0.016688          25.       28.       28.         4        15         0      0.00     68.09   3043.58

1645 INT SEC ADDED BY RAISING SEC       1.01,   1.275FT AND MULTIPLYING BY    0.853

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   SECNO      DEPTH      C-SEL      CRIWS      WSELK      EG         HV         HL         CLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        ARCH       VCL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      1.02        5.35   2232.81   2232.81      0.00   2235.51      2.70      1.46      0.13   2235.45
     4100.           .      4100.        .         .       311.       0.       13.        5.   2235.45
      0.03        0.00     13.18      0.00     0.045     0.040     0.045     0.000  2227.45   2766.99
  0.016836          28.       28.       28.         20        8         0      0.00     58.06   2825.05

1645 INT SEC ADDED BY RAISING SEC       1.02,   1.275FT AND MULTIPLYING BY    0.827

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      1.03        6.28   2234.81   2234.81      0.00   2237.27      3.06      0.47      0.18   2236.73
     4100.           .      4100.        .         .       292.       0.       13.        5.   2236.73
      0.03        0.00     14.33      0.00     0.045     0.040     0.045     0.000  2228.73   2558.50
  0.017356          28.       28.       28.         20        8         0      0.00     48.03   2606.53

1645 INT SEC ADDED BY RAISING SEC       1.03,   1.275FT AND MULTIPLYING BY    0.791
```

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3727 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

```
##########################################################################
####                    DECATUR BOULEVARD                             ####
####                 SPECIAL BRIDGE ROUTINE                           ####
##########################################################################
####  CENTERLINE = 2370
```

10.33	7.12	2237.12	2237.12	0.00	2240.69	3.56	0.49	0.25	2238.00
4100.	0.	4100.	0.	0.	271.	0.	13.	5.	2238.00
7.13	0.00	15.15	0.00	0.045	0.040	0.045	0.000	2230.00	2350.00
0.016543	23.	23.	23.	23	8	0	0.00	38.00	2388.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TOA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCHAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2234.87 ,NOT 2237.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.00	2.60	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.34
PRESS FLOW BECAUSE EGLWC OF 2247.17 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	WS	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2241.65	2247.17	0.00	0.	4100.	294.	294.	2241.00	2242.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2242.00 ELREA= 2242.00

10.34	8.34	2239.34	0.00	0.00	2241.65	2.31	0.97	0.00	2235.00
4100.	0.	4100.	0.	0.	336.	0.	14.	6.	2242.00
8.43	0.00	12.23	0.00	0.045	0.040	0.045	0.000	2230.50	2350.00
0.008312	95.	95.	95.	4	0	0	0.00	38.00	2388.00

*SECNO 10.49

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.925FT AND MULTIPLYING BY 0.339

3301 HV CHANGED MORE THAN HVINS

10.01	9.98	2242.46	0.00	0.00	2242.64	0.18	0.36	0.64	2255.98
4100.	0.	3997.	103.	0.	1153.	72.	17.	6.	2238.48
8.75	0.00	3.48	1.43	0.045	0.040	0.045	0.000	2232.48	2140.11

0.000734	163.	198.	178.	3	0	0	0.00	204.03	2344.14

SECNO	DEPTH	C.SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TKA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.645

1.02	8.22	2242.67	0.00	0.00	2242.80	0.13	0.14	0.02	2257.95
4100.	1.	4085.	35.	0.	1411.	37.	23.	7.	2240.45
0.07	0.00	2.88	0.94	0.045	0.040	0.045	0.000	2234.45	2258.22
0.000709	163.	198.	178.	2	0	0	0.00	309.92	2568.15

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.394

1.03	6.43	2242.85	0.00	0.00	2243.02	0.16	0.20	0.02	2259.93
4100.	1.	4089.	1.	0.	1272.	2.	30.	5.	2242.43
0.09	0.00	3.22	0.46	0.045	0.040	0.045	0.000	2236.43	2377.30
0.001550	163.	198.	178.	2	1	0	0.00	392.33	2769.63

1648 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.282

3288 DIVIDED FLOW

####	CENTERLINE =	2813							
1.49	4.57	2243.27	0.00	0.00	2243.58	0.31	0.49	0.07	2261.90
4100.	0.	4100.	0.	0.	921.	0.	35.	11.	2244.40
0.12	0.00	4.45	1.01	0.045	0.040	0.045	0.000	2238.40	2497.02
0.000503	163.	198.	178.	3	0	0	0.00	382.23	2912.29

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1648 INT SEC ADDED BY RAISING SEC 10.70, -10.830FT AND MULTIPLYING BY 0.668

3301 HV CHANGED MORE THAN HVINS

1.11	2.85	2244.85	0.00	0.00	2245.59	0.74	1.88	0.13	2260.80
4100.	1.	4033.	1.	1.	588.	3.	39.	13.	2245.80
0.11	0.00	6.89	0.00	0.045	0.040	0.045	0.000	2242.80	1826.60
0.011530	278.	278.	290.	3	2	0	0.00	284.63	2081.23

SECNO	DEPTH	C.SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TKA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.165

1.02	2.99	2243.19	0.00	0.00	2246.65	0.66	3.25	0.11	2264.40
3980.	0.	3333.	0.	0.	688.	0.	43.	14.	2245.40

6.12	0.00	6.57	0.00	0.045	0.040	0.045	0.000	2245.60	1919.34
0.011924	278.	278.	290.	3	0	0	0.00	295.05	2214.39

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.142

1.03	2.40	2251.60	0.00	0.00	2252.18	0.58	3.33	0.01	2268.00
3800.	0.	3800.	0.	0.	620.	0.	47.	16.	2253.00
0.13	0.00	6.13	0.00	0.045	0.040	0.045	0.000	2249.20	2012.09
0.012046	278.	278.	290.	3	0	0	0.00	335.46	2347.55

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.124

CENTERLINE = 2150

10.70	2.23	2255.03	0.00	0.00	2255.56	0.53	3.37	0.01	2271.60
3700.	0.	3700.	0.	0.	635.	0.	51.	19.	2256.60
0.15	0.00	6.23	0.00	0.045	0.040	0.045	0.000	2252.80	2104.88
0.012266	278.	278.	290.	3	0	0	0.00	375.76	2480.64

*SECNO 11.96

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3477 ENCROACHMENT STATIONS= 1900.0 2840.0 TYPE= 1 TARGET= 940.000

CENTERLINE = 2630

10.96	6.56	2269.56	2269.50	0.00	2271.66	1.09	14.93	0.17	2270.60
3700.	62.	3648.	0.	30.	432.	0.	68.	28.	100000.00
0.19	1.72	8.45	0.00	0.045	0.033	0.180	0.000	2263.00	2437.66
0.009809	1400.	1358.	1280.	13	20	0	0.00	243.17	2797.98

SECNO	DEPTH	C.SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	ELA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XAR	*TA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.150

CENTERLINE = 2561

11.15	6.21	2275.61	0.00	0.00	2276.78	1.17	6.10	0.02	2278.60
3700.	0.	3700.	0.	0.	426.	0.	78.	32.	2281.80
0.23	0.00	8.68	0.00	0.045	0.033	0.180	0.000	2265.40	2523.92
0.004391	1035.	1035.	985.	3	4	0	0.00	77.33	2601.25

*SECNO 11.28

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2461

11.28	4.90	2276.80	0.00	0.00	2280.58	1.78	3.62	0.18	2288.60
3700.	0.	3700.	0.	0.	346.	0.	84.	33.	2288.10
0.24	0.00	10.71	0.00	0.045	0.033	0.140	0.000	2273.90	2431.33
0.008154	655.	645.	640.	3	4	0	0.00	77.92	2509.25

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED

347? ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2288.40 ELREA= 2288.40

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        ##########################################################
        ####                  JONES BOULEVARD                 ####
        ####              SPECIAL BRIDGE ROUTINE              ####
        ##########################################################
        ####  CENTERLINE = 2725
```

11.31	6.20	2286.20	2286.20	0.00	2289.33	3.13	1.43	0.68	2280.00
3700.	..	3700.	0.	0.	261.	0.	85.	34.	2280.00
0.25	1.03	14.29	0.00	0.045	0.031	0.140	0.000	2280.00	2764.00
0.007698	180.	180.	200.	20	11	0	0.00	42.00	2746.00

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SECNO	DEPTH	CWSEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	ULOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2283.99 ,NOT 2286.20 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFO	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.90	0.00	41.50	13.50	224.00	0.00	2288.40	2288.00

*SECNO 11.320
PRESS FLOW BECAUSE EGLWC OF 2296.20 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	HS	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2292.91	2296.20	...	183.	3513.	224.	224.	2288.40	2291.40

347. ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000
CENTERLINE AT CARDS = 1690

11.52	11.12	2291.52	0.00	0.00	2292.16	0.64	2.83	0.00	2280.40
3700.	311.	3206.	186.	113.	467.	196.	86.	34.	2280.40
0.25	2.73	6.86	0.95	0.045	0.031	0.140	0.000	2280.40	2683.61
0.006825	70.	70.	70.	2	3	2	0.00	105.37	2792.98

*SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
CENTERLINE = 2370

11.45	4.80	2293.70	2293.70	0.00	2295.83	2.13	1.36	0.74	2303.20
371.	..	371.	0.	0.	316.	0.	95.	35.	2301.60
0.28	0.73	11.72	0.95	0.141	0.035	0.160	0.000	2288.40	2326.95
0.011629	675.	675.	255.	20	19	0	0.00	79.65	2401.59

SECNO	DEPTH	C.SEL	CRIWS	.SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICCNT	CCPAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 11.648

3361 HV CHANGED MORE THAN HVINS

####	CENTERLINE =	2330							
11.64	5.58	2302.98	0.00	0.00	2304.44	1.46	8.54	0.07	2310.40
3700.	0.	3700.	0.	0.	382.	0.	103.	37.	2305.10
.29	0.00	9.70	0.00	0.140	0.035	0.160	0.000	2297.40	2290.99
0.006538	1000.	1000.	1000.	4	8	0	0.00	76.87	2367.86

*SECNO 11.79

3361 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE =	2360							
11.79	5.77	2311.77	2311.77	0.00	2318.97	2.20	6.90	0.22	2319.20
3700.	0.	3700.	0.	0.	311.	0.	109.	38.	2316.90
0.31	0.00	11.90	0.00	0.140	0.035	0.160	0.000	2306.00	2316.50
0.011576	810.	810.	810.	3	8	0	0.00	71.76	2388.27

CCHV= 0.300 CEHV= 0.300
*SECNO 11.820

3361 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED .SEL,C.SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

TORREY PINES DRIVE
SPECIAL BRIDGE ROUTINE

11.82	6.23	2316.23	2316.23	0.00	2319.35	3.12	2.20	0.46	2318.00
3700.	0.	3700.	0.	0.	261.	0.	110.	38.	2318.00
.32	0.00	14.17	0.00	0.140	0.040	0.160	0.000	2310.00	3289.11
0.017798	120.	155.	160.	20	8	0	0.00	42.28	2331.39

SECNO	DEPTH	C.SEL	CRIWS	.SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICCNT	CCPAR	TOPWID	ENDST

SPECIAL BRIDGE

6227 DOWNSTREAM ELEV IS 2313.99 .NOT. 2316.23 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CQFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.640
PRESS FLOW BECAUSE EGLWC OF 2326.79 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2322.59	2326.79	0.00	378.	3326.	224.	224.	2319.00	2320.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.64	7.97	2319.47	0.00	0.00	2321.37	1.50	2.02	0.00	2319.50
3700.	0.	3700.	0.	0.	335.	0.	111.	36.	2319.50
0.32	0.00	11.95	0.00	0.140	0.040	0.160	0.000	2311.00	2289.00
0.002444	75.	75.	75.	4	0	4	0.00	42.50	2331.50

*SECNO 11.670

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 1000.

11.87	6.30	2321.30	0.00	0.00	2322.64	1.34	1.10	0.17	2325.50
3700.	0.	3700.	0.	0.	396.	0.	112.	39.	2325.50
0.32	0.00	9.28	0.00	0.140	0.036	0.045	0.000	2316.00	2300.44
0.005752	377.	160.	70.	3	0	0	0.00	79.08	2379.52

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

CENTERLINE = 2220

11.99	4.88	2325.78	0.00	0.00	2327.58	1.80	4.80	0.14	2330.80
3700.	0.	3700.	0.	0.	344.	0.	117.	40.	2332.90
0.34	0.00	10.75	0.00	0.140	0.035	0.045	0.000	2320.50	2168.70
0.010015	47.	646.	650.	3	0	0	0.00	83.58	2252.24

SECNO	DEPTH	CHSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

*SECNO 12.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

CENTERLINE = 2310

12.11	4.83	2330.83	0.00	0.00	2332.60	1.76	5.01	0.00	2335.30
3700.	0.	3700.	0.	0.	347.	0.	122.	41.	2337.50
0.35	0.00	10.65	0.00	0.140	0.031	0.046	0.000	2326.00	2275.52
0.007531	485.	530.	565.	1	0	0	0.00	82.72	2358.25

CCHV= 0.300 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

```
            ##########################################################
            ####                  TROPICANA AVENUE                ####
            ####              NORMAL BRIDGE ROUTINE               ####
            ##########################################################
            ####  CENTERLINE = 10000
     12.15      6.31  2333.31      0.00      0.00  2333.81      0.50      0.84      0.38  2338.50
     3700.       .0    3700.       0.0       0.0     662.       0.0     126.      42.    2338.50
      0.37      0.00     5.67      0.00     0.140     0.031     0.045     0.000  2327.00  9942.16
 0.001446       280.     300.      300.         2         0         0      0.00    115.72 10057.88
```

*SECNO 12.151

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2338.50

```
     12.15      6.9   2333.19      0.00      0.00  2334.04      0.85      0.00      0.23  2327.00
     3700.       38.    3544.     118.       36.     445.       36.     126.      42.    2327.00
      0.37      1.35     7.97      3.26     0.140     0.031     0.045     0.000  2327.00  9942.58
 0.004262         1.       1.        1.         2         0         0      0.00     96.95 10057.46
```



```
   SECNO     DEPTH     Q_SEL     CRIWS     ASELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       ISA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

*SECNO 12.16

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

```
     12.16      5.76  2333.26      0.00      0.00  2334.33      1.07      0.23      0.06  2327.50
     3700.       36.    3554.     118.       32.     421.       32.     126.      42.    2327.50
      0.37      1.10     8.45      3.41     0.140     0.031     0.045     0.000  2327.50  9943.22
 0.005833         50.      50.       50.         2         0         0      0.00     95.65 10056.83
```

*SECNO 12.165

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

```
     12.16      6.56  2334.16      0.00      0.00  2334.52      0.46      0.00      0.18  2339.00
     3700.       0.       0.        0.        0.     681.       0.     126.      42.    2339.00
      0.37      0.00     5.43      0.00     0.140     0.031     0.045     0.000  2327.50  9941.67
 0.001264         1.       1.        1.         3         0         0      0.00    116.71 10058.38
```

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED ASEL,QWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

347 ENCROACHMENT STATIONS= 1537. 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

#### CENTERLINE = 2240									
12.32	7.16	2341.76	2341.76	0.00	2343.80	2.04	2.31	0.79	2347.10
3700.	0.	3700.	0.	0.	323.	0.	135.	44.	2347.40
0.59	0.00	11.47	0.00	0.060	0.035	0.045	0.000	2334.70	2211.05
0.012002	750.	800.	750.	20	8	0	0.00	80.91	2251.96

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

CCH\= 0.100 CEHV= 0.300
149 NH CARD USED
*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

347 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

#### CENTERLINE = 2360									
12.42	7.25	2347.95	0.00	0.00	2349.39	1.44	5.52	0.06	2350.60
3700.	0.	3700.	0.	0.	385.	0.	140.	45.	100000.00
0.41	0.00	9.62	0.00	0.060	0.040	0.045	0.000	2340.70	2230.16
0.018528	550.	550.	595.	2	0	0	0.00	80.10	2410.26

CCH\= 0.300 CEHV= 0.500
149 NH CARD USED
*SECNO 12.480

347 ENCROACHMENT STATIONS= 1300. 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

##
RAINBOW BOULEVARD
NORMAL BRIDGE ROUTINE
ET CARDS USED AT BRIDGE XSECS TO CONFINE Q25, Q50 AND Q100
IN LOB TO TROPICANA AVE GRADE, BASED ON UPSTREAM WIDTH.
##

#### CENTERLINE = 2200				###					
12.48	6.71	2350.21	0.00	0.00	2351.81	1.60	2.34	0.08	2358.50
3700.	0.	3700.	0.	0.	364.	0.	142.	45.	2360.00
0.41	0.00	10.16	0.00	0.060	0.040	0.045	0.000	2343.50	2170.53
0.007648	250.	250.	300.	3	0	0	0.00	58.58	2229.11

149 NH CARD USED
*SECNO 12.481

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3490 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.48	6.73	2360.23	3.00	0.00	2351.82	1.60	0.01	0.00	2358.50
3700.	0.	3700.	0.	0.	365.	0.	142.	45.	2360.00
0.41	0.00	10.14	0.00	0.060	0.040	0.045	0.000	2343.50	2168.28
0.012096	1.	1.	1.	1	0	0	0.00	60.83	2231.15

1490 NH CARD USED
*SECNO 12.49

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300. 2730.0 TYPE= 1 TARGET= 1430.000

3490 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	7.34	2351.34	3.00	0.00	2353.13	1.79	1.21	0.10	2359.00
37[illegible].	.	37[illegible].	.	.	348.	0.	143.	45.	2360.50
0.42	0.13	10.74	0.00	0.060	0.045	0.046	0.000	2344.00	2167.66
0.015182	90.	90.	90.	3	0	0	0.00	64.04	2231.72

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.00

SECNO	DEPTH	C*SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	T*A	LEFT/RIGHT
TIME	WLOB	VCH	WROB	*AL	*NCH	XNR	*TA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOP*IC	ENDST

3490 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	8.40	2352.40	3.00	0.00	2353.38	0.99	0.01	0.24	2359.00
3700.	0.	3700.	0.	0.	466.	0.	143.	45.	2360.50
0.42	0.00	7.97	0.00	0.060	0.040	0.045	0.000	2344.00	2169.41
0.013681	1.	1.	1.	3	0	0	0.00	60.73	2230.14

1490 NH CARD USED
*SECNO 12.550

347 ENCROACHMENT STATIONS= 1710.0 2462.0 TYPE= 1 TARGET= 752.000
CENTERLINE = 2513

12.55	7.31	2363.61	0.00	0.00	2354.62	1.01	1.13	0.01	2355.60
3700.	0.	3700.	0.	0.	459.	0.	146.	46.	2358.10
0.43	0.00	8.07	0.00	0.060	0.035	0.045	0.000	2346.20	2287.86
0.013668	310.	310.	310.	2	0	0	0.00	78.25	2366.15

```
**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  1,2,3,4,5
  MODIFICATION -  51,51,52,53,54,55
**********************************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH  REACH 1      50-YEAR FLOODPLAIN RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.        3.        0.        0.  0.000000      0.00      0.3       0.  2224.460     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2.000     .000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VCL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST

*PROF 2

CCHV=    0.100  CEHV=    0.300
*SECNO 10.130

3265 DIVIDED FLOW

          ####   STARTING WATER SURFACE AT 10.13 BASED ON REACH 2 ANALYSIS  ####
          ####   CENTERLINE =   2530
    10.13       7.26  2224.46   2224.46   2224.46   2225.40      1.94      0.00      0.00   2224.40
   7000.       2879.     4121.        0.       756.       428.       0.        0.        0.   2225.60
     .002        3.11      9.62      0.00      0.060     0.040     0.045     0.000  2217.20   1691.35
 0.009682       350.      470.      500.         3         4         0      0.00   713.47   2595.78

CCHV=    0.100  CEHV=    0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC     10.31,  -5.133FT AND MULTIPLYING BY    0.803

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    10.31       7.31  2227.63   2227.63      0.00   2230.14      2.56      3.57      0.49   2230.77
   7000.          .       0.        0.        0.       545.       0.        6.        3.   2231.27
     .01        6.30     12.83      0.00     0.045     0.040     0.045     0.000  2219.77   2056.56
 0.014297       307.      307.      307.         2         8         0      0.00   107.87   2164.42

1645 INT SEC ADDED BY RAISING SEC     10.31,   2.567FT AND MULTIPLYING BY    1.123
```

3301 HV CHANGED MORE THAN HVINS

1.02	9.36	2231.70	0.00	0.00	2232.93	1.14	2.55	0.14	2233.33
7000.	.	7000.	0.	0.	819.	0.	11.	4.	2233.83
0.02	0.00	8.55	0.00	0.045	0.040	0.045	0.000	2222.22	2095.82
0.005441	307.	307.	307.	3	0	0	0.00	145.12	2240.94

SECNO	DEPTH	C.SEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.567FT AND MULTIPLYING BY 1.105

#### CENTERLINE = 2300									
10.31	8.53	2233.43	0.00	0.00	2234.68	1.25	1.81	0.03	2235.90
7000.	.	7000.	0.	0.	780.	0.	17.	5.	2236.40
0.03	0.00	8.97	0.00	0.045	0.040	0.045	0.000	2224.99	2167.18
0.006481	307.	307.	307.	3	0	0	0.00	146.65	2313.83

CCHV= 0.300 CEHV= 0.500
*SECNO 10.33

1645 INT SEC ADDED BY RAISING SEC 10.33, -3.825FT AND MULTIPLYING BY 2.055

3301 HV CHANGED MORE THAN HVINS

1.01	6.75	2232.93	0.00	0.00	2235.66	2.73	0.24	0.74	2234.18
7000.	.	7000.	0.	0.	528.	0.	17.	5.	2234.18
0.13	0.00	13.26	0.00	0.045	0.040	0.045	0.000	2226.18	3183.48
0.012336	28.	28.	28.	3	8	0	0.00	78.09	3261.57

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.275FT AND MULTIPLYING BY 0.829

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3727 CRITICAL DEPTH ASSUMED

1.02	7.11	2234.56	2234.56	0.00	2238.15	3.59	0.38	0.43	2235.45
7000.	.	7000.	0.	0.	461.	0.	17.	5.	2235.45
0.13	0.00	15.21	0.00	0.045	0.040	0.045	0.000	2227.45	2905.65
0.015976	28.	28.	28.	23	8	0	0.00	64.13	2970.38

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.275FT AND MULTIPLYING BY 0.794

SECNO	DEPTH	C.SEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	10.39	2239.12	2239.12	0.00	2240.75	1.63	0.24	0.59	2236.73	
7000.	521.	5914.	565.	137.	534.	202.	18.	5.	2236.73	
0.23	2.79	11.38	2.79	0.045	0.040	0.045	0.000	2228.73	2471.64	
0.005632	28.	28.	28.	21	15	0	0.00	376.87	2548.51	

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.275FT AND MULTIPLYING BY 0.740

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

```
##########################################################################
####                    DECATUR BOULEVARD                             ####
####                SPECIAL BRIDGE ROUTINE                            ####
##########################################################################
####  CENTERLINE = 2370
```

10.33	10.25	2240.25	2240.25	0.00	2245.27	5.01	0.25	1.69	2238.10	
7000.	0.	7000.	0.	0.	390.	0.	18.	5.	2236.00	
0.13	0.1	17.97	0.0	0.045	0.041	0.045	0.000	2230.00	2350.00	
0.016788	28.	28.	28.	21	8	0	0.00	38.00	2388.00	

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2236.95 ,NOT 2240.25 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SECNO	DEPTH	CWSEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SB	XK	XKOR	COPG	RDLEN	BWC	BWP	BAREA	SS	ELCHO	ELCHD
	1.25	1.50	2.90	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESS FLOW BECAUSE EGLWC OF 2254.24 EXCEEDS 1.5 DEPTH
6670 D.S. ENERGY OF 2245.27 HIGHER THAN COMPUTED ENERGY OF 2244.02

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOIDAL AREA	ELLC	ELTRD
2253.46	2254.24	1.00	3261.	3742.	294.	294.	2241.00	2242.00

10.34	14.46	2244.66	1.00	0.00	2245.27	0.61	0.00	0.00	2235.00	
7000.	2283.	3313.	1432.	542.	545.	728.	21.	5.	2242.00	
0.03	2.39	6.33	1.97	0.045	0.040	0.045	0.000	2230.50	1856.81	

0.001195	95.	95.	95.	4	0	6	0.00	879.25	2736.06

*SECNO 10.490

CENTERLINE = 2610

10.49	7.53	2245.98	0.00	0.00	2246.14	0.15	0.83	0.05	2261.90
7000.	0.	6970.	30.	0.	2204.	34.	59.	18.	2244.40
0.16	0.00	3.16	0.89	0.045	0.040	0.045	0.000	2238.40	2493.81
0.000997	680.	700.	710.	4	0	0	0.00	535.66	3029.67

CCHL= 0.100 CCHV= 0.300

*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -9.600FT AND MULTIPLYING BY 0.872

3301 HV CHANGED MORE THAN HVINS

1.01	3.09	2246.23	0.00	0.00	2247.27	0.98	3.89	0.25	2262.00
6667.	0.	6667.	0.	0.	838.	0.	72.	22.	2247.00
0.11	0.00	7.95	0.00	0.045	0.040	0.045	0.000	2243.20	1955.35
0.013473	370.	370.	387.	4	0	0	0.00	333.95	2329.29

SECNO	DEPTH	C.SEL	CRIWS	%SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCH	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.800FT AND MULTIPLYING BY 1.074

1.02	3.04	2251.04	0.00	0.00	2251.84	0.80	4.55	0.02	2266.80
6333.	0.	6333.	0.	0.	882.	0.	80.	25.	2251.80
0.13	0.00	7.17	0.00	0.045	0.040	0.045	0.000	2248.00	2048.88
0.011227	370.	370.	387.	2	0	0	0.00	358.15	2407.03

1645 INT SEC ADDED BY RAISING SEC 1.02, 4.800FT AND MULTIPLYING BY 1.065

CENTERLINE = 2150

10.78	2.76	2255.65	0.00	0.00	2256.36	0.81	4.51	0.03	2271.60
6000.	0.	6000.	0.	0.	831.	0.	87.	28.	2256.60
0.14	0.00	7.22	0.00	0.045	0.040	0.045	0.000	2252.80	2103.22
0.013349	370.	370.	387.	3	0	0	0.00	380.19	2483.41

*SECNO 11.960

3265 DIVIDED FLOW

7165 MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

3471 ENCROACHMENT STATIONS= 1900.0 2840.0 TYPE= 1 TARGET= 940.000

CENTERLINE = 2680

10.96	7.61	2270.61	2270.61	2269.56	2271.76	1.15	14.22	0.10	2278.60
6000.	483.	5517.	0.	173.	618.	0.	112.	40.	100000.00
0.19	2.83	8.93	0.00	0.045	0.033	0.180	0.000	2263.00	2426.22
0.018328	1483.	1355.	1280.	10	23	3	0.00	377.76	2806.79

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2560

11.15	7.48	2276.88	0.00	2275.61	2278.90	2.02	6.88	0.26	2278.60
6000.	0.	6000.	0.	0.	526.	0.	128.	45.	2281.80
0.21	0.00	11.41	0.00	0.045	0.033	0.180	0.000	2269.40	2522.68
0.0005683	1035.	1010.	985.	2	0	0	0.00	80.07	2602.74

SECNO	DEPTH	Q*SEL	QRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCP&ID	ENDST

*SECNO 11.268

CENTERLINE = 2460

11.26	6.86	2290.75	0.00	2278.90	2282.96	2.20	4.03	0.06	2288.60
6000.	0.	6000.	0.	0.	504.	0.	135.	46.	2288.10
0.23	0.00	11.91	0.00	0.045	0.033	0.140	0.000	2273.90	2428.27
0.0006834	655.	645.	640.	3	0	0	0.00	93.87	2512.14

CCHV= 0.300 CEHV= 0.500

*SECNO 11.315

3301 HV CHANGED MORE THAN HVINS

3688 20 TRIALS ATTEMPTED *SEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3727 CRITICAL DEPTH ASSUMED

3477 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

```
##########################################################################
####                      JONES BOULEVARD                               ####
####                  SPECIAL BRIDGE ROUTINE                            ####
##########################################################################
```

CENTERLINE = 2725

11.31	8.49	2288.49	2288.49	2286.20	2291.72	3.24	1.13	0.52	2280.00
6000.	397.	5398.	208.	66.	356.	100.	137.	47.	2280.00
0.23	6.02	15.14	2.09	0.045	0.031	0.140	0.000	2280.00	2688.44
0.0057e2	131.	130.	200.	20	17	0	0.00	83.44	2771.88

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2285.50 ,NOT 2288.49 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.70	0.00	2280.40	2280.00

*SECNO 11.320

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	Q*SEL	QRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCP&ID	ENDST

FGEPS	FGLOC	H3	QWEIR	QPR	FAREA	TRAPEZOID	ELLC	ELTRD

						AREA		
2305.86	2301.13	0.00	2723.	3292.	224.	224.	2288.40	2291.40

347 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

#### CENTERLINE BT CARDS = 1690								
11.32	11.38	2292.28	0.00	2291.52	2293.72	1.44	1.99	0.00	2280.40
6000.	530.	5140.	329.	125.	499.	234.	139.	47.	2280.40
0.25	4.10	10.30	1.41	0.045	0.031	0.140	0.000	2280.40	2682.22
0.011763	7.	70.	70.	3	3	6	0.00	116.83	2799.05

*SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

#### CENTERLINE = 2370									
11.45	6.49	2295.39	2295.39	2293.70	2298.18	2.79	2.30	0.68	2303.20
6000.	0.	6000.	0.	0.	447.	0.	148.	48.	2301.60
0.25	0.00	13.42	0.00	0.140	0.035	0.160	0.000	2288.50	2324.11
0.011771	675.	663.	655.	29	11	1	0.00	80.86	2404.98

CCHV= 1.100 CEHV= 0.300
*SECNO 11.640

3301 HV CHANGED MORE THAN HVINS

#### CENTERLINE = 2330									
11.64	7.28	2304.68	0.00	2302.98	2306.77	2.09	6.52	0.07	2310.40
6000.	0.	6000.	0.	0.	517.	0.	159.	50.	2305.10
0.27	0.00	11.61	0.00	0.147	0.035	0.160	0.000	2297.40	2299.16
0.006906	1001.	1000.	1000.	3	1	0	0.00	82.02	2371.18

*SECNO 11.790

1

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SECNO	DEPTH	C*SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	WCH	WROB	ALOB	ACH	AROB	VOL	TRD	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCHAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

#### CENTERLINE = 2360									
11.79	7.53	2313.53	2313.53	2311.77	2316.37	2.64	6.89	0.23	2319.20
6000.	0.	6000.	0.	0.	443.	0.	168.	52.	2316.90
0.25	0.00	13.63	0.00	0.140	0.035	0.160	0.000	2306.60	2312.70
0.006725	810.	810.	810.	3	2	1	0.00	79.24	2391.94

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 2318.30 ELREA= 2319.00

11.82	8.60	2318.60	2318.60	2316.23	2322.87	4.27	2.08	0.71	2318.00
6[illegible]	3.	5997.	0.	4.	362.	0.	170.	52.	2318.00
0.29	0.52	16.59	0.00	0.140	0.040	0.160	0.000	2310.00	3274.28
0.117191	125.	155.	160.	20	8	0	0.00	57.22	3331.50

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2315.50 ,NOT 2318.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	XKOR	COFG	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840

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SECNO	DEPTH	CWSEL	CRIWS	*SELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

6671 D.S. ENERGY OF 2322.87 HIGHER THAN COMPUTED ENERGY OF 2322.56
PRESSURE AND WEIR FLOW

EGPRS	EGLOC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
2335.31	2332.76	0.00	3089.	2921.	224.	224.	2319.00	2320.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3717 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.54	8.82	2320.32	2320.04	2319.47	2324.38	4.06	1.24	-1.24	2319.50
6[illegible]	3.	5997.	0.	4.	371.	0.	170.	52.	2319.50
0.29	0.73	16.18	0.00	0.140	0.040	0.160	0.000	2311.50	3280.11
0.115817	75.	75.	75.	20	5	0	0.00	51.39	3331.50

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 10000,

11.97	10.28	2325.28	0.00	2321.30	2326.18	0.90	0.85	0.95	2325.50
6[illegible]	0.	5[illegible]	0.	0.	787.	0.	173.	52.	2325.50
0.30	0.00	7.62	0.00	0.140	0.035	0.045	0.000	2315.00	2281.12
0.032652	3[illegible]	165.	70.	3	8	0	0.00	117.77	2398.38

CCHV= 0.100 CHV= 0.300
*SECNO 11.990

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
372 CRITICAL DEPTH ASSUMED
CENTERLINE = 2220

11.99	6.26	2327.16	2327.16	2325.73	2329.76	2.61	3.06	0.51	2330.80
6[illegible]	1.	6[illegible]	0.	0.	463.	0.	182.	54.	2332.90

```
      0.31       0.00      12.97       0.00       0.140      0.035      0.045      0.000   2320.98   2164.68
 0.010864        470.       645.       650.           4         14          0       0.00     89.82   2254.50
```



```
   SECNO     DEPTH     C#SEL     CRIWS     #SELK     EG        HV        HL        CLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCFAR     TOPWID      ENDST

*SECNO 12.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2335.30 ELREA=     2337.50

         ####  CENTERLINE =  2310
    12.10       6.60   2332.57       0.00   2331.83   2334.81      2.32      5.02      0.03   2335.30
     6000.          0.     6000.         0.        0.      491.        0.       188.       56.   2337.50
      0.32       0.00      12.21       0.00       0.140      0.031      0.045      0.000   2326.00   2271.23
 0.007057        485.       580.       585.           2          0          0       0.00     90.20   2361.43

CCHV=    0.300 CEHV=    0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2338.50 ELREA=     2338.50

         ##########################################################
         ####                TROPICANA AVENUE                  ####
         ####              NORMAL BRIDGE ROUTINE               ####
         ##########################################################
         ####  CENTERLINE = 13000
    12.15       3.43   2335.43       0.00   2333.31   2336.11      1.68      5.81      0.49   2338.50
     6000.          0.     6000.         0.        0.      907.        0.       193.       56.   2338.50
      0.34       0.00      6.62       0.00       0.140      0.031      0.045      0.000   2327.00   9938.01
 0.001402        280.       300.       300.           3          0          0       0.00    124.01  10062.02

*SECNO 12.151

3285 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

337  NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2338.50

    12.15       8.10   2335.10       0.00   2333.09   2336.44      1.34      6.00      0.33   2327.00
     6000.          36.     5646.       267.        64.      592.        64.       193.       56.   2327.00
      0.34       1.35      9.54       4.18       0.140      0.031      0.045      0.000   2327.00   9938.65
 0.004790          1.         1.         1.           2          0          0       0.00    104.93  10061.38



   SECNO     DEPTH     C#SEL     CRIWS     #SELK     EG        HV        HL        CLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCFAR     TOPWID      ENDST

*SECNO 12.160
```

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	7.79	2335.29	0.00	2333.26	2336.76	1.46	0.25	0.06	2327.50
6000.	83.	5662.	255.	55.	569.	59.	194.	56.	2327.50
0.34	1.39	9.94	4.31	0.140	0.031	0.045	0.000	2327.50	9939.25
0.005370	5.	50.	50.	2	0	0	0.00	103.71	10060.79

*SECNO 12.160

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

12.16	8.92	2336.42	0.00	2334.16	2337.02	1.60	0.00	0.26	2339.00
6000.	0.	6000.	3.	0.	968.	0.	194.	56.	2339.00
0.34	0.00	5.20	0.00	0.140	0.031	0.045	0.000	2327.50	9937.05
0.001183	1.	1.	1.	3	0	0	0.00	125.92	10062.97

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,O*SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

CENTERLINE = 2240

12.32	8.73	2343.43	2343.43	2341.76	2346.11	2.58	2.10	0.55	2347.10
6000.	0.	6000.	0.	0.	465.	0.	207.	58.	2347.40
0.36	0.00	12.89	0.00	0.140	0.035	0.045	0.000	2334.70	2287.30
0.010851	751.	800.	750.	25	8	0	0.00	50.68	2297.97

SECNO	DEPTH	Q*SEL	QRTMS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	WLOB	QCH	QROB	ALOB	ACH	AROB	WCL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	ANCH	XNR	WTR	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCPAR	TOPWID	ENDST

CCH\= 0.10 CCHV= 0.300
1490 NH CARD USED
*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

CENTERLINE = 2360

12.42	8.93	2349.63	0.00	2347.95	2351.92	1.99	5.56	0.06	2350.60
6000.	0.	6000.	0.	0.	530.	0.	213.	59.	100000.00
0.37	0.00	11.33	0.00	0.140	0.040	0.045	0.000	2340.70	2323.73
0.009406	595.	551.	595.	2	0	0	0.00	92.60	2416.33

CCH\= 0.300 CCHV= 0.500

1490 NH CARD USED
*SECNO 12.480

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

```
        ##########################################################################
        ####                    RAINBOW BOULEVARD                             ####
        ####                NORMAL BRIDGE ROUTINE                             ####
        #### ET CARDS USED AT BRIDGE XSECS TO CONFINE Q25, Q50 AND Q100       ####
        #### IN LOB TO  TROPICANA AVE GRADE, BASED ON UPSTREAM WIDTH.         ####
        ##########################################################################
        ####          CENTERLINE = 2200          ####
    12.48       8.56  2352.06       0.00  2350.21  2354.54       2.48       2.68       0.24  2358.50
    600.        0.    600.          0.      0.     475.          0.       217.         60.    2360.00
     0.38       0.00    12.63       0.00    0.060    0.040      0.045      0.000  2343.50    2169.29
 0.009052        2.      2.          3.       2        0          0         0.00     60.55    2230.24
```

1490 NH CARD USED
*SECNO 12.481


```
   SECNO      DEPTH      QLSEL      QRIWS      WSELK      EG         HV         HL         CLOSS     BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        ARCB       VOL        TEA     LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTA        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST
```

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

```
    12.48       8.93  2352.43       0.00  2350.23  2354.63       2.20       1.81       0.38  2358.50
    600.          0.    600.          0.      0.     504.          0.       217.         60.    2360.00
     0.38       0.00    11.91       0.00    0.060    0.040      0.045      0.000  2343.50    2166.07
 0.013206          1.      1.          1.       3        0          0         0.00     60.11    2233.17
```

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

```
    12.49       8.93  2352.63  2352.19  2351.34  2355.92       2.38       1.52       0.39  2359.00
    600.          0.    600.          0.      0.     433.          0.       218.         60.    2360.50
     0.38       0.00    13.36       0.00    0.140    0.045      0.045      0.000  2344.00    2166.07
```

0.022364	90.	90.	90.	32	18	0	0.00	67.13	2233.18

1490 NH CARD USED

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ECH	AROB	VOL	TBA	LEFT&RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XAR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TCP&IC	ENDST

*SECNO 12.491

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=			1300.0	2730.0	TYPE=	1	TARGET=	1430.000	
12.49	11.79	2355.79	0.00	2352.40	2356.58	0.79	0.01	0.66	2359.00
6000.	6.3.	5137.	0.	977.	678.	0.	218.	60.	2360.50
0.38	0.52	7.66	0.00	0.14?	0.040	0.046	0.000	2344.10	1362.83
0.002360	1.	1.	1.	6	0	0	0.00	699.73	2232.21

1490 NH CARD USED
*SECNO 12.550

3470 ENCROACHMENT STATIONS=			1710.0	2462.0	TYPE=	1	TARGET=	752.000	
###	CENTERLINE =		2310						
12.55	10.21	2356.41	0.00	2353.51	2357.54	1.13	.79	0.17	2365.60
6000.	6.	8994.	0.	21.	702.	0.	226.	62.	2358.10
.39	0.30	5.54	0.00	0.140	0.038	0.046	0.000	2346.20	2231.09
0.002742	310.	310.	310.	3	0	0	0.00	140.64	2371.73

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 1,2,3,4,5
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3 FLAMINGO WASH REACH 1 100-YEAR FLOODPLAIN RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	3.	0.	0.000000	0.00	0.3	0.	2225.160	0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	3.000	0.0.0	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV

SECNO	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
STARTING WATER SURFACE AT 10.13 BASED ON REACH 2 ANALYSIS
CENTERLINE = 2533

10.13	7.96	2225.16	2225.10	2225.16	2226.16	1.00	0.00	0.00	2224.40
10500.	5283.	5247.	0.	1267.	496.	0.	0.	0.	2225.60
0.00	4.15	10.57	0.00	0.060	0.040	0.045	0.000	2217.20	1712.11
0.009717	360.	470.	500.	5	4	0	0.00	874.42	2596.53

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.782

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	9.76	2228.88	2228.83	0.00	2231.84	2.96	2.64	0.55	2230.13
10500.	0.	10500.	0.	0.	761.	7.	3.	3.	2230.63
0.00	0.00	13.80	0.00	0.045	0.040	0.045	0.000	2219.13	2020.11
0.013775	230.	230.	230.	20	11	0	0.00	131.22	2151.33

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.093

3301 HV CHANGED MORE THAN HVINS

1.02	11.40	2232.46	2.17	0.00	2233.90	1.45	1.91	0.15	2232.05
10500.	1.	10499.	0.	1.	1086.	12.	3.	3.	2232.55
0.01	0.34	9.67	0.00	0.045	0.040	0.045	0.000	2221.08	2039.51
0.000556	230.	230.	230.	4	0	0	0.00	169.14	2208.65

SECNO	DEPTH	C*SEL	CRIWS	*SELK	EG	HV	HL	CLCSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.925FT AND MULTIPLYING BY 1.085

1.03	10.00	2233.73	2.00	0.00	2235.26	1.49	1.35	0.01	2233.98
10500.	0.	10500.	0.	0.	1073.	0.	17.	4.	2234.48
0.02	0.00	9.78	0.00	0.045	0.040	0.045	0.000	2222.99	2090.56
0.006224	230.	230.	230.	6	0	0	0.00	172.21	2262.77

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.925FT AND MULTIPLYING BY 1.078

CENTERLINE = 230

10.31	10.34	2235.24	0.00	0.00	2236.72	1.48	1.46	0.00	2235.90
10500.	0.	10500.	0.	0.	1078.	0.	23.	5.	2236.40
0.02	0.00	9.77	0.00	0.045	0.040	0.045	0.000	2224.53	2139.10

0.06444	23?.	23?.	23?.	2	0	0	?.??	177.89	2316.99

CCHV= ?.30? CEHV= 1.500
*SECNO 10.330
3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3725 CRITICAL DEPTH ASSUMED

```
##########################################################################
####                    DECATUR BOULEVARD                             ####
####                SPECIAL BRIDGE RCLTINE                            ####
##########################################################################
####  CENTERLINE = 2370.                                                ####
```

10.33	12.52	2242.62	2242.52	0.00	2244.00	1.48	0.69	0.00	2238.00
10500.	2294.	5907.	2389.	495.	476.	536.	26.	6.	2238.00
?.?3	4.45	12.41	4.45	?.?45	0.?42	0.?45	0.000	2230.00	2131.32
0.?06130	110.	110.	110.	25	19	0	?.??	493.76	2625.08

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2239.11 ,NOT 2242.52 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

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SECNO	DEPTH	CWSEL	CRITWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	WCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTR	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SB	XK	XKOR	CORG	RDLEN	BWC	EWP	AREA	SS	ELCHO	ELCHC
	1.25	1.50	2.80	0.00	37.40	9.40	294.00	0.00	2239.50	2239.00

*SECNO 10.340

3301 HV CHANGED MORE THAN HWINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
2272.23	2256.51	0.00	7542.	3035.	294.	294.	2241.00	2242.00

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3711 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

?0.34	13.?2	2244.42	2244.38	0.00	2245.54	1.13	0.47	-0.47	2235.00
10500.	3008.	5772.	1718.	691.	529.	547.	30.	8.	2242.00
?.?3	4.56	10.91	3.14	?.?45	0.?42	0.?45	0.000	2230.50	1909.25
0.?04118	95.	95.	95.	20	9	6	?.??	803.14	2712.39

*SECNO 10.490

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.525FT AND MULTIPLYING BY 0.324

3301 HV CHANGED MORE THAN HWINS

1.01	13.11	2245.58	0.00	0.00	2246.14	0.56	0.43	0.17	2255.98
10500.	*	9834.	666.	*.	1614.	156.	37.	10.	2238.48
0.?4	0.??	6.15	3.59	?.?45	0.?42	0.?45	?.???	2232.48	2130.90
0.?01422	153.	198.	178.	2	0	0	?.??	202.16	2333.05

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.695

1.02	11.71	2246.16	3.00	0.00	2246.43	0.28	0.20	0.09	2257.95
10500.	3.	10006.	494.	0.	2336.	223.	47.	11.	2240.45
0.05	0.00	4.28	2.22	0.045	0.040	0.045	0.000	2234.45	2260.60
0.[illegible]798	165.	198.	178.	2	0	0	0.00	337.22	2587.82

SECNO	DEPTH	C.SEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	IWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CCPAR	TCP&IC	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.41[illegible]

1.03	9.85	2246.38	0.00	0.00	2246.61	0.23	0.17	0.01	2259.93
10500.	3.	10246.	254.	0.	2615.	163.	89.	13.	2242.43
0.07	0.00	3.92	1.56	0.045	0.040	0.045	0.000	2236.43	2371.38
0.[illegible]824	165.	198.	178.	3	0	0	0.00	465.83	2837.21

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.29[illegible]

CENTERLINE = 2610

10.49	8.18	2246.58	0.00	0.00	2246.85	0.27	0.22	0.02	2261.90
10500.	3.	10414.	86.	0.	2498.	64.	71.	15.	2244.40
0.06	0.00	4.17	1.34	.045	0.040	0.045	0.000	2238.40	2493.11
0.[illegible]1472	163.	198.	178.	2	0	0	0.00	552.56	3045.67

CCRVE= [illegible] CERVE= [illegible]
*SECNO 10.7[illegible]

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.80[illegible]FT AND MULTIPLYING BY 0.881

3301 HV CHANGED MORE THAN HVINS

1.01	4.95	2246.95	[illegible]	0.00	2247.65	[illegible]	1.67	0.13	2260.80
10225.	3.	10047.	178.	0.	1484.	74.	84.	18.	2245.80
[illegible]	0.00	6.77	2.39	.045	0.040	0.045	0.000	2242.00	1997.69
0.[illegible]4790	278.	278.	290.	3	0	0	0.00	418.82	2416.51

1645 INT SEC ADDED BY RAISING SEC 1.31, 3.60[illegible]FT AND MULTIPLYING BY 1.045

3301 HV CHANGED MORE THAN HVINS

7160 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	3.48	2249.03	2249.03	0.00	2250.55	1.47	2.24	0.23	2264.48
9950.	3.	9933.	[illegible]	[illegible]	1023.	0.	93.	20.	2249.40
0.10	0.00	9.72	[illegible]	.045	0.040	0.045	0.000	2245.63	2134.84
0.[illegible]6785	278.	278.	290.	4	19	0	0.00	355.72	2390.55

SECNO	DEPTH	C.SEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	IWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CCPAR	TCP&IC	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.043

3301 HV CHANGED MORE THAN HVINS

1.13	3.87	2283.27	0.00	0.00	2254.06	0.92	3.46	0.05	2268.00
9675.	0.	9672.	3.	0.	1216.	5.	100.	23.	2253.00
0.11	0.00	7.95	0.61	0.045	0.040	0.045	0.000	2249.20	2066.54
0.009541	278.	278.	290.	2	0	0	0.00	436.66	2503.30

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.041

CENTERLINE = 2150

10.76	3.36	2256.16	0.00	0.00	2257.38	1.22	3.25	0.07	2271.60
9400.	0.	9400.	0.	0.	1060.	0.	107.	26.	2256.60
0.12	0.00	3.36	0.00	0.045	0.040	0.045	0.000	2252.80	2101.31
0.014800	278.	278.	290.	2	0	0	0.00	385.30	2486.60

*SECNO 10.960
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

347 ENCROACHMENT STATIONS= 1900. 2840. TYPE= 1 TARGET= 940.000

CENTERLINE = 2380

10.96	8.45	2271.45	2271.45	2269.56	2272.86	1.41	15.01	0.06	2270.60
5400.	1430.	1970.	0.	331.	782.	0.	141.	38.	100000.00
0.16	4.52	10.15	0.00	0.045	0.033	0.180	0.000	2263.00	2417.06
0.006432	1430.	1355.	1280.	10	17	0	0.00	396.78	2813.84

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2560

11.15	8.36	2278.26	0.00	2275.61	2281.63	3.37	5.18	0.59	2278.60
9400.	0.	9401.	0.	0.	638.	0.	162.	44.	2281.80
0.18	0.00	14.72	0.00	0.045	0.033	0.180	0.000	2269.40	2521.32
0.007755	1035.	1010.	985.	2	0	0	0.00	83.04	2604.37

SECNO	DEPTH	QCHSEL	QRIWS	ASELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TAE	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.281

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2460

11.28	9.44	2283.34	0.00	2278.89	2285.91	2.57	4.20	0.08	2288.60
9400.	0.	9400.	0.	0.	731.	0.	172.	45.	2288.10
0.19	0.00	12.86	0.00	0.045	0.033	0.140	0.000	2273.90	2424.22
0.005549	685.	645.	640.	2	0	0	0.00	91.75	2515.97

CCHV= 0.300 CEHV= 0.600
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

347 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

JONES BOULEVARD
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2725

11.31	10.83	2290.83	2290.83	2286.20	2295.26	4.44	1.03	0.53	2280.30
9400.	769.	8177.	455.	107.	455.	182.	175.	45.	2280.00
0.20	7.15	17.98	2.49	0.045	0.031	0.140	0.000	2280.00	2684.15
0. 15871	18 .	180.	200.	20	8	0	0.00	106.48	2790.63

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2287.42 ,NOT 2291.83 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
6871 D.S. ENERGY OF 2295.26 HIGHER THAN COMPUTED ENERGY OF 2294.74

SECNO	DEPTH	C.SEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2333.49	23[illegible].42	0.00	6556.	2348.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

347 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000
CENTERLINE BT CARDS = 1695

11.32	11.20	2291.60	2291.44	2291.52	2295.68	4.08	0.39	-0.39	2280.40
9400.	791.	8133.	476.	115.	471.	200.	176.	45.	2280.40
.2	6.35	17.23	2.39	.045	0.031	0.140	0.000	2280.40	2683.46
0.005163	70.	70.	70.	20	15	5	0.00	110.18	2793.63

*SECNO 11.450

3301 HV CHANGED MORE THAN HWINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2370

11.45	8.58	2297.48	2297.48	2293.70	2300.99	3.51	4.64	0.17	2303.20
9400.		9400.	0.	0.	625.	0.	187.	47.	2301.60
0.21	0.00	15.04	0.00	0.140	0.036	0.160	0.000	2288.90	2320.60
0.010068	675.	660.	665.	5	15	2	0.00	89.87	2410.47

CCHV= 0.10, CCHV= 0.300
*SECNO 11.640

3301 HV CHANGED MORE THAN HVINS

```
          ####  CENTERLINE =  2330
    11.64      9.18  2306.58       0.00  2302.98  2309.57      2.99      8.53      0.05  2310.43
    9400.         .     9392.         8.        0.      676.     12.      202.      49.  2305.10
     0.23      0.00     13.89       0.65     0.140    0.035    0.160    0.000  2297.41  2287.11
 0.007315       10.     1000.     1000.         2        0        0     0.00    101.39  2388.50
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TEA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

*SECNO 11.79

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####  CENTERLINE =  2360
    11.79      9.54  2315.64  2315.64  2311.77  2319.21      3.56      6.89      0.17  2319.20
    94..          .        .        .        .      62.        .       214.       51.  2316.90
     0.24      0.00     15.15       0.00     0.140    0.035    0.160    0.000  2306.68  2308.13
 0.015056       81.      810.      810.         3        8        0     0.00     88.24  2396.37
```

CCHV=   0.300 CCHV=   0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                    TORREY PINES DRIVE                            ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ##########################################################################
    11.82     12.78  2322.78  2322.78  2316.23  2323.88      1.88       .92      0.75  2318.00
    9400.     2774.     5736.      890.     2554.      539.     879.      221.      54.  2318.00
     0.25      1.39     10.64       1.01     0.140    0.040    0.160    0.000  2310.00  1823.13
 0.004184       18.      158.      160.        25       16        9     0.00  1999.51  3822.64
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2317.42 WCT   2322.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

```
SB  XK        XKOR      COPG      RDLEN     BWC       BWP       BAREA     SS        ELCHO     ELCHC
     1.25      1.50      2.63      5.00     41.50     13.50    224.00      0.00   2311.00   2310.00
```

*SECNO 11.840
PRESSURE AND WTR FLOW


```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TEA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZCID AREA	ELLC	ELTRD
2363.79	2335.67	0.00	7784.	1618.	224.	224.	2315.00	2320.70

3665 20 TRIALS ATTEMPTED *SEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

11.84	14.02	2325.52	2325.52	2319.47	2326.59	1.07	0.28	-0.28	2319.50
9400.	3065.	6085.	250.	3495.	592.	206.	228.	58.	2315.50
0.25	0.38	11.23	1.22	0.141	0.040	0.160	0.000	2311.50	1072.29
0.003424	75.	75.	75.	22	9	8	0.00	2338.07	2410.36

*SECNO 11.670

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 10010,

11.67	13.87	2325.37	0.00	2321.30	2327.73	1.86	0.75	0.40	2325.50
9400.	3.	9393.	1.	4.	856.	2.	243.	66.	2325.50
0.26	0.24	10.96	0.75	0.140	0.035	0.045	0.000	2315.00	2259.00
0.005013	330.	160.	70.	4	0	2	0.00	150.13	2409.13

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2220

11.99	8.38	2329.28	0.00	2325.76	2332.39	3.11	4.29	0.37	2330.80
9400.	0.	9400.	0.	0.	664.	0.	255.	68.	2332.90
0.27	0.00	14.15	0.00	0.140	0.036	0.045	0.000	2320.50	2158.45
0.006246	470.	645.	650.	3	0	0	0.00	99.56	2258.00

*SECNO 12.100
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

CENTERLINE = 2310

12.10	8.12	2334.12	2334.12	2331.83	2337.43	3.31	4.94	0.36	2335.30
9400.	0.	9400.	0.	0.	643.	0.	263.	69.	2337.50
0.28	0.00	14.61	0.00	0.140	0.031	0.045	0.000	2326.00	2267.04
0.007862	485.	680.	565.	2	8	1	0.00	97.49	2364.53

CCHV= 0.30 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

TROPICANA AVENUE
NORMAL BRIDGE ROUTINE
CENTERLINE = 10000

12.15	11.03	2338.38	0.00	2333.31	2336.96	0.38	0.60	0.73	2338.50
9400.	0.	9400.	0.	0.	1249.	0.	270.	70.	2332.50
0.29	0.00	7.83	0.00	0.140	0.031	0.045	0.000	2327.00	9932.62
0.001328	290.	300.	300.	3	8	3	0.00	134.26	10067.18

*SECNO 12.151

330[illegible] HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2338.50

12.15	10.59	2337.59	0.00	2333.09	2339.47	1.88	0.00	0.50	2327.00
9400.	191.	8618.	591.	107.	756.	107.	270.	70.	2327.50
0.29	1.78	11.43	5.54	0.142	0.031	0.045	0.000	2327.00	9933.79
0.008135	1.	1.	1.	3	0	0	-33.65	132.44	10066.22

*SECNO 12.16[illegible]

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	10.49	2337.59	0.00	2333.26	2339.65	1.90	0.41	0.01	2327.50
9400.	194.	8626.	611.	106.	752.	106.	271.	70.	2327.50
0.29	1.83	11.45	5.69	0.141	0.031	0.045	0.000	2327.50	9933.98
0.008251	50.	50.	50.	2	0	0	-27.32	132.05	10066.03

SECNO	DEPTH	CWSEL	CRIWS	%SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XAR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.16[illegible]

330[illegible] HV CHANGED MORE THAN HVINS

12.16	12.[illegible]2	2339.52	0.00	2334.06	2340.24	0.72	0.00	0.35	2339.00
9400.	7.	9380.	13.	51.	1377.	32.	271.	70.	2339.00
0.29	0.13	6.81	0.42	0.141	0.031	0.046	0.000	2327.50	9736.89
0.[illegible]973	1.	1.	1.	3	0	0	0.00	453.31	10190.20

*SECNO 12.320
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3690 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

#### CENTERLINE = 2240									
12.32	12.45	2347.15	2347.15	2341.75	2347.90	0.75	1.21	0.02	2347.10
9400.	2593.	6807.	0.	1095.	846.	0.	302.	81.	2347.40
0.33	2.37	3.35	0.00	0.161	0.035	0.045	0.000	2334.70	1530.00
0.002713	750.	850.	750.	23	10	0	0.00	786.68	2316.68

CCHV= 0.100 CEHV= 0.300
1495 NH CARD USED
*SECNO 12.420
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3690 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

#### CENTERLINE = 2360									
12.42	10.[illegible]	2350.75	2350.79	2347.55	2351.46	0.63	1.83	0.01	2350.60

9400.	4145.	5253.	0.	1500.	642.	0.	327.	91.	100000.00	
0.35	2.76	8.19	0.00	0.060	0.040	0.045	0.000	2340.70	1600.00	
0.004247	535.	550.	595.	20	16	7	1.03	820.52	2420.52	

SECNO	DEPTH	C#SEL	CRIWS	#SELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOP#IC	ENDST

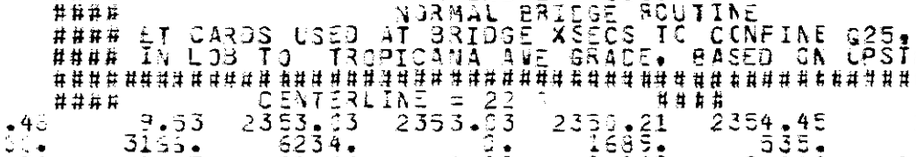
CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.480

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3688 20 TRIALS ATTEMPTED #SEL,C#SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000



12.48	9.53	2353.03	2353.03	2350.21	2354.45	1.42	1.52	0.39	2358.50
9400.	3166.	6234.	0.	1685.	535.	0.	341.	95.	2360.00
.36	1.37	11.66	0.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.006880	290.	290.	300.	21	12	7	0.00	641.68	2230.83

1490 NH CARD USED
*SECNO 12.481

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2350.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

12.48	10.71	2354.21	0.00	2350.23	2354.72	0.52	0.01	0.27	2358.50
9400.	4533.	4867.	0.	2402.	623.	0.	341.	95.	2360.00
.36	1.89	7.81	0.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.004932	1.	1.	1.	6	3	7	0.00	706.56	2234.00

SECNO	DEPTH	C#SEL	CRIWS	#SELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOP#IC	ENDST

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS=		1300.	2730.	TYPE=	1	TARGET=	1430.000			
12.49	10.80	2354.80	0.00	2351.34	2355.24	0.44	0.49	0.02	2359.00	
9400.	5241.	4159.	0.	2460.	543.	0.	347.	97.	2360.50	
0.37	2.13	7.66	0.00	0.140	0.045	0.045	0.000	2344.00	1300.00	
0.006147	9.	9.	9.	2	0	0	.00	703.79	2234.88	

1490 NH CARD USED
*SECNO 12.491

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED -SEL,CWSEL
3695 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=		1300.0	2730.0	TYPE=	1	TARGET=	1430.000			
12.49	11.32	2355.32	2355.32	2352.40	2357.69	2.38	0.01	0.97	2359.10	
9400.	9[illegible].	8459.	0.	739.	648.	0.	347.	97.	2360.50	
0.37	1.29	13.35	0.00	0.140	0.040	0.045	0.000	2344.00	1367.87	
0.007191	1.	1.	1.	20	8	0	0.00	543.50	2231.93	

1490 NH CARD USED
*SECNO 12.55

3470 ENCROACHMENT STATIONS=		1710.0	2462.0	TYPE=	1	TARGET=	752.000			
#### CENTERLINE =		2310								
12.55	11.17	2357.37	2355.42	2353.61	2359.53	2.16	1.77	0.96	2355.50	
9400.	67.	9333.	0.	100.	788.	0.	355.	100.	2358.10	
0.38	0.67	11.35	0.00	0.140	0.036	0.045	0.000	2346.20	2169.29	
0.004654	310.	310.	310.	4	15	0	0.00	204.29	2373.58	

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 51,52,53,54,55
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3 FLAMINGO WASH REACH 1 500-YEAR FLOODPLAIN RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	WSEL	FQ
	0.	5.	0.	0.	0.000000	0.00	0.3	2227.580	0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CRWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
STARTING WATER SURFACE AT 10.13 BASED ON REACH 2 ANALYSIS
CENTERLINE = 2530

10.13	10.38	2227.58	0.00	2227.58	2229.21	1.63	0.00	0.00	2224.40
35000.	23482.	11223.	325.	3521.	733.	59.	0.	0.	2225.60
0.00	6.66	15.30	5.55	1.000	0.340	0.046	0.000	2217.20	1403.54
0.012199	350.	470.	500.	0	0	0	0.00	1215.68	2619.22

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.759

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	17.61	2236.74	2236.74	0.7	2241.18	3.38	1.95	0.52	2230.13
35000.	1969.	29362.	3668.	334.	1860.	806.	19.	4.	2230.63	
0.00	5.39	15.79	5.59	0.045	0.040	0.045	0.000	2219.13	1889.21
0.006235	230.	230.	230.	20	14	0	0.00	453.81	2343.02

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.106

3301 HV CHANGED MORE THAN HVINS

1.2	17.72	2236.75	1.31	0.21	2241.42	2.67	1.27	0.37	2232.05
35000.	2021.	29236.	3745.	388.	2071.	636.	34.	7.	2232.55	
0.01	5.31	14.11	5.88	0.045	0.040	0.045	0.000	2221.05	1921.79
0.004899	230.	230.	230.	2	0	0	0.00	505.66	2427.45

SECNO	DEPTH	CRWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.72, 1.925FT AND MULTIPLYING BY 1.096

3268 DIVIDED FLOW

1.03	16.85	2236.92	0.00	0.07	2242.67	2.84	1.19	0.25	2233.98
35000.	1517.	31411.	3072.	317.	2120.	498.	50.	10.	2234.48
1.1	5.21	14.34	5.03	0.045	0.040	0.045	0.000	2222.58	1974.85

0.005506	23?.	230.	230.	4	0	0	0.00	472.94	2480.27

1645 INT SEC ADDED BY RAISING SEC 1.33, 1.925FT AND MULTIPLYING BY 1.087

####	CENTERLINE =	2356							
10.31	16.21	2241.11	0.00	0.00	2243.98	2.87	1.31	0.01	2235.98
35000.	1299.	31171.	2530.	272.	2182.	435.	65.	12.	2236.40
1.12	4.77	14.28	5.81	.046	0.040	0.045	0.000	2224.98	2024.24
0.005855	23?.	230.	230.	3	0	0	0.00	433.36	2457.59

CCH= 0.300 CEHV= 0.500
*SECNO 10.330

1645 INT SEC ADDED BY RAISING SEC 10.33, -3.825FT AND MULTIPLYING BY 2.907

3284 CROSS SECTION 1.01 EXTENDED 0.60 FEET

3301 HV CHANGED MORE THAN HVINS

1.61	18.61	2244.78	0.00	0.00	2244.84	0.06	0.01	0.84	2234.18
35000.	15375.	6621.	13001.	10837.	2056.	9159.	73.	13.	2234.18
1.12	1.42	3.22	1.59	.045	0.040	0.045	0.000	2226.18	1560.00
0.000163	23.	23.	23.	3	0	0	0.00	3608.51	5368.51

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.275FT AND MULTIPLYING BY 0.781

1.12	17.28	2244.73	0.00	0.00	2244.91	0.17	0.01	0.06	2235.45
35000.	14116.	8040.	12844.	6161.	1492.	4659.	84.	15.	2235.45
0.03	2.29	5.39	2.59	0.045	0.040	0.045	0.000	2227.46	1717.67
0.000598	23.	23.	23.	2	0	0	0.00	2746.85	4464.52

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IBC	ICONT	COPAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.275FT AND MULTIPLYING BY 0.720

3301 HV CHANGED MORE THAN HVINS

1.03	15.75	2244.48	0.00	0.00	2245.22	0.75	0.03	0.29	2236.72
35000.	12266.	13326.	12413.	2816.	979.	2525.	90.	17.	2236.72
1.03	4.36	11.54	4.92	0.045	0.040	0.045	1.000	2228.72	1918.18
0.002766	23.	23.	23.	3	0	1	1.00	1623.01	3541.20

1648 INT SEC ADDED BY RAISING SEC 1.13, 1.275FT AND MULTIPLYING BY 0.611

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED

DECATUR BOULEVARD
SPECIAL BRIDGE ROUTINE

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          ####  CENTERLINE =  2370
    10.33     15.75  2245.75  2245.75      0.00  2247.58      1.83      0.12      0.54  2238.00
   35000.     12546.    9754.   12700.     1718.     598.     1541.      93.       18.   2238.00
     0.03      7.30     16.30     8.24      0.45     0.04      0.45     0.00   2230.00  1779.59
 0.007791       25.       23.       28.        2        5        0     0.00    951.31  2770.90
0
 SPECIAL BRIDGE

 SB   XK        XKOR       COFQ       RDLEN      BWC        EWP        BAREA      SS         ELCHU      ELCHD
        1.25       1.50       2.80       0.00      37.4.      9.40     294.0       0.00    2230.50    2230.00

 *SECNO 10.340
 PRESSURE AND WEIR FLOW

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        ARCB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


  EGPRS       EGLWC        FR        QWEIR       QPR        EAREA    TRAPEZOID       ELLC       ELTRD
                                                                        AREA
   2575.65    2250.19       2.58     32019.      2988.       294.       294.      2241.00    2242.00


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3720 CRITICAL DEPTH ASSUMED
    10.34     16.51  2247.01  2247.01      0.00  2245.60      1.59      0.69     -0.69  2235.00
   35000.     14855.    9842.   10303.     2152.     627.     1536.     102.       20.   2242.00
     0.03      6.87     16.69     6.71      0.45     0.04      0.45     0.00   2230.51  1656.33
 0.006773       95.       95.       95.        2        9        0     0.00   1170.19  2826.53
*SECNO 10.490
 1645 INT SEC ADDED BY RAISING SEC     10.49,   -5.287FT AND MULTIPLYING BY    0.396

 3301 HV CHANGED MORE THAN HVINS

     1.01     14.79  2247.93      0.00      0.00  2250.85      2.92      1.53      0.67  2256.63
   35000.        .    3226.     2737.        .     2294.      313.       .        24.    2239.13
     0.04      0.00     14.06     8.76      0.45     0.04      0.45     0.00   2233.13  2168.12
 0.005989       217.      263.      237.        3        0        0     0.00    251.81  2419.93

 1645 INT SEC ADDED BY RAISING SEC      1.01,    2.633FT AND MULTIPLYING BY    1.762

 3301 HV CHANGED MORE THAN HVINS

     1.02     15.69  2251.35      0.00      0.00  2252.17      0.81      0.68      0.63  2259.27
   35000.        .    3209.     2905.        0.     4322.      627.      143.       26.    2241.77
     0.05      0.01     7.43     4.63      0.45     0.04      0.45     0.00   2235.77  2326.34
 0.001459       217.      263.      237.        2        0        0     0.00    447.64  2773.69
0
 1645 INT SEC ADDED BY RAISING SEC      1.02,    2.633FT AND MULTIPLYING BY    1.432

          ####  CENTERLINE =  2610
2
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SECNO / Q / TIME / SLOPE	DEPTH / QLOB / VLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / AROB / XNR / ICONT	HL / VOL / WTN / CCPAR	CLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
10.49	13.61	2252.11	0.00	0.00	2252.55	0.59	0.36	0.07	2261.90
35000.	0.	32693.	2307.	0.	5196.	634.	176.	29.	2244.40
0.06	0.00	6.29	3.64	0.045	0.040	0.045	0.000	2238.40	2486.69
0.011291	217.	263.	237.	3	0	0	0.00	627.16	3113.96

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1648 INT SEC ADDED BY RAISING SEC 10.71, -10.60 FT AND MULTIPLYING BY 0.999

3301 HV CHANGED MORE THAN HVINS

1.01	10.25	2252.25	0.00	0.00	2253.17	0.93	0.48	0.10	2260.80
34750.	0.	30599.	4151.	0.	3804.	856.	209.	33.	2245.80
0.07	0.00	8.34	4.85	0.045	0.040	0.045	0.000	2242.00	2078.36
0.002413	278.	278.	290.	2	0	0	0.00	588.87	2667.24

1648 INT SEC ADDED BY RAISING SEC 1.01, 3.60 FT AND MULTIPLYING BY 1.000

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3301 HV CHANGED MORE THAN HVINS

7168 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
1.02	6.90	2252.90	2252.50	0.00	2255.14	2.63	1.26	0.51	2264.40
34500.	0.	32640.	1860.	0.	2455.	280.	233.	36.	2245.40
0.07	0.00	13.29	6.64	0.045	0.040	0.045	0.000	2245.60	2089.33
0.011395	278.	278.	290.	5	14	0	0.00	547.05	2653.78

1648 INT SEC ADDED BY RAISING SEC 1.02, 3.600 FT AND MULTIPLYING BY 1.000

3268 DIVIDED FLOW

SECNO / Q / TIME / SLOPE	DEPTH / QLOB / VLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / AROB / XNR / ICONT	HL / VOL / WTN / CCPAR	CLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
7168 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
1.03	6.86	2256.07	2256.07	0.00	2258.70	2.63	3.18	0.50	2268.00
34250.	0.	32427.	1823.	0.	2441.	275.	250.	40.	2253.00
0.08	0.00	13.23	6.64	0.045	0.040	0.045	0.000	2249.20	2089.77
0.011468	278.	278.	290.	2	8	0	0.00	540.15	2654.16

1648 INT SEC ADDED BY RAISING SEC 1.03, 3.600 FT AND MULTIPLYING BY 1.000

3268 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2158

10.70	6.83	2259.63	2259.63	0.00	2262.26	2.63	3.20	0.00	2271.60
34000.	0.	32215.	1735.	0.	2426.	269.	268.	43.	2256.60
[illegible]	0.00	13.23	6.63	0.045	0.040	0.045	0.000	2252.80	2090.22
[illegible]11552	278.	278.	298.	2	5	0	0.00	532.92	2654.33

*SECNO 10.960

1648 INT SEC ADDED BY RAISING SEC 10.96, -7.650FT AND MULTIPLYING BY 4.075

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	8.55	2263.93	0.01	0.00	2264.34	0.45	1.87	0.22	2262.95
34000.	13318.	20682.	0.	4007.	3266.	0.	307.	56.	2267.95
0.10	3.32	6.33	0.00	0.045	0.033	0.180	0.000	2255.35	5468.86
[illegible]3146	356.	341.	320.	2	0	0	0.00	2559.31	11110.82

1648 INT SEC ADDED BY RAISING SEC 1.01, 2.550FT AND MULTIPLYING BY 0.748

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SECNO	DEPTH	C.SEL	CRIWS	.SELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	ILA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XACH	XNR	#TA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOP.ID	ENDST

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3688 20 TRIALS ATTEMPTED .SEL,C.SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	8.54	2265.94	2265.94	0.00	2267.10	1.16	1.75	0.21	2265.50
34000.	12382.	21618.	0.	2359.	2140.	0.	355.	74.	2270.50
0.12	5.23	10.10	0.00	0.045	0.033	0.180	0.000	2257.91	4147.46
0.009306	358.	341.	320.	2	11	0	0.00	1822.76	8332.58

1648 INT SEC ADDED BY RAISING SEC 1.02, 2.550FT AND MULTIPLYING BY 0.664

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	8.54	2269.29	2269.29	0.00	2270.76	1.47	3.30	0.39	2268.05
34000.	13021.	20979.	0.	2251.	1744.	0.	389.	86.	2273.05
0.13	6.14	11.57	0.00	0.045	0.033	0.180	0.000	2260.45	2767.58
[illegible]9714	358.	341.	320.	3	9	0	0.00	1307.86	5585.04

1645 INT SEC ADDED BY RAISING SEC 1.33, 2.550FT AND MULTIPLYING BY 0.494

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2680

10.96	10.63	2273.63	2273.63	0.00	2275.03	1.40	3.00	0.01	2270.60
34000.	185.5.	15492.	0.	3168.	1239.	0.	423.	98.	2275.60
0.14	5.86	12.60	0.00	0.045	0.033	0.180	0.000	2263.00	603.53
0.007639	358.	341.	320.	7	8	0	0.00	1492.92	2829.78

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	SLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.15

1645 INT SEC ADDED BY RAISING SEC 11.15, -4.800FT AND MULTIPLYING BY 1.430

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	15.14	2279.74	2279.74	0.01	2281.59	2.24	1.35	0.25	2273.80
34000.	6661.	25007.	2332.	1552.	1807.	1914.	451.	106.	2277.00
0.14	4.30	13.34	1.22	0.045	0.033	0.180	0.000	2264.60	1144.86
0.003898	259.	253.	246.	2	12	1	0.00	1416.88	3961.89

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.600FT AND MULTIPLYING BY 0.900

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.12	15.47	2281.67	2281.67	0.0	2284.06	2.38	1.02	0.14	2275.40
34000.	7291.	24197.	2512.	1586.	1674.	1915.	481.	114.	2278.60
0.14	4.63	14.46	1.31	0.045	0.033	0.180	0.000	2266.20	1125.52
0.004132	259.	253.	246.	23	2	0	0.00	1332.23	3688.29

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.600FT AND MULTIPLYING BY 0.889

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
&	GLOB	QCH	QROB	ALOB	ACH	ARCH	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1.03	15.92	2283.72	2283.72	0.00	2286.18	2.46	1.06	0.02	2277.00
34000.	8125.	23135.	2739.	1555.	1545.	1943.	511.	122.	2280.20
.16	4.81	14.98	1.41	0.045	0.033	0.180	0.000	2267.80	1105.60
0.004272	259.	253.	246.	20	8	9	0.00	1250.69	3416.51

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.600FT AND MULTIPLYING BY 0.875

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2560

11.15	16.47	2285.87	2285.87	0.00	2288.39	2.52	1.10	0.02	2278.60
34000.	9127.	21879.	2994.	1734.	1413.	1973.	541.	125.	2281.80
.16	5.26	16.49	1.52	0.045	0.033	0.180	0.000	2265.40	1086.06
0.004378	259.	253.	246.	20	8	9	0.00	1166.09	3143.55

*SECNO 11.28

1645 INT SEC ADDED BY RAISING SEC 11.28, -3.375FT AND MULTIPLYING BY 0.864

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	19.04	2289.57	2289.57	0.00	2295.08	5.51	0.76	0.90	2285.23
34000.	453.	32549.	998.	105.	1691.	593.	355.	132.	2284.73
.16	4.31	19.24	1.68	0.045	0.033	0.140	0.000	2270.52	2341.34
0.005017	164.	161.	160.	20	8	9	0.00	401.85	2743.19

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
&	GLOB	QCH	QROB	ALOB	ACH	ARCH	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1.02	18.37	2290.52	2290.52	0.00	2296.15	5.63	0.82	0.04	2286.35
34000.	413.	32561.	929.	97.	1682.	552.	563.	133.	2285.85
.17	4.20	19.42	1.68	0.045	0.033	0.140	0.000	2271.65	2352.00
0.005173	164.	161.	160.	4	8	9	0.00	386.29	2738.19

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	16.53	2291.42	2291.42	0.00	2297.21	5.79	0.85	0.05	2287.48

34000.	359.	32791.	850.	88.	1668.	506.	572.	134.	2286.98	
0.17	4.16	19.66	1.68	0.145	0.033	0.140	0.000	2272.77	2362.99	
0.005392	164.	161.	160.	4	6	0	0.00	366.64	2729.63	

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
372 CRITICAL DEPTH ASSUMED
CENTERLINE = 2460

11.26	18.71	2292.61	2292.61	0.00	2298.28	5.67	0.86	0.01	2288.60
34000.	372.	32786.	871.	91.	1684.	522.	580.	136.	2288.10
0.17	4.17	19.45	1.67	0.145	0.033	0.140	0.000	2273.60	2371.64
0.005249	164.	161.	160.	4	6	0	0.00	374.73	2746.37

CCHV= 0.300 CEHV= 1.000
*SECNO 11.310

1645 INT SEC ADDED BY RAISING SEC 11.31, -4.575FT AND MULTIPLYING BY 1.857

328 CROSS SECTION 1.31 EXTENDED 4.48 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	24.49	2269.91	0.00	0.00	2299.97	0.06	0.01	1.69	2275.43
34000.	20631.	7107.	6263.	19391.	1906.	14995.	501.	139.	2275.43
0.18	1.06	3.72	0.42	0.045	0.031	0.140	0.000	2275.43	1000.00
0.000085	45.	45.	50.	4	6	0	0.00	5329.74	6329.74

SECNO	DEPTH	CWSEL	CRIWS	ASELK	EG	HV	HL	CLOSS	BANK ELEV
	GLOB	WCH	WROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.525FT AND MULTIPLYING BY 0.846

3280 CROSS SECTION 1.02 EXTENDED 2.91 FEET

1.02	22.91	2299.36	0.00	0.00	2300.03	0.17	0.01	0.06	2276.95
34000.	18548.	9059.	6393.	12209.	1612.	9918.	634.	144.	2276.95
0.18	1.62	5.99	0.64	0.045	0.031	0.140	0.000	2276.95	1000.00
0.000240	45.	45.	50.	3	6	0	0.00	4509.83	5509.83

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.525FT AND MULTIPLYING BY 0.818

3280 CROSS SECTION 1.03 EXTENDED 1.11 FEET

3301 HV CHANGED MORE THAN HVINS

1.03	21.11	2299.58	0.00	0.00	2300.36	0.77	0.02	0.30	2278.48
34000.	14566.	12770.	6664.	6043.	1140.	5529.	553.	148.	2278.48
0.19	2.41	11.20	1.21	0.045	0.031	0.140	0.000	2278.48	1000.00
0.000936	45.	45.	50.	3	6	0	0.00	3570.95	4570.95

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.525FT AND MULTIPLYING BY 0.778

3280 CROSS SECTION 11.31 EXTENDED 3.89 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,C*SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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          ##########################################################################
          ####                    JONES BOULEVARD                               ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ##########################################################################
          ####  CENTERLINE = 2725
    11.31     20.89   2300.89   2300.89      0.00   2302.39      1.50      1.06      0.36   2280.00
   34000.    13874.    13405.     6720.     4321.      877.     4079.      665.       152.   2280.00
     0.19      3.21      15.23      1.65      0.045     0.031     0.140     0.000  2280.00  1000.00
0.001766       45.       45.        50.        20         6         0      0.00  2705.98  3705.98
```


SECNO	DEPTH	C*SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	WCL	TRA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOP WID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2297.43 ,NOT 2300.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEFQ	RDLEN	B*C	B*P	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.60	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
6871 D.S. ENERGY OF 2302.39 HIGHER THAN COMPUTED ENERGY OF 2301.27
3280 CROSS SECTION 11.32 EXTENDED 0.87 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2288.98	2337.48	0.00	3321.	868.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED *SEL,C*SEL
3711 *SEL ASSUMED BASED ON MIN DIFF
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          ####  CENTERLINE BY CARDS = 1691
    11.32     20.87   2301.27      0.00      0.00   2302.75      1.52      0.00      0.00   2280.40
   34000.    13816.    13459.     6725.     4228.      877.     4060.      680.       156.   2280.40
     0.19      3.22      15.35      1.66      0.046     0.031     0.141     0.000  2280.41  1000.00
0.001765       70.       70.        70.        20         0         8      0.00  2699.78  3699.78
```

*SECNO 11.450

1648 INT SEC ADDED BY RAISING SEC 11.45, -5.666FT AND MULTIPLYING BY 0.626

3280 CROSS SECTION 1.31 EXTENDED 1.70 FEET

3301 HV CHANGED MORE THAN HVINS

3685 21 TRIALS ATTEMPTED *SEL,C*SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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     1.00     20.90   2304.33   2304.33      0.00   2306.56      2.52      1.57      0.50   2297.53
   34000.     9726.     2412.     3863.     5135.      1246.     2533.      726.       166.   2295.93
```

0.20	1.93	16.39	1.52	0.140	0.035	0.160	0.000	2283.23	600.00
0.003956	225.	225.	218.	20	5	0	0.00	1876.88	2476.88

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.833FT AND MULTIPLYING BY 1.259

3280 CROSS SECTION 1.02 EXTENDED 0.93 FEET

3351 HV CHANGED MORE THAN HVINS

3668 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	20.03	2306.10	2306.10	0.00	2308.27	2.17	0.78	0.11	2300.37
34000.	8417.	22428.	3155.	6469.	1645.	2557.	773.	179.	2298.77
0.21	1.54	14.52	1.23	0.140	0.035	0.160	0.000	2286.07	600.00
0.003148	225.	225.	218.	20	10	0	0.00	2438.44	3038.44

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.833FT AND MULTIPLYING BY 1.23

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
CENTERLINE = 2370

1.45	19.01	2307.91	2307.91	0.00	2310.21	2.29	0.69	0.06	2303.20
34000.	6577.	25148.	2275.	5010.	1782.	1958.	820.	192.	2301.60
0.21	1.61	14.11	1.16	0.140	0.035	0.160	0.000	2288.50	670.32
0.003141	225.	225.	218.	20	12	0	0.00	2830.97	3501.29

CCHV= 0.100 CEHV= 0.300
*SECNO 11.640
3280 CROSS SECTION 11.64 EXTENDED 0.10 FEET

3668 2. TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
CENTERLINE = 2330

11.64	18.79	2316.11	2316.11	0.00	2318.47	2.37	0.16	0.12	2310.40
34000.	4351.	22322.	6817.	3649.	1516.	4573.	1232.	258.	2305.10
0.24	1.26	15.06	1.49	0.140	0.035	0.160	0.000	2297.40	560.00
0.003174	1000.	1000.	1000.	20	5	0	0.00	2519.10	3479.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.790

1648 INT SEC ADDED BY RAISING SEC 11.79, -4.333FT AND MULTIPLYING BY 0.964

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	18.05	2319.75	2319.75	0.00	2321.59	1.64	1.36	0.05	2314.90
34000.	10166.	20803.	3037.	6712.	1500.	2356.	1126.	286.	2312.60
0.26	1.51	13.87	1.23	0.140	0.035	0.160	0.000	2301.76	200.44
0.003573	46.	46.	46.	20	10	0	0.00	2547.89	3148.33

1648 INT SEC ADDED BY RAISING SEC 1.01, 4.300FT AND MULTIPLYING BY 1.037

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2361

11.79	17.54	2323.64	2323.64	0.00	2325.76	2.13	1.54	0.09	2319.20
34000.	9312.	21903.	2780.	6123.	1507.	2100.	1221.	313.	2316.90
0.26	1.52	14.54	1.32	0.140	0.035	0.160	0.000	2306.00	278.88
0.004376	46.	46.	46.	20	8	7	0.00	2523.51	3202.40

CCHV= 1.300 CCHV= 0.500
*SECNO 11.820

1648 INT SEC ADDED BY RAISING SEC 11.82, -2.687FT AND MULTIPLYING BY 1.681

3287 CROSS SECTION 1.01 EXTENDED 3.02 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	19.02	2326.35	0.00	0.00	2326.42	0.07	0.04	0.62	2315.33
34000.	20815.	6452.	6730.	26072.	1352.	9924.	1245.	317.	2315.33
0.27	0.68	4.77	0.63	0.140	0.040	0.160	0.000	2307.33	1000.00
0.000418	46.	52.	53.	3	0	1	0.00	5581.33	6581.33

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

1648 INT SEC ADDED BY RAISING SEC 1.01, 1.333FT AND MULTIPLYING BY 0.797

3286 CROSS SECTION 1.02 EXTENDED 1.64 FEET

1.02	17.64	2326.31	0.01	0.00	2326.53	0.22	0.13	0.07	2316.67
34000.	20112.	7621.	6367.	16572.	1300.	6099.	1275.	322.	2316.67
0.27	1.21	7.62	1.24	0.140	0.040	0.160	0.000	2308.67	1000.00
0.001284	46.	52.	53.	3	0	1	0.00	4412.00	5412.00

1648 INT SEC ADDED BY RAISING SEC 1.02, 1.333FT AND MULTIPLYING BY 0.746

3287 CROSS SECTION 11.82 EXTENDED 0.03 FEET

3301 HV CHANGED MORE THAN HVINS

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          ####                    SPECIAL BRIDGE ROUTINE                    ####
          ##########################################################################
    11.82     16.83  2326.83     0.00     0.00  2327.01     0.98     0.11     0.38  2318.00
   34000.     18315.     9775.     5911.     8684.      677.     3111.     1294.      326.  2318.00
     0.27      2.11     14.43     1.90     0.140     0.040     0.160     0.000  2310.00  1000.00
 0.005630       40.       52.       53.        4         0         0      0.00  3162.72  4162.71

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.50       2.63       0.00      41.50      13.50     224.00      0.00    2311.00    2313.00

*SECNO 11.840
3280 CROSS SECTION      11.84 EXTENDED      2.18 FEET

PRESSURE AND WEIR FLOW

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   SECNO      DEPTH      C#SEL      CRIWS      #SELK      EG         HV         HL         CLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       WCL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        #NCH       XNR        WTR        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CCSAR      TOPWID     ENDST

 EGFRS      EGL#C       H3        QWEIR      GPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                    AREA
 2882.65    2323.53      1.82     31616.     2389.      224.       224.      2319.00    2320.70


3688 20 TRIALS ATTEMPTED #SEL,C#SEL
3713 #SEL ASSUMED BASED ON MIN DIFF
    11.84     16.68  2328.18     0.00     0.00  2329.57     1.39     0.00     0.00  2319.50
   34000.     21640.    11326.     1034.     5576.      705.      487.     1314.      331.  2319.50
     0.28      2.26     16.06     2.13     0.140     0.040     0.160     0.000  2311.50  1000.00
 0.005618       75.       75.       75.        2         0         7      0.00  2460.00  3460.00

*SECNO 11.87
3688 20 TRIALS ATTEMPTED #SEL,C#SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
          ####          CENTERLINE = 1000.
    11.87     17.95  2332.95  2332.95     0.00  2334.62     1.68     0.79     0.14  2325.50
   34000.     2500.    21809.     9690.     1698.     1707.     2931.     1360.      342.  2325.50
     0.28      1.47     12.77     3.31     0.141     0.038     0.045     0.000  2315.00  1791.55
 0.002720       300.      154.       75.        2         9         0      0.00  1868.88  3660.43

CCHW=    0.10  CCHV=    0.300
*SECNO 11.99
3280 CROSS SECTION      11.99 EXTENDED      0.04 FEET

3688 20 TRIALS ATTEMPTED #SEL,C#SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
          ####  CENTERLINE =  2220.
    11.99     15.14  2336.04  2336.04     0.00  2337.70     1.67     2.00     0.00  2330.80
   34000.     2912.    18995.    12093.     1768.     1417.     2766.     1444.      366.  2332.90
     0.30      1.65     13.40     4.37     0.141     0.038     0.045     0.000  2320.50  1673.72
 0.003718       470.      646.      650.       20        10         0      0.00  1496.28  3170.00

*SECNO 12.100
3688 20 TRIALS ATTEMPTED #SEL,C#SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED
```

```
      ####  CENTERLINE =  2310
   12.10     14.79  2340.79  2340.79      0.00  2342.44      1.65      1.86      0.00  2335.30
 34000.      6886.   18416.    8698.      4050.    1344.     2177.     1527.       386.  2337.50
    0.32       1.70    13.70     4.00      0.140     0.031     0.045     0.000  2326.00  1127.90
 0.002958     465.     593.      565.        23         6         0      0.00  1923.72  3051.63

CCHL=   0.300 CCHV=   0.500
*SECNO 12.150

1645 INT SEC ADDED BY RAISING SEC     12.15,  -0.750FT AND MULTIPLYING BY   0.825

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    1.01     15.80  2342.05  2342.05      0.00  2344.61      2.56      0.23      0.45  2337.75
 34000.      5148.   23741.    5111.      2993.    1560.     1222.     1538.       386.  2337.75
    0.32       1.72    15.22     3.99      0.140     0.031     0.045     0.000  2326.25  8852.30
 0.003252     715.     75.       75.        23         8         0      0.00  1369.02 10221.32

1645 INT SEC ADDED BY RAISING SEC      1.01,   0.250FT AND MULTIPLYING BY   1.071

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
    1.02     17.65  2344.16  2341.94      0.00  2345.20      1.25      1.15      0.45  2338.10
 34000.      6249.   19913.    7833.      4977.    1393.     2412.     1550.       391.  2338.00
    0.32       1.26    10.62     3.25      0.140     0.031     0.045     0.000  2326.50  8666.60
 0.001305     715.     75.       75.        22         6         0      0.00  1792.68 10459.29

1645 INT SEC ADDED BY RAISING SEC      1.02,   0.250FT AND MULTIPLYING BY   1.066

    1.03     17.65  2344.40     0.00      0.00  2345.33      0.93      0.89      0.34  2338.25
 34000.      6236.   19947.    7817.      5306.    2018.     2572.     1566.       394.  2338.25
    0.33       1.18    9.89     3.24      0.140     0.031     0.045     0.000  2326.75  8693.34
 0.001143     715.     75.       75.         3         0         0      0.00  1911.11 10604.45

1645 INT SEC ADDED BY RAISING SEC      1.03,   0.250FT AND MULTIPLYING BY   1.062
```



```
      ##########################################################################
      ####                    TROPICANA AVENUE                              ####
      ####                NORMAL BRIDGE ROUTINE                             ####
      ##########################################################################
      ####  CENTERLINE = 10000
   12.15     17.59  2344.59      0.00      0.00  2345.43      0.85      0.08      0.02  2338.50
 34000.      6187.   20102.    7711.      5554.    2134.     2685.     1882.       397.  2338.50
    0.33       1.11    9.42     2.87      0.140     0.031     0.045     0.000  2327.00  8729.37
 0.001037     715.     75.       75.         2         0         0      0.00  2018.23 10747.59

*SECNO 12.151

3301 HV CHANGED MORE THAN HVINS
```

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2338.50

12.15	18.21	2345.21	.00	0.00	2345.58	0.37	0.00	0.14	2327.00
34000.	9112.	7384.	17504.	5486.	1157.	3351.	1683.	397.	2327.00
0.33	1.66	6.38	5.22	0.140	0.031	0.045	0.000	2327.00	8643.33
0.003072	1.	1.	1.	3	0	0	-411.70	2123.04	10766.37

*SECNO 12.160

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	17.35	2345.35	0.00	0.00	2345.78	0.43	0.17	0.03	2327.50
34000.	8766.	8236.	16979.	5025.	1170.	3097.	1594.	400.	2327.50
0.33	1.75	7.34	5.48	0.140	0.031	0.045	0.000	2327.50	8693.18
0.003666	50.	50.	50.	2	0	0	-354.92	2062.31	10755.49

*SECNO 12.180

3301 HV CHANGED MORE THAN HVINS

12.16	17.54	2346.04	0.00	0.00	2346.09	1.04	0.00	0.31	2339.00
34000.	4377.	21626.	8167.	4424.	2128.	2659.	1595.	400.	2335.00
0.33	0.97	10.11	3.07	0.140	0.031	0.045	0.000	2327.50	8734.74
0.001199	1.	1.	1.	2	0	0	0.00	2011.68	10746.42

*SECNO 12.320

1648 INT SEC ADDED BY RAISING SEC 12.32, -3.600FT AND MULTIPLYING BY 1.230

SECNO	DEPTH	CWSEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	WSL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCPAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	15.22	2346.32	0.00	0.00	2346.84	0.52	0.60	0.16	2343.50
34000.	21063.	12612.	325.	7224.	1450.	149.	1673.	418.	2343.80
0.36	2.92	8.70	2.18	0.060	0.035	0.045	0.000	2331.10	889.00
0.[illegible]2056	375.	400.	375.	4	0	0	0.00	2236.25	3266.25

1648 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 0.813

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2246.

12.32	14.25	2346.95	2346.95	0.00	2350.42	1.47	1.27	0.47	2347.10
34000.	19102.	14748.	149.	4371.	1062.	51.	1736.	435.	2347.40
0.37	4.37	15.33	2.93	0.060	0.035	0.045	0.000	2334.70	716.03
0.[illegible]6112	375.	400.	375.	21	10	3	0.00	1660.18	2512.54

CCH\= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.420

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 2360.20

#### CENTERLINE = 2360									
12.42	12.34	2353.04	0.00	0.00	2354.24	1.20	3.80	0.03	2350.60
34000.	22494.	11506.	0.	4152.	878.	0.	1e01.	454.	2360.20
0.39	5.42	13.10	0.00	0.060	0.040	0.045	0.000	2340.70	1026.37
0.008145	535.	550.	595.	3	0	0	0.00	1404.40	2430.78

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SECNO	DEPTH	C#SEL	CRIWS	#SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOSL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ERDST

CCH\= 0.300 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.480

1645 INT SEC ADDED BY RAISING SEC 12.48, -2.100FT AND MULTIPLYING BY 1.172

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3683 20 TRIALS ATTEMPTED #SEL,CWSEL
3692 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.20 ELREA= 2358.40

1.01	12.79	2354.19	2354.19	0.00	2356.47	2.27	0.67	0.03	2356.40
34000.	13627.	15373.	0.	6650.	872.	0.	1e10.	456.	2357.90
0.39	3.31	17.62	0.00	0.140	0.040	0.045	0.000	2341.40	1137.48
0.010975	7.	73.	75.	2	8	0	0.00	1342.61	2616.92

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.700FT AND MULTIPLYING BY 0.951

3285 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.80 ELREA= 2356.60

1.02	13.13	2355.18	2355.18	0.00	2357.36	2.18	0.77	0.03	2357.10
34000.	19115.	14885.	0.	5700.	851.	0.	1e20.	458.	2358.60
0.39	3.35	17.61	0.00	0.140	0.040	0.045	0.000	2342.10	1050.45
0.010748	7.	73.	75.	2	8	0	0.00	1325.26	2469.08

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SECNO	DEPTH	C#SEL	CRIWS	#SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

```
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOP&IC     ENDST


1645 INT SEC ADDED BY RAISING SEC       1.02,    0.700FT AND MULTIPLYING BY    0.545

3265 DIVIDED FLOW

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      1.03     13.22  2356.02  2356.02      0.00  2358.26      2.24      0.78      0.03  2357.80
    34000.    19400.   14600.       0.      5581.     817.       0.      1831.      462.  2355.30
      0.39      3.48     17.37     0.00     0.140    0.040     0.045     0.000  2342.80   980.98
 0.011275        7.        73.       75.         3        2         0      0.00  1280.78  2361.14

1645 INT SEC ADDED BY RAISING SEC       1.03,    0.700FT AND MULTIPLYING BY    0.546

3265 DIVIDED FLOW

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    RAINBOW BOULEVARD                     ####
          ####                NORMAL BRIDGE ROUTINE                     ####
          #### ET CARDS USED AT BRIDGE XSECS TO CONFINE 625, 650 AND 6100  ####
          #### IN LOB TO  TROPICANA AVE GRADE, BASED ON UPSTREAM WIDTH.    ####
          ##################################################################
          ####          CENTERLINE = 2200          ####
     12.48     13.42  2356.92  2356.92      0.00  2359.17      2.25      0.81      0.01  2358.50
    34000.    19762.   14238.       0.      5611.     786.       0.      1841.      462.  2360.00
      0.39      3.59     13.11     0.00     0.140    0.040     0.045     0.000  2343.56   907.81
 0.011636        7.        73.       75.         2        2         0      0.00  1241.98  2233.22

1495 NH CARD USED
*SECNO 12.481

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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    SECNO     DEPTH     QWSEL     CRIWS     ASELK     EG        HV        HL        CLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      WCL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XAL       XACH      XAR       WTA       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOP&IC       ENDST


337  NORMAL BRIDGE,NRD=   6 MIN ELTRD= 2361.77 MAX ELLC= 2356.50

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS    2225.00   2240.10
     12.48     15.06  2359.46      0.00      0.00  2359.76      0.30      0.01      0.58  2358.50
    34000.    26776.    7224.       0.      8932.     949.       0.      1841.      462.  2360.00
      0.40      3.00     7.61     0.00     0.140    0.040     0.045     0.000  2343.56   663.86
 0.005786        1.        1.        1.         3        0         0    -51.74  1583.94  2239.61

1495 NH CARD USED
*SECNO 12.49

3265 DIVIDED FLOW
```

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.12 MAX ELLC= 2359.50

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2225.00 2240.10

12.49	16.12	2360.12	0.00	0.00	2360.32	0.20	0.54	0.03	2359.00	
34000.	29254.	4706.	0.	8423.	806.	0.	1662.	466.	2360.50	
0.45	3.11	5.84	0.00	0.140	0.040	0.045	0.000	2344.00	583.50	
0.016143	90.	90.	90.	3	2	0	-87.41	1646.48	2239.76	

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HWINS

3688 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

12.49	16.46	2360.46	2360.46	0.00	2362.49	2.03	0.01	0.91	2359.00
34000.	17752.	16238.	0.	6806.	996.	0.	1662.	466.	2360.50
0.45	2.51	16.31	0.00	0.140	0.040	0.045	0.000	2344.00	572.90
0.007511	1.	1.	1.	23	9	0	1.00	1662.18	2235.08

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TKA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.551

1645 INT SEC ADDED BY RAISING SEC 12.55, -1.467FT AND MULTIPLYING BY 0.854

3301 HV CHANGED MORE THAN HWINS

1.61	18.75	2363.49	2361.42	0.00	2364.07	0.58	1.15	0.43	2354.13
34000.	22597.	11356.	347.	6153.	1259.	106.	1679.	469.	2356.63
0.41	4.69	8.71	3.27	0.14	0.140	0.140	0.000	2344.73	948.96
0.018067	105.	103.	103.	12	5	0	0.00	1178.62	2127.58

1645 INT SEC ADDED BY RAISING SEC 1.61, 0.733FT AND MULTIPLYING BY 1.085

3265 DIVIDED FLOW

3280 CROSS SECTION 1.02 EXTENDED 0.49 FEET

1.12	19.69	2365.15	0.00	0.00	2365.49	.34	1.35	0.07	2354.87
34000.	23793.	9798.	407.	6709.	1457.	164.	1697.	472.	2357.37
0.41	3.55	8.72	2.49	0.14	0.140	0.137	0.000	2346.47	920.34
0.009867	103.	103.	103.	2	0	0	0.00	1400.75	2519.14

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.733FT AND MULTIPLYING BY 1.075

3301 HV CHANGED MORE THAN HWINS

CENTERLINE = 2310

12.55	19.16	2363.29	0.00	0.00	2366.03	0.78	1.32	0.22	2355.60

34006.	18349.	15239.	412.	6416.	1513.	139.	1916.	476.	2358.10	
0.42	2.26	10.07	2.97	0.064	0.045	0.045	0.000	2346.20	1007.66	
0.0015	1 3.	103.	103.	2	0	0	0.00	1406.08	2413.75	

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH UPSTREAM R

SUMMARY PRINTOUT TABLE 150

	SECNO	XLOB	ELTRD	ELLOB	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	10.130	0.00	0.00	0.00	2217.20	4100.00	2223.47	2223.42	2224.36	101.16	8.71	688.76	407.65
	10.130	0.00	0.00	0.00	2217.20	7000.00	2224.46	2224.45	2225.40	96.68	9.62	1184.32	711.92
	10.130	0.00	0.00	0.00	2217.20	10500.00	2225.16	2225.10	2226.16	97.17	10.57	1763.44	1065.16
	10.130	0.00	0.00	0.00	2217.20	35000.00	2227.58	0.00	2229.21	121.99	15.30	4312.75	3168.87
	10.310	920.00	0.00	0.00	2224.90	4100.00	2231.07	0.00	2232.20	71.51	8.50	482.20	484.84
*	10.310	920.00	0.00	0.00	2224.90	7000.00	2233.43	0.00	2234.68	64.50	8.97	779.96	871.66
*	10.310	920.00	0.00	0.00	2224.90	10500.00	2235.24	0.00	2236.72	64.44	9.77	1074.79	1307.97
*	10.310	920.00	0.00	0.00	2224.90	35000.00	2241.11	0.00	2243.98	58.55	14.28	2889.74	4574.13
*	10.330	110.00	0.00	0.00	2230.00	4100.00	2237.12	2237.12	2240.69	185.43	15.15	270.68	301.09
*	10.330	110.00	0.00	0.00	2230.00	7000.00	2240.25	2240.25	2245.27	167.68	17.97	389.52	540.26
*	10.330	110.00	0.00	0.00	2230.00	10500.00	2242.52	2242.52	2244.00	61.30	12.41	1506.95	1341.16
*	10.330	110.00	0.00	0.00	2230.00	35000.00	2245.75	2245.75	2247.58	77.91	16.30	3857.45	3965.21
*	10.340	95.00	2242.00	2241.00	2230.50	4100.00	2235.34	0.00	2241.65	88.12	12.20	336.01	436.77
*	10.340	95.00	2242.00	2241.00	2230.50	7000.00	2244.96	0.00	2245.27	11.55	6.03	2218.74	2024.59
*	10.340	95.00	2242.00	2241.00	2230.50	10500.00	2244.42	2244.38	2245.54	41.18	10.91	1766.33	1636.25
*	10.340	95.00	2242.00	2241.00	2230.50	35000.00	2247.01	2247.01	2248.60	67.72	15.69	4325.68	4252.85
*	10.490	790.00	0.00	0.00	2238.40	4100.00	2243.27	0.00	2243.58	45.03	4.45	921.02	610.99
	10.490	790.00	0.00	0.00	2238.40	7000.00	2245.98	0.00	2246.14	9.97	3.16	2238.28	2216.83
•	10.490	790.00	0.00	0.00	2238.40	10500.00	2246.53	0.00	2246.85	14.72	4.17	2561.67	2737.11
*	10.490	790.00	0.00	0.00	2238.40	35000.00	2252.01	0.00	2252.59	12.91	6.29	5829.43	9741.15
*	10.700	1110.00	0.00	0.00	2252.80	3700.00	2255.03	0.00	2255.56	122.66	5.83	634.63	334.08
*	10.700	1110.00	0.00	0.00	2252.80	6000.00	2256.55	0.00	2256.36	133.49	7.22	830.90	519.34
*	10.700	1110.00	0.00	0.00	2252.80	9400.00	2258.16	0.00	2257.38	148.00	8.86	1060.40	772.67
*	10.700	1110.00	0.00	0.00	2252.80	34000.00	2259.63	2259.63	2262.26	115.52	13.28	2695.39	3163.35
	10.960	1365.00	0.00	0.00	2263.00	3700.00	2269.56	2269.50	2270.66	98.05	8.45	461.84	373.50
•	10.960	1365.00	0.00	0.00	2263.00	6000.00	2271.61	2270.61	2271.76	83.28	8.93	788.26	657.46
*	10.960	1365.00	0.00	0.00	2263.00	9400.00	2271.45	2271.45	2272.86	84.32	10.18	1114.14	1023.67
*	10.960	1365.00	0.00	0.00	2263.00	34000.00	2273.63	2273.63	2275.03	76.39	12.50	4397.18	3890.17

SECNO	XLOB	ELTRD	ELLOB	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K

	11.150	1010.00	0.00	0.00	2269.40	3700.00	2275.61	0.00	2276.78	40.91	8.68	426.22	578.46
	11.150	1010.00	0.00	0.00	2269.40	6000.00	2276.88	0.00	2278.90	56.63	11.41	526.03	797.29
	11.150	1010.00	0.00	0.00	2269.40	9400.00	2278.26	0.00	2281.63	77.55	14.72	638.44	1067.41
*	11.150	1010.00	0.00	0.00	2269.40	34000.00	2285.87	2285.87	2288.39	43.78	15.49	5119.36	5138.31
	11.280	645.00	0.00	0.00	2273.90	3700.00	2278.60	0.00	2280.58	81.54	10.71	345.53	409.75
	11.280	645.00	0.00	0.00	2273.90	6000.00	2280.76	0.00	2282.96	68.34	11.91	503.63	725.76
	11.280	645.00	0.00	0.00	2273.90	9400.00	2283.34	0.00	2285.91	55.49	12.86	731.24	1261.92
*	11.280	645.00	0.00	0.00	2273.90	34000.00	2292.61	2292.61	2298.28	52.49	19.45	2297.71	4692.89
*	11.310	180.00	0.00	0.00	2280.00	3700.00	2286.20	2286.20	2289.33	76.98	14.20	260.55	421.76
*	11.310	180.00	0.00	0.00	2280.00	6000.00	2288.49	2288.49	2291.72	57.62	15.14	521.98	790.48
*	11.310	180.00	0.00	0.00	2280.00	9400.00	2291.83	2291.83	2295.26	58.71	17.98	744.52	1226.84
*	11.310	180.00	0.00	0.00	2280.00	34000.00	2300.89	2300.89	2302.39	17.66	15.28	9277.15	8091.66
*	11.320	70.00	2291.40	2288.40	2288.40	3700.00	2291.52	0.00	2292.16	8.25	6.86	776.25	1288.27
*	11.320	70.00	2291.40	2288.40	2288.40	6000.00	2292.29	0.00	2293.72	17.83	10.30	862.01	1453.86
*	11.320	70.00	2291.40	2288.40	2288.40	9400.00	2291.60	2291.44	2295.68	51.83	17.28	785.22	1305.65
*	11.320	70.00	2291.40	2288.40	2288.40	34000.00	2301.27	0.00	2302.79	17.85	15.35	9224.98	8047.19
*	11.450	660.00	0.00	0.00	2288.90	3700.00	2293.70	2293.70	2295.83	116.24	11.72	315.76	343.19
*	11.450	660.00	0.00	0.00	2288.90	6000.00	2295.39	2295.39	2298.18	107.71	13.42	447.22	578.13
*	11.450	660.00	0.00	0.00	2288.90	9400.00	2297.48	2297.48	2300.99	100.68	15.04	624.90	936.82
*	11.450	660.00	0.00	0.00	2288.90	34000.00	2307.91	2307.91	2310.21	31.41	14.11	8752.62	6066.25
	11.640	1000.00	0.00	0.00	2297.40	3700.00	2302.98	0.00	2304.44	65.38	9.70	381.61	457.61
	11.640	1000.00	0.00	0.00	2297.40	6000.00	2304.68	0.00	2306.77	69.06	11.61	516.92	722.01
	11.640	1000.00	0.00	0.00	2297.40	9400.00	2306.58	0.00	2309.57	73.15	13.89	688.26	1099.08
•	11.640	1000.00	0.00	0.00	2297.40	34000.00	2316.10	2316.10	2318.47	31.74	15.06	9736.05	6034.76
*	11.790	610.00	0.00	0.00	2306.30	3700.00	2311.77	2311.77	2313.97	115.76	11.90	310.83	343.90
*	11.790	610.00	0.00	0.00	2306.30	6000.00	2313.53	2313.53	2316.37	107.25	13.53	443.45	579.36
*	11.790	610.00	0.00	0.00	2306.30	9400.00	2315.64	2315.64	2319.21	100.06	15.15	620.48	939.74
•	11.790	610.00	0.00	0.00	2306.30	34000.00	2323.64	2323.64	2325.76	41.76	14.54	9730.73	5325.71
*	11.820	155.00	0.00	0.00	2310.00	3700.00	2316.23	2316.23	2319.35	177.98	14.17	261.06	277.34
*	11.820	155.00	0.00	0.00	2310.00	6000.00	2318.60	2318.60	2322.87	171.91	16.59	365.96	457.62
*	11.820	155.00	0.00	0.00	2310.00	9400.00	2322.78	2322.78	2323.86	41.54	10.64	3972.14	1458.49
*	11.820	155.00	0.00	0.00	2310.00	34000.00	2328.03	0.00	2327.01	56.30	14.43	12472.39	4531.16
*	11.840	75.00	2320.70	2319.00	2311.60	3700.00	2318.47	0.00	2321.37	84.44	11.05	334.78	402.65
*	11.840	75.00	2320.70	2319.00	2311.60	6000.00	2320.32	2320.04	2324.38	158.17	16.18	374.31	477.08
*	11.840	75.00	2320.70	2319.00	2311.60	9400.00	2325.52	2325.52	2326.59	34.24	10.28	4292.51	1606.46
*	11.840	75.00	2320.70	2319.00	2311.60	34000.00	2328.18	0.00	2329.57	66.18	16.06	10767.68	4179.49
	11.870	160.00	0.00	0.00	2315.00	3700.00	2321.30	0.00	2322.64	57.52	9.28	398.56	487.84
	11.870	160.00	0.00	0.00	2315.00	6000.00	2325.28	0.00	2326.18	26.52	7.62	787.19	1165.19
	11.870	160.00	0.00	0.00	2315.00	9400.00	2325.87	0.00	2327.73	50.13	10.96	863.38	1327.68
*	11.870	160.00	0.00	0.00	2315.00	34000.00	2332.95	2332.95	2334.62	27.20	12.77	6335.91	6519.53

	SECNC	XLCH	ELTRO	ELLC	ELMIN	G	CHSEL	CRITS	EG	10K*S	VCH	AREA	.01K
	11.990	645.00	0.00	0.00	2320.90	3700.00	2325.73	0.00	2327.58	100.15	10.76	343.90	369.73
*	11.990	645.00	0.00	0.00	2320.90	6000.00	2327.15	2327.15	2329.76	108.64	12.97	462.67	575.66
	11.990	645.00	0.00	0.00	2320.90	9400.00	2329.28	0.00	2332.39	92.48	14.15	664.15	977.45
*	11.990	645.00	0.00	0.00	2320.90	34000.00	2336.04	2336.04	2337.70	37.18	13.40	8951.43	5575.94
	12.100	580.00	0.00	0.00	2326.00	3700.00	2330.83	0.00	2332.60	75.31	10.65	347.42	426.36
	12.100	580.00	0.00	0.00	2326.00	6000.00	2332.50	0.00	2334.81	70.57	12.21	491.25	714.22
*	12.100	580.00	0.00	0.00	2326.00	9400.00	2334.42	2334.42	2337.43	78.62	14.61	643.48	1060.11
*	12.100	580.00	0.00	0.00	2326.00	34000.00	2341.79	2340.79	2342.44	29.58	13.70	7571.25	6251.66
	12.150	310.00	0.00	0.00	2327.00	3700.00	2333.31	0.00	2333.81	14.46	5.67	652.21	973.16
	12.150	310.00	0.00	0.00	2327.00	6000.00	2335.43	0.00	2336.11	14.02	6.62	906.63	1602.38

	12.150	300.00	0.00	0.00	2327.00	9400.00	2336.08	0.00	2338.96	13.28	7.53	1248.93	2578.99
*	12.150	300.00	0.00	0.00	2327.00	34000.00	2344.69	0.00	2345.43	10.37	9.42	10373.07	10556.24
	12.151	1.00	2338.50	2338.50	2327.00	3700.00	2333.09	0.00	2334.04	42.62	7.97	516.99	566.73
	12.151	1.00	2338.50	2338.50	2327.00	6000.00	2336.44	0.00	2336.44	47.50	9.54	720.11	866.94
	12.151	1.00	2338.50	2338.50	2327.00	9400.00	2337.59	0.00	2339.47	81.35	11.40	969.62	1042.17
	12.151	1.00	2338.50	2338.50	2327.00	34000.00	2345.21	0.00	2345.58	30.72	6.38	9994.00	6134.36
	12.160	50.00	2338.50	2339.00	2327.50	3700.00	2333.26	0.00	2334.33	50.33	8.45	485.40	521.53
	12.160	50.00	2338.50	2339.00	2327.50	6000.00	2336.29	0.00	2336.76	53.70	9.94	688.09	818.74
	12.160	50.00	2338.50	2339.00	2327.50	9400.00	2337.99	0.00	2339.89	82.51	11.45	963.00	1034.82
	12.160	50.00	2338.50	2339.00	2327.50	34000.00	2345.35	0.00	2345.78	36.86	7.04	9292.10	5599.85
	12.160	1.00	0.00	0.00	2327.50	3700.00	2334.06	0.00	2334.52	12.64	5.43	681.48	1040.65
	12.160	1.00	0.00	0.00	2327.50	6000.00	2336.42	0.00	2337.02	11.53	6.28	967.89	1767.05
	12.160	1.00	0.00	0.00	2327.50	9400.00	2339.52	0.00	2340.24	9.73	6.81	1459.23	3013.41
	12.160	1.00	0.00	0.00	2327.50	34000.00	2345.04	0.00	2346.09	11.99	10.11	9211.35	9817.35
*	12.320	300.00	0.00	0.00	2334.70	3700.00	2341.76	2341.76	2343.80	120.62	11.47	322.64	337.73
*	12.320	300.00	0.00	0.00	2334.70	6000.00	2343.43	2343.43	2346.01	108.81	12.89	465.36	575.19
*	12.320	300.00	0.00	0.00	2334.70	9400.00	2347.16	2347.16	2347.90	27.13	8.05	1941.26	1804.55
*	12.320	300.00	0.00	0.00	2334.70	34000.00	2348.95	2348.95	2350.42	61.12	13.88	5484.24	4348.87
	12.420	550.00	0.00	0.00	2340.70	3700.00	2347.96	0.00	2349.39	85.28	9.62	384.81	409.67
	12.420	550.00	0.00	0.00	2340.70	6000.00	2349.63	0.00	2351.62	94.06	11.33	529.53	618.65
*	12.420	550.00	0.00	0.00	2340.70	9400.00	2350.79	2350.79	2351.42	42.47	8.19	2141.56	1442.40
	12.420	550.00	0.00	0.00	2340.70	34000.00	2353.04	0.00	2354.24	81.45	13.10	8030.29	3767.24
	12.460	290.00	0.00	0.00	2343.50	3700.00	2351.21	0.00	2351.81	76.48	10.16	364.34	423.09
	12.460	290.00	0.00	0.00	2343.50	6000.00	2353.06	0.00	2354.54	90.52	12.63	475.05	630.69
*	12.460	290.00	0.00	0.00	2343.50	9400.00	2353.93	2353.93	2354.45	68.80	11.66	2222.60	1133.24
*	12.460	290.00	0.00	0.00	2343.50	34000.00	2356.92	2356.92	2359.17	116.36	18.11	6296.52	3151.87
	12.461	1.00	2338.50	2338.50	2343.50	3700.00	2351.23	0.00	2351.82	120.96	10.14	364.78	336.42
	12.461	1.00	2338.50	2338.50	2343.50	6000.00	2352.43	0.00	2354.63	132.06	11.91	503.99	522.14
	12.461	1.00	2338.50	2338.50	2343.50	9400.00	2354.21	0.00	2354.73	49.32	7.61	3025.21	1338.49
*	12.461	1.00	2338.50	2338.50	2343.50	34000.00	2359.46	0.00	2359.76	57.60	7.61	9881.64	4479.82

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	S	CWSEL	CRITWS	EG	10K*S	VCH	AREA	.01K
	12.490	90.00	2360.00	2358.50	2344.00	3700.00	2351.34	0.00	2353.13	151.62	10.74	344.55	300.48
*	12.490	90.00	2360.00	2358.50	2344.00	6000.00	2352.93	2352.19	2355.92	223.64	13.86	432.95	401.22
	12.490	90.00	2360.00	2358.50	2344.00	9400.00	2354.60	0.00	2355.24	51.47	7.66	3002.75	1198.94
*	12.490	90.00	2360.00	2358.50	2344.00	34000.00	2360.12	0.00	2360.33	61.43	5.84	10228.41	4338.12
	12.491	1.00	0.00	0.00	2344.00	3700.00	2352.40	0.00	2353.38	36.80	7.97	464.53	689.94
	12.491	1.00	0.00	0.00	2344.00	6000.00	2355.79	0.00	2356.58	23.80	7.66	1655.27	1225.99
*	12.491	1.00	0.00	0.00	2344.00	9400.00	2358.32	2358.32	2357.69	71.91	13.05	1386.59	1108.52
*	12.491	1.00	0.00	0.00	2344.00	34000.00	2360.46	2360.46	2362.49	75.11	16.31	7801.54	3923.14
	12.550	310.00	0.00	0.00	2346.20	3700.00	2353.51	0.00	2354.52	36.08	8.07	458.74	615.97
	12.550	310.00	0.00	0.00	2346.20	6000.00	2356.41	0.00	2357.54	27.42	8.54	722.53	1145.95
	12.550	310.00	0.00	0.00	2346.20	9400.00	2357.37	2356.42	2359.53	46.54	11.85	882.21	1377.84
*	12.550	310.00	0.00	0.00	2346.20	34000.00	2365.26	0.00	2366.03	15.08	10.07	8768.35	8755.75

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FLAMINGO WASH UPSTREAM R

SUMMARY PRINTOUT TABLE 130

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10.130	4100.00	2223.47	0.00	0.00	0.00	397.00	0.00
	10.130	7000.00	2224.46	0.99	0.00	0.00	713.47	0.00
	10.130	10500.00	2225.16	0.70	0.00	0.00	874.42	0.00
	10.130	35000.00	2227.58	2.42	0.00	0.00	1215.68	0.00
	10.310	4100.00	2231.07	0.00	7.68	0.00	106.15	920.00
*	10.310	7000.00	2233.43	2.35	1.73	0.00	146.65	920.00
*	10.310	10500.00	2235.24	1.81	1.46	0.00	177.89	920.00
*	10.310	35000.00	2241.11	5.87	1.28	0.00	433.36	920.00
*	10.330	4100.00	2237.12	0.00	2.31	0.00	36.00	110.00
*	10.330	7000.00	2240.25	3.13	1.14	0.00	36.00	110.00
*	10.330	10500.00	2242.52	2.27	1.29	0.00	453.76	110.00
*	10.330	35000.00	2245.75	3.22	1.27	0.00	991.31	110.00
*	10.340	4100.00	2239.34	0.00	2.22	0.00	36.00	95.00
*	10.340	7000.00	2244.96	5.62	4.71	0.00	875.25	95.00
*	10.340	10500.00	2244.42	-0.54	1.89	0.00	833.14	95.00
*	10.340	35000.00	2247.71	2.89	1.28	0.00	1171.19	95.00
*	10.490	4100.00	2243.27	0.00	0.41	0.00	382.23	790.00
	10.490	7000.00	2245.38	2.12	1.03	0.00	535.86	790.00
*	10.490	10500.00	2246.58	0.20	0.20	0.00	552.56	790.00
*	10.490	35000.00	2252.71	5.42	0.65	0.00	627.16	790.00
*	10.700	3700.00	2255.23	0.00	3.43	0.00	375.76	1110.00
*	10.700	6000.00	2255.55	0.32	4.50	0.00	380.19	1110.00
*	10.700	9400.00	2256.16	0.61	3.08	0.00	385.30	1110.00
*	10.700	34000.00	2259.63	3.47	3.56	0.00	532.92	1110.00
	10.960	3700.00	2269.56	0.00	14.53	0.00	243.17	1365.00
*	10.960	6000.00	2270.61	1.05	15.07	1.05	377.76	1365.00
*	10.960	9400.00	2271.45	0.84	15.30	1.89	396.78	1365.00
*	10.960	34000.00	2273.53	2.18	4.34	0.00	1492.92	1365.00
	11.150	3700.00	2275.61	0.00	6.85	0.00	77.33	1010.00
	11.150	6000.00	2276.38	1.27	6.27	1.27	80.07	1010.00
	11.150	9400.00	2279.25	1.38	6.81	2.65	83.04	1010.00
*	11.150	34000.00	2285.37	7.61	2.15	0.00	1166.08	1010.00
	11.280	3700.00	2278.30	0.00	7.19	0.00	77.92	645.00
	11.280	6000.00	2280.76	1.86	8.38	1.86	83.87	645.00
	11.280	9400.00	2283.54	2.78	8.96	4.64	91.75	645.00
*	11.280	34000.00	2292.61	9.27	1.19	0.00	374.73	645.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	11.310	3700.00	2286.20	0.00	7.40	0.00	42.00	180.00
*	11.310	6000.00	2288.49	2.28	7.73	2.28	83.44	180.00
*	11.310	9400.00	2291.83	3.34	7.49	4.63	136.48	180.00
*	11.310	34000.00	2301.39	10.76	1.31	0.00	2705.58	180.00
*	11.320	3700.00	2291.52	0.00	5.31	0.00	109.37	70.00
*	11.320	6000.00	2292.28	0.76	3.80	0.76	116.83	70.00
*	11.320	9400.00	2291.60	-0.68	0.78	0.09	110.18	70.00
*	11.320	34000.00	2301.27	9.67	0.38	0.00	2699.78	70.00
*	11.450	3700.00	2293.70	0.00	2.18	0.00	74.65	660.00
*	11.450	6000.00	2295.39	1.69	3.17	1.69	80.86	660.00
*	11.450	9400.00	2297.48	2.09	5.88	3.78	89.67	660.00
*	11.450	34000.00	2307.91	10.43	1.82	0.00	2697.97	660.00

	11.640	3700.00	2302.98	0.00	9.28	0.00	76.87	1000.00
	11.640	6000.00	2304.68	1.70	9.29	1.70	82.02	1000.00
	11.640	9400.00	2306.58	1.90	9.10	3.60	191.38	1000.00
*	11.640	34000.00	2316.10	9.52	8.19	0.00	2915.10	1000.00
*	11.790	3700.00	2311.77	0.00	8.80	0.00	71.76	810.00
*	11.790	6000.00	2313.53	1.76	8.65	1.76	79.24	810.00
*	11.790	9400.00	2315.64	2.11	8.66	3.87	84.24	810.00
*	11.790	34000.00	2323.64	8.00	8.39	0.00	2920.51	810.00
*	11.820	3700.00	2316.23	0.00	4.46	0.00	42.28	155.00
*	11.820	6000.00	2318.60	2.37	5.07	2.37	57.22	155.00
*	11.820	9400.00	2322.78	4.18	7.13	6.54	1999.51	155.00
*	11.820	34000.00	2326.03	3.26	-0.27	0.00	3162.72	155.00
*	11.840	3700.00	2319.47	0.00	3.24	0.00	42.50	75.00
*	11.840	6000.00	2320.32	0.85	1.72	0.85	51.39	75.00
*	11.840	9400.00	2325.52	5.20	2.74	6.05	2328.07	75.00
*	11.840	34000.00	2328.19	2.66	2.15	0.00	2461.00	75.00
	11.870	3700.00	2321.38	0.00	1.83	0.00	76.08	160.00
	11.870	6000.00	2325.28	3.90	4.96	3.90	117.77	160.00
	11.870	9400.00	2325.37	0.09	0.35	4.56	150.13	160.00
*	11.870	34000.00	2332.95	7.58	4.76	0.00	1868.88	160.00
	11.990	3700.00	2325.78	0.00	4.48	0.00	83.55	645.00
*	11.990	6000.00	2327.15	1.37	1.87	1.37	96.82	645.00
	11.990	9400.00	2329.25	2.13	3.42	3.50	98.55	645.00
*	11.990	34000.00	2336.34	6.75	3.09	0.00	1486.28	645.00
	12.100	3700.00	2330.83	0.00	5.05	0.00	82.72	580.00
	12.100	6000.00	2332.66	1.66	5.34	1.66	90.20	580.00
*	12.100	9400.00	2334.12	1.62	4.84	3.29	97.49	580.00
*	12.100	34000.00	2340.79	6.67	4.75	0.00	1923.72	580.00

	SECNO	Q	C.SEL	DIFWSF	DIF%SX	DIFK%S	TOP%ID	XLCH
	12.150	3700.00	2333.31	0.00	2.43	0.00	115.72	200.00
	12.150	6000.00	2335.43	2.12	2.93	2.12	124.01	200.00
	12.150	9400.00	2338.06	2.66	3.96	4.77	134.36	200.00
*	12.150	34000.00	2344.59	6.53	0.18	0.00	2018.23	200.00
	12.151	3700.00	2333.09	0.00	-0.22	0.00	96.95	1.00
	12.151	6000.00	2335.19	2.01	-0.33	2.01	104.93	1.00
	12.151	9400.00	2337.59	2.49	-0.50	4.50	132.44	1.00
	12.151	34000.00	2346.21	7.63	0.63	0.00	2123.04	1.00
	12.160	3700.00	2333.26	0.00	0.17	0.00	95.65	50.00
	12.160	6000.00	2335.29	2.03	0.19	2.03	103.71	50.00
	12.160	9400.00	2337.99	2.69	0.40	4.73	132.05	50.00
	12.160	34000.00	2346.35	7.36	0.14	0.00	2092.31	50.00
	12.161	3700.00	2334.36	0.00	1.00	0.00	116.71	1.00
	12.161	6000.00	2336.42	2.06	1.13	2.06	126.92	1.00
	12.161	9400.00	2339.52	3.10	1.53	5.16	458.31	1.00
	12.161	34000.00	2345.04	5.52	-0.30	0.00	2011.68	1.00
•	12.320	3700.00	2341.76	0.00	7.70	0.00	91.91	800.00
*	12.320	6000.00	2343.43	1.66	7.00	1.66	98.68	800.00
*	12.320	9400.00	2347.15	3.72	7.63	5.39	786.68	800.00
*	12.320	34000.00	2348.95	1.81	2.63	0.00	1661.18	800.00
	12.420	3700.00	2347.95	0.00	6.19	0.00	81.10	550.00
	12.420	6000.00	2349.63	1.68	5.20	1.68	92.69	550.00

*	12.420	9400.00	2350.79	1.16	3.64	2.83	828.52	550.00
	12.420	34000.00	2353.04	2.26	4.08	0.00	1404.40	550.00
	12.460	3700.00	2350.21	1.18	2.26	0.00	58.58	290.00
	12.460	6000.00	2352.36	1.35	2.43	1.85	600.95	290.00
*	12.460	9400.00	2353.33	1.97	4.24	2.82	641.68	290.00
*	12.460	34000.00	2355.92	3.89	0.90	0.00	1241.98	290.00
	12.481	3700.00	2350.23	0.10	0.01	0.00	60.83	1.00
	12.481	6000.00	2352.43	2.21	0.37	2.21	65.11	1.00
	12.481	9400.00	2354.21	1.77	1.18	3.98	7 6.96	1.00
*	12.481	34000.00	2359.46	5.25	2.54	0.00	1563.94	1.00
	12.490	3700.00	2351.34	0.00	1.12	0.00	54.04	90.00
*	12.490	6000.00	2352.93	1.59	0.50	1.59	57.13	90.00
	12.490	9400.00	2354.80	1.87	0.59	3.46	733.79	90.00
*	12.490	34000.00	2360.12	5.33	2.66	0.00	1648.45	90.00
	12.491	3700.00	2352.40	0.11	1.06	0.00	60.73	1.00
	12.491	6000.00	2355.79	3.39	2.86	3.39	5 5.73	1.00
*	12.491	9400.00	2355.32	-0.47	0.52	2.92	543.50	1.00
*	12.491	34000.00	2360.46	5.14	2.34	0.00	1662.18	1.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLOC
	12.550	3700.00	2353.51	0.00	1.12	0.00	78.29	310.00
	12.550	6000.00	2356.41	2.89	0.62	2.89	140.64	310.00
	12.550	9400.00	2357.37	0.96	2.05	3.86	234.29	310.00
*	12.550	34000.00	2365.26	7.89	0.10	0.00	1406.88	310.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 12.310 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.310 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.310 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.330 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.330 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.330 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.330 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.330 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.330 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.340 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 12.340 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 12.340 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.340 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 12.340 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.340 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 12.340 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.340 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.490 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.490 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 12.490 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.700 PROFILE= 1 INTERPOLATED XSECTIONS USED

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 CAUTION  SECNO=    10.700   PROFILE= 2  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=    10.700   PROFILE= 3  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=    10.700   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    10.960   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.960   PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.960   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.960   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.960   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.150   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.280   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.310   PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.310   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.310   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.310   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.310   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.310   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.310   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.310   PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.310   PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.310   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.320   PROFILE= 1  HYDRAULIC JUMP D.S.
1
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 CAUTION  SECNO=    11.320   PROFILE= 2  HYDRAULIC JUMP D.S.
 CAUTION  SECNO=    11.320   PROFILE= 3  WSEL ASSUMED BASED ON MIN DIFF
 CAUTION  SECNO=    11.320   PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.320   PROFILE= 3  HYDRAULIC JUMP D.S.
 CAUTION  SECNO=    11.320   PROFILE= 4  WSEL ASSUMED BASED ON MIN DIFF
 CAUTION  SECNO=    11.320   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.320   PROFILE= 4  HYDRAULIC JUMP D.S.

 CAUTION  SECNO=    11.450   PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.450   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.450   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.450   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.450   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.450   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.450   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.450   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.450   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.640   PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.640   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.640   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=    11.790   PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.790   PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.790   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.790   PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.790   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.790   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.790   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=    11.820   PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.820   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.820   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.820   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.820   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    11.820   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    11.820   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    11.820   PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION  SECNO=   11.820  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   11.820  PROFILE= 4  INTERPOLATED XSECTIONS USED

CAUTION  SECNO=   11.840  PROFILE= 1  HYDRAULIC JUMP C.S.
CAUTION  SECNO=   11.840  PROFILE= 2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION  SECNO=   11.840  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   11.840  PROFILE= 2  HYDRAULIC JUMP C.S.
CAUTION  SECNO=   11.840  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   11.840  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   11.840  PROFILE= 3  HYDRAULIC JUMP C.S.
CAUTION  SECNO=   11.840  PROFILE= 4  WSEL ASSUMED BASED ON MIN DIFF
CAUTION  SECNO=   11.840  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   11.870  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   11.870  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   11.870  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION  SECNO=   11.990  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   11.990  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   11.990  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   11.990  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   11.990  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   12.100  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.100  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.100  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.100  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.100  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   12.150  PROFILE= 4  INTERPOLATED XSECTIONS USED

CAUTION  SECNO=   12.320  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.320  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.320  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.320  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.320  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.320  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.320  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.320  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.320  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.320  PROFILE= 4  INTERPOLATED XSECTIONS USED

CAUTION  SECNO=   12.420  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.420  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.420  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   12.480  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.480  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.480  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.480  PROFILE= 4  INTERPOLATED XSECTIONS USED

CAUTION  SECNO=   12.481  PROFILE= 4  BRIDGE DECK DEFINITION ERROR

CAUTION  SECNO=   12.490  PROFILE= 2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION  SECNO=   12.490  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.490  PROFILE= 4  BRIDGE DECK DEFINITION ERROR

CAUTION  SECNO=   12.491  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.491  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.491  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   12.491  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   12.491  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   12.491  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO= 12.550 PROFILE= 4 INTERPOLATED XSECTIONS USED

1
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
**************************************************
```

EOF..

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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  26-APR-88 TIME   21:25:47          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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 **************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -   01,02,03,04,05
   MODIFICATION -   50,51,52,53,54,55
 **************************************************

C
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY          25-YEAR EVENT
T3       FLAMINGO WASH UPSTREAM REACH (Rainbow-Cameron)   DMH 10/6/87

J1   ICHECK     INQ       NINV      IDTR      STRT      METRIC    HVINS     G          WSEL      FQ

        0.        2.        3.        0.  0.000000      0.00      0.3       0.  2223.470      0.000

J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000


QT       4.000    4100.000    7000.000   10500.000   35000.000      0.000      0.000      0.000      0.000      0.000
NC       0.060       0.045       0.040       0.100       0.300      0.000      0.000      0.000      0.000      0.000
         ####  Starting Water Surface at 10.13 based on Reach 2 analysis  ####
         ####  Centerline =   2530
X1      10.130      23.000    2469.000    2587.000     350.000     500.000     470.000       0.000       0.000       0.000
GR    2236.000    1150.000    2232.000    1180.000    2228.000    1350.000    2225.000    1350.000    2224.000    1960.000
GR    2221.700    2000.000    2220.900    2097.000    2224.500    2111.000    2224.400    2288.000    2222.700    2373.000
GR    2224.400    2489.000    2221.300    2504.000    2221.300    2521.000    2218.800    2547.000    2217.200    2569.000
GR    2217.200    2578.000    2225.600    2587.000    2225.600    2614.000    2234.700    2638.000    2237.000    2796.000
GR    2237.800    2947.000    2240.300    2959.000    2241.000    3083.000       0.000       0.000       0.000       0.000

NC       0.045       0.045       0.040       0.100       0.300      0.000      0.000      0.000      0.000      0.000
         ####  Centerline =   2300
X1      10.310      15.000    2129.000    2319.000     320.000     320.000     320.000       0.000       0.000       0.000
GR    2242.000    1550.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000
GR    2242.300    2000.000    2235.900    2129.000    2230.400    2214.000    2226.000    2236.000    2224.900    2248.000
```

GR	2224.900	2299.000	2235.400	2319.000	2237.900	2410.000	2242.200	2474.000	2241.300	2531.000
GR	2242.100	2584.000	2244.500	2630.000	2248.000	2810.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

DECATUR BOULEVARD
Special Bridge Routine

Centerline = 2370

X1	10.330	12.000	2350.000	2388.000	110.000	110.000	110.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2241.000	2241.000	0.000
GR	2249.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2060.000	2238.000	2350.000	2230.000	2350.000	2230.000	2388.000	2238.000	2388.000
GR	2243.000	2650.000	2248.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

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SB	1.250	1.500	2.600	0.000	37.400	9.400	294.000	0.000	2230.500	2230.000
X1	10.340	12.000	2350.000	2388.000	95.000	95.000	95.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	2241.000	2242.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2242.000	2242.000	0.000
X4	1.000	2242.000	2300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	3.000	0.000	2243.000	0.000	470.000	2244.000	0.000	610.000	2242.300	0.000
BT	780.000	2242.000	0.000	1080.000	2243.000	0.000	1280.000	2244.500	0.000	1430.000
BT	2246.000	0.000	1510.000	2252.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2244.000	1560.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2060.000	2235.000	2350.000	2230.500	2350.000	2230.500	2388.000	2242.000	2388.000
GR	2243.000	2650.000	2243.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2610

X1	10.490	26.000	2475.000	2987.000	650.000	710.000	790.000	0.000	0.000	0.000
GR	2272.000	1950.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000
GR	2264.900	2000.000	2272.200	2234.000	2270.600	2283.000	2265.500	2389.000	2261.900	2475.000
GR	2239.900	2501.000	2241.500	2547.000	2239.100	2570.000	2239.100	2617.000	2240.300	2648.000
GR	2242.100	2701.000	2241.300	2724.000	2240.600	2754.000	2233.400	2771.000	2238.400	2794.000
GR	2243.900	2799.000	2243.000	2845.000	2242.900	2888.000	2244.400	2987.000	2249.300	3092.000
GR	2270.000	3220.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.000	0.000	0.000	0.100	0.300	0.100	0.000	0.000	0.000	0.000
BT	4.000	3700.000	6000.000	9400.000	34000.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2150

X1	10.730	18.000	2352.000	2489.000	1110.000	1160.000	1110.000	0.000	0.000	0.000
GR	2280.000	1270.000	2280.000	1270.000	2280.000	1270.000	2280.000	1270.000	2280.000	1270.000
GR	2272.300	2002.000	2271.600	2352.000	2252.800	2112.000	2252.800	2198.000	2253.100	2233.000
GR	2253.600	2294.000	2253.600	2370.000	2253.600	2436.000	2253.600	2473.000	2256.600	2489.000
GR	2266.600	2553.000	2259.800	2605.000	2259.500	2654.000	2280.000	2740.000	0.000	0.000

ST	9.300	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1900.000	2840.000
NC	0.000	0.100	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2680

X1	10.960	31.000	2613.000	2840.000	1430.000	1280.000	1365.000	0.000	0.000	0.000
GR	2284.000	120.000	2280.000	500.000	2272.000	630.000	2272.000	1330.000	2276.000	1360.000
GR	2266.000	1520.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000	2281.000	1960.000
GR	2276.300	2000.000	2279.900	2083.000	2278.700	2174.000	2275.900	2353.000	2273.200	2398.000
GR	2268.300	2446.000	2270.600	2613.000	2267.500	2620.000	2267.500	2647.000	2264.700	2670.000
GR	2263.000	2680.000	2263.000	2686.000	2265.800	2702.000	2270.800	2736.000	2267.800	2761.000
GR	2267.900	2784.000	2272.900	2926.000	2275.600	2840.000	2275.600	2876.000	2274.100	2948.000
GR	2284.000	3590.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2560

X1	11.150	29.000	2521.000	2633.000	1035.000	985.300	1010.000	0.000	0.000	0.000
GR	2280.000	1020.000	2280.000	1180.000	2289.000	1430.000	2289.000	1570.000	2286.000	1710.000
GR	2292.400	2000.000	2290.400	2038.000	2286.400	2140.000	2284.600	2252.000	2282.900	2380.000
GR	2282.000	2399.000	2281.000	2404.000	2281.800	2420.000	2278.600	2521.000	2269.400	2530.000
GR	2268.400	2538.000	2273.700	2599.000	2280.500	2607.000	2281.800	2633.000	2280.300	2655.300
GR	2279.300	2563.000	2279.300	2683.000	2279.000	2710.000	2279.000	2731.000	2280.700	2791.000

SR	2254.000	3053.000	2285.000	3250.000	2292.000	3400.000	0.000	0.000	0.000	0.000
NC	0.045	0.140	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	#### Centerline = 2460									
X1	11.280	19.000	2416.000	2523.000	655.000	640.000	645.000	0.000	0.000	0.000
X4	3.000	2300.000	760.000	2296.000	920.000	2300.000	1750.000	0.000	0.000	0.000
GR	2301.000	700.000	2294.000	1060.000	2294.000	1280.000	2298.000	1400.000	2296.500	1600.000
GR	2304.500	2000.000	2302.300	2066.000	2303.000	2258.000	2300.500	2304.000	2292.100	2376.000
GR	2288.500	2416.000	2273.900	2439.000	2273.900	2502.000	2288.100	2523.000	2288.100	2556.000
GR	2298.300	2587.000	2292.000	2690.000	2296.000	3060.000	2300.000	3630.000	0.000	0.000
NC	0.000	0.000	0.031	0.300	0.500	0.000	0.000	0.000	0.000	0.000
ET	0.300	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000
	########## JONES BOULEVARD ##########									
	#### Special Bridge Routine ####									
	#### Centerline = 2725									
X1	11.310	16.000	2704.000	2746.000	180.000	200.000	180.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2288.400	2288.400	0.000
GR	2300.000	1000.000	2297.000	1200.000	2297.000	1600.000	2299.400	1760.000	2298.200	1980.000
GR	2300.000	2110.000	2300.000	2600.000	2292.000	2682.000	2280.000	2704.000	2280.000	2746.000
GR	2288.000	2766.000	2292.000	2900.000	2292.000	2920.000	2296.000	3100.000	2300.000	3420.000
GR	2301.400	3870.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	41.500	13.500	224.000	0.000	2283.400	2280.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	2100.000	3870.000
	#### Centerline BT cards = 1690									
X1	11.320	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.400	0.000
X2	0.000	0.000	1.000	2239.400	2291.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2291.400	2291.400	0.000
BT	12.000	0.000	2300.000	0.000	460.000	2299.700	0.000	710.000	2299.600	0.000
BT	1050.000	2296.000	0.000	1200.000	2294.300	0.000	1380.000	2293.000	0.000	1580.000
BT	2292.000	0.000	1650.000	2291.400	0.000	1750.000	2292.000	0.000	1820.000	2292.400
BT	0.000	2150.000	2296.000	0.000	2230.000	2300.000	0.000	0.000	0.000	0.000
NC	0.140	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	#### Centerline = 2370									
X1	11.450	20.000	2311.000	2428.000	675.000	655.000	660.000	0.000	0.000	0.000
GR	2309.600	600.000	2304.000	1070.000	2307.000	1360.000	2302.500	1530.000	2304.800	1780.000
GR	2304.100	2000.000	2302.800	2129.000	2302.800	2170.000	2305.900	2260.000	2303.200	2311.000
GR	2288.900	2335.000	2288.900	2392.000	2295.900	2408.000	2301.600	2428.000	2301.600	2444.000
GR	2302.200	2478.000	2304.400	2572.000	2304.500	2720.000	2307.500	3040.000	2308.000	3600.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	#### Centerline = 2330									
X1	11.540	19.000	2283.000	2372.000	1000.000	1000.000	1000.000	0.000	0.000	0.000
X4	1.000	2312.200	2283.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2315.000	560.000	2314.300	870.000	2315.000	1220.000	2315.000	1370.000	2315.000	1660.000
GR	2312.000	1800.000	2312.000	2104.000	2311.700	2291.000	2310.400	2283.000	2297.400	2297.000
GR	2297.400	2357.000	2305.100	2372.000	2307.700	2401.000	2308.600	2496.000	2312.600	2712.000
GR	2315.000	2950.000	2310.000	3290.000	2320.000	3600.000	0.000	0.000	0.000	0.000

	#### Centerline = 2360									
X1	11.790	20.000	2282.000	2399.000	810.000	810.000	810.000	0.000	0.000	0.000
GR	2326.200	40.000	2324.000	210.000	2320.000	970.000	2320.000	970.000	2321.300	1360.000
GR	2318.700	2000.000	2318.600	2149.000	2319.200	2292.000	2315.700	2306.000	2306.000	2329.000
GR	2306.000	2348.000	2308.300	2381.000	2316.900	2399.000	2317.700	2427.000	2317.700	2458.000
GR	2319.300	2569.000	2321.200	2656.000	2320.400	2688.000	2324.000	3260.000	2328.000	3510.000

NC	0.100	0.000	0.040	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000
	##										
	#### TORREY PINES DRIVE ####										
	#### Special Bridge Routine ####										
	##										
X1	11.322	14.000	3289.000	3331.500	120.000	160.000	155.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2319.000	2319.000	
GR	2326.000	1000.000	2321.300	2280.000	2321.000	2520.000	2320.800	2800.000	2320.000	3240.000	
GR	2318.000	3288.000	2310.000	3289.500	2310.000	3331.000	2318.000	3331.500	2320.000	3380.000	
GR	2321.200	3630.000	2323.000	3250.000	2324.000	4000.000	2325.000	4320.000	0.000	0.000	
SB	1.250	1.500	2.630	0.000	41.500	13.500	224.000	0.000	2311.000	2310.000	
X1	11.842	11.000	3289.000	3331.500	75.000	75.000	75.000	0.000	0.000	0.000	
X2	0.000	0.000	1.000	2319.000	2320.700	0.000	0.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2320.700	2320.700	
X4	1.000	2324.000	1300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
RT	4.000	3000.000	2321.100	0.000	3260.000	2320.700	0.000	3380.000	2321.000	0.000	
RT	3600.000	2321.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
GR	2326.000	1000.000	2323.300	1650.000	2324.000	1850.000	2324.000	1900.000	2324.000	3240.000	
GR	2319.500	3289.000	2311.500	3289.500	2311.500	3331.000	2319.500	3331.500	2324.000	3380.000	
GR	2328.000	3460.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
NC	0.140	0.045	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	#### Centerline = 10000.										
X1	11.372	13.000	2280.000	2400.000	300.000	70.000	160.000	0.000	1.500	0.000	
GR	2336.000	1000.000	2332.000	1750.000	2328.000	2050.000	2324.000	2280.000	2320.000	2300.000	
GR	2313.500	2315.000	2313.500	2360.000	2316.000	2370.000	2320.000	2380.000	2324.000	2400.000	
GR	2328.000	2500.000	2330.600	3600.000	2332.000	3700.000	0.000	0.000	0.000	0.000	
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000	
	#### Centerline = 2220										
X1	11.998	17.000	2154.000	2270.000	470.000	650.000	645.000	0.000	0.000	0.000	
GR	2344.000	540.000	2340.000	980.000	2340.000	980.000	2340.000	980.000	2336.000	1680.000	
GR	2330.300	2000.000	2330.800	2154.000	2320.900	2183.000	2320.900	2233.000	2322.600	2247.000	
GR	2331.100	2251.000	2332.900	2270.000	2331.700	2294.000	2333.800	2416.000	2332.000	2780.000	
GR	2332.000	2950.000	2335.000	3170.000	0.000	0.000	0.000	0.000	0.000	0.000	
NC	0.140	0.045	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	#### Centerline = 2310										
X1	12.100	24.000	2264.000	2371.000	485.000	565.000	590.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
GR	2342.000	550.000	2340.000	1180.000	2339.800	1530.000	2335.100	1850.000	2336.000	1940.000	
GR	2334.700	2000.000	2332.100	2079.000	2332.900	2104.000	2332.500	2122.000	2332.500	2136.000	
GR	2334.300	2147.000	2335.300	2264.000	2326.000	2268.000	2326.000	2349.000	2337.500	2371.000	
GR	2337.400	2435.000	2339.700	2488.000	2336.000	2537.000	2337.000	2579.000	2337.500	2650.000	
GR	2337.500	3000.000	2340.000	3030.000	2344.000	3140.000	2346.000	3260.000	0.000	0.000	

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NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000	
	##										
	#### TROPICANA AVENUE ####										
	#### Normal Bridge Routine ####										
	##										
	#### Centerline = 10000										
X1	12.152	21.000	9932.000	10068.000	280.000	300.000	300.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X4	2.000	2337.000	9450.000	2337.000	9850.000	0.000	0.000	0.000	0.000	0.000	
GR	2348.000	8263.000	2344.000	8910.000	2340.000	9370.000	2338.500	9932.000	2327.000	9954.500	
GR	2327.000	9954.600	2327.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100	
GR	2327.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500	
GR	2327.000	10045.600	2328.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000	
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X1	12.151	21.000	9954.500	10045.600	1.000	1.000	1.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

BT	14.000	9932.000	2338.500	2338.500	9954.500	2341.000	2337.000	9954.600	2341.000	2338.000	
BT	9960.500	2341.000	2338.000	9960.600	2341.000	2338.000	9997.000	2341.000	2338.000	9997.100	
BT	2341.000	2337.000	10003.000	2341.000	2337.000	10003.100	2341.000	2337.000	10039.500	2341.000	
BT	2337.000	10039.500	2341.000	2337.000	10045.500	2341.000	2337.000	10045.600	2341.000	2337.000	
BT	10068.000	2338.500	2338.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
GR	2348.000	8260.000	2344.000	8810.000	2340.000	9370.000	2338.500	9932.000	2327.000	9954.500	
GR	2327.000	9954.600	2327.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100	
GR	2327.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500	
GR	2327.000	10045.500	2338.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000	
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X1	12.167	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.500	0.000	
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X1	12.167	21.000	9932.000	10068.000	1.000	1.000	1.000	0.000	0.500	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
GR	2348.000	8260.000	2344.000	8810.000	2340.000	9370.000	2338.500	9932.000	2327.000	9954.500	
GR	2327.000	9954.600	2327.000	9960.500	2327.000	9960.600	2327.000	9997.000	2327.000	9997.100	
GR	2327.000	10003.000	2327.000	10003.100	2327.000	10039.500	2327.000	10039.600	2327.000	10045.500	
GR	2327.000	10045.500	2338.500	10068.000	2340.000	10420.000	2344.000	10730.000	2348.000	10850.000	
GR	2350.000	10970.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1530.000	2756.000	
MC	0.160	0.745	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	####	Centerline =	2240								
X1	12.320	25.000	2199.000	2319.000	750.000	750.000	900.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X4	5.000	2348.000	940.000	2346.000	940.000	2346.000	1460.000	2344.000	1605.000	2345.500	
X4	1670.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
GR	2360.000	-710.000	2354.400	70.000	2352.000	320.000	2344.000	1530.000	2340.000	1580.000	
GR	2346.100	2000.000	2347.100	2199.000	2334.700	2227.000	2334.700	2234.000	2337.300	2242.000	
GR	2337.900	2258.000	2337.900	2278.000	2346.200	2308.000	2347.400	2319.000	2347.400	2334.000	
GR	2347.900	2343.000	2351.300	2364.000	2352.200	2451.000	2358.400	2463.000	2349.200	2486.000	
GR	2348.600	2494.000	2348.600	2509.000	2350.100	2524.000	2354.400	2634.000	2356.700	2756.000	

NC	0.000	0.000	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000	
NH	4.000	0.140	760.000	0.060	2320.000	0.040	2477.000	0.045	3320.000	0.000	
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1600.000	2477.000	
	####	Centerline =	2360								
X1	12.420	19.000	2320.000	2477.000	535.000	595.000	550.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
X4	3.000	2352.000	1120.000	2351.200	1310.000	2348.000	1740.000	0.000	0.000	0.000	
GR	2364.000	-130.000	2355.000	760.000	2350.000	1600.000	2346.000	1690.000	2350.000	1650.000	
GR	2344.800	2000.000	2348.700	2152.000	2348.400	2288.000	2350.600	2320.000	2340.700	2358.000	
GR	2340.700	2384.000	2352.300	2426.000	2360.200	2477.000	2360.200	2531.000	2360.500	2733.000	
GR	2356.900	2826.000	2356.100	2919.000	2364.000	3100.000	2368.000	3320.000	0.000	0.000	
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000	
MC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000	
NH	4.000	0.140	1490.000	0.140	2165.000	0.040	2235.100	0.045	2730.000	0.000	
	##										
	####			BAYVIEW BOULEVARD						####	
	####			Normal Bridge Routine						####	
	####	ET cards used at bridge xsecs to confine Q25, Q50 and Q100								####	
	####	in LOB to Tropicana Ave grade, based on upstream width.								####	
	##										
	####	Centerline = 2200		####							
X1	12.480	19.000	2165.000	2235.100	280.000	300.000	290.000	0.000	0.000	0.000	
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000	
X4	2.000	2360.000	660.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000	
GR	2364.000	0.000	2352.000	1200.000	2349.000	1490.000	2348.200	1590.000	2349.400	1690.000	
GR	2356.500	2165.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	
GR	2343.500	2175.100	2343.500	2195.000	2343.500	2195.100	2343.500	2205.000	2343.500	2205.100	

GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2160.000	0.040	2240.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.481	24.000	2160.000	2240.100	1.000	1.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	5.000	2160.000	2360.000	2359.500	2175.000	2360.000	2358.500	2187.000	2362.500	2358.500
BT	2195.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2349.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2187.000	2360.000	2187.100	2360.000	2188.000	2343.500	2188.100
GR	2343.500	2217.000	2360.000	2217.100	2360.000	2218.000	2343.500	2218.100	2343.500	2218.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2175.000	0.040	2225.000	0.045	2730.000	0.000
ET	0.000	9.100	9.100	0.000	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.490	24.000	2160.000	2240.100	90.000	90.000	90.000	0.000	0.500	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
BT	5.000	2160.000	2360.000	2359.500	2175.000	2360.000	2358.500	2190.000	2362.500	2358.500
BT	2190.100	2362.500	2358.500	2225.000	2362.500	2358.500	2240.100	2360.000	2358.500	0.000
GR	2364.000	0.000	2352.000	1200.000	2349.000	1490.000	2349.200	1590.000	2349.400	1690.000
GR	2358.500	2160.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000

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GR	2343.500	2175.100	2343.500	2185.000	2360.000	2185.100	2360.000	2190.000	2343.500	2190.100
GR	2343.500	2215.000	2360.000	2215.100	2360.000	2220.000	2343.500	2220.100	2343.500	2220.100
GR	2343.500	2225.000	2360.000	2240.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2165.000	0.040	2235.100	0.045	2730.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1300.000	2730.000
X1	12.491	19.000	2165.000	2235.100	1.000	1.000	1.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2353.000	2353.000	0.000
X4	2.000	2360.000	600.000	2356.000	1000.000	0.000	0.000	0.000	0.000	0.000
GR	2364.000	100.000	2356.000	1330.000	2351.000	1490.000	2354.000	1590.000	2353.000	1690.000
GR	2358.500	2165.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000	2343.500	2175.000
GR	2343.500	2175.100	2343.500	2195.000	2343.500	2195.100	2343.500	2205.000	2343.500	2205.100
GR	2343.500	2225.000	2360.000	2235.100	2361.500	2500.000	2365.600	2730.000	0.000	0.000
NH	4.000	0.140	1330.000	0.140	2283.000	0.035	2375.000	0.045	2631.000	0.000
ET	0.000	9.100	9.100	9.100	0.000	0.000	0.000	0.000	1710.000	2462.000
	####	Centerline =	2310							
X1	12.550	14.000	2283.000	2375.000	310.000	310.000	310.000	0.000	0.000	0.000
GR	2372.000	460.000	2364.000	1110.000	2360.000	1330.000	2360.000	1520.000	2360.000	1710.000
GR	2360.000	2000.000	2355.600	2283.000	2346.200	2305.000	2346.200	2352.000	2358.100	2375.000
GR	2366.500	2421.000	2367.500	2462.000	2366.500	2568.000	2365.400	2681.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 10.137

3265 DIVIDED FLOW

```
            ####  Starting Water Surface at 10.13 based on Reach 2 analysis  ####
            ####  Centerline =   2530
     10.13        6.27   2223.47   2223.42   2223.47   2224.36      0.89      0.00      0.00   2224.40
     4100.        1181.      2519.        0.       354.       335.       1.        0.        0.   2225.63
       0.00       3.34       8.71       0.00      0.060      0.040     0.045     0.000  2217.20   1692.26
  0.010116         350.       470.       500.          0          5         0      0.00   397.00   2584.72
)
 CCHV=    0.100  CEHV=    0.300
 *SECNO 10.310
            ####  Centerline =   2300
     10.31        6.17   2231.07      0.00      0.00   2232.20      1.12      7.77      0.07   2235.98
     4100.           0.      4100.        0.        0.       482.       12.       5.   2236.40
       0.03       0.00       9.50       0.00      0.045      0.040     0.045     0.000  2224.90   2203.59
  0.007151         920.       920.       920.          2          0         0      0.00   106.15   2309.74
)
 CCHV=    0.300  CEHV=    0.500
 *SECNO 10.330

 1645 INT SEC ADDED BY RAISING SEC      10.33,  -3.825FT AND MULTIPLYING BY    1.792


 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.01        4.81   2230.99   2230.99      0.00   2233.42      2.43      0.29      0.66   2234.18
     4100.           0.      4100.        0.        0.       328.       0.       13.       5.   2234.18
       0.03       0.00      12.52       0.00      0.045      0.040     0.045     0.000  2226.18   2975.49
  0.016668          28.        28.        28.          4         15         0      0.00    68.09   3043.58
)

 1645 INT SEC ADDED BY RAISING SEC       1.01,   1.275FT AND MULTIPLYING BY    0.853

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    SECNO       DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL        OLOSS    BANK ELEV
    Q           OLOB       OCH        QROB       ALOB       ACH        AROB       VOL       TWA    LEFT/RIGHT
    TIME        VLOB       VCH        VROB       XNL        XNCH       XNR        WTN       ELMIN       SSTA
    SLOPE       XLOPL      XLCH       XLOBR      ITRIAL     IOC        ICONT      CORAR     TOPWID      ENDST


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.32        5.36   2232.81   2232.81      0.00   2235.51      2.70      0.46      0.13   2235.45
     4100.           0.      4100.        0.        0.       311.       0.       13.       5.   2235.45
       0.03       0.00      13.18       0.00      0.045      0.040     0.045     0.000  2227.45   2766.99
  0.015835          28.        28.        28.         20          9         0      0.00    58.06   2825.05
)

 1645 INT SEC ADDED BY RAISING SEC       1.32,   1.275FT AND MULTIPLYING BY    0.827


 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.03        6.08   2234.81   2234.81      0.00   2237.87      3.06      0.47      0.18   2236.73
     4100.           0.      4100.        0.        0.       292.       0.       13.       5.   2236.73
       0.03       0.00      14.03       0.00      0.045      0.040     0.045     0.000  2228.73   2558.50
  0.017356          28.        28.        28.         20          9         0      0.00    48.03   2606.53
)

 1645 INT SEC ADDED BY RAISING SEC       1.03,   1.275FT AND MULTIPLYING BY    0.791
```

3301 HV CHANGED MORE THAN HVIAS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

```
##########################################################################
####                    DECATUR BOULEVARD                             ####
####                Special Bridge Routine                            ####
##########################################################################
####  Centerline = 2370
```

10.33	7.12	2237.12	2237.12	0.00	2240.69	3.56	0.49	0.25	2238.00
4100.	0.	4100.	0.	0.	271.	0.	13.	5.	2239.00
0.25	0.00	15.15	0.00	0.045	0.040	0.045	0.000	2230.00	2350.00
0.018543	28.	28.	28.	20	8	0	0.00	38.00	2388.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2234.87 ,YCT 2237.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.25	1.50	2.80	0.00	37.40	8.40	284.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESS FLOW BECAUSE EGLWC OF 2247.17 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVIAS

PRESSURE FLOW

EGPRS	EGLWC	HS	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRC
2241.65	2247.17	0.00	0.	4100.	284.	284.	2241.00	2242.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2242.00 ELREA= 2242.00

10.34	8.84	2239.34	0.00	0.00	2241.65	2.31	0.57	0.00	2235.00
4100.	0.	4100.	0.	0.	336.	0.	14.	6.	2242.00
0.25	0.00	12.20	0.00	0.045	0.040	0.045	0.000	2230.50	2350.00
0.008312	95.	95.	95.	4	0	0	0.00	38.00	2388.00

*SECNO 10.490

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.925FT AND MULTIPLYING BY 0.339

3301 HV CHANGED MORE THAN HVIAS

1.01	8.83	2242.46	0.00	0.00	2242.64	0.18	0.35	0.64	2255.98
4100.	0.	3597.	103.	0.	1150.	72.	17.	6.	2238.48
0.25	0.00	3.48	1.43	0.045	0.040	0.045	0.000	2232.49	2140.11

0.000794	163.	198.	178.	3	0	0	0.00	204.03	2344.14

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.649

1.02	8.22	2242.67	0.00	0.00	2242.80	0.13	0.14	0.02	2257.95
4100.	0.	4065.	35.	0.	1411.	37.	23.	7.	2240.45
0.07	0.00	2.88	0.94	0.045	0.040	0.045	0.000	2234.45	2258.22
0.000709	163.	198.	178.	2	0	0	0.00	309.92	2568.15

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.394

1.03	6.43	2242.85	0.00	0.00	2243.02	0.16	0.20	0.02	2259.93
4100.	0.	4099.	1.	0.	1272.	2.	30.	9.	2242.43
0.09	0.00	3.22	0.46	0.045	0.040	0.045	0.000	2236.43	2377.30
0.001559	163.	198.	178.	2	0	0	0.00	392.33	2769.63

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.282

3265 DIVIDED FLOW

Centerline = 2610

10.49	4.97	2243.27	0.00	0.00	2243.58	0.31	0.49	0.07	2261.92
4100.	0.	4100.	0.	0.	921.	0.	35.	11.	2244.40
0.10	0.00	4.45	0.00	0.045	0.040	0.045	0.000	2238.40	2497.02
0.004503	163.	198.	178.	3	0	0	0.00	382.23	2912.20

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.80FT AND MULTIPLYING BY 0.669

3301 HV CHANGED MORE THAN HVINS

1.01	2.35	2244.85	0.00	0.00	2245.59	0.74	1.85	0.13	2260.80
4000.	0.	4000.	0.	0.	580.	0.	39.	13.	2245.40
0.11	0.00	6.89	0.00	0.045	0.040	0.045	0.000	2242.00	1826.60
0.011530	279.	278.	280.	3	0	0	0.00	254.63	2091.23

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.165

1.02	2.59	2248.19	0.00	0.00	2248.35	0.16	3.25	0.01	2264.40
3900.	0.	3900.	0.	0.	600.	0.	43.	14.	2249.40

0.12	0.00	5.50	0.00	0.045	0.040	0.045	0.000	2245.60	1919.34
0.011924	278.	278.	290.	3	0	0	0.00	295.05	2214.39

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.142

1.03	2.40	2251.60	0.00	0.00	2252.18	0.58	3.33	0.01	2268.00
3800.	0.	3800.	0.	0.	620.	0.	47.	16.	2253.00
0.13	0.00	6.13	0.00	0.045	0.040	0.045	0.000	2249.20	2012.09
0.012046	279.	278.	290.	3	0	0	0.00	335.46	2347.55

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.124

Centerline = 2150

10.70	2.23	2255.03	0.00	0.00	2255.56	0.53	3.37	0.01	2271.60
3700.	0.	3700.	0.	0.	535.	0.	51.	19.	2256.60
0.15	0.00	5.83	0.00	0.045	0.040	0.045	0.000	2252.80	2104.88
0.012266	278.	278.	290.	3	0	0	0.00	375.76	2480.64

*SECNO 10.960

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1900.0 2840.0 TYPE= 1 TARGET= 940.000

Centerline = 2580

10.86	6.56	2269.56	2269.53	0.00	2270.66	1.09	14.93	0.17	2270.60
3700.	52.	3648.	0.	30.	432.	0.	68.	28.	100000.00
0.19	1.72	9.45	0.00	0.045	0.033	0.180	0.000	2263.00	2437.66
0.009809	1430.	1365.	1280.	13	20	0	0.00	243.17	2797.98

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	COPAR	TOPWID	ENDST

*SECNO 11.150

Centerline = 2560

11.15	6.21	2275.61	0.00	0.00	2276.78	1.17	6.10	0.02	2278.60
3700.	0.	3700.	0.	0.	426.	0.	78.	32.	2281.80
0.23	0.00	8.69	0.00	0.045	0.033	0.180	0.000	2269.40	2523.92
0.004091	1035.	1010.	995.	3	0	0	0.00	77.33	2601.25

*SECNO 11.280

3301 HV CHANGED MORE THAN HVINS

Centerline = 2460

11.28	4.90	2278.80	0.00	0.00	2280.58	1.78	3.62	0.18	2288.60
3700.	0.	3700.	0.	0.	346.	0.	84.	33.	2288.10
0.24	0.00	10.71	0.00	0.045	0.033	0.140	0.000	2273.90	2431.33
0.008154	655.	645.	640.	3	0	0	0.00	77.92	2509.25

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3695 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2288.40 ELREA= 2288.40

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##############################################################
####                    JONES BOULEVARD                   ####
####                 Special Bridge Routine               ####
##############################################################
####  Centerline = 2725
```

11.31	6.20	2286.20	2286.20	0.00	2289.33	3.13	1.43	0.69	2280.00
3700.	0.	3700.	0.	0.	261.	0.	85.	34.	2280.00
0.25	0.00	14.20	0.00	0.045	0.031	0.140	0.000	2280.00	2704.00
0.307695	180.	180.	200.	20	11	0	0.00	42.00	2746.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNP	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	COPAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2283.99 ,NOT 2286.20 HYDRAULIC JUMP OCCURS DOWNSTREAM *IF LOW FLOW CONTROLS*

SB	XK	XKOR	COEG	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.55	2.90	0.00	41.50	13.50	224.00	0.00	2288.40	2288.00

*SECNO 11.320
PRESS FLOW BECAUSE EGLWC OF 2296.20 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIP	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2292.81	2286.20	0.00	153.	3513.	224.	224.	2288.40	2291.40

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

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####  Centerline BT cards = 1690
```

11.32	11.12	2291.52	0.00	0.00	2292.16	0.64	2.93	0.00	2280.40
3700.	310.	3205.	185.	113.	467.	196.	86.	34.	2280.40
0.25	2.73	6.86	0.95	0.045	0.031	0.140	0.000	2280.40	2683.61
0.000825	70.	70.	70.	2	0	2	0.00	109.37	2792.98

*SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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####  Centerline =  2370
```

11.45	4.90	2293.70	2293.70	0.00	2295.83	2.13	1.36	0.74	2303.20
3700.	0.	3700.	0.	0.	316.	0.	85.	35.	2301.60
0.25	0.00	11.72	0.00	0.140	0.035	0.150	0.000	2288.90	2326.95
0.311524	675.	660.	655.	20	14	0	0.00	74.65	2401.69

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COBAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 11.540

3301 HV CHANGED MORE THAN HVINS

	#### Centerline = 2339								
11.64	5.58	2302.98	0.00	0.00	2304.44	1.46	8.54	0.07	2310.40
3700.	0.	3700.	0.	0.	382.	0.	103.	37.	2305.10
0.29	3.00	9.70	0.00	0.140	0.035	0.160	0.000	2297.40	2290.99
0.006538	1000.	1000.	1000.	4	9	0	0.00	76.97	2367.86

*SECNO 11.790

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

	#### Centerline = 2360								
11.79	5.77	2311.77	2311.77	0.00	2313.97	2.20	6.90	0.22	2319.20
3700.	0.	3700.	0.	0.	311.	0.	109.	36.	2316.90
0.31	0.00	11.97	0.00	0.140	0.035	0.160	0.000	2306.00	2316.50
0.011576	810.	810.	810.	3	8	0	0.00	71.76	2388.27

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

	########## TORREY PINES DRIVE ##########								
	#### Special Bridge Routine ####								
11.82	6.23	2316.23	2316.23	0.00	2319.35	3.12	2.20	0.46	2319.30
3700.	0.	3700.	0.	0.	261.	0.	110.	38.	2319.00
0.32	0.00	14.17	0.00	0.140	0.040	0.160	0.000	2310.00	3289.11
0.017793	120.	155.	160.	20	8	0	0.00	42.28	3331.39

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COBAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2313.99 ,NOT 2316.23 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840
PRESS FLOW BECAUSE EGLWC OF 2326.79 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2322.59	2326.79	0.00	378.	3326.	224.	224.	2319.00	2320.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.84	7.97	2319.47	0.00	0.00	2321.37	1.90	2.02	0.00	2319.50
3700.	0.	3700.	0.	0.	335.	0.	111.	39.	2319.50
0.32	0.00	11.05	0.00	0.140	0.040	0.160	0.000	2311.50	3289.00
0.008444	75.	75.	75.	4	0	4	0.00	42.50	3331.50

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

Centerline = 10000.

11.87	6.30	2321.30	0.00	0.00	2322.64	1.34	1.10	0.17	2325.50
3700.	0.	3700.	0.	0.	399.	0.	112.	39.	2325.50
0.32	0.00	9.29	0.00	0.140	0.035	0.045	0.000	2315.00	2300.44
0.005752	300.	160.	70.	3	0	0	0.00	79.06	2379.52

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

Centerline = 2220

11.99	4.88	2325.78	0.00	0.00	2327.58	1.80	4.30	0.14	2330.60
3700.	0.	3700.	0.	0.	344.	0.	117.	40.	2332.90
0.34	0.00	10.76	0.00	0.140	0.035	0.045	0.000	2320.00	2168.70
0.010015	470.	645.	650.	3	0	0	0.00	83.55	2252.24

SECNO	DEPTH	QWSEL	QRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.130

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.10	4.83	2330.83	0.00	0.00	2332.60	1.76	5.01	0.00	2335.30
3700.	0.	3700.	0.	0.	347.	0.	122.	41.	2337.50
0.35	0.00	10.65	0.00	0.140	0.031	0.045	0.000	2326.00	2275.52
0.007531	435.	590.	565.	1	0	0	0.00	82.72	2358.25

CCHV= 0.300 CEHV= 0.500
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

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##########################################################################
####                    TROPICANA AVENUE                              ####
####                  Normal Bridge Routine                           ####
##########################################################################
####  Centerline = 10000
```

12.15	6.31	2333.31	0.00	0.00	2333.81	0.50	0.24	0.38	2338.50
3703.	0.	3703.	0.	0.	552.	0.	125.	42.	2339.50
0.37	0.00	5.67	0.00	0.140	0.031	0.045	0.000	2327.00	9942.16
0.001446	280.	300.	300.	2	0	0	0.00	115.72	10057.88

*SECNO 12.151

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NBD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.50

12.15	6.09	2333.09	0.00	0.00	2334.04	0.95	0.00	0.23	2327.00
3700.	38.	3544.	118.	36.	445.	0.	125.	42.	2327.00
0.37	1.05	7.97	3.25	0.140	0.031	0.045	0.000	2327.00	9942.58
0.004262	1.	1.	1.	2	0	0	0.00	96.95	10057.46

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNP	WTN	ELMIN	SSTA
SLOPE	YLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.160

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NBD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2339.00

12.16	5.76	2333.26	0.00	0.00	2334.33	1.07	0.23	0.06	2327.50
3700.	36.	3554.	110.	32.	421.	32.	126.	42.	2327.50
0.37	1.10	8.45	3.41	0.140	0.031	0.045	0.000	2327.50	9943.22
0.005033	50.	50.	50.	2	0	0	0.00	95.65	10056.83

*SECNO 12.161

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

12.16	6.56	2334.06	0.00	0.00	2334.52	0.46	0.00	0.18	2339.00
3700.	0.	3700.	0.	0.	691.	0.	126.	42.	2339.00
0.37	0.00	5.43	0.00	0.140	0.031	0.045	0.000	2327.50	9941.67
0.001264	1.	1.	1.	3	2	0	0.00	116.71	10058.33

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

####	Centerline =	2240							
12.32	7.06	2341.76	2341.76	0.00	2343.80	2.04	2.31	0.79	2347.10
3700.	0.	3700.	0.	0.	323.	0.	135.	44.	2347.40
0.39	0.00	11.47	0.00	0.060	0.035	0.045	0.000	2334.70	2211.05
0.012002	750.	900.	750.	20	8	0	0.00	80.91	2291.96

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.429

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1601.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

####	Centerline =	2360							
12.42	7.25	2347.95	0.00	0.00	2349.39	1.44	5.52	0.06	2350.60
3700.	0.	3700.	0.	0.	385.	0.	140.	45.	100000.00
0.41	0.00	9.62	0.00	0.060	0.040	0.045	0.000	2340.70	2330.16
0.008525	535.	550.	595.	2	0	0	0.00	60.10	2410.26

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.430

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.48	6.71	2350.21	0.00	0.00	2351.21	1.60	2.34	0.08	2350.50
3700.	0.	3700.	0.	0.	364.	0.	142.	45.	2360.00
0.41	0.00	10.16	0.00	0.060	0.040	0.045	0.000	2343.60	2170.53
0.007648	280.	250.	300.	3	0	0	0.00	58.58	2229.11

1490 NH CARD USED
*SECNO 12.481

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NPD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.48	6.73	2350.23	0.00	0.00	2351.82	1.60	0.01	0.00	2358.50
3700.	0.	3700.	0.	0.	365.	0.	142.	45.	2360.00
0.41	0.00	10.14	0.00	0.060	0.040	0.045	0.000	2343.50	2168.28
0.012096	1.	1.	1.	1	0	0	0.00	60.93	2231.15

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NPD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	7.34	2351.34	0.00	0.00	2353.13	1.79	1.21	0.10	2359.00
3700.	0.	3700.	0.	0.	345.	0.	143.	45.	2360.50
0.42	0.00	10.74	0.00	0.060	0.045	0.045	0.000	2344.00	2167.66
0.015162	90.	90.	90.	3	0	0	0.00	54.04	2231.72

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.49	3.40	2352.40	0.00	0.00	2353.38	0.98	0.01	0.24	2359.00
3700.	0.	3700.	0.	0.	465.	0.	143.	45.	2360.50
0.42	0.00	7.97	0.00	0.060	0.040	0.045	0.000	2344.00	2169.41
0.003690	1.	1.	1.	3	0	0	0.00	60.73	2230.14

1490 NH CARD USED
*SECNO 12.550

3470 ENCROACHMENT STATIONS= 1710.0 2462.0 TYPE= 1 TARGET= 752.000
Centerline = 2310

12.55	7.31	2353.51	0.00	0.00	2354.52	1.01	1.13	0.01	2355.60
3700.	0.	3700.	0.	0.	459.	0.	146.	46.	2359.10
0.43	0.00	9.07	0.00	0.060	0.035	0.045	0.000	2346.20	2297.96
0.003608	310.	310.	310.	2	0	0	0.00	78.29	2366.15

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**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 1      50-YEAR FLOODPLAIN RUN

J1  ICHECK     INQ       NINV      IDIR       STRT      METRIC    HVINS     Q          WSEL      FQ
       3.       3.        2.        0.   0.000000       0.00      0.3       0.  2224.460     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ICH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      WLOB      VCH       VROB      XAL       XNCH      XNP       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

*PROF 2

CCHV=   0.100  CEHV=   0.300
*SECNO 10.130

3265 DIVIDED FLOW

          ####  Starting Water Surface at 10.13 based on Reach 2 analysis  ####
          ####  Centerline =  2530
    10.13        7.26   2224.46   2224.46   2224.46   2225.46      0.34      0.00      0.00   2224.46
    7000.        2879.     4121.        0.       756.       429.       0.        0.        0.   2225.60
     0.00        3.91      9.62      0.00      0.060     0.040     0.045     0.000   2217.20   1801.35
 0.009668         350.      470.      500.         3         4         0      0.00    713.47   2585.78

CCHV=   0.100  CEHV=   0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC     10.31,  -5.133FT AND MULTIPLYING BY   0.803

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.01        7.81   2227.58   2227.58      0.00   2230.14      2.56      3.57      0.49   2230.77
    7000.          0.     7000.        0.        0.       545.       0.        6.        3.   2231.27
     0.01        0.00     12.83      0.00     0.045     0.040     0.045     0.000   2219.77   2056.56
 0.014297         307.      307.      307.         2         3         2      0.00    107.87   2164.42

1645 INT SEC ADDED BY RAISING SEC      1.01,   2.567FT AND MULTIPLYING BY   1.123
```

3301 HV CHANGED MORE THAN HVINS

1.02	9.36	2231.70	0.00	0.00	2232.83	1.14	2.55	0.14	2233.33
7000.	0.	7000.	0.	0.	819.	0.	11.	4.	2233.83
0.03	0.00	9.55	0.00	0.045	0.040	0.045	0.000	2222.33	2055.92
0.005441	307.	307.	307.	3	0	0	0.00	145.12	2240.34

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.567FT AND MULTIPLYING BY 1.109

Centerline = 2300

10.31	8.53	2233.43	0.00	0.00	2234.68	1.25	1.21	0.03	2235.90
7000.	0.	7000.	0.	0.	780.	0.	17.	5.	2236.40
0.03	0.00	9.57	0.00	0.045	0.040	0.045	0.000	2224.90	2167.18
0.006450	307.	307.	307.	3	0	0	0.00	146.65	2313.83

CCHV= 0.300 CEHV= 0.500
*SECNO 10.330

1645 INT SEC ADDED BY RAISING SEC 10.33, -3.825FT AND MULTIPLYING BY 2.055

3301 HV CHANGED MORE THAN HVINS

1.01	6.75	2232.93	0.00	0.00	2235.66	2.73	0.24	0.74	2234.18
7000.	0.	7000.	0.	0.	528.	0.	17.	5.	2234.18
0.03	0.00	13.26	0.00	0.045	0.040	0.045	0.000	2226.18	3183.49
0.012336	28.	28.	28.	3	0	0	0.00	78.09	3261.57

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.275FT AND MULTIPLYING BY 0.829

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3593 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	7.11	2234.56	2234.56	0.00	2238.15	3.59	0.38	0.43	2235.45
7000.	0.	7000.	0.	0.	460.	0.	17.	5.	2235.45
0.03	0.00	15.21	0.00	0.045	0.040	0.045	0.000	2227.45	2905.65
0.015976	23.	28.	23.	20	3	0	0.00	64.73	2970.39

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.275FT AND MULTIPLYING BY 0.794

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSE
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	10.39	2239.12	2239.12	0.00	2240.75	1.63	0.24	0.59	2236.73
7000.	521.	5914.	565.	187.	534.	202.	19.	5.	2236.73
0.03	2.79	11.08	2.79	0.045	0.040	0.045	0.000	2228.73	2471.64
0.005632	28.	28.	28.	20	15	0	0.00	376.97	2848.51

1645 INT SEC ADDED BY RAISING SEC 1.03. 1.275FT AND MULTIPLYING BY 0.740

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSE
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

DECATUR BOULEVARD
Special Bridge Routine
Centerline = 2370

10.33	10.25	2240.25	2240.25	0.00	2245.27	5.01	0.25	1.69	2239.00
7000.	0.	7000.	0.	0.	390.	0.	18.	5.	2238.00
0.03	0.00	17.97	0.00	0.045	0.040	0.045	0.000	2230.00	2350.00
0.016788	28.	28.	28.	20	8	0	0.00	38.00	2388.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2236.95 .NOT 2240.25 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SB	XK	XKOB	CCEO	PDLEN	BWC	BWP	BAREA	SS	ELCHL	ELCHD
	1.25	1.50	2.00	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESS FLOW BECAUSE EGLWC OF 2254.24 EXCEEDS 1.5 DEPTH
6870 D.S. ENERGY OF 2245.27 HIGHER THAN COMPUTED ENERGY OF 2244.02

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2253.46	2254.24	0.00	3261.	3742.	294.	294.	2241.00	2242.00

10.34	14.46	2244.96	0.00	0.00	2245.27	0.31	0.00	0.00	2235.00
7000.	2255.	3313.	1432.	942.	543.	728.	21.	6.	2242.00
0.03	2.39	6.03	1.97	0.045	0.040	0.045	0.000	2230.50	1856.91

0.001195	95.	95.	95.	4	0	6	0.00	979.25	2736.06

*SECNO 10.490

	#### Centerline =	2610							
10.49	7.58	2245.93	0.00	0.00	2246.14	0.15	0.83	0.05	2261.90
7000.	0.	6970.	30.	0.	2204.	34.	55.	18.	2244.40
0.10	0.00	3.16	0.00	0.045	0.040	0.045	0.000	2238.40	2493.81
0.000997	650.	790.	710.	4	0	6	0.00	535.86	3029.67

CCHV= 0.100 CEHV= 0.300

*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -9.600FT AND MULTIPLYING BY 0.872

3301 HV CHANGED MORE THAN HVINS

1.01	3.09	2246.29	0.00	0.00	2247.27	0.98	0.89	0.25	2262.00
6667.	0.	6667.	0.	0.	838.	1.	72.	22.	2247.00
0.11	0.00	7.95	0.00	0.045	0.040	0.045	0.000	2243.20	1995.35
0.013473	370.	370.	387.	4	0	0	0.00	333.95	2329.29

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.800FT AND MULTIPLYING BY 1.074

1.02	3.14	2251.84	0.00	0.00	2251.84	0.80	4.55	0.02	2266.30
6333.	0.	6333.	0.	0.	893.	1.	69.	25.	2251.80
0.13	0.00	7.17	0.00	0.045	0.040	0.045	0.000	2248.00	2048.99
0.011227	370.	370.	387.	2	0	0	0.00	358.15	2407.03

1645 INT SEC ADDED BY RAISING SEC 1.02, 4.800FT AND MULTIPLYING BY 1.069

	#### Centerline =	2150							
10.70	2.75	2255.55	0.00	0.00	2256.36	0.81	4.51	0.00	2271.60
6000.	0.	6000.	0.	0.	831.	0.	67.	28.	2256.60
0.14	0.00	7.22	0.00	0.045	0.040	0.045	0.000	2252.80	2103.22
0.013349	370.	370.	387.	3	0	0	0.00	380.19	2483.41

*SECNO 10.960

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3479 ENCROACHMENT STATIONS= 1800.0 2840.0 TYPE= 1 TARGET= 940.000

	#### Centerline =	2580							
10.96	7.61	2270.61	2270.61	2269.56	2271.76	1.15	14.22	0.10	2270.60
6000.	483.	5517.	0.	170.	619.	0.	112.	40.	100000.00
0.19	2.83	8.33	0.00	0.045	0.033	0.110	0.000	2263.00	2426.22
0.008328	1430.	1395.	1280.	10	23	0	0.00	377.76	2806.79

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

Centerline = 2560

11.15	7.48	2275.88	0.00	2275.61	2278.59	2.92	5.85	0.26	2278.60
6000.	0.	6000.	3.	0.	526.	0.	128.	45.	2281.80
0.21	0.00	11.41	0.00	0.045	0.033	0.180	0.000	2269.40	2522.68
0.005663	1035.	1010.	985.	2	0	0	0.00	80.07	2602.74

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

•SECNO 11.280

Centerline = 2450

11.28	6.86	2280.76	0.00	2273.90	2282.96	2.20	4.00	0.86	2268.60
6000.	0.	6000.	0.	0.	504.	0.	135.	46.	2289.10
0.23	0.00	11.91	0.00	0.045	0.033	0.140	0.000	2273.90	2428.27
0.006834	656.	645.	640.	3	0	0	0.00	83.87	2512.14

CCHV= 0.300 CEHV= 0.500

•SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3585 20 TRIALS ATTEMPTED WSEL,CWSEL
3593 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

JONES BOULEVARD
Special Bridge Routine
Centerline = 2725

11.31	8.49	2288.49	2288.49	2286.20	2291.72	3.24	1.13	0.52	2280.00
6000.	397.	5395.	208.	66.	356.	100.	137.	47.	2280.00
0.23	6.02	15.14	2.39	0.045	0.031	0.140	0.000	2290.00	2689.44
0.005762	180.	180.	200.	20	17	0	0.00	83.44	2771.98

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2285.50 ,NOT 2288.49 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COSQ	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.60	3.00	41.50	13.50	224.00	0.00	2285.49	2290.00

•SECNO 11.320

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	FR	QWEIR	CPR	BAREA	TRAPEZOID	ELLC	ELTRD

2305.86	2301.13	0.00	2723.	3292.	224.	AREA 224.	2288.40	2291.40	

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

Centerline BT cards = 1690

11.32	11.68	2292.29	0.00	2291.52	2293.72	1.44	1.99	0.00	2280.40
6000.	530.	5140.	329.	129.	499.	234.	139.	47.	2280.40
0.23	4.10	10.30	1.41	0.045	0.031	0.140	0.000	2280.40	2682.22
0.001783	70.	70.	70.	3	0	6	0.00	116.83	2799.05

*SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2370

11.45	5.49	2295.39	2295.39	2293.70	2298.18	2.79	2.30	0.68	2303.20
6000.	0.	6000.	0.	0.	447.	0.	148.	48.	2301.60
0.25	0.00	13.42	0.00	0.140	0.035	0.160	0.000	2288.00	2324.11
0.013771	675.	660.	655.	20	11	0	0.00	80.86	2404.98

CCHV= 0.100 CEHV= 0.300
*SECNO 11.540

3301 HV CHANGED MORE THAN HVINS

Centerline = 2330

11.64	7.28	2304.68	0.00	2302.99	2306.77	2.39	3.52	0.07	2310.40
6000.	0.	6000.	0.	0.	517.	0.	159.	50.	2305.10
0.27	0.00	11.61	0.00	0.140	0.035	0.160	0.000	2297.40	2289.16
0.006905	1000.	1000.	1000.	3	0	0	0.00	82.02	2371.19

*SECNO 11.720

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTM	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2360

11.79	7.53	2313.53	2313.53	2311.77	2316.37	2.84	6.89	0.23	2319.20
6000.	0.	6000.	0.	0.	443.	0.	168.	52.	2316.90
0.29	0.00	13.53	0.00	0.140	0.035	0.160	0.000	2306.00	2312.70
0.013725	810.	810.	810.	3	9	0	0.00	79.24	2391.94

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.00 ELREA= 2319.00

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          ##########################################################################
          ####                    TORREY PINES DRIVE                            ####
          ####                 Special Bridge Routine                           ####
          ##########################################################################
    11.82       8.60   2318.60   2316.60   2316.23   2322.87      4.27      2.08      0.71   2318.30
    6000.          3.      5997.        1.        4.       362.       0.       179.       52.    2318.30
     0.29       0.62     16.59      0.00     0.140     0.040     0.160     0.000   2310.00   3274.28
 0.017191       120.       155.       160.        22         9         0      0.00     57.22   3331.50
J
 SPECIAL BRIDGE
 5227 DOWNSTREAM ELEV IS   2315.50 ,NOT   2318.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
 SB   XK        XKOR       COEG       RDLEN      RWC        RWP        AREA       SS        ELCHU      ELCHD
       1.25       1.50       2.63       3.00      41.50      13.50     224.00      0.00   2311.00    2310.00
 *SECNO 11.840
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XAL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      COPAP      TOPWID     ENDST

 6870 D.S. ENERGY OF 2322.87 HIGHER THAN COMPUTED ENERGY OF 2322.56
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       FB        QWEIR      QPR        BAREA    TRAPEZOID AREA      ELLC       ELTRD
   2335.31    2332.76       0.00      3088.      2921.      224.       224.      2318.00    2320.70

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELREA=     2319.50 ELREA=     2320.70

    11.34       8.82   2320.32   2320.04   2319.47   2324.38      4.06      1.24     -1.24   2319.50
    6000.          3.      5997.        1.        4.       371.       0.       170.       52.    2319.50
     0.29       0.73     16.18      0.00     0.140     0.040     0.150     0.000   2311.50   3280.11
 0.015817         75.        75.        75.        20         5         0      0.00     51.39   3331.50
J
 *SECNO 11.870

 3301 HV CHANGED MORE THAN HVINS

          ####              Centerline = 10000,
    11.47      10.28   2325.28      0.00   2321.30   2326.18      0.90      0.85      0.95   2325.50
    6000.          3.      6000.        1.        0.       787.       0.       173.       52.    2325.50
     0.30       0.00      7.62      0.00     0.140     0.035     0.045     0.000   2315.00   2281.12
 0.002652        300.       140.        70.         3         0         0      0.00    117.77   2399.99
J
 CCHV=   0.100  CEHV=   0.300
 *SECNO 11.900

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####  Centerline =   2220
    11.99       6.25   2327.15   2327.15   2325.78   2329.76      2.61      3.06      0.51   2330.80
    6000.          3.      6000.        3.        3.       463.       0.       182.       54.    2332.80
```

0.31	0.00	12.97	0.00	0.140	0.035	0.045	0.000	2320.90	2164.58
0.010864	470.	645.	650.	4	14	0	0.00	89.82	2254.50

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

•SECNO 12.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.11	6.50	2332.50	0.00	2330.83	2334.81	2.32	5.22	0.03	2335.30
6000.	0.	6000.	0.	0.	491.	0.	189.	55.	2337.50
0.32	0.00	12.21	0.00	0.140	0.031	0.045	0.000	2326.90	2271.23
0.007057	485.	590.	565.	2	0	0	0.00	90.20	2361.43

CCHV= 0.300 CEHV= 0.500
•SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA= 2338.50 ELREA= 2338.50

TROPICANA AVENUE
Normal Bridge Routine
Centerline = 10000

12.15	8.43	2335.43	0.00	2333.31	2336.11	0.68	0.81	0.49	2338.50
6000.	0.	6000.	0.	0.	917.	0.	193.	56.	2339.50
0.34	0.00	6.62	0.00	0.140	0.031	0.045	0.000	2327.00	9938.01
0.001402	280.	300.	300.	3	0	0	0.00	124.01	10062.02

•SECNO 12.151

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE.NRD= 14 MIN ELTRD= 2338.50 MAX ELLC= 2338.50

12.15	8.10	2335.10	0.00	2333.09	2336.44	1.34	0.00	0.33	2327.00
6000.	66.	5946.	267.	64.	592.	64.	193.	56.	2327.00
0.34	1.35	9.54	4.19	0.140	0.031	0.045	0.000	2327.00	9939.65
0.004790	1.	1.	1.	2	0	0	0.00	104.93	10061.38

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

•SECNO 12.151

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 2339.50 MAX ELLC= 2339.00

12.16	7.79	2335.29	0.00	2333.26	2336.76	1.46	0.25	0.06	2327.50
6000.	83.	5662.	255.	59.	569.	59.	194.	56.	2327.50
0.34	1.39	9.94	4.31	0.140	0.031	0.045	0.000	2327.50	9939.25
0.005377	50.	50.	50.	2	0	0	0.00	103.71	10060.79

*SECNO 12.160

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2339.00 ELREA= 2339.00

12.16	8.92	2336.42	0.00	2334.36	2337.02	0.60	0.00	0.26	2339.00
6000.	0.	6000.	0.	0.	968.	0.	194.	56.	2339.00
0.34	0.00	5.20	0.00	0.140	0.031	0.045	0.000	2327.50	9937.05
0.001153	1.	1.	1.	3	0	0	0.00	125.92	10062.97

*SECNO 12.320

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1531.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

Centerline = 2240

12.32	8.73	2343.43	2343.43	2341.76	2346.01	2.58	2.10	0.99	2347.10
6000.	0.	6000.	0.	0.	465.	0.	207.	58.	2347.40
0.36	0.00	12.89	0.00	0.060	0.035	0.045	0.000	2334.70	2207.30
0.010881	750.	800.	750.	25	9	0	0.00	90.68	2297.97

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 3.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

Centerline = 2360

12.42	8.93	2349.63	0.00	2347.95	2351.62	1.99	5.56	0.06	2350.60
6000.	0.	6000.	0.	0.	530.	0.	213.	58.	100000.00
0.37	0.00	11.33	0.00	0.060	0.040	0.045	0.000	2340.70	2323.73
0.009406	535.	550.	515.	2	3	0	0.00	92.60	2416.33

CCHV= 3.300 CEHV= 0.500

1490 NH CARD USED
*SECNO 12.480

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

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         ##################################################################
         ####                    RAINBOW BOULEVARD                     ####
         ####                 Normal Bridge Routine                    ####
         #### ET cards used at bridge xsecs to confine Q25, Q50 and Q100 ####
         #### in LOB to  Tropicana Ave grade, based on upstream width.   ####
         ##################################################################
         ####       Centerline = 2200       ####
```

12.48	8.56	2352.06	0.00	2350.21	2354.54	2.48	2.68	0.24	2358.50
6000.	0.	6000.	0.	0.	475.	0.	217.	60.	2360.00
0.39	0.00	12.63	0.00	0.060	0.040	0.045	0.000	2343.50	2169.29
0.009052	290.	290.	300.	2	0	0	0.00	60.95	2230.24

1490 NH CARD USED
*SECNO 12.481

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.48	8.93	2352.43	0.00	2350.23	2354.63	2.20	0.01	0.08	2358.50
6000.	0.	6000.	0.	0.	504.	0.	217.	60.	2360.00
0.38	0.00	11.91	0.00	0.060	0.040	0.045	0.000	2343.50	2166.07
0.013205	1.	1.	1.	3	0	0	0.00	65.11	2233.17

1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

3685 20 TRIALS ATTEMPTED WSEL,CWSE
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2353.00 ELREA= 2353.00

12.48	8.93	2352.83	2352.19	2351.34	2355.82	2.98	1.52	0.38	2358.00
6000.	0.	6000.	0.	0.	433.	0.	219.	60.	2360.50
0.34	0.00	13.86	0.00	0.140	0.045	0.045	0.000	2344.00	2166.07

0.022364 91. 90. 90. 42 18 0 0.00 57.15 2233.18

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

*SECNO 12.491

3265 DIVIDED FLOW

3331 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1303.0 2730.0 TYPE= 1 TARGET= 1430.000

12.49	11.79	2355.79	0.00	2352.40	2356.58	0.79	0.01	0.66	2359.00
6000.	803.	5197.	0.	977.	679.	0.	218.	60.	2360.50
0.38	0.82	7.66	0.00	0.140	0.040	0.045	0.000	2344.00	1352.83
0.002396	1.	1.	1.	6	0	0	0.00	599.73	2232.21

1490 NH CARD USED

*SECNO 12.550

3470 ENCROACHMENT STATIONS= 1711.0 2462.0 TYPE= 1 TARGET= 752.000

Centerline = 2310

12.55	10.21	2356.41	0.00	2353.51	2357.54	1.13	0.79	0.17	2356.60
6000.	6.	5994.	0.	21.	702.	1.	226.	52.	2359.10
0.38	0.80	8.54	0.00	0.140	0.035	0.045	0.000	2346.20	2231.09
0.002742	310.	310.	310.	3	0	0	0.00	140.64	2371.73

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,32,33,34,35
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 James M. Montgomery Consulting Engineers, Inc.
T3 Flamingo Wash Reach 1 100-YEAR FLOODPLAIN RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	7.	4.	2.	2.	0.000000	0.00	0.3	0.	2225.160	0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PREVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	WCH	WROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
Starting Water Surface at 10.13 based on Reach 2 analysis
Centerline = 2530

10.13	7.96	2225.16	2225.13	2225.16	2226.16	1.00	0.00	0.00	2224.40
10500.	5253.	5247.	0.	1267.	496.	0.	0.	0.	2225.60
0.00	4.15	10.57	0.00	0.060	0.040	0.045	0.000	2217.20	1712.11
0.009717	350.	470.	500.	0	4	0	0.00	874.42	2586.53

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.782

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.31	8.76	2228.88	2228.88	0.00	2231.84	2.96	2.64	0.59	2230.13
10500.	0.	10500.	0.	0.	761.	0.	7.	3.	2230.63
0.00	0.00	13.80	0.00	0.045	0.040	0.045	0.000	2219.13	2020.11
0.013775	230.	230.	230.	20	11	0	0.00	131.22	2151.33

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.093

3301 HV CHANGED MORE THAN HVINS

1.02	11.40	2232.45	0.00	0.00	2233.90	1.45	1.91	0.15	2232.05
10500.	1.	10499.	0.	1.	1086.	0.	12.	3.	2232.55
0.01	0.84	9.67	0.00	0.045	0.040	0.045	0.000	2221.55	2039.51
0.005563	230.	230.	230.	4	0	0	0.00	169.14	2209.65

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	WCH	WROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.925FT AND MULTIPLYING BY 1.085

1.03	10.80	2233.79	0.00	0.00	2235.26	1.49	1.35	0.01	2233.98
10500.	0.	10500.	0.	0.	1073.	0.	17.	4.	2234.48
0.02	0.00	9.79	0.00	0.045	0.040	0.045	0.000	2222.98	2090.56
0.006224	230.	230.	230.	3	0	0	0.00	172.21	2262.77

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.925FT AND MULTIPLYING BY 1.078

Centerline = 2300

10.31	10.34	2236.24	0.00	0.00	2236.72	1.48	1.46	0.00	2235.90
10500.	0.	10500.	0.	0.	1075.	0.	23.	5.	2236.40
0.02	0.00	9.77	0.00	0.045	0.040	0.045	0.000	2224.98	2139.10

0.005444	250.	250.	250.	2	0	0	0.00	177.89	2316.99

CCHV= 0.300 CEHV= 0.500
*SECNO 10.330
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

DECATUR BOULEVARD
Special Bridge Routine
Centerline = 2370

10.33	12.52	2242.52	2242.52	0.00	2244.00	1.48	0.69	0.00	2238.00	
10500.	2204.	5907.	2389.	495.	476.	536.	26.	6.	2238.00	
0.03	4.45	12.41	4.45	0.045	0.040	0.045	0.000	2230.00	2131.32	
0.006130	110.	110.	110.	20	19	0	0.00	493.76	2625.08	

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2239.11 ,NOT 2242.52 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

SB	XK	XKOR	CORC	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.50	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
3301 HV CHANGED MORE THAN HVINS
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	FR	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2272.23	2256.51	0.00	7542.	3035.	294.	294.	2241.00	2242.00

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

10.34	13.82	2244.42	2244.33	0.00	2245.54	1.13	0.47	-0.47	2235.00	
10500.	3009.	5772.	1718.	691.	529.	547.	30.	8.	2242.00	
0.03	4.36	10.91	3.14	0.045	0.040	0.045	0.000	2230.50	1909.25	
0.004119	95.	95.	95.	20	9	0	0.00	803.14	2712.39	

*SECNO 10.497
1645 INT SEC ADDED BY RAISING SEC 10.49, -5.525FT AND MULTIPLYING BY 0.324
3301 HV CHANGED MORE THAN HVINS

1.01	13.11	2245.58	0.00	0.00	2246.14	0.56	0.43	0.17	2255.98	
10500.	0.	9834.	666.	0.	1604.	166.	37.	10.	2238.46	
0.04	0.00	6.13	3.59	0.045	0.040	0.045	0.000	2232.48	2130.90	
0.001422	163.	198.	178.	2	0	0	0.00	202.15	2333.05	

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.975FT AND MULTIPLYING BY 1.695

1.02	11.71	2246.16	0.00	0.00	2246.43	0.28	0.20	0.09	2257.95
10500.	0.	10006.	494.	0.	2336.	223.	47.	11.	2240.45
0.05	0.00	4.28	2.22	0.045	0.040	0.045	0.000	2234.45	2250.60
0.000798	163.	198.	178.	2	0	0	0.00	337.22	2587.82

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.975FT AND MULTIPLYING BY 1.410

1.03	9.95	2246.39	0.00	0.00	2246.61	0.23	0.17	0.01	2259.93
10500.	0.	10246.	254.	0.	2615.	163.	59.	13.	2242.43
0.07	0.00	3.92	1.55	0.045	0.040	0.045	0.000	2236.43	2371.38
0.000884	163.	198.	178.	3	0	0	0.00	465.83	2837.21

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.975FT AND MULTIPLYING BY 1.291

Centerline = 2510

10.49	8.18	2246.58	0.00	0.00	2246.85	0.27	0.22	0.02	2261.90
10500.	0.	10414.	86.	0.	2489.	64.	71.	15.	2244.40
0.38	0.00	4.17	1.34	0.045	0.040	0.045	0.000	2238.40	2493.11
0.001472	163.	198.	178.	2	0	0	0.00	552.56	3045.67

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.300FT AND MULTIPLYING BY 0.881

3301 HV CHANGED MORE THAN HVINS

1.21	4.85	2246.85	0.00	0.00	2247.65	0.79	0.67	0.13	2260.90
10225.	0.	10047.	178.	0.	1484.	74.	64.	19.	2245.80
0.09	0.00	6.77	2.38	0.045	0.040	0.045	0.000	2242.00	1997.69
0.004790	278.	278.	291.	3	0	0	0.00	418.82	2416.51

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.045

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	3.48	2248.08	2249.08	0.00	2250.55	1.47	2.24	0.23	2264.40
9950.	0.	9950.	0.	0.	1023.	0.	93.	20.	2243.40
0.10	0.00	9.72	0.00	0.045	0.040	0.045	0.000	2245.60	2034.84
0.016789	278.	278.	291.	4	19	0	0.00	355.72	2390.55

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.043

3301 HV CHANGED MORE THAN HVINS

1.03	3.87	2253.07	0.00	0.00	2254.06	0.98	3.46	0.05	2268.00
9675.	0.	9672.	3.	0.	1216.	5.	100.	23.	2253.00
0.11	0.00	7.95	0.61	0.045	0.040	0.045	0.000	2249.20	2066.64
0.009541	278.	278.	291.	2	0	0	0.00	436.66	2503.30

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.041

Centerline = 2150

10.70	3.36	2256.16	0.00	0.00	2257.38	1.22	3.25	0.07	2271.60
9400.	0.	9400.	0.	0.	1060.	3.	107.	26.	2256.60
0.12	0.00	8.86	0.00	0.045	0.040	0.045	0.000	2252.80	2101.31
0.014800	278.	278.	291.	2	0	0	0.00	385.30	2486.60

*SECNO 13.850
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1900.0 2840.0 TYPE= 1 TARGET= 940.000

Centerline = 2690

10.96	8.45	2271.45	2271.45	2259.56	2272.86	1.41	15.01	0.06	2270.60
9400.	1430.	7970.	3.	331.	783.	0.	141.	38.	100000.00
0.16	4.32	10.18	0.00	0.045	0.033	0.180	0.000	2263.00	2417.06
0.008432	1430.	1365.	1280.	10	17	0	0.00	396.78	2613.94

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

Centerline = 2560

11.15	8.86	2278.26	0.00	2275.61	2281.63	3.37	8.18	0.59	2278.60
9400.	0.	9400.	0.	0.	633.	0.	162.	44.	2281.80
0.19	0.00	14.72	0.33	0.045	0.033	0.180	0.000	2269.40	2521.33
0.007755	1035.	1010.	985.	2	0	0	0.00	83.04	2604.37

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TW	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.280

3301 HV CHANGED MORE THAN HVINS

Centerline = 2460

11.28	9.44	2283.34	0.00	2278.80	2285.91	2.57	4.20	0.08	2286.60
9400.	0.	9400.	0.	0.	731.	0.	172.	45.	2289.10
0.19	0.00	12.86	0.00	0.045	0.033	0.140	0.000	2273.00	2424.22
0.005549	655.	645.	640.	2	0	0	0.00	91.75	2515.97

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

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          ##########################################################
          ####                  JONES BOULEVARD                 ####
          ####              Special Bridge Routine              ####
          ##########################################################
          ####  Centerline = 2725
```

11.31	10.83	2290.83	2290.83	2286.20	2295.26	4.44	1.03	0.93	2280.00
9400.	759.	8177.	455.	107.	455.	182.	175.	45.	2280.00
0.20	7.15	17.98	2.49	0.045	0.031	0.140	0.000	2280.00	2684.15
0.005871	180.	180.	200.	20	8	0	0.00	106.48	2790.63

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2287.42 ,NOT 2290.83 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	YKOR	COEG	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.25	1.56	2.90	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
5570 D.S. ENERGY OF 2295.26 HIGHER THAN COMPUTED ENERGY OF 2294.74

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	TWA	LEFT/RIGHT
TIME	YLOB	YLCH	YLOB2	ITRIAL	IDC	ICONT	COPAR	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOB2	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	OPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2333.49	2308.42	0.00	5556.	2848.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 2100.0 3870.0 TYPE= 1 TARGET= 1770.000

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          ####  Centerline BT cards = 1590
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11.32	11.20	2291.60	2291.44	2291.52	2295.68	4.08	2.39	-0.39	2280.40
9400.	791.	8133.	476.	115.	471.	200.	176.	45.	2280.40
0.21	6.88	17.28	2.39	0.045	0.031	0.140	0.000	2280.40	2683.46
0.005183	70.	70.	70.	20	15	0	0.00	110.18	2793.63

*SECNO 11.460

3301 HV CHANGED MORE THAN HVTOL

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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          ####  Centerline =  2370
```

11.45	8.58	2297.48	2297.48	2293.78	2300.99	3.51	4.64	0.17	2303.20
9400.	0.	9400.	0.	0.	525.	0.	197.	47.	2301.60
0.21	2.20	15.04	0.00	0.140	0.035	0.160	0.000	2288.90	2320.60
0.010068	675.	660.	655.	5	15	0	0.00	99.57	2410.47

CCHV= 0.130 CSHV= 0.300
*SECNO 11.540

7361 HV CHANGED MORE THAN HVTOL

3301 HV CHANGED MORE THAN HVINS

####	Centerline =	2330							
11.64	9.18	2306.58	0.00	2302.98	2309.57	2.99	8.53	0.05	2310.40
9400.	0.	9392.	8.	0.	676.	12.	202.	46.	2305.10
0.23	0.00	13.89	0.65	0.140	0.035	0.160	0.000	2297.40	2287.11
0.007315	1000.	1000.	1000.	2	0	0	0.00	101.38	2388.50

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.790

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	Centerline =	2360							
11.79	9.64	2315.64	2315.64	2311.77	2319.21	3.56	6.88	0.17	2319.20
9400.	0.	9400.	0.	0.	620.	0.	214.	51.	2316.90
0.24	0.00	15.15	0.00	0.140	0.035	0.160	0.000	2306.00	2308.13
0.010006	810.	810.	810.	3	8	0	0.00	88.24	2396.37

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

3301 HV CHANGED MORE THAN HVINS

3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##
####
TORREY PINES DRIVE
Special Bridge Routine
##

11.82	12.78	2322.78	2322.78	2315.23	2323.86	1.08	0.92	0.75	2318.00
9400.	2774.	5736.	890.	2554.	539.	879.	221.	54.	2316.00
0.25	1.09	10.64	1.31	0.147	0.040	0.150	0.000	2310.00	1923.13
0.004154	120.	155.	161.	20	16	0	0.00	1999.51	3922.64

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2317.42 ,NOT 2322.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEF	POLEN	BWC	BWF	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840
PRESSURE AND WEIR FLOW

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2363.79	2335.67	0.00	7784.	1618.	224.	224.	2319.00	2320.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

11.84	14.22	2325.62	2325.62	2319.47	2326.59	1.27	1.28	-0.28	2319.50
9400.	3065.	6035.	250.	3495.	592.	206.	228.	58.	2319.50
0.25	0.38	10.28	1.22	0.140	0.040	0.160	0.000	2311.50	1072.29
0.003424	75.	75.	75.	20	9	0	0.00	2338.07	3410.36

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

Centerline = 10300.

11.87	10.87	2325.87	0.00	2321.30	2327.73	1.86	0.75	0.40	2325.50
9400.	1.	9398.	1.	4.	553.	2.	243.	66.	2325.50
0.26	0.24	10.96	0.75	0.140	0.035	0.045	0.000	2315.00	2259.00
0.005013	300.	150.	70.	4	0	0	0.00	150.13	2409.13

CCHV= 0.100 CEHV= 0.300
*SECNO 11.890

3301 HV CHANGED MORE THAN HVINS

Centerline = 2220

11.89	8.58	2329.28	0.00	2325.73	2332.39	3.11	4.29	0.37	2330.90
9400.	0.	9400.	0.	0.	664.	0.	255.	69.	2332.90
0.27	0.00	14.15	0.00	0.140	0.035	0.045	0.000	2320.90	2158.45
0.009248	470.	645.	650.	3	0	0	0.00	99.56	2259.00

*SECNO 12.100
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

Centerline = 2310

12.10	8.12	2334.12	2334.12	2330.83	2337.43	3.31	4.84	0.86	2335.30
9400.	0.	9400.	0.	0.	643.	0.	263.	69.	2337.50
0.29	0.00	14.61	0.00	0.140	0.031	0.045	0.000	2326.00	2267.04
0.007962	485.	580.	565.	2	9	0	0.00	97.49	2364.53

CCHV= 0.320 CEHV= 0.600
*SECNO 12.150

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2338.50 ELREA= 2338.50

TROPICANA AVENUE
Normal Bridge Routine
Centerline = 10300

12.15	11.78	2338.08	0.00	2333.31	2338.96	0.88	0.90	0.73	2338.50
9400.	1.	9400.	0.	0.	1245.	0.	270.	70.	2338.50
0.29	0.00	7.53	0.00	0.140	0.031	0.045	0.000	2327.00	9932.82
0.001328	280.	300.	300.	3	9	0	0.00	134.36	10067.18

*SECNO 12.151

3301 HV CHANGED MORE THAN HVTAS

3370 NORMAL BRIDGE,NRO= 14 MIN ELTRO= 2338.50 MAX ELLC= 2339.50

12.15	10.59	2337.59	0.00	2333.09	2339.47	1.88	0.00	0.50	2327.00
9400.	191.	8619.	591.	107.	756.	107.	270.	70.	2327.00
0.29	1.78	11.40	5.54	0.140	0.031	0.045	0.000	2327.00	9933.79
0.008135	1.	1.	1.	3	0	0	-33.66	132.44	10066.22

*SECNO 12.160

3370 NORMAL BRIDGE,NRO= 14 MIN ELTRO= 2338.50 MAX ELLC= 2339.00

12.15	10.49	2337.99	0.00	2333.26	2339.89	1.90	0.41	0.01	2327.50
9400.	194.	8606.	600.	106.	752.	105.	271.	70.	2327.50
0.29	1.83	11.46	5.59	0.140	0.031	0.045	0.000	2327.50	9933.98
0.008251	50.	50.	50.	2	0	0	-27.32	132.05	10066.03

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.150

3301 HV CHANGED MORE THAN HVTAS

12.15	12.02	2339.52	0.00	2334.26	2340.24	0.72	0.00	0.35	2339.00
9400.	7.	9390.	13.	51.	1377.	32.	271.	70.	2339.00
0.29	0.13	6.81	0.42	0.140	0.031	0.045	0.000	2327.50	9736.85
0.000973	1.	1.	1.	3	0	0	0.00	453.31	10190.20

*SECNO 12.320
3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1530.0 2756.0 TYPE= 1 TARGET= 1226.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

Centerline = 2240

12.32	12.45	2347.15	2347.15	2341.76	2347.90	0.75	1.21	0.02	2347.10
9400.	2543.	6907.	0.	1095.	846.	0.	302.	81.	2347.40
0.33	2.37	8.05	0.00	0.060	0.035	0.045	0.000	2334.70	1530.00
0.002713	750.	900.	750.	20	10	0	0.00	786.68	2316.68

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 12.420
3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1600.0 2477.0 TYPE= 1 TARGET= 877.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 100000.00

Centerline = 2340

12.42	10.39	2350.79	2350.79	2347.95	2351.42	0.63	1.83	0.01	2350.60

9400.	4145.	5255.	0.	150.	642.	0.	327.	91.	1600.00
0.35	2.76	8.19	0.00	0.060	0.040	0.045	0.000	2340.70	1600.00
0.004247	535.	550.	595.	23	16	0	0.00	820.52	2420.52

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.490

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3585 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

RAINBOW BOULEVARD
Normal Bridge Routine
ST cards used at bridge xsecs to confine Q25, Q50 and Q100 in LOB to Tropicana 1ve grade, based on upstream width.
Centerline = 2200

12.48	9.53	2353.03	2353.03	2350.21	2354.45	1.42	1.52	0.39	2359.50
9400.	3156.	5234.	0.	1689.	535.	0.	341.	95.	2360.00
0.35	1.87	11.66	1.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.006340	280.	290.	303.	23	12	0	0.00	641.66	2230.93

1490 NH CARD USED
*SECNO 12.491

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NPO= 6 MIN ELTRO= 2360.00 MAX ELLO= 2359.50

3470 ENCROACHMENT STATIONS= 1301.0 2730.0 TYPE= 1 TARGET= 1430.000

12.48	10.71	2354.21	0.00	2350.23	2354.73	0.52	0.01	0.27	2359.50
9400.	4533.	4867.	0.	2402.	623.	0.	341.	95.	2360.00
0.35	1.89	7.81	0.00	0.140	0.040	0.045	0.000	2343.50	1300.00
0.004932	1.	1.	1.	5	3	0	0.00	706.96	2234.20

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED

1490 NH CARD USED
*SECNO 12.49

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NPD= 6 MIN ELTRD= 2340.00 MAX ELLC= 2358.50

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

12.49	10.30	2354.80	0.00	2351.34	2355.24	0.44	0.49	0.02	2359.10	
9400.	5241.	4159.	0.	2460.	543.	0.	347.	97.	2360.50	
0.37	2.13	7.66	0.10	0.140	0.045	0.045	0.000	2344.00	1300.00	
0.006147	90.	90.	90.	2	0	0	0.00	703.79	2234.88	

1490 NH CARD USED
*SECNO 12.491

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1300.0 2730.0 TYPE= 1 TARGET= 1430.000

12.49	11.32	2356.32	2356.32	2352.40	2357.69	2.38	0.01	0.97	2359.10	
9400.	952.	9460.	0.	739.	648.	0.	347.	97.	2360.50	
0.37	1.29	13.05	0.00	0.140	0.040	0.045	0.000	2344.00	1367.87	
0.007191	1.	1.	1.	20	8	0	0.00	543.50	2231.93	

1490 NH CARD USED
*SECNO 12.551

3470 ENCROACHMENT STATIONS= 1710.0 2462.0 TYPE= 1 TARGET= 752.300
Centerline = 2310

12.55	11.17	2357.37	2355.42	2353.51	2359.53	2.16	1.77	0.06	2355.60	
9400.	67.	9333.	0.	100.	738.	0.	355.	100.	2359.10	
0.38	0.67	11.65	0.10	0.140	0.035	0.045	0.000	2346.20	2169.29	
0.004654	310.	310.	310.	4	15	0	0.00	204.29	2373.59	

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 LAS VEGAS WASH OVERFLOW STUDY
T2 James M. Montgomery Consulting Engineers, Inc.
T3 Flamingo Wash Reach 1 500-YEAR FLOODPLAIN RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.000000	0.00	0.3	0.	2227.500	0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 10.130
Starting Water Surface at 10.13 based on Reach 2 analysis
Centerline = 2530

10.13	10.38	2227.58	0.00	2227.58	2228.21	1.63	0.00	0.00	2224.40
35000.	23452.	11223.	325.	3521.	733.	59.	2.	0.	2225.60
0.00	6.66	15.30	5.55	0.060	0.040	0.045	0.000	2217.20	1403.54
0.012199	350.	470.	500.	0	0	0	0.00	1215.68	2619.22

CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

1645 INT SEC ADDED BY RAISING SEC 10.31, -5.775FT AND MULTIPLYING BY 0.759

5301 HV CHANGED MORE THAN HVINS

3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	17.61	2236.74	2236.74	0.00	2240.08	3.35	1.95	0.52	2230.13
35000.	1969.	29352.	3668.	334.	1960.	556.	19.	4.	2230.63
0.00	5.89	15.79	6.59	0.045	0.040	0.045	0.000	2219.13	1669.21
0.006235	230.	230.	230.	20	14	0	0.00	453.61	2343.02

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.925FT AND MULTIPLYING BY 1.106

5301 HV CHANGED MORE THAN HVINS

1.02	17.70	2238.75	0.00	0.00	2241.42	2.67	1.27	0.07	2232.05
35000.	2020.	29235.	3745.	320.	2071.	636.	34.	7.	2232.55
0.01	5.31	14.11	5.33	0.045	0.040	0.045	0.000	2221.05	1921.79
0.004899	230.	230.	230.	2	0	0	0.00	505.66	2427.45

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	WCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	VLOBL	VLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.925FT AND MULTIPLYING BY 1.096

3265 DIVIDED FLOW

1.03	16.95	2239.82	0.00	0.00	2242.67	2.84	1.19	0.05	2233.98
35000.	1937.	30410.	3032.	317.	2121.	499.	30.	10.	2234.48
0.01	5.01	14.34	5.03	0.045	0.040	0.045	0.000	2222.98	1974.95

```
 0.005508      230.      230.      230.         4         0         0     0.00    472.94   2480.27
)
 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.925FT AND MULTIPLYING BY   1.087

          ####  Centerline =  2300
    10.31     16.21   2241.11      0.00      0.00   2243.98      2.87      1.31      0.01   2235.50
   35000.     1299.     31171.     2533.      272.     2192.      435.       65.      12.    2236.40
     0.02      4.77     14.28      5.31     0.045     0.040     0.045     0.000   2224.90   2224.24
 0.005865      230.      230.      230.         3         0         0     0.00    433.36   2457.59
)
 CCHV=   0.300 CEHV=   0.500
 *SECNO 10.330

 1645 INT SEC ADDED BY RAISING SEC     10.33,  -3.825FT AND MULTIPLYING BY   2.907

 3260 CROSS SECTION      1.01 EXTENDED      0.60 FEET

 3301 HV CHANGED MORE THAN HVINS

     1.01     18.61   2244.78      0.00      0.00   2244.84      0.06      0.01      0.84   2234.18
   35000.    15378.     6621.    13001.    10837.     2055.     8159.       73.      13.    2234.19
     0.02      1.42      3.22      1.59     0.045     0.040     0.045     0.000   2226.18   1560.00
 0.000193       29.       28.       28.         3         0         0     0.00   3808.51   5368.51
)
 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.275FT AND MULTIPLYING BY   0.781

     1.02     17.23   2244.73      0.00      0.00   2244.81      0.17      0.01      0.86   2235.45
   35000.    14116.     8040.    12844.     6161.     1492.     4959.       84.      15.    2235.45
     0.03      2.29      5.39      2.59     0.045     0.042     0.045     0.000   2227.45   1717.67
 0.000597       29.       28.       28.         2         0         0     0.00   2746.85   4464.52
)
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 1645 INT SEC ADDED BY RAISING SEC      1.02,   1.275FT AND MULTIPLYING BY   0.720

 3301 HV CHANGED MORE THAN HVINS

     1.03     15.75   2244.43      0.00      0.00   2245.22      0.75      0.03      0.28   2236.72
   35000.    12265.     10325.    12410.     2816.      979.     2525.       60.      17.    2236.72
     0.13      4.36     10.54      4.92     0.045     0.040     0.045     0.000   2228.72   1518.19
 0.002769       28.       28.       28.         3         0         0     0.00   1623.81   3541.20
)
 1645 INT SEC ADDED BY RAISING SEC      1.03,   1.275FT AND MULTIPLYING BY   0.611

 3301 HV CHANGED MORE THAN HVINS

 3695 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    DECATUR BOULEVARD                             ####
          ####                 Special Bridge Routine                           ####
          ##########################################################################
```

Centerline = 2370

10.33	16.75	2245.75	2245.75	0.00	2247.58	1.83	0.12	0.54	2238.00
35000.	12546.	9754.	12703.	1718.	598.	1541.	93.	19.	2239.00
0.03	7.30	16.30	8.24	0.045	0.040	0.045	0.000	2230.00	1779.59
0.007791	28.	28.	28.	20	5	0	0.00	991.31	2770.90

SPECIAL BRIDGE

SB	XK	XKOR	COEP	BOLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.80	0.00	37.40	9.40	294.00	0.00	2230.50	2230.00

*SECNO 10.340
PRESSURE AND WEIR FLOW

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

ECPRS	EGLWC	K3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2575.85	2250.16	2.58	32019.	2988.	294.	294.	2241.00	2242.00

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

10.34	16.51	2247.01	2247.01	0.00	2248.60	1.59	0.69	-0.69	2235.00
35000.	14355.	9842.	10303.	2162.	627.	1535.	102.	20.	2242.00
0.03	6.87	15.69	6.71	0.045	0.040	0.045	0.000	2230.50	1656.33
0.006773	95.	95.	95.	20	9	0	0.00	1170.19	2926.53

*SECNO 10.490

1645 INT SEC ADDED BY RAISING SEC 10.49, -5.267FT AND MULTIPLYING BY 0.396

3301 HV CHANGED MORE THAN HVINS

1.01	14.79	2247.83	0.00	0.00	2250.65	2.82	1.58	0.67	2256.63
35000.	0.	32263.	2737.	0.	2294.	313.	121.	24.	2239.13
0.04	0.00	14.06	8.76	0.045	0.040	0.045	0.000	2233.13	2168.12
0.005989	217.	263.	237.	3	0	0	0.00	251.81	2419.93

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.633FT AND MULTIPLYING BY 1.762

3301 HV CHANGED MORE THAN HVINS

1.02	15.59	2251.35	0.00	0.00	2252.17	0.81	0.69	0.63	2259.27
35000.	0.	32095.	2905.	0.	4322.	627.	143.	26.	2241.77
0.05	0.00	7.43	4.63	0.045	0.040	0.045	0.000	2235.77	2326.04
0.001459	217.	263.	237.	2	0	0	0.00	447.64	2773.69

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.633FT AND MULTIPLYING BY 1.432

Centerline = 2610

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST
10.49	13.61	2252.01	0.00	0.00	2252.59	0.59	0.36	0.07	2261.90
35000.	0.	32693.	2307.	0.	5195.	534.	176.	29.	2244.40
0.26	0.00	6.29	3.54	0.045	0.040	0.045	0.000	2238.40	2486.69
0.001291	217.	263.	237.	3	0	0	0.00	627.16	3113.86

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

1645 INT SEC ADDED BY RAISING SEC 10.70, -10.800FT AND MULTIPLYING BY 0.999

3301 HV CHANGED MORE THAN HVINS

1.01	10.25	2252.25	0.00	0.00	2253.17	0.93	0.48	0.10	2260.80
34750.	0.	30699.	4151.	0.	3904.	856.	209.	33.	2245.80
0.27	0.00	8.04	4.85	0.045	0.040	0.045	0.000	2242.00	2078.36
0.002413	278.	278.	290.	2	0	0	0.00	588.87	2667.24

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	6.80	2252.60	2252.80	0.00	2255.14	2.53	1.26	0.51	2264.40
34500.	0.	32640.	1860.	0.	2455.	281.	233.	36.	2249.40
0.27	0.00	13.29	6.64	0.045	0.040	0.045	0.000	2245.60	2089.33
0.011395	278.	278.	290.	5	14	0	0.00	547.05	2653.78

1645 INT SEC ADDED BY RAISING SEC 1.02, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	6.86	2256.17	2256.17	0.00	2258.70	2.53	1.18	0.00	2268.00
34250.	0.	32427.	1823.	0.	2441.	275.	250.	40.	2253.00
0.28	0.00	13.28	6.64	0.045	0.040	0.045	0.000	2249.20	2089.77
0.011469	278.	278.	290.	2	5	0	0.00	540.15	2654.16

1645 INT SEC ADDED BY RAISING SEC 1.03, 3.600FT AND MULTIPLYING BY 1.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2150

10.70	6.33	2259.63	2259.63	0.00	2262.26	2.63	3.20	0.00	2271.60
34000.	0.	32215.	1785.	0.	2426.	269.	268.	43.	2256.60
0.29	0.00	13.28	6.63	0.045	0.040	0.045	0.000	2252.80	2090.22
0.011552	278.	278.	293.	2	5	0	0.00	532.92	2654.53

*SECNO 10.960

1645 INT SEC ADDED BY RAISING SEC 10.96, -7.650FT AND MULTIPLYING BY 4.079

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	3.55	2263.80	0.00	0.00	2264.34	0.45	1.87	0.22	2262.95
34000.	13318.	20682.	0.	4007.	3266.	0.	307.	56.	2267.95
0.10	3.32	6.33	0.00	0.045	0.033	0.180	0.000	2255.35	5468.86
0.003146	358.	341.	320.	2	0	0	0.00	2559.31	11110.82

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.550FT AND MULTIPLYING BY 0.748

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	SLOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3695 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	8.34	2265.94	2265.94	0.00	2267.10	1.16	1.75	0.21	2265.50
34000.	12332.	21618.	0.	2369.	2140.	0.	355.	74.	2270.50
0.12	5.23	10.10	0.00	0.045	0.033	0.180	0.000	2257.90	4147.46
0.008306	358.	341.	320.	2	11	0	0.00	1822.76	8332.58

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.550FT AND MULTIPLYING BY 0.664

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	8.84	2266.28	2266.28	0.00	2270.76	1.47	3.30	0.09	2266.05
34000.	13821.	20179.	0.	2251.	1744.	0.	369.	86.	2273.05
0.13	6.14	11.57	0.00	0.045	0.033	0.180	0.000	2260.45	2767.58
0.009714	358.	341.	320.	3	8	0	0.00	1307.86	5585.04

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.550FT AND MULTIPLYING BY 0.494

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2680

10.96	13.63	2273.63	2273.53	0.00	2275.03	1.40	3.00	0.01	2278.60
34000.	19508.	15492.	0.	3158.	1239.	0.	423.	98.	2275.60
3.14	5.86	12.50	0.00	0.045	0.033	0.180	0.000	2263.00	603.53
0.007639	358.	341.	320.	7	8	0	0.00	1492.92	2829.78

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COBAR	TCPWID	ENDST

*SECNO 11.150

1645 INT SEC ADDED BY RAISING SEC 11.15, -4.900FT AND MULTIPLYING BY 1.430

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVTAS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	15.14	2279.74	2279.74	0.00	2281.99	2.24	1.35	0.25	2283.80
34000.	6661.	25007.	2332.	1550.	1807.	1914.	451.	106.	2277.00
3.14	4.30	13.34	1.22	0.045	0.033	0.130	0.000	2264.60	1144.86
0.003898	259.	253.	245.	23	15	0	0.00	1416.89	3961.89

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1645 INT SEC ADDED BY RAISING SEC 1.01, 1.600FT AND MULTIPLYING BY 0.900

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	15.47	2281.67	2281.67	0.00	2284.06	2.38	1.32	0.04	2285.40
34000.	7291.	24197.	2512.	1596.	1674.	1915.	491.	114.	2278.60
3.15	4.60	14.45	1.31	0.045	0.033	0.130	0.000	2264.20	1125.52
0.004132	259.	253.	245.	23	9	0	0.00	1332.23	3688.29

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1645 INT SEC ADDED BY RAISING SEC 1.02, 1.600FT AND MULTIPLYING BY 0.889

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO / Q / TIME / SLOPE	DEPTH / OLOB / WLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / AROB / XNR / ICONT	HL / VOL / WTN / CORAR	QLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
1.03	15.92	2283.72	2283.72	0.00	2286.18	2.46	1.06	0.02	2277.00
34000.	9126.	23135.	2733.	1655.	1545.	1943.	511.	122.	2290.20
0.16	4.31	14.98	1.41	0.045	0.033	0.180	0.000	2267.80	1105.60
0.004272	259.	253.	246.	20	8	0	0.00	1250.69	3416.51

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.600FT AND MULTIPLYING BY 0.875

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2560

11.15	16.47	2285.37	2285.37	0.00	2288.39	2.52	1.10	0.02	2278.60
34000.	9127.	21879.	2994.	1734.	1413.	1973.	541.	126.	2281.80
0.16	5.26	15.49	1.52	0.045	0.033	0.180	0.000	2269.40	1086.06
0.004378	259.	253.	245.	20	8	0	0.00	1166.08	3143.55

*SECNO 11.280

1645 INT SEC ADDED BY RAISING SEC 11.28, -3.375FT AND MULTIPLYING BY 0.984

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	19.04	2289.57	2289.57	0.00	2295.08	5.51	0.76	0.90	2285.23
34000.	453.	32549.	998.	105.	1691.	593.	555.	132.	2284.73
0.16	4.31	19.24	1.59	0.045	0.033	0.140	0.000	2270.52	2341.34
0.005010	164.	161.	160.	20	8	0	0.00	401.85	2743.19

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO / Q / TIME / SLOPE	DEPTH / OLOB / WLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / AROB / XNR / ICONT	HL / VOL / WTN / CORAR	QLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
1.02	16.47	2290.52	2290.52	0.00	2296.15	5.63	0.92	0.04	2286.35
34000.	410.	32661.	929.	97.	1682.	552.	563.	133.	2285.85
0.17	4.20	19.42	1.68	0.045	0.033	0.140	0.000	2271.65	2352.00
0.005173	164.	161.	160.	4	8	0	0.00	386.20	2738.19

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	19.65	2291.42	2291.42	0.00	2297.21	5.79	0.95	0.05	2287.48

34000.	359.	32791.	883.	88.	1669.	506.	572.	134.	2286.98
0.17	4.06	19.66	1.68	0.045	0.033	0.140	0.000	2272.77	2362.99
0.005392	164.	161.	160.	4	6	0	0.00	366.64	2729.63

1645 INT SEC ADDED BY RAISING SEC 1.03. 1.125FT AND MULTIPLYING BY 1.006

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2460

11.23	18.71	2292.61	2292.61	0.00	2298.28	5.67	0.86	0.01	2288.60
34000.	372.	32756.	871.	91.	1634.	522.	580.	136.	2288.10
0.17	4.07	19.45	1.57	0.045	0.033	0.140	0.000	2273.90	2371.64
0.005249	164.	161.	160.	4	5	0	0.00	374.73	2746.37

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

1645 INT SEC ADDED BY RAISING SEC 11.31. -4.575FT AND MULTIPLYING BY 1.857

3280 CROSS SECTION 1.01 EXTENDED 4.48 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	24.49	2299.91	0.00	0.00	2299.97	0.06	0.01	1.68	2275.43
34000.	28630.	7107.	6263.	19391.	1909.	14995.	601.	139.	2275.43
2.19	1.26	3.72	0.42	0.045	0.031	0.140	0.000	2275.43	1000.00
0.000085	45.	45.	50.	4	2	0	0.00	5329.74	6329.74

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01. 1.525FT AND MULTIPLYING BY 0.646

3280 CROSS SECTION 1.02 EXTENDED 2.91 FEET

1.02	22.91	2299.86	0.00	0.00	2300.03	0.17	0.01	0.06	2276.95
34000.	18548.	9059.	6393.	12208.	1512.	9918.	634.	144.	2276.95
0.19	1.52	5.99	0.64	0.045	0.031	0.140	0.000	2276.95	1000.00
0.000240	45.	45.	50.	3	0	0	0.00	4509.83	5509.83

1645 INT SEC ADDED BY RAISING SEC 1.02. 1.525FT AND MULTIPLYING BY 0.818

3280 CROSS SECTION 1.03 EXTENDED 1.11 FEET

3301 HV CHANGED MORE THAN HVINS

1.03	21.10	2299.59	0.00	0.00	2300.36	0.77	0.02	0.30	2278.48
34000.	14566.	12770.	6664.	6043.	1140.	5529.	553.	148.	2278.48
0.19	2.41	11.20	1.21	0.045	0.031	0.140	0.000	2278.48	1000.00
0.000936	45.	45.	50.	3	0	0	0.00	3570.95	4570.95

1645 INT SEC ADDED BY RAISING SEC 1.03. 1.525FT AND MULTIPLYING BY 0.779

3280 CROSS SECTION 11.31 EXTENDED 0.89 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##
JONES BOULEVARD
Special Bridge Routine
##
Centerline = 2725

11.31	20.49	2300.89	2300.89	0.00	2302.39	1.50	0.06	0.36	2280.00
34000.	13874.	13405.	6720.	4321.	877.	4079.	665.	152.	2280.00
0.19	3.21	15.28	1.65	0.045	0.031	0.140	0.000	2280.00	1000.00
0.001766	45.	45.	50.	29	5	9	0.00	2705.98	3705.98

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2297.46 ,YOT 2300.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

CD	XK	XKOR	CDEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
6870 D.S. ENERGY OF 2302.39 HIGHER THAN COMPUTED ENERGY OF 2301.27
3283 CROSS SECTION 11.32 EXTENDED 0.87 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2358.39	2337.48	0.00	33201.	883.	224.	224.	2288.40	2291.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
Centerline BT cards = 1690

11.32	20.37	2301.27	0.00	0.00	2302.79	1.52	0.00	0.00	2280.40
34000.	13816.	13459.	6725.	4283.	877.	4069.	665.	156.	2280.40
0.19	3.22	15.35	1.56	0.045	0.031	0.140	0.000	2280.40	1000.00
0.001795	70.	70.	70.	29	0	8	0.00	2699.79	3699.79

*SECNO 11.450

1645 INT SEC ADDED BY RAISING SEC 11.45, -5.666FT AND MULTIPLYING BY 0.626

3288 CROSS SECTION 1.01 EXTENDED 1.79 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	20.20	2304.03	2304.03	0.00	2306.56	2.52	0.57	0.50	2297.53
34000.	9726.	20412.	3863.	5035.	1246.	2533.	726.	158.	2295.93

0.27	1.93	14.39	1.52	0.140	0.035	0.160	0.000	2285.23	600.00
0.003996	225.	220.	219.	20	5	0	0.00	1876.28	2476.28

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.833FT AND MULTIPLYING BY 1.299

3280 CROSS SECTION 1.02 EXTENDED 0.93 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	20.03	2306.10	2306.10	0.00	2308.27	2.17	0.78	0.11	2300.37
34000.	8417.	22429.	3155.	5469.	1545.	2557.	773.	179.	2293.77
0.22	1.54	14.52	1.23	0.140	0.035	0.150	0.000	2286.07	600.00
0.003148	225.	220.	218.	20	10	0	0.00	2438.44	3038.44

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.833FT AND MULTIPLYING BY 1.230

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2370

11.45	18.01	2307.91	2307.91	0.00	2310.21	2.29	0.69	0.06	2303.20
34000.	6577.	25148.	2275.	5013.	1722.	1958.	820.	192.	2301.60
0.21	1.31	14.11	1.15	0.140	0.035	0.160	0.000	2288.90	670.32
0.003141	225.	220.	218.	20	12	0	0.00	2830.97	3501.29

CCHV= 0.100 CEHV= 0.300
*SECNO 11.640
3280 CROSS SECTION 11.64 EXTENDED 0.10 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2330

11.64	18.70	2316.10	2316.10	0.00	2318.47	2.37	3.16	0.02	2310.40
34000.	4361.	22922.	6817.	3643.	1516.	4573.	1032.	259.	2305.10
0.24	1.20	15.06	1.49	0.140	0.035	0.160	0.000	2297.40	560.00
0.003174	1000.	1000.	1000.	20	5	0	0.00	2919.10	3479.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

*SECNO 11.790

1645 INT SEC ADDED BY RAISING SEC 11.79, -4.300FT AND MULTIPLYING BY 0.964

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	18.05	2319.75	2319.75	0.00	2321.59	1.84	1.36	0.05	2314.90
34000.	10155.	20868.	3037.	6712.	1500.	2356.	1126.	286.	2312.60
0.25	1.61	13.97	1.29	0.140	0.035	0.160	0.000	2301.70	200.44
0.003573	405.	405.	405.	20	10	0	0.00	2947.89	3148.33

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.300FT AND MULTIPLYING BY 1.037

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2360

11.73	17.64	2323.64	2323.64	0.00	2325.76	2.13	1.54	0.09	2319.20
34000.	9312.	21908.	2780.	6123.	1507.	2100.	1221.	313.	2316.90
0.25	1.52	14.54	1.32	0.140	0.035	0.160	0.000	2306.00	278.88
0.004076	405.	405.	405.	20	5	0	0.00	2923.51	3202.40

CCHV= 0.300 CEHV= 0.600
*SECNO 11.820

1645 INT SEC ADDED BY RAISING SEC 11.82, -2.667FT AND MULTIPLYING BY 1.681

3280 CROSS SECTION 1.01 EXTENDED 3.02 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	19.02	2326.35	0.10	0.00	2326.42	0.07	0.04	0.62	2315.33
34000.	20819.	6452.	6731.	26372.	1352.	9924.	1245.	317.	2315.33
0.27	0.80	4.77	0.52	0.140	0.040	0.160	0.000	2307.33	1000.00
0.000418	40.	52.	53.	3	0	0	0.00	5581.03	6581.03

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	APOB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORBR	TCPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.333FT AND MULTIPLYING BY 0.797

3280 CROSS SECTION 1.02 EXTENDED 1.64 FEET

1.02	17.64	2326.31	0.00	0.00	2326.53	0.22	0.03	0.07	2316.67
34000.	20012.	7621.	6367.	16572.	1000.	6099.	1275.	322.	2316.67
0.27	1.21	7.62	1.04	0.140	0.040	0.160	0.000	2308.67	1000.00
0.001254	40.	52.	53.	3	0	0	0.00	4412.00	5412.00

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.333FT AND MULTIPLYING BY 0.746

3280 CROSS SECTION 11.82 EXTENDED 0.33 FEET

3301 HV CHANGED MORE THAN HVINS

11.82	16.23	2326.03	0.00	0.00	2327.01	0.98	0.11	0.39	2318.00
34000.	18315.	9775.	5911.	9684.	677.	3111.	1294.	326.	2318.00
0.27	2.11	14.43	1.90	0.140	0.040	0.160	0.000	2310.00	1000.00
0.005630	40.	52.	53.	4	2	0	0.00	3162.72	4162.71

SPECIAL BRIDGE

SB	XK	XKOR	COEC	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	3.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.840
3280 CROSS SECTION 11.84 EXTENDED 2.18 FEET

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2862.65	2323.53	1.52	31616.	2389.	224.	224.	2319.00	2329.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DTEF

11.44	15.69	2328.19	0.00	0.00	2329.57	1.39	0.00	0.00	2319.50
34000.	21540.	11726.	1034.	9576.	705.	497.	1314.	331.	2319.50
0.28	2.26	16.06	2.13	0.140	0.040	0.150	0.000	2311.50	1000.00
0.006619	75.	75.	75.	20	0	7	0.00	2460.00	3460.00

*SECNO 11.870
3685 20 TRIALS ATTEMPTED WSEL,CWSE
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 10300.

11.87	17.95	2332.95	2332.95	0.00	2334.62	1.68	0.79	0.14	2325.50
34000.	2500.	21800.	9690.	1698.	1707.	2931.	1360.	342.	2325.50
0.29	1.47	12.77	3.31	0.140	0.035	0.045	0.000	2315.00	1791.55
0.002729	300.	160.	70.	20	9	0	0.00	1668.88	3660.43

CCHV= 0.100 CFHV= 0.300
*SECNO 11.990
3290 CROSS SECTION 11.99 EXTENDED 0.04 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2220

11.99	15.14	2336.04	2336.04	0.00	2337.70	1.67	2.00	0.00	2330.90
34000.	2912.	18995.	12093.	1769.	1417.	2766.	1444.	365.	2332.90
0.30	1.65	13.40	4.37	0.140	0.035	0.045	0.000	2320.90	1673.72
0.003715	470.	645.	650.	20	10	9	0.00	1496.29	3170.00

*SECNO 12.100
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          #### Centerline =  2310
    12.10     14.79   2340.79   2340.79      0.00   2342.44      1.65      1.86      0.00   2335.30
    34000.     6886.    18415.     8698.     4850.     1344.     2177.     1527.      386.    2337.50
        0.32      1.70     13.70      4.00     0.140     0.031     0.045     0.000   2326.00   1127.90
 0.002958       495.      980.      565.        20         6         0      0.00   1923.72   3051.63

CCHV=   0.300 CEHV=   0.500
*SECNO 12.150

1645 INT SEC ADDED BY RAISING SEC     12.15,  -0.750FT AND MULTIPLYING BY   0.825

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    1.01     15.30   2342.05   2342.05      0.00   2344.61      2.56      0.23      0.45   2337.75
    34000.     5143.    23741.     5111.     2993.     1560.     1282.     1538.      388.    2337.75
        0.32      1.72     15.22      3.99     0.140     0.031     0.045     0.000   2326.25   8852.30
 0.003252       70.       75.       75.        20         8         0      0.00   1369.02  10221.32

1645 INT SEC ADDED BY RAISING SEC      1.01,   0.250FT AND MULTIPLYING BY   1.071

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
    1.02     17.65   2344.15   2341.54      0.00   2345.20      1.05      0.15      0.45   2338.00
    34000.     6948.    18518.     7233.     4977.     1993.     2412.     1550.      391.    2339.00
        0.32      1.26     10.52      3.25     0.140     0.031     0.045     0.000   2326.50   9666.50
 0.001305       70.       75.       75.        22         5         0      0.00   1792.68  10459.29

1645 INT SEC ADDED BY RAISING SEC      1.02,   0.250FT AND MULTIPLYING BY   1.066

    1.03     17.65   2344.40      0.00      0.00   2345.33      0.93      0.09      0.24   2338.25
    34000.     5236.    19947.     7317.     5395.     2818.     2572.     1566.      394.    2339.25
        0.33      1.19      9.89      3.04     0.140     0.031     0.045     0.000   2326.75   8693.34
 0.001143       70.       75.       75.         0         0         0      0.00   1911.11  10604.45

1645 INT SEC ADDED BY RAISING SEC      1.03,   0.250FT AND MULTIPLYING BY   1.062
```



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          ##########################################################################
          ####                    TROPICANA AVENUE                              ####
          ####                Normal Bridge Routine                             ####
          ##########################################################################
          #### Centerline = 10000
    12.15     17.59   2344.59      0.00      0.00   2345.43      0.85      0.08      0.02   2338.50
    34000.     5137.    20102.     7711.     5554.     2134.     2695.     1583.      397.    2338.50
        0.33      1.11      9.42      2.87     0.140     0.031     0.045     0.000   2327.00   8729.37
 0.001037       70.       75.       75.         2         0         0      0.00   2019.23  10747.59

*SECNO 12.151

3301 HV CHANGED MORE THAN HVINS
```

3370 NORMAL BRIDGE,NRO= 14 MIN ELTRO= 2338.50 MAX ELLO= 2339.50

12.15	18.21	2345.21	0.00	0.00	2345.58	0.37	0.00	0.14	2327.00
3400.	9112.	7384.	17504.	5496.	1157.	3351.	1583.	397.	2327.00
0.33	1.66	6.38	5.22	0.140	0.031	0.045	0.000	2327.00	8643.33
0.003072	1.	1.	1.	3	0	0	-411.70	2123.04	10766.37

*SECNO 12.160

3370 NORMAL BRIDGE,NRO= 14 MIN ELTRO= 2338.50 MAX ELLO= 2339.00

12.16	17.85	2345.35	0.00	0.00	2345.79	0.43	0.17	0.03	2327.50
3400.	8786.	8236.	16972.	5025.	1170.	3097.	1594.	400.	2327.50
0.33	1.75	7.04	5.48	0.140	0.031	0.045	0.000	2327.50	8693.18
0.003686	50.	50.	50.	2	0	0	-354.92	2062.31	10755.49

*SECNO 12.160

3301 HV CHANGED MORE THAN HVINS

12.16	17.54	2345.04	0.00	0.00	2346.09	1.04	0.00	0.31	2339.00
3400.	4307.	21526.	8167.	4424.	2128.	2659.	1595.	400.	2339.00
0.33	0.97	10.11	3.37	0.140	0.031	0.045	0.000	2327.50	8734.74
0.001199	1.	1.	1.	2	0	0	0.00	2011.68	10746.42

*SECNO 12.320

1645 INT SEC ADDED BY RAISING SEC 12.32, -3.600FT AND MULTIPLYING BY 1.230

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	15.22	2346.32	0.00	0.00	2346.84	0.52	0.60	0.16	2343.50
3400.	21063.	12612.	325.	7224.	1450.	149.	1673.	418.	2343.80
0.36	2.92	8.70	2.18	0.060	0.035	0.045	0.000	2331.10	889.00
0.002056	375.	400.	375.	4	0	0	0.00	2236.29	3266.25

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.600FT AND MULTIPLYING BY 0.813

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2240

12.32	14.25	2348.95	2348.95	0.00	2350.42	1.47	1.27	0.47	2347.10
3400.	19102.	14748.	149.	4371.	1062.	51.	1736.	435.	2347.40
0.37	4.37	13.88	2.93	0.060	0.035	0.045	0.000	2334.70	715.33
0.006112	375.	400.	375.	20	10	0	0.00	1660.18	2512.54

CCHV= 1.100 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.420

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 2360.20

Centerline = 2360

12.40	12.34	2353.04	0.00	0.00	2354.24	1.20	3.80	0.03	2350.60
34000.	22494.	11506.	0.	4152.	878.	0.	1981.	454.	2360.20
0.39	5.42	13.10	0.00	0.060	0.040	0.045	0.000	2340.70	1026.37
0.008145	535.	550.	595.	3	8	0	0.00	1404.40	2430.78

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	VLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNF	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 3.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.480

1645 INT SEC ADDED BY RAISING SEC 12.48, -2.100FT AND MULTIPLYING BY 1.172

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3695 20 TRIALS ATTEMPTED WSEL,CWSE
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.20 ELREA= 2358.40

1.01	12.79	2354.13	2354.13	0.00	2356.47	2.27	0.67	0.53	2356.40
34000.	18627.	15373.	0.	5630.	872.	0.	1910.	456.	2357.90
0.39	5.31	17.62	0.00	0.140	0.040	0.045	0.000	2341.40	1137.48
0.010976	70.	73.	75.	23	8	0	0.00	1342.80	2616.92

1545 INT SEC ADDED BY RAISING SEC 1.01, 0.700FT AND MULTIPLYING BY 0.951

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2351.80 ELREA= 2356.60

1.02	13.28	2355.18	2355.18	0.00	2357.36	2.18	0.77	0.03	2357.10
34000.	19116.	14885.	0.	5700.	851.	0.	1920.	458.	2359.60
0.39	5.35	17.50	0.00	0.140	0.040	0.045	0.000	2342.10	1050.45
0.010748	70.	73.	75.	2	5	0	0.00	1325.26	2489.08

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	VLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNF	WTN	ELMIN	SSTA

```
    SLOPE     XLOBL     XLCH     XLOBR     ITRIAL    IDC       ICONT     CORAR     TCPWID    ENDST


 1645 INT SEC ADDED BY RAISING SEC      1.02,   0.700FT AND MULTIPLYING BY   0.949

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
       1.03     13.22   2356.02   2356.02      0.00   2358.26      2.24      0.78      0.03   2357.80
      34000.    19400.    14600.       0.      5581.     817.       0.      1831.      460.    2359.30
       0.39      3.48     17.87      0.00      0.140    0.040     0.045     0.000   2342.80    980.98
  0.011275        70.       73.       75.         0         5         0      0.00   1280.79   2361.14

 1645 INT SEC ADDED BY RAISING SEC      1.03,   0.700FT AND MULTIPLYING BY   0.946

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                                                          ####
          ####                    PAINROW BOULEVARD                     ####
          ####                 Normal Bridge Routine                    ####
          #### ET cards used at bridge xsecs to confine Q25, Q50 and Q100 ####
          #### in LOB to  Tropicana Ave grade, based on upstream width.   ####
          ##################################################################
          ####          Centerline = 2200          ####
      12.48     13.42   2356.92   2356.92      0.00   2359.17      2.25      0.81      0.01   2358.50
    34000.    19762.    14238.       0.      5510.     786.       0.      1841.      462.    2360.00
       0.39      3.59     18.11      0.00      0.140    0.040     0.045     0.000   2343.50    907.91
  0.011636        70.       73.       75.         2         5         0      0.00   1241.98   2233.22

 1490 NH CARD USED
 *SECNO 12.491

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

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    SECNO     DEPTH     CHSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XAL       XNCH      XNF       WTA       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TCPWID      ENDST


 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

 4677 BRIDGE DECK DEFINITION ERROR AT STATIONS   2225.00   2240.10
      12.48     15.96   2359.46      0.00      0.00   2359.76      0.30      2.01      0.58   2358.50
    34000.    26776.     7224.       0.      8933.     948.       0.      1841.      462.    2360.00
       0.42      3.00      7.51      0.00      0.140    0.040     0.045     0.000   2343.50    653.96
  0.005760         1.        1.        1.         5         0         0    -60.74   1583.94   2239.61

 1490 NH CARD USED
 *SECNO 12.490

 3265 DIVIDED FLOW
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3370 NORMAL BRIDGE,NBD= 6 MIN ELTRD= 2360.00 MAX ELLC= 2358.50

4677 BRIDGE DECK DEFINITION ERROR AT STATIONS 2225.00 2240.10

12.49	16.12	2360.12	0.00	0.00	2360.33	0.20	0.54	0.03	2359.00
34000.	29294.	4706.	0.	9423.	806.	0.	1862.	466.	2360.50
0.40	3.11	5.84	0.00	0.140	0.045	0.045	0.000	2344.00	583.50
0.006143	90.	60.	90.	3	0	0	-87.41	1646.45	2239.76

1490 NH CARD USED
*SECNO 12.491

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

12.49	16.46	2360.46	2360.46	0.00	2362.49	2.03	0.01	0.91	2359.00
34000.	17762.	16238.	0.	6806.	996.	0.	1862.	466.	2360.50
0.40	2.61	16.31	0.00	0.140	0.040	0.045	0.000	2344.00	572.90
0.007511	1.	1.	1.	20	9	0	0.00	1662.18	2235.08

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
B	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNP	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.552

1645 INT SEC ADDED BY RAISING SEC 12.55, -1.467FT AND MULTIPLYING BY 0.854

3301 HV CHANGED MORE THAN HVINS

1.01	18.75	2363.49	2361.42	0.00	2364.07	0.58	1.15	0.43	2354.13
34000.	22597.	11056.	347.	5153.	1269.	109.	1879.	469.	2356.63
0.41	4.39	8.71	3.20	0.140	0.140	0.110	0.000	2344.73	948.96
0.018087	103.	103.	103.	12	5	0	0.00	1178.62	2127.58

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.733FT AND MULTIPLYING BY 1.085

3265 DIVIDED FLOW

3280 CROSS SECTION 1.02 EXTENDED 0.49 FEET

1.02	18.69	2365.15	0.00	0.00	2365.49	0.34	1.35	0.07	2354.97
34000.	23798.	9795.	407.	6708.	1457.	164.	1597.	472.	2357.37
0.41	3.55	6.72	2.49	0.140	0.140	0.137	0.000	2345.47	920.34
0.009867	103.	103.	103.	2	0	0	0.00	1400.75	2519.14

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.733FT AND MULTIPLYING BY 1.079

3301 HV CHANGED MORE THAN HVINS

Centerline = 2310

12.55	19.26	2365.26	0.00	0.00	2366.03	0.78	0.32	0.22	2355.60

540.00.	1834.	1523.	412.	6415.	1513.	149.	1416.	476.	2358.10	
0.42	2.86	10.07	2.97	0.064	0.045	0.045	0.000	2346.20	1007.66	
0.001538	103.	103.	103.	2	2	2	0.00	1406.02	2413.75	

HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH UPSTREAM 8

SUMMARY PRINTOUT TABLE 150

	SECNO	XLOCH	ELTRD	ELLOC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	10.130	0.00	0.00	0.00	2217.20	4100.00	2223.47	2223.42	2224.36	101.16	8.71	668.76	407.65
	10.130	0.00	0.00	0.00	2217.20	7000.00	2224.46	2224.45	2225.40	96.68	9.62	1184.32	711.92
	10.130	0.00	0.00	0.00	2217.20	10500.00	2225.16	2225.10	2226.16	97.17	10.57	1763.44	1065.16
	10.130	0.00	0.00	0.00	2217.20	35000.00	2227.59	0.00	2229.21	121.99	15.30	4312.75	3168.37
	10.310	920.00	0.00	0.00	2224.90	4100.00	2231.07	0.00	2232.20	71.51	8.50	482.20	484.94
*	10.310	920.00	0.00	0.00	2224.90	7000.00	2233.43	0.00	2234.62	64.50	8.97	779.96	871.50
*	10.310	920.00	0.00	0.00	2224.90	10500.00	2235.24	0.00	2236.72	64.44	9.77	1074.79	1307.97
*	10.310	920.00	0.00	0.00	2224.90	35000.00	2241.11	0.00	2243.98	58.55	14.28	2889.74	4574.13
*	10.330	110.00	0.00	0.00	2230.00	4100.00	2237.12	2237.12	2240.69	185.43	15.15	270.68	301.09
*	10.330	110.00	0.00	0.00	2230.00	7000.00	2240.25	2240.25	2245.27	167.89	17.97	389.52	540.26
*	10.330	110.00	0.00	0.00	2230.00	10500.00	2242.52	2242.52	2244.00	61.30	12.41	1506.95	1341.10
*	10.330	110.00	0.00	0.00	2230.00	35000.00	2245.75	2245.75	2247.59	77.91	16.30	3857.45	3965.20
*	10.340	95.00	2242.00	2241.00	2230.50	4100.00	2239.34	0.00	2241.65	88.12	12.20	336.01	436.77
*	10.340	95.00	2242.00	2241.00	2230.50	7000.00	2244.96	0.00	2245.27	11.95	6.03	2218.74	2024.59
*	10.340	95.00	2242.00	2241.00	2230.50	10500.00	2244.42	2244.38	2245.54	41.18	10.91	1766.33	1636.23
*	10.340	95.00	2242.00	2241.00	2230.50	35000.00	2247.01	2247.01	2248.60	67.73	15.69	4325.68	4252.85
*	10.490	790.00	0.00	0.00	2238.40	4100.00	2243.27	0.00	2243.58	45.03	4.45	521.02	610.99
	10.490	790.00	0.00	0.00	2238.40	7000.00	2245.98	0.00	2246.14	9.97	3.16	2238.28	2215.83
*	10.490	790.00	0.00	0.00	2238.40	10500.00	2246.59	0.00	2246.85	14.72	4.17	2561.67	2737.11
*	10.490	790.00	0.00	0.00	2238.40	35000.00	2252.01	0.00	2252.59	12.91	6.29	5829.43	9741.15
*	10.700	1110.00	0.00	0.00	2252.80	3700.00	2255.83	0.00	2255.56	122.66	5.83	634.63	334.08
*	10.700	1110.00	0.00	0.00	2252.80	6000.00	2255.55	0.00	2256.36	133.49	7.22	830.90	519.31
*	10.700	1110.00	0.00	0.00	2252.80	9400.00	2256.16	0.00	2257.38	148.00	8.86	1060.40	772.67
*	10.700	1110.00	0.00	0.00	2252.80	34000.00	2259.63	2259.63	2262.26	115.52	13.28	2695.39	3163.33
	10.950	1365.00	0.00	0.00	2263.00	3700.00	2269.56	2269.56	2270.66	98.09	8.45	461.84	373.58
*	10.950	1365.00	0.00	0.00	2263.00	6000.00	2270.61	2270.61	2271.76	83.28	8.93	788.26	657.48
*	10.950	1365.00	0.00	0.00	2263.00	9400.00	2271.45	2271.45	2272.86	84.32	10.18	1114.14	1023.67
*	10.950	1365.00	0.00	0.00	2263.00	34000.00	2273.63	2273.63	2275.03	76.39	12.50	4397.18	3890.17

SECNO	XLOCH	ELTRD	ELLOC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K

	11.150	1010.00	0.00	0.00	2269.40	3700.00	2275.61	0.00	2276.73	40.91	8.68	426.22	578.48
	11.150	1010.00	0.00	0.00	2269.40	6000.00	2276.88	0.00	2278.90	56.63	11.41	526.03	797.29
	11.150	1010.00	0.00	0.00	2269.40	9400.00	2278.26	0.00	2281.63	77.55	14.72	638.44	1067.41
*	11.150	1010.00	0.00	0.00	2269.40	34000.00	2285.87	2285.87	2288.39	43.78	15.49	9119.36	5138.31
	11.230	645.00	0.00	0.00	2273.90	3700.00	2279.80	0.00	2280.58	81.54	10.71	345.53	409.75
	11.230	645.00	0.00	0.00	2273.90	6000.00	2280.76	0.00	2282.96	68.34	11.91	503.63	725.78
	11.230	645.00	0.00	0.00	2273.90	9400.00	2283.34	0.00	2286.91	55.49	12.36	731.04	1261.92
*	11.230	645.00	0.00	0.00	2273.90	34000.00	2292.61	2292.61	2298.28	52.49	19.45	2297.71	4692.89
*	11.310	180.00	0.00	0.00	2280.00	3700.00	2286.20	2286.20	2289.33	76.98	14.20	260.55	421.70
*	11.310	180.00	0.00	0.00	2280.00	6000.00	2288.49	2288.49	2291.72	57.62	15.14	521.98	790.46
*	11.310	180.00	0.00	0.00	2280.00	9400.00	2290.83	2290.83	2295.26	58.71	17.98	744.52	1226.84
*	11.310	180.00	0.00	0.00	2280.00	34000.00	2300.89	2300.89	2302.39	17.66	15.28	9277.15	8091.66
*	11.320	70.00	2291.40	2288.40	2280.40	3700.00	2291.52	0.00	2292.16	8.25	6.86	776.25	1288.27
*	11.320	70.00	2291.40	2288.40	2280.40	6000.00	2292.28	0.00	2293.72	17.03	10.30	862.01	1453.86
*	11.320	70.00	2291.40	2288.40	2280.40	9400.00	2291.60	2291.44	2295.68	51.83	17.28	785.22	1305.63
*	11.320	70.00	2291.40	2288.40	2280.40	34000.00	2301.27	0.00	2302.79	17.85	15.35	9224.98	8047.19
*	11.450	660.00	0.00	0.00	2288.90	3700.00	2293.70	2293.70	2295.83	116.24	11.72	315.76	343.19
*	11.450	660.00	0.00	0.00	2288.90	6000.00	2295.39	2295.39	2298.13	107.71	13.42	447.22	578.13
*	11.450	660.00	0.00	0.00	2288.90	9400.00	2297.48	2297.48	2300.99	100.68	15.04	624.90	936.82
*	11.450	660.00	0.00	0.00	2288.90	34000.00	2307.91	2307.91	2310.21	31.41	14.11	8752.62	6066.25
	11.640	1000.00	0.00	0.00	2297.40	3700.00	2302.98	0.00	2304.44	65.38	9.70	381.61	457.61
	11.640	1000.00	0.00	0.00	2297.40	6000.00	2304.68	0.00	2306.77	69.06	11.61	516.92	722.01
	11.640	1000.00	0.00	0.00	2297.40	9400.00	2306.58	0.00	2309.57	73.15	13.89	688.26	1099.08
*	11.640	1000.00	0.00	0.00	2297.40	34000.00	2316.10	2316.10	2318.47	31.74	15.06	9736.05	6034.78
*	11.790	810.00	0.00	0.00	2306.00	3700.00	2311.77	2311.77	2313.97	115.76	11.90	310.83	343.90
*	11.790	810.00	0.00	0.00	2306.00	6000.00	2313.53	2313.53	2316.37	107.25	13.53	443.45	579.36
*	11.790	810.00	0.00	0.00	2306.00	9400.00	2315.64	2315.64	2319.21	100.06	15.15	620.48	939.74
*	11.790	810.00	0.00	0.00	2306.00	34000.00	2323.64	2323.64	2325.78	40.76	14.54	9730.73	5325.71
*	11.820	155.00	0.00	0.00	2310.00	3700.00	2316.23	2316.23	2319.35	177.98	14.17	261.06	277.34
*	11.820	155.00	0.00	0.00	2310.00	6000.00	2318.60	2318.60	2322.87	171.91	16.59	365.96	457.52
*	11.820	155.00	0.00	0.00	2310.00	9400.00	2322.78	2322.78	2323.86	41.54	10.64	3972.14	1458.49
*	11.820	155.00	0.00	0.00	2310.00	34000.00	2326.93	0.00	2327.01	56.30	14.43	12472.39	4531.16
*	11.840	75.00	2320.70	2319.00	2311.50	3700.00	2319.47	0.00	2321.37	84.44	11.05	334.78	402.65
*	11.840	75.00	2320.70	2319.00	2311.50	6000.00	2320.32	2320.04	2324.39	153.17	16.18	374.31	477.08
*	11.840	75.00	2320.70	2319.00	2311.50	9400.00	2325.52	2325.52	2326.59	34.24	10.28	4292.51	1606.46
*	11.840	75.00	2320.70	2319.00	2311.50	34000.00	2328.19	0.00	2329.57	66.18	16.06	10767.68	4179.49
	11.870	160.00	0.00	0.00	2315.00	3700.00	2321.30	0.00	2322.64	57.52	9.28	358.56	487.84
	11.870	160.00	0.00	0.00	2315.00	6000.00	2325.29	0.00	2326.18	26.52	7.62	787.19	1165.19
	11.870	160.00	0.00	0.00	2315.00	9400.00	2325.87	0.00	2327.73	50.13	10.96	863.08	1327.65
*	11.870	160.00	0.00	0.00	2315.00	34000.00	2332.95	2332.95	2334.62	27.20	12.77	6335.91	6519.53

	SECND	XLCH	ELTRD	ELLC	ELMTN	Q	CWSEL	CPIWS	EG	10K*S	VCH	AREA	.01K
	11.990	645.00	0.00	0.00	2320.90	3700.00	2325.78	0.00	2327.59	100.15	10.76	343.90	369.73
*	11.990	645.00	0.00	0.00	2320.90	6000.00	2327.15	2327.15	2329.76	108.64	12.97	462.67	575.66
*	11.990	645.00	0.00	0.00	2320.90	9400.00	2329.29	0.00	2332.39	92.48	14.15	664.15	977.45
*	11.990	645.00	0.00	0.00	2320.90	34000.00	2336.04	2336.04	2337.70	37.18	13.40	5951.43	5575.94
	12.100	580.00	0.00	0.00	2326.00	3700.00	2330.83	0.00	2332.66	75.31	10.65	347.42	426.36
	12.100	580.00	0.00	0.00	2326.00	6000.00	2332.50	0.00	2334.91	70.57	12.21	491.25	714.22
*	12.100	580.00	0.00	0.00	2326.00	9400.00	2334.12	2334.12	2337.43	78.62	14.61	643.48	1060.11
*	12.100	580.00	0.00	0.00	2326.00	34000.00	2340.79	2340.79	2342.44	29.53	13.70	7571.25	6251.58
	12.150	300.00	0.00	0.00	2327.00	3700.00	2333.31	0.00	2333.81	14.46	5.67	652.21	973.18
	12.150	300.00	0.00	0.00	2327.00	6000.00	2335.43	0.00	2336.11	14.02	6.62	906.63	1602.33

	12.150	300.00	0.00	0.00	2327.00	9400.00	2338.08	0.00	2338.96	13.28	7.53	1248.93	2578.99
*	12.150	300.00	0.00	0.00	2327.00	34000.00	2344.59	0.00	2345.43	10.37	9.42	10373.07	10556.24
	12.151	1.00	2339.50	2338.50	2327.00	3700.00	2333.09	0.00	2334.04	42.62	7.97	516.99	566.73
	12.151	1.00	2339.50	2338.50	2327.00	6000.00	2335.10	0.00	2336.44	47.90	9.54	720.11	866.91
	12.151	1.00	2339.50	2338.50	2327.00	9400.00	2337.59	0.00	2339.47	81.35	11.40	969.62	1042.17
	12.151	1.00	2339.50	2338.50	2327.00	34000.00	2345.21	0.00	2345.58	30.72	6.38	9994.00	6134.38
	12.152	50.00	2339.50	2339.00	2327.50	3700.00	2333.26	0.00	2334.33	50.33	8.45	485.40	521.53
	12.152	50.00	2339.50	2339.00	2327.50	6000.00	2335.29	0.00	2336.76	53.70	9.94	688.09	818.74
	12.152	50.00	2339.50	2339.00	2327.50	9400.00	2337.99	0.00	2339.85	82.51	11.45	963.00	1034.82
	12.152	50.00	2339.50	2339.00	2327.50	34000.00	2345.35	0.00	2345.79	36.96	7.04	9292.10	5599.85
	12.160	1.00	0.00	0.00	2327.50	3700.00	2334.06	0.00	2334.52	12.64	5.43	681.48	1040.63
	12.160	1.00	0.00	0.00	2327.50	6000.00	2336.42	0.00	2337.02	11.53	6.20	967.89	1767.09
	12.160	1.00	0.00	0.00	2327.50	9400.00	2339.52	0.00	2340.24	9.73	6.81	1459.23	3013.41
	12.160	1.00	0.00	0.00	2327.50	34000.00	2345.04	0.00	2346.09	11.99	10.11	9211.35	9817.35
*	12.320	800.00	0.00	0.00	2334.70	3700.00	2341.76	2341.76	2343.80	120.02	11.47	322.64	337.73
*	12.320	800.00	0.00	0.00	2334.70	6000.00	2343.43	2343.43	2346.01	108.81	12.89	465.36	575.19
*	12.320	800.00	0.00	0.00	2334.70	9400.00	2347.15	2347.15	2347.90	27.13	8.05	1941.26	1804.53
*	12.320	800.00	0.00	0.00	2334.70	34000.00	2348.95	2348.95	2350.42	61.12	13.88	5484.24	4348.87
	12.420	550.00	0.00	0.00	2340.70	3700.00	2347.95	0.00	2349.39	85.28	9.62	384.81	400.67
	12.420	550.00	0.00	0.00	2340.70	6000.00	2349.63	0.00	2351.62	94.06	11.33	529.53	618.65
*	12.420	550.00	0.00	0.00	2340.70	9400.00	2350.79	2350.79	2351.42	42.47	8.19	2141.56	1442.40
	12.420	550.00	0.00	0.00	2340.70	34000.00	2353.04	0.00	2354.24	81.49	13.10	5030.29	3767.24
	12.480	290.00	0.00	0.00	2343.50	3700.00	2350.21	0.00	2351.81	76.49	10.16	364.34	423.09
	12.480	290.00	0.00	0.00	2343.50	6000.00	2352.06	0.00	2354.54	90.52	12.63	475.05	630.53
*	12.480	290.00	0.00	0.00	2343.50	9400.00	2353.03	2353.03	2354.45	68.30	11.66	2223.60	1133.24
*	12.480	290.00	0.00	0.00	2343.50	34000.00	2356.92	2356.92	2359.17	116.36	18.11	6296.52	3151.37
	12.481	1.00	2360.00	2359.50	2343.50	3700.00	2350.23	0.00	2351.82	120.96	10.14	364.78	336.42
	12.481	1.00	2360.00	2359.50	2343.50	6000.00	2352.43	0.00	2354.63	132.06	11.91	503.99	522.12
	12.481	1.00	2360.00	2359.50	2343.50	9400.00	2354.21	0.00	2354.73	49.32	7.81	3025.21	1338.49
*	12.481	1.00	2360.00	2359.50	2343.50	34000.00	2359.46	0.00	2359.76	57.60	7.61	9881.64	4479.82

	SECNO	XLOW	ELTRO	ELLO	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	WCH	AREA	.01K
	12.480	90.00	2360.00	2359.50	2344.00	3700.00	2351.34	0.00	2353.13	151.62	10.74	344.55	300.43
*	12.480	90.00	2360.00	2359.50	2344.00	6000.00	2352.93	2352.19	2355.92	223.64	13.86	432.95	401.22
	12.480	90.00	2360.00	2359.50	2344.00	9400.00	2354.80	0.00	2355.24	61.47	7.66	3002.75	1198.94
*	12.480	90.00	2360.00	2359.50	2344.00	34000.00	2360.12	0.00	2360.33	61.43	5.84	10228.41	4333.12
	12.491	1.00	0.00	0.00	2344.00	3700.00	2352.40	0.00	2353.39	36.80	7.97	464.53	609.91
	12.491	1.00	0.00	0.00	2344.00	6000.00	2355.79	0.00	2356.58	23.80	7.66	1655.27	1229.99
*	12.491	1.00	0.00	0.00	2344.00	9400.00	2355.32	2355.32	2357.69	71.91	13.05	1386.59	1108.52
*	12.491	1.00	0.00	0.00	2344.00	34000.00	2360.46	2360.46	2362.49	75.11	16.31	7801.54	3923.14
	12.550	310.00	0.00	0.00	2346.20	3700.00	2353.51	0.00	2354.52	36.08	8.07	458.74	615.97
	12.550	310.00	0.00	0.00	2346.20	6000.00	2356.41	0.00	2357.54	27.42	8.54	722.53	1145.93
	12.550	310.00	0.00	0.00	2346.20	9400.00	2357.37	2355.42	2358.53	46.54	11.85	888.21	1377.84
*	12.550	310.00	0.00	0.00	2346.20	34000.00	2365.26	0.00	2366.03	15.08	10.07	8068.35	8755.75

FLAMINGO WASH UPSTREAM R

SUMMARY PRINTOUT TABLE 150

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10.130	4100.00	2223.47	0.00	0.00	0.00	397.00	0.00
	10.130	7000.00	2224.46	0.99	0.00	0.00	713.47	0.00
	10.130	10500.00	2225.16	0.70	0.00	0.00	874.42	0.00
	10.130	35000.00	2227.59	2.42	0.00	0.00	1215.68	0.00
	10.310	4100.00	2231.07	0.00	7.60	0.00	106.15	920.00
*	10.310	7000.00	2233.43	2.36	1.73	0.00	146.65	920.00
*	10.310	10500.00	2235.24	1.81	1.46	0.00	177.89	920.00
*	10.310	35000.00	2241.11	5.87	1.29	0.00	433.36	920.00
*	10.330	4100.00	2237.12	0.00	2.31	0.00	38.00	110.00
*	10.330	7000.00	2240.25	3.13	1.14	0.00	38.00	110.00
*	10.330	10500.00	2242.52	2.27	7.29	0.00	493.76	110.00
*	10.330	35000.00	2245.75	3.22	1.27	0.00	991.31	110.00
*	10.340	4100.00	2239.34	0.00	2.29	0.00	38.00	95.00
*	10.340	7000.00	2244.96	5.62	4.71	0.00	879.25	95.00
*	10.340	10500.00	2244.42	-0.54	1.89	0.00	803.14	95.00
*	10.340	35000.00	2247.01	2.59	1.26	0.00	1170.19	95.00
*	10.490	4100.00	2243.27	0.00	0.41	0.00	382.23	790.00
	10.490	7000.00	2245.98	2.72	1.03	0.00	535.86	790.00
*	10.490	10500.00	2246.58	0.60	0.22	0.00	552.56	790.00
*	10.490	35000.00	2252.01	5.42	0.65	0.00	627.15	790.00
*	10.700	3700.00	2255.03	3.02	3.43	0.00	375.76	1110.00
*	10.700	6000.00	2255.55	0.52	4.50	0.00	380.19	1110.00
*	10.700	8400.00	2256.16	0.61	3.03	0.00	385.38	1110.00
*	10.700	34000.00	2259.63	3.47	3.56	0.00	532.92	1110.00
	10.960	3700.00	2265.56	0.00	14.53	0.00	243.17	1365.00
*	10.960	6000.00	2270.61	1.05	15.27	1.05	377.76	1365.00
*	10.960	8400.00	2271.45	0.84	15.30	1.89	396.78	1365.00
*	10.960	34000.00	2278.63	2.18	4.34	0.00	1492.92	1365.00
	11.150	3700.00	2275.61	0.00	6.05	0.00	77.33	1010.00
	11.150	6000.00	2276.88	1.27	6.27	1.27	80.37	1010.00
	11.150	8400.00	2278.26	1.38	6.81	2.65	83.04	1010.00
*	11.150	34000.00	2285.37	7.11	2.15	0.00	1166.09	1010.00
	11.280	3700.00	2275.80	0.00	3.19	0.00	77.92	645.00
	11.280	6000.00	2280.76	1.95	3.88	1.95	83.87	645.00
	11.280	8400.00	2283.34	2.59	5.08	4.54	91.75	645.00
*	11.280	34000.00	2292.61	9.27	1.19	0.00	374.73	645.00

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	11.310	3700.00	2286.20	0.00	7.40	0.00	42.00	180.00
*	11.310	6000.00	2288.49	2.28	7.73	2.28	83.44	180.00
*	11.310	8400.00	2290.83	2.34	7.49	4.63	106.48	180.00
*	11.310	34000.00	2300.39	10.06	1.31	0.00	2705.98	180.00
*	11.320	3700.00	2291.52	0.00	5.31	0.00	109.37	70.00
*	11.320	6000.00	2292.28	0.76	3.80	0.75	116.83	70.00
*	11.320	8400.00	2291.60	-0.68	0.75	0.09	119.18	70.00
*	11.320	34000.00	2301.27	9.67	0.39	0.00	2699.78	70.00
*	11.450	3700.00	2293.70	0.00	2.13	0.00	74.65	660.00
*	11.450	6000.00	2295.38	1.68	3.11	1.68	88.96	660.00
*	11.450	8400.00	2297.48	2.09	5.88	3.78	99.97	660.00
*	11.450	34000.00	2307.91	10.43	1.82	0.00	2530.97	660.00

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	11.640	3700.00	2302.99	0.00	9.25	0.00	76.97	1000.00
	11.640	6000.00	2304.68	1.70	9.29	1.70	82.02	1000.00
	11.640	9400.00	2306.58	1.90	9.10	3.60	101.38	1000.00
•	11.640	34000.00	2316.10	9.52	8.19	0.00	2919.10	1000.00
	11.790	3700.00	2311.77	0.00	8.80	0.00	71.76	810.00
*	11.790	6000.00	2313.53	1.76	8.85	1.76	79.24	810.00
*	11.790	9400.00	2315.64	2.11	9.06	3.87	88.24	810.00
•	11.790	34000.00	2323.54	8.00	3.88	0.00	2923.51	810.00
	11.820	3700.00	2316.23	0.00	4.46	0.00	42.28	155.00
*	11.820	6000.00	2318.50	2.37	5.07	2.37	57.22	155.00
•	11.820	9400.00	2322.78	4.18	7.13	6.54	1999.51	155.00
*	11.820	34000.00	2326.03	3.26	-0.27	0.00	3162.72	155.00
•	11.840	3700.00	2319.47	0.00	3.24	0.00	42.50	75.00
•	11.840	6000.00	2320.32	0.85	1.72	0.85	51.39	75.00
•	11.840	9400.00	2325.52	5.20	2.74	6.05	2338.07	75.00
*	11.840	34000.00	2328.19	2.66	2.15	0.00	2460.00	75.00
	11.870	3700.00	2321.30	0.00	1.83	0.00	75.08	160.00
	11.870	6000.00	2325.28	3.98	4.95	3.98	117.77	160.00
	11.870	9400.00	2325.87	0.59	0.35	4.56	150.13	160.00
*	11.870	34000.00	2332.95	7.08	4.76	0.00	1868.88	160.00
	11.930	3700.00	2325.79	0.00	4.49	0.00	93.55	645.00
*	11.930	6000.00	2327.15	1.37	1.37	1.37	89.82	645.00
	11.930	9400.00	2329.28	2.13	3.42	3.50	99.56	645.00
*	11.930	34000.00	2336.04	5.75	3.09	0.00	1495.28	645.00
	12.100	3700.00	2330.83	0.00	5.05	0.00	82.72	580.00
	12.100	6000.00	2332.50	1.66	5.34	1.66	90.20	580.00
*	12.100	9400.00	2334.12	1.62	4.94	3.29	97.49	580.00
*	12.100	34000.00	2340.79	6.67	4.75	0.00	1923.72	580.00

	SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	12.150	3700.00	2333.31	0.00	2.48	0.00	115.72	300.00
	12.150	6000.00	2335.43	2.12	2.83	2.12	124.01	300.00
	12.150	9400.00	2338.09	2.66	3.96	4.77	134.36	300.00
*	12.150	34000.00	2344.59	6.50	3.18	0.00	2018.23	300.00
	12.151	3700.00	2333.09	0.00	-0.22	0.00	96.95	1.00
	12.151	6000.00	2335.10	2.01	-0.33	2.01	104.93	1.00
	12.151	9400.00	2337.59	2.49	-0.50	4.50	132.44	1.00
	12.151	34000.00	2345.21	7.63	-0.63	0.00	2123.04	1.00
	12.150	3700.00	2333.26	0.00	0.17	0.00	85.65	50.00
	12.150	6000.00	2335.29	2.03	0.19	2.03	103.71	50.00
	12.150	9400.00	2337.98	2.69	0.40	4.73	132.05	50.00
	12.150	34000.00	2345.35	7.36	0.14	0.00	2062.31	50.00
	12.160	3700.00	2334.06	0.00	-0.80	0.00	116.71	1.00
	12.160	6000.00	2336.42	2.36	1.13	2.35	125.92	1.00
	12.160	9400.00	2339.52	3.10	1.53	5.46	453.31	1.00
	12.160	34000.00	2345.04	5.52	-0.30	0.00	2011.69	1.00
•	12.320	3700.00	2341.76	0.00	7.73	0.00	80.91	800.00
*	12.320	6000.00	2343.43	1.66	7.03	1.66	90.68	800.00
*	12.320	9400.00	2347.15	3.72	7.63	5.39	786.68	800.00
*	12.320	34000.00	2349.95	1.81	2.53	0.00	1660.18	800.00
	12.420	3700.00	2347.95	0.00	6.15	0.00	81.18	550.00
	12.420	6000.00	2349.63	1.68	6.20	1.68	92.60	550.00

*	12.420	9400.00	2350.79	1.16	3.54	2.83	824.52	550.00
	12.420	34000.00	2353.04	2.25	4.08	0.00	1404.40	550.00
	12.480	3700.00	2350.21	0.00	2.26	0.00	58.58	290.00
	12.480	6000.00	2352.06	1.85	2.43	1.85	60.95	290.00
*	12.480	9400.00	2353.03	0.97	2.24	2.82	641.68	290.00
*	12.480	34000.00	2356.92	3.89	3.90	0.00	1241.98	290.00
	12.481	3700.00	2350.23	0.00	2.01	0.00	60.83	1.00
	12.481	6000.00	2352.43	2.21	2.37	2.21	65.11	1.00
	12.481	9400.00	2354.21	1.77	1.18	3.98	706.96	1.00
*	12.481	34000.00	2359.46	5.25	2.54	0.00	1583.94	1.00
	12.490	3700.00	2351.34	0.00	1.12	0.00	54.04	90.00
*	12.490	6000.00	2352.93	1.59	0.50	1.59	57.13	90.00
	12.490	9400.00	2354.90	1.97	0.59	3.46	703.79	90.00
*	12.490	34000.00	2360.12	5.33	0.66	0.00	1646.45	90.00
	12.491	3700.00	2352.40	0.00	1.25	0.00	60.73	1.00
	12.491	6000.00	2355.79	3.39	2.85	3.39	599.73	1.00
*	12.491	9400.00	2355.32	-0.47	0.52	2.92	543.50	1.00
*	12.491	34000.00	2360.46	5.14	0.34	0.00	1662.18	1.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	12.550	3700.00	2353.51	0.00	1.12	0.00	78.29	310.00
	12.550	6000.00	2356.41	2.89	0.62	2.89	140.64	310.00
	12.550	9400.00	2357.37	0.96	2.05	3.85	204.29	310.00
*	12.550	34000.00	2365.26	7.89	2.12	0.00	1406.08	310.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 10.310 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.310 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.310 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.330 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.330 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.330 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.330 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.330 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 10.330 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.340 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.340 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 10.340 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 10.340 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 10.340 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.340 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 10.490 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.490 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.490 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.700 PROFILE= 1 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.700 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.700 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 10.700 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 10.960 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.960 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.960 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.960 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.960 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.150 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.290 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.310 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.310 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.320 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.320 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.320 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.320 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.320 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.320 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.320 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.320 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.450 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.450 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.450 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.640 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.640 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.640 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.790 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.790 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 11.820 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.820 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 11.840 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.840 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.840 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.840 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 11.840 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 11.840 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 11.840 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.870 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.870 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.870 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

1

CAUTION SECNO= 11.990 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.990 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.990 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.990 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.990 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.100 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.100 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.100 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.100 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.100 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.150 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.320 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.320 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.320 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.420 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.420 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.420 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 12.480 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.480 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.480 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.480 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 12.481 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 12.490 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 12.490 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.490 PROFILE= 4 BRIDGE DECK DEFINITION ERROR

CAUTION SECNO= 12.491 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.491 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.491 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 12.491 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.491 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 12.491 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECTN= 12.550 PROFILE= 4 INTERPOLATED XSECTIONS USED

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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EOF..

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     44
 10.13 ####   Starting Water Surface at 10.13 based on Reach 2 analysis  ####
 10.13 ####   Centerline =   2530
 10.31 ####   Centerline =   2300
 10.33 ##################################################################
 10.33 ####                    DECATUR BOULEVARD                       ####
 10.33 ####                 Special Bridge Routine                     ####
 10.33 ##################################################################
 10.33 ####   Centerline = 2370
 10.49 ####   Centerline =   2610
 10.70 ####   Centerline =   2150
 10.96 ####   Centerline =   2680
 11.15 ####   Centerline =   2560
 11.29 ####   Centerline =   2460
 11.31 ##################################################################
 11.31 ####                    JONES BOULEVARD                         ####
 11.31 ####                 Special Bridge Routine                     ####
 11.31 ##################################################################
 11.31 ####   Centerline = 2725
 11.32 ####   Centerline BT cards = 1690
 11.45 ####   Centerline =   2370
 11.64 ####   Centerline =   2330
 11.79 ####   Centerline =   2360
 11.82 ##################################################################
 11.82 ####                    TORREY PINES DRIVE                      ####
 11.82 ####                 Special Bridge Routine                     ####
 11.82 ##################################################################
 11.87 ####              Centerline = 10000.
 11.99 ####   Centerline =   2220
 12.10 ####   Centerline =   2310
 12.15 ##################################################################
 12.15 ####                    TROPICANA AVENUE                        ####
 12.15 ####                 Normal Bridge Routine                      ####
 12.15 ##################################################################
 12.15 ####   Centerline = 10000
 12.32 ####   Centerline =   2240
 12.42 ####   Centerline =   2350
 12.48 ##################################################################
 12.48 ####                    RAINBOW BOULEVARD                       ####
 12.48 ####                 Normal Bridge Routine                      ####
 12.48 #### BT cards used at bridge xsecs to confine Q25, Q50 and Q100   ####
 12.48 #### in LOB to  Tropicana ive grade, based on upstream width.     ####
 12.48 ##################################################################
 12.49 ####              Centerline = 2200      ####
 12.55 ####   Centerline =   2310
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY        25-YEAR EVENT
T3       FLAMINGO WASH UPSTREAM REACH (Rainbow-Cameron)   DMH 10/6/87
J1           2                                    .3          2223.47
J2       1          -1
JT       4    4100     7000    11500    35000
------------------------------------------------------------------------------
NC  .060     .045      .04       .1       .3
X1  10.13      23      2489     2587      350       500      470
GR   2236    1150     2232      1180     2229      1350     2228      1350     2224      1660
GR2221.7     2200   2220.9      2357   2224.5      2111   2224.4      2288   2222.7      2373
GR2224.4     2489   2221.3      2504   2221.3      2521   2219.9      2547   2217.2      2569
GR2217.2     2578   2225.6      2587   2225.6      2514   2234.7      2638   2237.0      2796
GR2237.8     2847   2240.3      2959   2241.0      3083
------------------------------------------------------------------------------
NC  .045     .045      .04       .1       .3
X1  10.31      18      2129     2319      920       920      920
GR   2248    1550     2244      1550     2244      1550     2244      1950     2244      1950
GR2242.3     2000   2235.6      2129   2230.4      2214   2226.0      2236   2224.9      2245
GR2224.9     2299   2236.4      2319   2237.9      2410   2242.2      2474   2241.3      2531
```

GR2242.1	2554	2244.5	2630	2249	2810					
NC			.3	.5						
X1 10.33	12	2350	2399	110	110	110✓				
X3 10							2241	2241		
GR 2243	1560	2244	1950	2244	1950	2244	1950	2244	1950	
GR 2244	2060	2238	2350	2230.0	2350	2230.0	2388	2238	2388	
GR 2243	2650	2249.0	2970							
SB 1.25	1.5	2.80		37.4	9.4	294		2230.5	2230	
X1 10.34	12	2350	2399	95	95	95✓				
X2		1	2241	2242						
X3 10							2242	2242		
X4 1	2242.0	2300								
BT 8	0	2248		470	2244		610	2242.3		
BT 783	2242		1080	2243		1280	2244.5		1430	
BT 2248		1510	2252.0							
GR 2248	1560	2244	1950	2244	1950	2244	1950	2244	1950	
GR 2244	2060	2235	2360	2230.5	2350	2230.5	2388	2242.	2389	
GR 2243	2650	2248.0	2970							
X1 10.49	26	2475	2687	650	710	790✓				
GR 2272	1960	2272	1960	2272	1960	2272	1960	2272	1960	
GR2268.9	2000	2272.2	2234	2270.5	2283	2265.5	2389	2261.9	2475	
GR2239.5	2501	2241.5	2547	2239.1	2570	2239.1	2617	2240.3	2648	
GR2242.1	2701	2241.3	2724	2240.6	2754	2238.4	2771	2238.4	2794	
GR2243.9	2799	2243.0	2845	2242.9	2888	2244.4	2987	2248.3	3092	
GR 2270	3220									
NC			.1	.3						
BT 4	3700	6000	9400	34000						
X1 10.70	19	2352	2489	1110	1160	1110				
GR 2280	1270	2280	1270	2280	1270	2280	1270	2280	1270	
GR2272.3	2000	2271.6	2052	2252.8	2112	2252.8	2198	2253.1	2233	
GR2253.6	2284	2253.6	2370	2253.6	2436	2253.6	2473	2256.6	2499	
GR2256.6	2553	2259.8	2605	2259.5	2654	2280	2740			
BT	9.1	9.1	9.1					1900	2940	
NC	.180	.033								
X1 10.96	31	2613	2840	1430	1280	1365				
GR 2284	120	2280	600	2272	630	2272	1330	2276	1360	
GR 2266	1620	2281	1900	2281	1900	2281	1900	2281	1900	
GR2276.8	2000	2279.9	2083	2278.7	2174	2275.9	2353	2273.2	2398	
GR2268.8	2446	2270.6	2613	2267.5	2620	2267.5	2647	2264.7	2670	
GR2253.0	2680	2253.0	2696	2265.9	2702	2270.8	2736	2267.9	2761	
GR2267.9	2734	2272.9	2826	2275.6	2840	2275.6	2876	2274.1	2948	
GR 2284	3590									
X1 11.15	28	2521	2633	1335	985	1010				
GR 2290	1020	2280	1180	2289	1430	2289	1570	2296	1710	
GR2292.8	2000	2290.4	2038	2288.4	2140	2284.6	2282	2282.6	2360	
GR2282.0	2399	2280.0	2404	2281.8	2420	2276.6	2521	2269.4	2530	
GR2269.4	2584	2273.7	2599	2280.5	2607	2281.8	2633	2280.3	2655	
GR2279.3	2663	2279.3	2683	2279.0	2710	2279.0	2731	2280.7	2791	
GR 2284	3050	2288	3250	2292	3400					
NC .245	.140	.033								
X1 11.29	19	2416	2523	655	640	645				
X4 3	2300	750	2296	920	2300	1750				
GR 2301	700	2284	1060	2294	1280	2298	1400	2296.5	1600	
GR2304.5	2000	2302.3	2066	2303.0	2258	2300.5	2304	2292.1	2376	
GR2288.6	2416	2273.9	2439	2273.9	2502	2286.1	2523	2288.1	2556	
GR2286.8	2587	2292	2650	2295	3050	2300	3530			
NC		.031	.3	.5						
BT	9.1	9.1	9.1					2100	3870	
X1 11.31	16	2704	2746	190	200	180				
X3 10							2298.4	2288.4		
GR 2300	1000	2287	1200	2287	1600	2288.4	1760	2288.2	1980	
GR 2300	2110	2300	2900	2292	2682	2280	2704	2280	2746	
GR 2288	2758	2292	2900	2292	2920	2296	3100	2300	3420	
GR2301.4	3870									
SB 1.25	1.56	2.80		41.5	13.5	224		2280.4	2280	
BT	9.1	9.1	9.1					2100	3870	
X1 11.32				70	70	70		.4		
X2		1	2288.4	2281.4						

X3	10						2291.4	2291.4		
BT	12	0	2300		460	2299.7	710	2299.6		
BT	1050	2296		1200	2294.3	1380	2293		1580	
BT	2292.3		1650	2291.4	1750	2292		1920	2292.4	
BT		2150	2296		2230	2300				
MC	.140	.160	.035							
X1	11.45	20	2311	2423	675	655	660			
GR	2308.6	600	2304	1070	2307	1360	2302.5	1630	2304.9	1780
GR	2304.1	2302	2302.9	2129	2302.8	2170	2305.9	2260	2303.2	2311
GR	2286.9	2335	2286.9	2392	2296.9	2408	2301.6	2428	2301.6	2444
GR	2302.2	2478	2304.4	2572	2304.5	2720	2307.5	3040	2309.0	3600
MC				.1	.3					
X1	11.64	18	2283	2372	1000	1000	1000			
X4	1	2312.2	2180							
GR	2316	560	2314.3	870	2315	1220	2315.0	1370	2315.0	1660
GR	2312.0	1810	2312.0	2104	2311.7	2261	2310.4	2283	2297.4	2297
GR	2297.4	2357	2305.1	2372	2307.7	2401	2308.6	2496	2312.6	2712
GR	2315	2853	2310	3290	2320	3600				
X1	11.79	20	2282	2299	810	810	810			
GR	2326.2	40	2324	210	2320	970	2320	970	2321.3	1360
GR	2318.7	2000	2319.6	2149	2319.2	2282	2315.7	2306	2306.0	2329
GR	2306.0	2348	2308.3	2381	2316.9	2399	2317.7	2427	2317.7	2458
GR	2319.8	2569	2321.2	2656	2320.4	2688	2324	3260	2328	3510
MC			.04	.3	.5					
X1	11.82	14	3289	3331.5	120	160	155			
X3	10								2319	2319
GR	2326.9	1000	2321.3	2200	2321.0	2520	2320.4	2800	2320.0	3240
GR	2318.0	3289	2310.0	3289.5	2310.0	3331	2318.0	3331.5	2320.0	3380
GR	2321.2	3630	2323.0	3990	2324.0	4000	2328.0	4320		
SR	1.25	1.5	2.63		41.5	13.5	224		2311	2310.0
X1	11.84	11	3289	3331.5	75	75	75			
X2			1	2318	2320.7					
X3	10								2320.7	2320.7
X4	1	2324	1300							
BT	4	3000	2321.1		3260	2320.7		3330	2321	
BT	3600	2321.4								
GR	2326.0	1000	2323.3	1650	2324.0	1850	2324.0	1900	2324.0	3240
GR	2319.5	3289	2311.5	3289.5	2311.5	3331	2319.5	3331.5	2324.0	3380
GR	2328.0	3460								
MC	.140	.045	.035							
X1	11.97	13	2280	2400	300	70	160		1.5	
GR	2336.0	1000	2332.0	1750	2328.0	2060	2324.0	2280	2320.0	2300
GR	2313.5	2315	2313.5	2360	2316.0	2370	2320.0	2380	2324.0	2400
GR	2328.0	2500	2330.6	3600	2332.0	3700				
MC				.1	.3					
X1	11.99	17	2154	2270	470	650	645			
GR	2344	540	2340	990	2340	980	2340	980	2336	1660
GR	2330.3	2000	2330.8	2154	2320.9	2183	2320.9	2233	2322.6	2247
GR	2331.1	2261	2332.9	2270	2331.7	2294	2333.8	2416	2332.0	2790
GR	2332	2950	2336	3170						
MC	.140	.045	.031							
X1	12.10	24	2264	2371	495	565	580			
X3	10									
GR	2348	550	2340	1180	2339.8	1530	2335	1850	2336	1940
GR	2334.7	2000	2332.1	2079	2332.9	2104	2332.5	2122	2332.5	2136
GR	2334.3	2147	2335.3	2264	2326.0	2288	2326.0	2349	2337.5	2371
GR	2337.4	2435	2339.7	2499	2336.0	2537	2337.0	2578	2337.5	2650
GR	2337.5	3000	2340	3010	2344	3140	2346	3250		
MC				.3	.5					
X1	12.15	21	9932	10068	280	300	300			
X3	10									
X4	2	2337	9450	2337	9850					
GR	2348	9250	2344	9810	2340	9370	2338.5	9932	2327	9954.5
GR	2327	9954.6	2327	9960.5	2327	9960.6	2327	9997	2327	9997.1
GR	2327	10013	2327	10034.1	2327	10039.5	2327	10039.6	2327	10045.5
GR	2327	10045.6	2339.5	10068	2340	10400.	2344	10730	2346	10850
GR	2350	10970								
112.151		21	9954.5	10045.6	1	1	1			

```
X3      10
BT      14      9932    2338.5  2336.5  9954.5  2341.0     2337  9954.6  2341.0     2338
BT9960.5  2341.0     2338  9960.6  2341.0     2338     9997  2341.0     2338  9997.1
BT2341.0     2337    10033  2341.0     2337  10033.1  2341.0     2337  10039.5  2341.0
BT   2337 10039.6  2341.0     2337 10045.5  2341.0     2337 10045.6  2341.0     2337
BT10068.  2338.5  2338.5
GR    2348     8250     2344     8810     2340     9370  2338.5     9932     2327  9954.5
GR    2337  9954.6     2337  9960.5     2327  9960.6     2327     9997     2337  9997.1
GR    2337    10033     2327  10033.1     2327  10039.5     2337 10039.6     2337 10045.5
GR    2327 10045.6  2338.5    10068     2340    10420.     2344    10730     2348    10950
K1 12.16
K2
K3      10
K1 12.16       21     9932    10068        1        1        1              0.5
K3      10
GR    2348     8250     2344     8810     2340     9370  2338.5     9932     2327  9954.5
GR    2327  9954.6     2327  9960.5     2327  9960.6     2327     9997     2327  9997.1
GR    2327    10033     2327  10033.1     2327  10039.5     2327 10039.6     2327 10045.5
GR    2327 10045.6  2338.5    10068     2340    10420.     2344    10730     2348    10950
ET              9.1      9.1      9.1                                      1530     2756
MC     .060     .045     .036
K1 12.32       25     2199     2319      750      750      800
K3      10
K4       5     2348      840     2346      940     2346     1460     2344     1605  2345.5
K4    1670
GR    2350     -710  2354.4       70     2352      320     2344     1530     2340     1590
GR2346.1     2010  2347.1     2199  2334.7     2227  2334.7     2234  2337.3     2242
GR2337.9     2258  2337.9     2278  2346.2     2308  2347.4     2319  2347.4     2334
GR2347.9     2348  2351.3     2364  2352.2     2451  2350.4     2463  2345.2     2486
GR2348.6     2434  2348.5     2509  2350.1     2524  2354.4     2634  2356.7     2756
MC                  .040       .1       .3
MH       4      .14      750      .06     2320      .04     2477     .045     3320
ET              9.1      9.1      9.1                                      1600     2477
K1 12.42       19     2320     2477      535      595      550
K3      10
K4       3     2352     1122  2351.2     1310     2348     1742
GR    2364     -130     2356      760     2350     1600     2346     1690     2350     1950
GR2348.8     2010  2348.7     2152  2348.4     2288  2350.6     2320  2348.7     2358
GR2348.7     2334  2352.3     2426  2350.2     2477  2350.2     2531  2360.5     2733
GR2356.9     2926  2356.1     2919     2364     3130     2368     3320
ET              9.1      9.1      9.1                                      1300     2730
MC                                .3       .5
MH       4      .14     1490      .14     2165      .04  2235.1     .045     2730
K1 12.49       19     2165  2235.1      980      300      290
K3      10
K4       2     2352      600     2356     1000                       2353     2353
GR    2364        0     2352     1200     2349     1490  2349.2     1590  2349.4     1690
GR2356.5     2165  2343.5     2175  2343.5     2175  2343.5     2175  2343.5     2175
GR2343.5  2175.1  2343.5     2195  2343.5  2185.1  2343.5     2215  2343.5  2205.1
GR2343.5  2225.0     2360  2236.1  2351.5     2500  2365.6     2730
MH       4      .14     1490      .14     2163      .04  2240.1     .045     2730
ET              9.1      9.1      9.1                                      1300     2730
K112.481       24     2160  2240.1        1        1        1
K3      10
K4       2     2352      600     2356     1000                       2353     2353
GR       2     2160     2352  2356.5  2175.0     2360  2358.5     2187  2362.5  2356.5
BT2195.1  2352.5  2352.5     2225  2352.5  2352.5  2240.1     2360  2358.5
GR    2364        0     2352     1200     2349     1490  2349.2     1590  2349.4     1690
GR2356.5     2160  2343.5     2175     2343  2175.0  2343.5     2175  2343.5     2175
GR2343.5  2175.1  2343.5     2187     2360  2187.1     2360     2138  2343.5  2188.1
GR2343.5     2217     2360  2217.1     2360     2213  2343.5  2218.1  2343.5  2218.1
GR2343.5  2225.0     2360  2240.1  2351.5     2500  2365.6     2730
MH       4      .14     1490      .14     2175      .04  2225.0     .045     2730
ET              9.1      9.1      9.1                                      1300     2730
K1 12.49       24     2160  2240.1       80       80       80              0.5
K2
```

```
X3        10                                                                2353      2353
X4         2      2350          600      2355      1000
BT         6      2160         2360      2358.5    2175.0      2360      2358.5      2190      2362.5    2358.5
BT2130.1      2362.5    2358.5       2225      2362.5    2358.5      2240.1      2360      2358.5
GR   2364          0         2352      1200      2349      1490      2349.2      1590      2345.4      1690
GR2358.5       2160    2343.5       2175      2343.5      2175      2343.5      2175      2343.5      2175
GR2343.5    2175.1    2343.5       2185      2360      2185.1      2360      2190      2343.5    2190.1
GR2343.5       2215      2360    2215.1      2360      2220      2343.5    2220.1      2343.5    2220.1
GR2343.5    2225.0      2360    2240.1    2361.5      2500      2365.6      2730
NH         4      .14      1490       .14      2165       .04      2235.1       .045      2730
ET         9.1       5.1       5.1                                                    1300      2730
X112.491         19      2165    2235.1         1         1         1                    0.5
X3        10                                                                2353      2353
X4         2      2360          600      2355      1000
GR   2368          100         2356      1330      2351      1490      2354      1590      2353      1690
GR2358.5       2165    2343.5       2175      2343.5      2175      2343.5      2175      2343.5      2175
GR2343.5    2175.1    2343.5       2195      2343.5    2195.1      2343.5      2215      2343.5    2205.1
GR2343.5    2225.0      2360    2235.1    2361.5      2500      2365.6      2730
NH         4      .14      1330       .14      2293       .035      2375       .045      2691
ET         9.1       9.1       9.1                                                    1710      2462
X1  12.55         14      2293      2375       310       310       310
GR   2372         460      2364      1110      2360      1330      2360      1520      2360      1710
GR2360.0       2000    2355.6       2283    2346.2      2305    2346.2      2352    2358.1      2375
GR2366.6       2421    2367.5       2462    2356.5      2568    2365.4      2691
EJ
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  REACH 1      50-YEAR FLOODPLAIN RUN
J1               3                                                  .3          2224.46
J2         2                 -1
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  Reach 1      100-YEAR FLOODPLAIN RUN
J1               4                                                  .3          2225.19
J2         3                 -1
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  Reach 1      500-YEAR FLOODPLAIN RUN
J1               5                                                  .3          2227.58
J2      15                -1


ER
EOF..
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    44
10.13 ####   Starting Water Surface at 10.1³ based on Reach 2 analysis  ####
10.13 ####   Centerline =  2530
10.31 ####   Centerline =  2300
10.33 ##########################################################################
10.33 ####                      DECATUR BOULEVARD                               ####
10.33 ####                    Special Bridge Routine                            ####
10.33 ##########################################################################
10.33 ####   Centerline = 2370
10.49 ####   Centerline =  2610
10.70 ####   Centerline =  2150
10.96 ####   Centerline =  2680
11.15 ####   Centerline =  2550
11.28 ####   Centerline =  2460
11.31 ##########################################################################
11.31 ####                       JONES BOULEVARD                                ####
11.31 ####                    Special Bridge Routine                            ####
11.31 ##########################################################################
11.31 ####   Centerline = 2725
11.32 ####   Centerline BT cards = 1697
11.45 ####   Centerline =  2370
11.64 ####   Centerline =  2330
11.79 ####   Centerline =  2360
11.82 ##########################################################################
11.82 ####                     TORREY PINES DRIVE                               ####
11.82 ####                    Special Bridge Routine                            ####
11.82 ##########################################################################
11.87 ####             Centerline = 10000,
11.99 ####   Centerline =  2220
12.10 ####   Centerline =  2310
12.15 ##########################################################################
12.15 ####                      TROPICANA AVENUE                                ####
12.15 ####                    Normal Bridge Routine                             ####
12.15 ##########################################################################
12.15 ####   Centerline = 10000
12.32 ####   Centerline =  2240
12.42 ####   Centerline =  2360
12.49 ##########################################################################
12.49 ####                      RAINBOW BOULEVARD                               ####
12.49 ####                    Normal Bridge Routine                             ####
12.49 #### BT cards used at bridge xsecs to confine Q25, Q50 and Q100           ####
12.49 #### in LOB to  Tropicana Ave grade, based on upstream width.             ####
12.49 ##########################################################################
12.49 ####             Centerline = 2200      ####
12.55 ####   Centerline =  2310
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY          25-YEAR EVENT
T3       FLAMINGO WASH UPSTREAM REACH (Rainbow-Cameron)    DMH 10/6/87
J1           2                                    .3          2223.47
J2       1          -1
ET       4    4100        7000    10500    35000
NC    .050       .045        .1       .3
X1  10.13         23        2489     2587      350       900       470
GR    2236       1150        2232     1180     2228      1350      2228      1350      2224      1860
GR2221.7         2000      2220.9     2097   2224.5      2111    2224.4      2288    2222.7      2373
GR2224.4         2489      2221.3     2504   2221.3      2521    2218.8      2547    2217.2      2569
GR2217.2         2578      2225.6     2587   2225.6      2614    2234.7      2638    2237.0      2796
GR2237.8         2947      2240.3     2959   2241.0      3083
NC    .045       .045        .1       .3
X1  10.31           18        2129     2319      920       920       920
GR    2248       1550        2244     1950     2244      1950      2244      1950      2244      1950
GR2242.3         2000      2235.9     2129   2230.4      2214    2226.0      2236    2224.8      2248
GR2224.9         2289      2236.4     2319   2237.9      2410    2242.2      2474    2241.3      2531
```

GR2242.1	2554	2244.5	2530	2248	2510				
NC			.3	.5					
X1 10.33	12	2350	2388	110	110	110			
X3 10							2241	2241	
GR 2248	1550	2244	1950	2244	1950	2244	1950	2244	1950
GR 2244	2050	2238	2350	2230.0	2350	2230.0	2388	2238	2388
GR 2243	2550	2249.0	2870						
SR 1.25	1.5	2.80		37.4	9.4	294		2230.5	2230
X1 10.34	12	2350	2388	95	95	95			
X2 1		1	2241	2242					
X3 10							2242	2242	
X4 1	2242.0	2300							
BT 8	0	2249		470	2244		610	2242.3	
BT 780	2242		1080	2243		1280	2244.5		1430
BT 2248		1510	2252.0						
GR 2248	1550	2244	1950	2244	1950	2244	1950	2244	1950
GR 2244	2750	2235	2350	2230.5	2350	2230.5	2388	2242.	2388
GR 2243	2650	2249.0	2870						
X1 10.49	26	2475	2987	650	710	790			
GR 2272	1960	2272	1960	2272	1960	2272	1950	2272	1960
GR2268.9	2000	2272.2	2234	2270.5	2283	2265.5	2389	2261.9	2475
GR2239.9	2501	2241.5	2547	2239.1	2570	2239.1	2617	2240.3	2648
GR2242.1	2701	2241.3	2724	2240.6	2754	2238.4	2771	2238.4	2794
GR2243.9	2799	2243.0	2845	2242.9	2888	2244.4	2987	2246.3	3092
GR 2270	3220								
NC			.1	.3					
DT 4	3700	6000	9400	34000					
X1 10.70	19	2052	2489	1110	1160	1110			
GR 2280	1270	2280	1270	2280	1270	2280	1270	2280	1270
GR2272.3	2000	2271.6	2052	2252.8	2112	2252.8	2198	2253.1	2233
GR2253.6	2284	2253.6	2370	2253.6	2436	2253.6	2473	2256.6	2489
GR2256.6	2553	2258.8	2605	2259.5	2654	2280	2740		
ET	9.1	9.1	9.1					1900	2840
MC	.180	.033							
X1 10.96	31	2613	2840	1430	1280	1365			
GR 2284	123	2280	800	2272	630	2272	1330	2276	1360
GR 2266	1520	2281	1900	2281	1900	2281	1910	2281	1900
GR2276.8	2000	2275.9	2093	2278.7	2174	2275.9	2353	2273.2	2398
GR2268.8	2446	2270.6	2613	2267.5	2623	2267.5	2647	2264.7	2670
GR2263.0	2680	2263.0	2686	2265.9	2702	2270.8	2736	2267.9	2761
GR2267.9	2784	2272.9	2926	2275.6	2840	2275.6	2976	2274.1	2948
GR 2284	3580								
X1 11.15	29	2621	2633	1035	985	1010			
GR 2290	1120	2280	1180	2289	1430	2289	1570	2286	1710
GR2292.8	2000	2290.4	2038	2284.4	2140	2284.6	2282	2282.9	2380
GR2282.0	2399	2282.9	2404	2281.8	2420	2278.6	2521	2269.4	2530
GR2269.4	2588	2273.7	2599	2280.5	2607	2281.3	2633	2280.3	2655
GR2279.3	2663	2279.3	2683	2279.0	2710	2279.0	2731	2280.7	2791
GR 2284	3050	2288	3250	2292	3400				
NC .045	.140	.033							
X1 11.28	19	2416	2523	655	640	645			
X4 3	2300	760	2295	920	2300	1750			
GR 2301	700	2294	1060	2294	1280	2293	1400	2296.5	1600
GR2304.5	2000	2302.3	2066	2303.0	2258	2300.5	2304	2292.1	2376
GR2288.6	2416	2273.9	2439	2273.9	2502	2288.1	2523	2288.1	2556
GR2288.8	2587	2292	2690	2296	3060	2300	3630		
NC		.031	.3	.5					
ET	9.1	9.1	9.1					2100	3870
X1 11.31	16	2704	2746	180	200	180			
X3 10							2298.4	2298.4	
GR 2300	1900	2297	1200	2297	1600	2299.4	1760	2298.2	1980
GR 2300	2110	2300	2600	2292	2682	2280	2704	2280	2746
GR 2288	2758	2292	2900	2292	2920	2296	3100	2300	3420
GR2301.4	3870								
SR 1.25	1.56	2.80		41.5	13.5	224		2280.4	2280
ET	9.1	9.1	9.1					2100	3870
X1 11.32				70	70	70		.4	
X2		1	2298.4	2291.4					

X3	10						2291.4	2291.4		
BT	12	0	2300		460	2299.7	710	2296.6		
BT	1050	2296		1200	2294.3		1380	2293		1580
BT	2292.0		1650	2291.4		1750	2292		1920	2292.4
BT		2150	2296		2230	2300				
NC	.140	.160	.035							
X1	11.45	23	2311	2428	675	655	660			
GR	2308.6	600	2304	1070	2307	1360	2302.5	1530	2304.8	1780
GR	2304.1	2332	2302.8	2123	2302.8	2170	2305.9	2260	2303.2	2311
GR	2288.9	2335	2298.9	2362	2296.9	2408	2301.6	2428	2301.6	2444
GR	2302.2	2478	2304.4	2572	2304.5	2720	2307.5	3040	2308.0	3600
NC				.1	.3					
X1	11.64	13	2283	2372	1000	1300	1000			
X4	1	2312.2	2130							
GR	2316	560	2314.3	870	2315	1220	2315.0	1370	2315.0	1660
GR	2312.0	1800	2312.0	2104	2311.7	2261	2310.4	2283	2297.4	2297
GR	2297.4	2357	2305.1	2372	2307.7	2401	2308.6	2496	2312.6	2712
GR	2315	2850	2310	3200	2320	3600				
X1	11.79	20	2282	2799	810	810	810			
GR	2326.2	40	2324	210	2320	970	2320	970	2321.3	1360
GR	2318.7	2000	2319.6	2149	2319.2	2292	2315.7	2308	2306.8	2329
GR	2306.0	2348	2308.3	2381	2316.9	2399	2317.7	2427	2317.7	2458
GR	2319.8	2569	2321.2	2656	2320.4	2688	2324	3260	2328	3510
NC			.04	.3	.5					
X1	11.82	14	3289	3331.5	120	160	155			
X3	10								2319	2319
GR	2326.0	1000	2321.3	2200	2321.0	2520	2320.3	2800	2320.0	3240
GR	2319.0	3289	2310.0	3289.5	2310.0	3331	2319.0	3331.5	2320.0	3390
GR	2321.2	3530	2323.0	3950	2324.0	4000	2328.0	4320		
SB	1.25	1.5	2.63		41.5	13.5	224		2311	2310.0
X1	11.84	11	3289	3331.5	75	75	75			
X2			1	2319	2320.7					
X3	10								2320.7	2320.7
X4	1	2324	1300							
BT	4	3000	2321.1		3260	2320.7		3380	2321	
BT	3600	2321.4								
GR	2326.0	1000	2323.3	1650	2324.0	1850	2324.0	1900	2324.0	3240
GR	2319.5	3289	2311.5	3289.5	2311.5	3331	2319.5	3331.5	2324.0	3380
GR	2329.5	3460								
NC	.140	.145	.035							
X1	11.87	13	2283	2403	300	70	160		1.5	
GR	2336.0	1000	2332.0	1750	2328.0	2050	2324.0	2280	2320.0	2300
GR	2313.5	2315	2313.5	2360	2316.0	2370	2320.0	2330	2324.0	2400
GR	2328.0	2500	2330.6	2600	2332.0	3700				
NC				.1	.3					
X1	11.89	17	2154	2270	470	650	645			
GR	2344	540	2343	981	2340	980	2340	980	2336	1680
GR	2330.3	2000	2330.3	2154	2320.9	2183	2320.9	2233	2322.6	2247
GR	2331.1	2261	2332.9	2270	2331.7	2294	2333.9	2416	2332.0	2780
GR	2332	2850	2336	3170						
NC	.140	.145	.031							
X1	12.10	24	2264	2371	485	565	580			
X3	10									
GR	2348	550	2340	1180	2339.9	1530	2335	1850	2336	1940
GR	2334.7	2000	2332.1	2079	2332.9	2104	2332.5	2122	2332.5	2136
GR	2334.3	2147	2336.3	2264	2325.0	2288	2326.0	2349	2337.5	2371
GR	2337.4	2435	2339.7	2493	2336.0	2537	2337.0	2578	2337.5	2650
GR	2337.5	3000	2340	3030	2344	3140	2346	3260		
NC				.3	.5					
X1	12.15	21	9932	10068	280	300	300			
X3	10									
X4	2	2337	9450	2337	9850					
GR	2348	9260	2344	9810	2340	9370	2333.5	9932	2327	9954.5
GR	2327	9954.6	2327	9960.5	2327	9960.6	2327	9997	2327	9997.1
GR	2327	10003	2327	10007.1	2327	10039.5	2327	10039.6	2327	10045.6
GR	2327	10045.5	2330.5	10068	2340	10420.	2344	10730	2348	10950
GR	2350	10970								
(112.151		21	9954.5	10045.6	1	1	1			

```
X3      10
BT      14      9932    2338.5  2336.5  9954.5  2341.0      2337  9954.6  2341.0      2338
BT9960.5  2341.0      2338  9960.6  2341.0      2338      9997  2341.0      2338  9997.1
BT2341.0      2337  10003  2341.0      2337  10003.1  2341.0      2337  10039.5  2341.0
BT    2337  10039.6  2341.0      2337  10045.5  2341.0      2337  10045.6  2341.0      2337
BT10068.  2338.5  2338.5
GR    2348      8250      2344      8810      2340      8370  2338.5      9932      2327      9954.5
GR    2337  9954.6      2337  9960.5      2327  9960.6      2327      9997      2337      9997.1
GR    2337     10003      2327  10003.1      2327  10039.5      2337  10039.6      2337  10045.5
GR    2327  10045.6  2338.5     10068      2340     10420.      2344     10730      2348     10850
GR    2350     10970
X1  12.16                                  50        50        50                9.5
X2                                                              1
X3      10
X1  12.16        21      9932     10068         1         1         1               0.5
X3      10
GR    2348      8250      2344      8810      2340      8370  2338.5      9932      2327      9954.5
GR    2327  9954.6      2327  9960.5      2327  9960.6      2327      9997      2327      9997.1
GR    2327     10003      2327  10003.1      2327  10039.5      2327  10039.6      2327  10045.5
GR    2327  10045.6  2338.5     10068      2340     10420.      2344     10730      2348     10850
GR    2350     10970
ET                9.1       9.1       9.1                                          1530      2756
MC    .060      .045      .035
X1  12.32        25      2199      2319       750       750       800
X3      10
X4       5      2348       840      2346       940      2346      1460      2344      1605  2345.5
X4    1670
GR    2360      -710  2354.4        70      2352       320      2344      1530      2340      1580
GR2346.1      2000  2347.1      2199  2334.7      2227  2334.7      2234  2337.3      2242
GR2337.9      2258  2337.9      2278  2346.2      2308  2347.4      2319  2347.4      2334
GR2347.9      2348  2351.3      2364  2352.2      2451  2350.4      2463  2349.2      2486
GR2348.6      2494  2348.6      2509  2350.1      2524  2354.4      2634  2356.7      2756
MC                  .040        .1        .3
MH       4      .14       760       .06      2321       .04      2477      .045      3320
ET                9.1       9.1       9.1                                          1600      2477
X1  12.42        19      2320      2477       535       595       550
X3      10
X4       3      2352      1120  2351.2      1310      2348      1740
GR    2364      -130      2356       760      2350      1600      2346      1690      2350      1850
GR2348.8      2000  2349.7      2152  2348.4      2288  2350.6      2320  2340.7      2358
GR2340.7      2334  2352.3      2425  2350.2      2477  2360.2      2531  2360.5      2733
GR2356.9      2825  2356.1      2919      2364      3100      2368      3320
ET                9.1       9.1       9.1                                          1300      2730
MC                            .3                  .5
MH       4      .14      1490       .14      2165       .04      2235.1      .045      2730
X1  12.48        19      2165     2236.1       280       300       290
X3      10                                                              2353      2353
X4       2      2350       600      2356      1000
GR    2364         0      2352      1200      2349      1490      2349.2      1590  2349.4      1690
GR2358.5      2165  2343.5      2175  2343.5      2175  2343.5      2175  2343.5      2175
GR2343.5  2175.1  2343.5      2195  2343.5  2195.1  2343.5      2205  2343.5  2205.1
GR2343.5  2225.0      2360  2235.1  2361.5      2500  2365.6      2730
MH       4      .14      1490       .14      2160       .04  2240.1      .045      2730
ET                9.1       9.1       9.1                                          1300      2730
X112.481         24      2160  2240.1         1         1         1
X3      10                                                              2353      2353
X4       2      2350       600      2356      1000
RT       6      2160      2360  2358.5  2175.0      2360  2358.5      2187  2362.5  2358.5
RT2195.1  2362.5  2358.5      2225  2352.5  2358.5  2240.1      2360  2358.5
GR    2364         0      2352      1200      2349      1490      2349.2      1590  2349.4      1690
GR2358.5      2160  2343.5      2175  2343.5      2175  2343.5      2175  2343.5      2175
GR2343.5  2175.1  2343.5      2187      2360  2187.1      2360      2188  2343.5  2188.1
GR2343.5      2217      2360  2217.1      2360      2218  2343.5  2218.1  2343.5  2218.1
GR2343.5  2225.0      2360  2240.1  2361.5      2500  2365.6      2730
MH       4      .14      1490       .14      2175       .04  2225.0      .045      2730
ET                9.1       9.1       9.1                                          1300      2730
X1  12.49        24      2160  2240.1        90        90        90               0.5
X2
X3      10
```

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X3      10                                                      2353      2353
X4       2     2360       600      2356      1000
BT       6     2160      2360     2359.5    2175.0      2360    2358.5    2190    2362.5    2358.5
BT2190.1     2362.5    2358.5      2225    2362.5    2358.5    2240.1    2360    2358.5
GR  2364.4         0      2352      1200      2349      1490    2349.2    1590    2349.4      1690
GR2358.5      2160    2343.5      2175    2343.5      2175    2343.5    2175    2343.5      2175
GR2343.5    2175.1    2343.5      2195      2360    2185.1      2360    2190    2343.5    2190.1
GR2343.5      2215      2360    2215.1      2360      2220    2343.5  2220.1    2343.5    2220.1
GR2343.5    2225.0      2362    2240.1    2351.5      2500    2365.6    2730
MH       4      .14      1490       .14      2165       .04    2235.1    .045      2730
ET             9.1       9.1       9.1                                  1300      2730
X112.491        19      2165    2235.1         1         1         1                 0.5
X3      10                                                      2353      2353
X4       2     2360       600      2356      1000
GR  2358.5       100      2356      1330      2351      1490      2354    1590      2353      1690
GR2358.5      2165    2343.5      2175    2343.5      2175    2343.5    2175    2343.5      2175
GR2343.5    2175.1    2343.5      2195    2343.5    2195.1    2343.5    2215    2343.5    2205.1
GR2343.5    2225.0      2360    2236.1    2361.5      2500    2365.6    2730
MH       4      .14      1330       .14      2283       .05      2375    .045      2681
ET             9.1       9.1       9.1                                  1710      2462
X1  12.55       14      2283      2375       310       310       310
GR  2372.4      460      2354      1110      2360      1330      2360    1520      2360      1710
GR2360.0       2007    2355.6      2283    2346.2      2305    2346.2    2352    2358.1      2375
GR2366.6       2421    2367.5      2462    2356.5      2568    2365.4    2681
EJ
T1             LAS VEGAS WASH OVERFLOW STUDY
T2             James M. Montgomery Consulting Engineers, Inc.
T3             Flamingo Wash  REACH 1      50-YEAR FLOODPLAIN RUN
J1                 3                                    .3          2224.46
J2       2                -1
T1             LAS VEGAS WASH OVERFLOW STUDY
T2             James M. Montgomery Consulting Engineers, Inc.
T3             Flamingo Wash  Reach 1      100-YEAR FLOODPLAIN RUN
J1                 4                                    .3          2225.19
J2       3                -1
T1             LAS VEGAS WASH OVERFLOW STUDY
T2             James M. Montgomery Consulting Engineers, Inc.
T3             Flamingo Wash  Reach 1      500-YEAR FLOODPLAIN RUN
J1                 5                                    .3          2227.58
J2      15                -1


ER
EOF..
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    44
10.13 ####  Starting Water Surface at 10.13 based on Reach 2 analysis  ####
10.13 ####  Centerline =  2530
10.31 ####  Centerline =  2300
10.33 ##########################################################################
10.33 ####                    DECATUR BOULEVARD                             ####
10.33 ####                  Special Bridge Routine                          ####
10.33 ##########################################################################
10.33 ####  Centerline = 2370
10.49 ####  Centerline =  2610
10.70 ####  Centerline =  2150
10.96 ####  Centerline =  2680
11.15 ####  Centerline =  2560
11.28 ####  Centerline =  2460
11.31 ##########################################################################
11.31 ####                    JONES BOULEVARD                               ####
11.31 ####                  Special Bridge Routine                          ####
11.31 ##########################################################################
11.31 ####  Centerline = 2725
11.32 ####  Centerline BT cards = 1690
11.45 ####  Centerline =  2370
11.64 ####  Centerline =  2330
11.79 ####  Centerline =  2360
11.82 ##########################################################################
11.82 ####                    TORREY PINES DRIVE                            ####
11.82 ####                  Special Bridge Routine                          ####
11.82 ##########################################################################
11.87 ####            Centerline = 10000,
11.99 ####  Centerline =  2220
12.10 ####  Centerline =  2310
12.15 ##########################################################################
12.15 ####                    TROPICANA AVENUE                              ####
12.15 ####                  Normal Bridge Routine                           ####
12.15 ##########################################################################
12.15 ####  Centerline = 10000
12.32 ####  Centerline =  2240
12.42 ####  Centerline =  2360
12.43 ##########################################################################
12.43 ####                    RAINBOW BOULEVARD                             ####
12.43 ####                  Normal Bridge Routine                           ####
12.43 #### ET cards used at bridge xsecs to confine 925, 950 and 9100   ####
12.49 #### in LOB to  Tropicana Ave grade, based on upstream width.     ####
12.49 ##########################################################################
12.43 ####          Centerline = 2200      ####
12.55 ####  Centerline =  2310
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY          25-YEAR EVENT
T3       FLAMINGO WASH UPSTREAM REACH (Rainbow-Cameron)    DWH 10/6/87
J1            2                                    .3          2223.47
J2       1          -1
J3       4     4100      7000    13500    35000
NC    .060     .045      .04       .1       .3
X1  10.13       23      2489     2587      350       500      470
GR   2236     1150      2232     1180      2228      1350     2229      1350     2224      1660
GR2221.7     2000      2220.9   2057      2224.5    2111     2224.4    2288     2222.7    2373
GR2224.4     2489      2221.3   2564      2221.3    2521     2219.8    2547     2217.2    2669
GR2217.2     2578      2225.5   2597      2225.5    2614     2234.7    2638     2237.0    2796
GR2237.8     2947      2243.3   2959      2241.0    3093
NC    .045     .045      .04       .1       .3
X1  10.31       18      2129     2319      920       920      920
GR   2248     1550      2244     1950      2244      1950     2244      1950     2244      1950
GR2242.3     2000      2235.9   2129      2230.4    2214     2226.0    2236     2224.9    2248
GR2224.9     2299      2236.4   2319      2237.9    2410     2242.2    2474     2241.3    2531
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GR2242.1	2534	2244.5	2630	2243	2810					
NC			.3	.5						
X1 10.33	12	2350	2388	110	110	110				
X3 10							2241	2241		
GR 2248	1550	2244	1950	2244	1950	2244	1950	2244	1950	
GR 2244	2350	2238	2350	2230.0	2350	2230.0	2388	2238	2388	
GR 2243	2650	2249.0	2870							
SB 1.25	1.5	2.80		37.4	9.4	294		2230.5	2230	
X1 10.34	12	2350	2383	95	95	95				
X2		1	2241	2242						
X3 10							2242	2242		
X4 1	2242.0	2300								
BT 8	0	2248		470	2244		610	2242.3		
BT 780	2242		1080	2243		1280	2244.5		1430	
BT 2248		1510	2252.0							
GR 2248	1550	2244	1950	2244	1950	2244	1950	2244	1950	
GR 2244	2350	2235	2350	2230.5	2350	2230.5	2388	2242.	2388	
GR 2243	2650	2249.0	2870							
X1 10.49	26	2475	2997	650	710	790				
GR 2272	1950	2272	1960	2272	1960	2272	1960	2272	1960	
GR2268.9	2000	2272.2	2234	2270.5	2283	2265.5	2389	2261.9	2475	
GR2239.9	2501	2241.5	2547	2239.1	2570	2239.1	2617	2240.3	2649	
GR2242.1	2701	2241.3	2724	2240.5	2754	2238.4	2771	2238.4	2784	
GR2243.9	2799	2243.0	2845	2242.9	2888	2244.4	2987	2248.3	3092	
GR 2270	3220									
NC			.1	.3						
BT 4	3700	6000	9400	34000						
X1 10.70	19	2252	2489	1110	1160	1110				
GR 2280	1270	2280	1270	2280	1270	2280	1270	2280	1270	
GR2272.3	2000	2271.6	2052	2252.8	2112	2252.8	2198	2253.1	2233	
GR2253.6	2284	2253.6	2370	2253.6	2436	2253.6	2473	2256.6	2489	
GR2256.6	2553	2259.8	2605	2259.5	2654	2280	2740			
BT	9.1	9.1	9.1					1900	2840	
NC	.180	.333								
X1 10.96	31	2513	2840	1430	1280	1365				
GR 2284	1220	2280	1500	2272	1430	2272	1330	2276	1360	
GR 2266	1520	2281	1500	2281	1900	2281	1900	2281	1900	
GR2276.8	2000	2279.9	2083	2279.7	2174	2275.9	2353	2273.2	2398	
GR2269.8	2446	2271.5	2613	2267.5	2620	2267.5	2647	2264.7	2670	
GR2263.0	2583	2263.0	2696	2265.8	2702	2270.8	2735	2267.8	2761	
GR2267.9	2784	2272.9	2926	2275.6	2940	2275.6	2976	2274.1	2948	
GR 2284	3590									
X1 11.15	28	2521	2633	1035	885	1010				
GR 2290	1220	2280	1180	2289	1430	2289	1570	2286	1710	
GR2292.8	2000	2290.4	2038	2288.4	2140	2284.6	2282	2282.9	2390	
GR2282.0	2398	2281.0	2404	2281.8	2420	2278.5	2521	2269.4	2530	
GR2269.4	2529	2273.7	2569	2280.5	2607	2281.8	2633	2280.3	2655	
GR2279.3	2563	2279.3	2693	2279.9	2710	2279.0	2731	2280.7	2791	
GR 2294	3550	2288	3250	2292	3400					
MC .145	.140	.333								
X1 11.28	19	2416	2523	655	640	645				
X6 3	2300	760	2296	920	2300	1750				
GR 2301	780	2294	1060	2294	1290	2298	1400	2296.5	1600	
GR2304.5	2000	2302.3	2066	2303.0	2268	2305.5	2314	2292.1	2376	
GR2286.6	2416	2273.9	2439	2273.9	2502	2288.1	2523	2288.1	2556	
GR2288.8	2587	2292	2650	2295	3060	2300	3230			
MC		.231	.3	.5						
BT	9.1	9.1	9.1					2107	3870	
X1 11.31	15	2704	2745	180	200	180				
X3 10							2288.4	2288.4		
GR 2300	1000	2297	1200	2297	1600	2299.4	1760	2298.2	1980	
GR 2300	2110	2300	2601	2292	2682	2280	2734	2280	2746	
GR 2288	2758	2292	2900	2292	2920	2296	3110	2300	3420	
GR2301.4	3870									
SB 1.25	1.56	2.80		41.5	13.5	224		2280.4	2280	
BT	9.1	9.1	9.1					2100	3870	
X1 11.32				70	70	70		.4		
X2		1	2288.4	2291.4						

X3 10							2291.4	2291.4		
BT 12	0	2300		460	2299.7		710	2299.6		
BT 1050	2296		1200	2294.3		1380	2293		1590	
BT2292.0		1550	2291.4		1750	2292		1920	2292.4	
BT	2150	2296		2230	2300					
MC .140	.150	.035								
X1 11.45	20	2311	2428	675	655	660				
GR2308.5	600	2304	1070	2307	1360	2302.5	1630	2304.8	1780	
GR2304.1	2000	2302.8	2129	2302.8	2170	2305.9	2260	2303.2	2311	
GR2298.9	2355	2298.9	2352	2296.9	2408	2301.6	2428	2301.6	2444	
GR2302.2	2478	2304.4	2572	2304.5	2720	2307.5	3040	2308.8	3600	
MC			.1	.3						
X1 11.64	18	2283	2372	1000	1000	1000				
X4 1	2312.2	2280								
GR 2316	550	2314.3	970	2315	1220	2315.0	1370	2315.0	1660	
GR2312.0	1800	2312.0	2104	2311.7	2261	2310.4	2283	2297.4	2297	
GR2297.4	2357	2305.1	2372	2307.7	2401	2308.6	2496	2312.6	2712	
GR 2315	2950	2310	3290	2320	3600					
X1 11.79	20	2282	2359	810	810	810				
GR2325.2	40	2324	210	2320	970	2320	970	2321.3	1360	
GR2318.7	2000	2314.6	2149	2313.2	2282	2315.7	2308	2306.0	2329	
GR2305.0	2348	2308.3	2391	2316.9	2399	2317.7	2427	2317.7	2458	
GR2319.8	2569	2321.2	2656	2320.4	2688	2324	3260	2325	3510	
MC		.04	.3	.5						
X1 11.82	14	3289	3331.5	120	160	155				
X3 10								2319	2319	
GR2326.0	1000	2321.3	2200	2321.0	2520	2320.8	2800	2320.0	3240	
GR2318.0	3239	2310.0	3289.5	2310.0	3331	2319.0	3331.5	2320.0	3380	
GR2321.2	3630	2328.0	3950	2324.0	4000	2328.0	4320			
SR 1.25	1.5	2.53		41.5	13.5	224		2311	2310.0	
X1 11.94	11	3289	3331.5	75	75	75				
X2		1	2319	2320.7						
X3 10								2320.7	2320.7	
X4 1	2324	1300								
BT 4	3000	2321.1		3260	2320.7		3390	2321		
BT 3600	2321.4									
GR2326.0	1300	2323.3	1650	2324.0	1850	2324.0	1900	2324.0	3240	
GR2319.5	3239	2311.5	3299.5	2311.5	3331	2319.5	3331.5	2324.0	3380	
GR2328.0	3460									
MC .140	.045	.035								
X1 11.87	13	2280	2403	300	70	160		1.5		
GR2336.0	1000	2332.0	1750	2329.0	2050	2324.0	2280	2320.0	2300	
GR2313.5	2315	2313.5	2360	2316.0	2370	2320.0	2328	2324.0	2400	
GR2329.0	2500	2330.6	2600	2332.0	2700					
MC			.1	.3						
X1 11.99	17	2154	2270	470	650	645				
GR 2344	540	2340	990	2340	990	2340	980	2336	1680	
GR2332.3	2000	2330.8	2164	2320.9	2183	2320.9	2233	2322.6	2247	
GR2331.1	2261	2332.9	2273	2331.7	2294	2333.8	2416	2332.0	2780	
GR 2332	2950	2336	3170							
MC .140	.045	.031								
X1 12.10	24	2254	2371	485	565	580				
X3 10										
GR 2348	550	2340	1181	2339.8	1530	2335	1850	2336	1940	
GR2334.7	2000	2332.1	2079	2332.9	2104	2332.5	2122	2332.5	2136	
GR2334.3	2147	2335.3	2264	2326.0	2288	2326.0	2349	2337.5	2371	
GR2337.4	2436	2339.7	2499	2336.0	2537	2337.0	2578	2337.5	2650	
GR2337.5	3000	2340	3000	2344	3140	2346	3260			
MC			.3	.5						
X1 12.15	21	9932	10068	280	300	300				
X3 10										
X4 2	2337	9450	2337	9850						
GR 2348	9250	2344	9810	2340	9370	2338.5	9932	2327	9954.5	
GR 2327	9954.5	2327	9968.5	2327	9961.6	2327	9997	2327	9997.1	
GR 2327	10003	2327	10003.1	2327	10038.5	2327	10035.6	2327	10045.5	
GR 2327	10045.5	2338.5	10068	2341	10420.	2344	10730	2348	10950	
GR 2350	10970									
I12.151	21	9954.5	10045.5	1	1	1				
X3 10										

```
X3       10
X1       14      9932    2339.5    2338.5    9954.5    2341.0      2337    9954.6    2341.0      2338
BT9960.5      2341.0      2338    9960.6    2341.0      2338      9997    2341.0      2338    9997.1
BT2341.0      2337     10003    2341.0      2337    10003.1    2341.0      2337    10039.5    2341.0
BT   2337    10039.6    2341.0      2337    10045.5    2341.0      2337    10045.6    2341.0      2337
BT10068.     2338.5    2338.5
GR   2348      8260      2344      8810      2340      9370    2338.5      9932      2327    9554.5
GR   2337    9954.6      2337    9960.5      2327    9568.6      2327      9997      2337    9997.1
GR   2337     10003      2327    10033.1    2327    10039.5      2337    10039.6      2337    10045.5
GR   2327    10045.6    2338.5     10068      2340     10420.      2344     10730      2348     10850
GR   2350     10970
X1   12.16                                     50        50        50                  0.5
X2                                                           1
X3       10
X1   12.16        21      9932     10068         1         1         1                  0.5
X3       10
GR   2348      8260      2344      8810      2340      9370    2338.5      9932      2327    9554.5
GR   2327    9954.6      2327    9960.5      2327    9568.6      2327      9997      2327    9997.1
GR   2327     10003      2327    10033.1    2327    10039.5      2327    10039.6      2327    10045.5
GR   2327    10045.6    2338.5     10068      2340     10420.      2344     10730      2348     10850
GR   2350     10970
ET                9.1       9.1       9.1                                          1530      2756
NC     .060      .045      .035
X1   12.32        25      2199      2319       750       750       800
X3       10
X4        5      2348       840      2345       940      2346      1460      2344      1605    2345.5
X4     1670
GR   2360      -710    2354.4        70      2352       320      2344      1530      2340      1580
GR2346.1      2000    2347.1      2199    2334.7      2227    2334.7      2234    2337.3      2242
GR2337.9      2258    2337.9      2273    2346.2      2308    2347.4      2319    2347.4      2334
GR2347.9      2348    2351.3      2364    2352.2      2451    2350.4      2463    2349.2      2486
GR2348.6      2494    2349.6      2509    2350.1      2524    2354.4      2634    2356.7      2756
NC                      .043        .1        .3
NH        4      .14       760       .05      2320       .04      2477      .045      3320
ET                9.1       9.1       9.1                                          1600      2477
X1   12.42        19      2320      2477       535       595       550
X3       10
X4        3      2352      1120    2351.2      1310      2348      1740
GR   2364      -130      2356       760      2350      1600      2346      1690      2350      1650
GR2348.3      2000    2348.7      2152    2348.4      2288    2350.6      2320    2340.7      2358
GR2340.7      2384    2352.3      2425    2350.2      2477    2360.2      2531    2360.5      2733
GR2356.9      2826    2356.1      2919      2364      3100      2368      3320
ET                9.1       9.1       9.1                                          1300      2730
NC                          .3        .5
NH        4      .14      1490       .14      2165       .04    2235.1      .045      2730
X1   12.48        19      2165    2235.1       280       300       290
X3       10                                                    2353      2353
X4        2      2350       600      2356      1000
GR   2364                2352      1200      2349      1490    2349.2      1590    2349.4      1690
GR2350.5      2165    2343.5      2175    2343.5      2175    2343.5      2175    2343.5      2175
GR2343.5    2175.1    2343.5      2195    2343.5    2195.1    2343.5      2205    2343.5    2205.1
GR2343.5    2225.0      2350    2235.1    2351.5      2500    2365.6      2730
MH        4      .14      1490       .14      2160       .04    2240.1      .045      2730
ET                9.1       9.1       9.1                                          1300      2730
X1 12.481        24      2160    2240.1         1         1         1
X3       10                                                    2353      2353
X4        2      2350       600      2356      1000
ST        5      2160      2360    2359.5    2175.3      2360    2358.5      2187    2362.5    2358.5
BT2195.1    2362.5    2358.5      2225    2352.5    2358.5    2240.1      2360    2358.5
GR   2354                2352      1200      2349      1490    2349.2      1590    2349.4      1690
GR2358.5      2160    2343.5      2175    2343.5      2175    2343.5      2175    2343.5      2175
GR2343.5    2175.1    2343.5      2197      2360    2197.1      2360      2188    2343.5    2188.1
GR2343.5      2217      2360    2217.1      2360      2218    2343.5    2216.1    2343.5    2216.1
GR2343.5    2225.0      2360    2240.1    2351.5      2500    2365.6      2730
MH        4      .14      1490       .14      2175       .04    2225.0      .045      2730
ET                9.1       9.1       9.1                                          1300      2730
X1   12.49        24      2160    2240.1        90        90        90                  0.5
X2
```

```
X3       10                                                    2353      2353
X4        2      2350       600      2356      1000
ST        6      2160      2360    2358.5    2175.0      2360    2358.5      2190    2362.5    2356.5
BT2190.1      2362.5    2358.5      2225      2352.5    2358.5    2240.1      2350    2358.5
SR     2364         0      2352      1200      2349      1490    2349.2      1590    2349.4      1690
GR2358.5      2150      2343.5      2175      2343.5      2175    2343.5      2175    2343.5      2175
GR2343.5    2175.1      2343.5      2165      2360      2185.1      2360      2190    2343.5    2190.1
GR2343.5      2215      2360      2215.1      2363      2220      2343.5    2220.1    2343.5    2225.1
GR2343.5    2225.0      2360      2240.1    2361.5      2500      2365.6      2730
NH        4     .14      1490        .14      2165       .04      2235.1       .045      2730
ST              0.1         0.1       0.1                                    1300      2730
K112.491       19      2165      2235.1         1         1         1                     0.5
X3       10                                                    2353      2353
X4        2      2350       600      2356      1000
GR     2368       100      2356      1330      2351      1490      2354      1590      2353      1690
GR2358.5      2155      2343.5      2175      2343.5      2175    2343.5      2175    2343.5      2175
GR2343.5    2175.1      2343.5      2195      2343.5    2195.1    2343.5      2205    2343.5    2205.1
GR2343.5    2225.0      2360      2235.1    2361.5      2500      2365.6      2730
NH        4     .14      1330        .14      2283       .035     2375       .045      2681
ST              0.1         0.1       0.1                                    1710      2462
K1  12.55        14      2283      2375       310       310       310
GR   2372       450      2364      1110      2360      1330      2360      1520      2360      1710
GR2360.0      2000    2355.6      2283    2346.2      2305    2346.2      2352    2358.1      2375
GR2366.6      2421    2367.5      2462    2356.5      2568    2365.4      2681
EJ
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  REACH 1     50-YEAR FLOODPLAIN RUN
J1               3                                      .3          2224.46
J2        2                 -1
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  Reach 1     100-YEAR FLOODPLAIN RU
J1               4                                      .3          2225.16
J2        3                 -1
T1            LAS VEGAS WASH OVERFLOW STUDY
T2            James M. Montgomery Consulting Engineers, Inc.
T3            Flamingo Wash  Reach 1     500-YEAR FLOODPLAIN RUN
J1               5                                      .3          2227.59
J2       15                 -1
```

```
C
C
C      75
C    8.641 ####   MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
C    8.641 ####   FROM KOVAL LANE TO UPRR (THROUGH CASINO PROPERTY AND       ####
C    8.641 ####   CLOSED CONDUIT) WAS MODELED BY CDE IN LAWFWBOL.  STARTING ####
C    8.641 ####   WSEL'S ARE TAKEN FROM CDE HEC2 RUN.                        ####
C    8.641 ####              CENTERLINE =  2930                              ####
C    8.65 ##########################################################################
C    8.65 ####                  UNION PACIFIC RAILROAD                       ####
C    8.65 ####                  SPECIAL BRIDGE ROUTINE                       ####
C    8.65 ##########################################################################
C    8.66 ####   ALL FLOWS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG      ####
C    8.66 ####   THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER       ####
C    8.66 ####   WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.    ####
C    8.66 ####   FLOWS LEAVING THE CHANNEL TO NORTH = 0, 660, 2080, 3586     ####
C    8.74 ##########################################################################
C    8.74 ####                  FLAMINGO ROAD OVERPASS                       ####
C    8.74 ####            NORMAL GROUND SECTION UTILIZED                     ####
C    8.74 ##########################################################################
C    8.74 ####              CENTERLINE =  2160                               ####
C    8.74 ####   THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS    ####
C    8.74 ####   SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED      ####
C    8.74 ####   ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR15_SPLIT)   ####
C    8.94 ####              CENTERLINE =  2610                               ####
C    8.94 ####   VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SKALE XING    ####
C    8.94 ####   THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO     ####
C    8.94 ####   CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00           ####
C    9.18 ####              CENTERLINE =  2210                               ####
C    9.43 ####              CENTERLINE =  2330                               ####
C    9.62 ####              CENTERLINE =  2591                               ####
C    9.81 ####              CENTERLINE =  2672                               ####
C   10.04 ####              CENTERLINE = 10000                               ####
C   10.04 ####   CAMERON STREET NOT MODELED.  THIS IS A SKALE XING           ####
C   10.04 ####   THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO     ####
C   10.04 ####   CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09          ####
C   10.04 ####   LEFT BANK INEFFECTIVE FLOW AT STA 9490.
C   10.13 ####              CENTERLINE =  2531                               ####
C   10.13 ####   LEFT BANK INEFFECTIVE FLOW AT STA 2289.
C   10.33 ##########################################################################
C   10.33 ####                  DECATUR BOULEVARD                            ####
C   10.33 ####                SPECIAL BRIDGE ROUTINE                         ####
C   10.33 ##########################################################################
C   10.36 ####   CENTERLINE =  2371
C   10.49 ####   CENTERLINE =  2610
C   10.70 ####   CENTERLINE =  2150
C   10.96 ####   CENTERLINE =  2680
C   11.15 ####   CENTERLINE =  2860
C   11.28 ####   CENTERLINE =  2460
C   11.31 ##########################################################################
C   11.31 ####                  JONES BOULEVARD                              ####
C   11.31 ####                SPECIAL BRIDGE ROUTINE                         ####
C   11.31 ##########################################################################
C   11.31 ####   CENTERLINE =  2725
C   11.32 ####   CENTERLINE BT CARDS =  1690
C   11.45 ####   CENTERLINE =  2370
C   11.64 ####   CENTERLINE =  2330
C   11.79 ####   CENTERLINE =  2350
C   11.82 ##########################################################################
C   11.82 ####                  TORREY PINES DRIVE                           ####
C   11.82 ####                SPECIAL BRIDGE ROUTINE                         ####
C   11.82 ##########################################################################
C   11.87 ####              CENTERLINE =  1900                               ####
```

```
C   11.99 ####   CENTERLINE =   2220
C   12.10 ####   CENTERLINE =   2310
C   12.15 ##########################################################
C   12.15 ####                    TROPICANA AVENUE                  ####
C   12.15 ####                NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)  ####
C   12.15 ##########################################################
C   12.15 ####   CENTERLINE =  1000
C   12.32 ####   CENTERLINE =   2240
C   12.42 ####   CENTERLINE =   2350
C   12.48 ##########################################################
C   12.48 ####                    RAINBOW BOULEVARD                 ####
C   12.48 ####                NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)  ####
C   12.48 ##########################################################
C   12.48 ####          CENTERLINE =  2230        ####
C   12.55 ####   CENTERLINE =   2310
T1      MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6577) HYDRAULICS
T2      CHANNEL & BRIDGE CAPACITY STUDY BY CDE 2/13/89
T3      FLAMINGO WASH, REACH 2 + 1, FROM TO RAINBOW RD (DS OF SPANISH TRAILS)
J1          2                                                    2130.1
J2   -1      1      -1       5    12.5

NC   .025    .025    .025     .1      .3
ET      4    4100    5340    5880   20200
X1  8.641       4    2000    2113       3         3         3
GR2140.6    2000  2131.6    2014  2131.6    2099  2140.6    2113

NC                           .3      .5
X1   6.65       4    2000    2096      10        10
GR   2144    2000    2132    2000    2132    2096    2144    2096

SB   1.25    1.56     2.6      96      96        36       330          2132.3    2132
X1   6.66                       1      58        58        58              .3
X2                         1 2137.5  2144.5

NC   .145    .045    .035
X1   6.74      12      2.1    2229      48        45        45
X4      2  2140.5      2.6  2140.5     222
GR   2160      25      2.6    2153.1     33    2152       920    2149      1250    2152      1550
GR2160.2      25      2.6    2155.3     33    2141  2137.3    2111  2137.3    2202  2148.3    2229
GR2140.3      25      2.6    2145.3     22

NC   .145    .045    .035      .4      .1      .5
X1   6.74      34      2.1    2551    2790    1030
GR   2160      25      2.6    2153.1     33    2152      1630    2160      1630    2160      1630
GR2160.7      25      2.6    2153.3     33    2152  2143.3    2122  2145.2    2139  2148.2    2322
GR2145.2      25      2.6    2147.3     33    2531  2143.3    2622  2143.3    2639  2144.8    2666
GR2149.7      25      2.6    2152.1     33    2674  2151.5    2721  2147.7    2739  2146.9    2751
GR2148.9      25      2.6    2154.2     33    2767  2149.5    2821  2148.3    2844  2150.6    2866
GR2148.7      25      2.6    2154.3     33    2853  2148.3    2972  2151.2    3011  2151.9    3059
GR2150.9      25      2.6    2155.7     33    3132  2157.2    3210    2160      3310    2161.9    3359

NC   .170    .170    .045
X1   6.43      20      2.1    2144    2382    1240    1171    1230
GR   2172      11      2.6    2145.8     33    2164    1250    2164    1730    2165    1822
GR2161.7      20      2.6    2152.3     33    2103  2161.5    2144  2156.2    2157  2153.9    2184
GR2158.9      20      2.6    2153.3     33    2233  2158.4    2332  2167.3    2214  2155.5    2344
GR2157.2      20      2.6    2153.9     33    2367    2165    2335    2165    3670    2172    3750

NH       4    .145    .045      2272    .174      2395    .171      3710       5      4501.
X1   6.43      15      2.1    2272    2395    1315    1230    1330
GR2154.5      20      2.6    2154.2     33    2124  2179.3    2215  2176.8    2241  2176.5    2272
GR2172.8      20      2.6    2171.2     33    2299  2171.3    2357  2172.2    2388  2176.1    2395
GR2176.5      20      2.6    2177.6     33    2537    2177.4    2715    2175      2933      2177      2955
GR   2175      20      2.6    2157.5     33    4240      2180    4460    2161    4500

NH       4    .045    .045      2496    .174      2552    .171      3630    .090      5330
X1   6.62      33      2.1    2493    2651    1395    1356    1022
GR   2154      18      2.6    2134    2471    2194    1871    2194    1871    2194    1878
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GR2193.6	2000	2191.4	2135	2191.6	2175	2191.5	2255	2190.3	2280
GR2169.6	2307	2189.0	2335	2189.6	2372	2190.0	2388	2187.9	2418
GR2166.3	2426	2186.3	2432	2189.1	2444	2188.2	2493	2186.3	2508
GR2184.4	2577	2184.4	2591	2182.3	2617	2182.8	2652	2186.9	2691
GR2187.4	2717	2184.3	2732	2189.5	2827	2185.5	3630	2185	4520
GR 2188	5[illegible]21	2192	5243	2195	5330				
NC .045	.045	.04							
X1 5.81	32	2329	2775	981	981	975			
X3 10									
GR 2204	1338	2204	1633	2204	1740	2207	1800	2207	1950
GR2206.0	2000	2204.3	2122	2203.5	2196	2203.2	2344	2203.4	2411
GR2202.6	2468	2198.5	2513	2196.4	2543	2196.4	2581	2197.4	2595
GR2156.6	2629	2192.1	2653	2192.1	2678	2193.3	2706	2196.6	2724
GR2186.3	2755	2203.2	2778	2202.6	2803	2202.6	3014	2201.6	3061
GR2199.2	3097	2200.1	3140	2198.3	3192	2201.8	3224	2203.8	3266
GR 2204	3310	2208	3430						
NR 4	0.06	9430	0.06	9950	.040	10060	.045	10150	
X1 1[illegible].04	12	9251	1[illegible]	1[illegible]95	1255	1245			
GR 2220	61[illegible]	2224	3243	2220	6880	2218.6	9490	2220.5	9880
GR 2220	9950	2216	9970	2213	10000	2216	10030	2220	10060
GR 2224	1[illegible]	2228	1[illegible]						
NR 4	0.06	2283	.056	2489	.040	2561	.045	3983	
X1 1[illegible].13	23	2489	2587	350	5[illegible]	470			
GR 2236	1150	2232	1183	2228	1355	2229	1354	2224	1960
GR2221.7	2[illegible]	2221.9	2[illegible]7	2224.5	2111	2224.4	2288	2222.7	2378
GR2224.4	2489	2221.2	2504	2221.3	2521	2218.9	2547	2217.2	2569
GR2247.2	2578	2225.6	2597	2225.6	2614	2234.7	2638	2237.0	2756
GR2237.8	2947	2240.3	2959	2241.0	3083				
NC .060	.045	.04	.1	.3					
NC .045	.045	.04	.1	.3					
X1 1[illegible].31	10	2126	2319	823	5[illegible]	520			
GR 2248	1856	2244	1955	2244	1[illegible]	2244	1950	2244	1950
GR2242.6	[illegible]	2239.5	[illegible]29	2239.4	2214	2242.2	2236	2224.9	2248
GR2224.6	2299	2236.4	2319	2237.9	2341	2242.2	2474	2241.3	2931
GR2242.1	2584	2244.6	2630	2243	2810				
NC			.3	.5					
X1 1 .33	12	2351	3383	110	110	110			
X3 10							2241	2241	
GR 2246	2[illegible]	2244	2[illegible]	2244	1[illegible]	2244	1[illegible]	2244	1950
GR 2244	2[illegible]	2239	2[illegible]	2239.0	2360	2239.0	2388	2238	2388
GR 2243	2650	2240.0	2670						
SC 1.25	1.5	2.3[illegible]		37.4	9.4	294		2230.5	2230
X1 1[illegible].34	12	2350	2353	95	95	95			
X2		1	2241	2242					
X3 10							2242	2242	
X4	2242.0	2500							
BT		2248		470	2244		610	2242.3	
BT 7[illegible]	2242		[illegible]80	2243		1280	2244.5		1430
BT 2248		1510	2252.3						
GR 2[illegible]	[illegible]58	2244	[illegible]955						
GR 2244	2[illegible]90	2235	2355	2231.6	2380	2231.6	2398	2242.0	2388
GR 2243	2650	2240.3	2670						
X1 1[illegible].49	26	2475	2387	650	710	750			
GR 2272	1[illegible]6	2272	1[illegible]95	2272	1[illegible]36	2272	1960	2272	1960
GR2266.9	[illegible]00	2272.2	2234	2271.5	2253	2266[illegible].6	2300	2261.5	2475
GR2264.9	[illegible]11	2241.6	2547	2239.1	2576	2236.1	2617	2241.3	2648
GR2264.1	[illegible]11	2241.3	2724	2240.6	2754	2238.4	2771	2236.4	2794
GR2243.9	[illegible]99	2243.1	[illegible]43	2242.9	[illegible]83	2244.4	[illegible]87	2240.3	[illegible]92
GR 2270	5[illegible]20								
NC			.1	.3					

X1 10.70	19	2052	2489	1110	1160	1110			
GR 2280	1270	2231	1270	2280	1270	2280	1270	2280	1270
GR2272.3	2000	2274.6	2352	2252.3	2112	2252.8	2198	2253.1	2233
GR2253.6	2284	2253.6	2370	2253.5	2436	2253.6	2473	2256.6	2489
GR2256.6	2553	2259.8	2606	2259.5	2554	2280	2740		
NC	.151	.033							
X1 10.96	31	2611	2840	1430	1280	1365			
GR 2284	1120	2280	500	2272	630	2272	1330	2276	1360
GR 2268	1520	2281	1900	2281	1900	2281	1900	2281	1900
GR2276.8	2	2279.5	2383	2278.7	2174	2275.5	2353	2273.2	2398
GR2268.8	2446	2270.6	2613	2267.5	2620	2267.6	2647	2264.7	2670
GR2268.8	2685	2263.8	2586	2265.8	2702	2270.8	2736	2267.8	2761
GR2267.9	27?4	2272.9	2825	2275.6	2840	2275.8	2876	2274.1	2948
GR 2264	359?								
X1 11.15	28	2521	2533	1135	985	1010			
GR 2290	1020	2280	1180	2289	1430	2289	1570	2286	1710
GR2282.8	2000	2290.4	2338	2288.4	2140	2284.6	2282	2282.9	2380
GR2284.8	2399	2284.1	2404	2284.8	2342	2278.6	2521	2276.4	2530
GR2268.4	2588	2275.7	2599	2280.5	2607	2281.8	2633	2283.3	2665
GR2279.3	2663	2279.3	2683	2279.0	2710	2279.0	2731	2281.7	2791
GR 2284	3050	2288	3250	2292	3400				
NC .45	.140	.133							
X1 11.28	19	2416	2525	855	640	645			
X4 3	2300	760	2296	920	2300	1750			
GR 2301	780	2294	1060	2294	1200	2298	1400	2296.5	1600
GR23 4.5	2	2312.3	2355	2311.5	2328	2310.4	2352	2312.1	2376
GR2268.6	2416	2273.5	2439	2278.9	2392	2280.1	2423	2286.1	2598
GR2285.8	2587	2292	2650	2296	2360	2380	3330		
NC		.031	.3	.5					
X1 11.31	16	2774	2745	130	210	180			
X3 10							2288.4	2288.4	
GR 2280	1	2291	1200	2297	1600	2299.4	1760	2296.2	1980
GR 2280	2110	2301	2600	2292	2662	2280	2704	2280	2746
GR 2288	2768	2292	2800	2292	2921	2296	3100	2300	3420
GR2301.4	3070								
SE 11.65	1.50	2.83		41.5	15.5	224		2280.4	2280
X1 11.02				70	70	70		.4	
X2 1			2288.4	2291.4					
X3 10							2291.4	2291.4	
GT 12		2813		460	2289.7		710	2290.6	
BT 1.50	2296		1200	2294.3		1380	2293		1580
BT2292.0		1650	2291.4		1750	2292		1820	2292.4
BT	2150	2296		2230	2300				
NC .14	.160	.138							
X1 11.48	20	2311	2428	675	655	660			
GR2316.8	600	2304	1070	2317	1360	2316.5	1530	2314.8	1780
GR2314.1	2000	2302.5	2128	2302.3	2170	2305.5	2260	2313.2	2311
GR2288.9	2335	2288.9	2392	2296.9	2420	2301.6	2420	2301.6	2444
GR2302.2	2478	2304.4	2572	2304.5	2720	2307.5	2940	2306.0	2600
NC			.1	.3					
X1 11.64	16	2283	2572	1000	1000	1000			
X4 1	2312.2	2150							
GR 2316	560	2314.3	870	2315	1220	2316.0	1370	2315.0	1660
GR2312.0	1000	2312.3	2104	2311.7	2251	2310.4	2283	2297.4	2297
GR2297.4	2367	2315.1	2372	2307.7	2401	2308.8	2496	2312.6	2712
GR 2316	2950	2310	3290	2320	3500				
X1 11.79	20	2282	2399	810	810	810			
GR2326.2	40	2324	210	2320	970	2321	970	2321.3	1360
GR2318.7	2	2316.6	2149	2317.2	2282	2315.7	2306	2316.0	2329
GR2315.3	2348	2316.3	2381	2316.9	2395	2317.7	2427	2317.7	2458

GR2319.8	2569	2321.2	2656	2321.4	2688	2324	3260	2328	3510
NC		.4	.3	.5					
X1 11.82	14	3289	3331.5	120	160	155			
X3 10								2319	2319
GR2326.8	1000	2321.2	2200	2321.8	2520	2320.8	2800	2320.8	3240
GR2318.5	3289	2313.8	3289.5	2313.8	3331	2319.8	3331.5	2321.8	3380
GR2321.2	3	2323.1	3350	2324.8	4000	2328.8	4320		
SB 1.25	1.5	2.83		41.5	13.8	224		2311	2310.8
X1 11.84	11	3289	3331.5	75	75	75			
X2		1	2319	2320.7					
X3 10								2321.7	2320.7
X4 1	2324	1500							
BT 4	30000	2321.1		3260	2320.7		3380	2321	
BT 3600	2321.4								
GR2328.8	1000	2323.1	1650	2324.8	1880	2324.8	1900	2324.8	3240
GR2319.5	3289	2311.5	3289.5	2311.5	3331	2319.5	3331.5	2324.8	3320
GR2328.1	3480								
NC .140	.045	.035							
X1 11.87	13	2289	2400	300	70	160		1.5	
GR2336.8	1000	2332.8	1750	2328.8	2150	2324.8	2280	2320.8	2300
GR2319.5	2315	2313.5	2360	2316.8	2370	2320.8	2380	2324.8	2400
GR2328.8	2500	2331.6	3600	2332.8	3700				
NC			.1	.3					
X1 11.99	17	2154	2270	470	660	640			
GR 2344	540	2340	980	2340	980	2340	980	2336	1680
GR2330.3	2000	2330.8	2154	2320.8	2183	2320.8	2233	2322.6	2247
GR2331.1	2261	2332.6	2271	2331.7	2294	2332.8	2416	2332.8	2780
GR 2332	2950	2336	3170						
NC .140	.045	.031							
X1 12.16	24	2254	2371	485	565	580			
X3 10									
GR 2348	650	2340	1180	2339.8	1530	2335	1850	2336	1940
GR2334.7	2000	2332.1	2279	2332.9	2134	2332.5	2122	2332.5	2136
GR2334.3	2147	2335.3	2264	2329.8	2238	2326.8	2349	2337.5	2371
GR2337.4	2435	2338.7	2468	2336.8	2537	2337.8	2578	2331.5	2650
GR2337.8	3	2540	3330	2344	3140	2346	3260		
NC			.3	.3					
X1 12.15	8	562	680	280	300	300			
X3 10							2238	2238	
GR 2340		2339.6	562	2337.1	562	2327.1	582	2327.1	630
GR2337.1	.51	2338.8	650	2340	1050				
SB 1.58	1.56	3	130	48	12	500	2	2328.7	2327.1
X112.196			1	183	188	188		1.1	
X2		1	2337.1	2338.6					
X3 10							2338.6	2338.6	
NC .160	.045	.035							
X1 12.32	25	2199	2319	750	750	800			
X3 10									
X4 5	2348	340	2346	940	2346	1460	2344	1805	2345.5
X4 1670									
GR 2360	-710	2354.4	70	2352	320	2344	1530	2340	1560
GR2346.1	2000	2347.1	2199	2334.7	2227	2334.7	2234	2337.3	2242
GR2337.9	2258	2337.9	2278	2346.2	2309	2347.4	2319	2347.4	2334
GR2347.9	2348	2351.3	2364	2352.2	2451	2350.4	2463	2349.2	2466
GR2348.6	2494	2349.6	2509	2350.1	2524	2354.4	2634	2356.7	2756
NC		.4	.1	.3					
NF 4	.14	760	.36	2522	.04	2477	.045	3329	
X1 12.42	19	2321	2477	535	595	550			
X3 10									

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X4        3    2352      1120    2351.2      1310      2349      1740
GR     2354    -13.      2356       760      2350      1660      2346      1650      2350      1650
GR2348.6       2000      2348.7     2152      2349.4    2288      2350.6    2320      2349.7    2358
GR2349.7       2384      2352.3     2426      2360.2    2477      2360.6    2631      2360.5    2733
GR2356.9       2826      2356.1     2919      2364      3100      2368      3320

NC                                   .3                .5
NH        4     .14       1499       .14      2165       .24      2235.1     .045      2730
X1 12.46        6         2150       2240       90        90                90
X3       10                                                               2400      2400
GR2358.5       2150      2358.5     2160      2343.5    2175      2343.5    2225      2360      2240
GR     2360    2250

SB     1.05     2         2.5        150        50       10        361.5      1      2344.5    2343.5
X1 12.49                                       90        90                1
X2                         1         2358.5    2360
X3       10                                                               2400      2400

NH        4     .14       1550       .14      2283       .036      2375      .045      2681
X1 12.55        14        2283       2375      310       310
GR     2372     46.       2354       1110      2360      1330      2360      1620      2360      1710
GR2360.0       2000      2355.6     2233      2346.2    2316      2346.2    2352      2358.1    2375
GR2366.6       2421      2357.5     2462      2366.5    2559      2365.4    2681
EJ
   ** BLANK CARD **
   ** BLANK CARD **
   ** BLANK CARD **
ER
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SUMMARY OF ERRORS

T1 MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6977) HYDRAULICS
T2 CHANNEL & BRIDGE CAPACITY STUDY BY COE 2/13/39
T3 FLAMINGO WASH, REACH 2 + 1, FRWY TO RAINBOW RD (DS OF SPANISH TRAILS)

8.660 - CAUTION - X3 CARD OMITTED AT DOWNSTREAM XSEC OF SPECIAL BRIDGE

8.660 - CAUTION - X3 CARD OMITTED AT UPSTREAM XSEC OF SPECIAL BRIDGE

8.660 UNABLE TO EDIT SPECIAL BRIDGE MODEL DUE TO INSUFFICIENT DATA

8.940 - ERROR - GR CARD - NUMST = 34 DOES NOT EQUAL NUMBER OF STATIONS READ = 35

9.430 - ERROR - NH CARD - STN = 3700.000 IS NOT GR OR X4 CARD

10.310 - NOTE - NC CARD - ONLY ONE MAY BE USED PER XSEC

10.340 - ERROR - GR CARD - STA = 1951.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - ERROR - GR CARD - STA = 1950.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - ERROR - GR CARD - STA = 1950.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 38.000 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

10.340 - CAUTION - TOP OF RIGHT LEVEE = 2242.000 IS LOWER THAN UPSTREAM TOP OF ROAD = 2252.000 AT SPECIAL BRIDGE

10.340 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 38.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 28.000

11.320 - NOTE - X1 CARD - PKSECE = 0.400 IS APPLIED TO BT ELEVATIONS ONLY WHEN REPBT = 1 AND NO BT CARDS ARE READ THIS XSEC

11.320 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 42.000 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

11.320 - CAUTION - TOP OF RIGHT LEVEE = 2291.400 IS LOWER THAN UPSTREAM TOP OF ROAD = 2300.000 AT SPECIAL BRIDGE

11.320 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 42.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 28.000

11.820 - ERROR - X3 CARD - ELREA = 2319.000 NOT USED WHEN ELLEA = 0

11.84[illegible] - ERROR - X3 CARD - ELREA = 2320.700 NOT USED WHEN ELLEA = 0

11.840 - CAUTION - TOP OF LEFT LEVEE = 2318.000 IS LOWER THAN DOWNSTREAM LOW CHORD = 2319.000 AT SPECIAL BRIDGE

11.840 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 42.500 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

11.840 - CAUTION - TOP OF LEFT LEVEE = 2318.000 IS LOWER THAN UPSTREAM TOP OF ROAD = 2320.700 AT SPECIAL BRIDGE

11.840 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 42.500 IS GREATER

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                        THAN TOP WIDTH OF SPECIAL OPENING =    28.000

12.186 - NOTE - SB CARD - BAREA =   500.000 DOES NOT AGREE WITHIN 10 PCT
                OF CALCULATED TRAPEZOIDAL AREA =   393.120

12.186 - CAUTION - TOP OF LEFT LEVEE =  2238.000 IS LOWER THAN DOWNSTREAM
                   LOW CHORD =  2337.100 AT SPECIAL BRIDGE

12.186 - CAUTION - TOP OF RIGHT LEVEE =  2238.000 IS LOWER THAN DOWNSTREAM
                   LOW CHORD =  2337.100 AT SPECIAL BRIDGE

12.186 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL =    88.000 IS GREATER
                   THAN TOP WIDTH OF SPECIAL BRIDGE OPENING =    70.000

12.186 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL =    88.000 IS GREATER
                   THAN TOP WIDTH OF SPECIAL OPENING =    83.600

12.320 - NOTE - GR CARD - IT IS RECOMMENDED THAT STATION NUMBERS
                BE STRICTLY POSITIVE

12.420 - NOTE - GR CARD - IT IS RECOMMENDED THAT STATION NUMBERS
                BE STRICTLY POSITIVE

12.480 - ERROR - NH CARD - STN =  1490.000 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN =  2165.000 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN =  2235.100 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN =  2730.000 IS NOT GR OR X4 CARD

12.490 - NOTE - SB CARD - BAREA =   961.500 DOES NOT AGREE WITHIN 10 PCT
                OF CALCULATED TRAPEZOIDAL AREA =   759.000

12.490 - CAUTION - TOP OF LEFT LEVEE =  2400.000 IS HIGHER THAN DOWNSTREAM
                   TOP OF ROAD =  2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP OF RIGHT LEVEE =  2400.000 IS HIGHER THAN DOWNSTREAM
                   TOP OF ROAD =  2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP OF LEFT LEVEE =  2400.000 IS HIGHER THAN UPSTREAM
                   TOP OF ROAD =  2360.000 AT SPECIAL BRIDGE

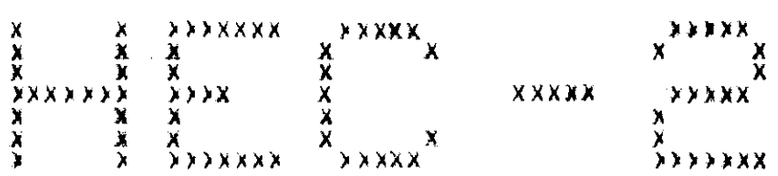
12.490 - CAUTION - TOP OF RIGHT LEVEE =  2400.000 IS HIGHER THAN UPSTREAM
                   TOP OF ROAD =  2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL =    80.000 IS GREATER
                   THAN TOP WIDTH OF SPECIAL OPENING =    68.000

RUN TIME = 00HRS 00MIN 14.350000SEC
===> HEC2=HEC2,INPUT=FS22
```

```
*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED MAY 1984                                 *
*                                                   *
*  RUN DATE  22 FEB 89 TIME     8:44:06             *
*****************************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```

THIS RUN EXECUTED 22 FEB 89 8:44:44

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  31,32,33,34,35,36
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************

C
T1      MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6977) HYDRAULICS
T2      CHANNEL & BRIDGE CAPACITY STUDY BY COE 2/13/89
T3      FLAMINGO WASH, REACH 2 + 1, FRWY TO RAINBOW RD (DS OF SPANISH TRAILS)
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
              2.                  .         0.000000  0.00      0.0       0.  2130.100  0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLOC     IBW       CHNIM     ITRACE
    -1.000     1.000     -1.000    5.000     12.500    0.000     0.000     0.000     0.000     0.000

NC      0.025     0.025     0.025     0.100     0.300     0.300     0.100     0.000     0.000     0.000
GT      4.000  4100.000  5340.000  5550.000  20200.000     0.000     0.000     0.000     0.000     0.000
        ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
        ####  FROM KOVAL LANE TO UPRR THROUGH CASINO PROPERTY AND       ####
        ####  CLOSED CONDUIT, WAS MODELED BY COE IN LIBFWBOL.  STARTING ####
        ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                       ####
        ####            CENTERLINE =  2060                              ####
X1      8.641     4.000  2000.000  2113.000     3.000     3.000     3.000     0.000     0.000     0.000
GR   2147.800  2130.100  2131.600  2114.000  2131.600  2089.000  2140.600  2113.000     0.000     0.000

NC      0.060     0.060     0.060     0.300     0.500     0.000     0.000     0.000     0.000     0.000
        ##########################################################################
        ####                  UNION PACIFIC RAILROAD                        ####
        ####                  SPECIAL BRIDGE ROUTINE                        ####
        ##########################################################################
X1      8.650     4.000  2000.000  2096.000    10.000    10.000    10.000     0.000     0.000     0.000
GR   2144.000  2130.100  2132.000  2096.000  2132.000  2096.000  2144.000  2096.000     0.000     0.000

SB      1.250     1.250     2.600    96.000    96.000    36.000   330.000     0.000  2132.300  2132.000
        ####  ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG   ####
        ####  THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER     ####
        ####  WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.  ####
        ####  FLOWS LEAVING THE CHANNEL TO NORTH =  0, 861, 2080, 3590  ####
X1      8.650     0.000     0.000     0.000    58.000    58.000    58.000     0.000     0.000     0.000
X2      8.000     0.000     1.000  2137.000  2144.600     0.000     0.000     0.000     0.000     0.000

NC      0.045     0.045     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

```
         ##########################################################################
         ####                    FLAMINGO ROAD OVERPASS                        ####
         ####                NORMAL GROUND SECTION UTILIZED                    ####
         ##########################################################################
         ####                  CENTERLINE =  2160                              ####
         ####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS          ####
         ####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED            ####
         ####  ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR15_SPLIT)         ####
X1          0.740      12.000    2041.000    2229.000     450.000     450.000      450.000       0.000       0.000       0.000
X4          0.740     214[illegible].000    2140.000    2220.000       0.000        0.000       0.000       0.000       0.000
GR    2160.000      250.000    2158.[illegible]    [illegible].000    2152.000      920.000    2149.000    1250.000    2152.000    1550.000
GR    2160.200      500.000    2166.300    2041.000    2137.300    2111.000    2137.300    2252.000    2146.300    2229.000
GR    2145.300     2245.000    2145.900    2260.000       0.000       0.000       0.000       0.000       0.000       0.000

NC          .045       0.045       0.040       0.100       0.300       0.000       0.000       0.000       0.000       0.000
            ####                CENTERLINE =  2610                              ####
            ####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SWALE XING   ####
            ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACTUALLY CUTS INTO   ####
            ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00          ####
X1          0.940      34.000    2551.000    2781.000    1330.000    1255.000    1060.000       0.000       0.000       0.000
GR    2166.000      430.000    2160.000    2163.000    1630.000    2160.000    1630.000    2160.000    1630.000    1630.000
GR    2162.700      500.000    2152.800    2100.000    2151.500    2134.000    2149.500    2198.000    2148.200    2325.000
GR    2149.200     2551.000    2147.900    2681.000    2142.300    2623.000    2142.300    2649.000    2144.600    2669.000
GR    2149.700     2674.000    2152.100    2663.000    2151.500    2721.000    2147.700    2739.000    2146.000    2751.000
GR    2145.800     2767.000    2150.200    2755.000    2149.800    2821.000    2148.200    2840.000    2150.900    2869.000
GR    2149.700     2953.000    2148.300    2972.000    2148.800    2989.000    2150.600    3001.000    2152.200    3092.000
GR    2150.900     3132.000    2153.700    3211.000    2157.200    3219.000    2160.000    3270.000    2169.000    3700.000

NC          .170       0.170       0.040       0.000       0.000       0.000       0.000       0.000       0.000       0.000
            ####                CENTERLINE =  2200                              ####
X1          9.180      20.000    2144.000    2332.000    1240.000    1170.000    1230.000       0.000       0.000       0.000
GR    2172.000      [illegible].000    2168.000    [illegible].000    2164.000    [illegible].000    2164.000    1730.000    2165.000    1820.000
GR    2161.700     2000.000    2152.300    2132.000    2161.900    2144.000    2156.200    2157.000    2157.000    2185.000
GR    2163.900     2235.000    2166.800    2261.000    2168.400    2182.000    2167.300    2514.000    2168.500    2544.000
GR    2165.200     2367.000    2158.900    2538.000    2165.000    2800.000    2165.000    3670.000    2172.000    3750.000

NH          .045       0.045    2272.000       0.040    2395.000       0.170    3700.000       5.000    4500.000       0.000
            ####                CENTERLINE =  2300                              ####
X1          9.430      19.000    2272.000    2395.000    1315.000    1250.000    1330.000       0.000       0.000       0.000
GR    2161.500     2000.000    2181.200    2124.000    2179.800    2215.000    2176.600    2241.000    2176.900    2272.300
GR    2172.800     2475.000    2171.300    2289.000    2177.300    2357.000    2172.200    2388.000    2176.100    2395.000
GR    2176.500     2472.000    2177.600    2667.000    2177.400    2709.000    2175.000    2930.000    2177.000    3260.000
GR    2175.000     3367.000    2180.500    4240.000    2185.000    4490.000    2181.000    4500.000       0.000       0.000

NH          .045       0.045    2483.000       0.040    2652.000       0.060    3630.000       0.090    5330.000       0.000
            ####                CENTERLINE =  2690                              ####
X1          9.620      33.000    2493.000    2691.000     985.000    1005.000    1220.000       0.000       0.000       0.000
GR    2194.000      [illegible].000    2194.000    [illegible].000    2194.000    1870.000    2194.000    1870.000    2190.000    1670.000
GR    2192.800     2000.000    2191.400    2136.000    2191.600    2179.000    2191.500    2255.000    2190.000    2280.000
GR    2188.600     2357.000    2188.900    2388.000    2188.500    2372.000    2191.000    2386.000    2187.600    2418.000
GR    2186.300     2426.000    2186.300    2432.000    2188.100    2444.000    2186.800    2493.000    2186.300    2558.000
GR    2184.400     2577.000    2184.400    2650.000    2188.800    2607.000    2188.800    2652.000    2185.900    2691.000
GR    2187.400     2717.000    2189.300    2726.000    2189.500    2727.000    2189.500    3630.000    2188.000    4520.000
GR    2188.000     3020.000    2192.000    3240.000    2195.000    3330.000       [illegible]       [illegible]       [illegible]       [illegible]
```

```
NC      .040        .040        .040        0.000       0.000       0.000       0.000       0.000       0.000       0.000
        ####                    CENTERLINE =  2670                              ####
X1     9.810      32.000    2629.000    2775.000     950.000     950.000     975.000       0.000       0.000       0.000
X3    10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR  2206.000     1338.000    2214.000    1810.000    2204.000    1740.000    2207.000    1800.000    2207.000    1950.000
GR  2206.000     2000.000    2204.000    2122.000    2200.500    2199.000    2203.000    2344.000    2203.400    2411.000
GR  2202.000     2468.000    2198.300    2543.000    2196.400    2543.000    2196.400    2581.000    2197.400    2595.000
GR  2196.800     2629.000    2192.100    2668.000    2192.100    2678.000    2193.300    2706.000    2196.600    2724.000
GR  2196.300     2755.000    2201.200    2775.000    2202.600    2793.000    2202.600    3014.000    2201.600    3061.000
GR  2199.200     3097.000    2200.100    3140.000    2199.800    3192.000    2201.800    3224.000    2203.800    3266.000
GR  2204.000     3310.000    2208.000    3430.000       0.000       0.000       0.000       0.000       0.000       0.000

MH      4.000       0.060    9890.000       0.060    9950.000       0.040   10060.000       0.045   10150.000       0.000
        ####                    CENTERLINE =  1000                              ####
        ####  CAMERON STREET NOT MODELED.  THIS IS A SHALE XING                 ####
        ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACTUALLY CUTS INTO          ####
        ####  CHANNEL  BANKS OR ABUTMENTS.  XING IS AT MILE 10.09               ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.                           ####
X1     10.040      12.000    9850.000   10060.000   10055.000    1250.000    1245.000       0.000       0.000       0.000
GR  2228.000     9880.000    2224.000    8240.000    2225.000    8980.000    2218.600    9490.000    2220.500    9880.000
GR  2220.000     9950.000    2216.000    9970.000    2213.000   10000.000    2216.000   10030.000    2220.000   10060.000
GR  2224.000    10150.000    2228.000   10160.000       0.000       0.000       0.000       0.000       0.000       0.000

MH      4.000       0.060    2235.000       0.060    2485.000       0.040    2587.000       0.045    3083.000       0.000
        ####                    CENTERLINE =  2530                              ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 2238.
X1     10.130      23.000    2489.000    2557.000    2550.000    1350.000     470.000       0.000       0.000       0.000
GR  2236.000     1150.000    2232.000    1180.000    2228.000    1350.000    2228.000    1350.000    2224.000    1660.000
GR  2221.700     2011.000    2220.900    2097.000    2224.500    2111.000    2224.400    2289.000    2222.700    2373.000
GR  2224.400     2489.000    2221.300    2554.000    2221.300    2521.000    2218.800    2547.000    2217.200    2569.000
GR  2217.200     2578.000    2225.600    2587.000    2225.600    2614.000    2234.700    2638.000    2237.000    2796.000
GR  2237.000     2947.000    2240.500    2959.000    2241.000    3083.000       0.000       0.000       0.000       0.000

NC      .060        .040        .040        .100        0.300       0.000       0.000       0.000       0.000       0.000
NC      .040        .040        .040        .100        0.300       0.000       0.000       0.000       0.000       0.000
X1     10.340      18.000    2125.000    2241.000    2240.000     920.000     920.000       0.000       0.000       0.000
GR  2246.000     1560.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000
GR  2242.300     2100.000    2235.900    2128.000    2230.400    2214.000    2226.000    2236.000    2224.500    2248.000
GR  2224.900     2299.000    2235.400    2319.000    2237.900    2410.000    2242.200    2474.000    2241.300    2531.000
GR  2242.100     2534.000    2244.600    2551.000    2248.000    2810.000       0.000       0.000       0.000       0.000

NC      .060        .060        .040        .300        0.300       0.000       0.000       0.000       0.000       0.000
        ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########
        ####                    DECATUR BOULEVARD                               ####
        ####                SPECIAL BRIDGE ROUTINE                              ####
        ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########  ##########
        ####  CENTERLINE =  2370                                                ####
X1     10.330      12.000    2350.000    2398.000     110.000     110.000     110.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    2241.000    2241.000       0.000
GR  2246.000     1561.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000    2244.000    1950.000
GR  2244.000     2060.000    2238.000    2350.000    2230.000    2350.000    2230.000    2389.000    2238.000    2388.000
GR  2243.000     2551.000    2248.000    2570.000       0.000       0.000       0.000       0.000       0.000       0.000
```

SB	1.250	1.500	2.500	0.000	37.400	9.400	294.000	0.000	2230.500	2230.000
X1	10.340	12.[illegible]	2350.[illegible]	[illegible]	55.[illegible]	55.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
X2	0.000	0.000	1.000	2241.000	2242.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
X3	10.[illegible]	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2242.000	2242.000	[illegible]
X4	1.000	2242.000	2310.000	[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000
BT	0.000	0.000	2248.000	[illegible]	470.[illegible]	2244.[illegible]	[illegible]	610.[illegible]	2242.[illegible]	[illegible]
BT	780.000	2242.000	0.000	10[illegible]	2243.000	[illegible]	1280.[illegible]	2244.50[illegible]	[illegible]	1430.000
BT	2248.000	0.000	1610.000	2242.[illegible]	[illegible]	[illegible]	[illegible]	0.000	0.000	0.000
GR	2245.000	1550.000	2244.000	[illegible]	2244.000	1980.[illegible]	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2060.000	2235.000	2245.000	2230.500	2350.[illegible]	2230.[illegible]	2388.000	2242.000	2388.000
GR	2243.000	2551.[illegible]	2248.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2610

X1	10.490	26.000	2475.000	2587.000	550.000	710.000	790.000	0.000	0.000	0.000
GR	2272.000	1960.000	2272.000	1966.000	2272.000	1966.[illegible]	2272.000	1953.000	2272.000	1960.000
GR	2268.900	2000.000	2272.200	2234.000	2270.600	2283.[illegible]	2265.[illegible]	2389.000	2261.900	2475.000
GR	2239.900	2311.[illegible]	2241.[illegible]	2547.000	2239.100	2570.000	2275.100	2617.000	2240.300	2648.000
GR	2242.100	2701.000	2241.300	2724.000	2240.800	2754.000	2238.400	2771.000	2238.400	2794.000
GR	2243.900	2799.000	2243.000	2845.000	2242.900	2885.000	2244.400	2587.000	2248.700	3092.000
GR	2247.[illegible]	3221.[illegible]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2150

X1	10.700	18.000	2052.000	2488.000	1110.000	1160.000	1110.000	0.000	0.000	0.000
GR	2268.000	1270.000	2268.000	1270.000	2268.000	1270.000	2268.000	1270.000	2280.000	1270.000
GR	2272.300	2[illegible]	2271.[illegible]	2[illegible]	2272.800	2112.000	2268.[illegible]	2198.000	2253.100	2233.000
GR	2253.600	2284.[illegible]	2253.600	2276.000	2253.600	2436.000	2253.600	2473.000	2256.600	2489.000
GR	2256.600	2553.000	2259.300	2615.000	2259.500	2654.000	2260.000	2740.000	0.000	0.000
NC	0.000	0.180	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2630

X1	10.960	31.000	2613.000	2940.000	1430.000	1230.000	1365.000	0.000	0.000	0.000
GR	2284.000	1200.000	2283.000	[illegible]	2272.000	[illegible]	2272.000	1330.000	2276.000	1360.000
GR	2266.[illegible]	1522.000	2281.000	1[illegible]	2281.000	1900.000	2281.000	1500.000	2281.000	1900.000
GR	2276.800	2[illegible]	2279.900	[illegible]	2276.700	2174.000	2275.[illegible]	2353.000	2273.200	2398.000
GR	2268.800	2446.[illegible]	2275.600	2613.000	2267.500	2620.000	2267.[illegible]	2647.000	2264.700	2670.000
GR	2263.000	2680.000	2263.000	2666.000	2265.800	2702.000	2270.800	2736.000	2267.800	2761.000
GR	2267.900	2784.[illegible]	2272.900	2826.000	2275.600	2840.000	2275.600	2876.000	2274.100	2948.000
GR	2284.000	3591.[illegible]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2560

X1	11.150	28.000	2521.000	2633.000	1035.000	985.000	1010.000	0.000	0.000	0.000
GR	2269.[illegible]	[illegible]	2268.000	[illegible]	2269.000	1430.000	2269.000	1570.000	2266.000	1710.000
GR	2282.800	2[illegible]	2280.[illegible]	2[illegible]	2288.400	2140.000	2284.600	2282.000	2282.900	2380.000
GR	2282.000	2399.000	2280.000	2404.000	2281.800	2420.000	2278.600	2521.000	2269.400	2530.000
GR	2269.400	2538.000	2273.700	2599.000	2280.500	2607.000	2281.000	2633.000	2280.300	2655.000
GR	2279.300	2[illegible]	2279.300	2[illegible]	2279.000	2712.000	2279.000	2731.000	2280.700	2791.000
GR	2284.000	3050.000	2283.000	3[illegible]	2282.000	3[illegible]	0.000	0.000	0.000	0.000

```
NC      0.545      3.140      3.033      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####  CENTERLINE =  2460
X1     11.280      19.        2416.      2823.      655.       640.       645.       0.000      0.000      0.000
X4      3.000    2360.        760.       2296.      920.      2300.      1760.       0.000      0.000      0.000
GR    2301.000    7000.      2294.      2300.      2294.      1280.      2298.      1400.      2296.500   1600.000
GR    2304.500    2000.      2302.300   2306.      2300.      2258.      2300.      2304.      2292.100   2376.000
GR    2288.600    2415.      2273.9     2439.      2273.      2252.      2288.      2523.      2288.100   2556.000
GR    2282.800    2537.      2292.000   2290.      2296.000   3060.      2300.      3630.      0.000      0.000

NC      0.000      0.000      0.031      0.000      0.500      0.000      0.000      0.000      0.000      0.000
          ##########################################################################
          ####                                                                  ####
          ####                    JONES BOULEVARD                               ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ####                                                                  ####
          ##########################################################################
          ####  CENTERLINE =  2725
X1     11.310      16.000     2704.000   2746.      180.       200.       180.       0.000      0.000      0.000
X3      1.000      0.         0.         0.         0.000      0.000      0.000      2288.400   2288.400   0.000
GR    2301.000    1000.      2297.      2299.      2297.000   1600.      2298.400   1760.000   2298.200   1980.000
GR    2300.000    2100.      2300.      2300.      2302.000   2680.      2299.400   2704.000   2290.000   2746.000
GR    2286.000    2763.      2292.      2800.      2292.000   2920.      2296.      3130.      2300.000   3420.000
GR    2301.400    3577.      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB      1.250      1.380      2.300      0.000      41.500     13.800     224.000    0.000      2280.400   2280.000
          ####  CENTERLINE BT CARDS =  1690
X1     11.320      0.         0.         0.         70.200     75.000     70.000     0.000      0.400      0.000
X4      1.000      0.         1.000      2288.400   2291.400   0.000      0.000      0.000      0.000      0.000
X3      1.000      0.         0.         0.         0.000      0.000      0.000      2291.400   2291.400   0.000
BT     12.000      0.         2300.      0.000      460.000    2299.700   0.000      710.000    2299.600   0.000
BT    1300.000    2295.       0.000      1200.000   2294.300   0.000      1380.000   2293.000   0.000      1520.000
BT     292.       0.         165.       2291.400   0.000      1750.000   2292.000   0.000      1820.000   2292.430
BT      0.000     2160.000   2295.000   0.000      2230.000   2300.      0.000      0.000      0.000      0.000

NC      0.140      0.160      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####  CENTERLINE =  2370
X1     11.450      20.000     2311.000   2428.000   675.000    655.000    660.000    0.000      0.000      0.000
GR    2306.600    1500.      2304.      1973.      2307.      1360.      2302.500   1630.000   2304.800   1780.000
GR    2304.100    2100.      2302.800   2129.      2302.800   2170.      2305.500   2260.000   2303.200   2311.000
GR    2288.900    2335.000   2288.900   2332.      2296.900   2408.      2301.600   2428.      2301.600   2444.000
GR    2312.200    2473.      2304.4     2572.000   2304.500   2720.000   2307.500   3040.000   2308.000   3600.000

NC      0.000      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          ####  CENTERLINE =  2330
X1     11.640      18.000     2283.000   2372.      1000.      1000.      1000.      0.000      0.000      0.000
X4      1.000      2312.200   2288.      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    2316.000    56.        2314.3     0.000      2316.000   1220.      2316.      1370.      2316.000   1660.000
GR    2312.000    1300.      2312.      2104.      2311.700   2261.      2297.      2283.      2297.400   2297.000
GR    2297.400    2357.      2305.100   2372.000   2307.700   2401.      2318.600   2486.000   2312.800   2712.000
GR    2316.       2950.      2310.000   3290.000   2320.000   3600.000   0.000      0.000      0.000      0.000
```

```
        ####   CENTERLINE =   2360
X1      11.790      20.000    2282.000    2399.000     810.000     810.000     810.000       0.000       0.000       0.000
GR    2328.200      40.000    2324.000     210.000    2320.000     970.000    2320.000     970.000    2321.000    1360.000
GR    2318.700    2[illegible].000    2318.600    2149.000    2319.200    2282.000    2315.700    2308.000    2306.000    2329.000
GR    2306.000    2348.000    2308.300    2361.000    2316.900    2399.000    2317.700    2427.000    2317.700    2458.000
GR    2319.200    2569.000    2321.200    2656.000    2320.400    2668.000    2324.000    3260.000    2328.000    3510.000

NC        0.080       0.030       0.040       1.210       0.500       2.100       0.000       0.000       0.000       0.000
          ##### ##########################################################################
          ####                      TORREY PINES DRIVE                                ####
          ####                   SPECIAL BRIDGE ROUTINE                               ####
          ##########################################################################

X1      11.820      14.000    3239.000    3331.500     120.000     160.000     155.000       0.000       0.000       0.000
X3      10.000       3.000       0.000       0.000       0.000       0.000       0.000       0.000    2319.000    2319.000
GR    2326.000    3200.000    2321.300     220.000    2321.000    2520.000    2320.000    2800.000    2320.000    3240.000
GR    2318.000    3289.000    2710.000    3289.500    2310.000    3331.000    2318.000    3331.500    2320.000    3380.000
GR    2321.200    3931.000    2328.000    3331.500    2324.000    4220.000    2328.000    4220.000       0.000       0.000

SB        1.250       1.500       2.630       0.000      41.500      13.500     224.000       0.000    2311.000    2310.000
X1      11.840      11.000    3239.000    3331.500      75.000      75.000      75.000       0.000       0.000       0.000
X2       0.000       0.000       1.000    2319.000    2320.700       0.000       0.000       0.000       0.000       0.000
X3      10.000                   0.000       0.000       0.000       0.000       0.000       0.000    2320.700    2320.700
X4       1.000    2324.000    1330.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GT       4.000    3289.000    2321.100       0.000    3260.000    2320.000       0.000    3380.000    2321.000       0.000
GT       0.000    2321.100       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR    2326.000                2324.000    2324.000    2324.000    2324.000    2324.000      15.000    2324.000    3240.000
GR    2319.500    3289.000    2311.500    3289.500    2311.500    3331.000    2319.500    3331.500    2324.000    3380.000
GR    2328.000    3460.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

NC        0.140       0.045       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
          ####   CENTERLINE =   1[illegible]
X1      11.870      15.000    2233.000    2410.000     300.000     700.000     166.000       0.000       1.500       0.000
GR    2328.000    3200.000    2332.000    1760.000    2324.000    3200.000    2324.000    2280.000    2320.000    2300.000
GR    2313.500    3215.000    2313.500    2316.000    2316.000    3270.000    2320.000    2330.000    2324.000    2400.000
GR    2326.000    2901.000    2334.000       0.000    2332.000    3700.000       0.000       0.000       0.000       0.000

NC        0.000       0.000       0.000       0.170       0.300       0.000       0.000       0.000       0.000       0.000
          ####   CENTERLINE =   2220
X1      11.990      17.000    2154.000    2270.000     470.000     650.000     645.000       0.000       0.000       0.000
GR    2324.000      54.000    2324.000      60.000    2340.000     980.000    2324.000     980.000    2326.000    1680.000
GR    2333.300    2[illegible].000    2333.800    2154.000    2322.900    2183.000    2322.600    2233.000    2322.600    2247.000
GR    2334.400    2564.000    2332.900    2270.000    2331.700    2414.000    2322.600    2416.000    2322.600    2760.000
GR    2332.000    2951.000    2336.000    3170.000       0.000       0.000       0.000       0.000       0.000       0.000

NC        .140       0.045       0.031       0.000       0.000       0.000       0.000       0.000       0.000       0.000
          ####   CENTERLINE =   2310
X1      12.190      24.000    2254.000    2371.000     485.000     565.000     580.000       0.000       0.000       0.000
X3      10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR    2348.000      55.000    2344.000     110.000    2339.000     153.000    2335.000    1950.000    2336.000    1940.000
GR    2334.700    2[illegible].000    2332.100    2279.000    2332.900    2134.000    2332.500    2122.000    2332.500    2136.000
GR    2334.300    2147.000    2335.300    2264.000    2326.000    2637.000    2327.500    2349.000    2327.500    2371.000
GR    2337.400    2435.000    2338.700    2488.000    2326.000    3147.000    2327.500    2578.000    2327.500    2655.000
GR    2337.500    3[illegible].000    2344.000    3[illegible].000    2344.000    3[illegible].000    2346.000    3260.000       0.000       0.000
```

```
NC      0.000      1.000      3.000      0.300      0.500      0.300      0.000      0.000      0.000      0.000
        ##########################################################################################
        ####                                                                                  ####
        ####                          TROPICANA AVENUE                                        ####
        ####                NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)                          ####
        ####                                                                                  ####
        ##########################################################################################
        ####  CENTERLINE = 10000
X1      12.150      8.000    562.000    650.000    280.000    300.000    300.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000   2238.000   2238.000      0.000
GR    234 .000          .    2238.600    562.000   2337.100    562.000   2327.100    582.000   2327.100    630.000
GR    2337.100    650.000    2338.600    650.000   2340.100   1050.000      0.000      0.000      0.000      0.000

SB      1.050      1.500      3.000    100.000     48.000     18.000    500.000      2.000   2328.700   2327.100
X1      12.166      0.000      0.000      0.000    188.000    188.000    188.000      0.000      1.100      0.000
X2      0.000      0.000      1.000   2337.100   2338.600      0.000      0.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000   2338.600   2338.600      0.000

NC      0.000      0.145      3.835      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####  CENTERLINE =   2245
X1      12.320     25.000   2139.000   2318.000    750.000    750.000    800.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
X4      5.000    8348.000    840.000   2346.000    940.000   2346.000   1460.000   2344.000   1605.000   2345.500
X4    1670.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    2361.000   -710.000   2354.400      7.000   2352.000    320.000   2344.000   1530.000   2340.000   1580.000
GR    2346.100   2333.000   2347.100   2138.000   2334.700   2227.000   2334.700   2334.000   2337.300   2242.000
GR    2367.900   2258.000   2337.900   2278.000   2346.200   2328.000   2347.400   2339.000   2347.400   2334.000
GR    2347.900   2343.000   2351.300   2264.000   2352.200   2481.000   2350.400   2463.000   2349.200   2486.000
GR    2348.600   2494.000   2348.500   2519.000   2350.100   2524.000   2354.400   2634.000   2356.700   2756.000

NC      1.000      0.000      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
NH      4.000      0.140    760.000      0.060   2320.100      0.040   2477.000      0.045   3320.000      0.000
        ####  CENTERLINE =   2350
X1      12.420     15.000   2320.000   2477.000    535.000    595.000    550.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
X4      3.000    2552.000    112.000   2351.200   1310.000   2348.000   1740.000      0.000      0.000      0.000
GR    2364.000   -130.000   2356.400      7.000   2350.000   1600.000   2346.400   1690.000   2350.000    185.000
GR    2348.800      2.000   2348.700   2182.000   2348.400   2288.000   2350.600   2320.000   2340.700   2358.000
GR    2340.700   2584.000   2352.300   2426.000   2360.200   2477.000   2360.200   2531.000   2360.500   2734.000
GR    2356.900   2526.000   2356.100   2519.000   2364.000   3100.000   2368.000   3329.000      0.000      0.000

NC      1.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
NH      4.000      0.140   1420.000      0.140   2165.000      0.040   2235.100      0.045   2730.000      0.000
        ##########################################################################################
        ####                                                                                  ####
        ####                          RAINBOW BOULEVARD                                       ####
        ####                NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)                         ####
        ####                                                                                  ####
        ##########################################################################################
        ####  CENTERLINE = 2200                ####
X1      12.480      6.000   2160.000   2240.000     50.000     50.000     50.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000   2400.000   2400.000      0.000
GR    2356.500   2130.000   2353.500   2161.000   2343.500   2175.000   2343.600   2225.000   2360.000   2240.000
GR    2360.000   2250.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```

SB	1.850	2.000	2.000	150.000	60.000	10.000	961.500	1.000	2344.500	2343.500
X1	12.490	0.000	0.000	0.000	60.000	90.000	90.000	0.000	1.000	0.000
X2	0.000	0.000	1.000	2358.500	2360.000	0.000	0.000	0.000	0.000	0.000
X3	12.490	0.000	0.000	0.000	0.000	0.000	0.000	2400.000	2400.000	0.000
NH	4.000	0.140	1330.000	0.140	2283.000	0.035	2375.000	0.045	2681.000	0.000
	####	CENTERLINE = 2313								
X1	12.550	14.000	2283.000	2375.000	310.000	310.000	310.000	0.000	0.000	0.000
GR	2372.000	460.000	2364.000	1110.000	2360.000	1330.000	2360.000	1520.000	2360.000	1710.000
GR	2387.000	2[illegible]	2355.000	2282.000	2346.200	2305.000	2346.200	2352.000	2358.100	2375.000
GR	2366.600	2421.000	2357.500	2462.000	2366.500	2568.000	2365.400	2681.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 1.10 CEHV= 0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING. REACH #### FROM KOVAL LAKE TO UPRR (THROUGH CASING PROPERTY AND #### CLOSED CONDUIT) WAS MODELED BY CCE IN LIFWBOL. STARTING #### WSEL'S ARE TAKEN FROM COE HEC2 RUN. #### CENTERLINE = 2060

8.64	4.33	2136.93	2135.93	213 .11	2137.90	1.96	1.00	0.00	2140.60
4100.	.	4100.	0.	0.	365.	0.	0.	0.	2140.60
.00	0.00	11.24	0.00	0.000	0.025	0.000	0.000	2131.60	2007.26
0.0.8978	3.	3.	3.	0	14	0	0.00	93.30	2100.56

CCHV= 1.3.4 CEHV= 1.5.0
*SECNO 8.550

3301 HV CHANGED MORE THAN HVINS

3885 20 TRIALS ATTEMPTED WSEL,CWSEL
JNION PACIFIC RAILROAD #### SPECIAL BRIDGE ROUTINE

8.65	5.12	2137.12	2135.35	0.00	2138.20	1.07	1.04	0.27	2144.00
4100.	.	4100.	0.	0.	493.	0.	0.	0.	2144.00
0.00	0.00	8.32	0.00	0.000	0.025	0.000	0.000	2132.00	2000.00
0.0.2533	10.	10.	10.	24	11	0	1.00	95.00	2196.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2134.35 ,NOT 2137.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHL	ELCHD
	1.25	1.56	2.60	95.00	98.00	96.00	330.00	0.00	2132.30	2132.00

*SECNO 8.660
PRESS FLOW BECAUSE EGLWC OF 2141.03 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	TOPWID	ENDST

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2140.96	2141.03	0.00	0.	4100.	330.	330.	2137.80	2144.60

ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG
THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER
WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.
FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3560

8.66	8.14	2141.44	.41	1.00	2142.86	0.43	2.66	0.00	2144.30
4100.	0.	4100.	0.	0.	731.	0.	1.	0.	2144.30
0.00	0.00	9.25	0.00	0.000	0.025	0.000	0.000	2132.30	2080.00
0.010567	58.	59.	58.	2	0	0	0.00	96.00	2096.00

*SECNO 8.741

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

FLAMINGO ROAD OVERPASS
NORMAL GROUND SECTION UTILIZED
CENTERLINE = 216
THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS
SOUTH OF FLAMINGO WASH. FLOWS ADJUSTED UPSTREAM BASED
ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR15_SPLIT)

8.74	3.45	2141.75	214 .75	.00	2142.25	1.49	.72	0.53	2166.30
4100.	0.	4100.	0.	0.	418.	0.	7.	1.	2145.30
0.00	0.00	9.80	0.00	0.000	0.035	0.000	0.000	2137.30	2078.88
0.012748	45.	45.	45.	3	18	0	0.00	142.40	2221.28

CONV= .11 CENV= 0.310
*SECNO 8.940

3205 DIVIDED FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HWINS

```
         ####          CENTERLINE =  2610                              ####
         ####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SWALE XING ####
         ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACTUALLY CUTS INTO ####
         ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00        ####
    8.94      6.22  2146.52     0.00      0.00  2146.96      0.43      7.61       0.11  2146.20
  4100.       512.     3501.      87.       271.     617.       48.       24.       11.  2150.20
    .17       1.39     5.67      1.83      0.048    0.040     0.045     0.000  2142.30  2157.27
0.014586    1030.    1060.     1355.         5        5         1      0.00     604.17  2993.13

*SECNO 9.100

3301 HV CHANGED MORE THAN HWINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
         ####          CENTERLINE =  2200                              ####
    9.16      4.77  2158.67  2158.67      0.00  2160.66      1.99      9.43       0.47  2161.60
  4100.        0.     4100.      0.        0.      362.       42.       20.       0.  2168.40
    .17       0.       11.32     0.00     0.000    0.040     0.000     0.000  2153.90  2151.66
0.016350    1243.    1230.     1170.         3       15         0      0.00      62.29  2243.35

1490 AH CARD USED
*SECNO 9.430

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HWINS

         ####          CENTERLINE =  2300                              ####
    9.43      4.21  2175.81  2174.95      0.00  2176.72      1.21     15.98       0.08  2176.90
  4100.        0.     4078.     21.        0.      462.       62.       96.       21.  2176.10
    .18       0.       6.34     0.35     0.000    0.040     0.170     0.000  2171.30  2273.35
0.019665    1316.    1330.     1280.        10       15         8      0.00     360.37  3442.14

1490 AH CARD USED
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TIA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	TOPWID	ENDST

*SECNO 9.62

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE = 259.						####	
9.62	4.13	2186.93	0.00	0.00	2187.49	0.56	10.71	0.06	2188.30
4100.	13.	2905.	1132.	6.	411.	685.	74.	42.	2185.90
.25	2.22	7.17	1.73	.045	0.043	0.000	0.000	2182.80	2422.97
0.011495	935.	1021.	1005.	4	3	0	1.00	986.13	4840.91

*SECNO 9.810

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELCEA= 2196.80 ELREA= 2203.20

####		CENTERLINE = 2670						####	
9.81	5.43	2191.39	2197.52	.00	2198.73	1.14	11.57	0.17	2196.80
4100.	264.	5836.	0.	80.	436.	0.	92.	54.	2203.20
.23	3.25	8.81	0.00	0.045	0.043	0.000	0.000	2192.10	2528.67
0.011316	950.	976.	950.	8	18	0	0.00	230.08	2758.75

1498 XH CARD USED
*SECNO 10.14

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE = 13000	####
####	CAMERON STREET NOT MODELED. THIS IS A SMALL XING	####
####	THAT IS NEAR GRADE AT THE CHANNEL AND ACTUALLY CUTS INTO	####
####	CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 10.09	####
####	LEFT BANK INEFFECTIVE FLOW AT STA 9490.	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	AACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELPIA	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST
10.4	7.00	2220.00	2220.00	0.00	2220.64	0.63	10.09	0.05	2220.00
4100.	974.	3126.	0.	329.	430.	0.	114.	70.	2220.00
0.29	1.55	7.27	0.00	0.000	0.040	0.000	0.000	2213.00	8879.91
0.006289	1095.	1246.	1250.	16	12	0	0.00	1007.64	10980.01

1450 NH CARD USED
*SECNO 10.130

3265 DIVIDED FLOW

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2830
LEFT BANK INEFFECTIVE FLOW AT STA 2239.

10.16	6.28	2223.48	2223.48	0.00	2224.36	0.88	3.43	0.07	2224.40
4100.	1166.	2514.	0.	357.	336.	0.	122.	76.	2225.50
0.30	3.32	8.67	0.00	0.065	0.040	0.000	0.000	2217.20	1891.62
0.009991	351.	470.	500.	2	10	0	0.00	356.98	2594.73

CCHV= 1.10 CEHV= 0.300
CCHV= 0.10 CEHV= 0.300
*SECNO 10.310

10.31	6.16	2231.06	0.00	0.00	2232.19	1.13	7.75	0.08	2235.90
41[illegible].	.	41[illegible].	0.	0.	481.	0.	134.	81.	2236.40
0.33	0.10	8.63	0.00	0.000	0.040	0.000	0.000	2224.90	2203.81
0.0 7203	921.	920.	920.	3	0	0	0.00	105.91	2309.71

CCHV= 0.300 CEHV= 0.300
*SECNO 10.330

3311 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED ,SEL,C,SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

DECATUR BOULEVARD

```
        ####                    SPECIAL BRIDGE ROUTINE                    ####
        ##########################################################################
        ####  CENTERLINE = 2373
    10.33      7.12  2237.12  2237.12      0.00  2240.69      3.57      1.20      1.22  2238.00
    4100.        1.     4100.      0.        0.     271.        0.      135.       81.  2238.00
     0.34      0.00     15.15     0.00     0.000    0.040     0.000     0.000  2230.00  2350.00
0.0186576      113.      113.      113.        20        8         0      0.00     38.00  2388.00

SPECIAL BRIDGE
5227 DOWNSTREAM ELEV IS   2234.87 ,NOT   2237.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
SB  XK        XKOR      COFQ      RDLEN     BWC       BHP       BAREA     SS        ELCHL     ELCHD
     1.25      1.50      2.80      1.00     37.40      5.48     294.00      0.00  2230.50   2230.00
*SECNO 10.340
 PRESS FLOW BECAUSE EGLWC OF   2247.17  EXCEEDS 1.5 DEPTH
3301 HV CHANGED MORE THAN HVINS
PRESSURE FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
  2241.65   2247.17     0.00         0.      4100.      294.      294.     2241.00   2242.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2242.00 ELREA=     2242.00
    10.34      8.13  2239.33      0.00      0.00  2241.65      2.32      0.96      0.00  2235.00
    4100.        0.     4100.      0.        0.     336.        0.      138.       91.  2242.00
     0.34      0.00     12.22     0.00     0.000    0.040     0.000     0.000  2230.50  2350.00
0.0168842       95.       95.       95.         4         0         0      0.00     38.00  2388.00

6930,RDST NOT ON GR CARD   1810.00
*SECNO 10.490
3301 HV CHANGED MORE THAN HVINS
        ####  CENTERLINE =  2610
    10.49      6.13  2244.45      0.00      0.00  2244.57      0.12      2.26      0.66  2241.90
    4100.        0.     4100.      0.        0.     1440.       0.      152.       86.  2244.40
     0.42      0.00      2.34      0.31     0.000    0.040     0.045     0.000  2238.40  2495.63
0.0 1401       65.       79.       71.         5         0         0      0.00    492.51  2988.14
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

CLWV= 0.100 CEWV= 0.300
*SECNO 10.700

3301 HV CHANGED MORE THAN HVINS

3665 25 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2150

10.70	2.93	2254.83	2254.83	0.00	2256.66	0.75	3.92	0.20	2271.60
4100.	0.	4100.	0.	0.	576.	0.	178.	97.	2256.60
0.46	0.00	7.11	0.00	0.000	0.40	0.000	0.000	2252.80	2108.37
0.016654	1113.	1113.	1160.	20	22	0	0.00	374.44	2479.81

*SECNO 10.960

3265 DIVIDED FLOW

CENTERLINE = 2680

11.96	6.89	2269.89	0.00	0.00	2270.18	0.59	14.50	0.02	2270.60
4100.	1095.	3005.	0.	302.	438.	0.	198.	109.	2275.60
0.52	3.63	6.86	1.00	0.045	0.033	0.000	0.000	2263.00	1462.36
0.016384	1437.	1365.	1280.	7	0	0	0.00	397.00	2798.30

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2560

11.15	5.04	2275.24	0.00	0.00	2276.85	1.65	6.39	0.32	2278.60
4100.	0.	4100.	0.	0.	398.	0.	212.	115.	2281.80
0.55	0.00	10.31	0.00	0.000	0.033	0.000	0.000	2269.40	2524.28
0.016222	1038.	1010.	985.	6	0	0	0.00	76.93	2600.81

*SECNO 11.250

CENTERLINE = 2460

11.26	5.15	2279.47	0.00	0.00	2281.19	1.69	4.19	0.11	2283.60
4100.	0.	4100.	0.	0.	383.	0.	218.	116.	2288.10
0.57	0.00	10.44	0.00	0.000	0.033	0.000	0.000	2273.90	2430.39
0.016781	858.	845.	840.	2	0	0	0.00	79.74	2510.13

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARGB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 25 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2288.40 ELREA= 2288.40

JONES BOULEVARD
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2725

11.31	6.64	2286.64	2286.64	0.00	2290.00	3.36	1.29	0.83	2280.00
4100.	0.	4100.	0.	0.	279.	0.	219.	116.	2280.00
0.57	0.00	14.70	0.00	0.000	0.031	0.000	0.000	2280.00	2704.00
0.003536	18.	18.	20.	20	11	3	1.00	42.00	2746.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2284.27 ,NOT 2286.64 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDEP	RDLEN	BWC	BWP	EAREA	SS	ELCHL	ELCHD
	1.25	1.55	2.80	0.00	41.50	13.50	224.00	0.00	2290.40	2280.00

*SECNO 11.320
PRESS FLOW BECAUSE EGLWC OF 2297.32 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	WJ	WWEIR	GPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2294.76	2297.32	0.00	577.	3530.	224.	224.	2288.40	2291.40

CENTERLINE BT CARDS = 2690

11.32	11.53	2291.93	0.00	0.00	2292.66	0.72	2.66	0.00	2280.40
4100.	354.	3530.	216.	122.	484.	216.	220.	117.	2280.40
0.57	2.95	7.29	1.00	0.045	0.031	0.140	0.000	2280.40	2682.86
0.000887	70.	70.	70.	2	3	4	1.00	113.41	2756.27

6930 ,RDST NOT ON BR CARD 1150.00
6930 ,RDST NOT ON BR CARD 1350.00
6930 ,RDST NOT ON BR CARD 1650.00
6930 ,RDST NOT ON BR CARD 1825.00

8930 ,RDST NOT ON GR CARD 2150.00
8930 ,RDST NOT ON GR CARD 2230.00

SECNO	DEPTH	CWSEL	CRIWS	∗SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	WCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

∗SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED ∗SEL,CWSEL
3695 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2370

11.45	5.11	2294.31	2294.31	0.00	2256.28	2.26	1.43	0.77	2303.20
4100.	.0	4100.	0.	0.	340.	0.	229.	118.	2301.60
.56	0.00	12.03	0.00	0.000	0.035	0.000	0.000	2288.90	2326.42
0.011463	675.	660.	655.	20	14	0	0.00	75.81	2302.23

CCHV= 1.100 CEHV= 1.300
∗SECNO 11.640

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2350

11.64	5.91	2353.91	1.34	0.00	2304.88	1.57	5.53	0.37	2310.40
4100.	.0	4100.	0.	0.	407.	0.	237.	120.	2305.10
.62	0.00	10.37	0.00	0.000	0.035	0.000	0.000	2291.40	2290.64
0.006681	1[illegible].	1000.	1000.	4	0	0	0.00	77.87	2368.50

∗SECNO 11.750

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2360

11.79	6.11	2312.11	2312.11	0.00	2314.43	2.33	6.89	0.23	2319.20
4100.	.0	4100.	0.	0.	335.	0.	244.	121.	2316.90
.63	0.00	12.24	0.00	0.000	0.035	0.000	0.000	2306.00	2315.78
0.011387	810.	810.	810.	2	8	0	0.00	73.18	2368.96

CCHV= 1.300 CEHV= 1.500
∗SECNO 11.820

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 2. TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

TORREY PINES DRIVE
SPECIAL BRIDGE ROUTINE

11.62	6.68	2316.68	2316.68	1.11	2320.31	3.33	2.18	0.50	2318.00
4100.	0.	4100.	0.	0.	280.	0.	245.	121.	2318.50
0.64	0.00	14.65	0.00	0.000	0.040	0.000	0.000	2310.00	3285.08
0.017725	125.	155.	160.	20	9	0	0.00	42.33	3331.42

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2314.27 ,NOT 2316.68 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEQ	RDLEN	BWC	EWP	EAREA	SS	ELCHL	ELCHD
	1.25	1.50	2.63	0.00	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.640
PRESS FLOW BECAUSE EGLWC OF 2327.91 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	HS	WEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2324.48	2327.90	0.00	838.	3272.	224.	224.	2319.00	2320.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.84	7.56	2319.16	0.00	0.00	2321.65	2.59	1.64	0.00	2319.50
4100.	0.	4100.	0.	0.	317.	0.	246.	121.	2319.50
0.64	0.00	12.91	0.00	0.000	0.040	0.000	0.000	2311.50	3285.03
0.011214	75.	75.	75.	4	1	4	0.00	42.45	3331.47

6930 ,REST NOT ON BR CARD 2995.99
6950 ,REST NOT ON BR CARD 3251.00

SECNO	DEPTH	CWSEL	CRIWS	#SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XAR	#TR	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	TOPWID	ENDST

*SECNO 11.670

3301 HV CHANGED MORE THAN HVINS

```
      ####                CENTERLINE =  10000,
    11.67      6.36   2321.96      0.00      0.00   2323.24      1.28      1.20      0.36   2325.50
   4100.         .         .         .         .       452.         .       247.       122.   2325.50
     .64       0.00      9.37      0.00      0.000     0.035     0.000     0.000   2315.10   2297.66
0.0050077       300.      161.       70.         2         0         0      0.00     84.68   2382.34
```

CCHV= .100 CEHV= .300
*SECNO 11.995

3301 HV CHANGED MORE THAN HVINS

```
      ####  CENTERLINE =  2220
    11.99      5.12   2326.32      0.00      0.00   2327.95      1.98      4.54      1.21   2330.80
   4100.         .         .         .         .       363.         .       253.       123.   2332.90
     .66       0.00     11.28      0.00      0.000     0.035     0.000     0.000   2320.90   2168.02
0.0011429       470.      645.      650.         2         3         3      0.00     84.60   2252.62
```

*SECNO 12.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

```
      ####  CENTERLINE =  2310
    12.15      5.19   2331.18      0.00      0.00   2333.12      1.95      5.02      1.01   2335.30
   4100.         .         .         .         .       376.         .       256.       124.   2337.50
     .67       0.00     10.90      0.00      0.000     0.031     0.000     0.000   2326.00   2274.64
0.0017289       485.      538.      565.         3         3         3      0.00     84.27   2358.91
```

CCHV= .300 CEHV= .500
*SECNO 12.150

```
      ##########################################################################
      ####                  TROPICANA AVENUE                              ####
      ####          NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)              ####
      ##########################################################################
      ####  CENTERLINE =  10000
    12.15      6.11   2333.20      0.00      0.00   2335.14      1.93      2.07      0.04   2338.60
   4100.         .         .         .         .       368.         .       254.       125.   2338.60
     .66       0.00     11.15      0.00      0.000     0.031     0.000     0.000   2327.10    569.79
0.0018539       280.      301.      300.         4         1         0      0.00     72.42    842.21
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	WLOB	SCH	GROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2331.02 ,NOT 2333.21 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SS	XK	XKOR	COEQ	RDLEN	BWC	BWP	BAREA	SS	ELCHL	ELCHD
	1.05	1.56	3.00	100.00	48.00	18.00	500.00	2.00	2328.70	2327.10

*SECNO 12.166
6646 ,FLOW IS BY WEIR AND LOW FLOW

3301 HV CHANGED MORE THAN HVINS

3421 BRIDGE W.S.= 2339.29 BRIDGE VELOCITY= 6.15 CALCULATED CHANNEL AREA= 542.

EGPRS	EGLWC	HS	QWEIR	QLOW	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2334.83	2339.37	6.08	431.	3695.	500.	393.	2337.10	2338.60

12.19	11.25	2339.46	0.00	0.00	2339.67	0.42	4.74	0.00	2339.70
4100.	0.	4100.	0.	0.	791.	0.	263.	125.	2339.70
0.69	0.00	5.19	0.00	0.000	0.031	0.000	0.000	2328.20	562.00
0.011698	186.	188.	188.	2	0	2	0.00	82.00	650.00

*SECNO 12.32

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

CENTERLINE = 2241.

12.32	7.39	2342.39	2342.39	0.00	2344.23	2.14	1.44	0.86	2347.10
4100.	0.	4100.	0.	0.	349.	0.	274.	127.	2347.40
0.71	0.	11.74	0.00	0.000	0.035	0.000	0.000	2334.70	2210.32
0.011692	750.	800.	750.	20	14	0	0.00	82.81	2293.13

CONV= 0.100 CEHV= 0.300
1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 2360.20

####	CENTERLINE =	2360							
12.42	7.58	2348.28	0.00	0.00	2349.82	1.55	5.53	0.06	2350.60
4100.	0.	4100.	0.	0.	411.	0.	278.	128.	2360.20
0.73	0.	9.98	0.00	0.000	0.040	0.000	0.000	2340.70	2328.92
0.008751	530.	850.	595.	2	0	0	0.00	82.50	2411.43

CCHV= 0.300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.460

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2400.00 ELREA= 2400.00

##
RAINBOW BOULEVARD
NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)
##
CENTERLINE = 2200

12.46	5.69	2349.19	2349.19	0.00	2351.81	2.62	2.56	0.54	2356.50
4100.	0.	4100.	0.	0.	316.	0.	279.	128.	2360.00
0.73	0.00	12.99	0.00	0.000	0.040	0.000	0.000	2343.50	2169.31
0.018096	50.	50.	50.	20	16	0	0.00	60.87	2230.18

SPECIAL BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	WLOB	WCH	WROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

5227 DOWNSTREAM ELEV IS 2347.72 ,NOT 2349.19 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFQ	RDLEN	BWC	ELP	BAREA	SS	ELCHL	ELCHD
	1.05	2.00	2.61	150.00	50.00	10.00	981.5	1.00	2344.50	2343.50

*SECNO 12.490

3351 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.= 2350.31 BRIDGE VELOCITY= 13.55 CALCULATED CHANNEL AREA= 276.

EGPRS	EGLWC	HS	DWEIR	GLOB	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	2354.40	0.00	0.	4100.	962.	756.	2358.50	2360.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2400.00 ELREA= 2400.00

12.49	6.85	2353.46	0.00	0.00	2354.40	0.95	2.59	0.00	2355.50
4100.	0.	+100.	0.	0.	524.	0.	260.	126.	2361.00
0.73	0.	7.82	0.00	0.000	0.041	0.000	0.000	2344.50	2166.55
0.013303	90.	90.	90.	0	0	0	0.00	67.09	2233.14

1490 NH CARD USED
*SECNO 12.550
CENTERLINE = 231.

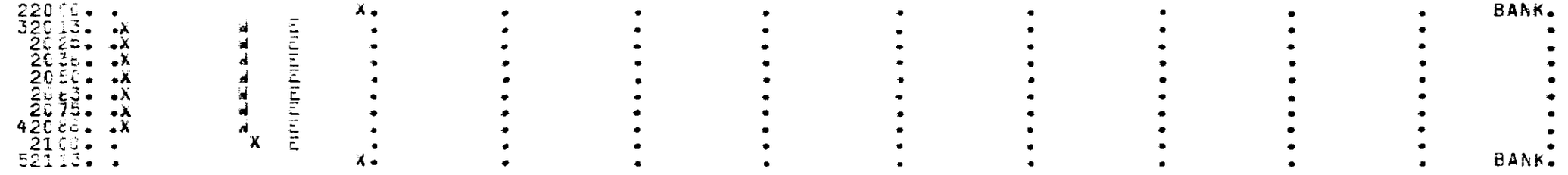
12.55	6.25	2354.46	0.00	0.00	2355.37	0.92	2.55	0.01	2355.60
4100.	0.	4100.	0.	0.	533.	0.	263.	126.	2358.10
0.74	0.00	7.69	0.00	0.000	0.035	0.000	0.000	2346.20	2285.69
0.012875	32.	31.	320.	0	0	0	0.00	82.26	2367.95

CROSS SECTION 8.54
STREAM FLAMINGO WASH, REACH 2 *
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2131. 2136. 2141. 2146. 2151. 2156. 2161. 2166. 2171. 2176. 2181.

STA-FEET



NRD= ELLC= 9999999.00 ELTRD= 9999999.00

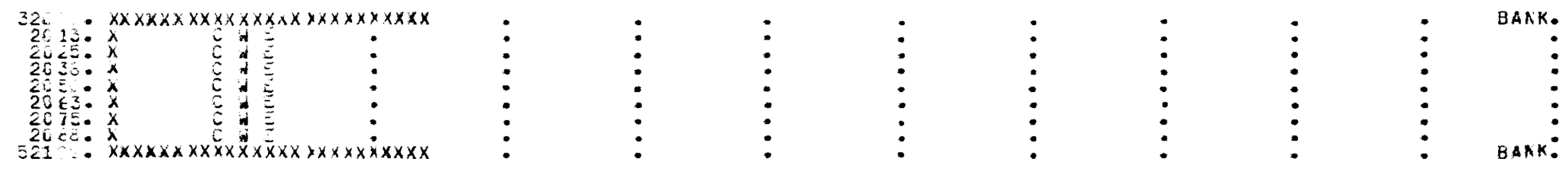
EL(I),STA(I)
2140.60 2131.60 2140.60 2131.60 2140.60 2140.60 2113.00

CROSS SECTION 3.65
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2132. 2137. 2142. 2147. 2152. 2157. 2162. 2167. 2172. 2177. 2182.

STA-FEET



NRD= ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)
2144.00 2000.00 2132.00 2096.00 2144.00 2096.00

CROSS SECTION 8.66
STREAM FLAMINGO WASH, REACH 2 *
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLP,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2132. 2137. 2142. 2147. 2152. 2157. 2162. 2167. 2172. 2177. 2182.

STA-FEET

```
 32[illegible]. .XXXXXXXXXXXXXXXXXXXXXXXX                                    BANK.
 2013. .X                                                                      .
 2043. .X                                                                      .
 2058. .X                                                                      .
 2071. .X                                                                      .
 2083. .X                                                                      .
 2095. .X                                                                      .
 2098. .X                                                                      .
 5210[illegible]. .XXXXXXXXXXXXXXXXXXXXXXXX                                   BANK.
```

NRO= 0 ELLO= 2137.80 ELTRD= 2144.60

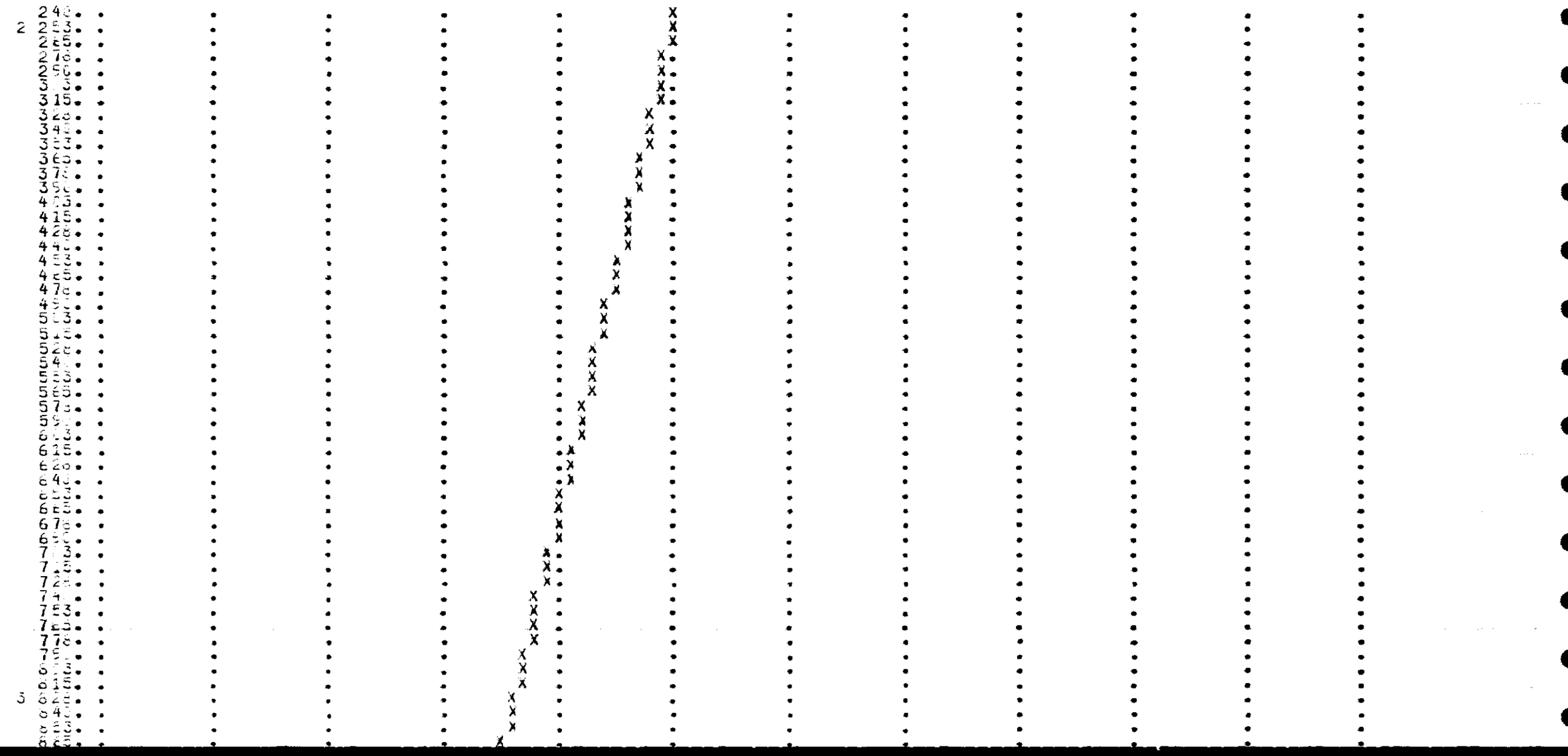
EL(I),STA(I)
2144.30 2000.00 2132.30 2000.00 2132.30 2096.00 2144.30 2096.00

CROSS SECTION 8.74
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 213[illegible]. 214[illegible]. 2145. 2150. 2155. 2160. 2165. 2170. 2175. 2180. 2185.

STA-FEET



4

5

6

BANK

BANK

NRO= 6 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

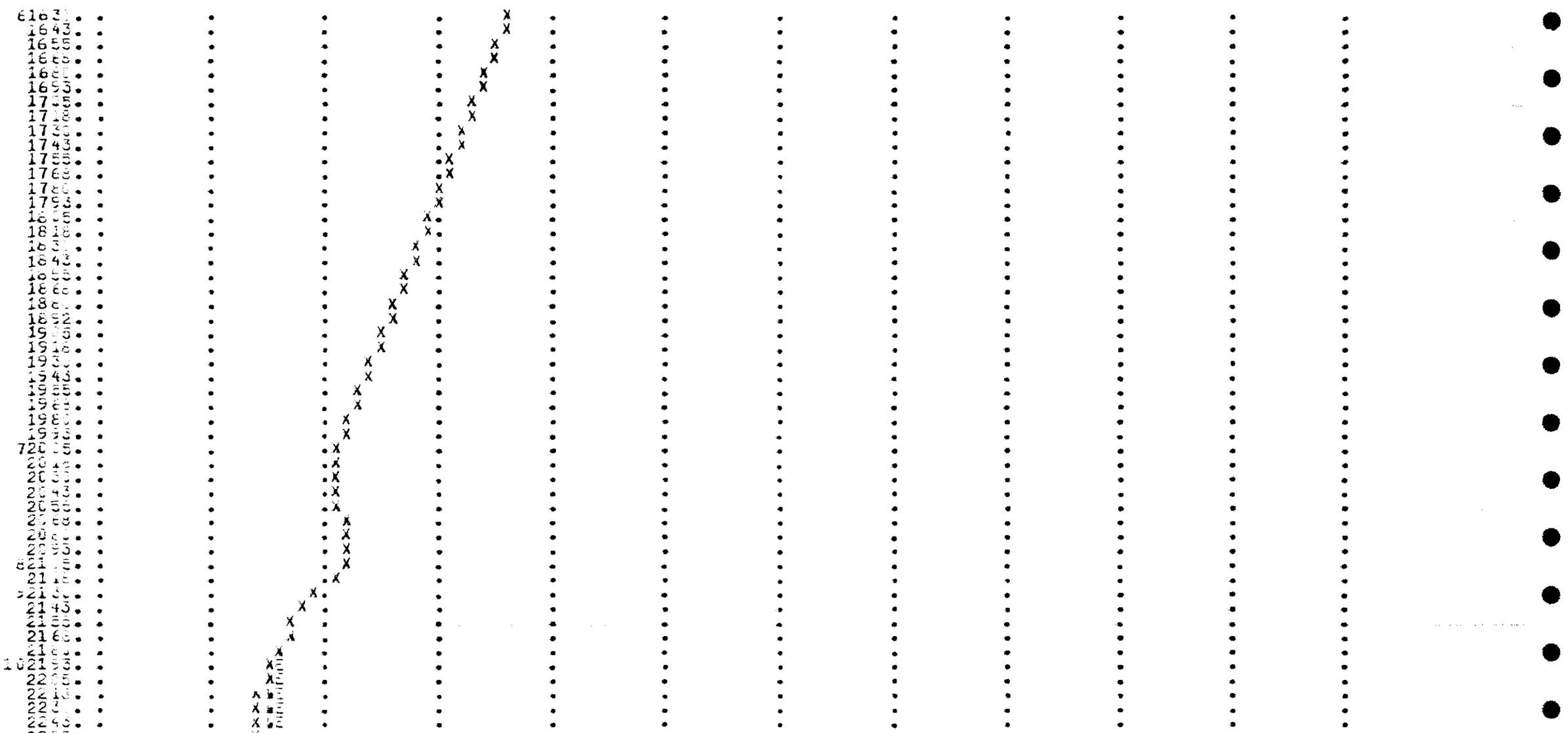
2166.20	2221.00	2166.30	2229.00	2145.30	2246.00	2145.90	2260.00		

CROSS SECTION 8.94
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

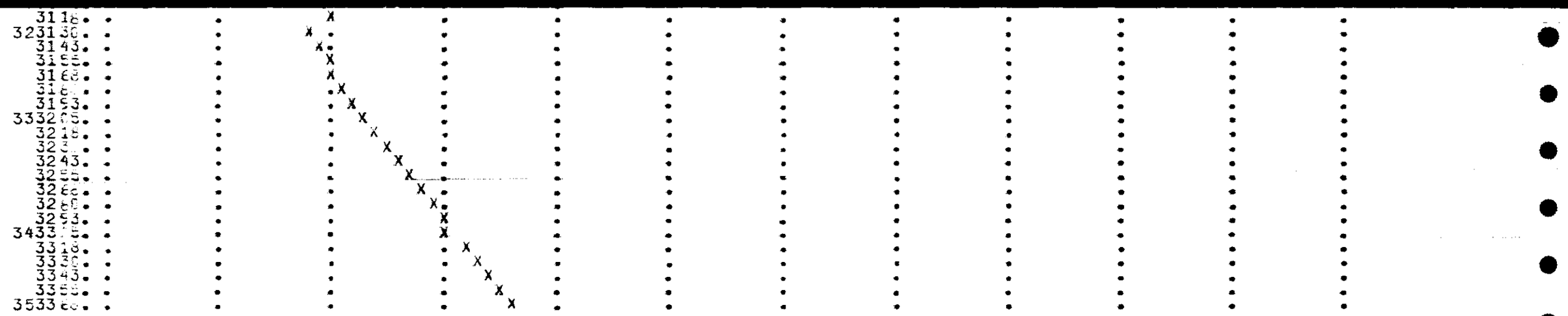
ELEV 2142. 2147. 2152. 2157. 2162. 2167. 2172. 2177. 2182. 2187. 2192.

STA-FEET



BANK

BANK



NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

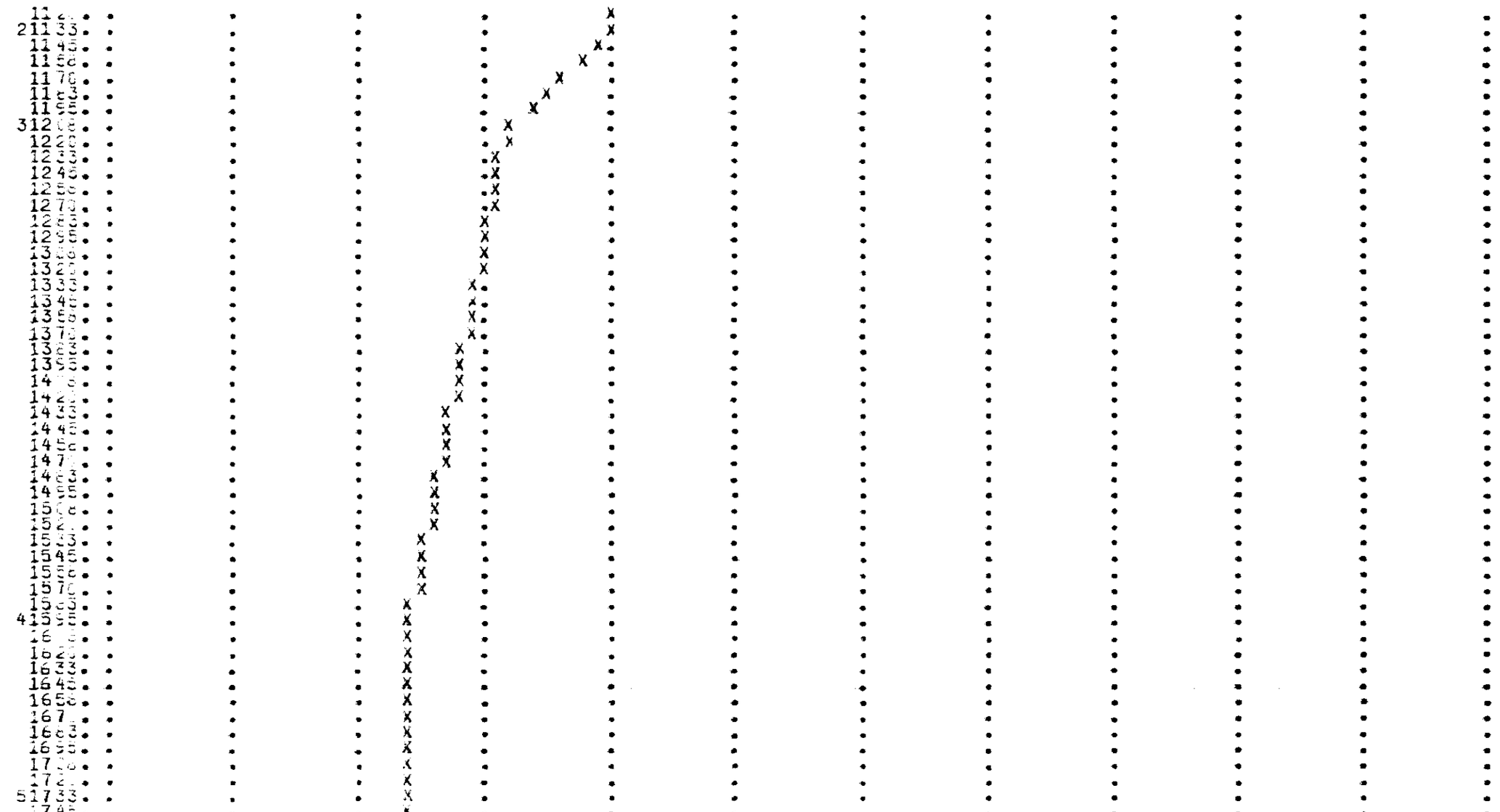
2160.00	1630.00	2160.00	1630.00	2160.00	1630.00	2160.00	1630.00	2160.00	1630.00
2152.70	2000.00	2152.80	2100.00	2151.50	2134.00	2149.50	2198.00	2148.20	2325.00
2149.20	2351.00	2147.90	2281.00	2143.30	2623.00	2142.20	2649.00	2144.60	2669.00
2149.70	2674.00	2152.10	2683.00	2151.50	2721.00	2147.70	2739.00	2146.00	2751.00
2145.60	2767.00	2150.20	2790.00	2149.50	2821.00	2148.30	2840.00	2150.90	2869.00
2149.70	2953.00	2148.30	2972.00	2148.80	2989.00	2150.50	3001.00	2153.20	3092.00
2150.90	3132.00	2153.70	3210.00	2157.20	3310.00	2160.00	3370.00		

CROSS SECTION 9.18
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2152. 2157. 2162. 2167. 2172. 2177. 2182. 2187. 2192. 2197. 2202.

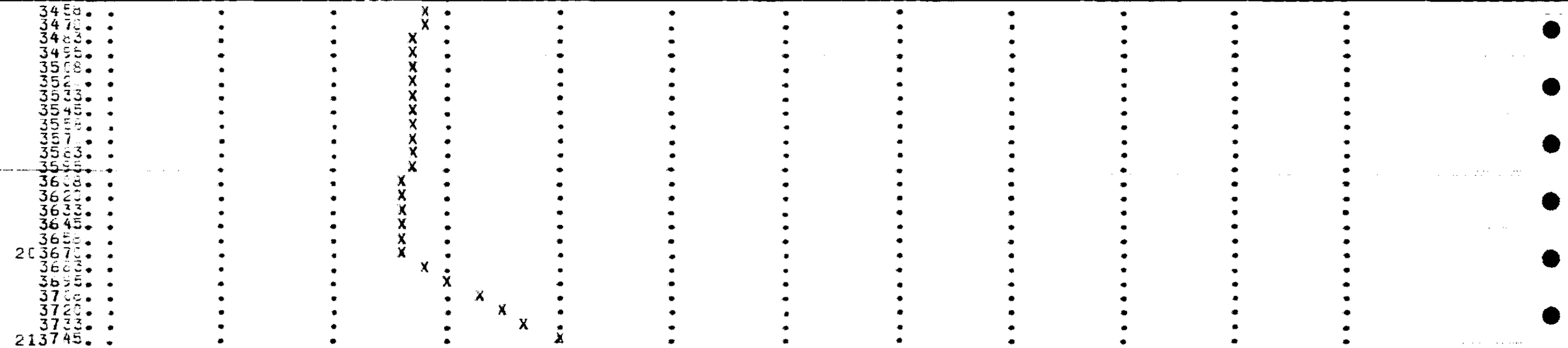
STA-FEET



BANK

BANK

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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

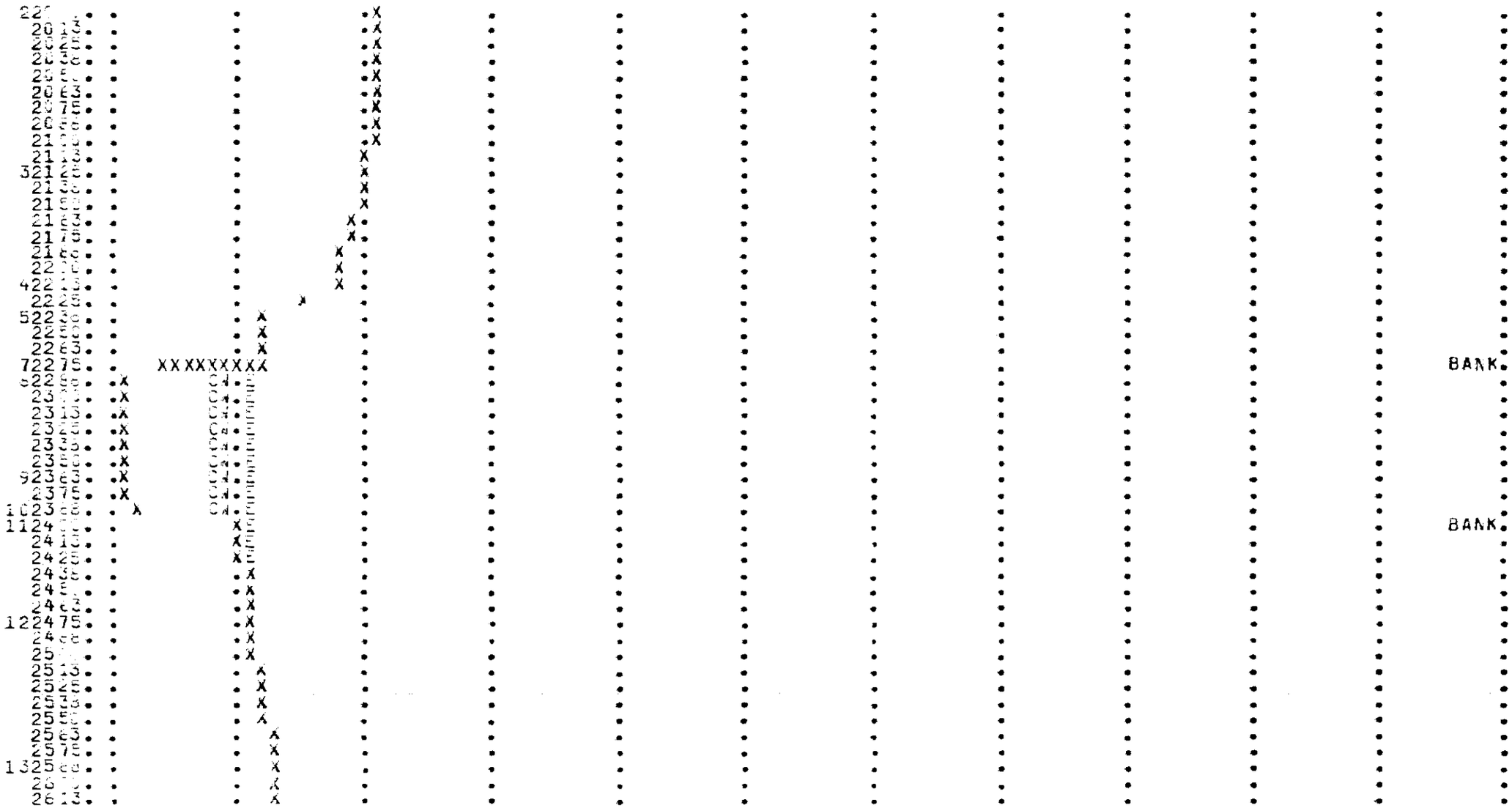
2172.00	1130.00	2168.00	1210.00	2164.00	1600.00	2164.00	1730.00	2165.00	1820.00
2161.70	2300.00	2162.30	2103.00	2161.60	2144.00	2156.20	2157.00	2153.90	2185.00
2153.90	2233.00	2166.80	2261.00	2168.40	2382.00	2167.30	2514.00	2168.50	2544.00
2168.20	2567.00	2168.90	2535.00	2168.30	2889.00	2165.00	3679.00	2172.00	3750.00

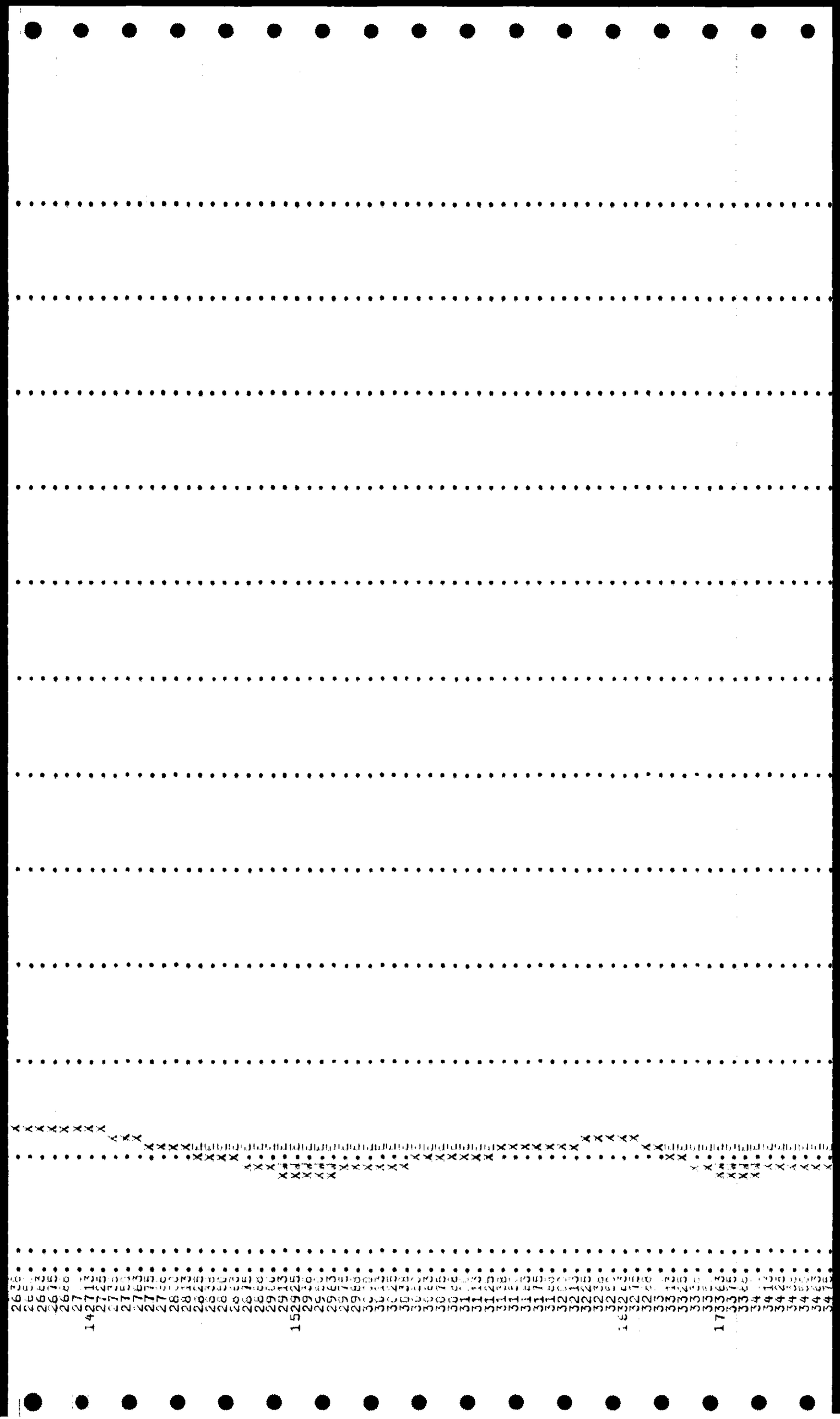
CROSS SECTION 9.43
STREAM FLAMINGO WASH, REACH 2 •
DISCHARGE= 4100.

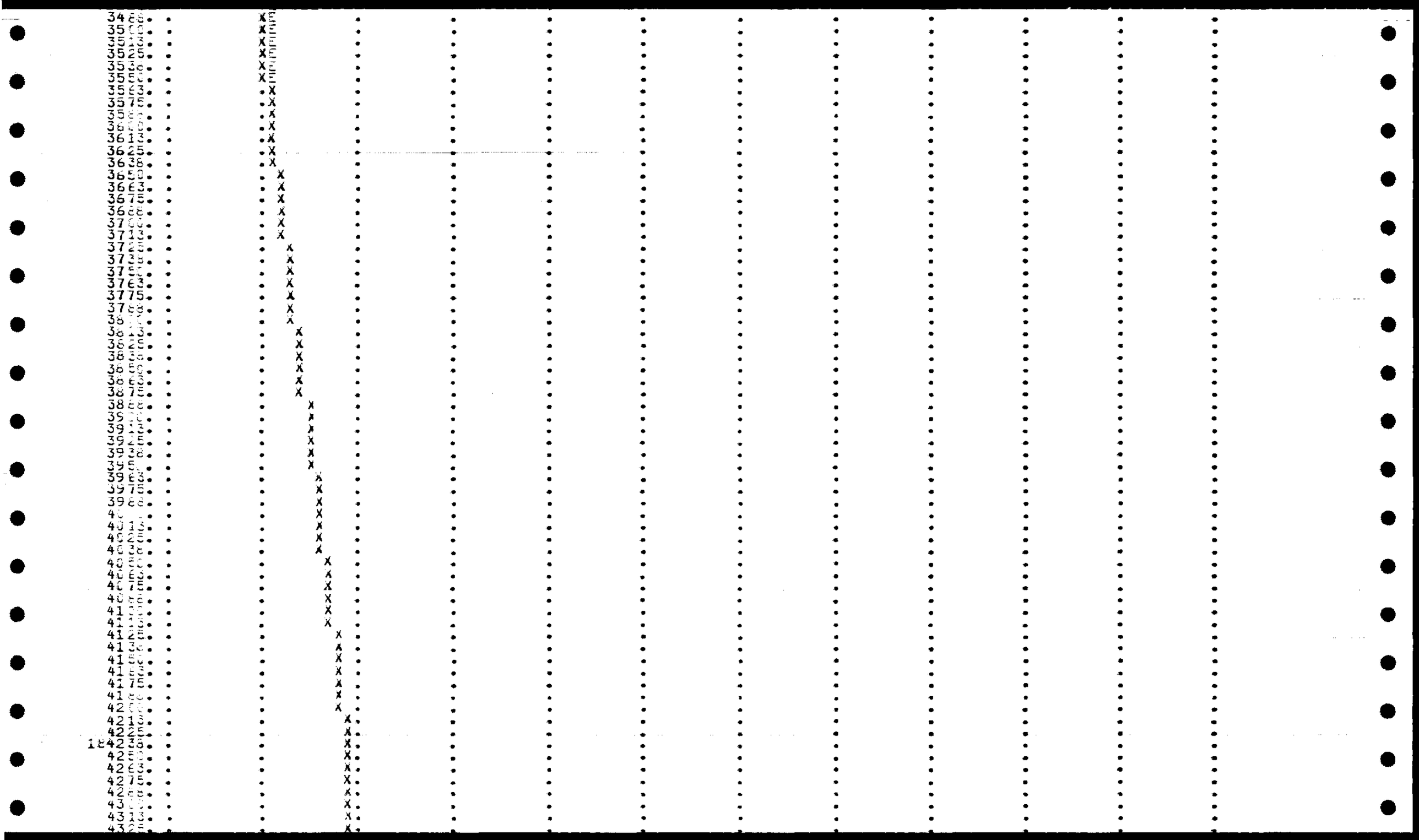
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

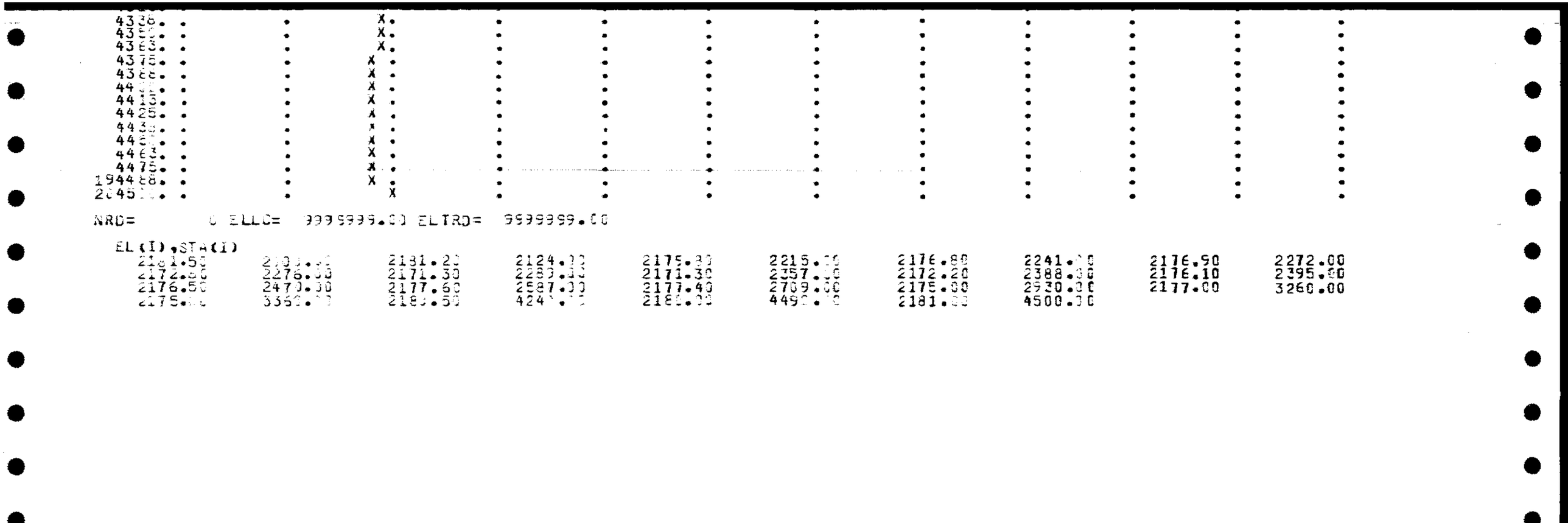
ELEV 2171. 2176. 2181. 2186. 2191. 2196. 2201. 2206. 2211. 2216. 2221.

STA-FEET









NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

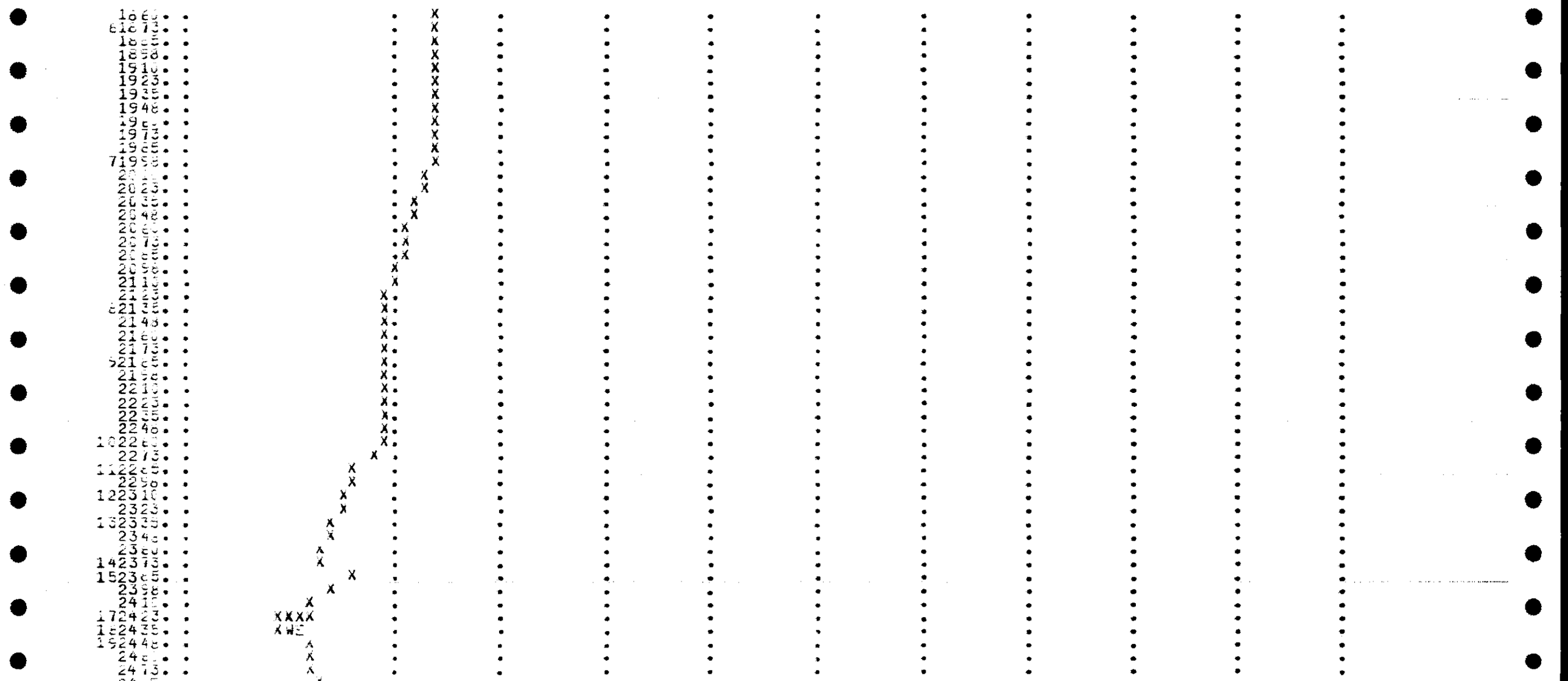
2161.50	2201.40	2181.20	2124.00	2175.80	2215.00	2176.80	2241.00	2176.90	2272.00
2172.60	2276.30	2171.30	2280.00	2171.30	2357.00	2172.20	2388.00	2176.10	2395.00
2176.50	2470.30	2177.60	2587.00	2177.40	2709.00	2175.00	2930.00	2177.00	3260.00
2175.40	3350.00	2180.50	4241.00	2180.00	4490.00	2181.00	4500.00		

CROSS SECTION 9.62
STREAM FLAMINGO WASH, REACH 2 •
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2162. 2167. 2192. 2197. 2202. 2207. 2212. 2217. 2222. 2227. 2232.

STA-FEET

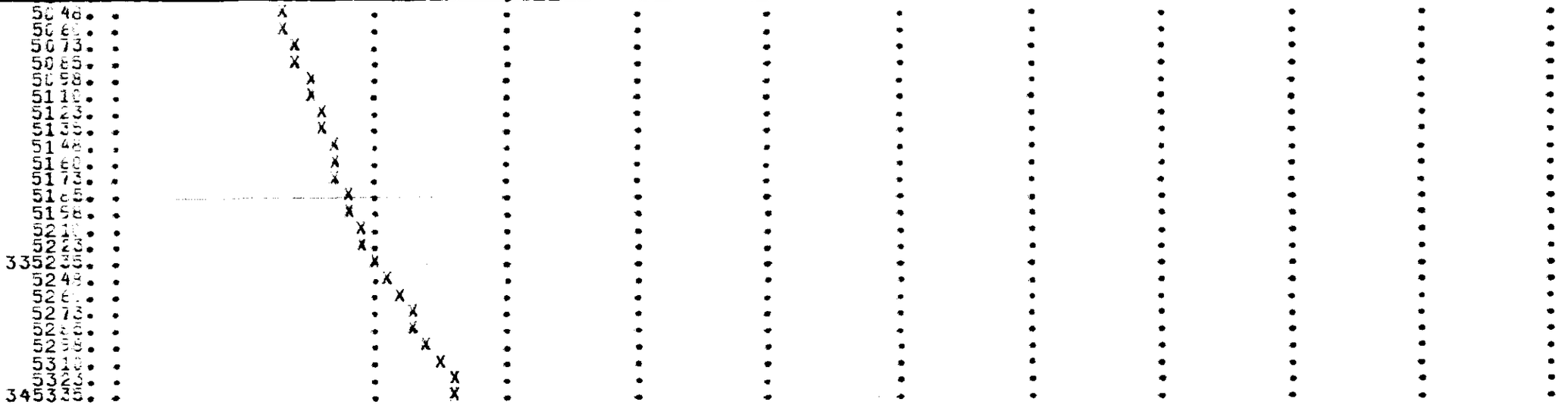


BANK

BANK

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3346
3360
3374
3388
3402
3416
3430
3444
3458
3472
3486
3500
3514
3528
3542
3556
3570
3584
3598
3612
3626
3640
3654
3668
3682
3696
3710
3724
3738
3752
3766
3780
3794
3808
3822
3836
3850
3864
3878
3892
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| | | |



NRD= 2 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

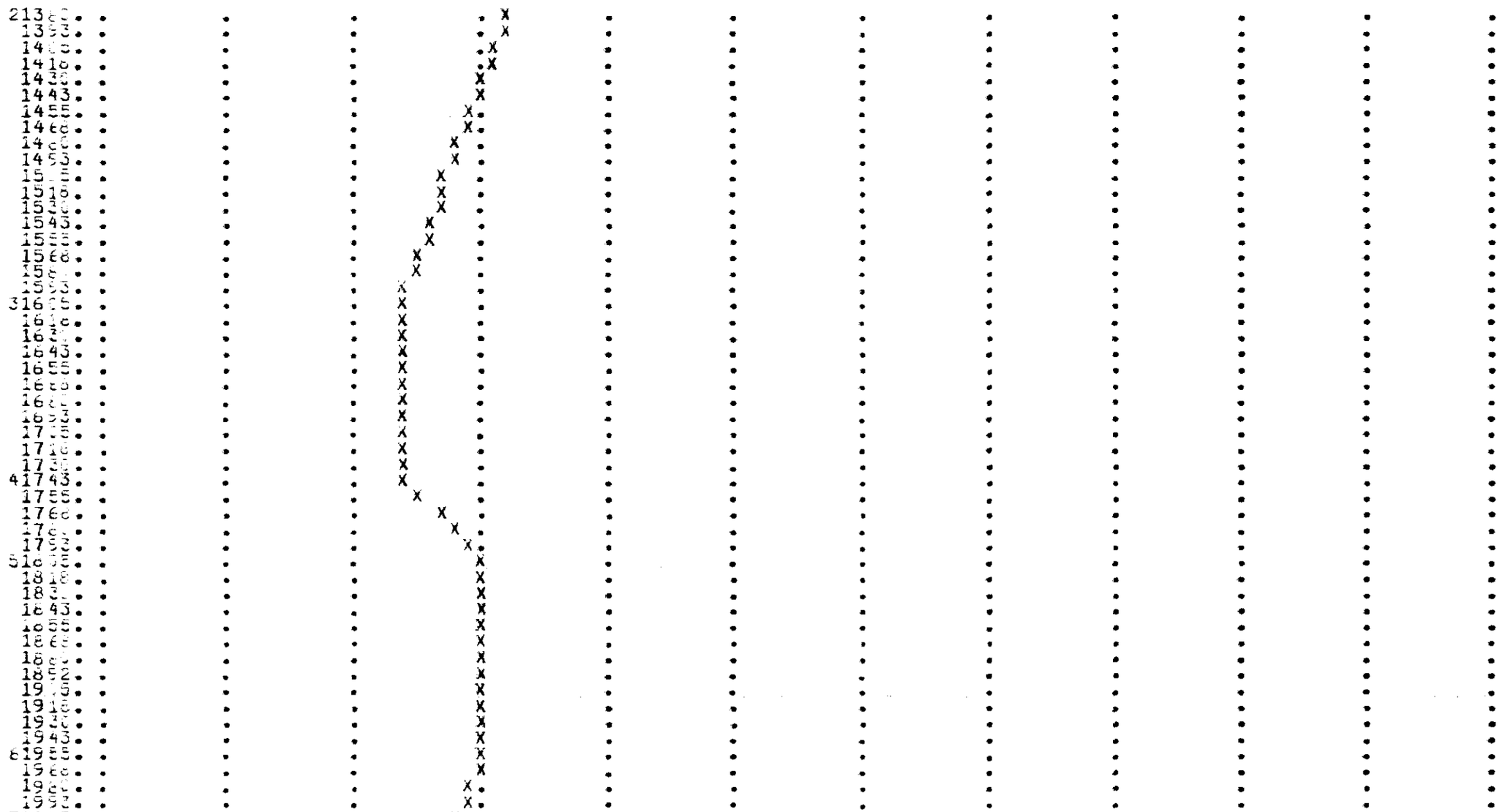
2194.00	1870.00	2194.00	1870.00	2194.00	1870.00	2194.00	1870.00	2194.00	1870.00
2193.00	2000.00	2191.40	2136.00	2191.60	2179.00	2191.60	2255.00	2190.00	2280.00
2189.60	2307.00	2189.30	2335.00	2188.50	2372.00	2190.00	2388.00	2187.90	2418.00
2186.30	2426.00	2188.30	2432.00	2188.10	2444.00	2188.30	2493.00	2186.30	2558.00
2184.40	2577.00	2184.40	2591.00	2184.80	2607.00	2182.60	2652.00	2185.90	2691.00
2187.40	2717.00	2189.30	2782.00	2189.50	3027.00	2189.50	3530.00	2185.00	4520.00
2188.00	5120.00	2192.00	5240.00	2195.00	5330.00				

CROSS SECTION 9.81
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2192. 2197. 2202. 2207. 2212. 2217. 2222. 2227. 2232. 2237. 2242.

STA-FEET



BANK

BANK

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

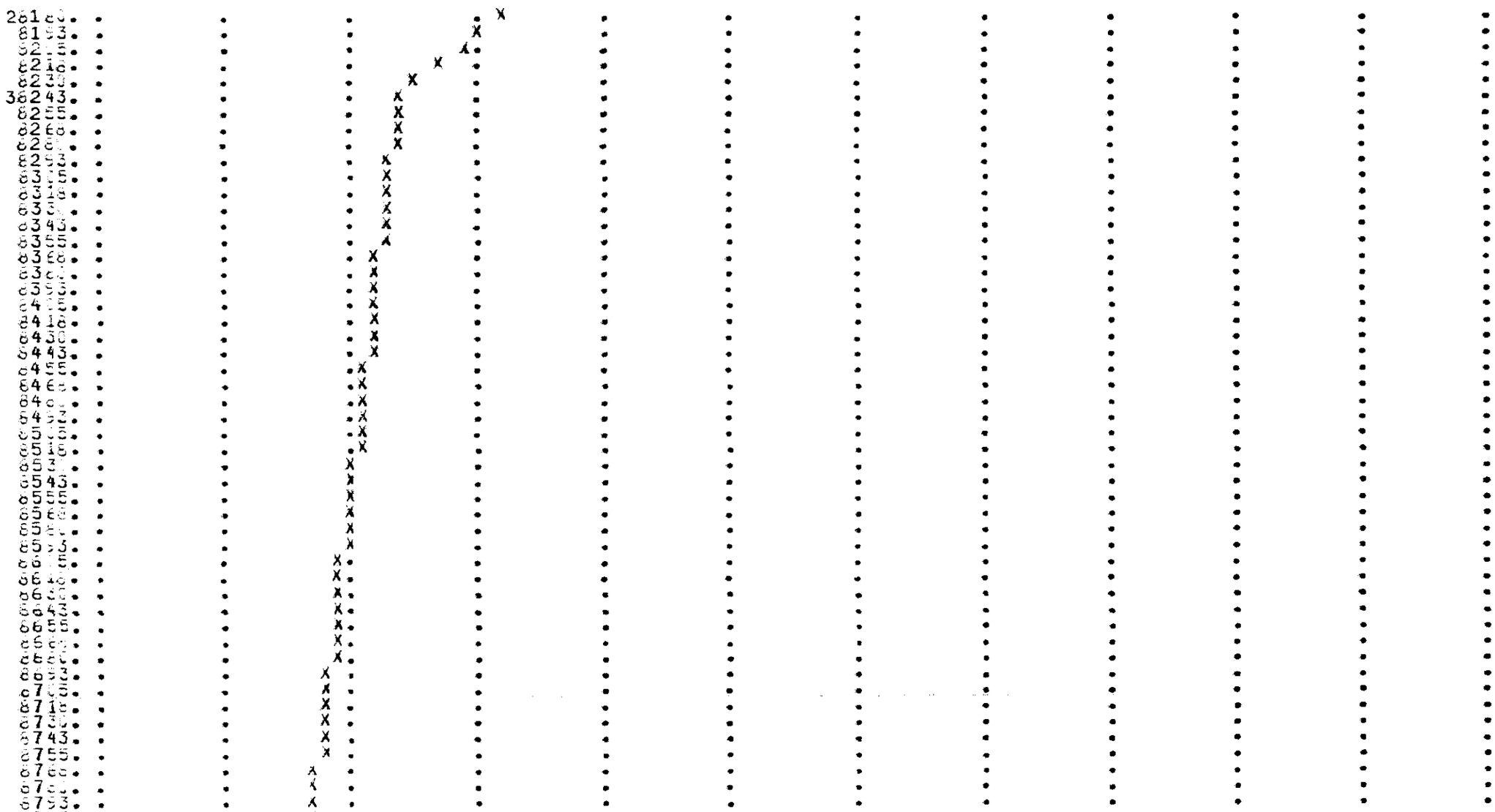
2206.00	1380.00	2204.00	1600.00	2204.00	1740.00	2207.00	1800.00	2207.00	1950.00
2206.00	2000.00	2204.00	2122.00	2203.50	2199.00	2203.20	2344.00	2203.40	2411.00
2202.00	2468.00	2198.90	2513.00	2196.40	2543.00	2196.40	2581.00	2197.40	2595.00
2196.80	2629.00	2192.10	2653.00	2192.10	2678.00	2193.30	2706.00	2196.60	2724.00
2196.30	2755.00	2203.20	2775.00	2202.60	2803.00	2202.60	3014.00	2201.60	3061.00
2199.20	3097.00	2230.10	3140.00	2199.90	3192.00	2201.80	3224.00	2203.80	3266.00
2204.00	3310.00	2208.00	3430.00						

CROSS SECTION 10.04
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

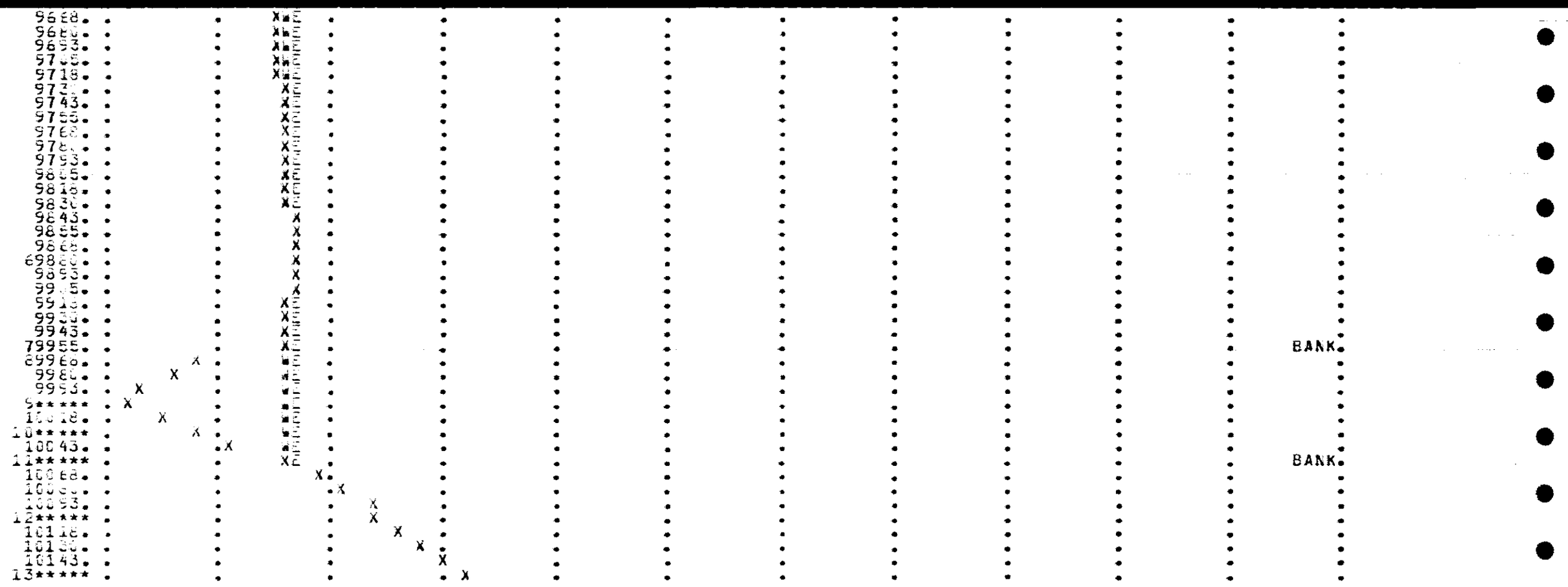
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2212. 2217. 2222. 2227. 2232. 2237. 2242. 2247. 2252. 2257. 2262.

STA-FEET



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NRD= 2 ELLC= 9999999.00 ELTRD= 9999999.00

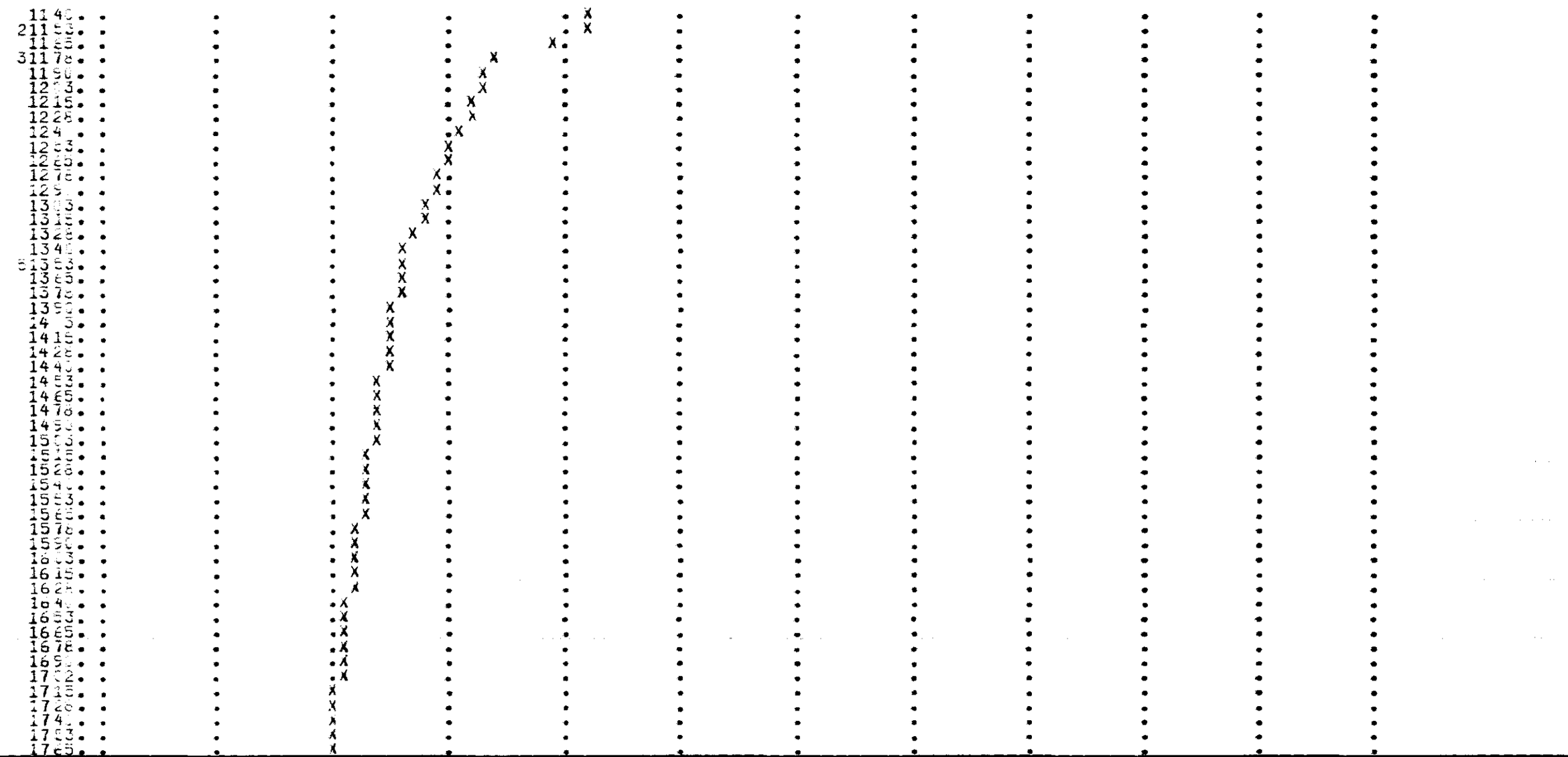
EL(I),STA(I)									
2226.00	8180.00	2224.00	8240.00	2220.00	8880.00	2218.60	9490.00	2220.50	9880.00
2221.00	9950.00	2216.00	9970.00	2213.00	10000.00	2216.00	10030.00	2220.00	10060.00
2224.00	10100.00	2223.00	10150.00						

CROSS SECTION 10.13
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

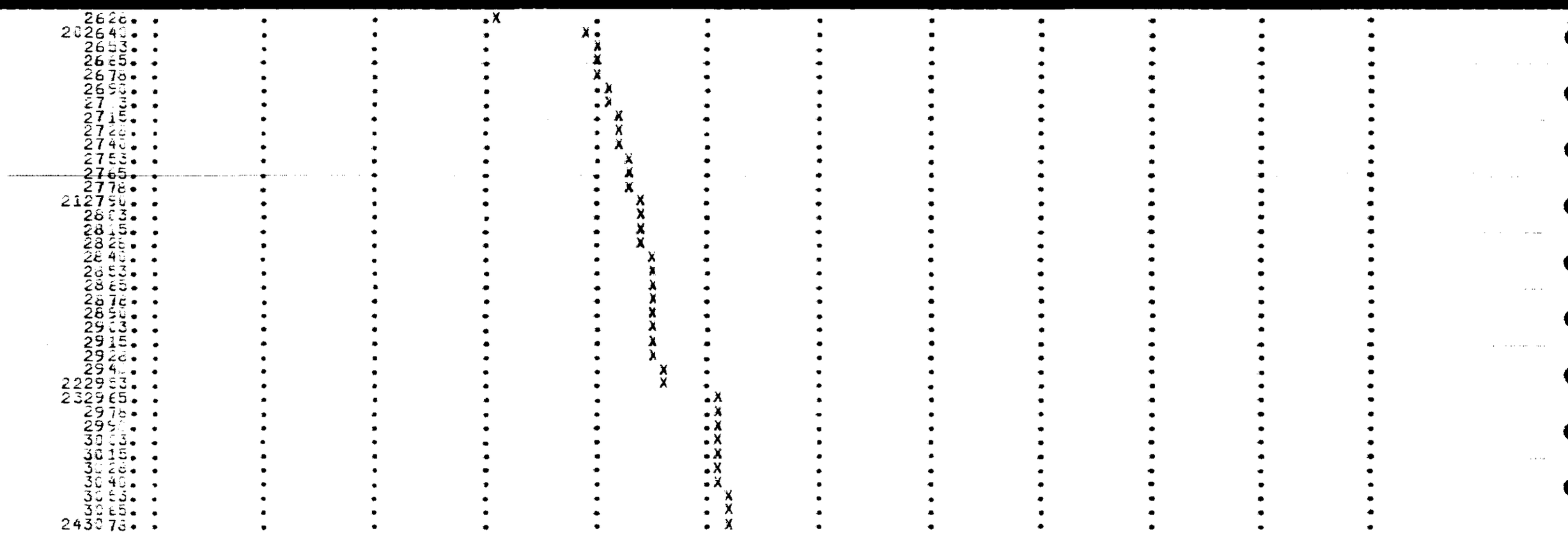
ELEV 2215. 2220. 2225. 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265.

STA-FEET



BANK

BANK



NRD= 3 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

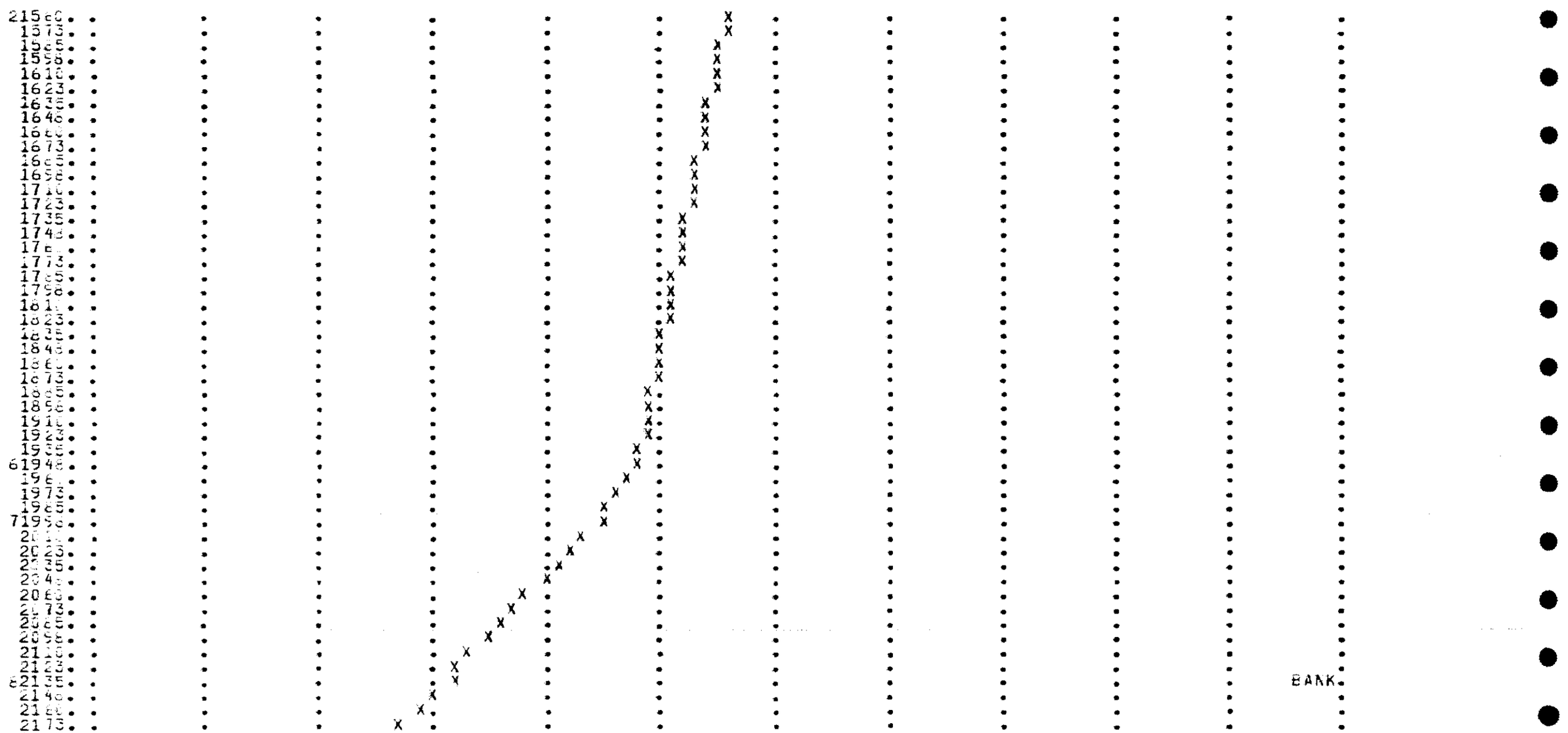
2236.00	1150.00	2232.00	1180.00	2228.00	1350.00	2228.00	1350.00	2224.00	1860.00
2221.70	2 000.00	2220.90	2197.00	2224.50	2111.00	2224.40	2288.00	2222.70	2373.00
2224.40	2489.00	2221.30	2604.00	2221.30	2521.00	2218.90	2647.00	2217.20	2569.00
2217.20	2573.00	2225.60	2697.00	2225.60	2614.00	2234.70	2638.00	2237.00	2796.00
2237.80	2947.00	2240.30	2959.00	2241.00	3083.00				

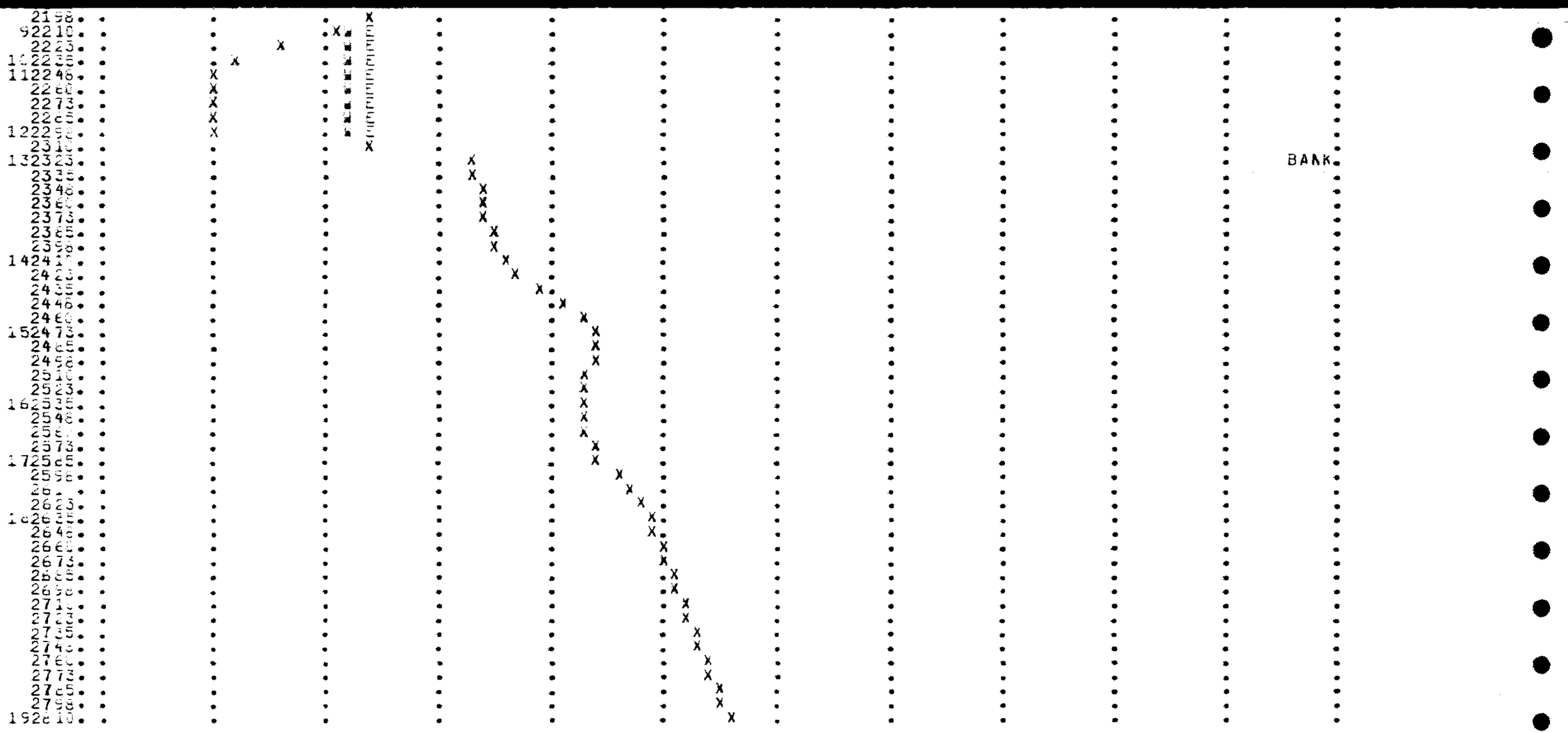
CROSS SECTION 10.31
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2220. 2225. 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270.

STA-FEET





NRD= ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

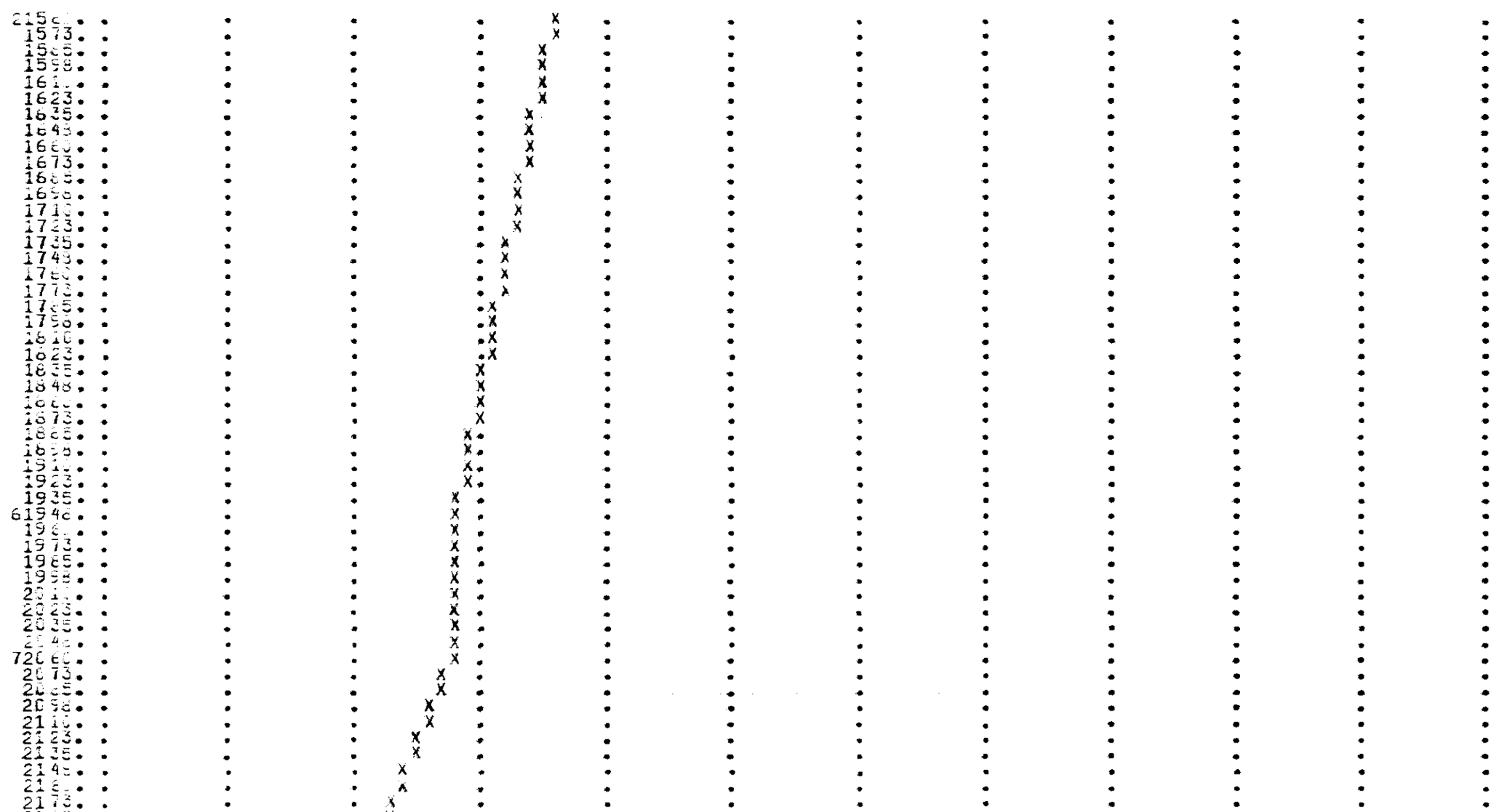
2248.00	1561.00	2244.00	1961.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00
2242.30	2000.00	2235.90	2123.00	2230.40	2214.00	2226.00	2236.00	2224.90	2248.00
2244.90	2299.00	2236.40	2313.00	2237.90	2410.00	2242.20	2474.00	2241.30	2531.00
2242.10	2534.30	2244.50	2630.00	2248.00	2610.00				

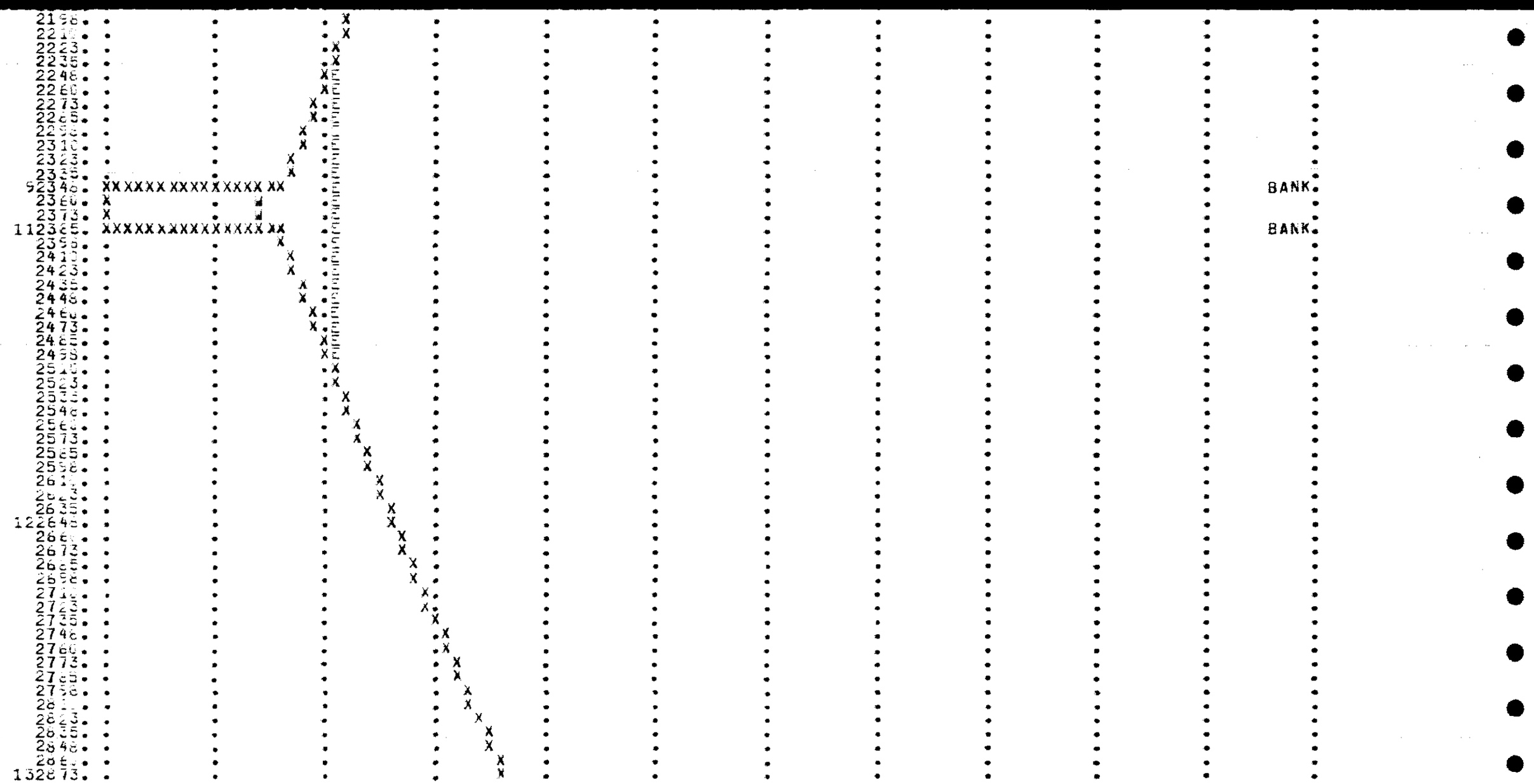
CROSS SECTION 10.33
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280.

STA-FEET





NAD= ELLO= ELTRO=

EL(I),STA(I)

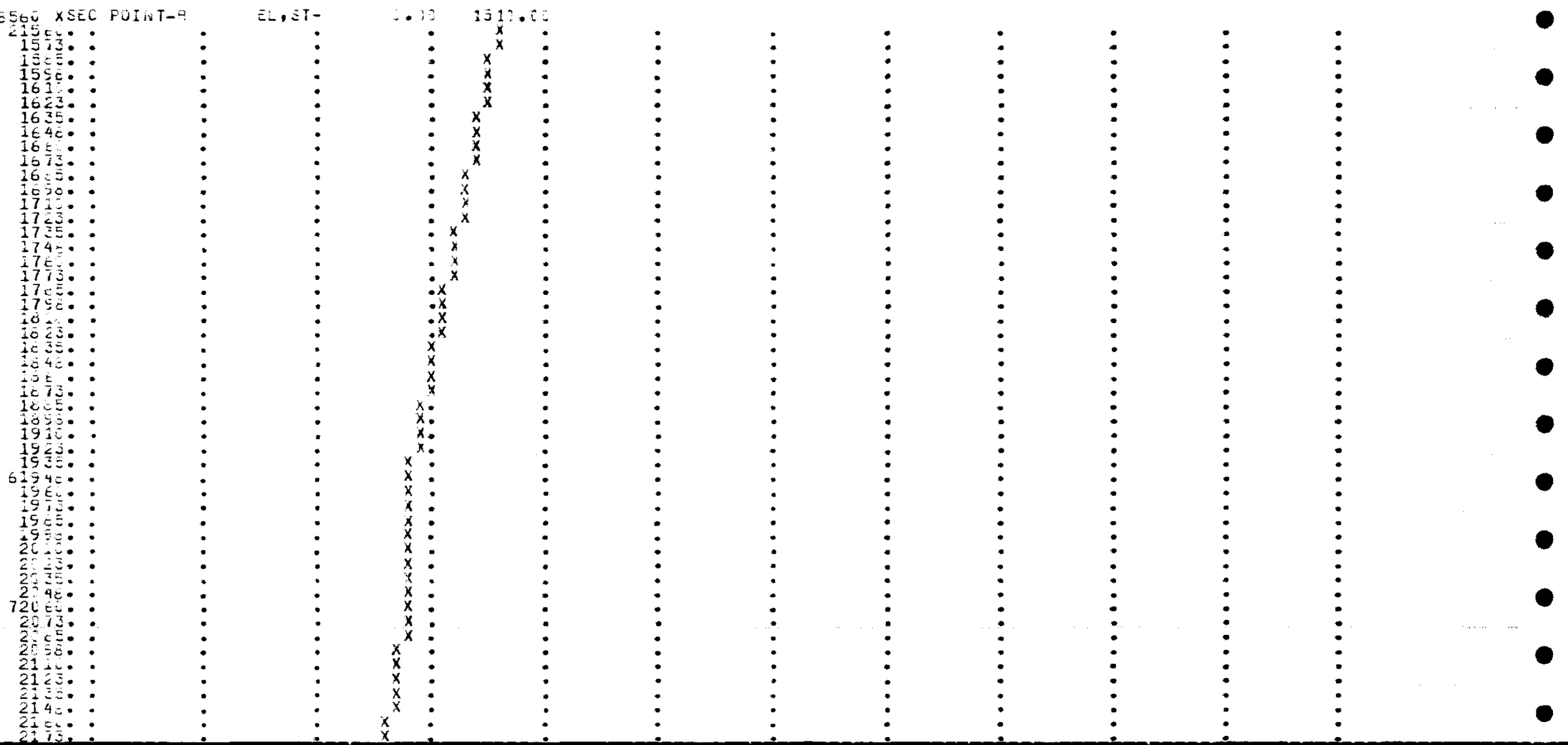
2248.00	1560.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00
2244.00	2350.00	2233.00	2350.00	2230.00	2350.00	2230.00	2388.00	2238.00	2388.00
2243.00	2550.00	2245.00	2370.00						

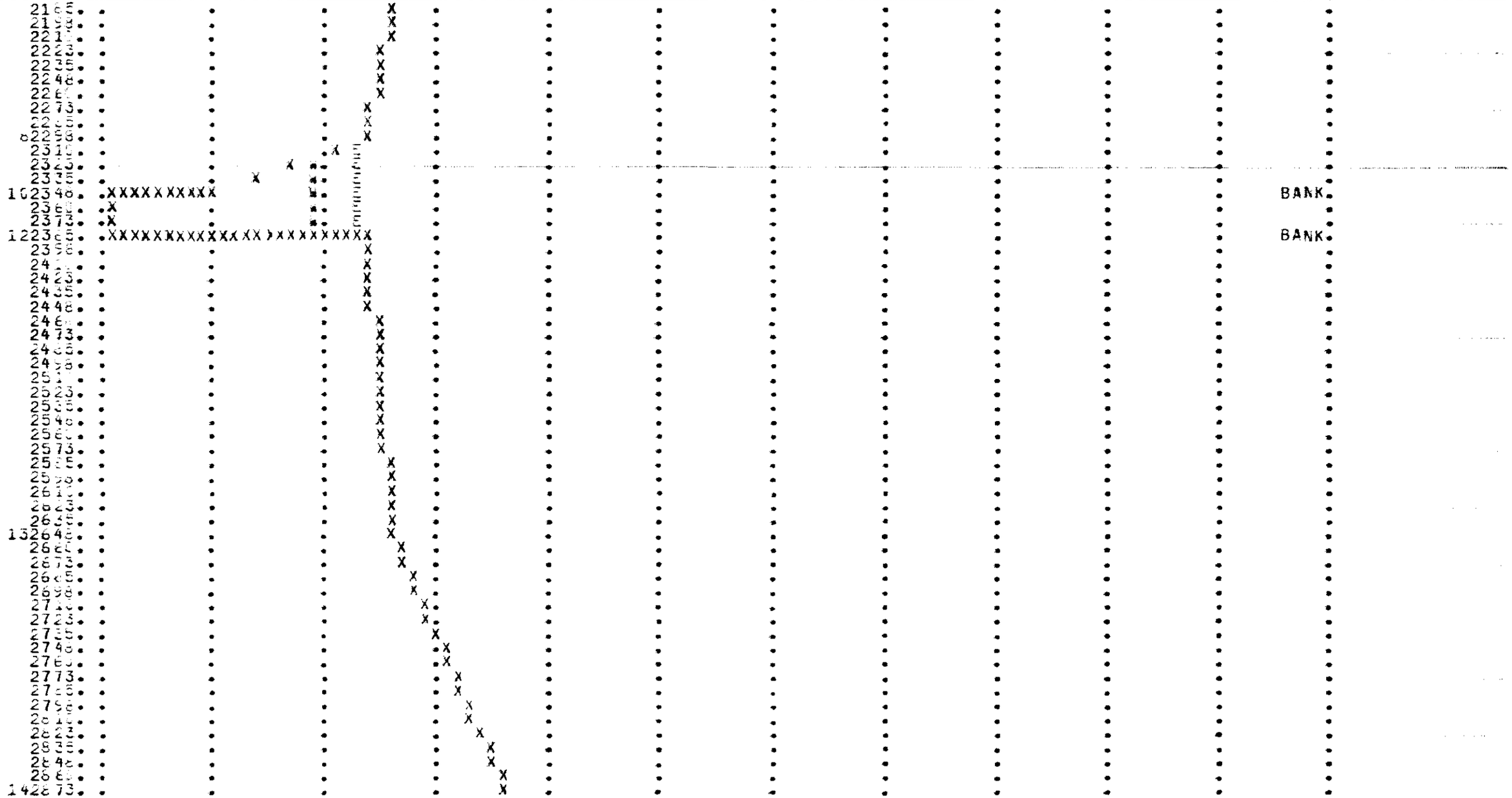
CROSS SECTION 10.34
STREAM FLAMINGO WASH, REACH 2 .
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLP,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280.

STA-FEET





NRD= 11 ELLC= 2241.0[illegible] ELTRD= 2242.00

[illegible]	0.00	2243.00	470.00	0.00	2244.00	610.00	0.00	2242.30
7[illegible].00	0.00	2242.00	1060.00	0.00	2243.00	1280.00	0.00	2244.50
1430.00	0.00	2243.00	1510.00	0.00	2252.00			

EL(I),STA(I)

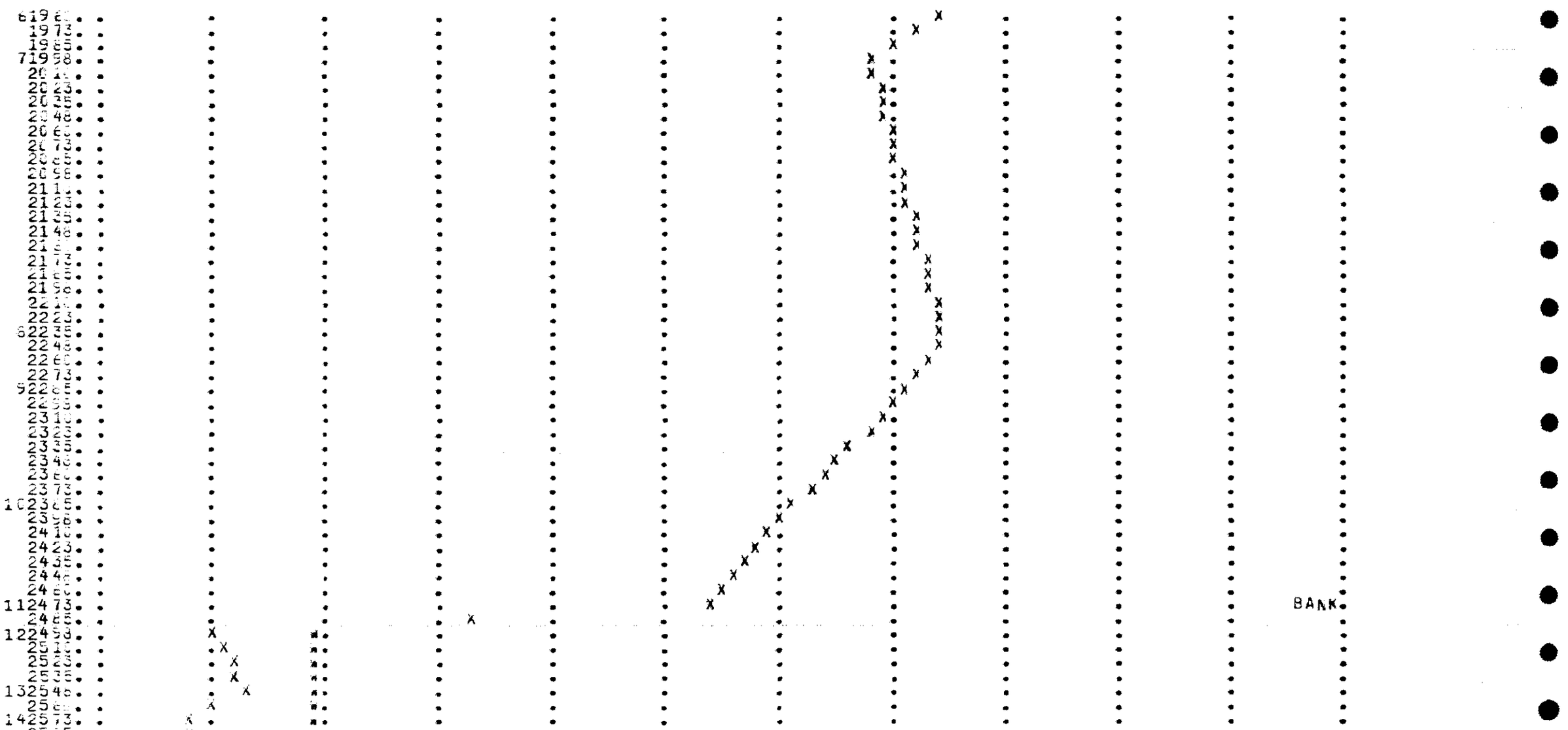
2248.00	1360.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00
2244.00	2060.00	2242.00	2300.00	2235.00	2350.00	2230.50	2350.00	2230.50	2389.00
2242.00	2358.10	2243.00	2650.00	2245.00	2870.00				

CROSS SECTION 10.49
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLP,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280. 2285.

STA-FEET



NRD= ELLC= 9999999. ELTRD= 9999999.00

EL(I),STA(I)

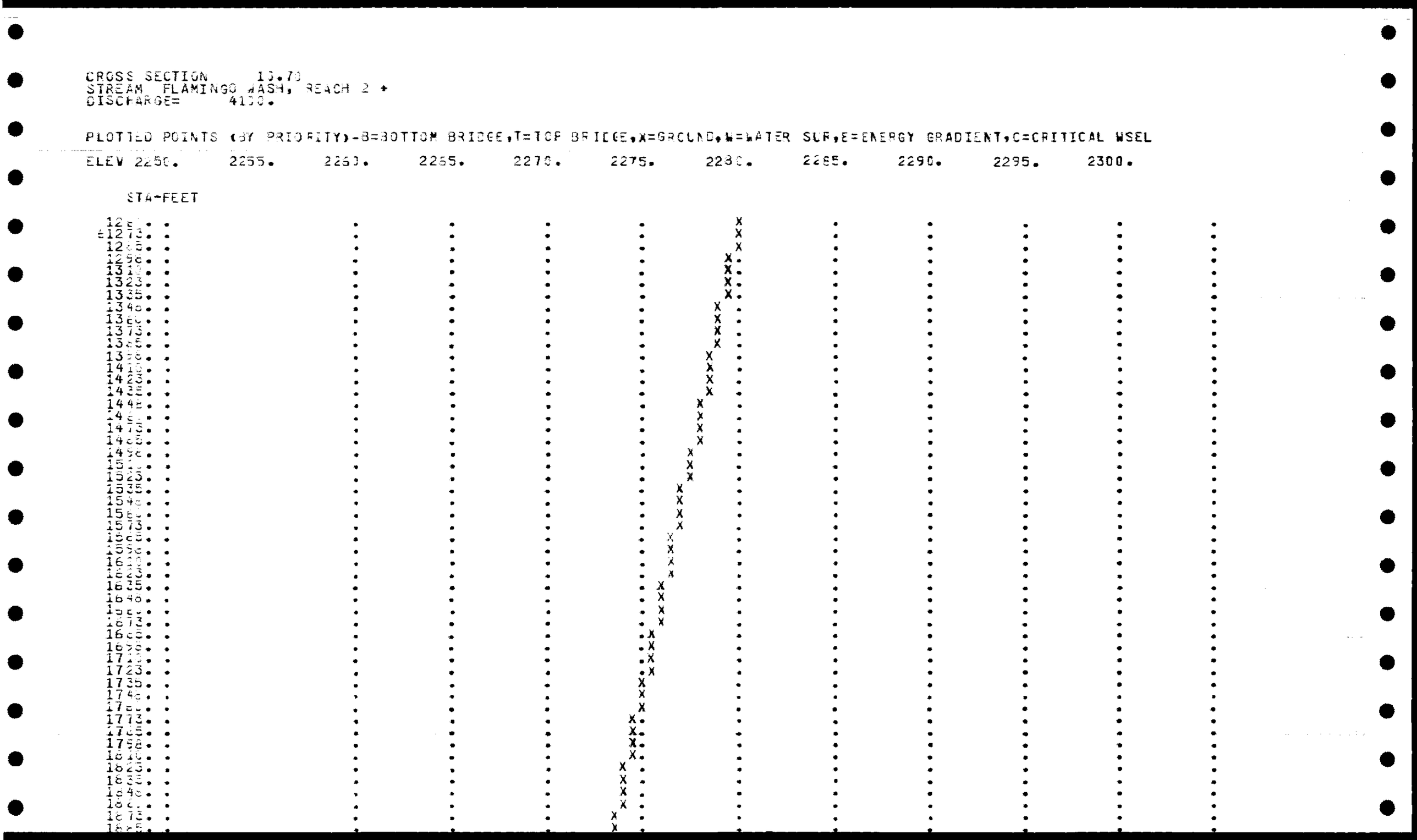
2272.00	1960.00	2272.00	1960.00	2272.00	1960.00	2272.00	1960.00	2272.00	1960.00
2268.00	2000.00	2272.20	2034.00	2271.60	2283.00	2266.50	2389.00	2261.90	2475.00
2259.90	2601.30	2241.50	2547.00	2235.10	2570.00	2236.10	2617.00	2240.30	2648.00
2242.10	2701.50	2241.30	2724.00	2240.60	2754.00	2238.40	2771.00	2238.40	2794.00
2243.90	2799.50	2243.00	2845.00	2242.90	2889.00	2244.40	2987.00	2248.30	3092.00
2270.00	3220.30								

CROSS SECTION 10.70
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2250. 2255. 2260. 2265. 2270. 2275. 2280. 2285. 2290. 2295. 2300.

STA-FEET



BANK

BANK

NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

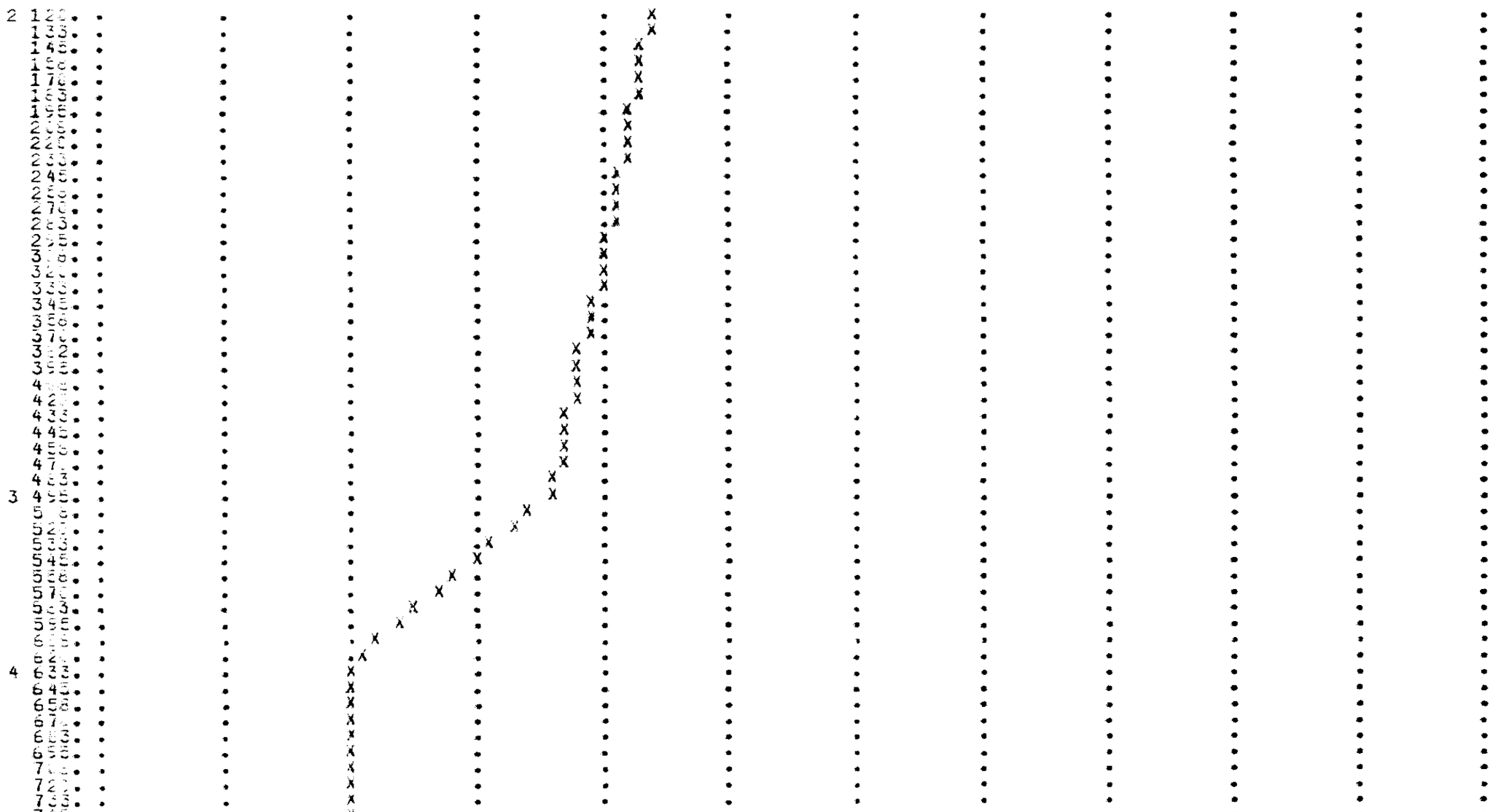
2280.00	1270.00	2280.00	1270.00	2280.00	1270.00	2280.00	1270.00	2280.00	1270.00
2272.30	2000.00	2271.60	2062.00	2252.80	2112.00	2252.80	2198.00	2253.10	2233.00
2253.60	2284.00	2253.60	2370.00	2253.60	2436.00	2253.60	2473.00	2256.60	2489.00
2256.60	2553.00	2259.60	2605.00	2259.60	2654.00	2280.00	2740.00		

CROSS SECTION 10.96
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2262. 2267. 2272. 2277. 2282. 2287. 2292. 2297. 2302. 2307. 2312.

STA-FEET



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 75
 77
 78
 79
 84
 84
 84
 86
 88
 94
 95
 99
 99
 99
110
110
110
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BANK

BANK

NRO= 0 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

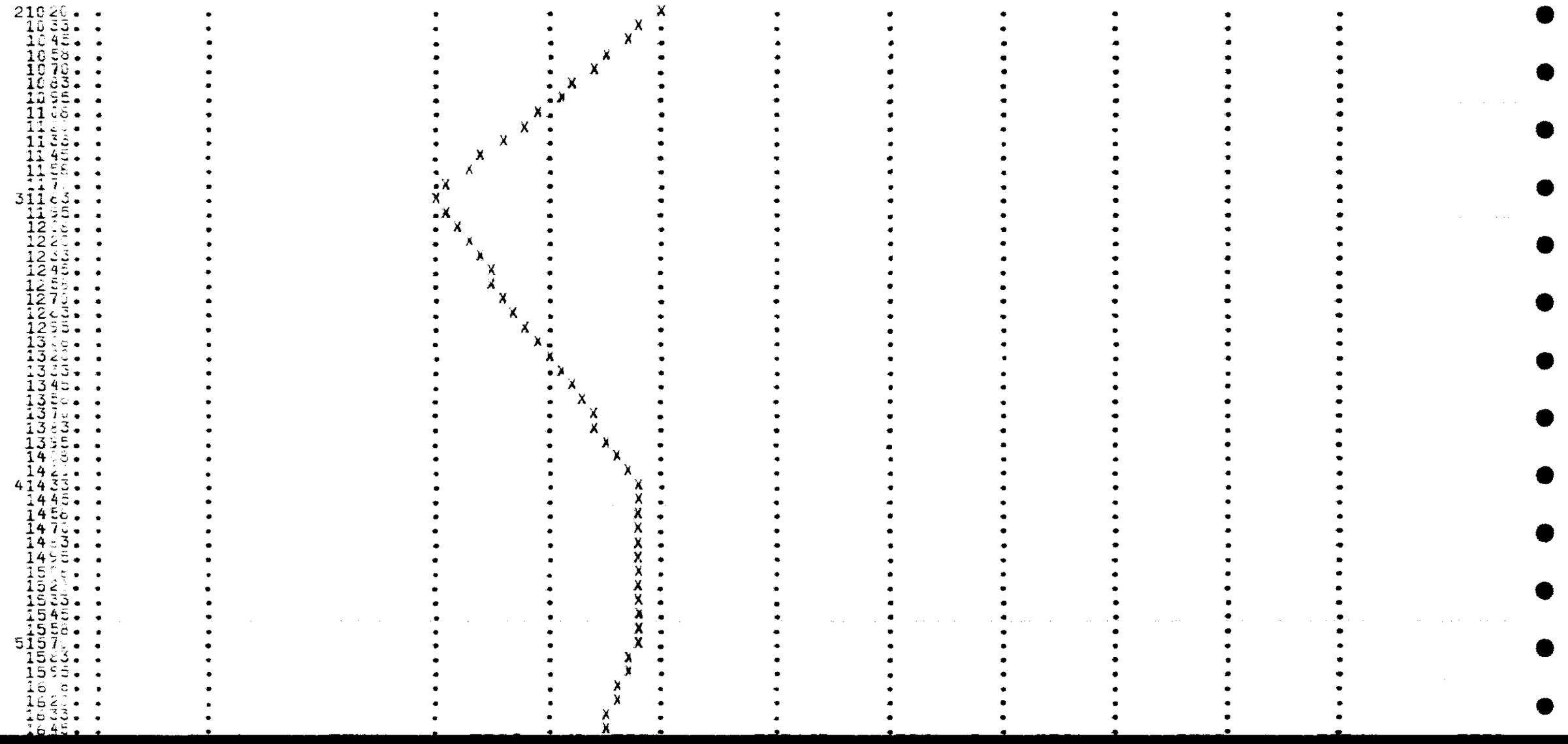
2264.00	2420.00	2280.00		2272.00	630.00	2272.00	1330.00	2276.00	1360.00
2266.00	2782.00	2281.00		2281.00	1900.00	2281.00	1900.00	2281.00	1900.00
2276.00	2330.00	2279.90		2276.70	2174.00	2275.90	2353.00	2273.20	2398.00
2268.00	2446.00	2271.60		2267.50	2620.00	2267.60	2647.00	2264.70	2670.00
2263.00	2630.00	2263.00		2265.80	2702.00	2270.80	2736.00	2267.80	2761.00
2267.90	2784.00	2272.90		2275.60	2848.00	2275.60	2876.00	2274.10	2948.00
2264.00	3090.00								

CROSS SECTION 11.15
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

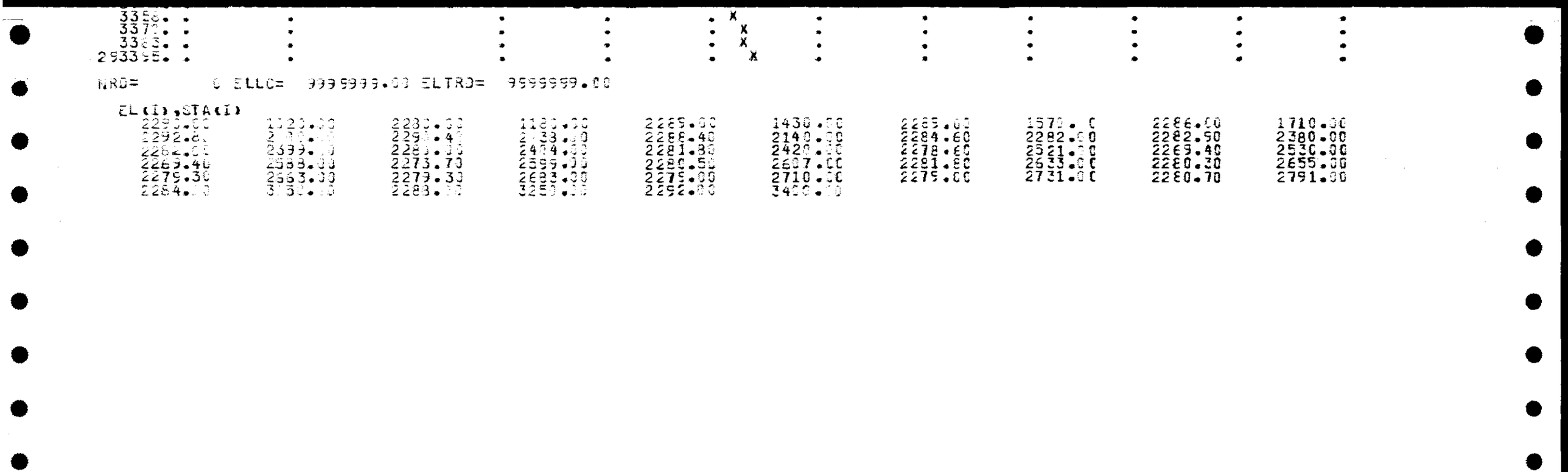
ELEV 2265. 2270. 2275. 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315.

STA-FEET



BANK

BANK



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

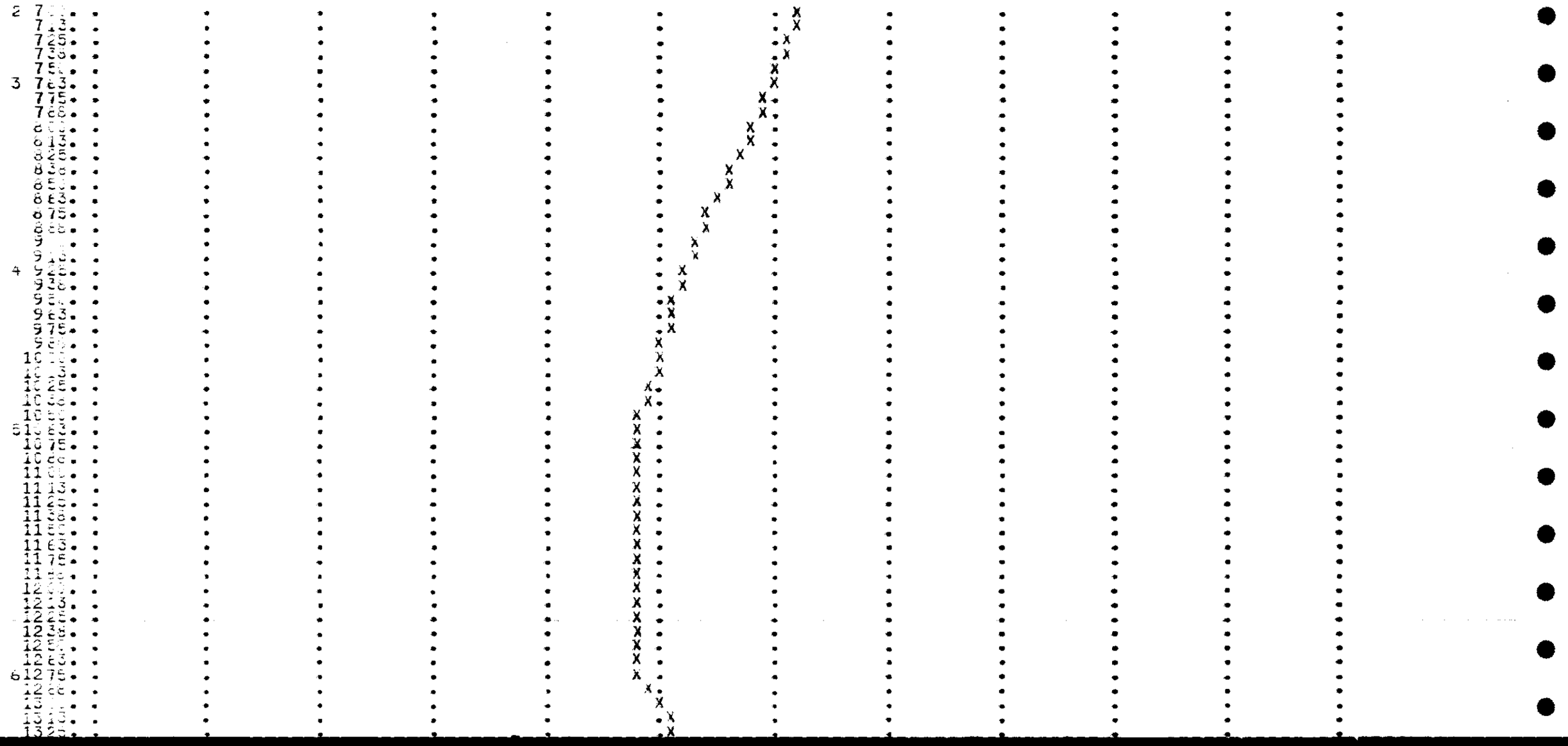
2291.00	1120.00	2280.00	1120.00	2269.00	1430.00	2269.00	1570.00	2286.00	1710.00
2292.80	2140.00	2290.40	2138.00	2286.40	2140.00	2284.60	2282.00	2282.50	2380.00
2284.00	2639.00	2280.30	2404.00	2281.30	2420.00	2278.60	2521.00	2269.40	2530.00
2269.40	2588.00	2273.70	2599.00	2280.50	2607.00	2281.80	2633.00	2280.30	2655.00
2279.30	2663.30	2279.30	2683.00	2279.00	2710.00	2279.00	2731.00	2280.70	2791.00
2284.00	3150.00	2288.00	3250.00	2292.00	3400.00				

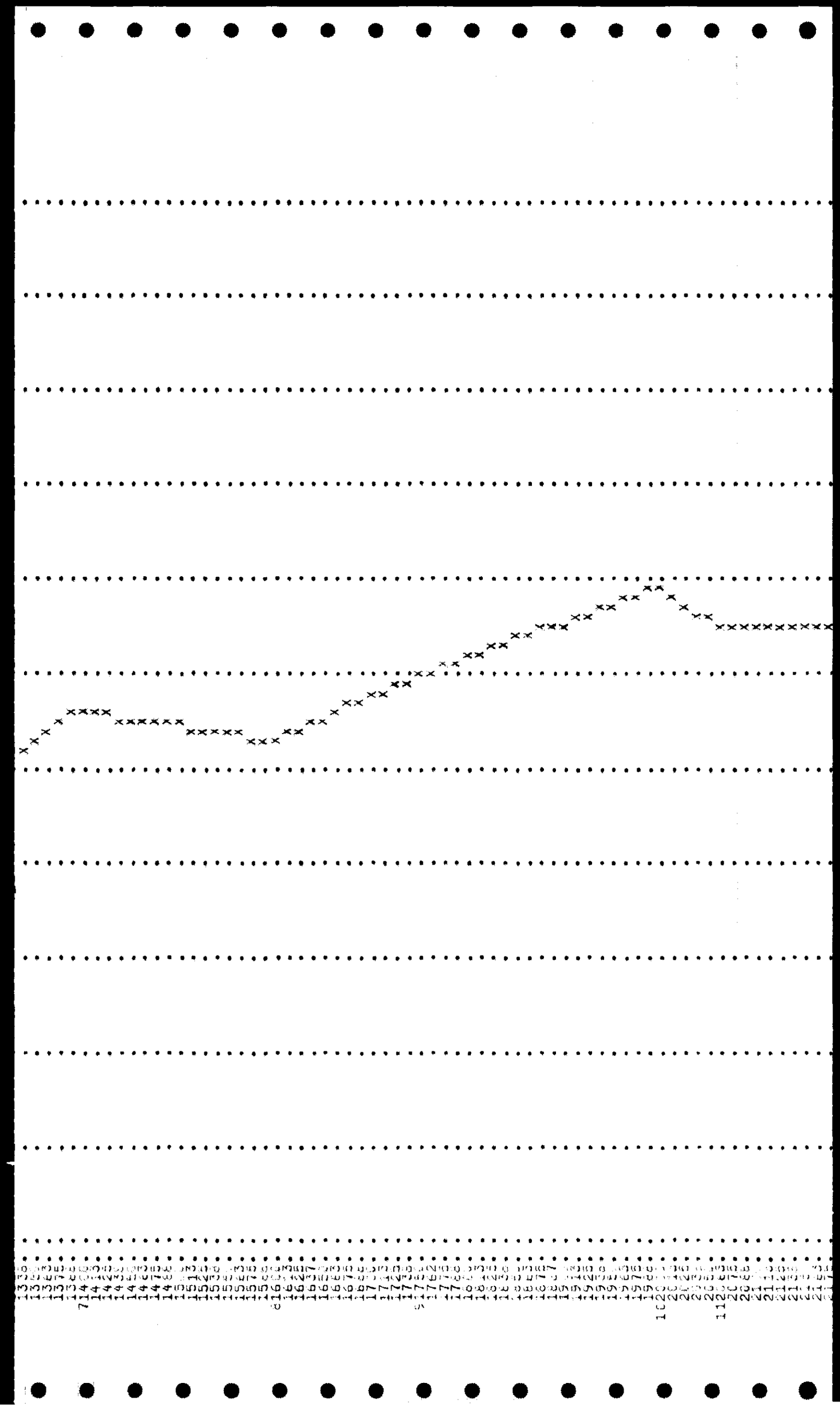
CROSS SECTION 11.28
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2270. 2275. 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315. 2320.

STA-FEET





BANK

BANK

MRD= ELLO= 9999999.00 ELTRO= 9999999.00

EL(I) STA(I)

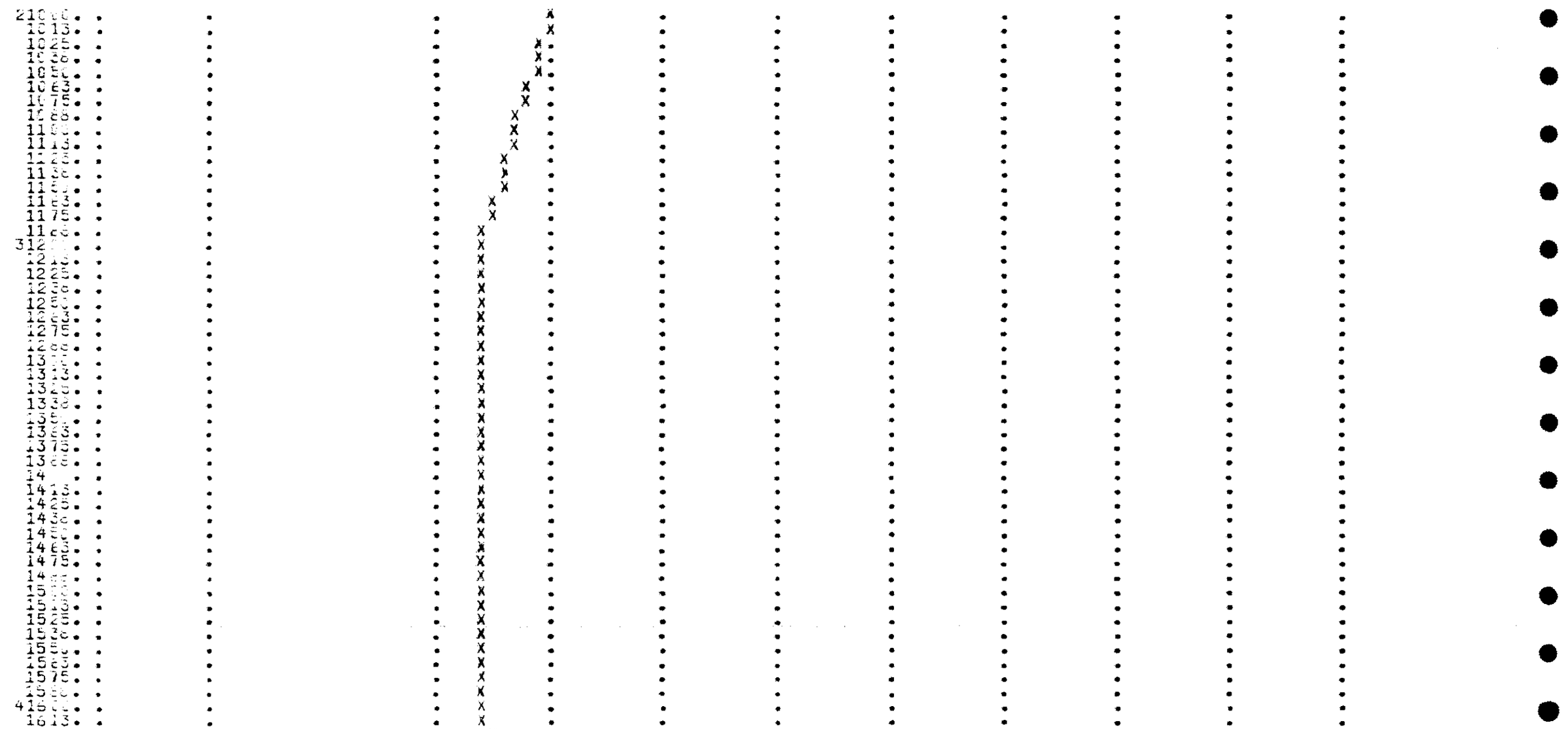
2273.90	2502.00	2283.10	2523.00	2288.10	2556.00	2298.60	2587.00	2292.00	2690.00

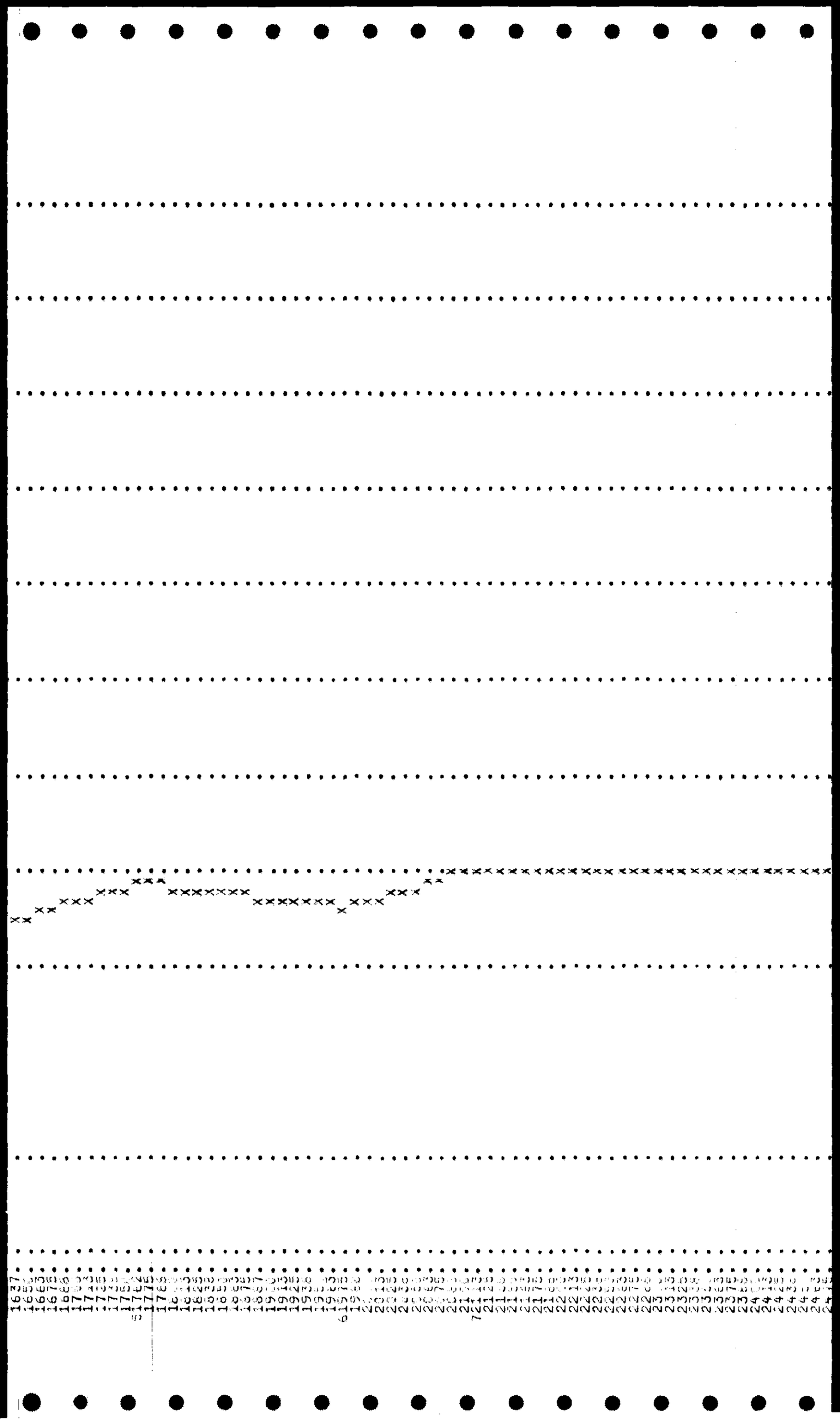
CROSS SECTION 11.31
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315. 2320. 2325. 2330.

STA-FEET





BANK

BANK

NRD= 0 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

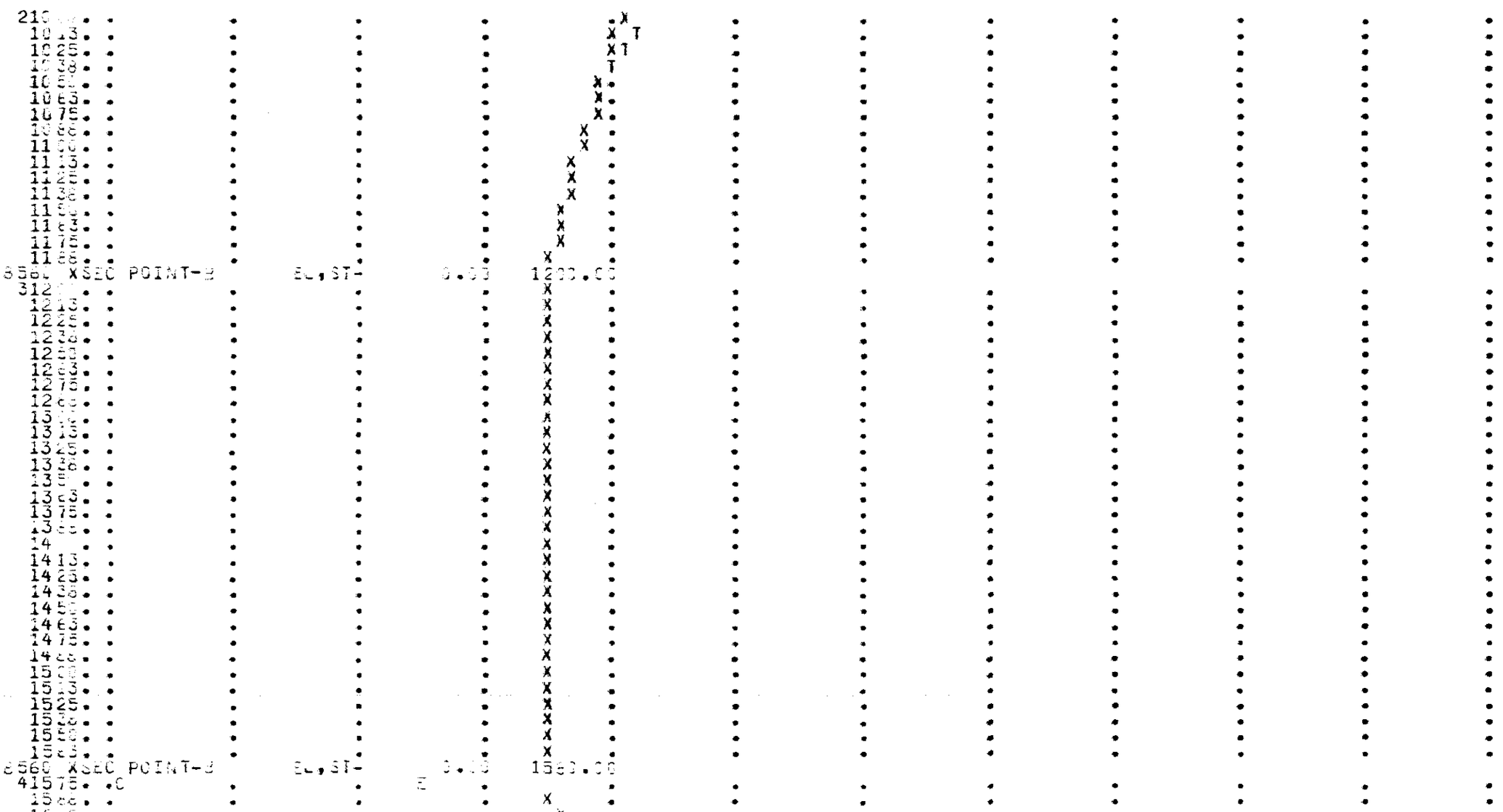
		2297.	1201.	2297.00	1600.00	2295.40	1760.00	2298.20	1580.00
2300.00	2110.	2300.	2000.	2292.00	2652.00	2280.00	2704.00	2260.00	2746.00
2298.20	4758.	2292.00	2300.00	2292.00	2920.00	2296.00	3100.00	2300.00	3420.00
2301.40	3670.								

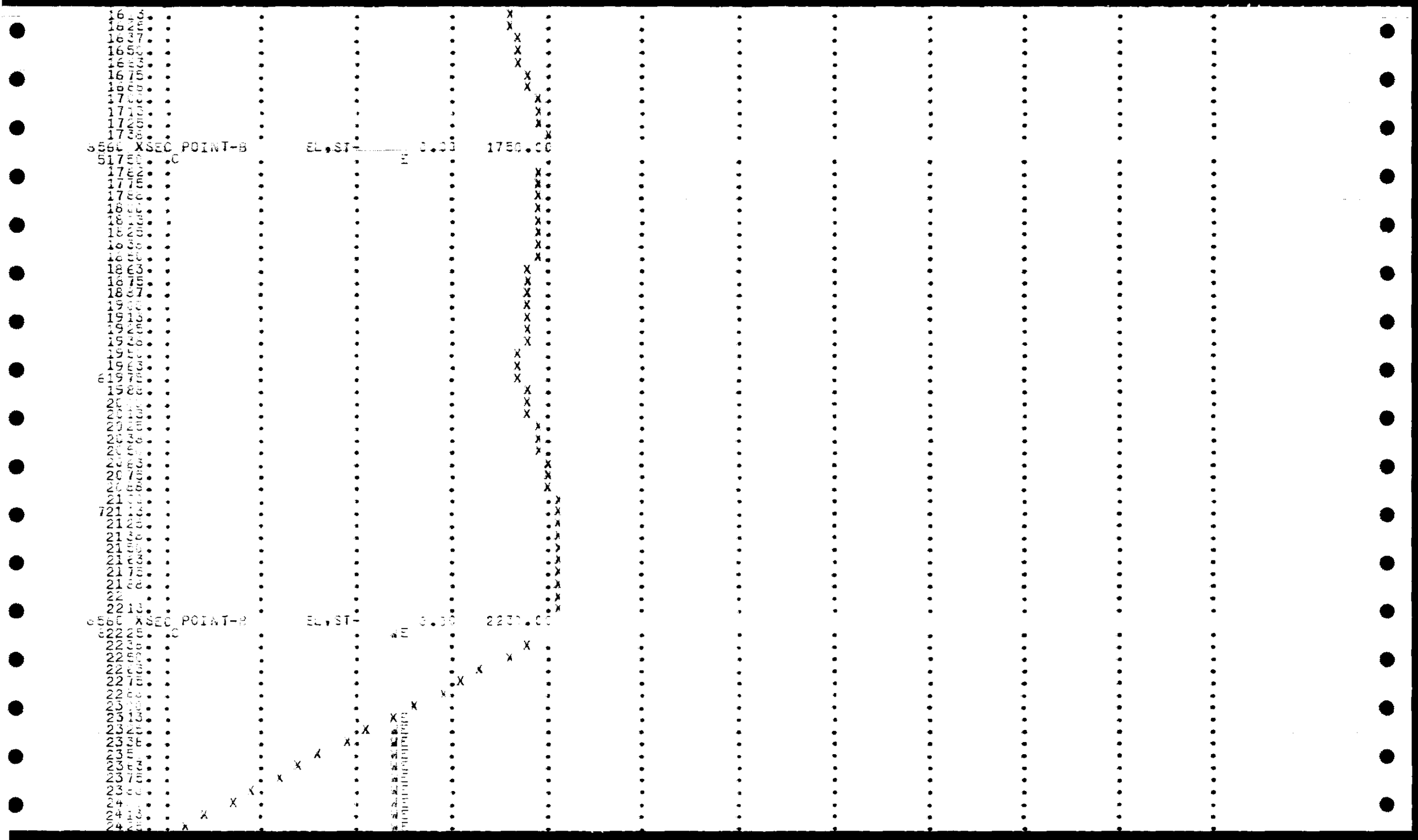
CROSS SECTION 11.62
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315. 2320. 2325. 2330.

STA-FEET




XSEC POINT-B
EL,ST-
1750.00
XSEC POINT-A
EL,ST-
2230.00

BANK

BANK

NMD= 14 ELLC= 2293.40 ELTRD= 2291.40

EL(I),STA(I)

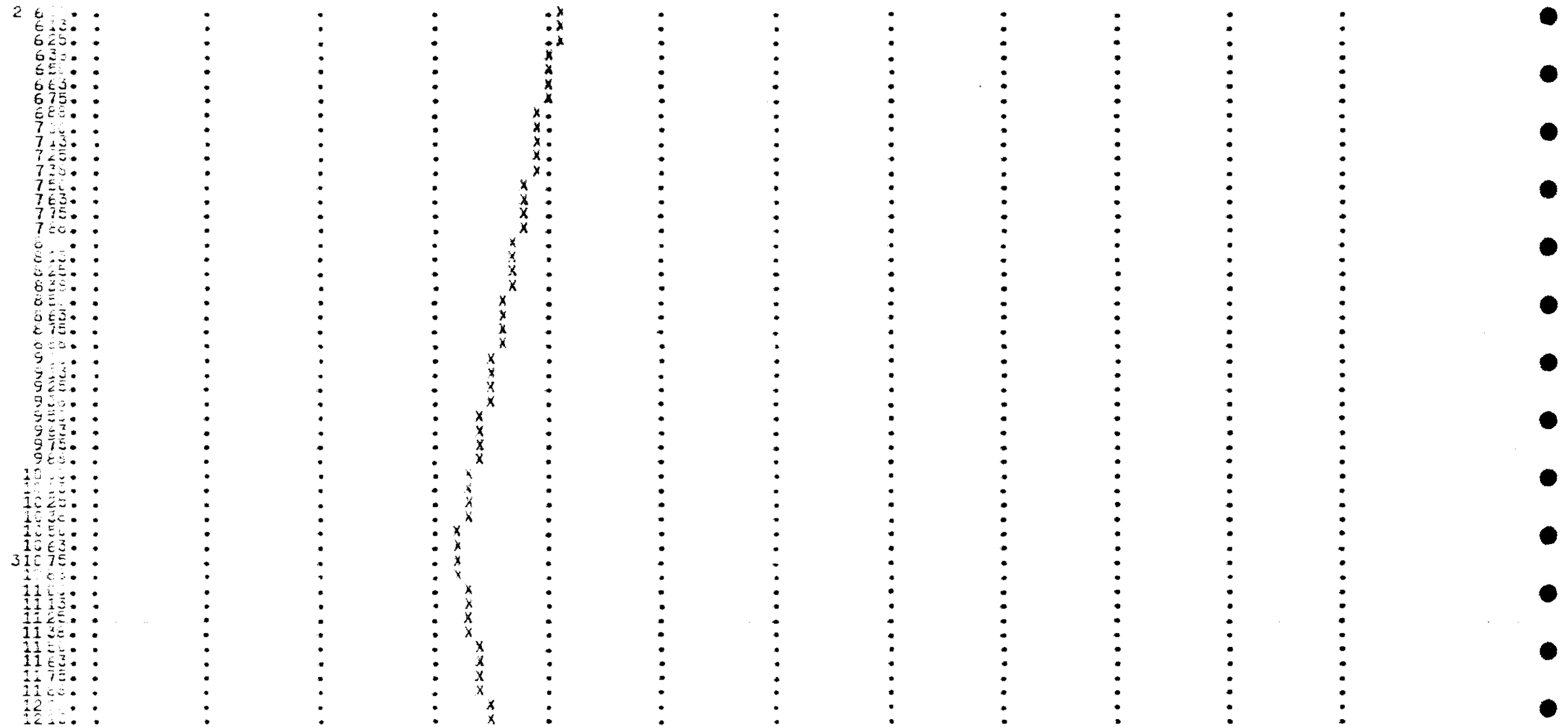
2300.40 1000.00 2297.40 2297.40 2299.80 1760.00 2298.80 1980.00
2300.40 2110.00 2300.40 2292.40 2280.40 2704.00 2280.40 2746.00
2286.40 2768.00 2292.40 2296.40 2300.40 3100.00 2300.40 3420.00
2301.80 3870.00

CROSS SECTION 11.45
STREAM FLAMINGO ASH, REACH 2 *
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2288. 2293. 2298. 2303. 2308. 2313. 2318. 2323. 2328. 2333. 2338.

STA-FEET



BANK

BANK

NRD= ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

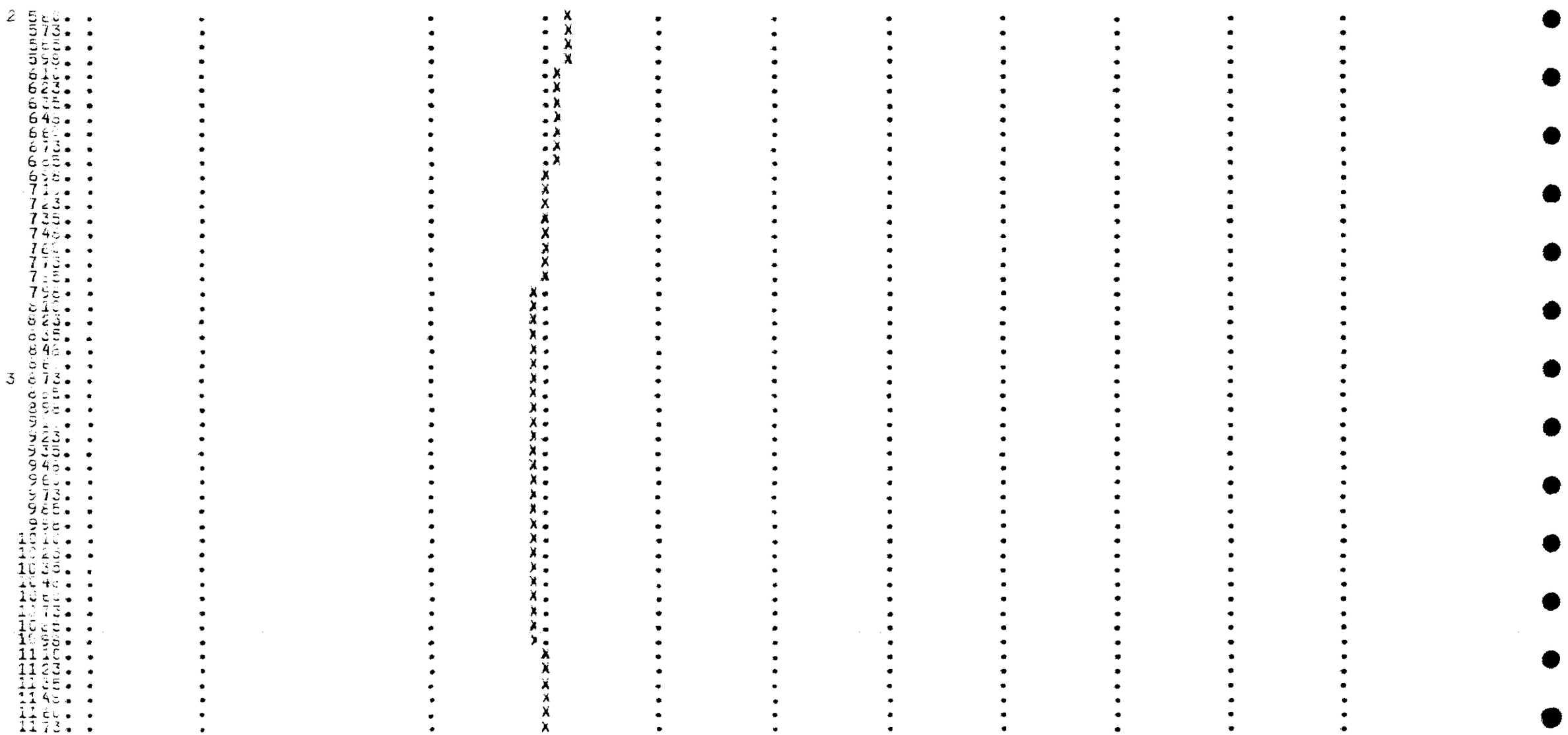
2308.60	2304.00	1070.00	2307.20	1360.00	2302.50	1630.00	2304.80	1780.00
2304.10	2302.80	2129.00	2302.80	2170.00	2305.90	2260.00	2303.20	2311.00
2288.90	2288.90	2392.00	2296.90	2408.00	2301.60	2428.00	2301.60	2444.00
2312.20	2304.40	2572.00	2304.50	2720.00	2307.50	3040.00	2308.00	3600.00

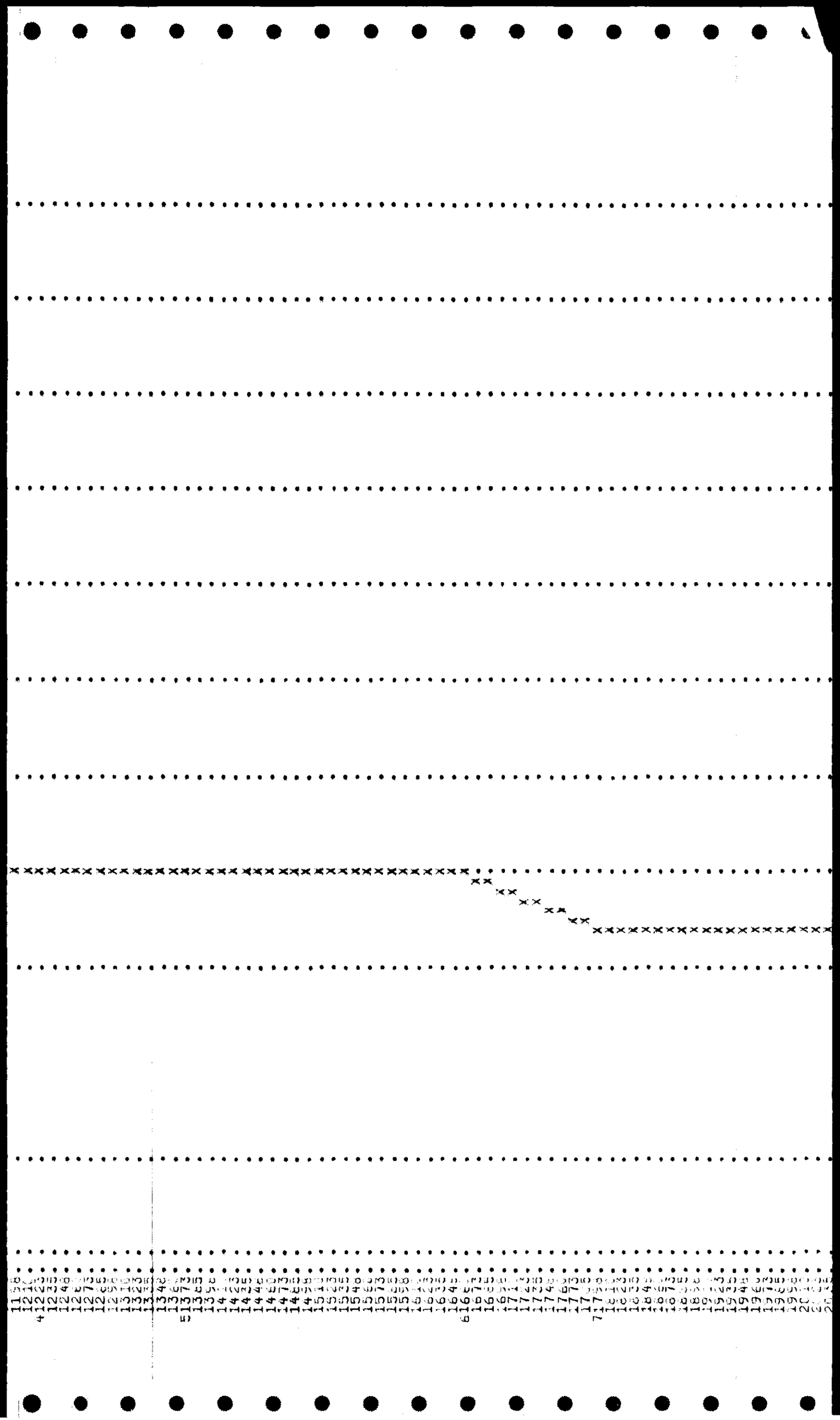
CROSS SECTION 11.64
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2295. 2300. 2305. 2310. 2315. 2320. 2325. 2330. 2335. 2340. 2345.

STA-FEET





BANK

BANK

NRD= ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

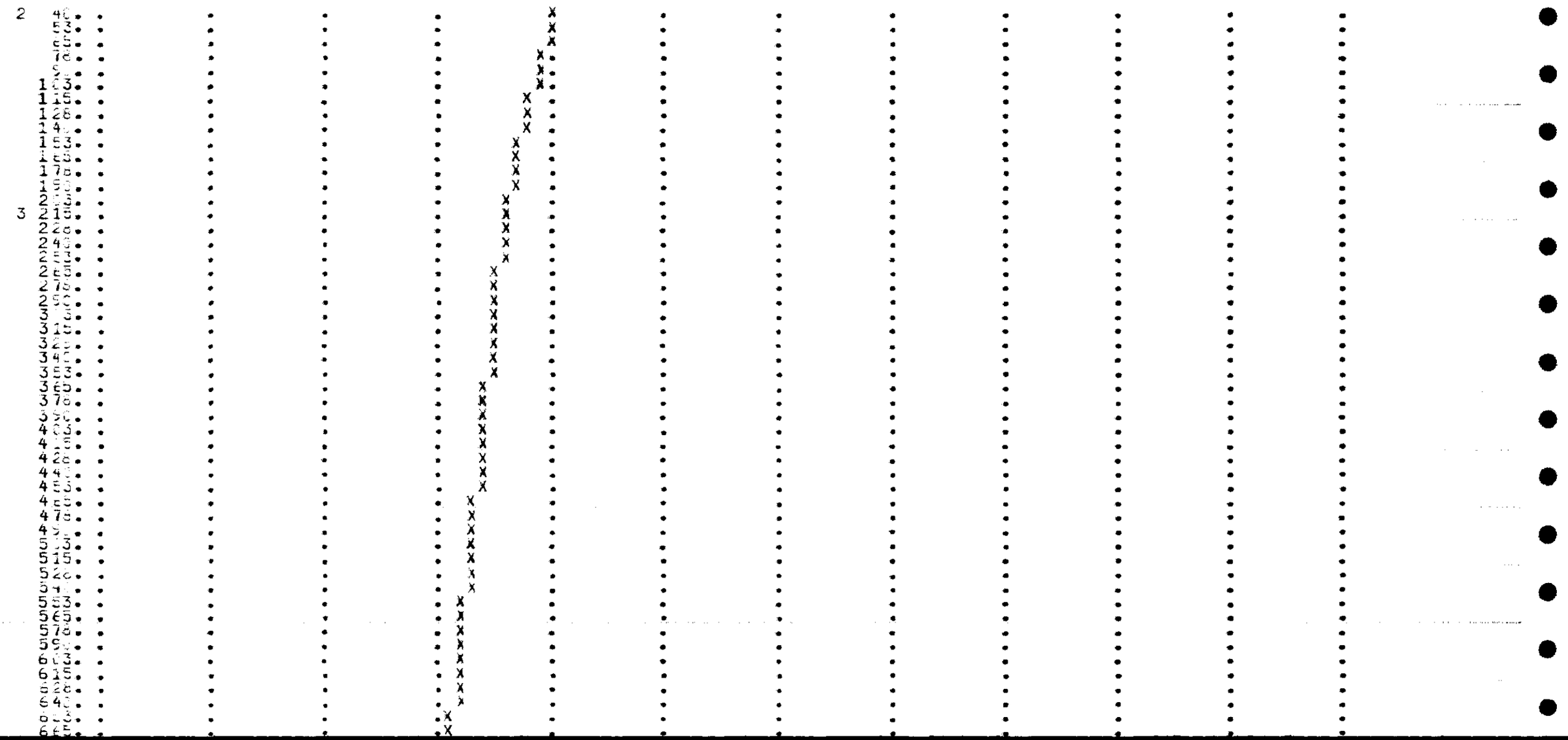
2316.00	560.00	2314.30	870.00	2315.00	1220.00	2315.00	1370.00	2315.00	1660.00
2312.	1356.00	2312.00	2104.	2312.20	2180.00	2311.70	2261.00	2310.40	2283.00
2297.40	2297.	2297.40	2357.	2305.10	2372.00	2307.70	2401.00	2308.60	2496.00
2312.50	2712.00	2315.00	2950.00	2310.00	3290.00	2320.00	3600.00		

CROSS SECTION 11.79
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2306. 2311. 2316. 2321. 2326. 2331. 2336. 2341. 2346. 2351. 2356.

STA-FEET

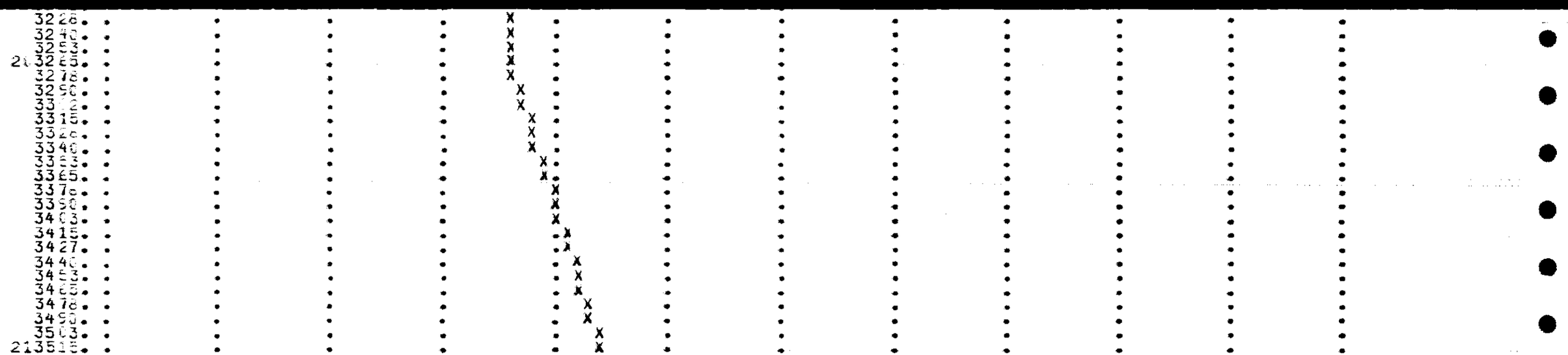


5

6

BANK

BANK



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

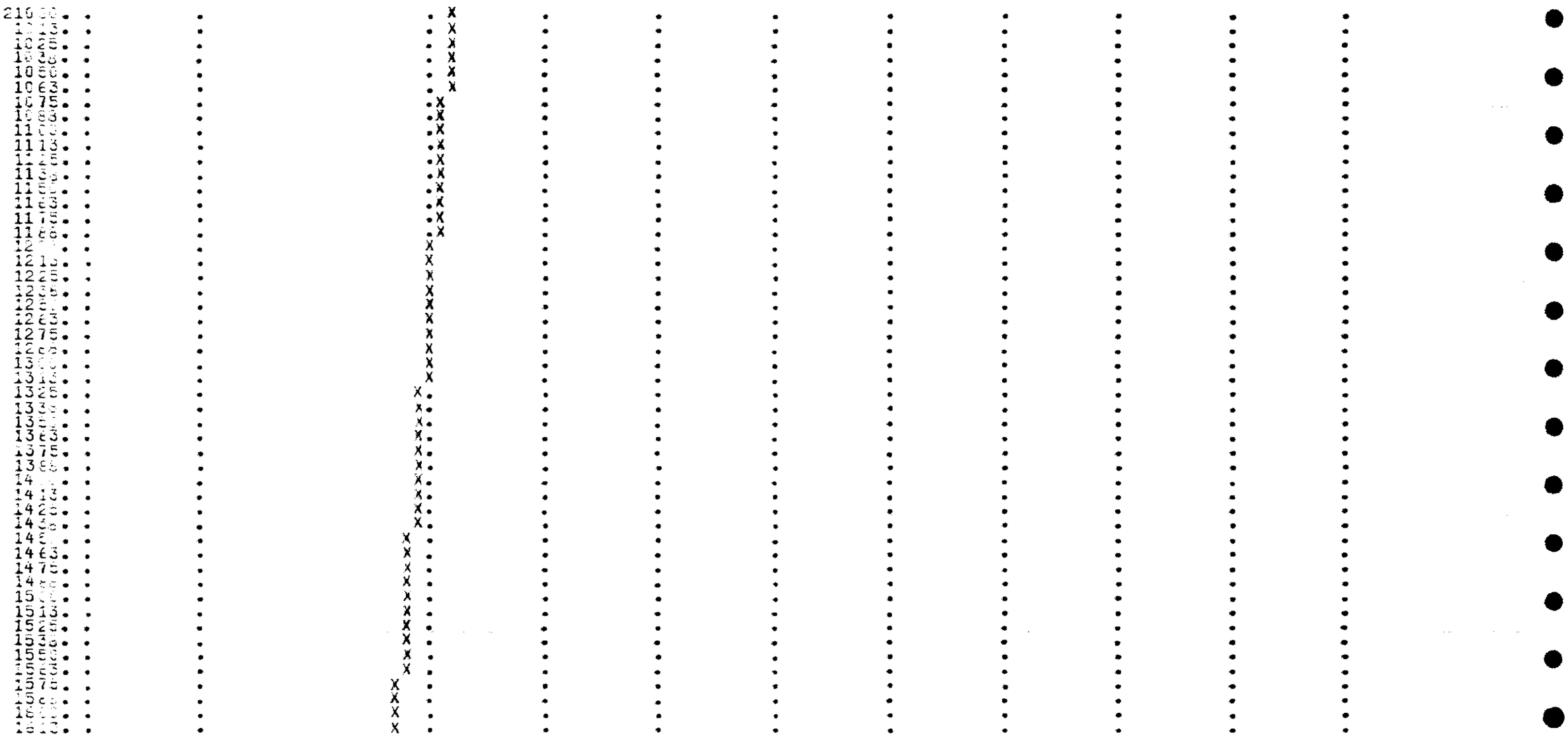
2326.20	40.00	2324.10	2130.00	2320.10	970.00	2320.00	970.00	2321.30	1360.00
2316.70	2130.00	2315.60	2145.00	2319.20	2282.00	2315.70	2308.00	2306.60	2329.00
2316.00	2348.00	2308.30	2381.00	2316.90	2399.00	2317.70	2427.00	2317.70	2458.00
2319.80	2569.00	2321.20	2656.00	2320.40	2688.00	2324.00	3260.00	2328.00	3510.00

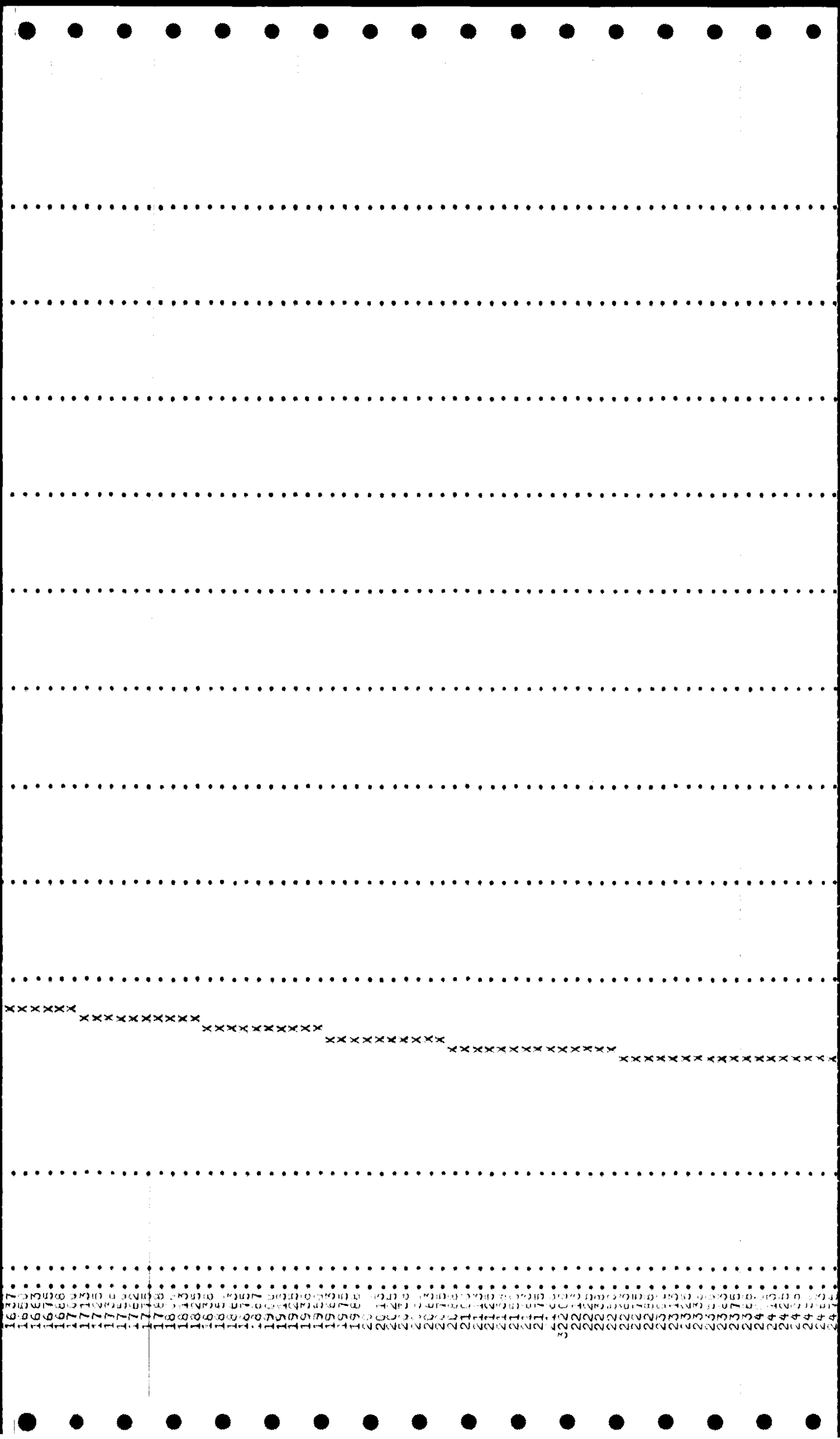
CROSS SECTION 11.82
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

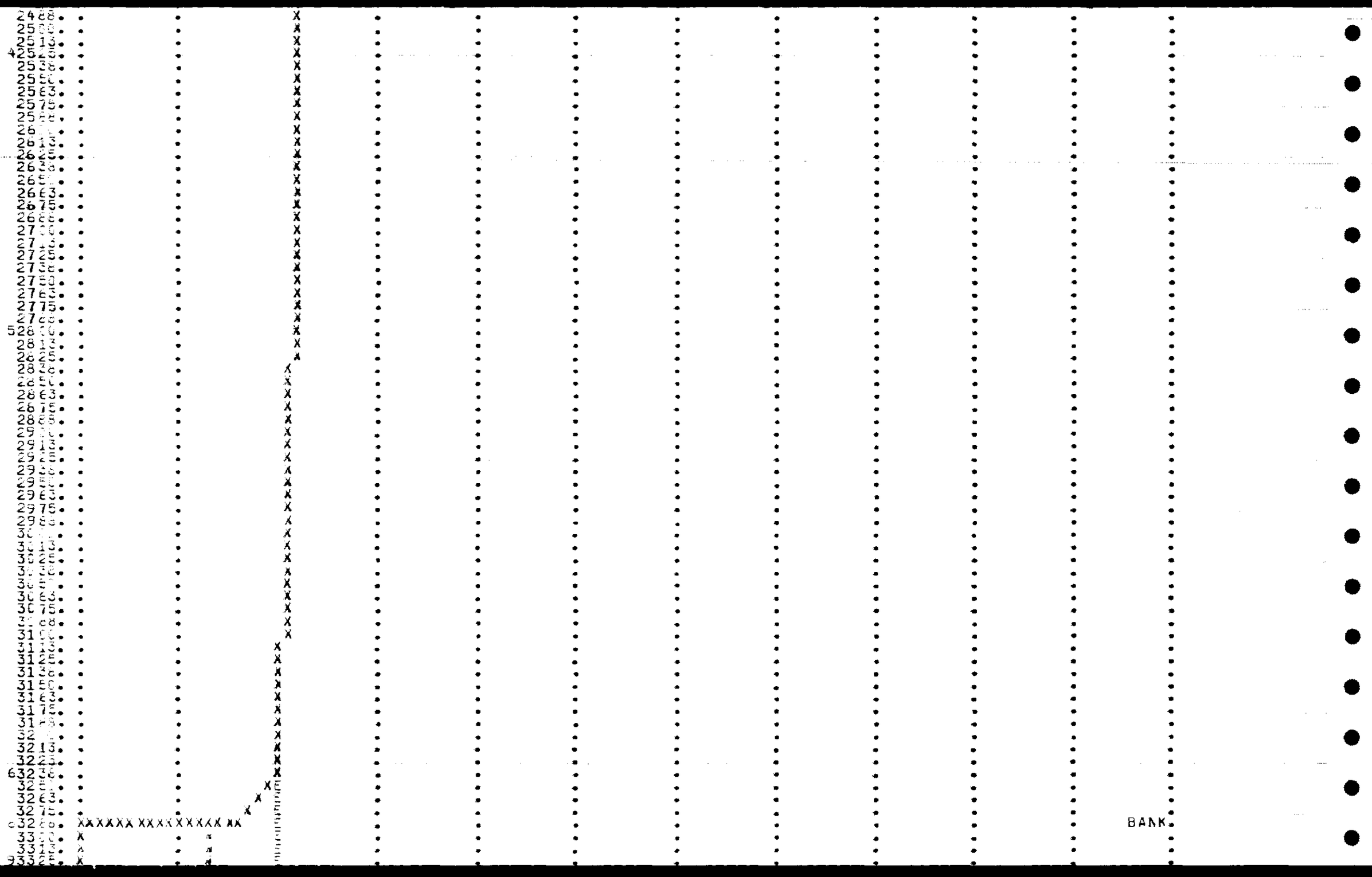
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2310. 2315. 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360.

STA-FEET






BANK

BANK

```
4168.  :         :         :  X      :         :         :         :         :         :         :
4200.  :         :         :  XX     :         :         :         :         :         :         :
4213.  :         :         :  X      :         :         :         :         :         :         :
4225.  :         :         :   X     :         :         :         :         :         :         :
4238.  :         :         :   X     :         :         :         :         :         :         :
4250.  :         :         :   X     :         :         :         :         :         :         :
4263.  :         :         :    X    :         :         :         :         :         :         :
4275.  :         :         :    X    :         :         :         :         :         :         :
4288.  :         :         :    X    :         :         :         :         :         :         :
4300.  :         :         :     X   :         :         :         :         :         :         :
4313.  :         :         :     X   :         :         :         :         :         :         :
154325.:_________:_________:_____X___:_________:_________:_________:_________:_________:_________:
```

NRD= 2 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

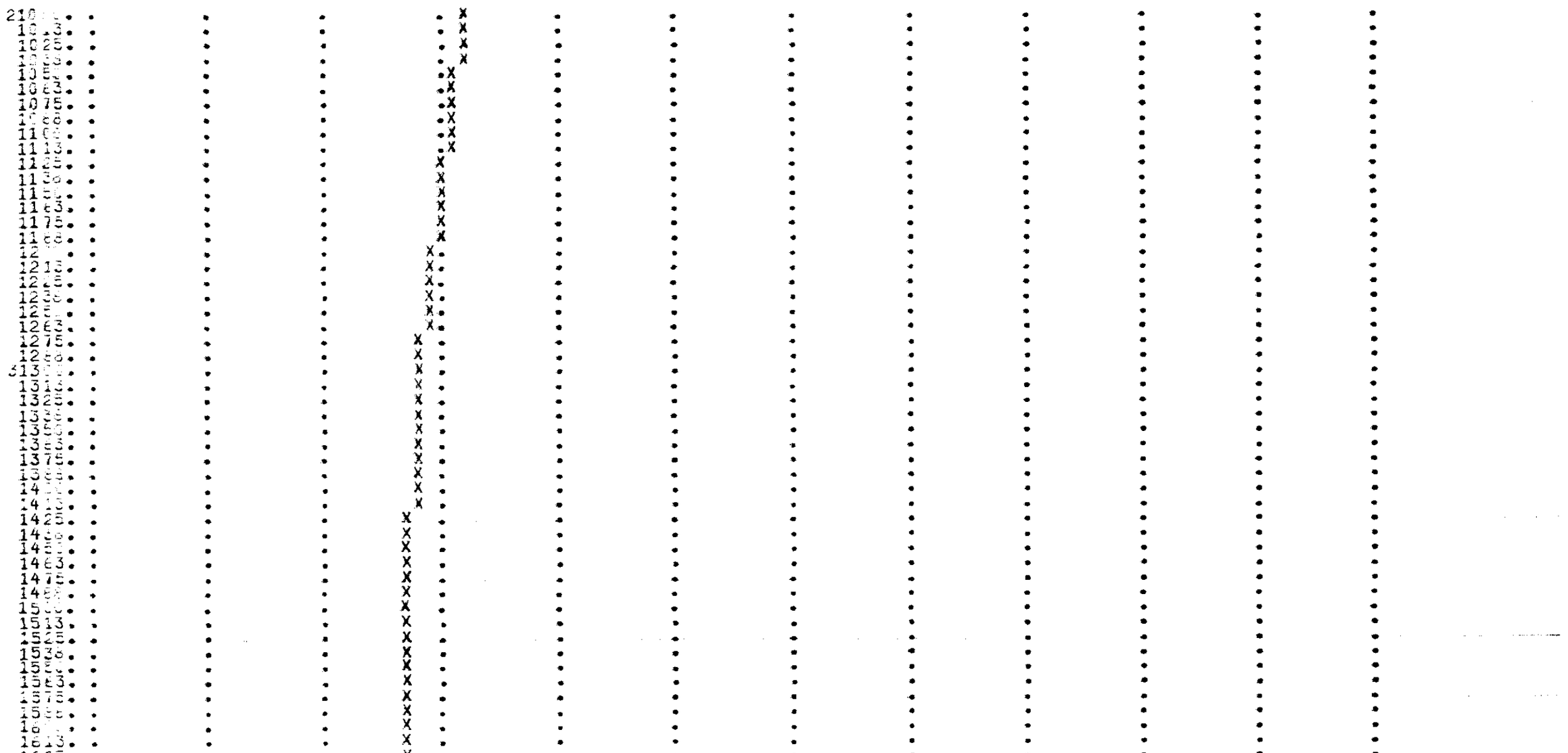
2326.00	1000.00	2321.30	2200.00	2321.00	2520.00	2320.80	2800.00	2320.00	3240.00
2318.00	3289.00	2310.00	3289.50	2310.00	3331.00	2318.00	3331.50	2320.00	3380.00
2321.20	3630.00	2323.00	3950.00	2324.00	4000.00	2328.00	4320.00		

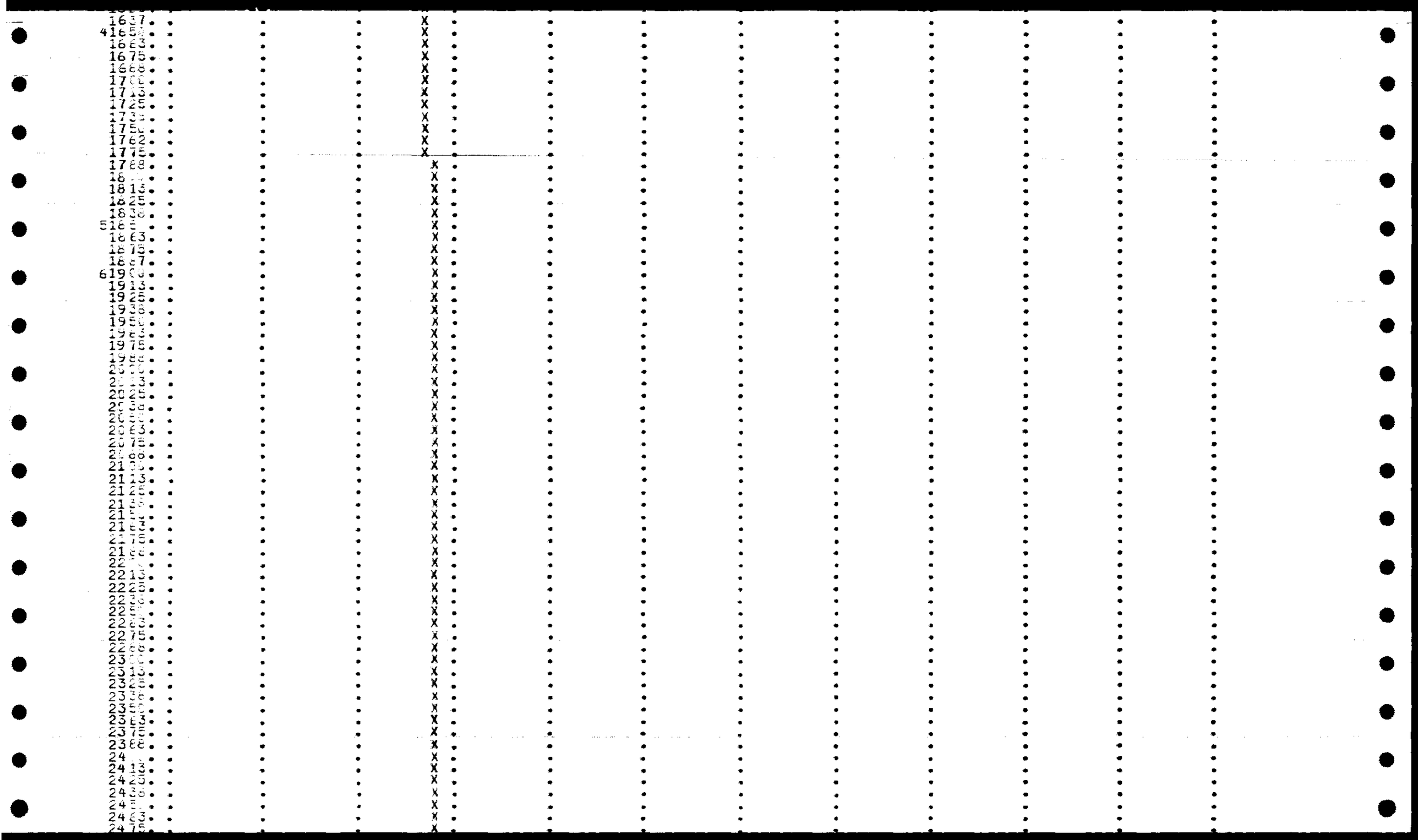
CROSS SECTION 11.34
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2310. 2315. 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360.

STA-FEET





SEC POINT-8 EL,ST- 0.00 3000.00

BANK

```
1033 26.  .  X        .        .  X     .        .        .        .        .        .        .        .        .        .        .
1133 66.  .           .        .  X     .        .        .        .        .        .        .        .        .        .        .
  33 80.  .           .        .  XTE   .        .        .        .        .        .        .        .        .        .        .
  33 83.  .           .        .     X  .        .        .        .        .        .        .        .        .        .        .
6562  XSEC POINT-B     EL,ST=        .  0.00    3380.00
1233 75.  .           .        .     X  .        .        .        .        .        .        .        .        .        .        .
  33 86.  .           .        .      X .        .        .        .        .        .        .        .        .        .        .
  34  .   .           .        .       X.        .        .        .        .        .        .        .        .        .        .
  34 13.  .           .        .       .X        .        .        .        .        .        .        .        .        .        .
  34 26.  .           .        .       . X       .        .        .        .        .        .        .        .        .        .
  34 32.  .           .        .       .  X      .        .        .        .        .        .        .        .        .        .
  34 50.  .           .        .       .   X     .        .        .        .        .        .        .        .        .        .
1334 65.  .           .        .       .   X     .        .        .        .        .        .        .        .        .        .
```

NRD= 6 ELLC= 2319.00 ELTRD= 2320.70

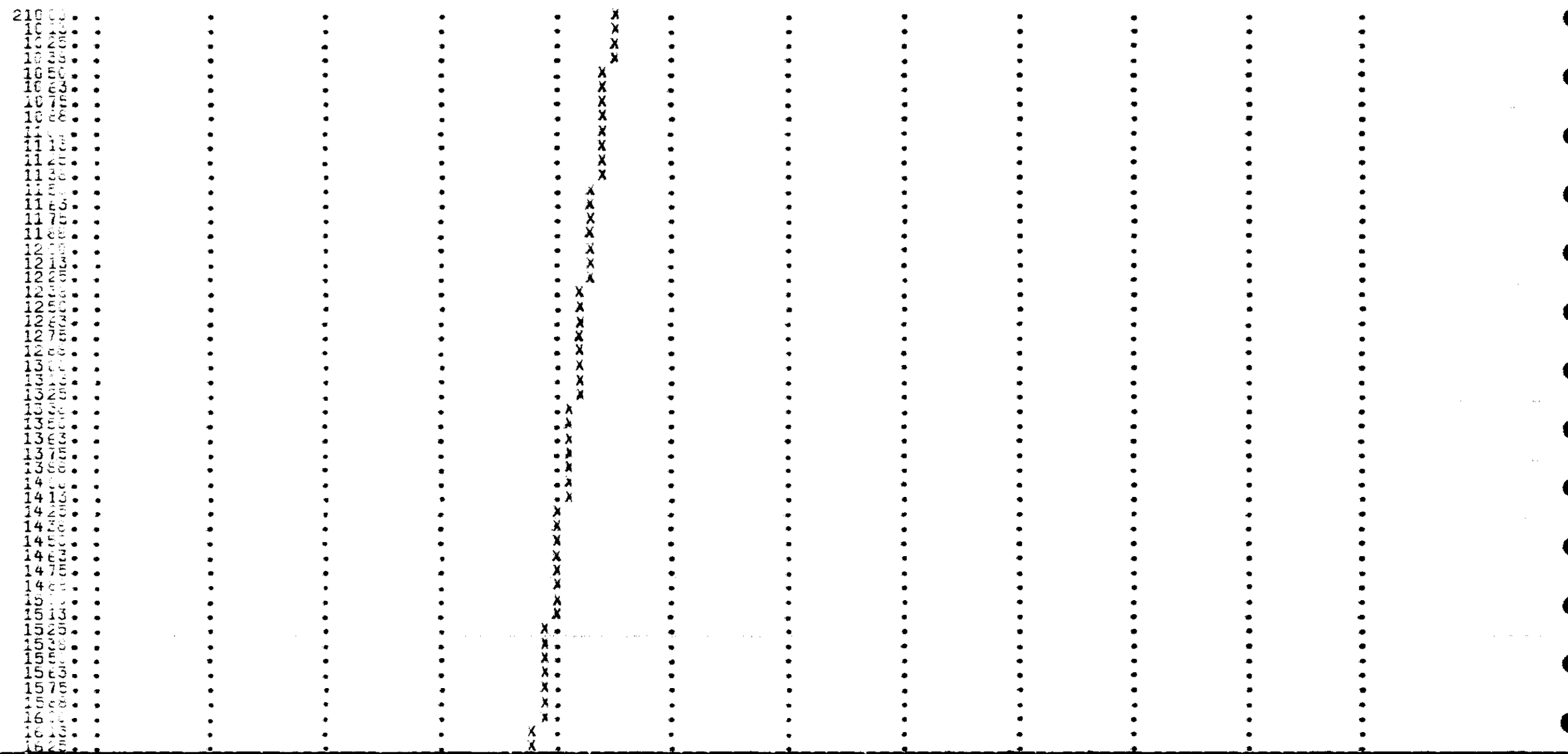
```
  30 00.00      0.00   2321.10    3260.00      0.00   2320.70   3380.00      0.00   2321.00
  36  .  .      0.00   2321.40
EL(I),STA(I)
   2326.00    1000.00    2324.00    1300.00    2323.30    1650.00    2324.00    1850.00    2324.00    1900.00
   2324.00    3240.00    2319.50    3289.00    2311.50    3289.50    2311.50    3331.00    2319.50    3331.50
   2324.00    3380.00    2328.00    3460.00
```

CROSS SECTION 11.37
STREAM FLAMINGO WASH, REACH 2 •
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2315. 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360. 2365.

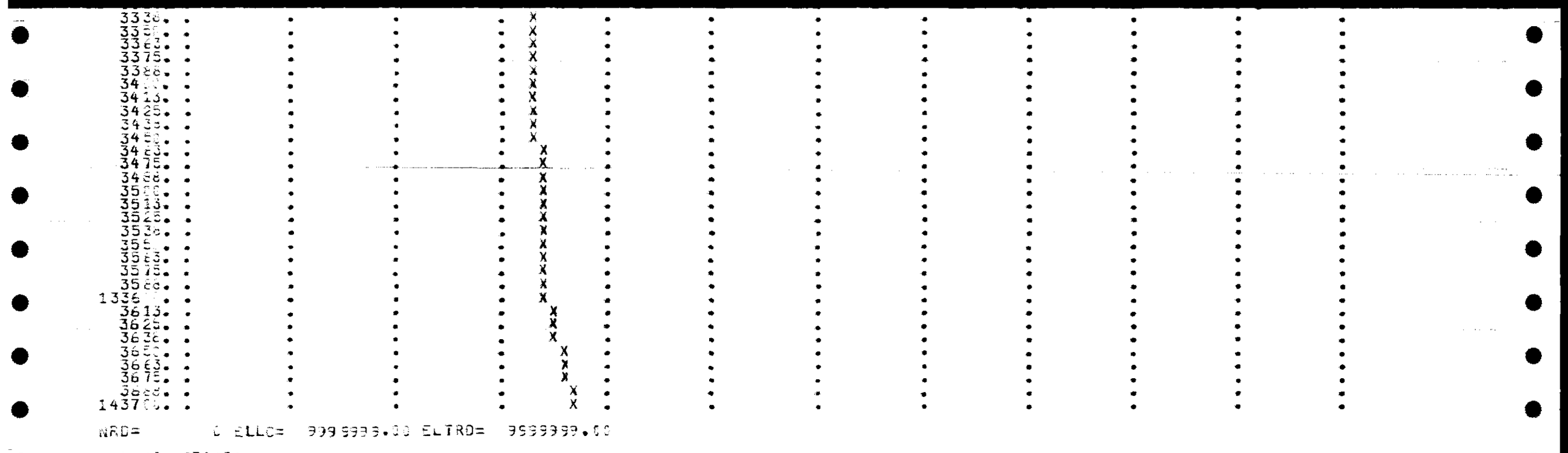
STA-FEET



BANK

BANK

```
                                                
```



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

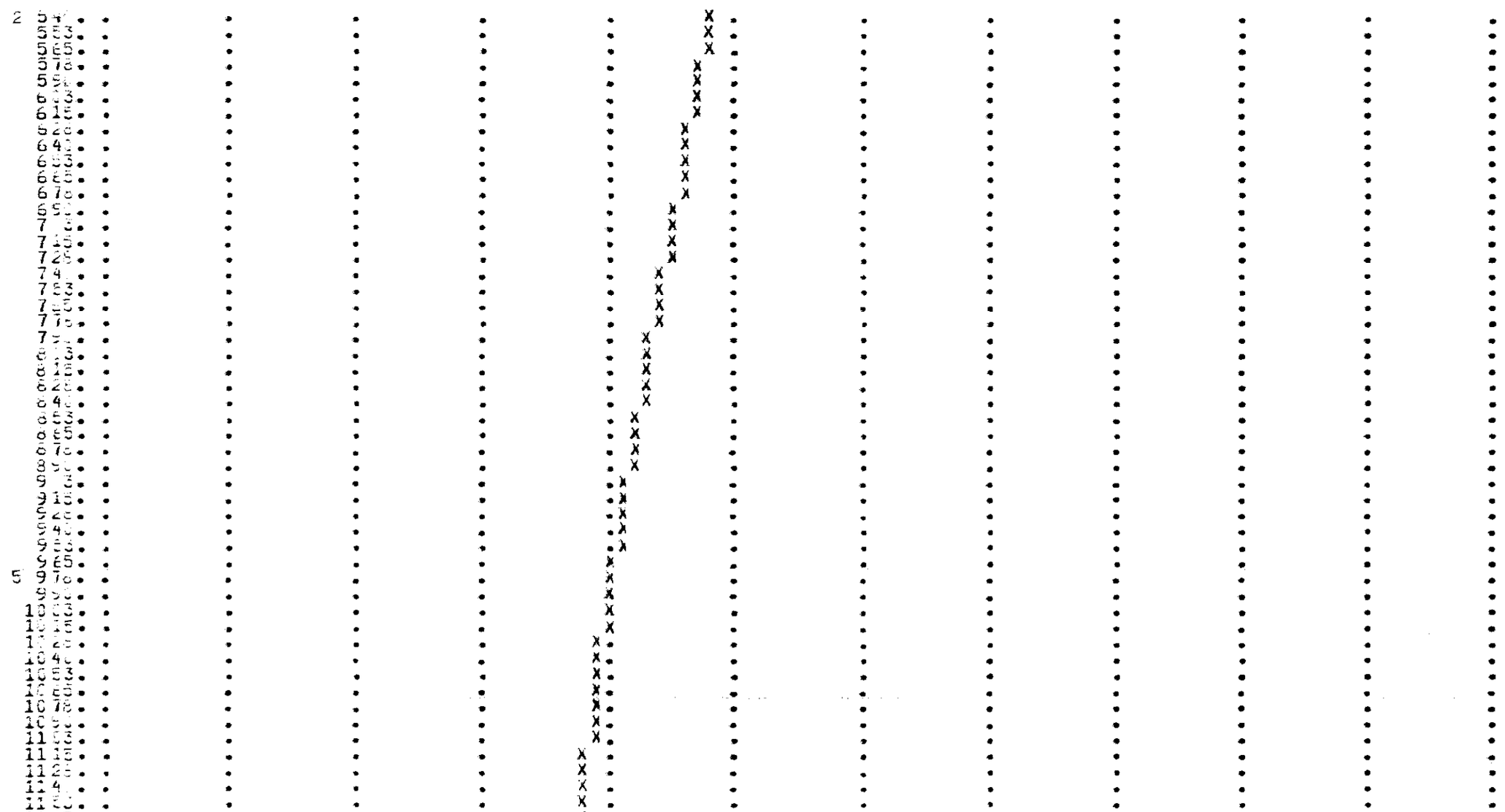
2337.50	1700.00	2333.50	1750.00	2325.50	2050.00	2325.50	2280.00	2321.50	2300.00
2315.00	1815.00	2315.00	2361.00	2317.50	2370.00	2321.50	2380.00	2325.50	2400.00
2329.50	3500.00	2332.10	3800.00	2333.50	3700.00				

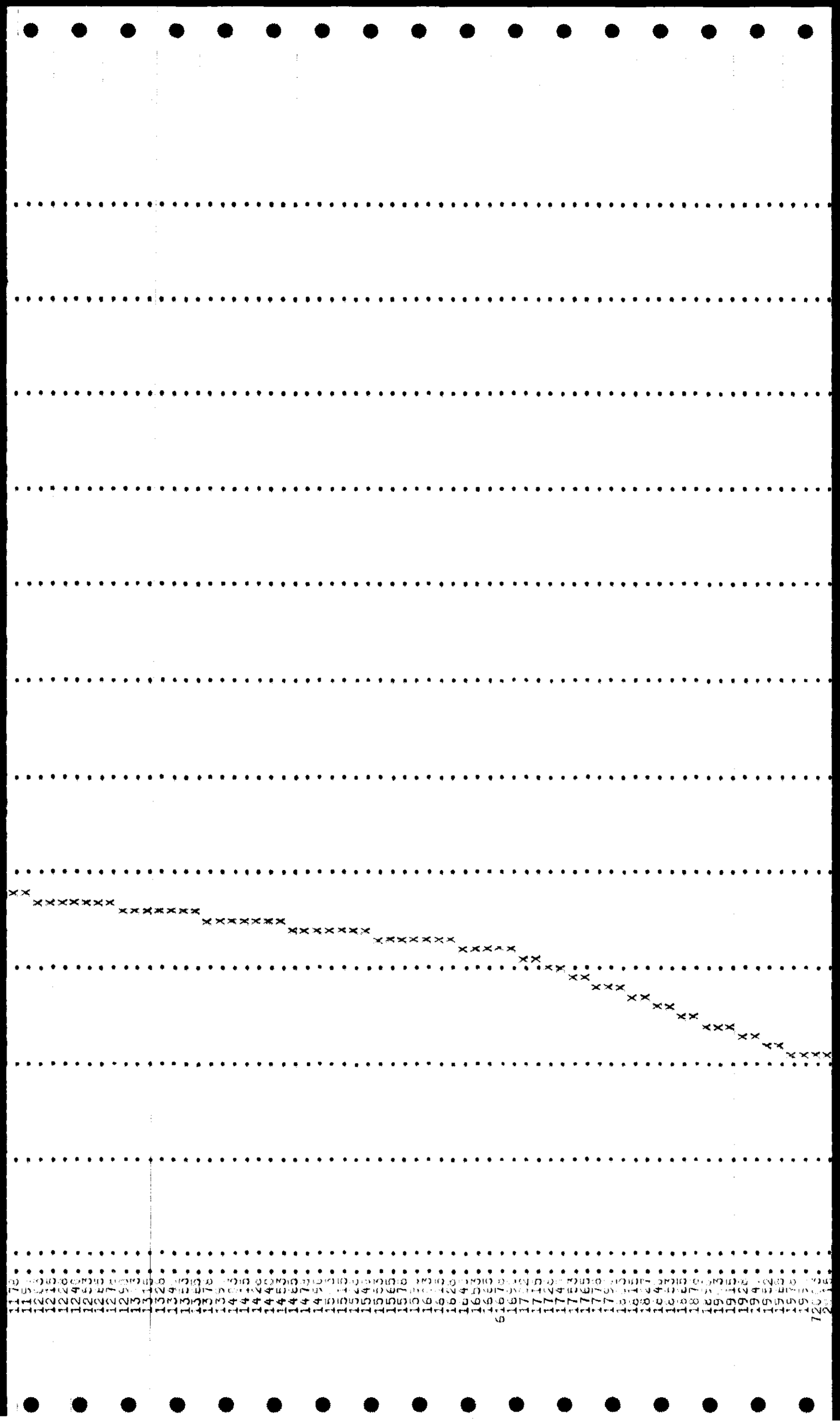
CROSS SECTION 11.99
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360. 2365. 2370.

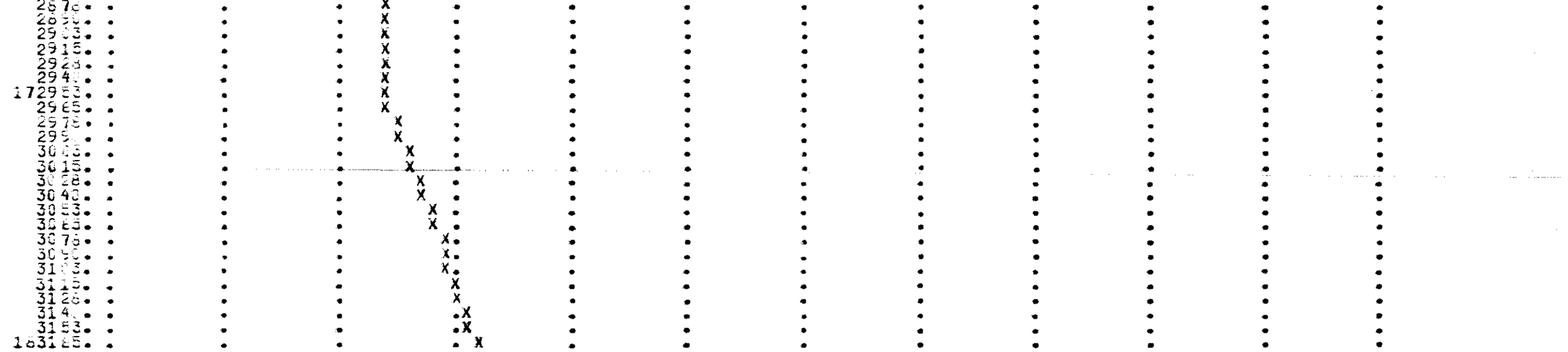
STA-FEET





BANK

BANK



NRD= 0 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

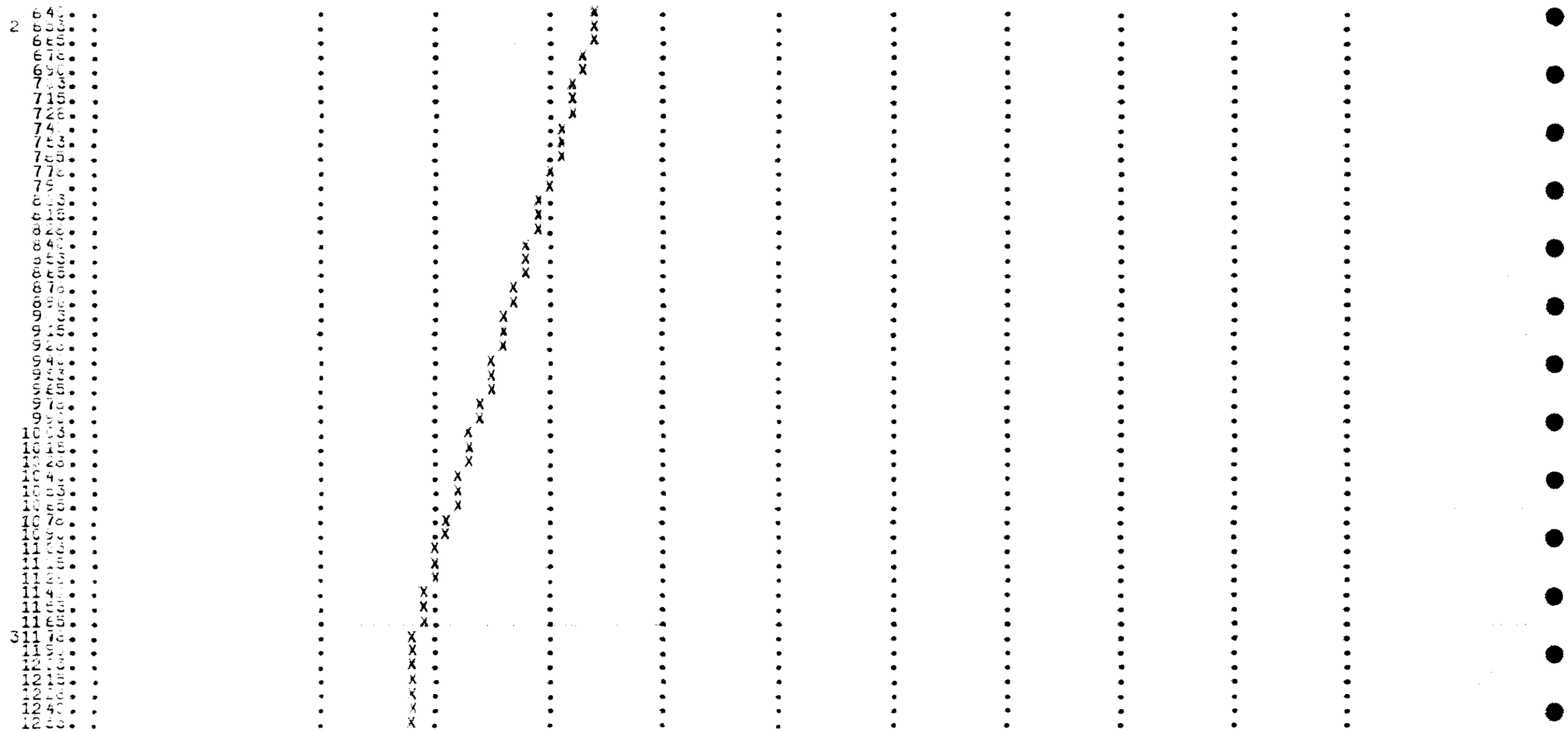
2344.00	540.00	2340.00	980.00	2340.00	980.00	2340.00	980.00	2336.00	1680.00
2330.30	2000.00	2330.80	2154.00	2320.90	2183.00	2320.90	2233.00	2322.60	2247.00
2331.10	2261.00	2332.90	2271.00	2331.70	2294.00	2333.80	2416.00	2332.00	2780.00
2332.00	2950.00	2336.00	3170.00						

CROSS SECTION 12.10
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4170.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

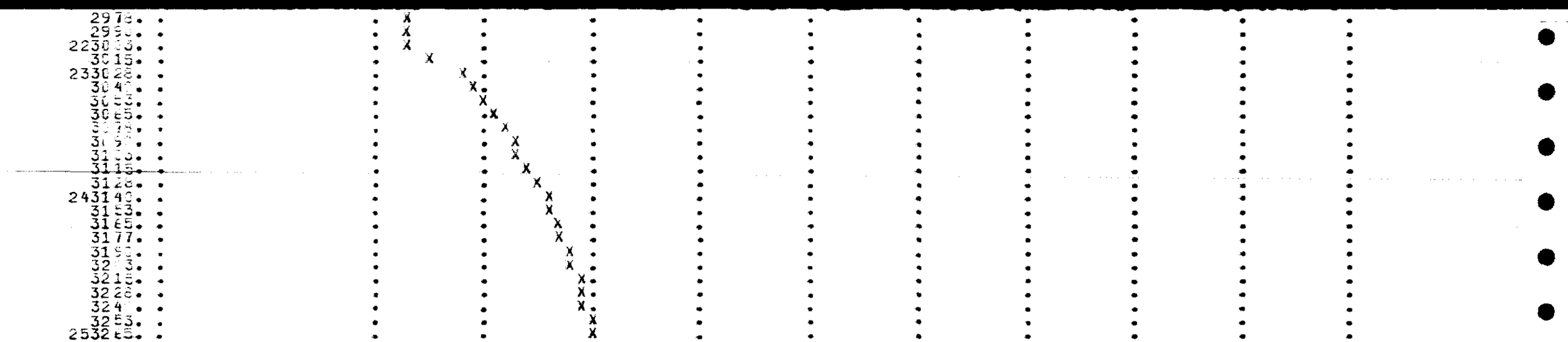
ELEV 2326. 2331. 2336. 2341. 2346. 2351. 2356. 2361. 2366. 2371. 2376.

STA-FEET



BANK

BANK



NRD= 0 ELLO= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

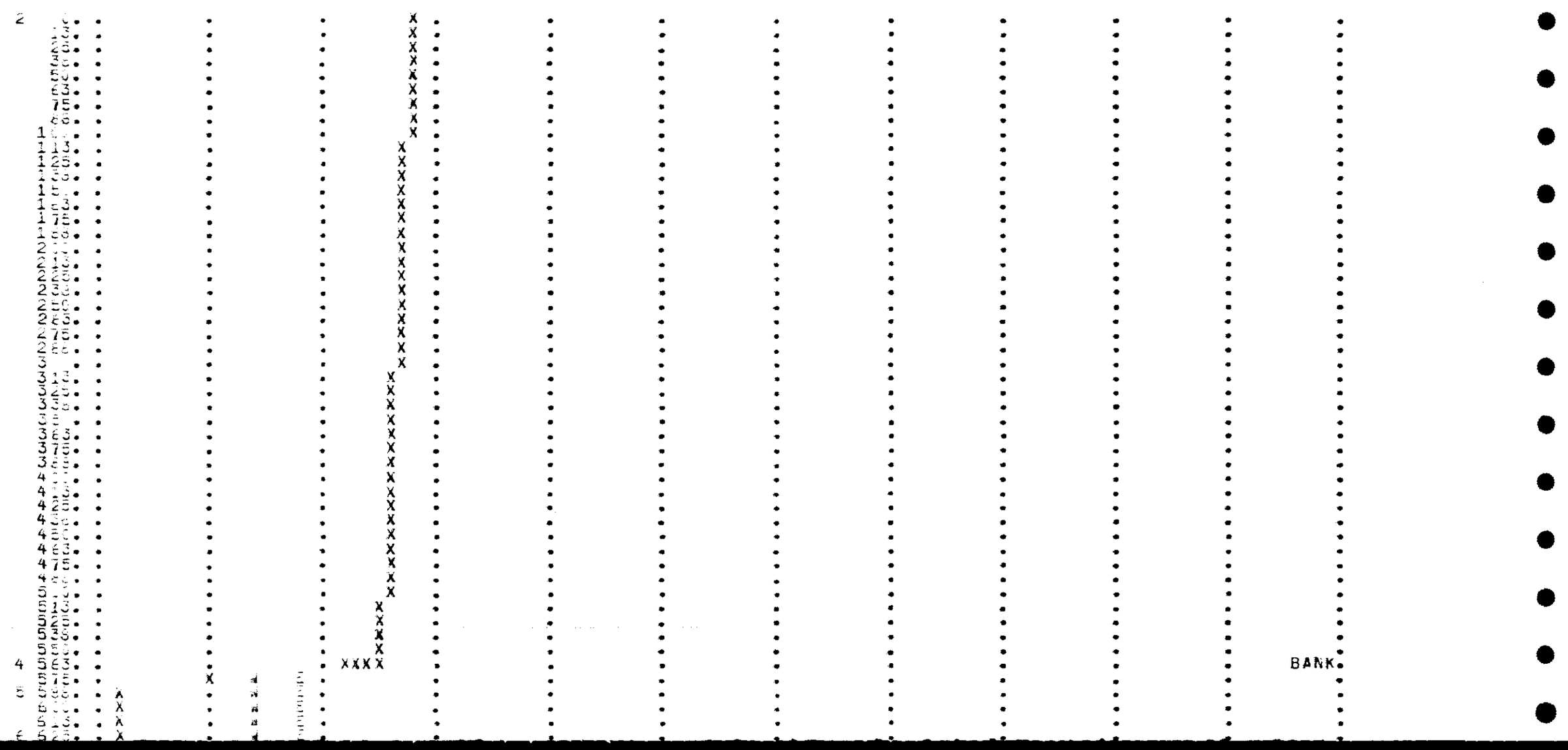
2346.00	350.00	2342.00	1180.00	2339.00	1530.00	2335.00	1950.00	2336.00	1940.00
2334.70	2300.00	2333.10	2079.00	2332.90	2104.00	2332.50	2122.00	2332.50	2136.00
2334.30	2247.00	2335.30	2264.00	2336.00	2288.00	2337.00	2349.00	2337.50	2371.00
2337.40	2435.00	2338.70	2488.00	2336.00	2537.00	2337.00	2578.00	2337.50	2650.00
2337.50	3000.00	2340.00	3030.00	2344.00	3140.00	2346.00	3260.00		

CROSS SECTION 12.15
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2326. 2331. 2336. 2341. 2346. 2351. 2356. 2361. 2366. 2371. 2376.

STA-FEET



BANK

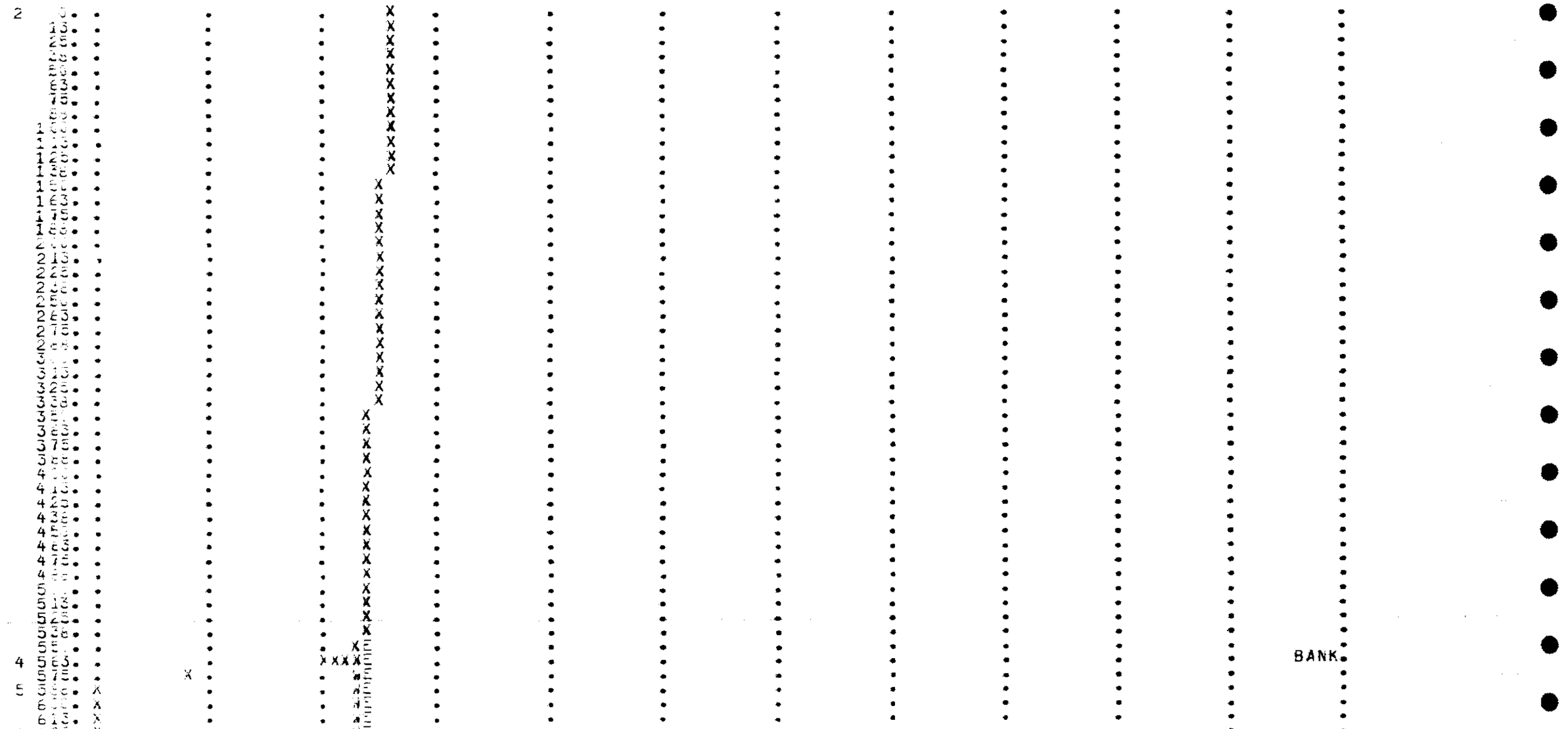
NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

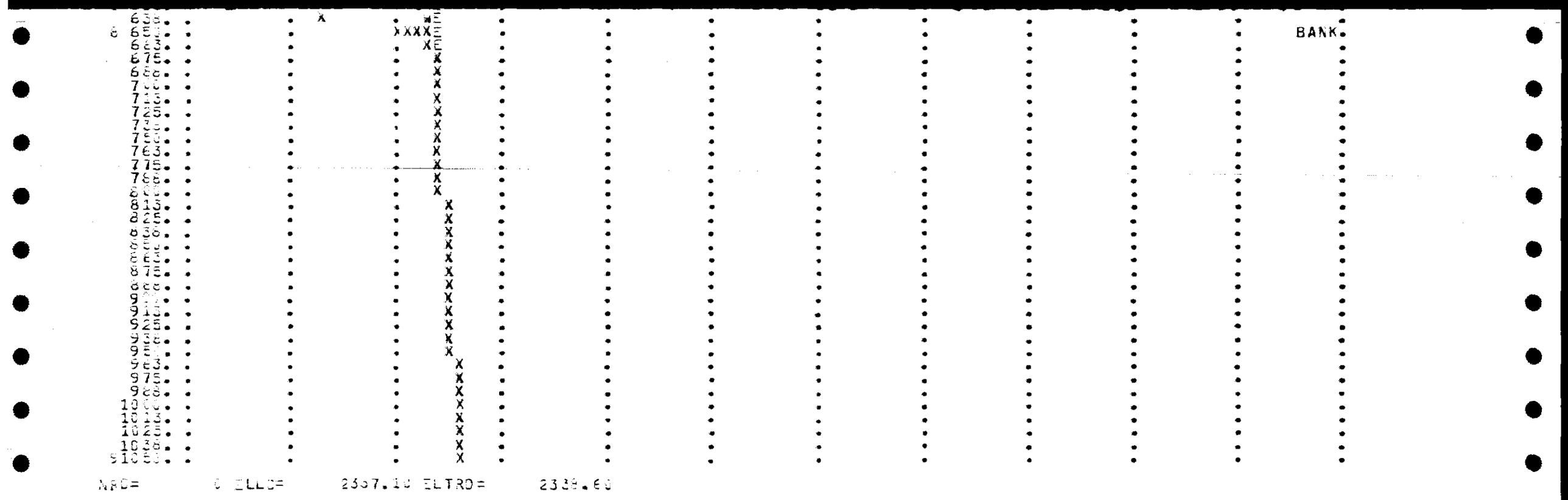
EL(I),STA(I)

2340.00	0.00	2333.60	562.00	2337.10	562.00	2327.10	582.00	2327.10	639.00
2337.10	651.00	2333.60	651.00	2340.00	1050.00				

CROSS SECTION 12.19
STREAM FLAMINGO WASH, REACH 2 *
DISCHARGE= 4110.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL





NRD= 0 ELLO= 2337.10 ELTRO= 2339.60

EL(I),STA(I)

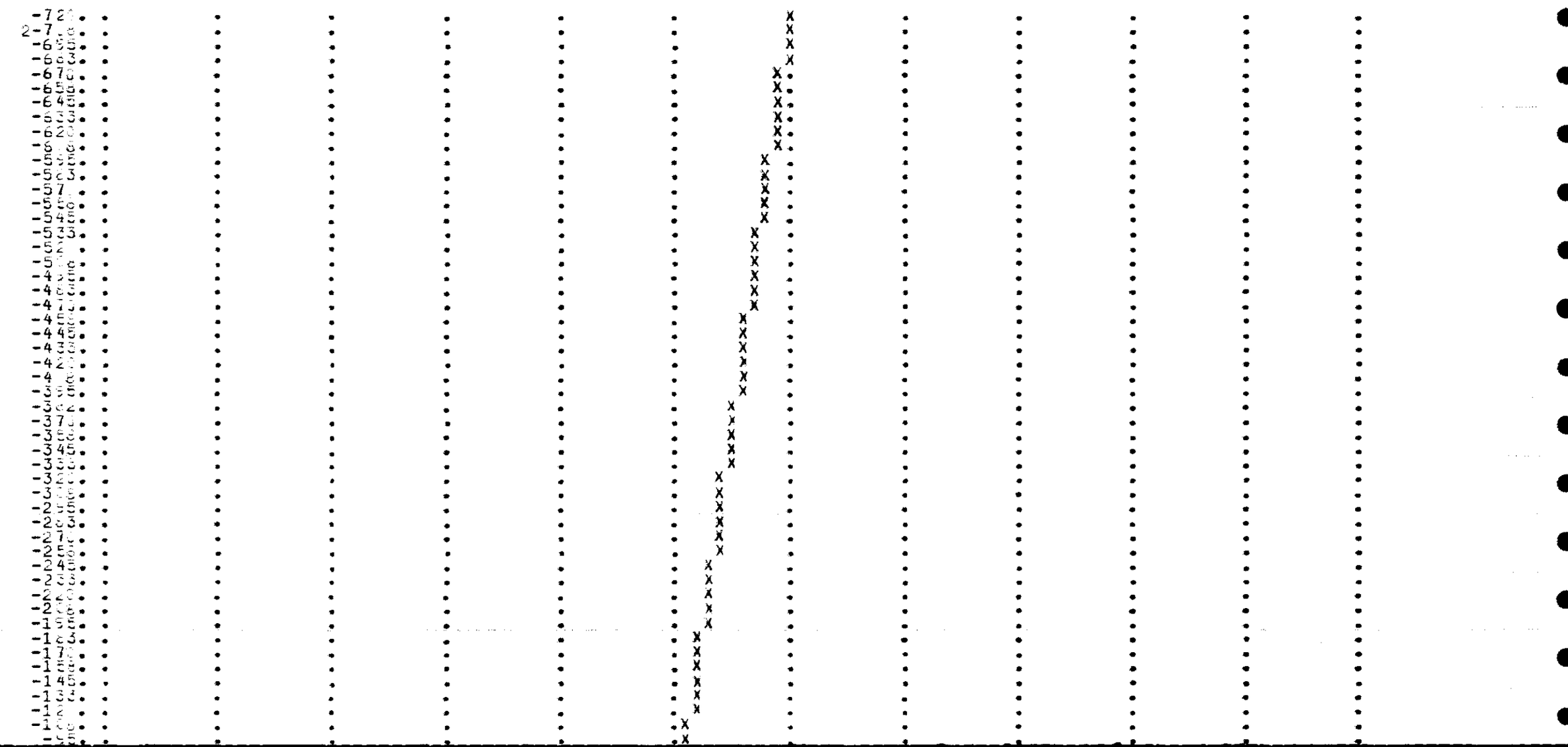
2341.10	0.00	2333.70	562.00	2338.20	562.00	2328.20	582.00	2328.20	630.00
2338.20	650.00	2339.70	657.00	2341.10	1050.00				

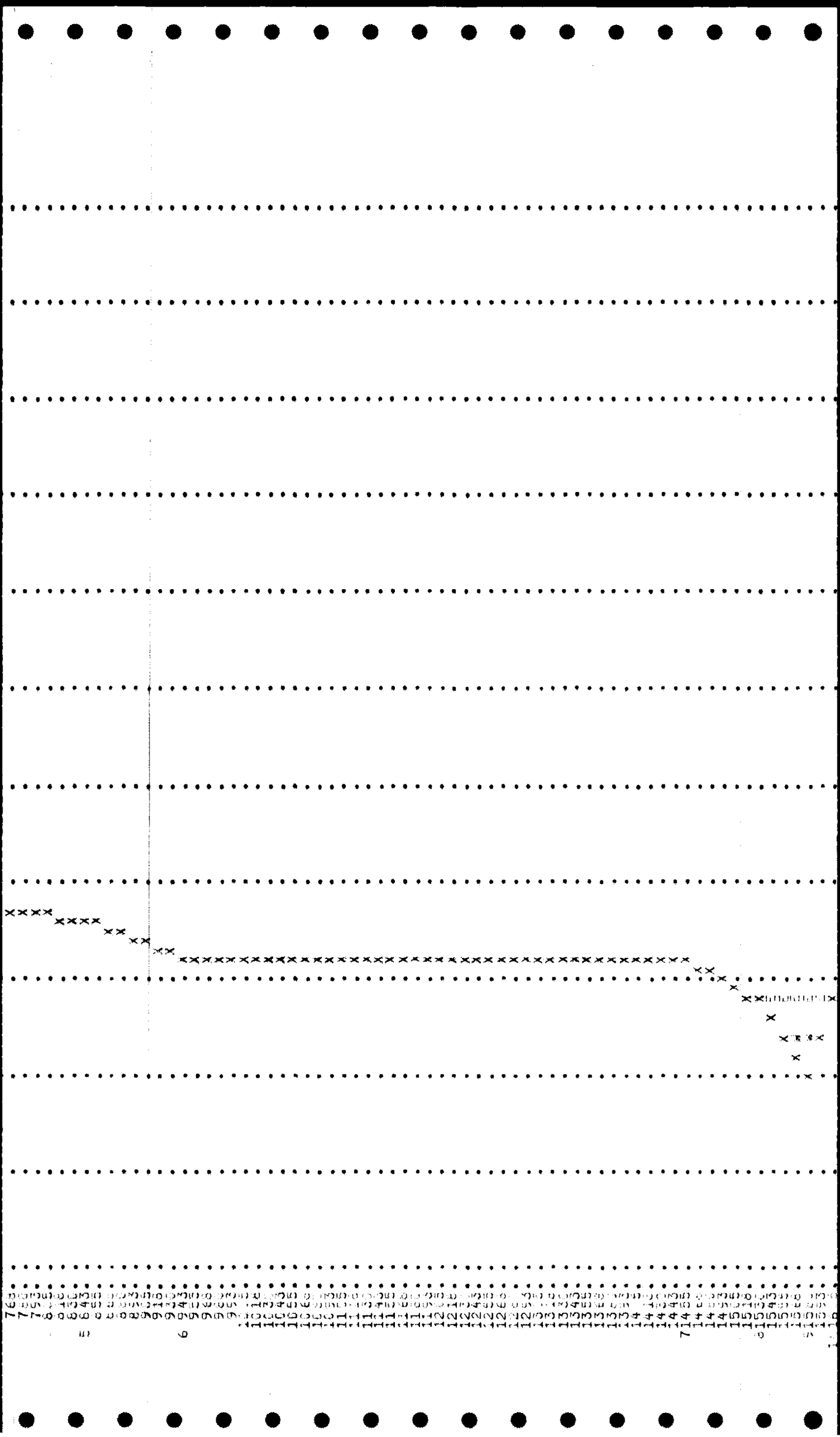
CROSS SECTION 12.32
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2330. 2335. 2340. 2345. 2350. 2355. 2360. 2365. 2370. 2375. 2380.

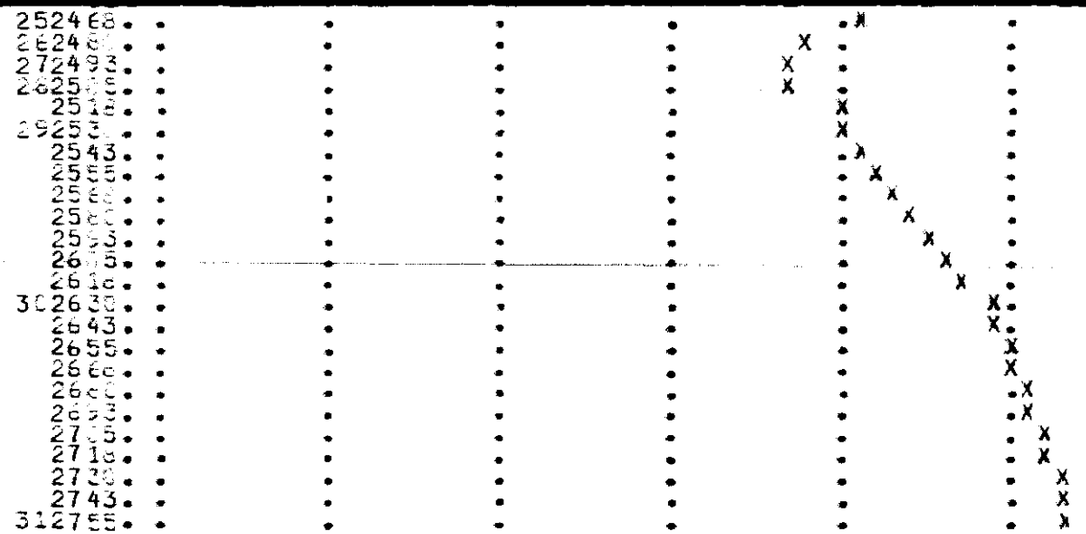
STA-FEET





BANK

BANK



NRD= 6 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),STA(I)

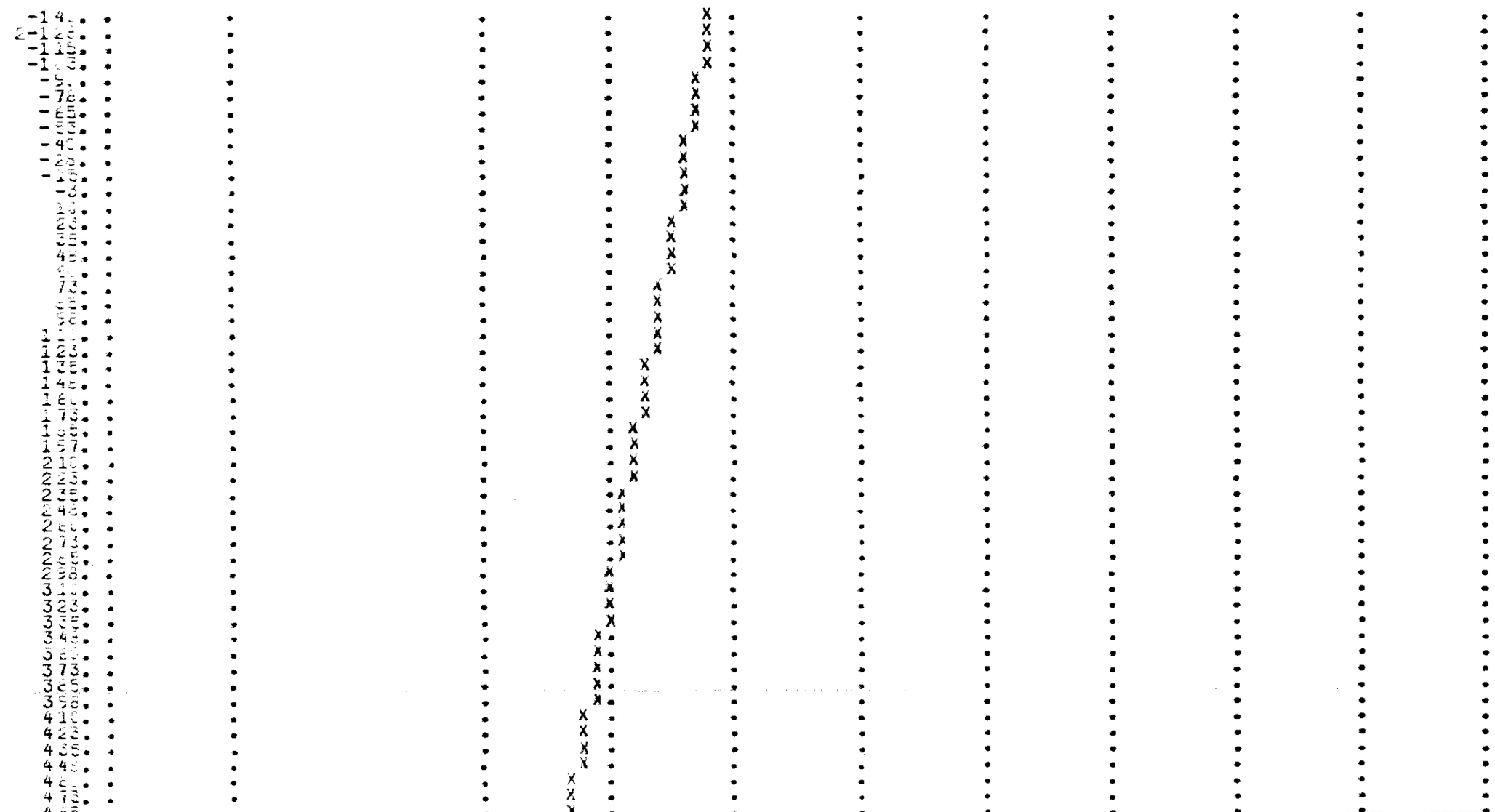
2346.00	-71.00	2354.40	7.00	2352.00	320.00	2348.00	940.00	2346.00	940.00
2346.00	1460.00	2344.00	1520.00	2347.00	1580.00	2344.00	1605.00	2345.60	1670.00
2346.10	2000.00	2347.10	2199.00	2334.70	2227.00	2334.70	2234.00	2337.30	2242.00
2337.30	2258.00	2337.90	2276.00	2346.20	2308.00	2347.40	2319.00	2347.40	2334.00
2347.60	2348.00	2351.30	2364.00	2352.20	2451.00	2350.40	2463.00	2349.20	2486.00
2345.60	2494.00	2343.50	2519.00	2351.20	2524.00	2354.40	2534.00	2356.70	2756.00

CROSS SECTION 12.42
STREAM FLAMINGO WASH, REACH 2 .
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLP,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2340. 2345. 2350. 2355. 2360. 2365. 2370. 2375. 2380. 2385. 2390.

STA-FEET

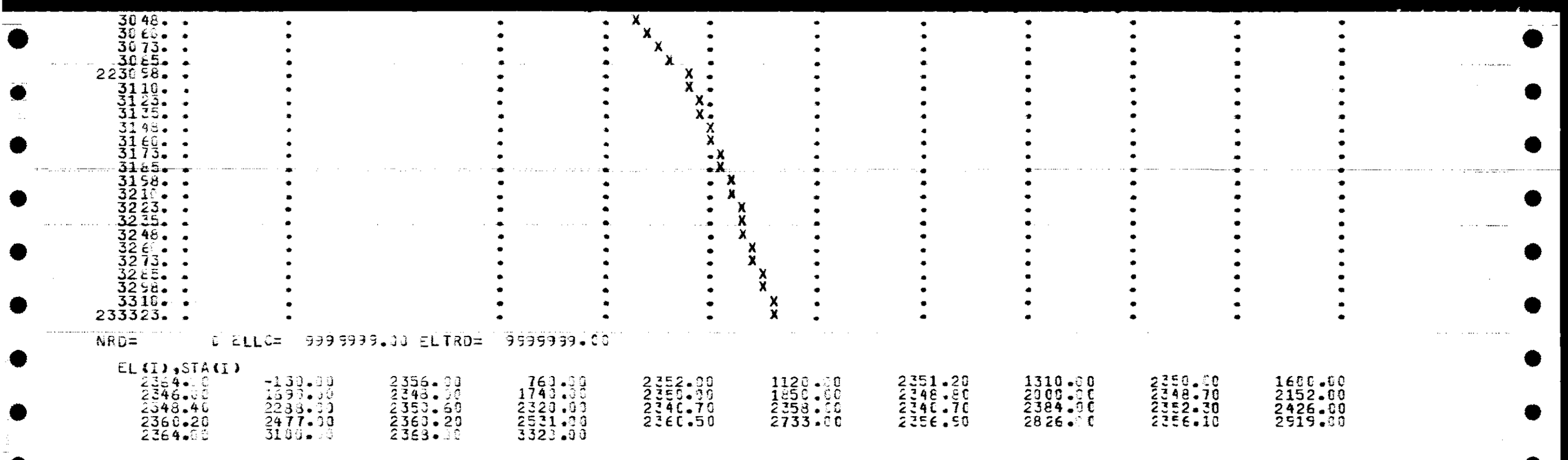


3

4

BANK

BANK



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2364.00	-130.00	2356.00	760.00	2352.00	1120.00	2351.20	1310.00	2350.00	1600.00
2346.00	1590.00	2348.00	1740.00	2350.00	1850.00	2348.80	2000.00	2348.70	2152.00
2348.40	2288.00	2350.60	2320.00	2340.70	2358.00	2340.70	2384.00	2352.30	2426.00
2360.20	2477.00	2360.20	2531.00	2360.50	2733.00	2356.90	2826.00	2356.10	2919.00
2364.00	3100.00	2368.00	3320.00						

CROSS SECTION 12.48
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2342.     2347.     2352.     2357.     2362.     2367.     2372.     2377.     2382.     2387.     2392.

   STA-FEET

 22150. :        :         :         :X        :         :         :         :         :         :         :
 32163. :        :         :         :X        :         :         :         :         :         :         :BANK.
 42175. : X      :         :         :         :         :         :         :         :         :         :
  2188. : X      :         :         :         :         :         :         :         :         :         :
  2200. : X      :         :         :         :         :         :         :         :         :         :
  2213. : X      :         :         :         :         :         :         :         :         :         :
 52225. : X      :         :         :         :         :         :         :         :         :         :
 62238. :        :         :         :         :X        :         :         :         :         :         :BANK.
 72250. :        :         :         :         :X        :         :         :         :         :         :

NRD=       0 ELLO= 9999999.00 ELRO= 9999999.00

  EL(I),STA(I)
    2358.50      2150.00      2358.50      2160.00      2343.50      2175.00      2343.50      2225.00      2360.00      2240.00
    2360.00      2250.00
```

CROSS SECTION 12.49
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2344.     2349.     2354.     2359.     2364.     2369.     2374.     2379.     2384.     2389.     2394.

     STA-FEET

 22150. .          :         :         :X        :         :         :         :         :         :         :
 32163. .          :         :         :X        :         :         :         :         :         :         :    BANK.
 42175. .X         :         :         :         :         :         :         :         :         :         :
  2188. .X         :         :         :         :         :         :         :         :         :         :
  2200. .X         :         :         :         :         :         :         :         :         :         :
  2213. .X         :         :         :         :         :         :         :         :         :         :
 52225. .X         :         :         :         :         :         :         :         :         :         :
 62238. .          :         :         :         :X        :         :         :         :         :         :    BANK.
 72250. .          :         :         :         :X        :         :         :         :         :         :
```

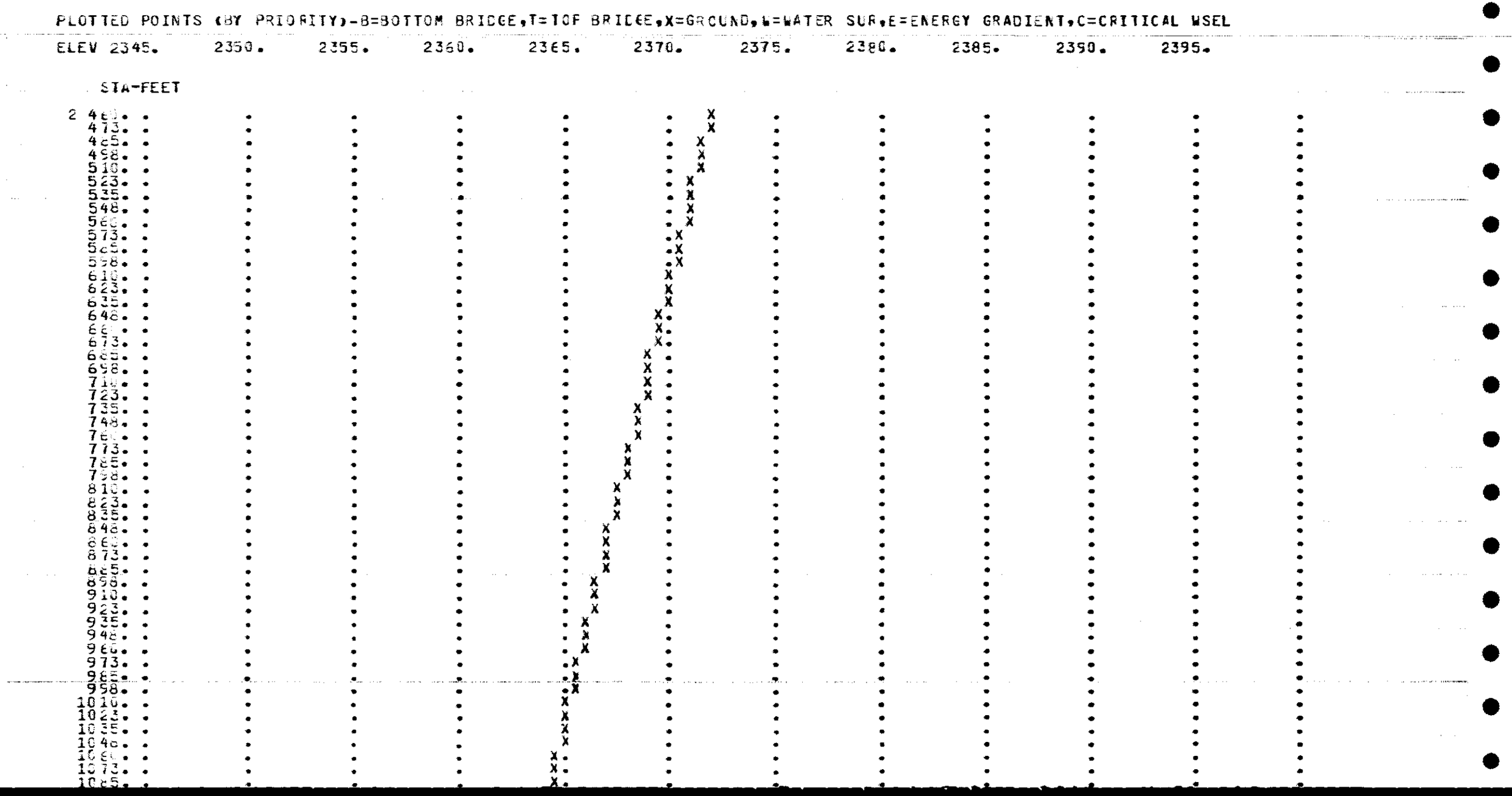
NRD= 0 ELLC= 2358.50 ELTRD= 2360.00

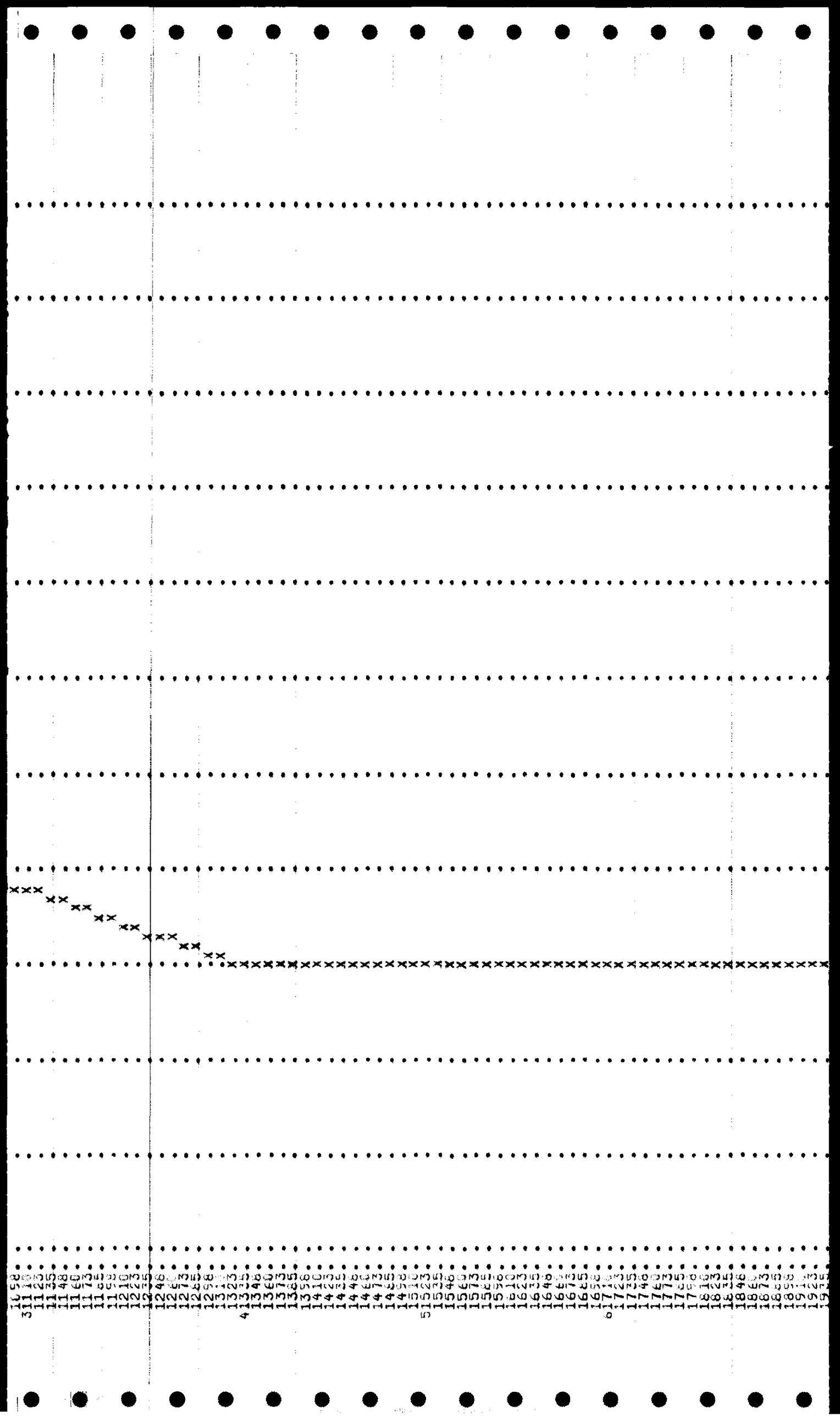
EL(I),STA(I)

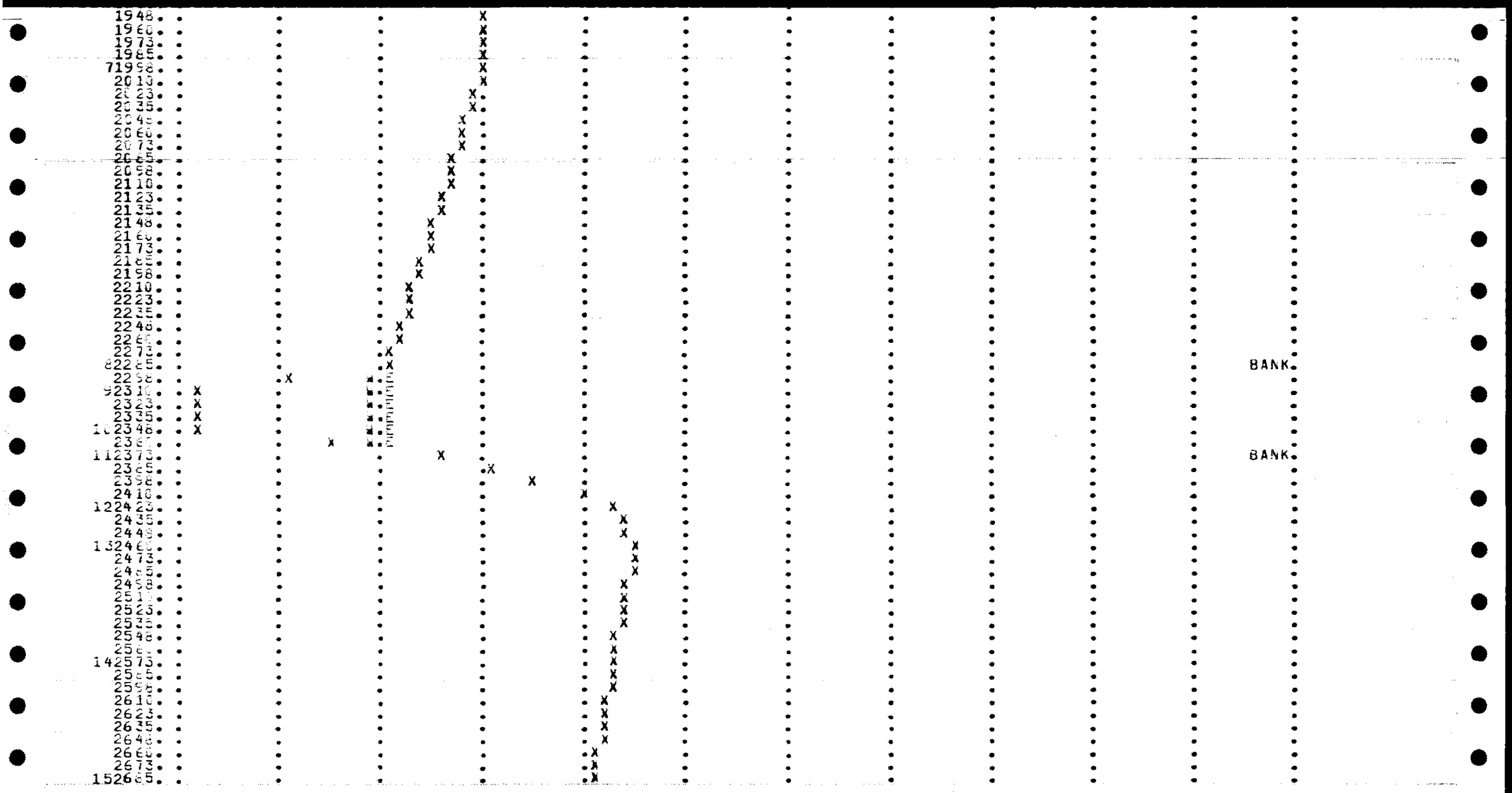
2359.50	2150.00	2359.50	2160.00	2344.50	2175.00	2344.50	2225.00	2361.00	2240.00
2361.00	2250.00							

CROSS SECTION 12.55
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL







NRD= 0 ELLC= 9999995.00 ELTRD= 9999999.00

EL(I),STA(I)

2372.00	460.00	2364.00	1110.00	2360.00	1339.10	2360.00	1520.00	2360.00	1710.00
2366.00	2000.00	2355.60	2283.00	2346.20	2305.00	2346.20	2352.00	2358.10	2375.00
2366.60	2421.00	2357.50	2462.00	2366.50	2568.00	2365.40	2681.00		

THIS RUN EXECUTED 22 FEB 89 9:46:32

```
**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**********************************************
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH, REACH 2 *

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	8.641	0.00	0.00	0.00	2131.60	4100.00	2135.93	2135.93	2137.90	59.78	11.24	364.74	530.26
*	8.650	10.00	0.00	0.00	2132.00	4100.00	2137.12	2135.83	2138.20	25.33	8.32	492.79	814.58
*	8.660	58.00	2144.60	2137.80	2132.30	4100.00	2140.44	0.00	2140.86	5.87	5.25	781.27	1692.70
*	8.741	450.00	0.00	0.00	2137.30	4100.00	2140.75	2140.75	2142.25	127.46	9.80	418.41	363.15
	8.940	1050.00	0.00	0.00	2143.30	4100.00	2145.52	0.00	2145.96	45.86	5.67	936.76	605.43
*	9.180	1230.00	0.00	0.00	2153.90	4100.00	2158.67	2158.67	2160.66	153.50	11.32	362.22	330.93
	9.430	1330.00	0.00	0.00	2171.30	4100.00	2175.51	2174.95	2176.72	96.65	8.84	523.19	417.06
	9.620	1120.00	0.00	0.00	2182.80	4100.00	2186.93	0.00	2187.49	114.95	7.07	1101.68	382.40
	9.810	975.00	0.00	0.00	2192.10	4100.00	2197.59	2197.52	2198.73	113.18	8.81	515.71	385.39
*	10.040	1245.00	0.00	0.00	2213.00	4100.00	2220.00	2220.00	2220.64	62.89	7.27	1058.69	517.02
*	10.130	470.00	0.00	0.00	2217.20	4100.00	2223.48	2223.48	2224.36	99.91	8.67	692.96	410.18
	10.310	920.00	0.00	0.00	2224.90	4100.00	2231.06	0.00	2232.19	72.03	8.53	480.73	483.10
*	10.330	110.00	0.00	0.00	2230.00	4100.00	2237.12	2237.12	2240.69	185.76	15.16	270.52	300.82
*	10.340	95.00	2242.00	2241.00	2230.50	4100.00	2239.33	0.00	2241.65	88.42	12.22	335.64	436.03
	10.490	790.00	0.00	0.00	2238.40	4100.00	2244.45	0.00	2244.57	14.01	2.84	1445.16	1095.43
*	10.700	1110.00	0.00	0.00	2252.80	4100.00	2254.88	2254.88	2255.66	206.54	7.11	576.43	285.29
	10.960	1365.00	0.00	0.00	2263.00	4100.00	2269.59	0.00	2270.18	63.54	6.86	739.39	512.76

	SECNO	XLCH	ELTRC	ELLC	ELMIN	Q	CWSEL	CRITS	EG	10K*S	VCH	AREA	.01K
	11.150	1010.00	0.00	0.00	2269.40	4100.00	2275.24	0.00	2276.89	62.22	10.31	397.57	519.80
	11.280	645.00	0.00	0.00	2273.90	4100.00	2279.40	0.00	2281.09	67.80	10.44	392.53	497.92
*	11.310	180.00	0.00	0.00	2280.00	4100.00	2286.64	2286.64	2290.00	75.36	14.70	278.88	472.30
*	11.320	70.00	2291.40	2288.40	2280.40	4100.00	2291.93	0.00	2292.66	8.87	7.29	822.04	1376.76
*	11.450	660.00	0.00	0.00	2288.90	4100.00	2294.01	2294.01	2296.28	114.63	12.08	339.53	382.94
	11.640	1090.00	0.00	0.00	2297.40	4100.00	2303.31	0.00	2304.88	66.01	10.07	407.11	504.65
*	11.790	810.00	0.00	0.00	2306.00	4100.00	2312.11	2312.11	2314.43	113.87	12.24	335.01	384.21
*	11.820	155.00	0.00	0.00	2310.00	4100.00	2316.68	2316.68	2320.01	177.25	14.65	279.81	307.96
*	11.840	75.00	2320.70	2319.00	2311.50	4100.00	2319.06	0.00	2321.65	121.40	12.91	317.48	372.12
	11.870	160.00	0.00	0.00	2315.00	4100.00	2321.96	0.00	2323.24	50.77	9.07	452.28	575.42
	11.990	645.00	0.00	0.00	2320.90	4100.00	2326.02	0.00	2327.99	104.29	11.29	363.28	401.48
	12.100	580.00	0.00	0.00	2326.00	4100.00	2331.18	0.00	2333.02	72.89	10.90	376.08	480.22
	12.150	330.00	0.00	0.00	2327.10	4100.00	2333.20	0.00	2335.14	65.39	11.15	367.55	507.01
*	12.186	188.00	2338.60	2337.10	2328.20	4100.00	2339.46	0.00	2339.87	6.96	5.19	790.56	1553.77
*	12.320	830.00	0.00	0.00	2334.70	4100.00	2342.09	2342.09	2344.23	116.92	11.74	349.16	379.17
	12.420	550.00	0.00	0.00	2340.70	4100.00	2346.28	0.00	2349.82	87.51	9.98	410.97	438.29
*	12.480	60.00	0.00	0.00	2343.50	4100.00	2349.19	2349.19	2351.81	150.96	12.99	315.63	333.70
*	12.490	90.00	2360.00	2358.50	2344.50	4100.00	2353.45	0.00	2354.40	33.03	7.82	524.19	713.43
	12.550	610.00	0.00	0.00	2346.20	4100.00	2354.45	0.00	2355.37	28.75	7.69	533.34	764.63

FLAMINGO WASH, REACH 2 +

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	8.641	4100.00	2135.93	0.00	0.00	5.83	93.30	0.00
*	8.650	4100.00	2137.12	0.00	1.19	0.00	96.00	10.00
*	8.660	4100.00	2140.44	0.00	3.31	0.00	96.00	58.00
*	8.740	4100.00	2140.75	0.00	0.32	0.00	142.40	450.00
	8.940	4100.00	2145.52	0.00	8.77	0.00	604.17	1060.00
*	9.180	4100.00	2158.67	0.00	9.15	0.00	92.29	1230.00
	9.430	4100.00	2175.51	0.00	16.84	0.00	360.37	1330.00
	9.620	4100.00	2186.93	0.00	11.41	0.00	886.13	1020.00
	9.810	4100.00	2197.59	0.00	10.67	0.00	230.08	975.00
*	10.040	4100.00	2220.00	0.00	22.41	0.00	1007.64	1245.00
*	10.130	4100.00	2223.48	0.00	3.48	0.00	398.58	470.00
	10.310	4100.00	2231.06	0.00	7.58	0.00	105.91	920.00
*	10.330	4100.00	2237.12	0.00	6.06	0.00	38.00	110.00
*	10.340	4100.00	2239.33	0.00	2.21	0.00	38.00	95.00
	10.490	4100.00	2244.45	0.00	5.11	0.00	492.51	790.00
*	10.700	4100.00	2254.83	0.00	10.43	0.00	374.44	1110.00
	10.960	4100.00	2269.59	0.00	14.72	0.00	397.00	1365.00
	11.150	4100.00	2275.24	0.00	5.65	0.00	76.53	1010.00
	11.280	4100.00	2279.40	0.00	4.16	0.00	79.74	645.00
*	11.310	4100.00	2286.64	0.00	7.24	0.00	42.00	180.00
*	11.320	4100.00	2291.93	0.00	5.29	0.00	113.41	70.00
*	11.450	4100.00	2294.01	0.00	2.08	0.00	75.81	660.00
	11.640	4100.00	2303.31	0.00	9.29	0.00	77.87	1000.00
*	11.790	4100.00	2312.11	0.00	8.80	0.00	73.18	810.00

	SECNO	Q	C*SEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	11.820	4100.00	2316.68	0.00	4.57	0.00	42.33	155.00
*	11.840	4100.00	2319.06	0.00	2.38	0.00	42.45	75.00
	11.870	4100.00	2321.96	0.00	2.91	0.00	84.68	160.00
	11.990	4100.00	2326.02	0.00	4.05	0.00	84.60	345.00
	12.100	4100.00	2331.18	0.00	5.16	0.00	84.27	580.00
	12.150	4100.00	2333.20	0.00	2.03	0.00	72.42	300.00
*	12.166	4100.00	2339.46	0.00	6.25	0.00	85.00	188.00
*	12.320	4100.00	2342.09	0.00	2.63	0.00	82.81	800.00
	12.420	4100.00	2348.28	0.00	6.19	0.00	82.50	550.00
*	12.480	4100.00	2349.19	0.00	0.92	0.00	69.87	50.00
*	12.490	4100.00	2353.45	0.00	4.26	0.00	67.09	90.00
	12.550	4100.00	2354.45	0.00	1.00	0.00	82.26	310.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 8.641 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 8.650 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 8.660 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 8.740 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.740 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 9.180 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.180 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.040 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.040 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.130 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.130 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.330 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.330 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.330 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 10.340 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 10.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.700 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.700 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.310 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.320 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.450 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.460 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.460 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.790 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 11.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.840 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 12.180 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 12.320 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

```
CAUTION  SECNO=    12.320  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    12.490  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    12.490  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    12.490  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    12.490  PROFILE= 1  HYDRAULIC JUMP D.S.
```

THIS RUN EXECUTED 22 FEB 89 9:46:36

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  51,52,53,54,55,56
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************


STOP
===> $EOJ
****** JOB EXITS ON 22 FEB 89  9:46:37                ******
****** CPU TIME=                   5 MINS  50.36 SECS ******
****** CONNECT TIME=     1 HOURS 23 MINS  13.00 SECS ******
```

```
C
C     I5
C   8.641 ####   MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
C   8.641 ####   FROM KOVAL LANE TO UPRR (THROUGH CASINO PROPERTY AND       ####
C   8.641 ####   CLOSED CONDUIT) WAS MODELED BY COE IN LAFWBOL.  STARTING ####
C   8.641 ####   WSEL'S ARE TAKEN FROM COE HEC2 RUN.                        ####
C   8.641 ####             CENTERLINE =  286.                               ####
C    8.65 ##################################################################
C    8.65 ####                  UNION PACIFIC RAILROAD                      ####
C    8.65 ####                  SPECIAL BRIDGE ROUTINE                      ####
C    8.65 ##################################################################
C    8.66 ####   ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG    ####
C    8.66 ####   THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER      ####
C    8.66 ####   WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.   ####
C    8.66 ####   FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3587    ####
C    8.74 ##################################################################
C    8.74 ####                  FLAMINGO ROAD OVERPASS                      ####
C    8.74 ####             NORMAL GROUND SECTION UTILIZED                   ####
C    8.74 ##################################################################
C    8.74 ####             CENTERLINE =  216.                               ####
C    8.74 ####   THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS   ####
C    8.74 ####   SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED     ####
C    8.74 ####   ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR115_SPLIT)####
C    8.94 ####             CENTERLINE =  2611                               ####
C    8.94 ####   VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SHALE XING   ####
C    8.94 ####   THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO    ####
C    8.94 ####   CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00          ####
C    9.16 ####             CENTERLINE =  2200                               ####
C    9.43 ####             CENTERLINE =  2300                               ####
C    9.82 ####             CENTERLINE =  2690                               ####
C    9.91 ####             CENTERLINE =  2670                               ####
C   10.04 ####             CENTERLINE = 10000                               ####
C   10.04 ####   CAMERON STREET NOT MODELED.  THIS IS A SHALE XING          ####
C   10.04 ####   THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO    ####
C   10.04 ####   CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09         ####
C   10.04 ####   LEFT BANK INEFFECTIVE FLOW AT STA 9490.
C   10.13 ####             CENTERLINE =  2530                               ####
C   10.13 ####   LEFT BANK INEFFECTIVE FLOW AT STA 2238.
C   10.33 ##################################################################
C   10.33 ####                  DECATUR BOULEVARD                           ####
C   10.33 ####                SPECIAL BRIDGE ROUTINE                        ####
C   10.33 ##################################################################
C   10.33 ####   CENTERLINE = 2575
C   10.43 ####   CENTERLINE =  2610
C   10.70 ####   CENTERLINE =  2150
C   10.96 ####   CENTERLINE =  2680
C   11.15 ####   CENTERLINE =  2550
C   11.28 ####   CENTERLINE =  2460
C   11.31 ##################################################################
C   11.31 ####                  JONES BOULEVARD                             ####
C   11.31 ####                SPECIAL BRIDGE ROUTINE                        ####
C   11.31 ##################################################################
C   11.31 ####   CENTERLINE = 2725
C   11.32 ####   CENTERLINE BT CARDS = 1690
C   11.45 ####   CENTERLINE =  2370
C   11.64 ####   CENTERLINE =  2330
C   11.79 ####   CENTERLINE =  2360
C   11.82 ##################################################################
C   11.82 ####                  TORREY PINES DRIVE                          ####
C   11.82 ####                SPECIAL BRIDGE ROUTINE                        ####
C   11.82 ##################################################################
C   11.97 ####             CENTERLINE = 10000.
```

```
C  11.99 ####   CENTERLINE =  2220
C  12.10 ####   CENTERLINE =  2310
C  12.15 ##########################################################
C  12.15 ####                    TROPICANA AVENUE                  ####
C  12.15 ####          NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)     ####
C  12.15 ##########################################################
C  12.15 ####   CENTERLINE = 10000
C  12.32 ####   CENTERLINE =  2240
C  12.42 ####   CENTERLINE =  2360
C  12.48 ##########################################################
C  12.48 ####                    RAINBOW BOULEVARD                 ####
C  12.48 ####          NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)    ####
C  12.48 ##########################################################
C  12.48 ####         CENTERLINE = 22[illegible]        ####
C  12.55 ####   CENTERLINE =  2310
T1       MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6977) HYDRAULICS
T2       CHANNEL & BRIDGE CAPACITY STUDY BY COE 2/13/89
T3       FLAMINGO WASH, REACH 2 + 1, FRLY TO RAINBOW RD (DS OF SPANISH TRAILS)
J1             2                                                    2130.1
J2    -1       1      -1       .3     12.3

NC   .025    .025    .025      .1       .3
QT        4     4100     5340     5880    20200
X1   8.641        4        2        3        3        3
GR2140.6    2000  2131.6     2014  2131.6     2089  2140.6     2113

NC                          .3       .3
X1   8.65        4     2000     2096       10       10
GR   2144     2.1     2132     2000     2132     2.96     2144     2.96

SB   1.25    1.56      2.6       96       96       36      330          2132.3     2132
X1   8.66                          1       58       58       58             .3
X2                         1  2137.8   2144.6

NC    .45      .45      .35
X1   8.74       12     2041     2229      450      450      450
X4      2  2140.0     2060  2140.0     2220
GR   2160      250  2153.1      830     2152      920     2149     1250     2152     1550
GR2158.2     2.00  2155.3     2141  2137.3     2111  2137.3     2202  2145.3     2229
GR2145.3     2246  2145.9     2260

NC    .045     .045     .04       .1       .3
X1   8.94       34     2551     2790     1030     1555     1060
GR   2160      163.     2160     1630     2160     1630     2160     1630     2160     1630
GR2152.7     2000  2152.8     2100  2151.5     2134  2149.5     2158  2148.2     2325
GR2149.2     2551  2147.9     2581  2143.3     2623  2143.3     2649  2144.6     2669
GR2149.7     2674  2152.1     2683  2151.5     2721  2147.7     2739  2146.0     2751
GR2145.6     2767  2150.2     2790  2149.5     2821  2148.3     2840  2150.9     2865
GR2149.7     2953  2148.3     2972  2148.3     2989  2150.9     3001  2153.2     3092
GR2150.9     3132  2153.7     3210  2157.2     3310     2160     3370  2160.0     3700

NC    .170     .170     .140
X1   9.18       20     2244     2332     1241     1175     1230
GR   2172     1130     2169     1210     2164     1800     2164     1730     2165     1820
GR2161.7     2000  2162.3     2103  2161.6     2144  2156.2     2157  2153.9     2185
GR2153.9     2233  2165.8     2261  2168.4     2332  2167.3     2514  2168.5     2544
GR2165.2     2567  2165.9     2535     2163     2881     2165     3670     2172     3750

NH        4      .045     2272     .040     2395     .170     3700        5     4500
X1   5.43       19     2272     2595     1315     1280     1320
GR2161.5     2000  2131.2     2124  2179.8     2215  2176.8     2241  2176.9     2272
GR2172.8     2276  2171.3     2289  2171.3     2357  2172.2     2388  2176.1     2395
GR2175.5     2472  2177.6     2587  2177.4     2705     2175     2935     2177     3260
GR   2175     3360  2180.5     4240     2180     4490     2181     4500

NH        4      .045     2493     .04      2652     .16      3630     .31      3330
X1   5.82       33     2493     2691      985     1026     1020
GR   2154     1670     2194     1670     2194     1870     2194     1870     2154     1870
```

GR2193.8	2000	2191.4	2136	2191.6	2179	2191.8	2255	2190.0	2280
GR2189.6	2307	2189.0	2335	2188.5	2372	2190.0	2388	2187.9	2418
GR2186.3	2426	2185.3	2432	2188.1	2444	2188.3	2493	2186.3	2558
GR2184.4	2577	2184.4	2651	2182.8	2667	2182.8	2652	2185.9	2691
GR2187.4	2717	2189.3	2782	2189.5	3027	2189.5	3630	2185	4520
GR 2188	5020	2192	5240	2195	5330				
NC .45	.45	.04							
X1 9.91	32	2025	2775	981	980	975			
X3 10									
GR 2208	1380	2204	1600	2204	1740	2207	1800	2207	1950
GR22[illegible]	[illegible]	2214.[illegible]	2122	2213.5	2199	2213.2	2344	2203.4	2411
GR2202.0	2468	2198.9	2513	2196.4	2543	2196.4	2581	2197.4	2595
GR2196.8	2629	2192.1	2653	2192.1	2678	2193.3	2706	2196.6	2724
GR2196.3	2755	2203.2	2775	2202.6	2903	2202.6	3014	2201.6	3061
GR2199.2	3197	2211.1	3141	2199.8	3192	2201.8	3224	2203.8	3266
GR 2204	3310	2208	3430						
NH 4	0.06	9490	.060	9950	.040	10060	.045	10150	
X1 1[illegible].4	12	9953	10060	10155	12540	1245			
GR 2228	8180	2224	8245	2222	8884	2218.6	9490	2220.5	9880
GR 2220	9550	2216	9970	2213	10000	2216	10030	2220	10060
GR 2224	10100	2228	10150						
NH 4	0.06	2288	.060	2489	.040	2587	.045	3083	
X1 1 .13	23	2489	2587	3880	5170	470			
GR 2236	1150	2252	1190	2225	1350	2228	1350	2224	1860
GR2221.7	2[illegible]	2227.9	2097	2224.5	2111	2224.4	2288	2222.7	2773
GR2224.4	2489	2221.3	2514	2221.3	2521	2218.8	2547	2217.2	2569
GR2217.2	2578	2225.6	2587	2226.6	2614	2234.7	2638	2237.0	2756
GR2237.8	2947	2240.3	2959	2241.0	3083				
NC .060	.045	.04	.1	.3					
NC .045	.045	.042	.1	.3					
X1 10.31	18	2123	2319	920	920	920			
GR 2246	1560	2244	1950	2244	1950	2244	1950	2244	1950
GR2242.3	2[illegible]	2235.9	2129	2237.4	2214	2226.8	2236	2224.9	2248
GR2224.9	2299	2235.4	2319	2237.9	2419	2242.2	2474	2241.3	2531
GR2242.1	2584	2244.5	2630	2243	2810				
NC			.3	.3					
X1 1 .33	12	2350	2388	110	110	110			
X3							2241	2241	
GR 2248	1560	2244	1950	2244	1950	2244	1950	2244	1950
GR 2244	2[illegible]	2238	2388	2237.0	2391	2238.6	2388	2238	2388
GR 2243	2650	2243.0	2870						
SB 1.25	1.5	2.30		37.4	9.4	254		2230.5	2230
X1 10.34	12	2350	2388	95	95	95			
X2		1	2241	2242					
X3 1[illegible]							2242	2242	
X4 1	2242.0	2350							
BT 8	0	2248		470	2244		610	2242.3	
BT 78[illegible]	2242		1080	2243		1280	2244.5		1430
BT 2248		1510	2262.0						
GR 2248	1560	2244	1950	2244	1950	2244	1950	2244	1950
GR 2244	2[illegible]	2235	2388	2237.5	2391	2238.5	2388	2240.	2388
GR 2243	2650	2243.0	2870						
X1 10.49	26	2475	2887	650	710	790			
GR 2272	1960	2272	1960	2272	1960	2272	1960	2272	1960
GR2268.9	2080	2272.2	2234	2270.5	2283	2265.5	2389	2261.9	2475
GR2239.9	2501	2241.5	2547	2239.1	2570	2239.1	2617	2241.3	2648
GR2242.1	2771	2241.3	2724	2240.6	2754	2239.4	2771	2238.4	2754
GR2243.9	2799	2243.0	2846	2242.9	2868	2244.4	2987	2248.3	3092
GR 2270	3220								
NC			.1	.3					

X1 10.76	19	2052	2489	1110	1160	1110				
GR 2280	1270	2280	1270	2280	1270	2280	1270	2280	1270	
GR2272.3	2800	2271.6	2352	2252.3	2112	2252.8	2198	2253.1	2233	
GR2253.6	2284	2253.6	2373	2253.6	2436	2253.6	2473	2256.6	2485	
GR2256.9	2553	2259.8	2605	2259.5	2654	2280	2740			
NC	.180	.033								
X1 10.96	31	2513	2340	1430	1280	1365				
GR 2274	120	2280	800	2272	880	2272	1330	2276	1360	
GR 2266	152	2231	1900	2281	1900	2281	1900	2281	1900	
GR2276.8	2000	2279.9	2083	2276.7	2174	2275.9	2353	2273.2	2398	
GR2263.8	2446	2274.6	2613	2267.5	2626	2267.5	2647	2264.7	2670	
GR2265.0	2680	2253.0	2686	2265.8	2702	2270.6	2736	2267.8	2761	
GR2267.9	2784	2272.9	2826	2275.6	2840	2275.6	2876	2274.1	2948	
GR 2284	3590									
X1 11.15	28	2521	2633	1035	985	1010				
GR 2290	1020	2280	1180	2289	1430	2289	1570	2286	1710	
GR2292.8	2000	2290.4	2038	2288.4	2140	2284.6	2282	2282.9	2380	
GR2282.1	2399	2281.3	2414	2281.3	2420	2278.6	2521	2280.4	2530	
GR2269.4	2586	2275.7	2593	2280.5	2607	2281.6	2633	2280.3	2655	
GR2279.3	2663	2279.3	2693	2279.3	2710	2279.3	2731	2280.7	2791	
GR 2284	3150	2288	3250	2292	3400					
NC .045	.140	.033								
X1 11.28	19	2416	2523	655	640	645				
X4 3	2300	760	2296	920	2300	1750				
GR 2281	710	2294	1060	2294	1280	2298	1400	2296.5	1600	
GR2304.5	2000	2302.3	2066	2303.3	2258	2302.5	2304	2292.1	2376	
GR2288.6	2416	2275.9	2439	2273.9	2502	2288.1	2523	2288.1	2556	
GR2288.8	2587	2292	2690	2296	3060	2300	3630			
NC		.031	.3	.5						
X1 11.31	16	2734	2746	180	200	180				
X3 16							2298.4	2296.4		
GR 2296	1000	2297	1200	2297	1600	2299.4	1760	2296.2	1580	
GR 2304	2112	2303	2652	2292	2682	2288	2704	2280	2746	
GR 2288	2768	2292	2800	2292	2920	2296	3100	2300	3420	
GR2301.4	3670									
SB 1.25	1.56	2.50		41.5	13.5	224		2280.4	2280	
X1 11.32				70	70	70		.4		
X2		1	2283.4	2291.4						
X3 16							2291.4	2291.4		
BT 12	0	2300		460	2299.7		710	2299.6		
BT 1651	2296		1200	2294.3		1380	2293		1680	
BT2292.0		1650	2291.4		1750	2292		1820	2292.4	
BT	2150	2296		2230	2300					
NC .140	.160	.036								
X1 11.48	21	2311	2423	675	655	661				
GR2306.6	6000	2304	1070	2307	1360	2302.6	1630	2304.8	1780	
GR2314.1	2000	2302.8	2129	2302.8	2170	2305.6	2260	2303.2	2311	
GR2288.9	2335	2288.9	2392	2296.9	2408	2301.6	2428	2301.6	2444	
GR2312.2	2478	2314.4	2572	2314.5	2727	2307.6	3140	2308.6	3600	
NC			.1	.5						
X1 11.64	18	2263	2372	1000	1000	1000				
X4 1	2312.2	2180								
GR 2316	560	2314.3	871	2315	1220	2315.2	1370	2315.6	1660	
GR2312.0	1800	2312.3	2104	2311.7	2261	2310.4	2283	2297.4	2297	
GR2297.4	2357	2305.1	2372	2307.7	2401	2308.6	2498	2312.6	2712	
GR 2315	2950	2310	3290	2320	3600					
X1 11.79	2	2282	2359	810	810	810				
GR2326.2	40	2324	210	2320	970	2322.1	970	2321.3	1360	
GR2318.7	2000	2315.6	2149	2314.5	2242	2315.7	2308	2316.6	2329	
GR2316.6	2348	2314.3	2381	2316.3	2399	2317.7	2427	2317.7	2458	

GR2319.8	2569	2321.2	2656	2321.4	2688	2324	3280	2328	3510
NC		.04	.3	.5					
X1 11.62	14	3283	3331.5	120	160	155			
X3 10								2319	2319
GR2326.0	1000	2321.3	2200	2321.0	2520	2320.0	2800	2320.0	3240
GR2318.0	3289	2310.0	3289.5	2310.0	3331	2319.0	3331.5	2320.0	3380
GR2321.2	3630	2323.3	3350	2324.5	4030	2328.0	4320		
SB 1.25	1.5	2.63		41.5	13.5	224		2311	2310.0
X1 11.64	11	3289	3331.5	75	75	75			
X2		1	2319	2320.7					
X3 10								2320.7	2320.7
X4 1	2324	1330							
BT 4	3000	2321.1		3260	2320.7		3380	2321	
BI 3600	2321.4								
GR2326.0	1000	2323.3	1650	2324.0	1850	2324.0	1900	2324.0	3240
GR2319.5	3289	2311.5	3289.5	2311.5	3331	2319.5	3331.5	2324.0	3380
GR2328.0	3460								
NC .145	.45	.035							
X1 11.87	13	2283	2430	300	70	160		1.5	
GR2336.0	1000	2332.0	1750	2328.0	2050	2324.0	2280	2320.0	2300
GR2313.5	2315	2313.5	2360	2316.3	2370	2320.0	2380	2324.0	2400
GR2328.0	2500	2337.6	3600	2332.0	3700				
NC			.1	.3					
X1 11.99	17	2154	2270	470	650	645			
GR 2344	540	2340	980	2340	980	2340	980	2336	1680
GR2333.3	2000	2331.9	2154	2320.9	2183	2320.9	2233	2322.6	2247
GR2331.1	2261	2332.9	2270	2331.7	2294	2333.8	2416	2332.0	2780
GR 2332	2950	2336	3170						
NC .140	.045	.031							
X1 12.10	24	2264	2371	485	565	580			
X3 10									
GR 2340	650	2340	1180	2339.8	1530	2335	1850	2336	1940
GR2334.7	2000	2332.1	2079	2332.9	2104	2332.5	2122	2332.5	2136
GR2334.3	2147	2335.3	2264	2326.0	2286	2326.0	2349	2337.5	2371
GR2337.4	2435	2336.7	2483	2336.3	2537	2337.5	2578	2337.5	2650
GR2337.5	3000	2340	3030	2344	3140	2346	3260		
NC			.3	.5					
X1 12.18	8	362	650	280	310	300			
X3 10							2238	2238	
GR 2340	0	2333.6	562	2337.1	562	2327.1	562	2327.1	630
GR2337.1	650	2336.6	650	2340	1050				
SB 1.05	1.56	3	100	48	18	500	2	2328.7	2327.1
X112.186				188	188	188		1.1	
X2		1	2337.1	2336.6					
X3 10							2336.6	2336.6	
NC .160	.45	.36							
X1 12.32	25	2199	2319	750	750	800			
X3 10									
X4 5	2348	840	2346	840	2346	1460	2344	1605	2345.5
X4 1670									
GR 2360	-710	2354.4	70	2352	320	2344	1530	2340	1580
GR2346.1	2000	2347.1	2199	2334.7	2221	2334.7	2234	2337.3	2242
GR2337.9	2258	2337.9	2273	2346.2	2308	2347.4	2319	2347.4	2334
GR2347.9	2348	2351.3	2364	2352.2	2451	2350.4	2463	2349.2	2486
GR2348.6	2494	2348.6	2539	2351.1	2524	2354.4	2634	2356.7	2756
NC		.340	.1	.3					
NR 4	.14	760	.06	2520	.04	2477	.045	3320	
X1 12.42	19	2323	2477	535	595	550			
X3 10									

```
X4      3     2352      1120    2351.2      1310      2348      1740
GR   2364     -130      2356       760      2350      1600      2346      1690      2350      1850
GR2348.8     2000    2349.7      2152    2349.4      2289    2350.6      2320    2349.7      2358
GR2348.7     2384    2352.3      2426    2351.2      2471    2360.2      2531    2351.5      2733
GR2356.9     2826    2355.1      2919      2364      3100      2368      3320
NC                                .3                .5
NH      4      .14      1490       .14      2165       .04    2235.1       .05      2730
X1 12.48        6      2150      2240        60        60                  60
X3     10                                                              2400      2400
GR2356.5      215    2353.5      2160    2343.5      2175    2343.5      2225      2360      2240
GR   2365     2250
SB   1.65        2       2.5       150        50        10     961.5         1    2344.5    2343.5
X1 12.49                              1        90        90                  1
X2                        1    2358.5      2360
X3     10                                                              2400      2400
NH      4      .14      1330       .14      2263       .05      2375       .05      2681
X1 12.55       14      2283      2375       310       310       310
GR   2372      460      2364      1110      2360      1300      2360      1520      2360      1710
GR2366.0     2000    2355.6      2283    2346.2      2305    2346.2      2352    2359.1      2375
GR2366.6     2421    2367.5      2462      2366      2568      2365.4      2681
EJ
   ** BLANK CARD **
   ** BLANK CARD **
   ** BLANK CARD **
ER
```

SUMMARY OF ERRORS

T1 MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (XE977) HYDRAULICS
T2 CHANNEL & BRIDGE CAPACITY STUDY BY COE 2/13/68
T3 FLAMINGO WASH, REACH 2 + 1, FRWY TO RAINBOW RD (DS OF SPANISH TRAILS)

8.660 - CAUTION - X3 CARD OMITTED AT DOWNSTREAM XSEC OF SPECIAL BRIDGE

8.660 - CAUTION - X3 CARD OMITTED AT UPSTREAM XSEC OF SPECIAL BRIDGE

8.660 UNABLE TO EDIT SPECIAL BRIDGE MODEL DUE TO INSUFFICIENT DATA

8.940 - ERROR - GR CARD - NUMST = 34 DOES NOT EQUAL NUMBER OF STATIONS READ = 35

9.430 - ERROR - NH CARD - STN = 3700.000 IS NOT GR OR X4 CARD

10.310 - NOTE - NC CARD - ONLY ONE MAY BE USED PER XSEC

10.340 - ERROR - GR CARD - STA = 1950.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - ERROR - GR CARD - STA = 1950.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - ERROR - GR CARD - STA = 1950.000 IDENTICAL GR POINTS ARE NOT ALLOWED WITH BT CARDS

10.340 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 38.000 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

10.340 - CAUTION - TOP OF RIGHT LEVEE = 2242.000 IS LOWER THAN UPSTREAM TOP OF ROAD = 2252.000 AT SPECIAL BRIDGE

10.340 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 38.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 28.000

11.320 - NOTE - X1 CARD - PXSECE = 0.400 IS APPLIED TO BT ELEVATIONS ONLY WHEN REPBT = 1 AND NO BT CARDS ARE READ THIS XSEC

11.320 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 42.000 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

11.320 - CAUTION - TOP OF RIGHT LEVEE = 2291.400 IS LOWER THAN UPSTREAM TOP OF ROAD = 2300.000 AT SPECIAL BRIDGE

11.320 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 42.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 28.000

11.820 - ERROR - X3 CARD - ELREA = 2319.000 NOT USED WHEN ELLEA = 0

11.840 - ERROR - X3 CARD - ELREA = 2320.700 NOT USED WHEN ELLEA = 0

11.840 - CAUTION - TOP OF LEFT LEVEE = 2318.000 IS LOWER THAN DOWNSTREAM LOW CHORD = 2319.000 AT SPECIAL BRIDGE

11.840 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 42.500 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 28.000

11.840 - CAUTION - TOP OF LEFT LEVEE = 2318.000 IS LOWER THAN UPSTREAM TOP OF ROAD = 2320.700 AT SPECIAL BRIDGE

11.840 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 42.500 IS GREATER

THAN TOP WIDTH OF SPECIAL OPENING = 28.000

12.186 - NOTE - SB CARD - BAREA = 500.000 DOES NOT AGREE WITHIN 10 PCT OF CALCULATED TRAPEZOIDAL AREA = 393.125

12.186 - CAUTION - TOP OF LEFT LEVEE = 2238.000 IS LOWER THAN DOWNSTREAM LOW CHORD = 2337.100 AT SPECIAL BRIDGE

12.186 - CAUTION - TOP OF RIGHT LEVEE = 2238.000 IS LOWER THAN DOWNSTREAM LOW CHORD = 2337.100 AT SPECIAL BRIDGE

12.186 - CAUTION - TOP WIDTH OF DOWNSTREAM CHANNEL = 88.000 IS GREATER THAN TOP WIDTH OF SPECIAL BRIDGE OPENING = 70.000

12.186 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 88.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 63.600

12.32[illegible] - NOTE - GR CARD - IT IS RECOMMENDED THAT STATION NUMBERS BE STRICTLY POSITIVE

12.420 - NOTE - GR CARD - IT IS RECOMMENDED THAT STATION NUMBERS BE STRICTLY POSITIVE

12.48[illegible] - ERROR - NH CARD - STN = 1490.000 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN = 2165.000 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN = 2235.100 IS NOT GR OR X4 CARD

12.480 - ERROR - NH CARD - STN = 2730.000 IS NOT GR OR X4 CARD

12.490 - NOTE - SB CARD - BAREA = 561.500 DOES NOT AGREE WITHIN 10 PCT OF CALCULATED TRAPEZOIDAL AREA = 756.000

12.490 - CAUTION - TOP OF LEFT LEVEE = 2400.000 IS HIGHER THAN DOWNSTREAM TOP OF ROAD = 2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP OF RIGHT LEVEE = 2400.000 IS HIGHER THAN DOWNSTREAM TOP OF ROAD = 2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP OF LEFT LEVEE = 2400.000 IS HIGHER THAN UPSTREAM TOP OF ROAD = 2360.000 AT SPECIAL BRIDGE

12.490 - CAUTION - TOP OF RIGHT LEVEE = 2400.000 IS HIGHER THAN UPSTREAM TOP OF ROAD = 2360.000 AT SPECIAL BRIDGE

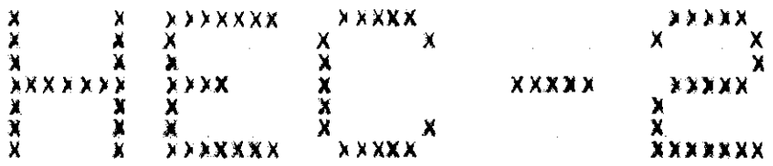
12.490 - CAUTION - TOP WIDTH OF UPSTREAM CHANNEL = 80.000 IS GREATER THAN TOP WIDTH OF SPECIAL OPENING = 68.000

RUN TIME = 0 HRS 0 MIN 14.[illegible] SEC

===> HLIB*HEC2,INPUT=F52B

```
*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED MAY 1984                                 *
*                                                   *
*  RUN DATE  22 FEB 89 TIME   12:52:21              *
*****************************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```

THIS RUN EXECUTED 22 FEB 89 12:52:21

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************

C
T1      MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6977) HYDRAULICS
T2      CHANNEL & BRIDGE CAPACITY STUDY BY CCE 2/13/89
T3      FLAMINGO WASH, REACH 2 + 1, FRWY TO RAINBOW RD (DS OF SPANISH TRAILS)

J1  ICHECK     INQ      NINV     IDIR      STRT     METRIC    HVINS      Q          WSEL       FG
              0.       2.       3.        0.     1.000000     0.00      0.0        0.  2130.100    0.000

J2  NPROF      IPLOT    PRFVS    XSECV     XSECH     FN       ALLDC     IBW        CHNIM      ITRACE
           -1.000      1.000   -1.000     5.000    12.500    0.000     0.000     0.000     0.000     0.000

NC      0.025     0.025     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT      4.000  4100.000  5340.000  5800.000 20200.000     0.000     0.000     0.000     0.000     0.000
####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH  ####
####  FROM KOVAL LANE TO UPRR (THROUGH CASING PROPERTY AND  ####
####  CLOSED CONDUIT) WAS MODELED BY CCE IN L&LFWBOL.  STARTING  ####
####  WSEL'S ARE TAKEN FROM CCE HEC2 RUN.  ####
####  CENTERLINE =  2060.  ####
X1      8.641     4.000  2000.000  2113.000     3.000     3.000     3.000     0.000     0.000     0.000
GR   2140.600  2100.000  2131.600  2114.000  2131.600  2089.000  2140.600  2113.000     0.000     0.000

NC      0.000     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
##########################################################################
####  UNION PACIFIC RAILROAD  ####
####  SPECIAL BRIDGE ROUTINE  ####
##########################################################################
X1      8.650     4.000  2000.000  2096.000    10.000    10.000    10.000     0.000     0.000     0.000
GR   2144.000  2100.000  2132.000  2093.000  2132.000  2096.000  2144.000  2096.000     0.000     0.000

SB      1.25      4.560     2.000    96.000    96.000    36.000   330.000     0.000  2132.300  2132.000
####  ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG  ####
####  THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER  ####
####  WEIRING OVER THE UPRR OR CROSSING AT SRING MOUNTAIN RD.  ####
####  FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3590  ####
X1      8.660     0.000     0.000     0.000    58.000    58.000    58.000     0.000     0.300     0.000
X2      8.000     0.000     1.000  2137.000  2144.600     0.000     0.000     0.000     0.000     0.000

NC      0.045     0.045     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

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         ##########################################################################
         ####                    FLAMINGO ROAD OVERPASS                        ####
         ####              NORMAL GROUND SECTION UTILIZED                      ####
         ##########################################################################
         ####                  CENTERLINE =  2160                              ####
         ####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS        ####
         ####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED          ####
         ####  ON RESULTS OF SPLIT FLOW ANALYSIS FOR LPRR (UPRR IS SPLIT)      ####
X1        9.740      12.000    2041.000    2229.000     450.000     450.000      450.000       0.000       0.000       0.000
X4        2.600    2140.000    2080.000    2140.000    2220.000       0.000        0.000       0.000       0.000       0.000
GR  2160.000      250.000    2152.100       0.000    2152.000     920.000     2149.000    1250.000    2152.000    1550.000
GR  2168.200     2080.000    2166.300    2041.000    2131.300    2111.000     2137.100    2202.000    2145.300    2229.000
GR  2145.300     2246.000    2145.900    2260.000       0.000       0.000        0.000       0.000       0.000       0.000

NC        0.045      0.045       0.040       0.100       0.300       0.000        0.000       0.000       0.000       0.000
         ####                  CENTERLINE =  2610                              ####
         ####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SKALE XING        ####
         ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACTUALLY CUTS INTO        ####
         ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00               ####
X1        8.940      34.000    2551.000    2750.000    1030.000    1355.000     1060.000       0.000       0.000       0.000
GR  2160.000     1630.000    2160.000    1630.000    2160.000    1630.000     2160.000    1630.000    2160.000    1630.000
GR  2152.700     2000.000    2152.800    2100.000    2151.500    2134.000     2149.500    2198.000    2148.200    2325.000
GR  2149.200     2551.000    2147.900    2681.000    2142.300    2623.000     2143.200    2645.000    2144.600    2669.000
GR  2145.700     2674.000    2152.100    2683.000    2151.500    2721.000     2147.700    2739.000    2146.000    2751.000
GR  2145.600     2767.000    2150.200    2750.000    2149.500    2821.000     2148.300    2840.000    2150.900    2869.000
GR  2149.700     2753.000    2148.300    2772.000    2146.800    2589.000     2150.900    3001.000    2153.200    3092.000
GR  2150.900     3132.000    2153.700    3210.000    2157.200    3310.000     2160.000    3378.000    2160.000    3700.000

NC        0.170      0.170       0.040       0.000       0.000       0.000        0.000       0.000       0.000       0.000
         ####                  CENTERLINE =  2200                              ####
X1        9.180      20.000    2144.000    2382.000    1240.000    1170.000     1230.000       0.000       0.000       0.000
GR  2172.500     1130.000    2168.000    1210.000    2164.000    1600.000     2164.000    1730.000    2165.000    1820.000
GR  2161.700     2100.000    2162.300    2103.000    2161.600    2144.000     2156.200    2157.000    2153.900    2185.000
GR  2153.900     2233.000    2166.800    2261.000    2168.400    2382.000     2167.300    2514.000    2168.500    2544.000
GR  2168.200     1567.000    2168.900    2635.000    2168.000    2883.000     2165.000    3670.000    2172.000    3750.000

NH        4.000      0.045    2272.000       0.040    2395.000       0.170     3700.000       5.000    4500.000       0.000
         ####                  CENTERLINE =  2300                              ####
X1        9.430      18.000    2272.000    2395.000    1315.000    1280.000     1330.000       0.000       0.000       0.000
GR  2161.500     2300.000    2161.200    2124.000    2175.800    2215.000     2176.800    2241.000    2176.900    2272.000
GR  2172.800     2275.000    2171.300    2269.000    2171.300    2357.000     2172.200    2398.000    2176.100    2395.000
GR  2176.500     2478.000    2177.600    2587.000    2177.400    2709.000     2175.000    2930.000    2177.000    3260.000
GR  2175.000     3360.000    2180.500    4240.000    2180.000    4490.000     2181.000    4500.000       0.000       0.000

NH        4.000      0.045    2493.000       0.040    2652.000       0.060     3630.000       0.090    5330.000       0.000
         ####                  CENTERLINE =  2590                              ####
X1        9.620      33.000    2493.000    2691.000     985.000    1005.000     1020.000       0.000       0.000       0.000
GR  2194.000     1870.000    2194.000    1870.000    2194.000    1870.000     2194.000    1870.000    2194.000    1870.000
GR  2193.800     2000.000    2191.400    2186.000    2191.600    2179.000     2191.500    2255.000    2190.000    2260.000
GR  2189.600     2507.000    2189.000    2335.000    2188.500    2372.000     2190.000    2388.000    2187.900    2418.000
GR  2186.300     2426.000    2186.300    2432.000    2188.100    2444.000     2188.300    2493.000    2186.300    2558.000
GR  2184.400     2577.000    2184.400    2591.000    2182.800    2607.000     2182.800    2652.000    2185.500    2691.000
GR  2187.400     2717.000    2189.300    2782.000    2189.500    3027.000     2189.500    3630.000    2185.000    4520.000
GR  2188.000     5120.000    2192.000    5240.000    2195.000    5330.000        0.000       0.000       0.000       0.000
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 NC      0.045      0.045      0.040      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####            CENTERLINE =  2670                        ####
 X1      9.811     32.111   2629.000   2775.000    950.000    950.000    975.000      0.000      0.000      0.000
 X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
 GR   2206.000   1380.000   2204.000   1600.000   2204.000   1740.000   2207.000   1800.000   2207.000   1950.000
 GR   2206.000   2000.000   2204.000   2122.000   2203.500   2199.000   2203.200   2344.000   2203.400   2411.000
 GR   2202.000   2463.000   2198.900   2513.000   2196.400   2543.000   2196.400   2581.000   2197.400   2595.000
 GR   2196.500   2629.000   2192.100   2653.000   2192.100   2678.000   2193.300   2706.000   2196.600   2724.000
 GR   2196.300   2755.000   2203.200   2775.000   2202.600   2903.000   2202.600   3014.000   2201.600   3061.000
 GR   2199.200   3097.000   2200.100   3140.000   2199.800   3192.000   2201.800   3224.000   2203.800   3266.000
 GR   2204.000   3310.000   2208.000   3430.000      0.000      0.000      0.000      0.000      0.000      0.000

 NH      4.000      0.060   9490.000      0.060   9950.000      0.040  10060.000      0.045  10150.000      0.000
          ####            CENTERLINE =  10000                        ####
          ####  CAMERON STREET NOT MODELED.  THIS IS A SMALE XING      ####
          ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO ####
          ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09     ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.
 X1     10.045     12.000   9350.000  10080.000  10095.000   1250.000   1245.000      0.000      0.000      0.000
 GR   2228.000   9180.000   2224.000   8240.000   2220.000   8880.000   2218.600   9490.000   2220.500   9880.000
 GR   2226.000   9951.000   2216.000   9973.000   2213.000  10005.000   2216.000  10030.000   2220.000  10060.000
 GR   2224.000  10100.000   2223.000  10150.000      0.000      0.000      0.000      0.000      0.000      0.000

 NH      4.000      0.060   2288.000      0.060   2489.000      0.040   2587.000      0.045   3083.000      0.000
          ####            CENTERLINE =  2530                        ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
 X1     10.135     25.000   2439.000   2587.000    360.000    500.000    470.000      0.000      0.000      0.000
 GR   2236.000   1150.000   2232.000   1180.000   2228.000   1350.000   2228.000   1350.000   2224.000   1860.000
 GR   2221.700   2000.000   2220.900   2097.000   2224.500   2111.000   2224.400   2288.000   2222.700   2373.000
 GR   2224.400   2489.000   2221.300   2514.000   2221.300   2521.000   2218.900   2547.000   2217.200   2569.000
 GR   2217.200   2573.000   2225.600   2587.000   2225.600   2614.000   2224.700   2638.000   2227.000   2796.000
 GR   2237.000   2747.000   2240.300   2959.000   2241.000   3083.000      0.000      0.000      0.000      0.000

 NC      0.060      0.045      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
 NC      0.045      0.045      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
 X1     10.310     18.000   2129.000   2319.000    920.000    920.000    920.000      0.000      0.000      0.000
 GR   2248.000   1860.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000
 GR   2242.300   2000.000   2235.900   2129.000   2230.400   2214.000   2226.000   2236.000   2224.900   2248.000
 GR   2224.900   2239.000   2236.400   2319.000   2237.900   2410.000   2242.200   2474.000   2241.300   2531.000
 GR   2242.100   2534.000   2244.500   2630.000   2248.000   2810.000      0.000      0.000      0.000      0.000

 NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
          ##########################################################################
          ####                    DECATUR BOULEVARD                           ####
          ####                SPECIAL BRIDGE ROUTINE                          ####
          ##########################################################################
          ####  CENTERLINE = 2370
 X1     10.330     12.000   2350.000   3290.000    110.000    110.000    110.000      0.000      0.000      0.000
 X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
 GR   2248.000   1560.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000   2244.000   1950.000
 GR   2244.000   2060.000   2238.000   2350.000   2230.000   2350.000   2230.000   2388.000   2238.000   2388.000
 GR   2243.000   2550.000   2248.000   2870.000      0.000      0.000      0.000      0.000      0.000      0.000
```

SB	1.25	1.500	2.8[illegible]	0.000	37.400	9.400	254.000	0.000	2230.500	2230.000
X1	10.340	12.000	2350.000	2388.[illegible]	95.000	95.000	0.000	0.000	0.000	0.000
X2	6.000	0.000	1.000	2241.000	2242.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2242.000	2242.000	0.000
X4	1.000	2242.000	2300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
BT	2.000	0.000	2248.000	0.000	470.000	2244.000	0.000	610.000	2242.300	0.000
BT	780.000	2242.000	0.000	1080.000	2242.000	0.000	1280.000	2244.500	0.000	1430.000
BT	2246.000	0.000	1510.000	2252.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2248.000	1561.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000	2244.000	1950.000
GR	2244.000	2760.000	2235.000	2350.000	2230.500	2350.000	2230.500	2388.000	2242.000	2388.000
GR	2243.000	2553.000	2248.000	2870.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2610							
X1	10.490	26.000	2475.000	2987.000	650.000	710.000	790.000	0.000	0.000	0.000
GR	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000	2272.000	1960.000
GR	2268.900	2000.000	2272.200	2234.000	2270.600	2283.000	2265.500	2389.000	2261.900	2475.000
GR	2239.900	2581.000	2241.600	2547.000	2239.100	2570.000	2236.100	2617.000	2240.300	2648.000
GR	2242.100	2701.000	2241.300	2724.000	2240.600	2754.000	2238.400	2771.000	2238.400	2794.000
GR	2243.900	2739.000	2243.000	2845.000	2242.900	2885.000	2244.400	2987.000	2246.300	3092.000
GR	2270.000	3220.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2150							
X1	10.700	19.000	2052.000	2489.000	1110.000	1160.000	1110.000	0.000	0.000	0.000
GR	2268.000	2700.000	2260.000	1270.000	2260.000	1270.000	2260.000	1270.000	2280.000	1270.000
GR	2272.300	2700.000	2271.600	2392.000	2252.800	2112.000	2252.800	2198.000	2253.100	2233.000
GR	2253.600	2384.000	2261.600	2377.000	2253.600	2436.000	2255.600	2472.000	2256.600	2489.000
GR	2256.600	2553.000	2259.800	2605.000	2259.500	2654.000	2260.000	2740.000	0.000	0.000
NC	0.000	0.180	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2630							
X1	10.960	31.000	2611.000	2940.000	1430.000	1280.000	1365.000	0.000	0.000	0.000
GR	2284.000	1220.000	2280.000	1360.000	2272.000	630.000	2272.000	1330.000	2276.000	1360.000
GR	2266.000	1520.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000	2281.000	1900.000
GR	2276.800	2000.000	2279.900	2398.000	2278.700	2174.000	2275.900	2353.000	2273.200	2398.000
GR	2268.800	2446.000	2276.600	2611.000	2267.500	2620.000	2267.500	2647.000	2264.700	2670.000
GR	2263.000	2688.000	2263.000	2666.000	2265.800	2702.000	2270.800	2736.000	2267.800	2761.000
GR	2267.900	2784.000	2272.900	2826.000	2276.600	2840.000	2275.600	2876.000	2274.100	2948.000
GR	2284.000	3590.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2560							
X1	11.150	28.000	2521.000	2633.000	1035.000	985.000	1010.000	0.000	0.000	0.000
GR	2290.000	1320.000	2280.000	1380.000	2289.000	1430.000	2289.000	1570.000	2286.000	1710.000
GR	2292.600	2000.000	2290.400	2038.000	2288.400	2140.000	2284.600	2282.000	2282.500	2380.000
GR	2282.000	2399.000	2281.000	2414.000	2281.800	2425.000	2278.600	2521.000	2269.400	2530.000
GR	2269.400	2588.000	2273.700	2599.000	2290.500	2607.000	2281.800	2633.000	2280.300	2655.000
GR	2279.300	2663.000	2279.300	2683.000	2275.000	2710.000	2279.000	2731.000	2280.700	2791.000
GR	2284.000	3591.000	2283.000	3595.000	2292.000	3600.000	0.000	0.000	0.000	0.000

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NC	0.045	0.140	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE = 2460								
X1	11.280	19.000	2416.000	2523.000	655.000	640.000	645.000	0.000	0.000	0.000
X4	3.000	2300.000	760.000	2296.000	920.000	2300.000	1750.000	0.000	0.000	0.000
GR	2301.000	700.000	2294.000	1060.000	2294.000	1280.000	2298.000	1400.000	2296.500	1600.000
GR	2304.500	2001.000	2302.300	2066.000	2300.000	2258.000	2300.500	2304.000	2292.100	2376.000
GR	2288.600	2416.000	2273.900	2439.000	2273.900	2502.000	2288.100	2523.000	2288.100	2556.000
GR	2288.800	2587.000	2292.000	2690.000	2296.000	3060.000	2300.000	3630.000	0.000	0.000
NC	0.000	0.000	0.031	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	####	JONES BOULEVARD								
	####	SPECIAL BRIDGE ROUTINE								
	####	CENTERLINE = 2725								
X1	11.310	16.000	2704.000	2746.000	180.000	200.000	180.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2288.400	2288.400	0.000
GR	2300.000	1000.000	2297.000	1200.000	2297.000	1600.000	2299.400	1760.000	2298.200	1980.000
GR	2304.000	2110.000	2302.000	2610.000	2294.000	2682.000	2288.400	2704.000	2280.000	2746.000
GR	2288.000	2768.000	2292.000	2800.000	2292.000	2920.000	2296.000	3100.000	2300.000	3420.000
GR	2301.400	3670.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	41.500	13.500	224.000	0.000	2280.400	2280.000
	####	CENTERLINE BT CARDS = 169								
X1	11.320	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.400	0.000
X2	0.000	0.000	1.000	2288.400	2291.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2291.400	2291.400	0.000
BT	12.000	0.000	23[illegible]	0.000	460.000	2299.700	0.000	710.000	2299.600	0.000
BT	1050.000	2296.000	0.000	1200.000	2294.300	0.000	1380.000	2293.000	0.000	1580.000
BT	2292.000	0.000	1650.000	2291.400	0.000	1750.000	2292.000	0.000	1820.000	2292.400
BT	0.000	2150.000	2296.000	0.000	2230.000	2300.000	0.000	0.000	0.000	0.000
NC	.140	.160	.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE = 2370								
X1	11.450	21.000	2311.000	2428.000	675.000	655.000	660.000	0.000	0.000	0.000
GR	2302.600	600.000	2304.000	1070.000	2307.000	1360.000	2302.500	1630.000	2304.800	1780.000
GR	2304.100	2001.000	2302.800	2129.000	2302.800	2170.000	2305.900	2260.000	2302.200	2311.000
GR	2288.900	2335.000	2288.900	2392.000	2296.900	2408.000	2301.600	2428.000	2301.600	2444.000
GR	2302.200	2478.000	2304.400	2572.000	2304.500	2720.000	2307.500	3040.000	2308.000	3680.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE = 2330								
X1	11.640	18.000	2283.000	2372.000	1000.000	1000.000	1000.000	0.000	0.000	0.000
X4	1.000	2312.200	2150.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2316.000	560.000	2314.300	870.000	2315.000	1220.000	2315.000	1370.000	2315.000	1660.000
GR	2312.000	1800.000	2312.000	2174.000	2311.700	2261.000	2310.400	2283.000	2297.400	2297.000
GR	2297.400	2357.000	2305.100	2372.000	2307.700	2401.000	2308.600	2496.000	2312.600	2712.000
GR	2315.000	2950.000	2310.000	3290.000	2320.000	3600.000	0.000	0.000	0.000	0.000

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          ####  CENTERLINE =  2360
X1      11.790      2[illegible]   2282.[illegible]   2399.[illegible]    810.000    810.[illegible]    810.000      0.000      0.000      0.000
GR    2326.200     46.[illegible]  2324.[illegible]    210.[illegible]  2320.000    970.[illegible]   2320.000    970.000   2321.300   1360.000
GR    2318.700   2000.000   2318.600   2149.000   2319.200   2282.000   2315.700   2308.000   2306.000   2329.000
GR    2306.000   2348.300   2308.300   2361.000   2316.900   2399.000   2317.700   2427.000   2317.700   2458.000
GR    2319.800   2569.000   2321.200   2686.000   2320.400   2688.000   2324.000   3260.000   2328.000   3510.000

NC      0.000      0.000      0.040      0.300      0.500      0.000      0.000      0.000      0.000      0.000
        ##########################################################################
        ####                    TORREY PINES DRIVE                          ####
        ####                SPECIAL BRIDGE ROUTINE                          ####
        ##########################################################################
X1      11.820     14.000   3289.000   3331.500    120.000    160.000    155.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000   2319.000   2319.000
GR    2326.000   1000.000   2321.300   2200.000   2321.000   2520.000   2320.800   2800.000   2320.000   3240.000
GR    2318.[illegible]   3239.[illegible]   2310.[illegible]   3289.[illegible]   2310.000   3331.000   2318.000   3331.500   2320.000   3380.000
GR    2321.200   3431.[illegible]   2323.[illegible]   3850.[illegible]   2324.[illegible]   4000.[illegible]   2328.000   4320.000      0.000      0.000

SB      1.250      1.500      2.630      0.200     41.500     13.500    224.000      0.000   2311.000   2310.000
X1     11.940     11.000   3289.000   3331.500     75.000     75.000[illegible]      0.000      0.000      0.000
X2      [illegible]      0.000      1.000   2319.000   2320.700      0.000      0.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000   2320.700   2320.700
X4      1.000   2324.000   1[illegible]      0.000      0.000      0.000      0.000      0.000      0.000      0.000
BT      4.000   3000.000   2321.100      0.000   3260.000   2320.700      0.000   3330.000   2321.000      0.000
BT      38.[illegible]   2321.[illegible]      [illegible]      [illegible]      0.000      0.000      0.000      0.000      0.000
GR    2326.[illegible]   1[illegible]   2323.[illegible]   1[illegible]   2324.[illegible]   1850.[illegible]   2324.[illegible]   1900.[illegible]   2324.000   3240.000
GR    2319.500   3289.000   2311.[illegible]   3289.[illegible]   2311.500   3331.[illegible]   2319.[illegible]   3331.500   2324.000   3380.000
GR    2328.000   3460.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.140      0.045      0.055      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####  CENTERLINE =  1000,
X1     11.870     15.000   2280.[illegible]   2400.000    300.000     70.000    160.000      0.000      1.500      0.000
GR    2336.000   1000.000   2332.[illegible]   1750.[illegible]   2328.[illegible]   2050.[illegible]   2324.[illegible]   2280.[illegible]   2320.000   2300.[illegible]
GR    2313.[illegible]   2315.[illegible]   2[illegible]   2286.[illegible]   2316.[illegible]   2270.[illegible]   2320.000   2380.000   2324.000   2400.000
GR    2328.[illegible]   2000.[illegible]   2330.[illegible]   3610.[illegible]   2332.[illegible]   3700.[illegible]      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####  CENTERLINE =  2220
X1     11.590     17.000   2154.000   2270.000    470.000    650.000    645.000      0.000      0.000      0.000
GR    2344.[illegible]   940.[illegible]   2340.[illegible]   980.[illegible]   2340.000    980.000   2340.000    980.000   2336.000   1680.000
GR    2330.[illegible]   2[illegible]   2330.[illegible]   2164.[illegible]   2320.900   2143.[illegible]   2320.900   2233.000   2322.600   2247.000
GR    2331.100   2261.000   2332.900   2270.000   2331.700   2294.[illegible]   2333.800   2416.000   2332.000   2780.000
GR    2332.[illegible]   2951.[illegible]   2336.000   3170.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.140      0.045      0.031      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####  CENTERLINE =  2310
X1     12.100     24.000   2264.000   2371.[illegible]    485.[illegible]    565.[illegible]    580.[illegible]      0.000      0.000      0.000
X3      10.[illegible]      0.[illegible]      [illegible]      [illegible]      0.000      0.000      0.000      0.000      0.000      0.000
GR    2348.[illegible]   950.[illegible]   2340.[illegible]   1180.[illegible]   2339.800   1530.[illegible]   2336.[illegible]   1850.000   2336.000   1940.000
GR    2334.700   2000.[illegible]   2332.100   2079.[illegible]   2332.900   2104.[illegible]   2332.500   2122.000   2332.500   2136.000
GR    2334.300   2147.[illegible]   2335.300   2264.[illegible]   2326.[illegible]   2288.[illegible]   2326.[illegible]   2349.[illegible]   2337.500   2371.[illegible]
GR    2337.400   2435.[illegible]   2338.700   2488.[illegible]   2336.[illegible]   2537.[illegible]   2337.000   2578.000   2337.500   2650.[illegible]
GR    2337.500   3[illegible]   2340.[illegible]   3130.[illegible]   2344.[illegible]   3140.[illegible]   2346.000   3260.000      0.000      0.000
```

NC 0.000 0.000 0.000 0.300 0.500 0.000 0.000 0.000 0.000 0.000

TROPICANA AVENUE
NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)
CENTERLINE = 10000

X1	12.150	8.000	562.000	650.000	280.000	300.000	300.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2238.000	2238.000	0.000
GR	2340.000	0.000	2338.600	562.000	2327.100	562.000	2327.100	582.000	2327.100	630.000
GR	2337.100	650.000	2338.600	650.000	2340.000	1050.000	0.000	0.000	0.000	0.000
SB	1.150	1.650	3.000	100.000	48.000	18.000	500.000	2.000	2328.700	2327.100
X1	12.186	0.000	0.000	0.000	188.000	188.000	188.000	0.000	1.100	0.000
X2	0.000	0.000	1.600	2337.100	2338.600	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2338.600	2338.600	0.000
NC	0.000	0.450	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2240

X1	12.320	25.000	2195.000	2319.000	750.000	750.000	800.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	8.000	2348.000	3450.000	2346.000	940.000	2346.000	1460.000	2344.000	1605.000	2345.500
X4	1670.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2360.000	-710.000	2354.400	700.000	2362.000	320.000	2344.000	1530.000	2340.000	1580.000
GR	2346.100	2000.000	2347.100	2159.000	2334.700	2227.000	2334.700	2234.000	2337.300	2242.000
GR	2337.900	2253.000	2357.900	2278.000	2346.200	2318.000	2347.400	2319.000	2347.400	2334.000
GR	2347.900	2348.000	2351.300	2364.000	2362.200	2451.000	2360.400	2463.000	2345.200	2486.000
GR	2348.600	2494.000	2348.600	2859.000	2360.100	2524.000	2354.400	2634.000	2356.700	2756.000
NC	0.000	0.000	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000
NH	4.000	0.140	760.000	0.140	2320.000	0.040	2477.000	0.045	3320.000	0.000

CENTERLINE = 2350

X1	12.420	19.000	2320.000	2477.000	535.000	595.000	550.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X4	3.000	2352.000	1120.000	2351.200	1310.000	2348.000	1740.000	0.000	0.000	0.000
GR	2364.000	-1130.000	2356.000	760.000	2350.000	1600.000	2346.000	1690.000	2350.000	1850.000
GR	2346.000	2000.000	2348.700	2152.000	2348.400	2288.000	2350.600	2320.000	2340.700	2358.000
GR	2348.700	2384.000	2352.300	2426.000	2360.200	2477.000	2360.200	2531.000	2360.500	2733.000
GR	2356.900	2826.000	2356.100	2919.000	2364.000	3100.000	2368.000	3320.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
NH	4.000	0.140	1490.000	0.140	2165.000	0.040	2235.100	0.045	2730.000	0.000

RAINBOW BOULEVARD
NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)
CENTERLINE = 2200

X1	12.480	6.000	2160.000	2240.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2400.000	2400.000	0.000
GR	2358.500	2150.000	2358.500	2160.000	2342.500	2175.000	2342.500	2225.000	2360.000	2240.000
GR	2360.000	2250.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SB	1.650	2.000	2.500	150.000	50.000	10.000	961.500	1.000	2344.500	2343.500
X1	12.490	0.000	0.000	0.000	50.000	50.000	50.000	0.000	1.000	0.000
X2	0.000	0.000	1.000	2358.500	2360.000	0.000	0.000	0.000	1.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2400.000	2400.000	0.000
NH	4.000	0.140	1330.000	0.140	2283.000	0.035	2375.000	0.045	2681.000	0.000
	####	CENTERLINE = 2313								
X1	12.550	14.000	2283.000	2375.000	310.000	310.000	310.000	0.000	0.000	0.000
GR	2372.000	+60.000	2364.000	1110.000	2360.000	1330.000	2360.000	1520.000	2360.000	1710.000
GR	2360.000	2100.000	2356.600	2283.000	2346.200	2305.000	2346.200	2352.000	2358.100	2375.000
GR	2366.600	2421.000	2367.500	2462.000	2366.500	2568.000	2365.400	2681.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SLOPE	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	GLOB	WCH	GROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 6.641
3720 CRITICAL DEPTH ASSUMED
MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING. REACH #### #### FROM KOVAL LANE TO UPRR (THROUGH CASING PROPERTY AND #### #### CLOSED CONDUIT) WAS MODELED BY COE IN LLWFWBOL. STARTING #### #### WSEL'S ARE TAKEN FROM COE HEC2 RUN. #### #### CENTERLINE = 2060

8.64	4.33	2135.93	2135.93	2131.10	2137.91	1.96	0.00	0.00	2140.60
4100.	0.	4100.	0.	0.	365.	0.	0.	0.	2140.60
0.00	0.00	11.24	0.00	0.000	0.025	0.000	0.000	2131.60	2007.26
0.02597	3.	3.	3.		14	1	1.00	93.30	2100.56

CCHV= 0.300 CEHV= 0.500
*SECNO 6.650

3311 HV CHANGED MORE THAN HVINS

3003 20 TRIALS ATTEMPTED WSEL,CWSEL
UNION PACIFIC RAILROAD
SPECIAL BRIDGE ROUTINE

5.65	5.12	2137.12	2135.83	0.00	2138.20	1.07	0.04	0.27	2144.00
4100.	0.	4100.	0.	0.	493.	0.	0.	0.	2144.00
0.00	0.00	8.32	0.00	0.000	0.025	0.000	0.000	2132.00	2000.00
0.02533	1.	10.	10.	24	11	0	1.00	96.00	2096.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2134.35 ,NOT 2137.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SK	XK	XKOR	CDFG	RDLEN	BWC	EWP	BAREA	SS	ELCHL	ELCHO
	1.25	1.56	2.60	96.00	96.00	36.00	330.00	0.00	2132.30	2132.00

*SECNO 6.650
PRESS FLOW BECAUSE EGLWC OF 2141.03 EXCEEDS 1.5 DEPTH

3311 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	VROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELPIA	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2140.86	2141.03	0.00	0.	4100.	330.	330.	2137.80	2144.60

ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD. FLOWS LEAVING THE CHANNEL TO NORTH = 0, 86 , 2080, 3580

8.66	8.14	2140.44	0.00	0.00	2140.86	0.43	2.66	0.00	2144.30
4100.	0.	4100.	0.	0.	781.	0.	1.	0.	2144.30
0.00	0.00	5.25	0.00	0.000	0.026	0.000	0.000	2132.30	2000.00
0.0 .567	58.	58.	58.	2	3	0	0.00	96.00	2096.00

*SECNO 8.740

3361 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

FLAMINGO ROAD OVERPASS
NORMAL GROUND SECTION UTILIZED
CENTERLINE = 2160
THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS SOUTH OF FLAMINGO WASH. FLOWS ADJUSTED UPSTREAM BASED ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR115_SPLIT)

8.74	3.45	2140.75	2140.75	0.00	2142.25	1.49	0.72	0.53	2166.30
4100.	0.	4100.	0.	0.	418.	0.	7.	1.	2145.30
0.02	0.00	9.80	0.00	0.000	0.035	0.000	0.000	2137.30	2078.88
0.0 12748	45 .	45 .	45 .	3	18	1	0.00	142.40	2221.28

CCHV= 0.100 CEHV= 0.300
*SECNO 8.940

3265 DIVIDED FLOW

SECNO	DEPTH	CASEL	CRIWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TSA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2610
VALLEY VIEW BOULEVARD NOT MODELED. THIS IS A SHALE XING
THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO
CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 9.00

8.94	6.22	2149.52	0.00	0.00	2149.96	0.43	7.61	0.11	2145.20
4100.	512.	3501.	87.	271.	617.	48.	24.	11.	2150.20
0.07	1.89	5.67	1.80	0.045	0.040	0.045	0.000	2143.30	2197.27
0.004586	1033.	1067.	1355.	5	0	0	0.00	604.17	2593.13

*SECNO 9.180

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 22

9.18	4.77	2158.67	2158.67	.00	2160.66	1.99	9.43	0.47	2161.60
4100.	0.	4103.	0.	0.	362.	0.	42.	20.	2168.40
0.10	0.00	11.32	0.00	0.000	0.040	0.000	0.000	2153.50	2151.06
0.001535	124.	123.	1170.	3	18	0	0.00	92.29	2243.35

1490 NH CARD USED
*SECNO 9.430

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2300

9.43	4.21	2175.21	2174.95	.11	2176.72	1.21	15.98	0.18	2176.90
4100.	0.	4079.	21.	0.	462.	62.	56.	27.	2176.10
0.16	0.00	8.34	0.35	0.000	0.040	0.170	0.000	2171.30	2273.35
0.009665	1315.	1333.	1280.	10	15	0	0.00	360.37	3442.14

1490 NH CARD USED

SECNO	DEPTH	W.SEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	ICH	CROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	TCFLIC	ENDST

*SECNO 9.620

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####	CENTERLINE = 2590						####	
9.62	4.13	2186.93	0.00	0.00	2187.49	0.56	10.71	0.06	2188.30
411.	15.	2815.	1182.	6.	411.	685.	74.	42.	2185.90
0.28	2.22	7.47	1.73	0.045	0.043	0.090	0.000	2182.80	2422.87
0.011495	985.	1029.	1005.	4	3	0	0.00	896.13	4840.91

*SECNO 9.610

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2196.80 ELREA= 2203.20

####	CENTERLINE = 2670						####	
9.61	5.49	2197.59	2197.52	1.00	2198.73	1.14	11.07	0.17	2196.80
4100.	264.	3836.	0.	80.	435.	0.	92.	54.	2203.20
0.23	3.28	8.81	0.00	0.045	0.040	0.000	0.000	2192.10	2528.67
0.011318	96.	975.	967.	8	18	0	0.00	230.08	2758.75

1490 NR CARD USED
*SECNO 10.040

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7165 MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED

####	CENTERLINE = 10000	####
####	CAMERON STREET NOT MODELED. THIS IS A SMALE XING	####
####	THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO	####
####	CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 10.09	####
####	LEFT BANK INEFFECTIVE FLOW AT STA 9490.	

SECNO / Q / TIME / SLOPE	DEPTH / GLOB / VLOB / XLOBL	CWSEL / WCH / VCH / XLCH	CRIWS / GROB / VROB / XLOBR	WSELK / ALOB / XAL / ITRIAL	EG / ACH / XACH / ICC	HV / AROB / XNR / ICONT	HL / VOL / WTN / CORAR	GLOSS / TBA / ELMIN / ICFLIC	BANK ELEV LEFT/RIGHT / SSTA / ENCST
	10.04	7.38	2220.00	2223.00	0.30	2220.64	0.63	10.09	0.05	2220.00
	4100.	974.	3126.	0.	629.	430.	0.	114.	76.	2220.00
	0.29	1.55	7.27	0.00	0.060	0.040	0.000	0.000	2213.00	6879.91
	0.006289	1095.	1245.	1250.	16	12	0	0.00	1007.64	10060.01

1490 NH CARD USED
*SECNO 10.130

3265 DIVIDED FLOW

7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2530 #### FLOW AT STA 2283.

	10.15	6.28	2223.48	2223.48	0.00	2224.36	0.88	3.43	0.07	2224.40
	4100.	1186.	2914.	0.	357.	336.	0.	122.	76.	2225.60
	0.38	3.32	8.67	0.00	0.060	0.040	0.000	0.000	2217.20	1891.62
	0.0 9991	35.	47.	5 5.	2	10	1	0.00	398.98	2584.73

CCHV= 0.100 CEHV= 0.300
CCHV= 0.100 CEHV= 0.300
*SECNO 10.310

	10.31	6.16	2231.16	0.00	0.00	2232.19	1.13	7.75	0.08	2235.90
	41[illegible].	.	4110.	.	.	481.	.	134.	81.	2236.40
	0.33	0.0	8.63	0.00	0.000	0.040	0.000	0.000	2224.90	2203.81
	0.007203	920.	920.	920.	3	0	0	0.00	105.91	2309.71

CCHV= 0.300 CEHV= 0.800
*SECNO 10.330

3301 HV CHANGED MORE THAN HVINS

3605 2. TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2241.00 ELREA= 2241.00

DECATUR BOULEVARD

```
          ####                    SPECIAL BRIDGE ROUTINE                              ####
          ##########################################################################
          ####  CENTERLINE = 2371
      10.35      7.12   2231.12   2237.12      0.00   2240.69      3.57      1.20      1.22   2238.00
     4100.        .0     4100.        0.         0.    271.         0.       135.       81.    2238.00
       0.34      0.00     15.16      0.00      0.000    0.040     0.000     0.000  2230.00   2350.00
  0.018576       110.      110.       110.        20        8         0      0.00     38.00   2388.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2234.37 ,NOT   2237.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN      BWC       ELP       BAREA      SS        ELCHU     ELCHD
     1.25      1.50      2.30       0.00     37.40      5.40     294.00      0.00   2230.50   2230.00

*SECNO 10.340
 PRESS FLOW BECAUSE EGLWC OF   2247.17  EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

    EGPFS      EGLWC       HS        QWEIR       QPR        EAREA   TRAPEZOID AREA      ELLC      ELTRD
  2241.65    2247.17      3.52           0.     4100.       294.        294.        2241.00   2242.00


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2242.00 ELREA=     2242.00

      10.34      8.83   2239.33      0.00       0.00   2241.65      2.32      0.96      0.00   2235.00
     4100.        .0     4100.        0.         0.    336.         0.       136.       81.    2242.00
       0.34      0.00     12.22      0.00      0.000    0.040     0.000     0.000  2230.50   2350.00
  0.018242       95.       95.        95.         4         1         0      0.00     38.00   2388.00

8931.RDSI NOT ON SR CARD   1510.00
*SECNO 10.490

3301 HV CHANGED MORE THAN HVINS

          ####  CENTERLINE =  2610
      10.49      6.75   2244.45      0.00       0.00   2244.57      0.12      2.26      0.66   2241.90
     4100.        .0     4100.        0.         0.    1445.        0.       152.       86.    2244.40
       0.42       0.         2.94      0.00      0.000    0.040     0.045     0.000  2238.40   2495.63
  0.018411       55.       710.       710.         3         1         0      0.00    452.51   2988.14
```

SLCNO	DEPTH	QWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARQB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICCNT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 10.700

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,QWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE =	2150.							
10.70	2.06	2254.38	2254.38	0.00	2255.66	0.79	3.92	0.20	2271.60
4100.	0.	4100.	0.	0.	576.	0.	178.	97.	2256.60
.48	0.	7.11	.00	0.000	0.041	0.000	0.000	2252.80	2105.37
0.021654	1110.	1110.	1150.	20	22	0	0.00	374.44	2479.81

*SECNO 10.960

3265 DIVIDED FLOW

####	CENTERLINE =	268.							
10.96	6.59	2266.59	0.00	1.00	2270.18	0.59	14.50	0.02	2270.60
4100.	1095.	3005.	0.	302.	438.	0.	198.	109.	2275.60
.52	3.63	6.86	.00	0.045	0.033	0.000	0.000	2263.00	1462.36
0.018394	143.	1365.	1280.	7	0	0	0.00	397.00	2796.39

*SECNO 11.150

3301 HV CHANGED MORE THAN HVINS

####	CENTERLINE =	255.							
11.15	5.34	2276.24	0.00	1.00	2276.89	1.65	6.39	0.32	2278.60
4100.	0.	4100.	0.	0.	398.	0.	212.	115.	2281.80
.55	0.	10.61	.00	0.000	0.033	0.000	0.000	2269.40	2524.29
0.019222	1035.	1017.	985.	8	0	0	0.00	76.52	2600.81

*SECNO 11.280

####	CENTERLINE =	246.							
11.28	5.57	2276.40	0.00	0.00	2281.05	1.69	4.19	0.01	2268.60
4100.	0.	4100.	0.	0.	393.	0.	218.	116.	2288.10
.57	0.	10.44	0.00	0.000	0.033	0.000	0.000	2273.90	2430.39
0.018780	655.	645.	640.	2	0	0	0.00	75.74	2510.13

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TRA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	ICPLIC	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 11.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2288.40 ELREA= 2288.40

JONES BOULEVARD
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2725

11.31	6.64	2286.64	2286.64	0.00	2290.00	3.36	1.29	0.83	2280.00
4100.	0.	4100.	0.	0.	279.	0.	219.	116.	2280.00
.57	0.	14.71	1.00	0.000	0.331	0.000	0.000	2280.00	2704.00
0.007536	18.	18.	200.	20	11	0	0.00	42.00	2746.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2284.27 ,NOT 2286.64 HYDRALLIC JUMP OCCURS DOWNSTREAM (IF LCK FLOW CONTROLS)

SB	XK	XKOR	COEFG	RDLEN	BWC	EWP	AREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	41.50	13.50	224.00	0.00	2280.40	2280.00

*SECNO 11.320
PRESS FLOW BECAUSE EGLWC OF 2297.32 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
2294.76	2297.32	0.00	577.	3530.	224.	224.	2288.40	2291.40

CENTERLINE BT CARDS = 1690

11.32	11.53	2291.93	0.00	0.00	2292.66	0.72	2.66	0.00	2280.40
4100.	354.	3530.	216.	122.	484.	216.	220.	117.	2280.40
.57	2.97	7.29	1.00	0.345	0.031	0.140	0.000	2280.40	2682.86
0.000887	7.	70.	70.	2	0	4	0.00	113.41	2796.27

8930 ;RDST NOT ON GR CARD 1050.00
8930 ;RDST NOT ON GR CARD 1380.00
8930 ;RDST NOT ON GR CARD 1650.00
8930 ;RDST NOT ON GR CARD 1820.00

8930 ,RDST NOT ON GR CARD 2150.00
8930 ,RDST NOT ON GR CARD 2230.00

SECNO	DEPTH	C#SEL	CRI#S	#SELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	#ACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ITC	ICONT	CORAR	TOPWIC	ENDST

*SECNO 11.450

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED #SEL,C#SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE =	2370							
11.45	5.11	2294.01	2294.01	0.00	2296.28	2.26	1.43	0.77	2303.20
4100.	1.	4100.	0.	0.	340.	0.	229.	118.	2301.60
0.59	0.	12.8	0.00	0.000	0.035	0.000	0.000	2286.90	2326.42
0.011463	675.	663.	655.	20	14	3	0.00	75.81	2402.23

CCHV= 0.100 CEHV= 0.300
*SECNO 11.640

3301 HV CHANGED MORE THAN HVINS

####	CENTERLINE =	2330							
11.64	5.91	2303.31	0.00	0.00	2304.88	1.57	0.53	0.07	2310.40
4100.	1.	4100.	0.	0.	47.	0.	237.	120.	2305.10
0.62	0.00	10.37	0.00	0.000	0.035	0.000	0.000	2297.40	2290.64
0.016801	1000.	1000.	1000.	4	0	0	0.00	77.87	2388.50

*SECNO 11.790

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE =	2360							
11.79	6.11	2312.11	2312.11	0.00	2314.43	2.33	6.89	0.23	2319.20
4100.	0.	4100.	0.	0.	335.	0.	244.	121.	2316.90
0.63	0.00	12.24	0.00	0.000	0.035	0.000	0.000	2306.00	2315.78
0.011387	810.	810.	810.	2	8	1	0.00	73.18	2388.56

CCHV= 0.300 CEHV= 0.500
*SECNO 11.820

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	ICRWIC	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2318.00 ELREA= 2319.00

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##########################################################################
####                    TORREY PINES DRIVE                            ####
####                SPECIAL BRIDGE ROUTINE                            ####
##########################################################################
```

11.62	6.68	2316.68	2316.68	1.00	2320.01	3.33	2.18	0.50	2318.00	
4100.	0.	4100.	0.	0.	280.	0.	245.	121.	2318.00	
0.64	0.00	14.65	0.00	0.000	0.040	0.000	0.000	2310.00	3289.00	
0.017725	12.	155.	155.	21	8	0	0.00	42.33	3331.42	

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2314.27 ,NOT 2316.68 HYDRALLIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEFG	RDLEN	EWC	EWP	BAREA	SS	ELCHL	ELCHD
	1.25	1.50	2.63	0.30	41.50	13.50	224.00	0.00	2311.00	2310.00

*SECNO 11.640
PRESS FLOW BECAUSE EGLWC OF 2327.9 EXCEEDS 1.5 DEPTH

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	HS	WEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2324.46	2327.90	0.00	338.	3272.	224.	224.	2319.00	2320.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2319.50 ELREA= 2320.70

11.64	7.56	2319.26	0.00	0.00	2321.65	2.59	1.64	0.00	2319.50	
4100.	0.	4100.	0.	0.	317.	0.	246.	121.	2319.50	
0.64	0.00	12.91	0.00	0.000	0.040	0.000	0.000	2311.50	3289.03	
0.012140	75.	75.	75.	4	0	4	0.00	42.45	3331.47	

6930 ,RDST NOT ON SR CARD 2699.39
8930 ,RDST NOT ON SR CARD 3267.

SECNO	DEPTH	C#SEL	CRIWS	#SELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	WSL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	#TN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	ICPLIC	ENDST

*SECNO 11.870

3301 HV CHANGED MORE THAN HVINS

######		CENTERLINE = 10000.							
....87	6.96	2321.96	0.30	0.00	2323.24	1.28	1.20	0.39	2325.50
4100.	..	4100.	..	..	452.	..	247.	122.	2325.50
0.64	0.00	9.37	0.00	0.000	0.035	0.000	0.000	2315.00	2297.66
0.005077	300.	160.	70.	2	0	0	0.00	84.68	2382.34

CCHV= 0.100 CEHV= 0.300
*SECNO 11.990

3301 HV CHANGED MORE THAN HVINS

######	CENTERLINE = 2220.								
11.99	5.12	2326.12	0.00	0.00	2327.99	1.98	4.54	0.21	2330.80
4100.	..	4100.	0.	..	363.	..	253.	123.	2332.90
..66	0.00	11.29	0.00	0.000	0.035	0.000	0.000	2320.90	2168.02
..013429	47.	845.	65.	2	1	0	0.00	84.60	2252.62

*SECNO 12.150

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2335.30 ELREA= 2337.50

####	CENTERLINE = 2310.								
12.15	5.10	2331.18	0.00	0.00	2333.02	1.85	6.02	0.01	2335.30
4100.	..	4100.	0.	..	376.	..	256.	124.	2337.50
0.67	0.00	10.90	0.00	0.000	0.031	0.000	0.000	2326.00	2274.64
0.007289	486.	881.	565.	2	0	0	0.00	84.27	2358.91

CCHV= 0.300 CEHV= 0.500
*SECNO 12.150

##
TROPICANA AVENUE
NORMAL BRIDGE ROUTINE(CHANGE TO SPECIAL)
##

####	CENTERLINE = 10000.								
12.15	6.11	2333.21	0.00	0.00	2335.14	1.93	2.07	0.04	2338.60
4100.	..	4100.	0.	..	388.	..	261.	125.	2338.60
..66	0.00	11.15	0.00	0.000	0.031	0.000	0.000	2327.10	569.79
0.006539	286.	300.	300.	4	0	0	0.00	72.42	642.21

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XACH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2331.32 ,NOT 2333.20 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFG	RDLEN	BWC	BLP	BAREA	SS	ELCHL	ELCHD
	1.05	1.56	3.00	100.00	40.00	18.00	500.00	2.00	2328.70	2327.10

*SECNO 12.186
6240 FLOW IS BY WEIR AND LOW FLOW

33.1 HV CHANGED MORE THAN HVINS

3420 BRIDGE W.S.= 2339.29 BRIDGE VELOCITY= 6.15 CALCULATED CHANNEL AREA= 342.

EGPRS	EGLWC	FR	QWEIR	QLOW	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2334.83	2339.87	6.36	431.	3695.	500.	393.	2337.10	2338.60

12.19	11.26	2339.46	0.00	0.00	2339.87	0.42	4.74	0.00	2339.70
411.	3.	4103.	0.	0.	791.	0.	263.	125.	2339.70
0.69	0.01	5.19	0.00	0.000	0.031	0.000	0.000	2328.20	5662.00
0.011696	183.	183.	183.	2	0	2	0.00	88.00	550.00

*SECNO 12.320

3311 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2347.10 ELREA= 2347.40

CENTERLINE = 2240.

12.32	7.39	2342.39	2342.39	0.00	2344.23	2.14	1.44	0.86	2347.10
411.	0.	4103.	0.	0.	349.	0.	274.	127.	2347.40
0.71	0.01	11.74	0.00	0.000	0.035	0.000	0.000	2334.70	2210.32
0.011692	750.	850.	750.	20	14	0	0.00	82.81	2293.13

CCHV= 0.100 CEHV= 0.300
1490 XH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ILC	ICONT	CORAR	ICPLIC	ENDST

*SECNO 12.420

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2350.60 ELREA= 2360.20

CENTERLINE = 2360

12.42	7.58	2348.28	0.00	0.00	2349.82	1.55	5.53	0.06	2350.60
4100.	0.	411[illegible]	[illegible]	1.	411.	0.	278.	128.	2360.20
0.73	[illegible]	9.98	0.00	0.000	0.040	0.000	0.000	2340.70	2328.92
0.000751	535.	550.	595.	2	0	0	0.00	82.50	2411.43

CCHV= [illegible].300 CEHV= 0.500
1490 NH CARD USED
*SECNO 12.480

3301 HV CHANGED MORE THAN HVINS

3685 2 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2400.00 ELREA= 2400.00

RAINBOW BOULEVARD
NORMAL BRIDGE ROUTINE(CHANGED TO SPECIAL)
CENTERLINE = 22[illegible]

12.48	5.69	2349.19	2349.19	0.00	2351.81	2.62	0.56	0.54	2358.50
4100.	[illegible]	4100.	0.	0.	316.	0.	279.	128.	2360.00
1.73	0.00	12.99	0.00	0.000	0.040	0.000	0.000	2343.50	2169.31
[illegible].18.98	5.	5.	5[illegible].	2[illegible]	18	[illegible]	[illegible].00	60.87	2230.18

SPECIAL BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IEC	ICONT	CORAR	ICFLTC	ENDST

5227 DOWNSTREAM ELEV IS 2347.72 ,NOT 2349.19 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.65	2.00	2.50	150.00	50.00	10.00	961.5[illegible]	1.00	2344.50	2343.50

*SECNO 12.490

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.= 2350.51 BRIDGE VELOCITY=, 13.55 CALCULATED CHANNEL AREA=, 276.

EGPRS	EGLWC	HB	QWEIR	QLOB	BAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	2354.40	0.00	0.	4100.	962.	756.	2358.50	2360.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2400.00 ELREA= 2403.00

12.49	8.05	2353.45	0.00	0.00	2354.40	0.95	2.59	0.00	2359.50
4100.	0.	4100.	0.	0.	524.	0.	283.	128.	2361.00
0.73	0.00	7.82	0.00	0.000	0.040	0.000	0.000	2344.50	2166.05
0.0 3305	91.	91.	90.	3	0	0	0.00	67.09	2233.14

1490 NH CARD USED
*SECNO 12.550

CENTERLINE = 2310

12.55	8.25	2354.45	0.00	0.00	2355.37	0.92	0.95	0.01	2355.60
4100.	0.	4100.	0.	0.	533.	0.	283.	128.	2358.10
0.74	0.00	7.69	0.00	0.001	0.035	0.000	0.000	2346.20	2285.69
0.0 28.75	310.	310.	310.	3	0	0	0.00	82.26	2367.95

CROSS SECTION 3.64
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2131.     2136.     2141.     2146.     2151.     2156.     2161.     2166.     2171.     2176.     2181.

     STA-FEET

 220  .  .          X.        :         :         :         :         :         :         :         :  BANK.
3211.  .X          :         :         :         :         :         :         :         :         :
2[illegible].  .X  :         :         :         :         :         :         :         :         :
2038.  .X          :         :         :         :         :         :         :         :         :
2[illegible].  .X  :         :         :         :         :         :         :         :         :
2063.  .X          :         :         :         :         :         :         :         :         :
2075.  .X          :         :         :         :         :         :         :         :         :
42068.  .X         :         :         :         :         :         :         :         :         :
 21  .  .      X   :         :         :         :         :         :         :         :         :
5211.  .          X.        :         :         :         :         :         :         :         :  BANK.
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NRD= 8 ELLOC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2140.60 2000.00 2131.60 2014.00 2131.60 2089.00 2140.60 2113.00

CROSS SECTION 3.65
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2132. 2137. 2142. 2147. 2152. 2157. 2162. 2167. 2172. 2177. 2182.

STA-FEET

3200. XXXXXXXXXXXXXXXXXXXXXXXX BANK.
2613. X
2625. X
2628. X
2650. X
2663. X
2675. X
2688. X
5210. XXXXXXXXXXXXXXXXXXXXXXXX BANK.

NRD= 2 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)
2144.00 2096.00 2132.00 2096.00 2132.00 2096.00 2144.00 2096.00

CROSS SECTION 8.66
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2132.     2137.     2142.     2147.     2152.     2157.     2162.     2167.     2172.     2177.     2182.

     STA-FEET

 32000. .XXXXXXXXXXXXXXXXXXXXXXXX     .         .         .         .         .         .         .         .  BANK.
  2013. .X         .        WE .         .         .         .         .         .         .         .         .
  2025. .X         .        WE .         .         .         .         .         .         .         .         .
  2038. .X         .        WE .         .         .         .         .         .         .         .         .
  2050. .X         .        WE .         .         .         .         .         .         .         .         .
  2063. .X         .        WE .         .         .         .         .         .         .         .         .
  2075. .X         .        WE .         .         .         .         .         .         .         .         .
  2088. .X         .        WE .         .         .         .         .         .         .         .         .
  8211. .XXXXXXXXXXXXXXXXXXXXXXXX     .         .         .         .         .         .         .         .  BANK.

NRD=       ELLC=      2137.30 ELTRD=     2144.60

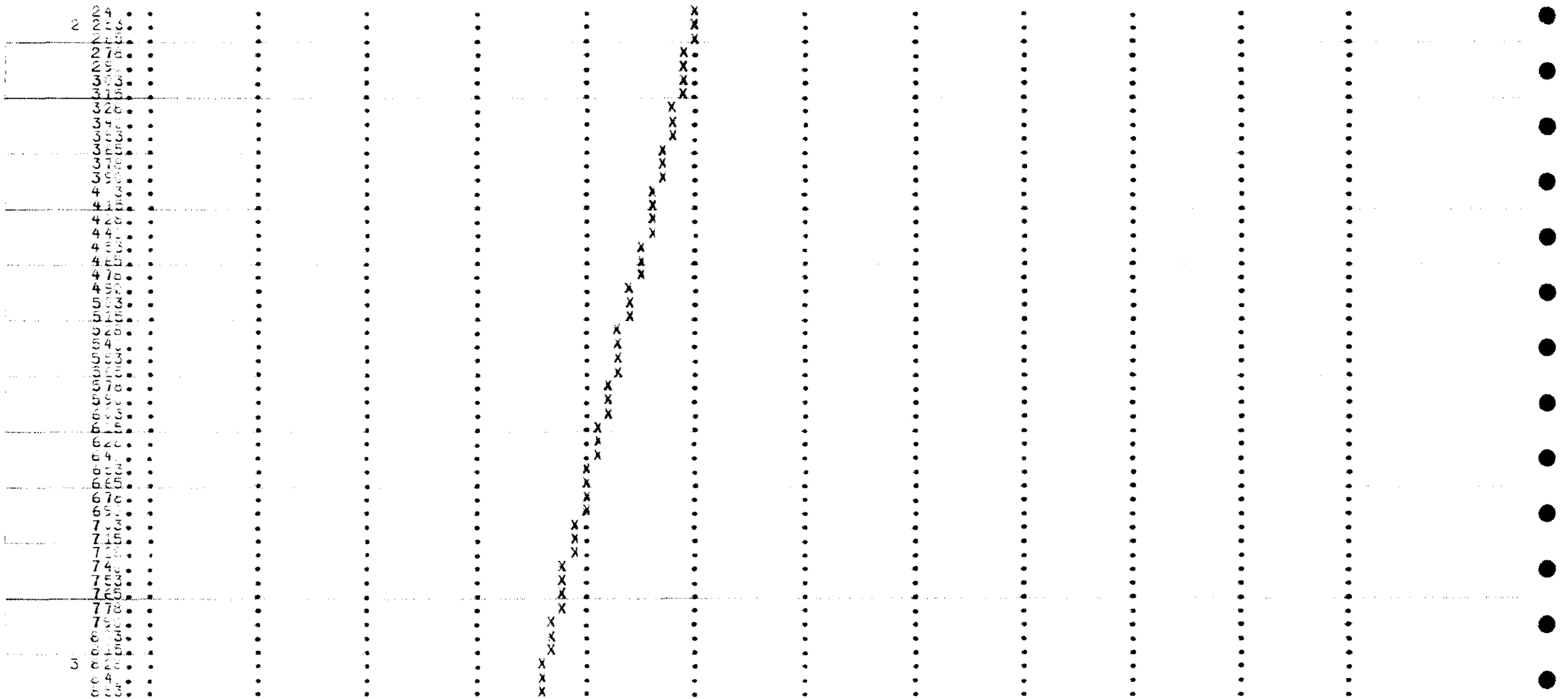
  EL(I),STA(I)
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CROSS SECTION 3.74
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

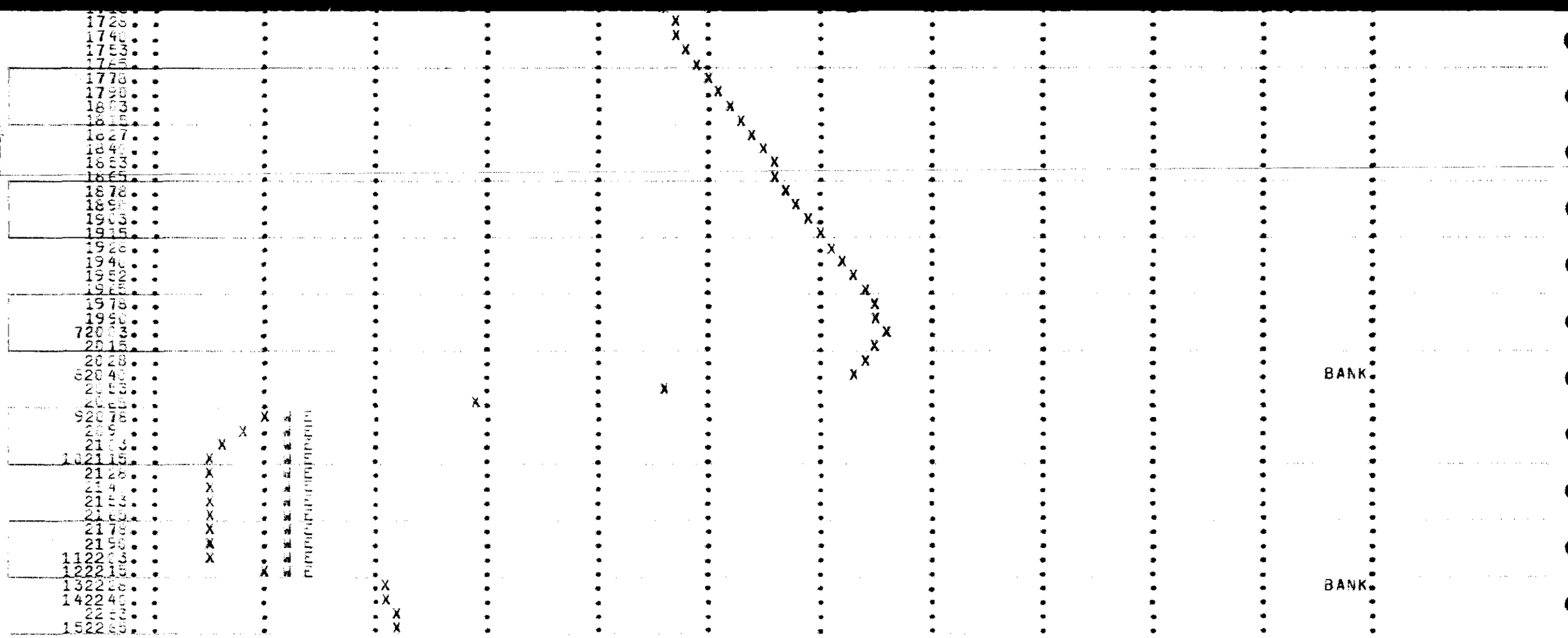
ELEV 2135. 2140. 2145. 2150. 2155. 2160. 2165. 2170. 2175. 2180. 2185.

STA-FEET



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Continuous Business Forms, Inc.



NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),SIA(I)

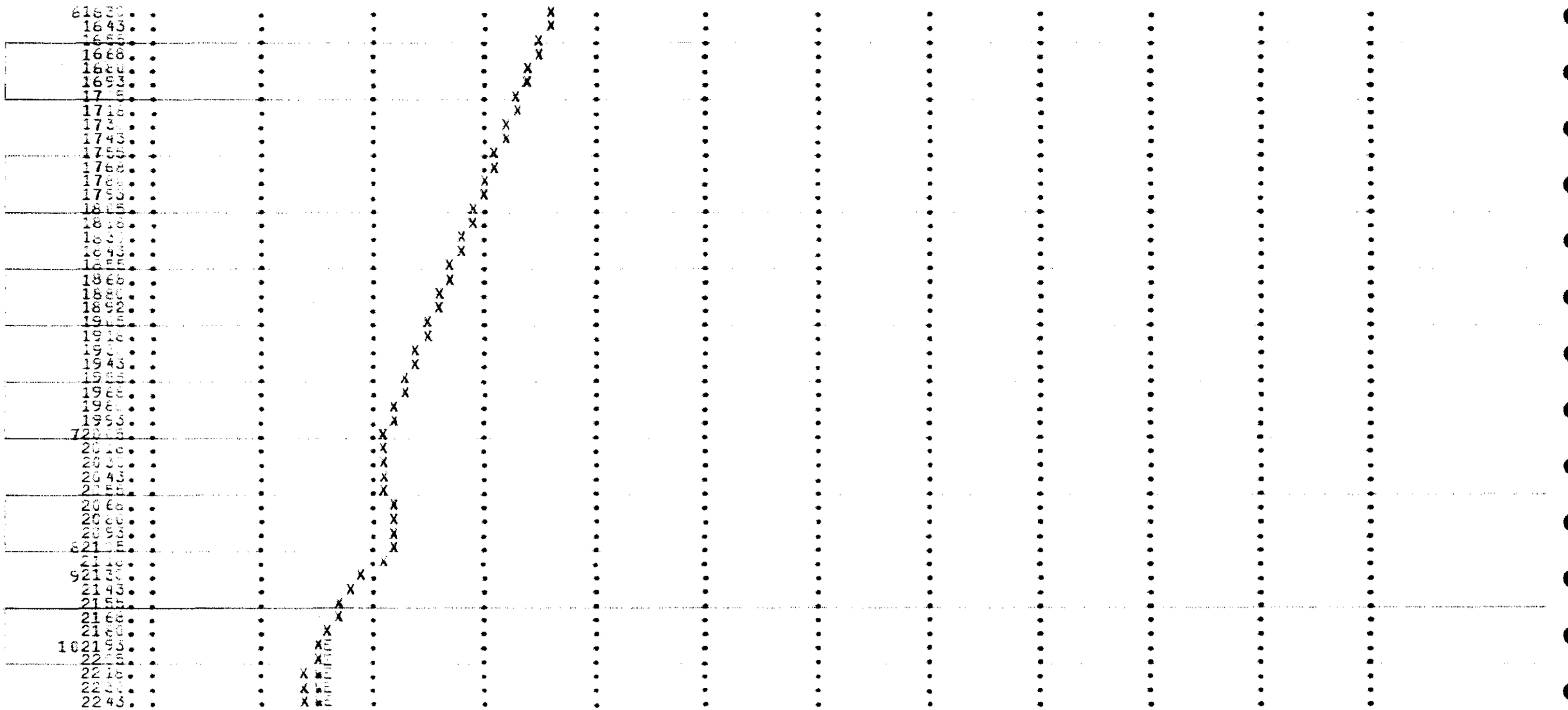
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2160.20	2000.00	2156.30	2341.00	2140.00	2080.00	2137.30	2111.00	2137.30	2202.00
2140.00	2221.00	2145.30	2229.00	2145.30	2246.00	2145.90	2260.00		

CROSS SECTION 8.94
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2142. 2147. 2152. 2157. 2162. 2167. 2172. 2177. 2182. 2187. 2192.

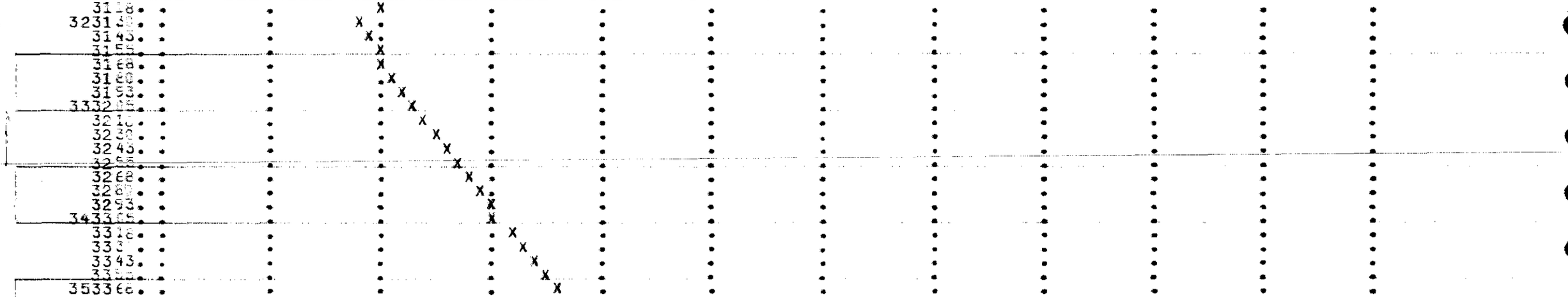
STA-FEET



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EL(I),STA(I)

2160.00	1630.00	2160.00	1630.00	2160.00	1630.00	2160.00	1630.00	2160.00	1630.00
2152.70	2000.00	2152.80	2101.[illegible]	2151.50	2134.[illegible]	2145.50	2198.[illegible]	2148.20	2325.00
2145.20	2551.10	2147.90	2681.[illegible]	2143.30	2623.00	2143.30	2649.[illegible]	2144.60	2669.00
2149.70	2674.[illegible]	2152.10	2683.[illegible]	2151.50	2721.00	2147.70	2739.[illegible]	2146.00	2751.00
2145.60	2767.00	2150.20	2788.[illegible]	2149.50	2821.00	2148.30	2840.[illegible]	2150.90	2869.00
2149.70	2953.00	2143.30	2972.00	2148.30	2989.[illegible]	2150.90	3001.[illegible]	2153.20	3092.00
2151.90	3132.[illegible]	2153.70	3210.00	2157.20	3310.00	2160.00	3370.00		

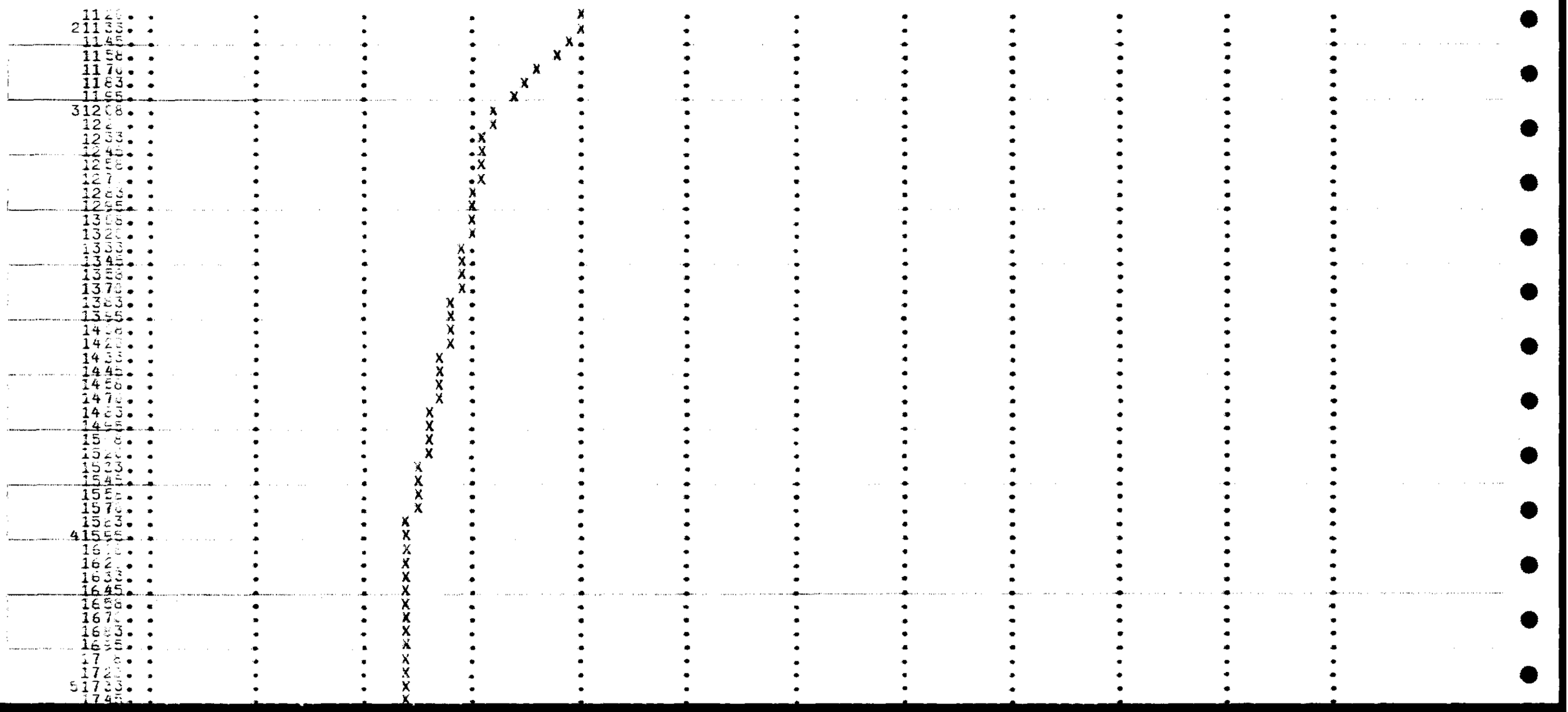
Continuous Interfolded Set Manufactured by Boise Business Forms, Inc.

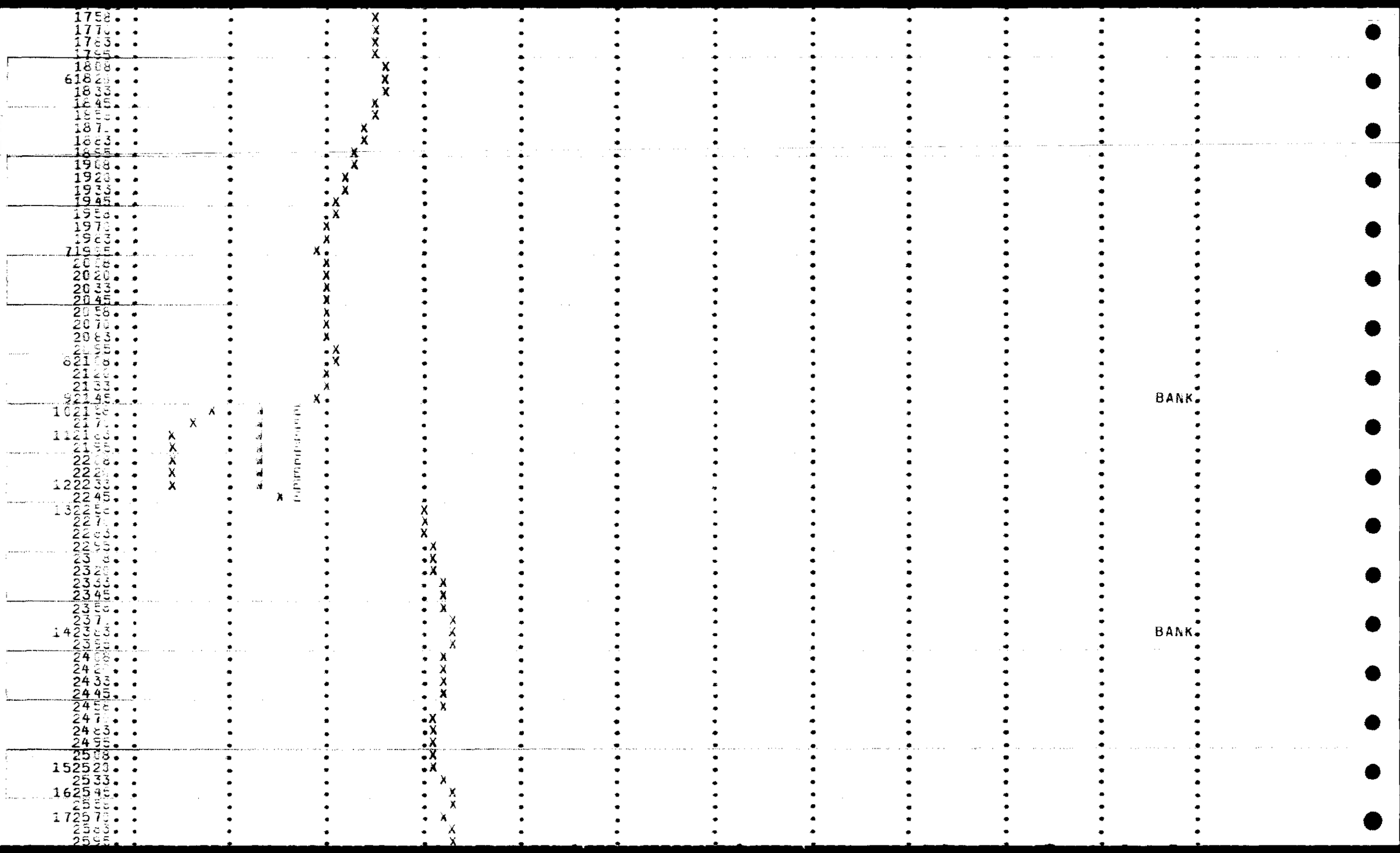
CROSS SECTION 9.18
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLR,E=ENERGY GRADIENT,C=CRITICAL WSEL

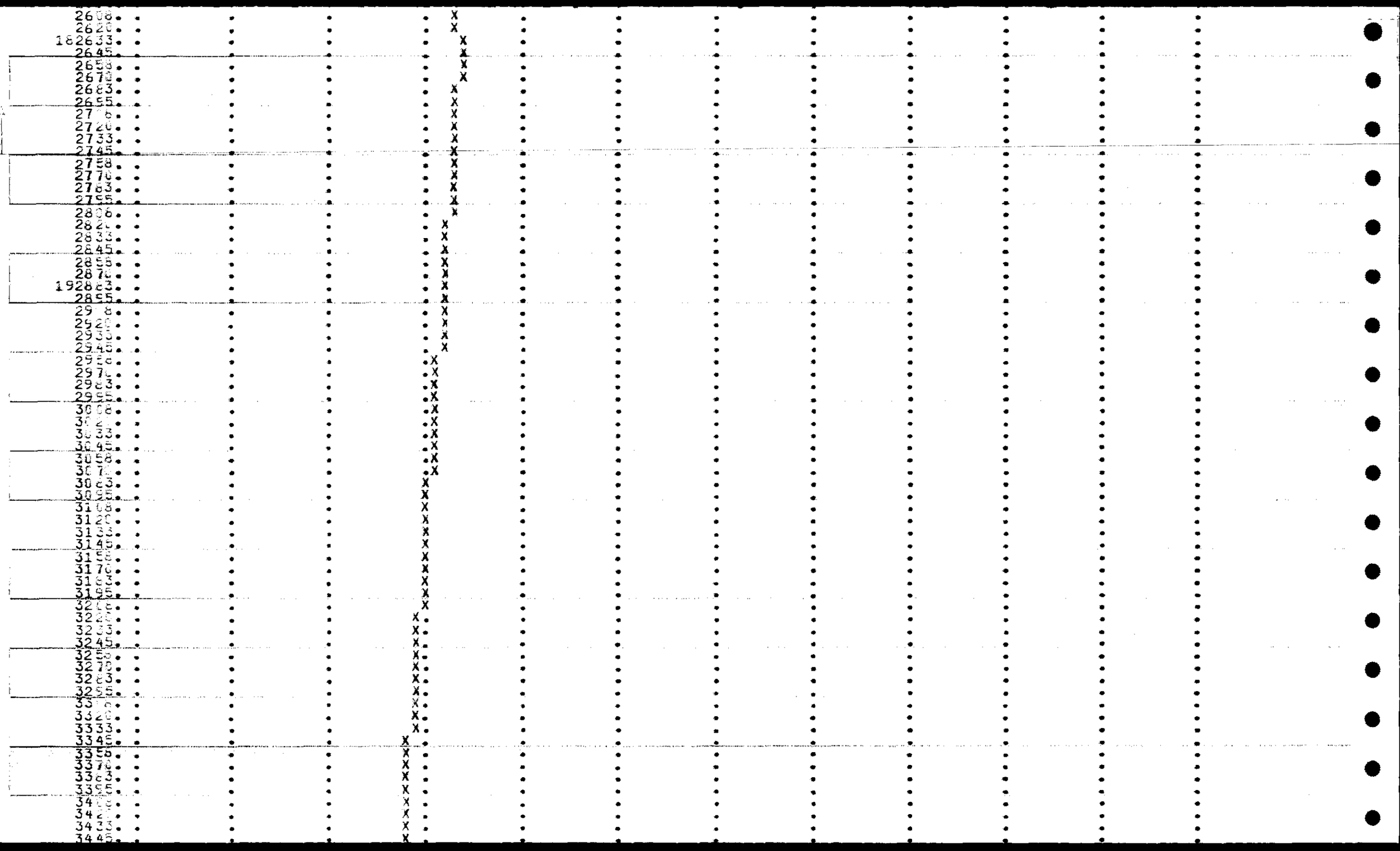
ELEV 2152. 2157. 2162. 2167. 2172. 2177. 2182. 2187. 2192. 2197. 2202.

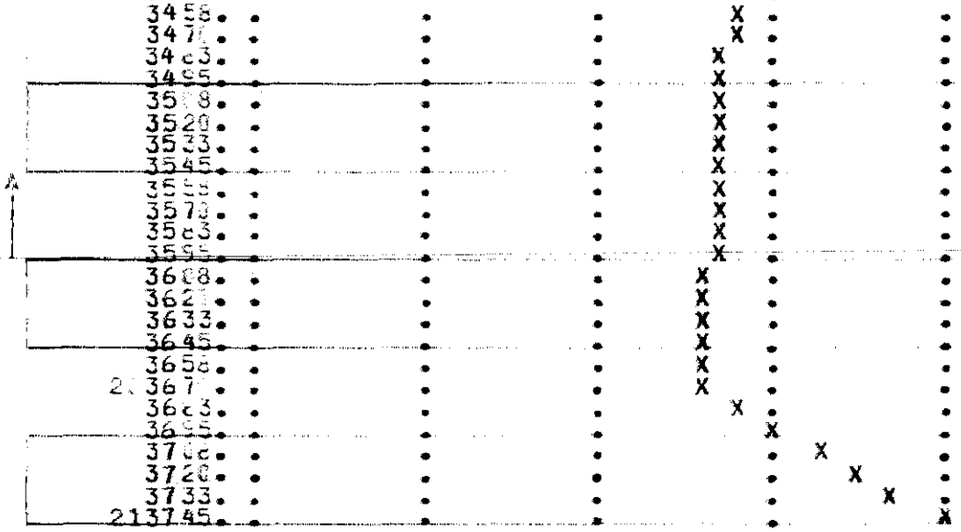
STA-FEET




BANK
BANK

Continuous Interpolated by Mayes Business Forms, Inc.





NRD= 0 ELLO= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2172.00	1130.00	2168.00	1210.00	2164.00	1600.00	2164.00	1730.00	2165.00	1820.00
2161.70	2100.00	2162.30	2103.00	2161.60	2144.00	2156.20	2157.00	2153.60	2185.00
2153.90	2233.00	2156.80	2261.00	2168.40	2382.00	2167.30	2514.00	2168.50	2544.00
2168.20	2567.00	2163.90	2635.00	2168.00	2880.00	2165.00	3670.00	2172.00	3750.00

CROSS SECTION 9.43
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2171. 2176. 2181. 2186. 2191. 2196. 2201. 2206. 2211. 2216. 2221.

SIA-FEET

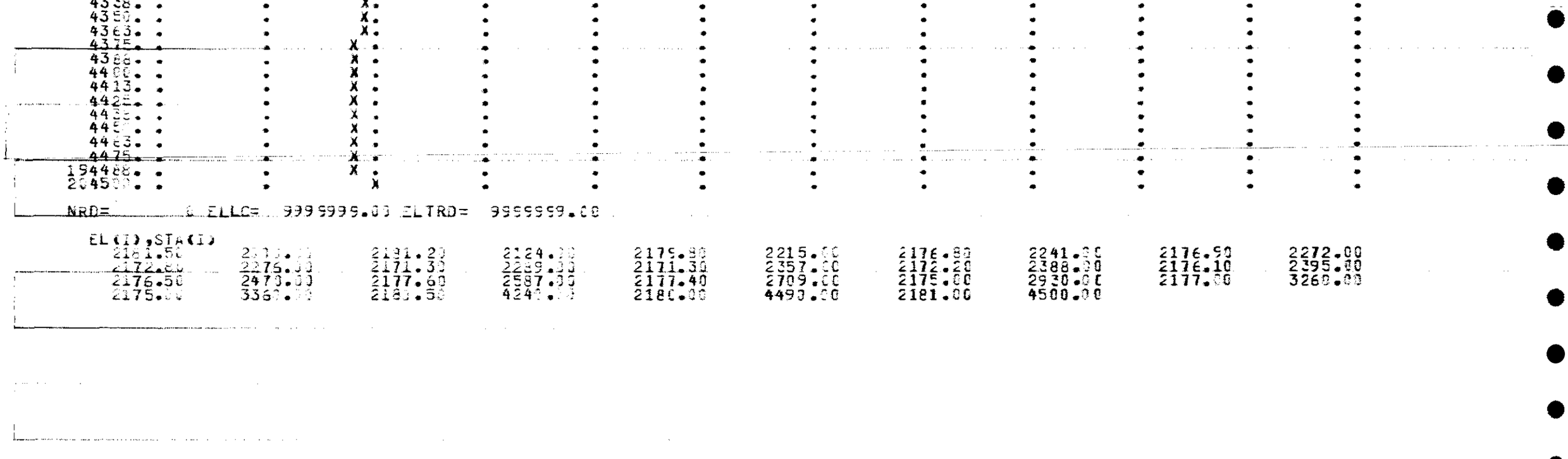
BANK

BANK

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Copyright Information Systems, Inc.

A



NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

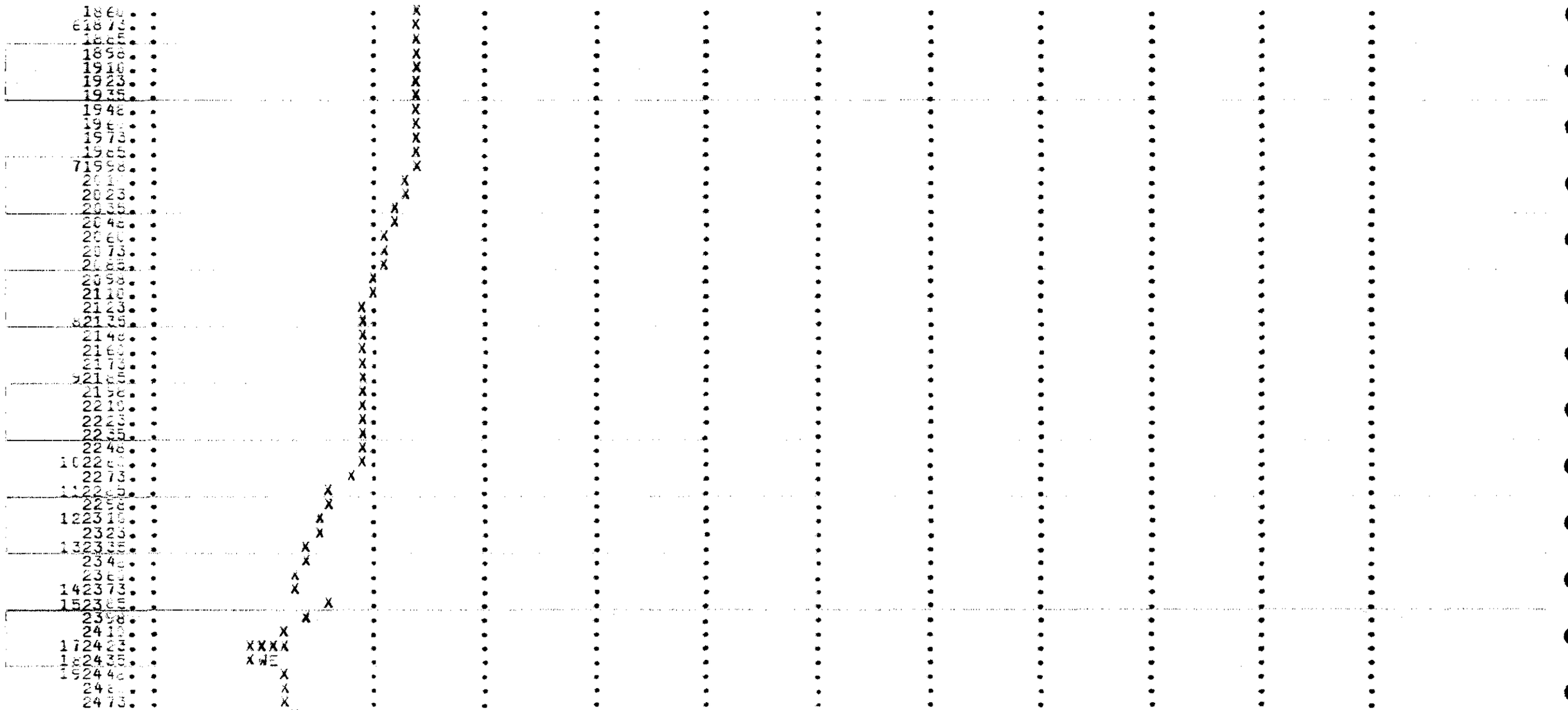
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2172.80	2276.00	2171.30	2289.00	2171.30	2357.00	2172.20	2388.00	2176.10	2395.00
2176.50	2470.00	2177.60	2587.00	2177.40	2709.00	2175.00	2930.00	2177.00	3260.00
2175.00	3360.00	2181.50	4240.00	2180.00	4490.00	2181.00	4500.00		

CROSS SECTION 9.62
STREAM FLAMINGO WASH, REACH 2 •
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2182. 2187. 2192. 2197. 2202. 2207. 2212. 2217. 2222. 2227. 2232.

STA-FEET



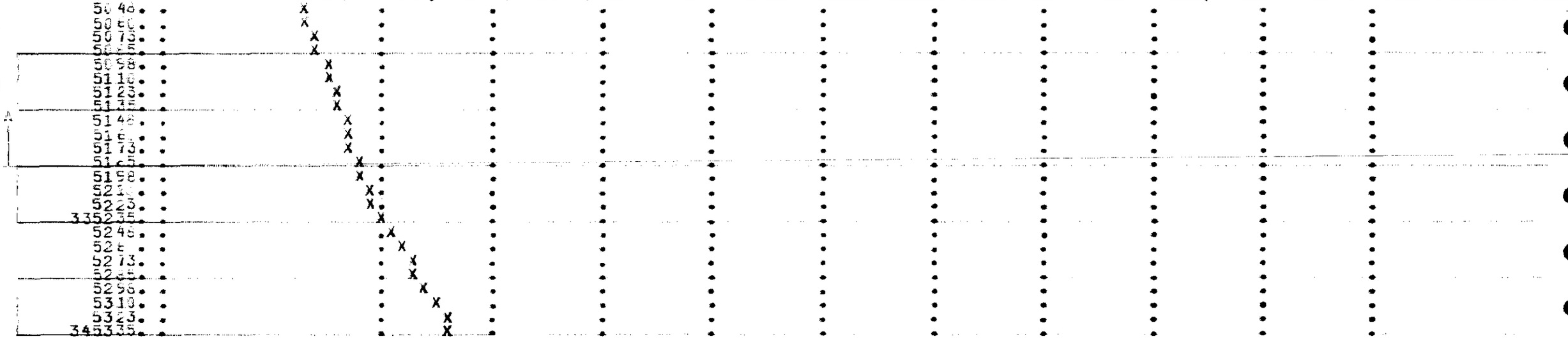
BANK

BANK

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| | | |



NRD= 6 ELLO= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

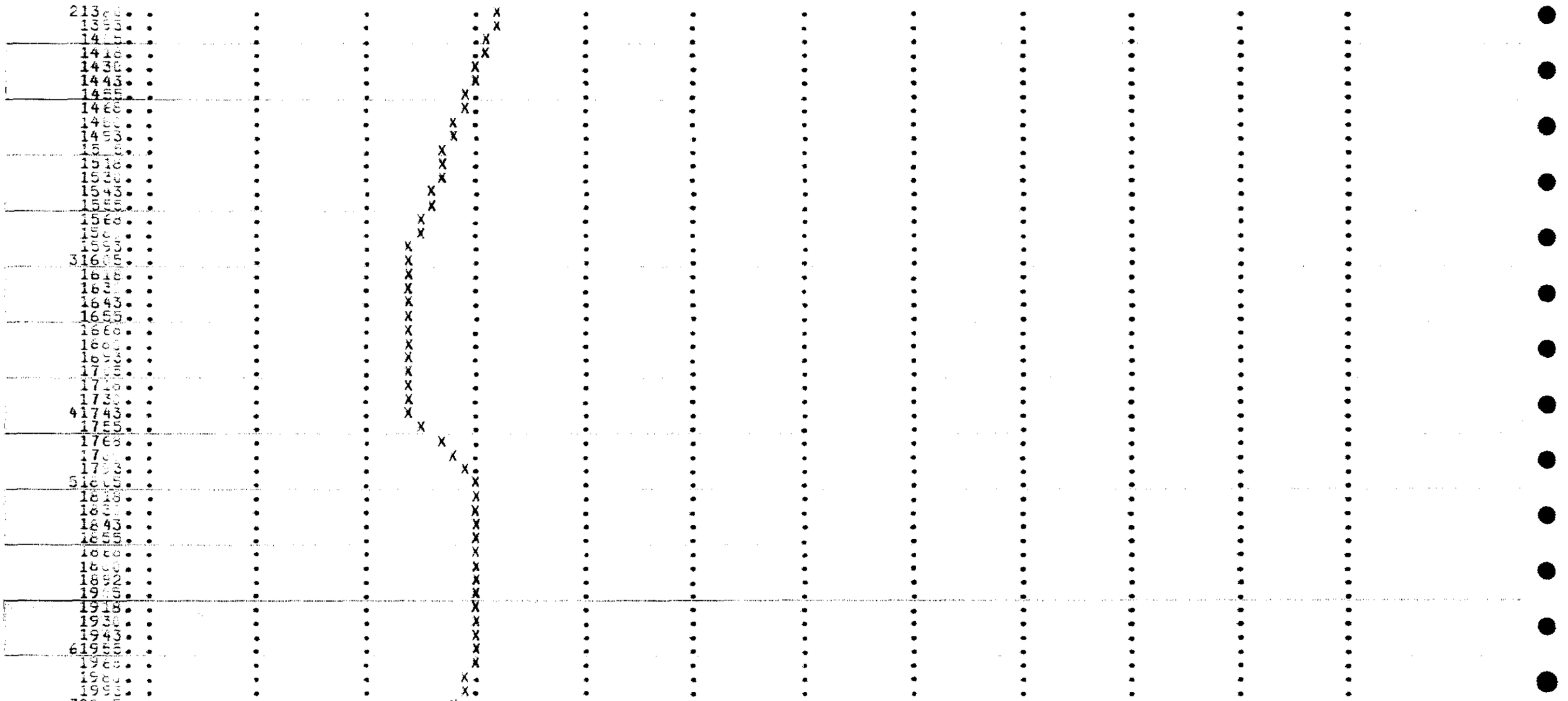
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2193.80	2000.00	2191.40	2136.00	2191.60	2179.00	2191.50	2255.00	2190.00	2280.00
2189.60	2337.00	2189.00	2335.00	2188.50	2372.00	2190.00	2388.00	2187.90	2418.00
2186.30	2426.00	2186.30	2432.00	2188.10	2444.00	2188.30	2493.00	2186.30	2558.00
2184.40	2577.00	2184.40	2591.00	2182.80	2607.00	2182.80	2652.00	2185.90	2691.00
2187.40	2717.00	2189.30	2782.00	2189.50	3027.00	2189.50	3630.00	2185.00	4520.00
2186.00	5729.00	2192.70	5240.00	2195.00	5330.00				

CROSS SECTION 9.81
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

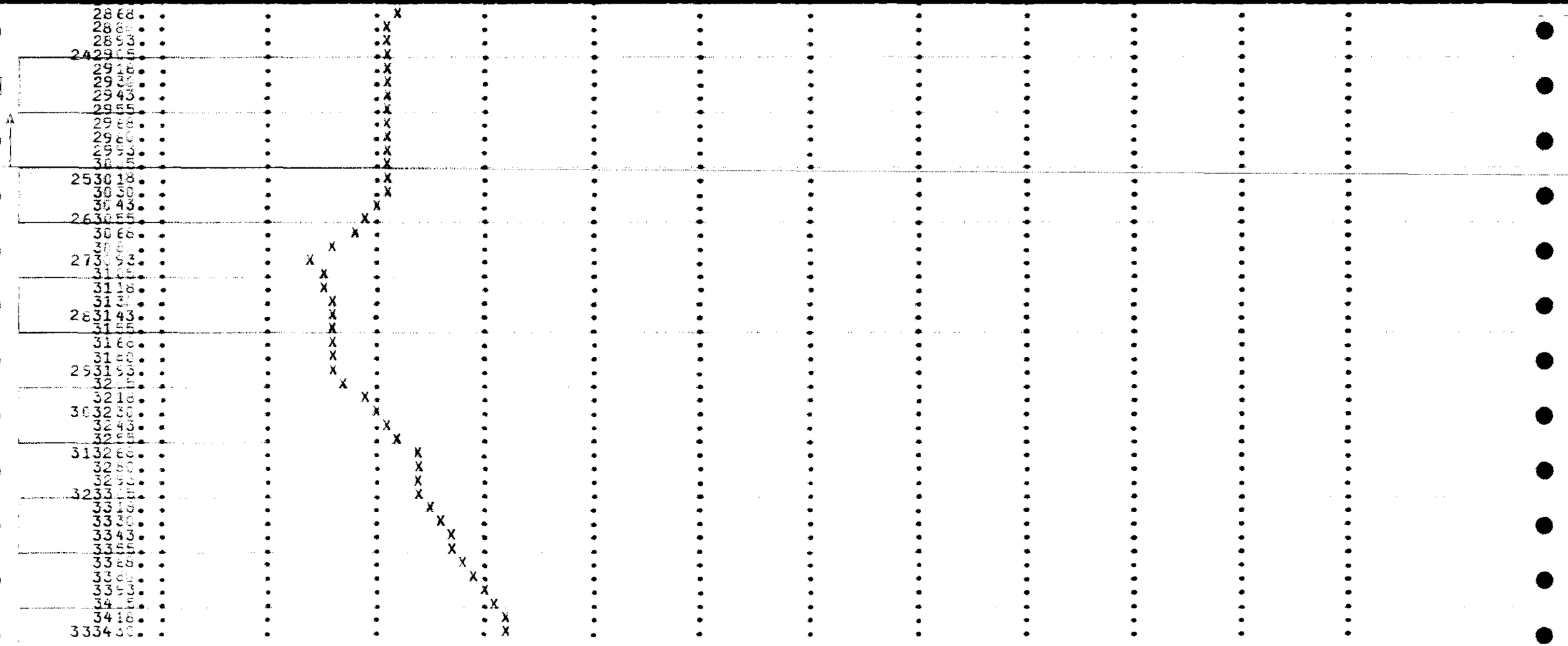
ELEV 2192. 2197. 2202. 2207. 2212. 2217. 2222. 2227. 2232. 2237. 2242.

STA-FEET



BANK.

BANK.



NRD= 0 ELLO= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

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2206.20	2100.00	2204.50	2122.00	2203.50	2199.00	2203.20	2344.00	2203.40	2411.00
2202.[illegible]	2468.[illegible]	2198.9[illegible]	2513.[illegible]	2196.40	2543.[illegible]	2196.40	2581.00	2197.40	2595.00
2196.80	2629.00	2192.10	2653.00	2192.10	2678.00	2193.30	2706.00	2196.60	2724.00
2196.30	2755.00	2203.20	2775.00	2202.60	2903.00	2202.60	3014.00	2201.60	3061.00
2199.20	3097.00	2200.10	3140.00	2199.80	3192.00	2201.80	3224.00	2203.80	3266.00
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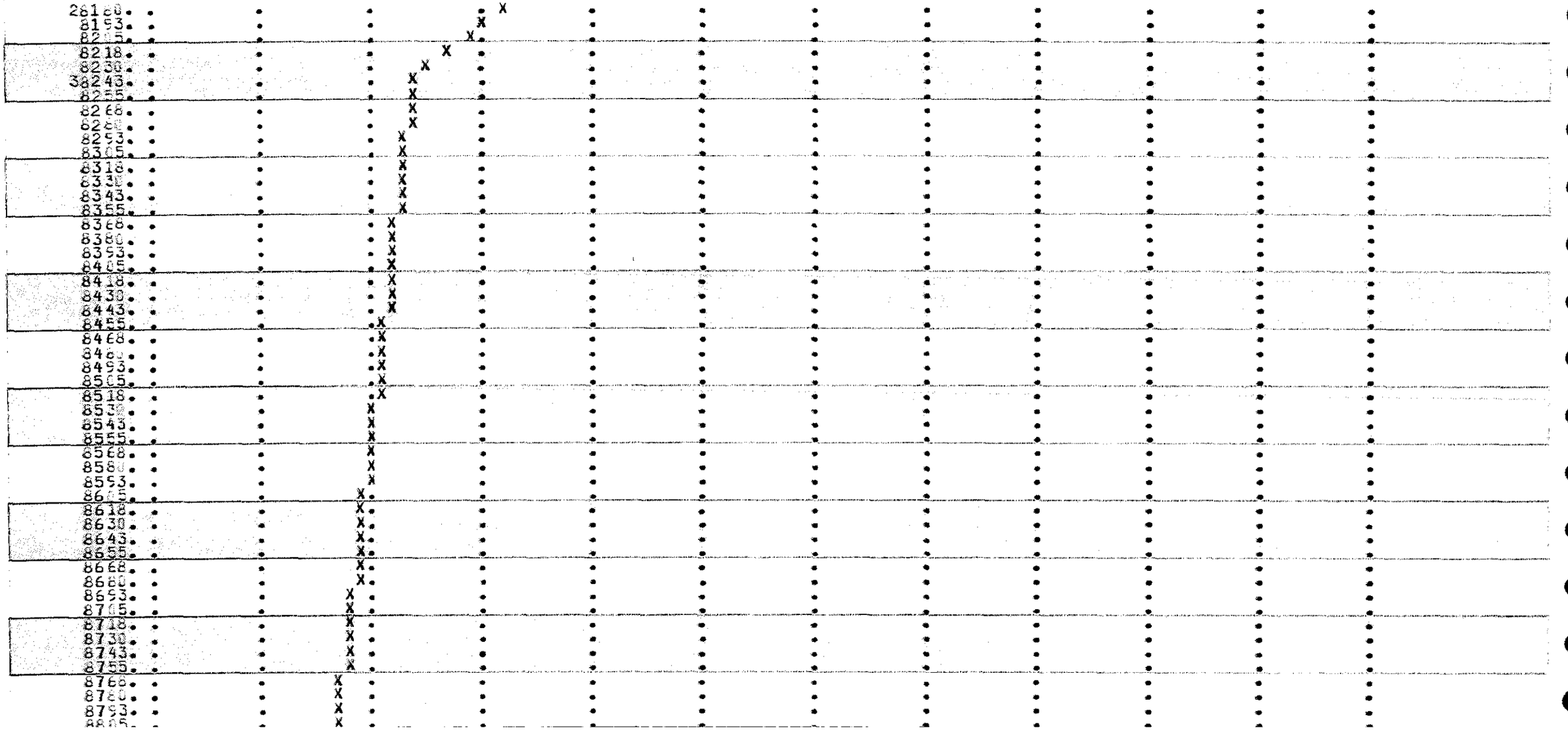
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Flamingo Wash-B

CROSS SECTION 13.04
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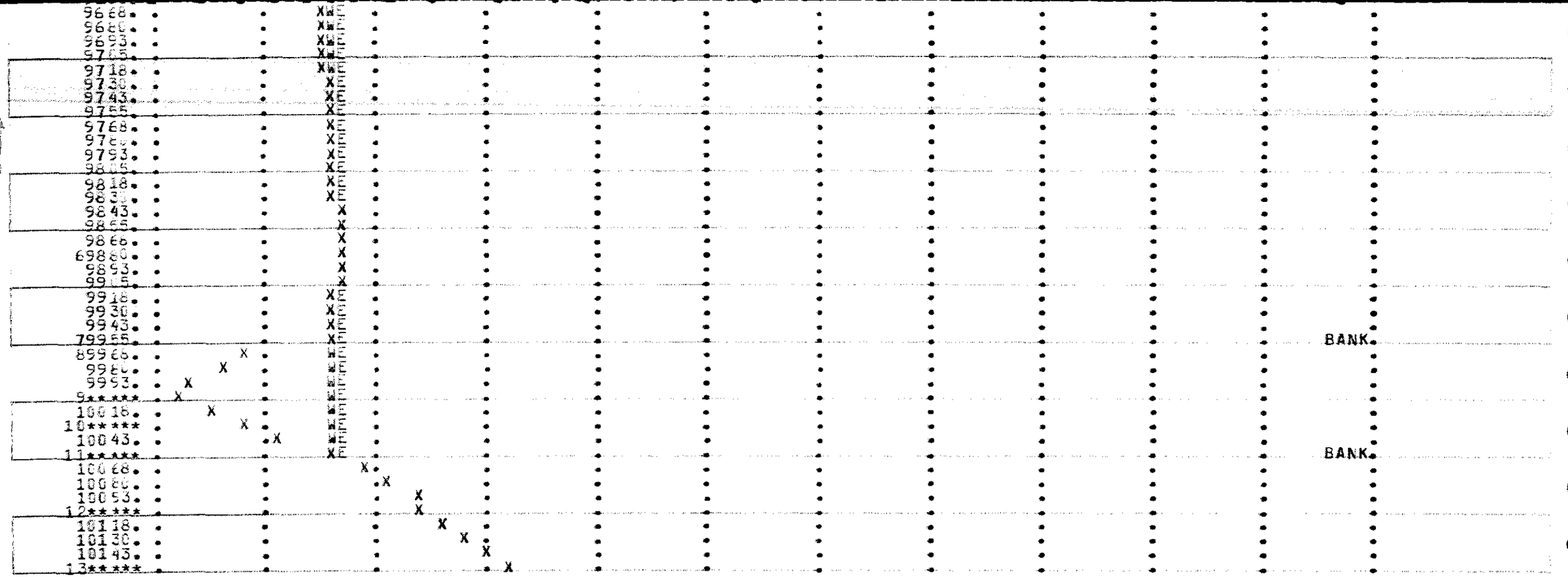
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	2212.	2217.	2222.	2227.	2232.	2237.	2242.	2247.	2252.	2257.	2262.
STA-FEET											



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NRD= 9 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),SIA(I)

2228.00	8180.00	2224.00	8240.00	2220.00	8880.00	2218.60	9490.00	2220.50	9880.00
2220.00	9950.00	2216.00	9970.00	2213.00	10000.00	2216.00	10030.00	2220.00	10060.00
2224.00	10100.00	2228.00	10150.00						

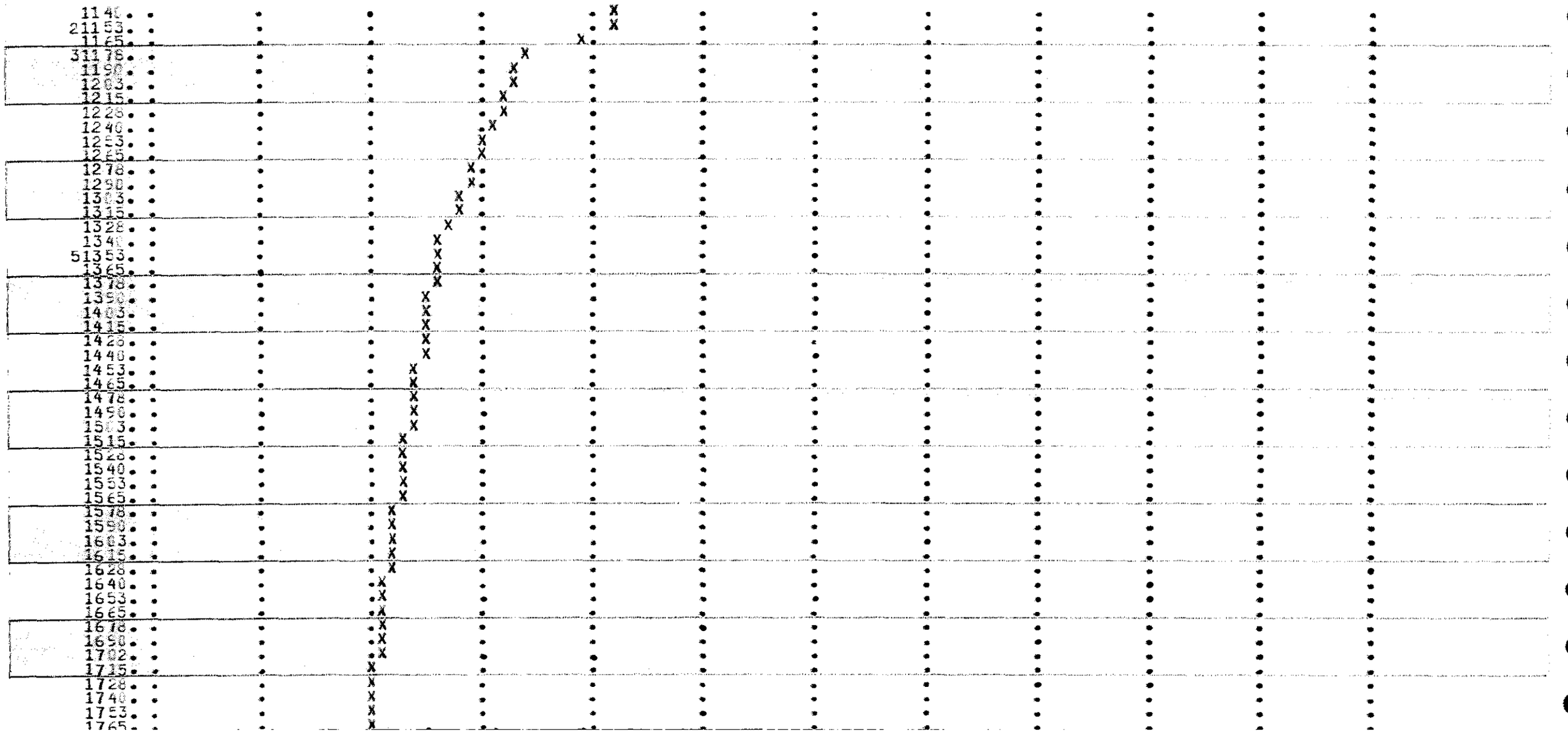
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CROSS SECTION 10.13
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2215. 2220. 2225. 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265.

STA-FEET

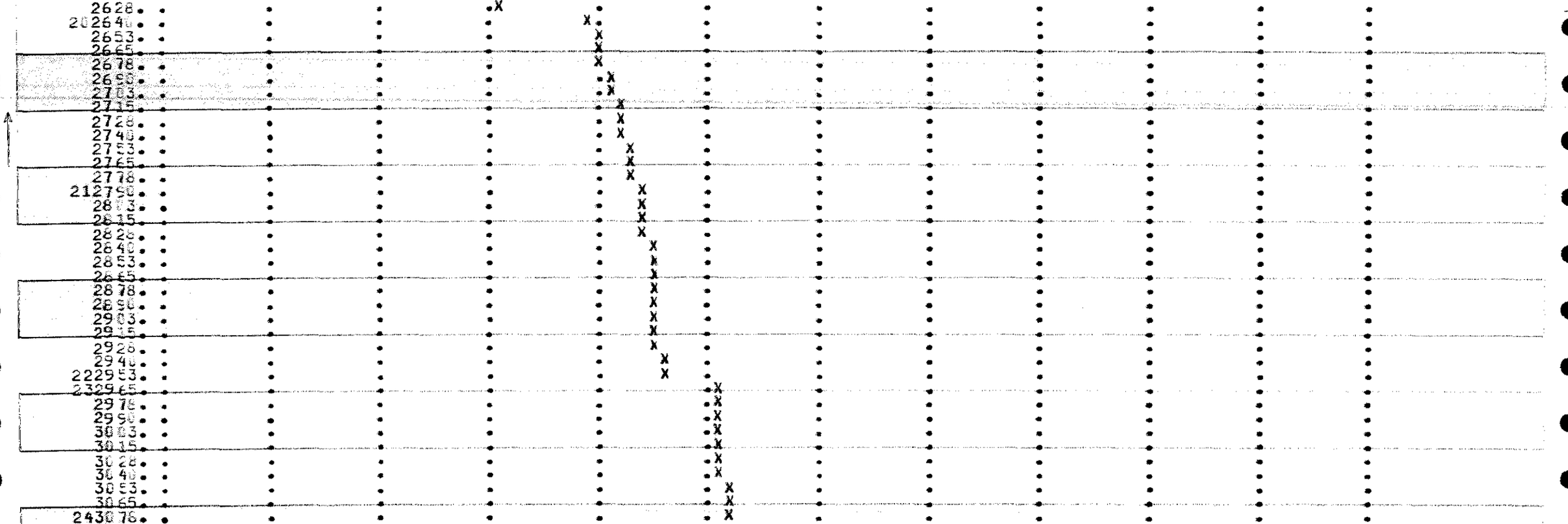


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BANK

BANK



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

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2221.70	2000.00	2220.90	2097.00	2224.50	2111.00	2224.40	2288.00	2222.70	2373.00
2224.40	2489.00	2221.30	2504.00	2221.30	2521.00	2218.80	2547.00	2217.20	2569.00
2217.20	2578.00	2225.60	2587.00	2225.60	2614.00	2234.70	2638.00	2237.00	2796.00
2237.80	2947.00	2240.30	2959.00	2241.00	3083.00				

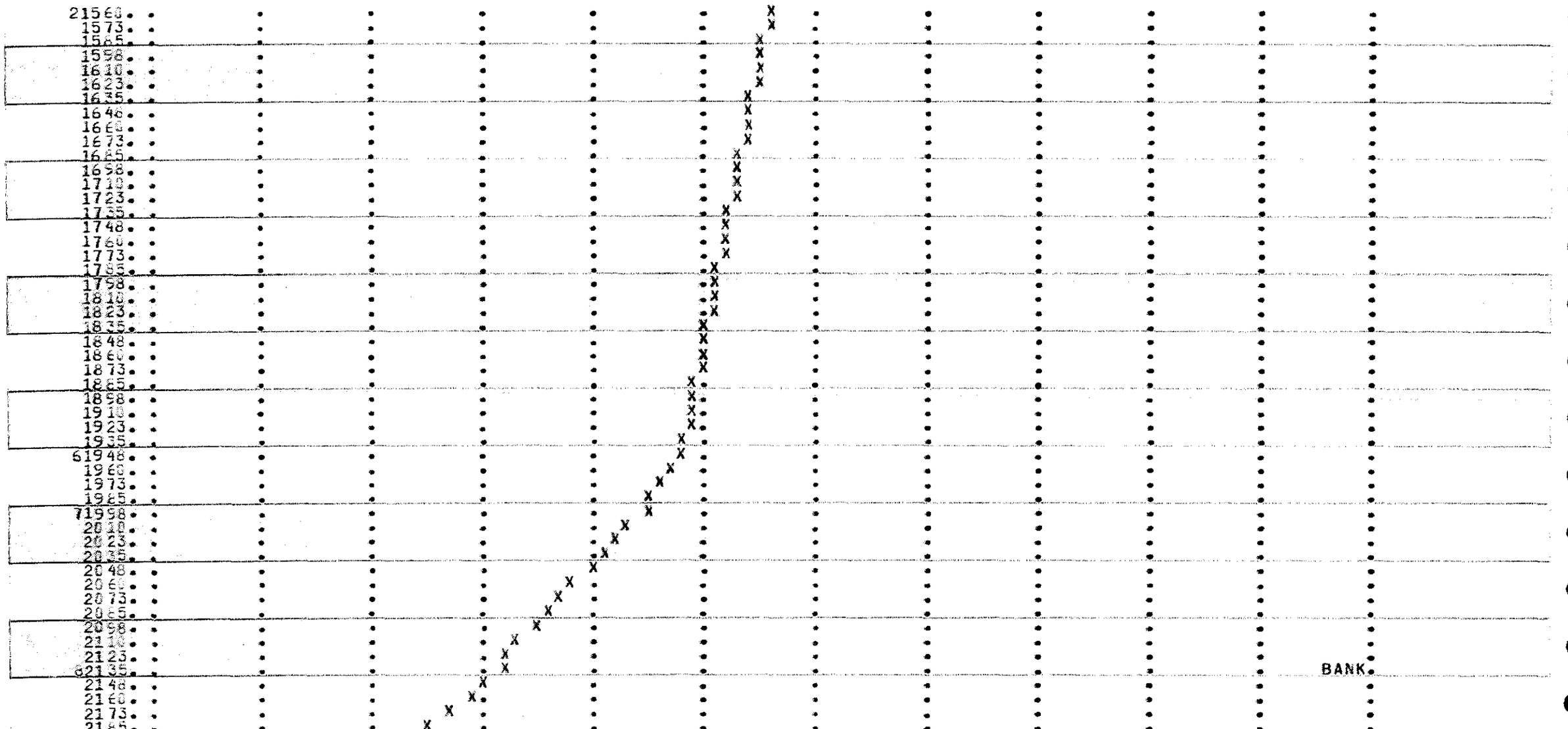
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CROSS SECTION 10.31
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DISCHARGE= 4100.

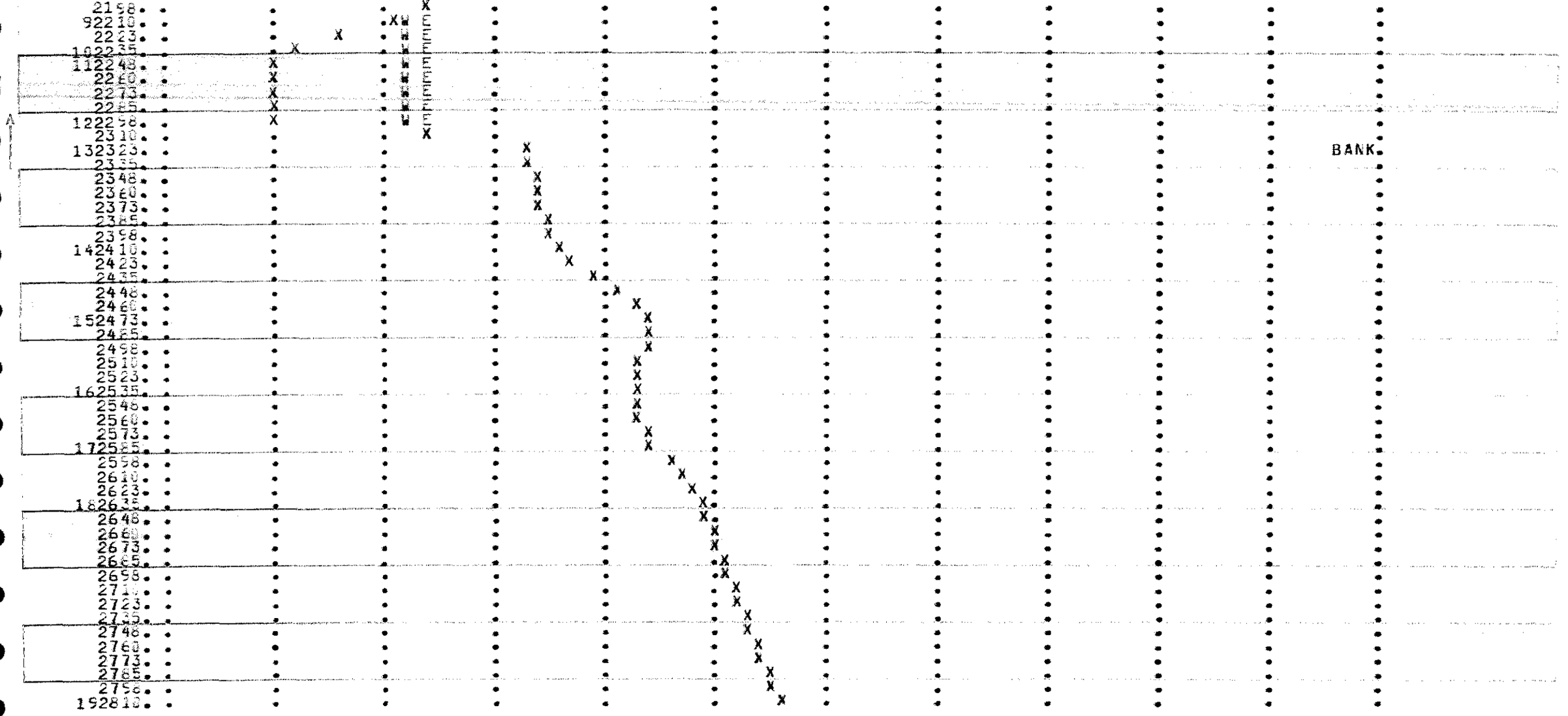
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 222. 2225. 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270.

STA-FEET



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NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)									
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2224.90	2299.00	2236.40	2319.00	2227.90	2410.00	2242.20	2474.00	2241.30	2531.00
2242.10	2584.00	2244.50	2630.00	2249.00	2810.00				

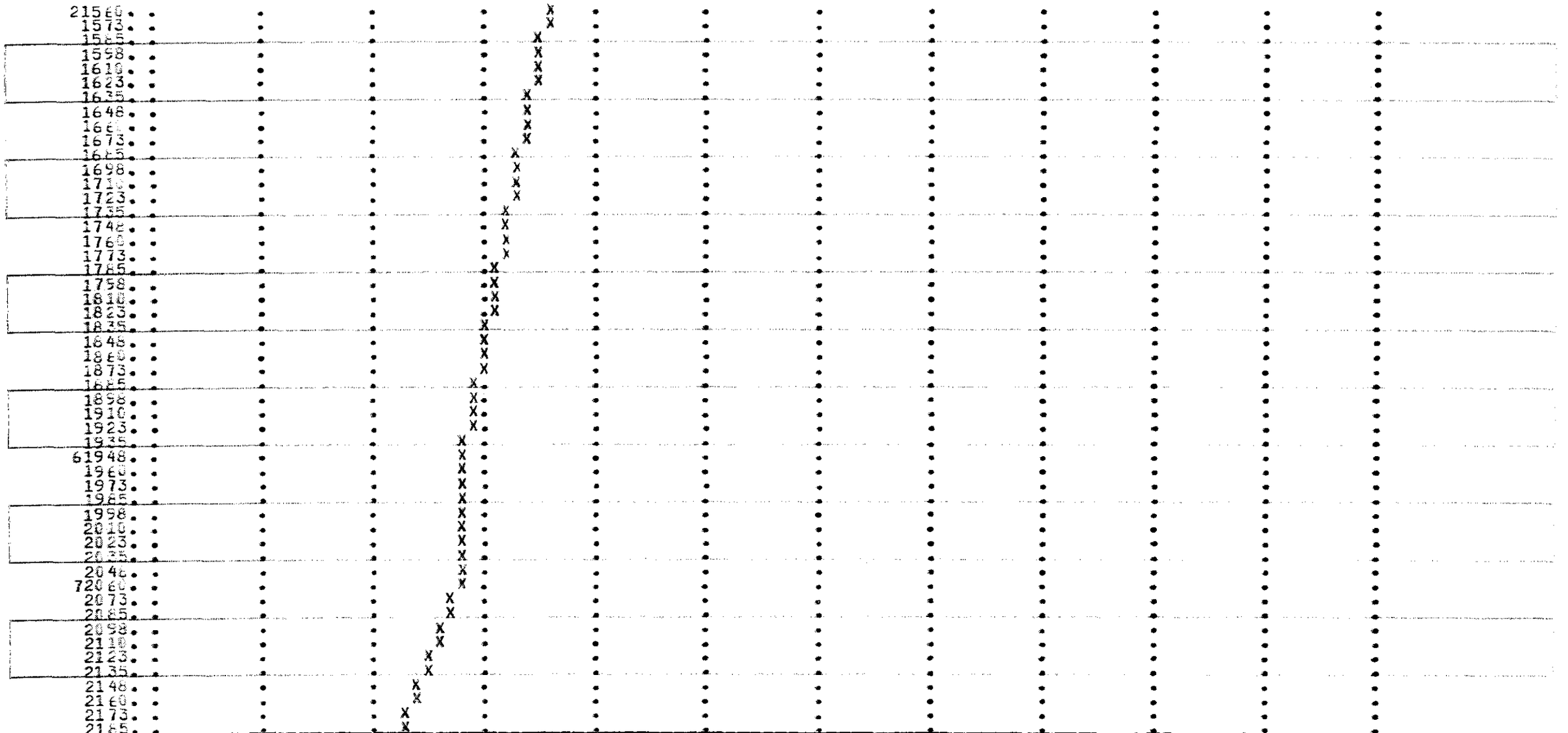
Continuous Interfolded @ Moore Business Forms, Inc. V

CROSS SECTION 10.33
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

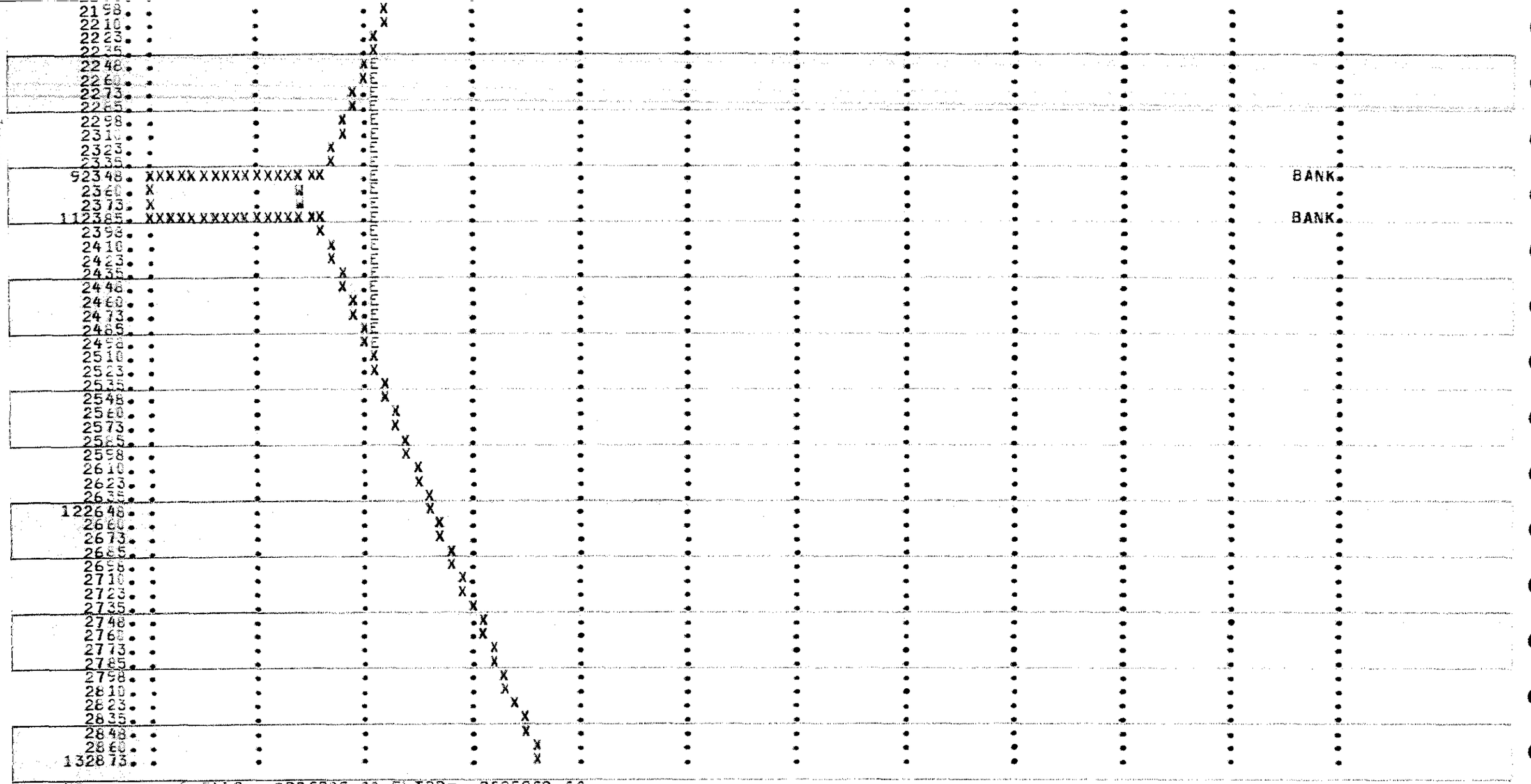
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280.

STA-FEET



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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)									
2248.00	1960.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00
2244.00	2060.00	2238.00	2350.00	2238.00	2350.00	2238.00	2388.00	2238.00	2388.00
2243.00	2650.00	2248.00	2870.00						

Continuous Interfolded @ Moore Business Forms, Inc.

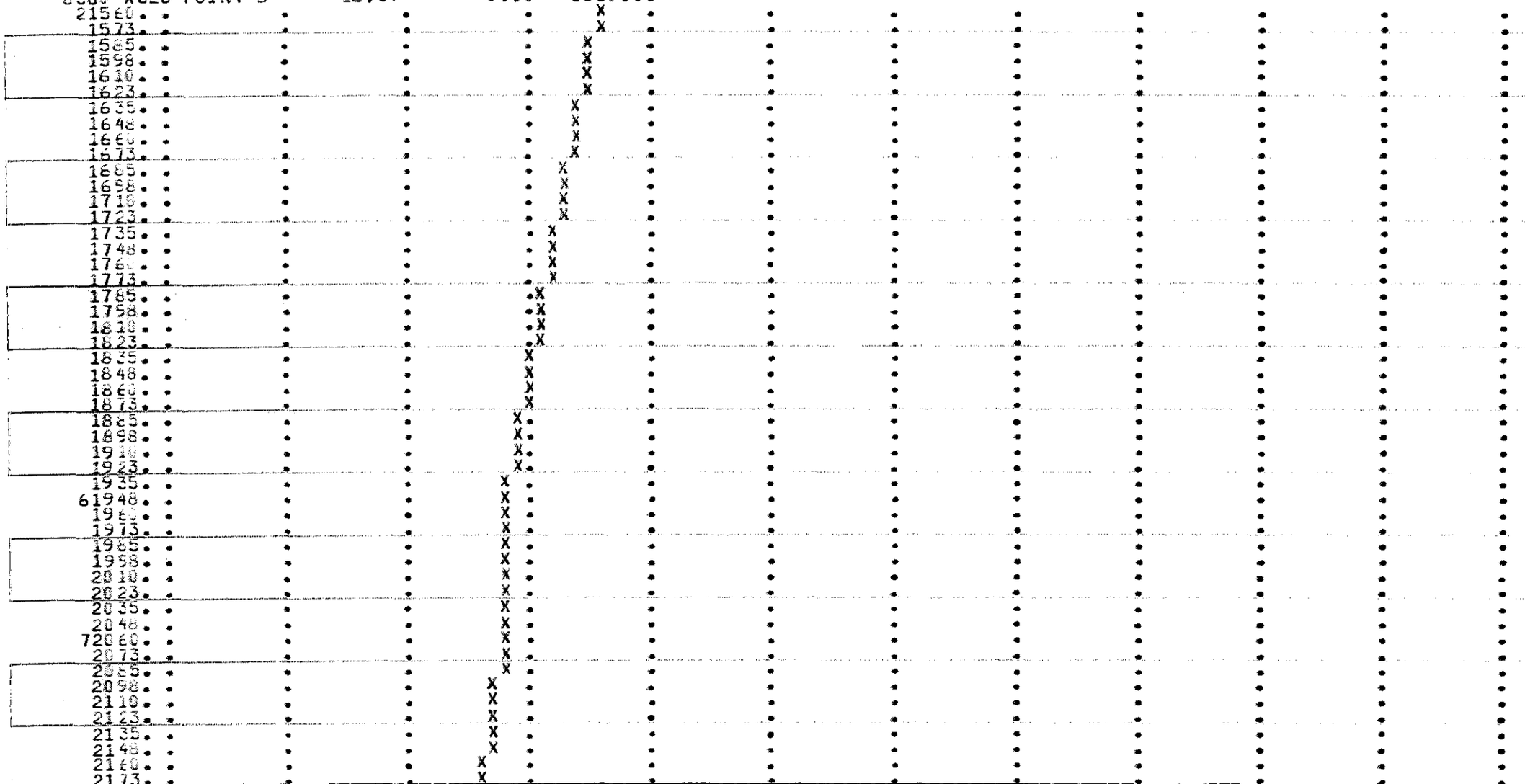
CROSS SECTION 10.34
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

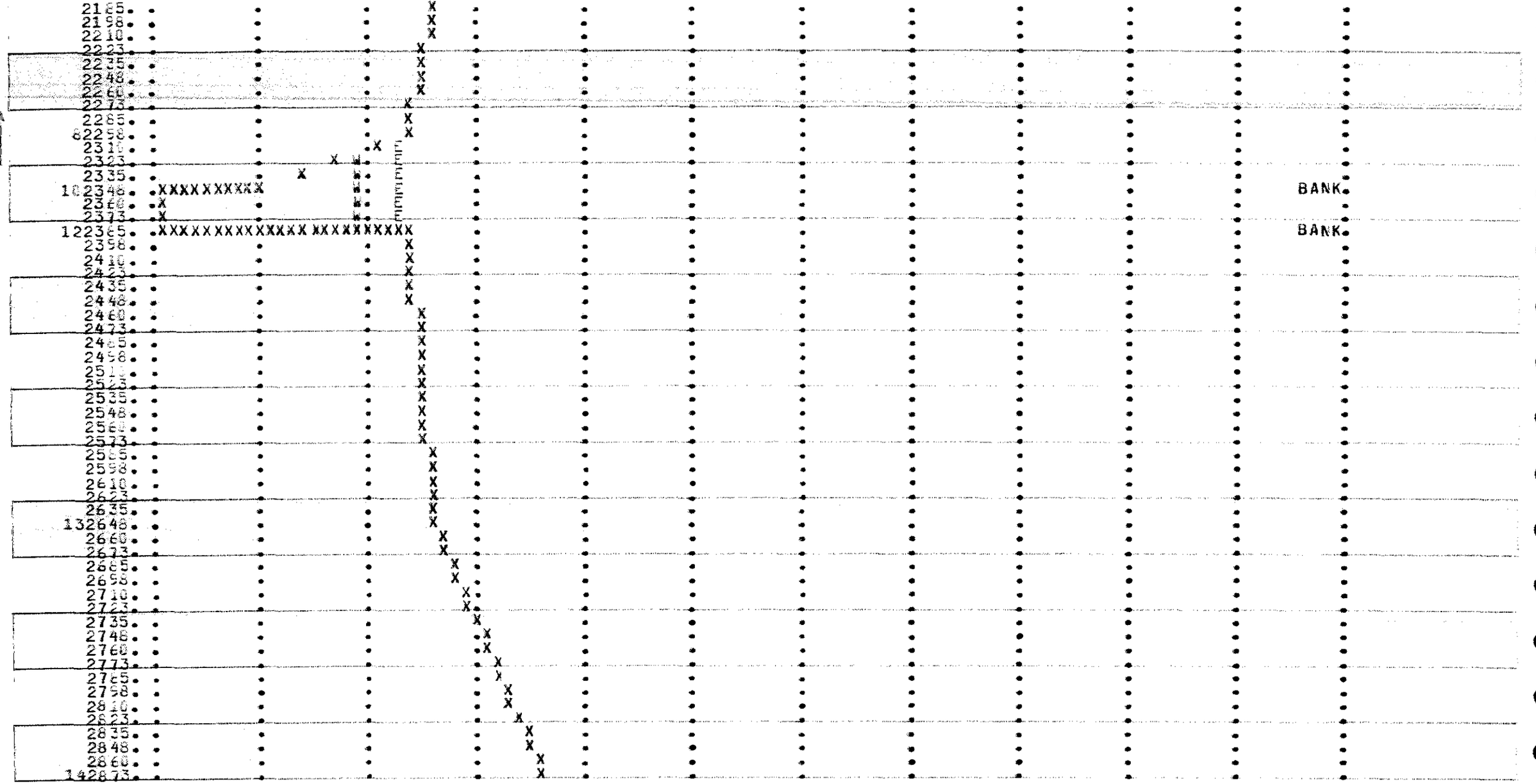
ELEV 2230. 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280.

STA-FEET

8560 XSEC POINT-B EL,ST- 0.00 1510.00



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NRD= 16 ELLC= 2241.00 ELTRD= 2242.00

0.00	0.00	2243.00	470.00	0.00	2244.00	610.00	0.00	2242.30
760.00	0.00	2242.00	1080.00	0.00	2243.00	1280.00	0.00	2244.50
1430.00	0.00	2248.00	1510.00	0.00	2252.00			

EL(I),STA(I)

2248.00	1560.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00	2244.00	1950.00
2244.00	2060.00	2242.00	2380.00	2235.00	2350.00	2230.50	2350.00	2230.50	2388.00
2242.00	2388.00	2243.00	2650.00	2248.00	2870.00				

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CROSS SECTION 10.49
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

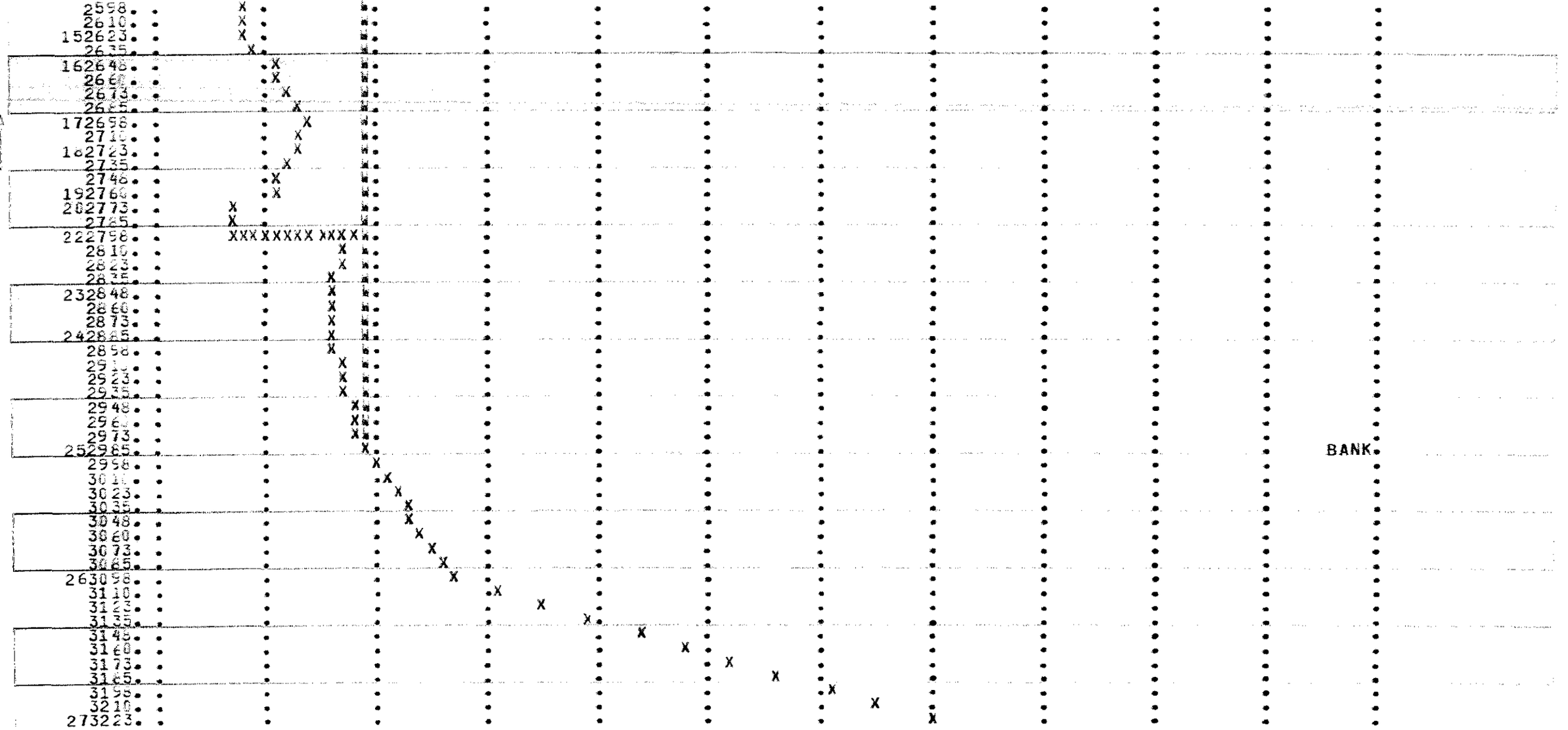
ELEV 2235. 2240. 2245. 2250. 2255. 2260. 2265. 2270. 2275. 2280. 2285.

STA-FEET

61560.
1973.
1985.
71998.
2010.
2023.
2035.
2048.
2060.
2073.
2085.
2098.
2110.
2123.
2135.
2148.
2160.
2173.
2185.
2198.
2210.
2223.
82235.
2248.
2260.
2273.
92285.
2298.
2310.
2323.
2335.
2348.
2360.
2373.
102385.
2398.
2410.
2423.
2435.
2448.
2460.
112473.
2485.
122498.
2510.
2523.
2535.
132548.
2560.
142573.
2585.

BANK.

Continuous Interfolded @ Moore Business Forms, Inc. V



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)									
2272.00	1960.00	2272.00	1960.00	2272.00	1960.00	2272.00	1960.00	2272.00	1960.00
2268.90	2001.00	2272.20	2234.00	2270.60	2283.00	2265.50	2389.00	2261.90	2475.00
2239.50	2501.00	2241.50	2547.00	2239.10	2570.00	2239.10	2617.00	2240.30	2648.00
2242.10	2701.00	2241.30	2724.00	2240.60	2754.00	2238.40	2771.00	2238.40	2794.00
2243.90	2799.00	2243.00	2845.00	2242.90	2888.00	2244.40	2987.00	2248.30	3092.00
2270.00	3225.00								

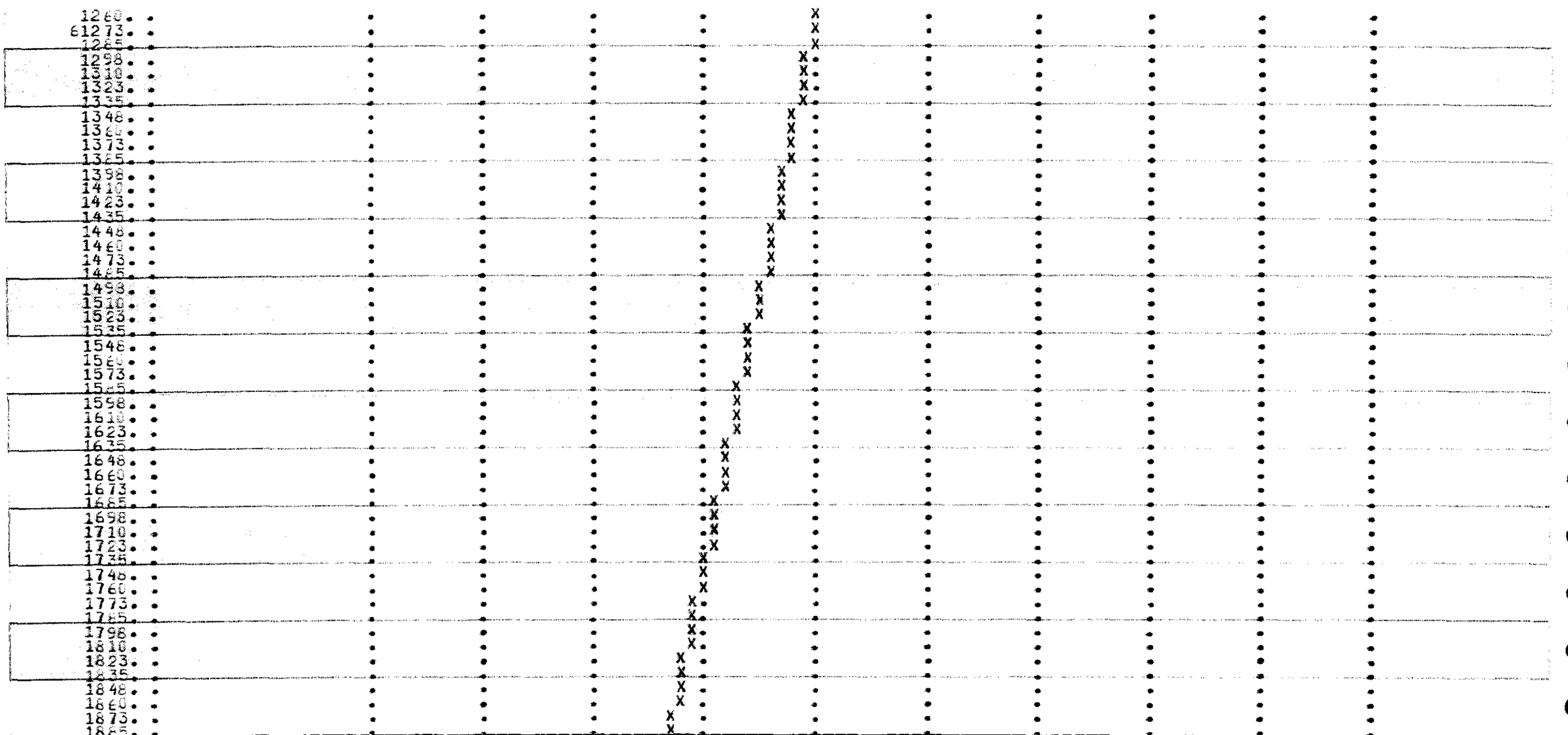
Continuous Interfolded @ Moore Business Forms, Inc. Y

CROSS SECTION 10.76
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41 0.

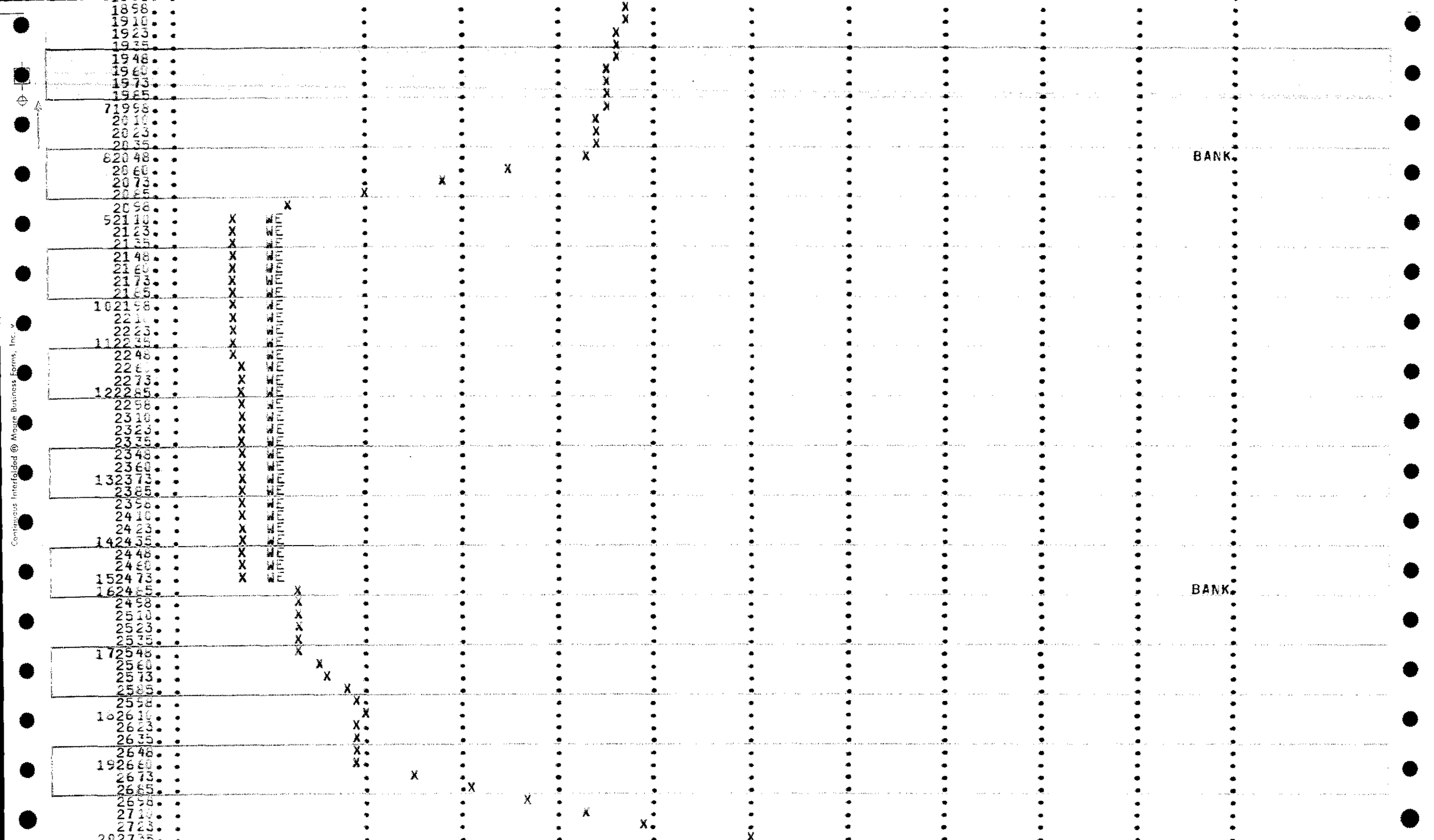
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	2250.	2255.	2260.	2265.	2270.	2275.	2280.	2285.	2290.	2295.	2300.

STA-FEET



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Continuous Interfolded @ Moore Business Forms, Inc.

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2280.00	1270.00	2280.00	1270.00	2260.00	1270.00	2280.00	1270.00	2260.00	1270.00
2272.30	2000.00	2271.60	2052.00	2252.80	2112.00	2252.80	2198.00	2253.10	2233.00
2253.60	2284.00	2253.60	2370.00	2253.60	2436.00	2253.60	2473.00	2256.60	2489.00
2256.60	2553.00	2259.80	2605.00	2258.50	2654.00	2280.00	2740.00		

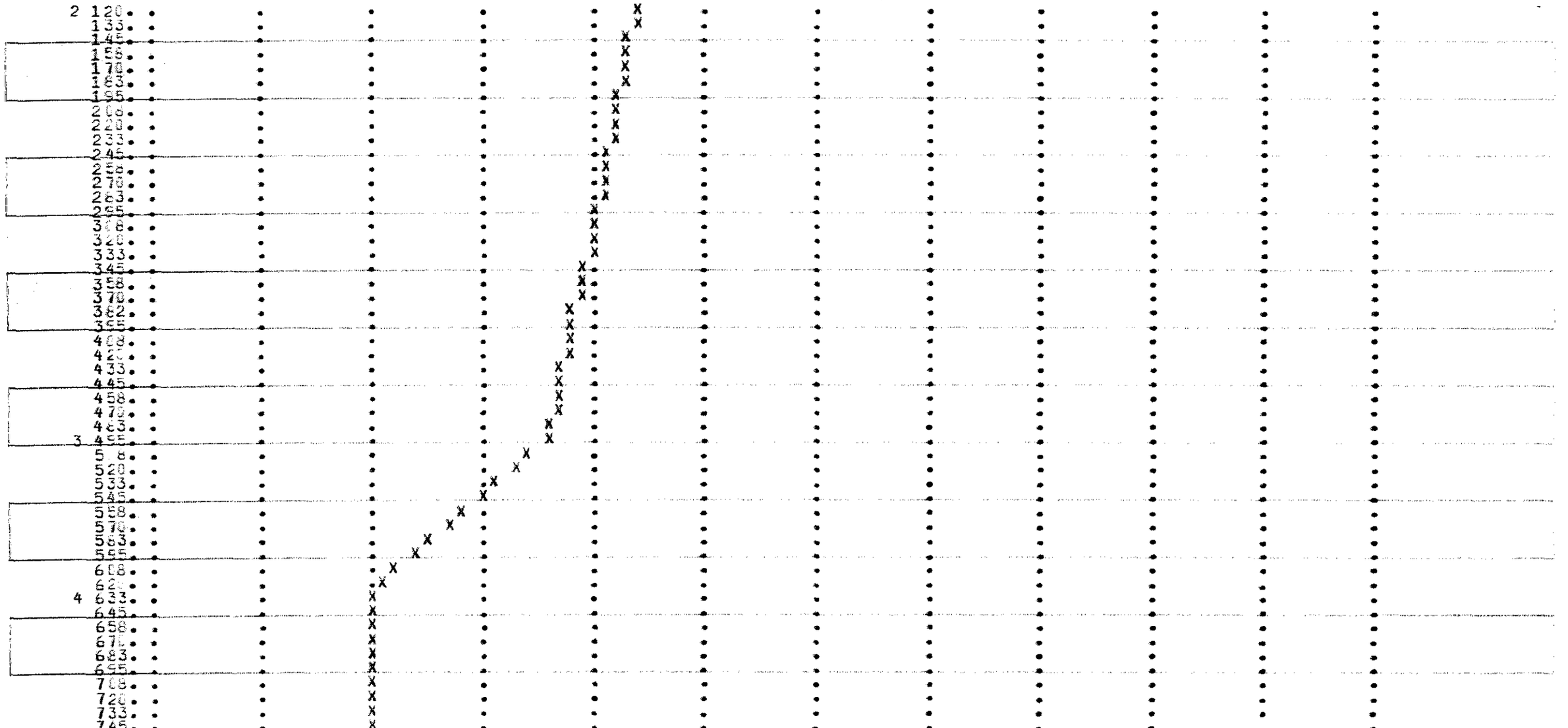
Continuous Interfolded ® Moore Business Forms, Inc.

CROSS SECTION 10.96
STREAM FLAMINGO WASH, REACH 2 *
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

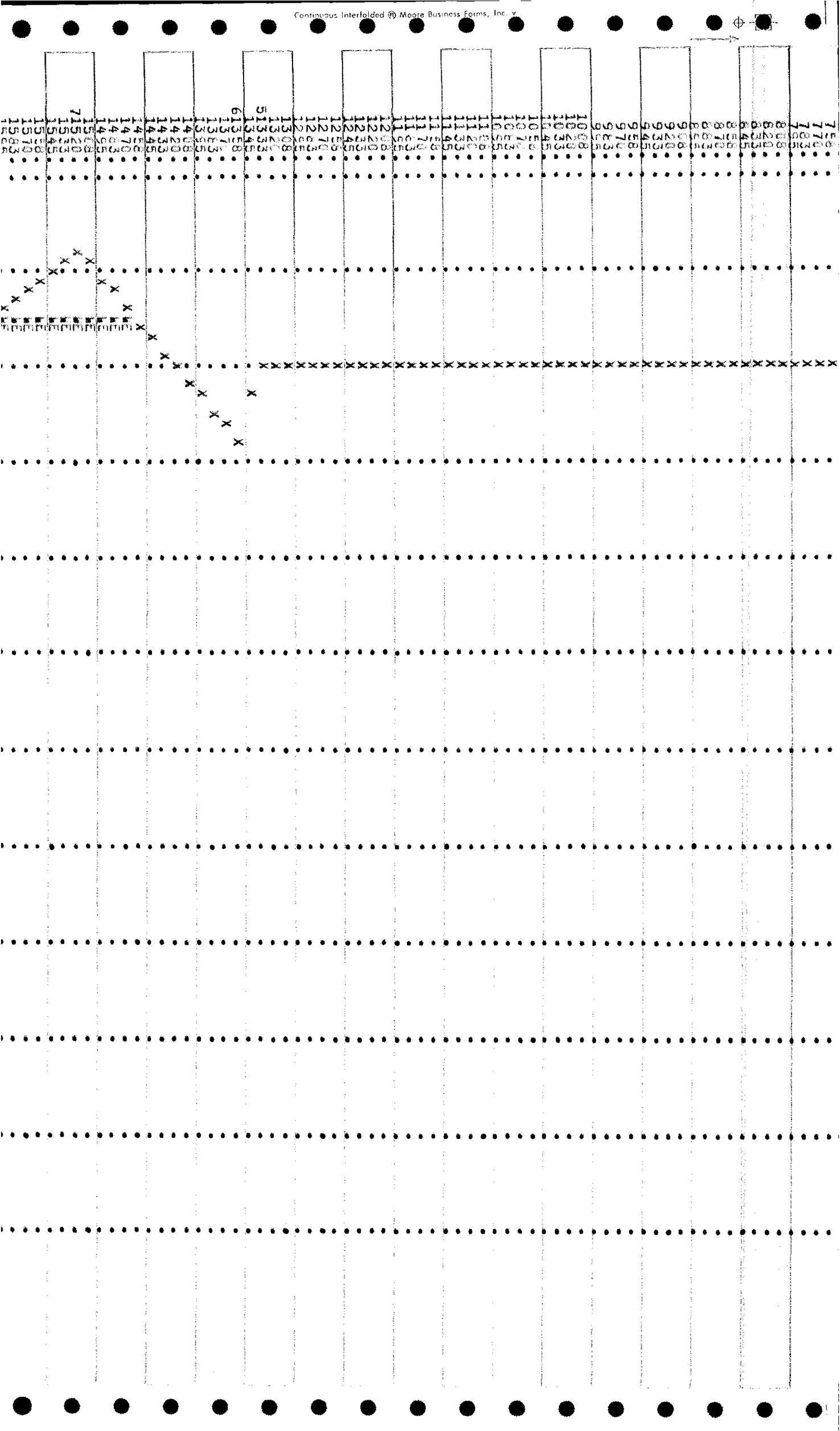
ELEV 2262. 2267. 2272. 2277. 2282. 2287. 2292. 2297. 2302. 2307. 2312.

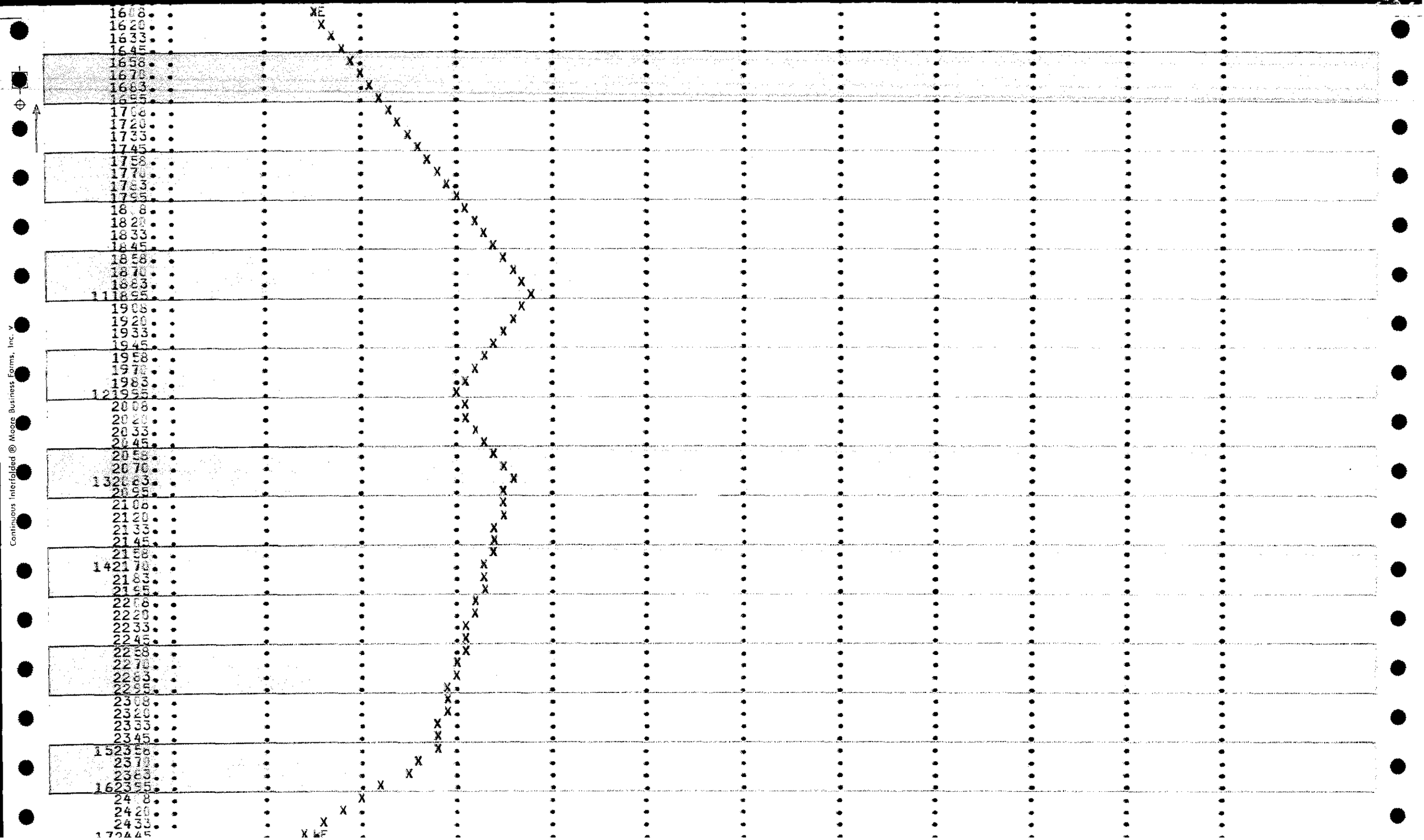
STA-FEET



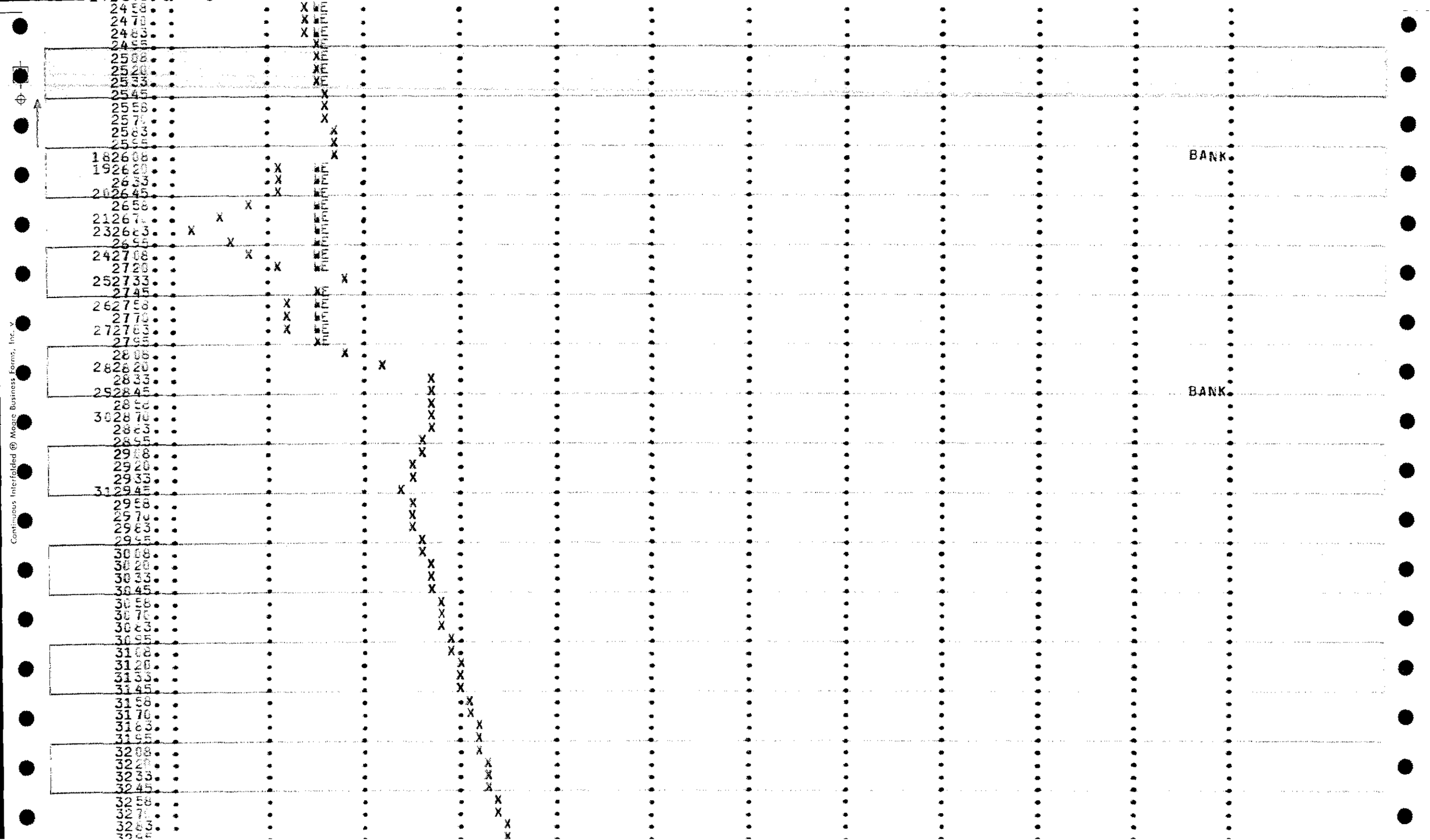
Continuous Interfolded @ Moore Business Forms, Inc. Y

Continuous Interfolded ® Moore Business Forms, Inc.

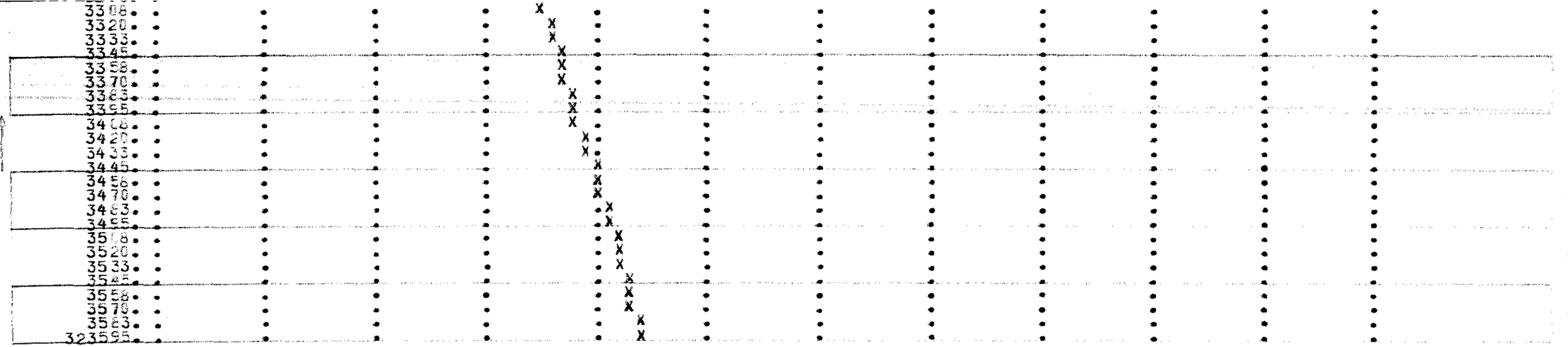




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Continuous Interfolded @ Moore Business Forms, Inc. V



NRD= 4 ELLO= 9999999.00 ELTRO= 9999999.00

EL(I),SIA(I)

2284.00	120.00	2280.00	500.00	2272.00	630.00	2272.00	1330.00	2276.00	1360.00
2266.00	1520.00	2281.00	1900.00	2281.00	1900.00	2281.00	1900.00	2281.00	1900.00
2276.60	2000.00	2279.90	2083.00	2278.70	2174.00	2275.90	2353.00	2273.20	2398.00
2268.80	2446.00	2270.60	2613.00	2267.50	2620.00	2267.50	2647.00	2264.70	2670.00
2263.00	2680.00	2263.00	2686.00	2265.80	2702.00	2270.80	2736.00	2267.80	2761.00
2267.90	2784.00	2272.90	2826.00	2275.60	2840.00	2275.60	2876.00	2274.10	2548.00
2284.00	3590.00								

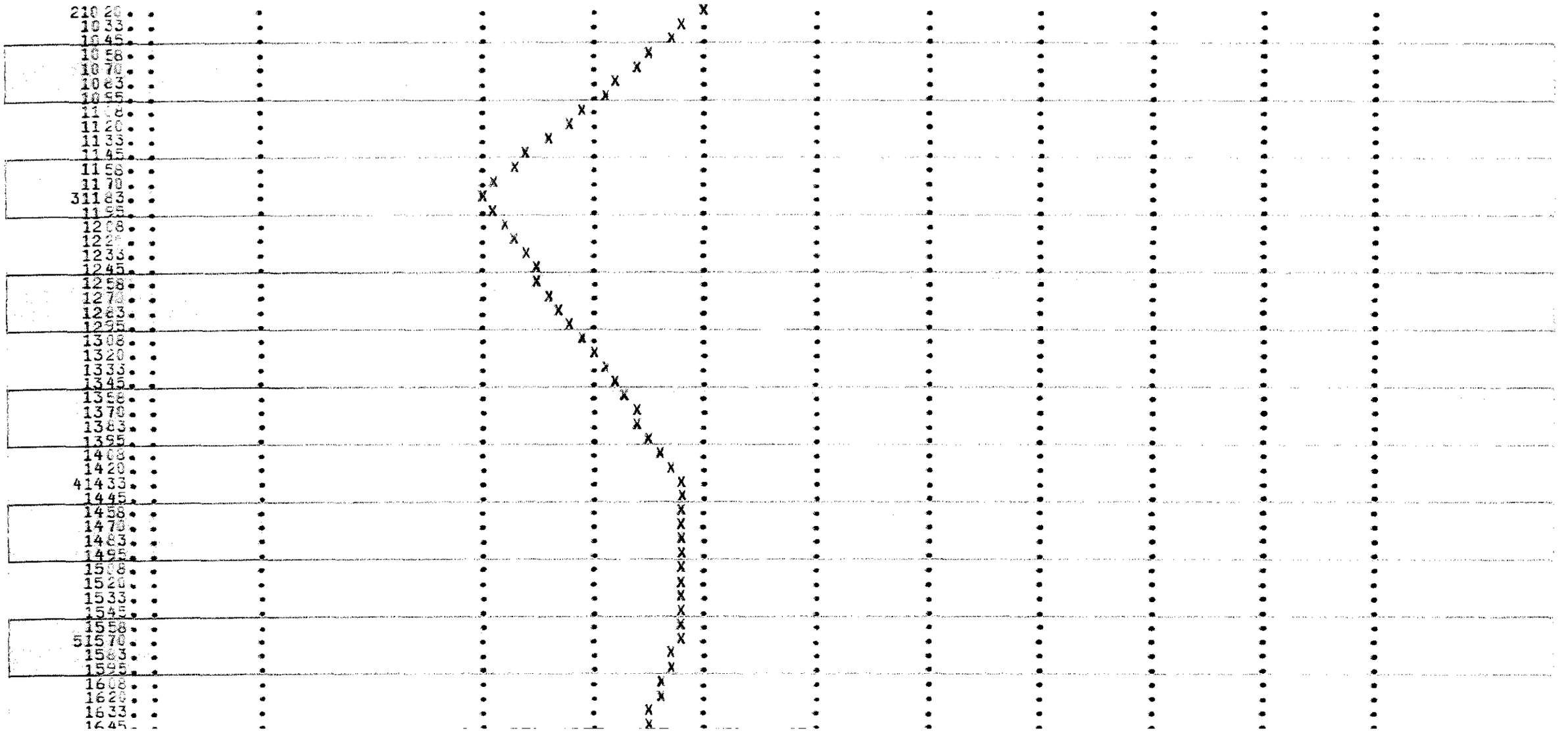
Continuous Interfolded ® Moore Business Forms, Inc.

CROSS SECTION 11.15
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

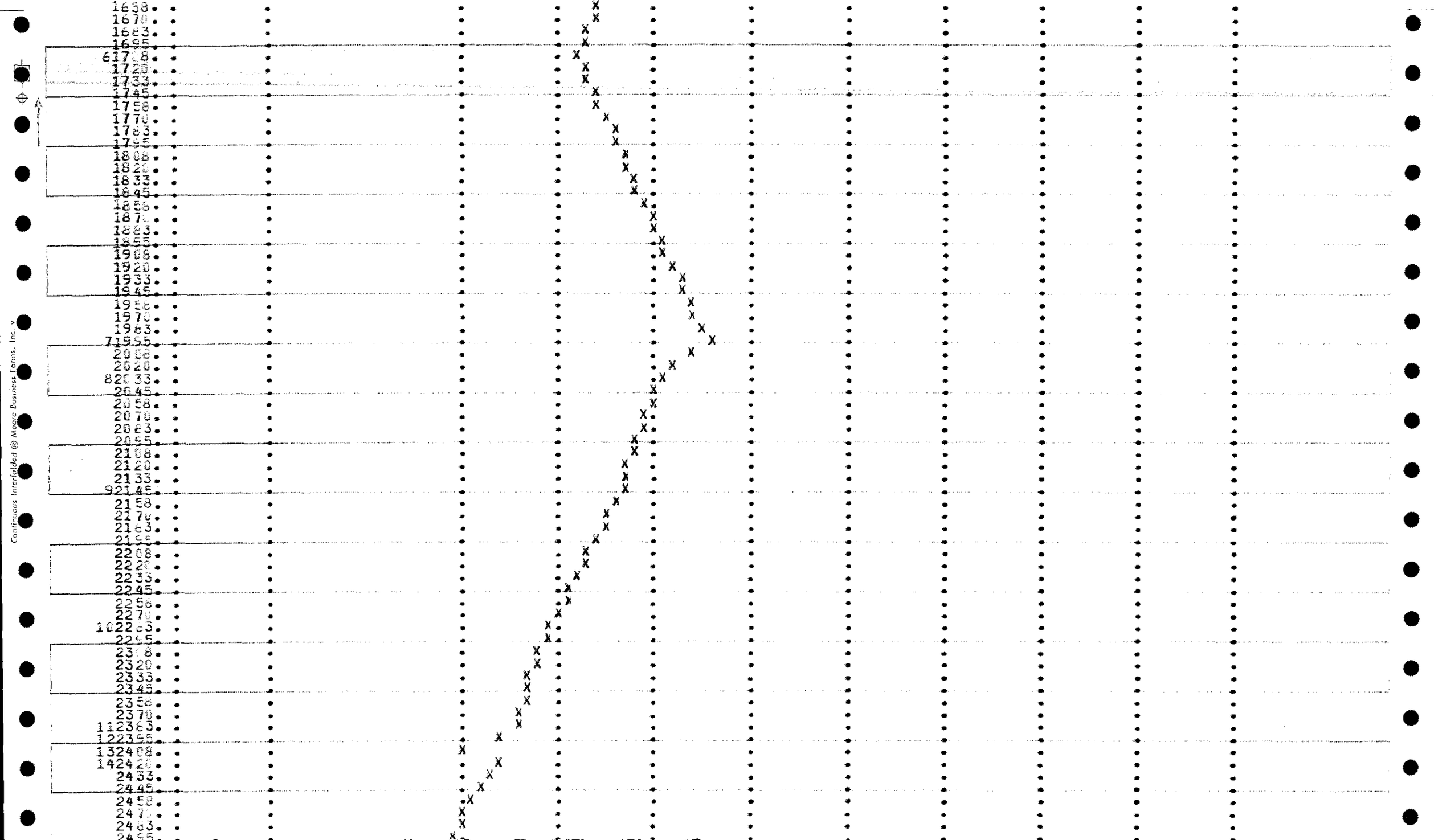
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2265. 2270. 2275. 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315.

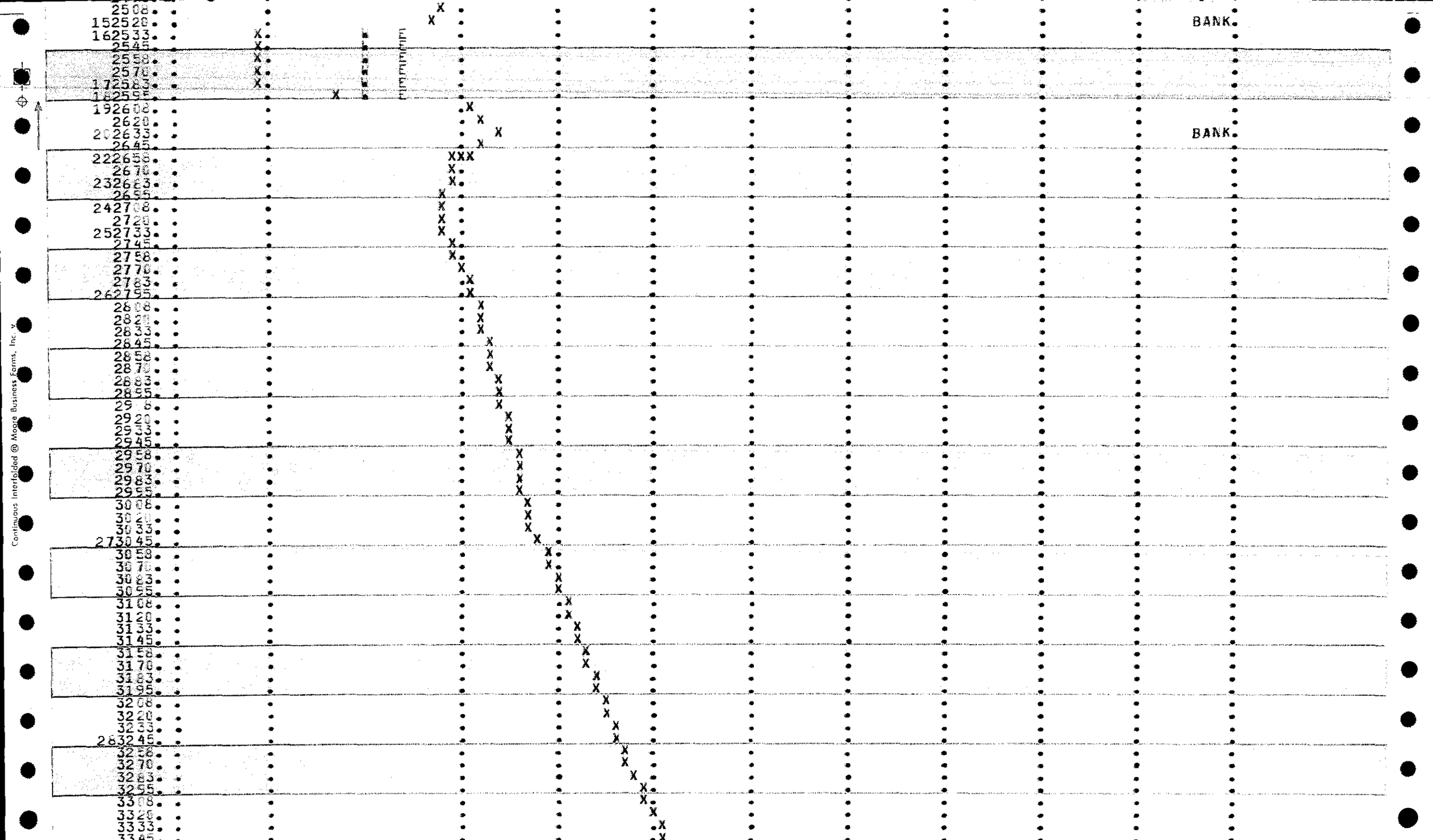
STA-FEET



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Continuous Interfolded @ Moore Business Forms, Inc. V



Continuous Interfolded @ Moore Business Forms, Inc. Y

```
3358.
3370.
3383.
2933
```

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

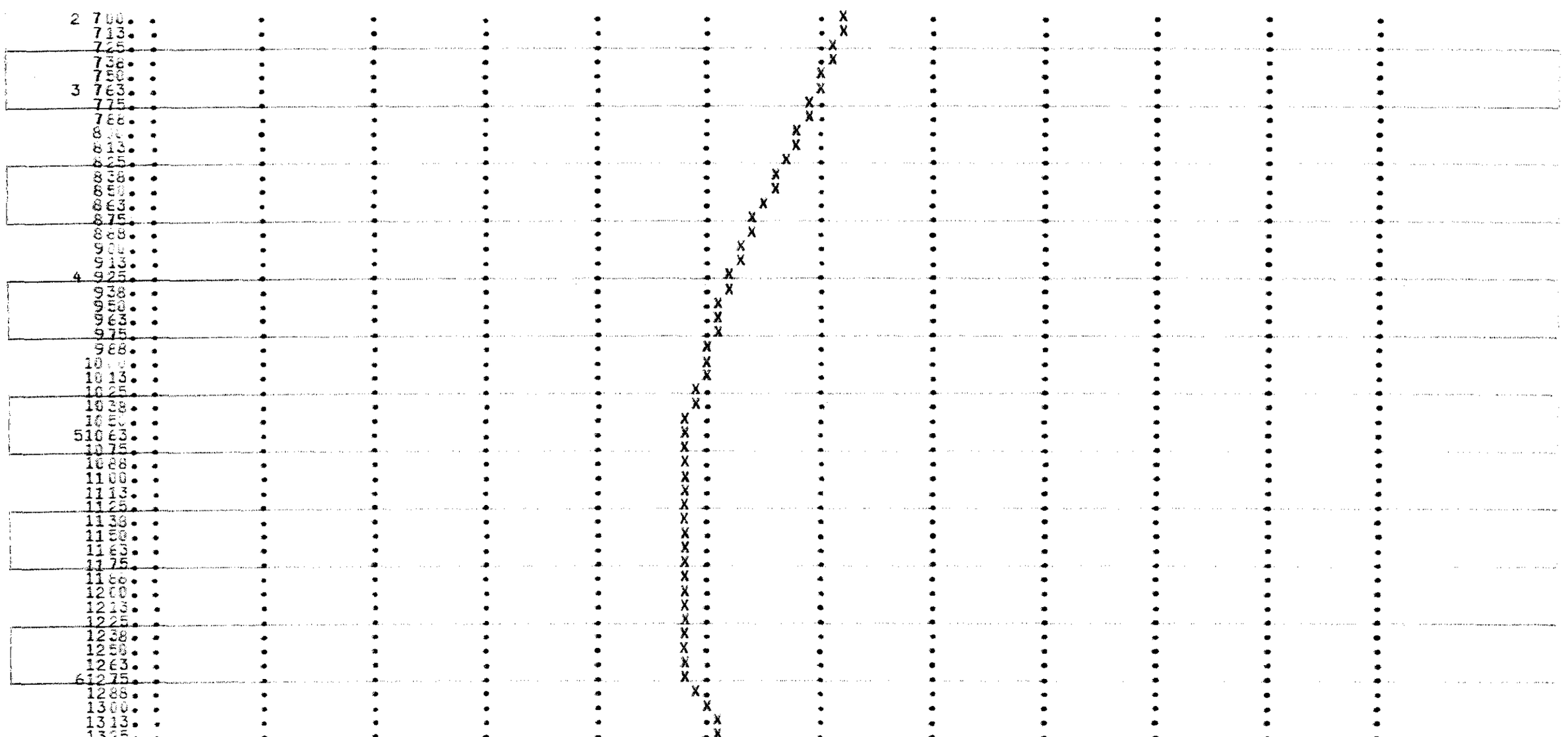
EL(I),STA(I)

2290.00	1320.00	2280.00	1180.00	2285.00	1430.00	2285.00	1570.00	2286.00	1710.00
2292.80	2000.00	2290.40	2038.00	2288.40	2140.00	2284.60	2282.00	2282.90	2380.00
2262.00	2399.00	2280.00	2404.30	2281.30	2420.00	2278.60	2521.00	2269.40	2530.00
2269.40	2588.00	2273.70	2599.30	2280.50	2607.00	2281.80	2633.00	2280.30	2655.00
2279.30	2663.00	2279.30	2683.00	2279.00	2710.00	2279.00	2731.00	2280.70	2791.00
2284.00	3050.00	2288.00	3250.00	2292.00	3400.00				

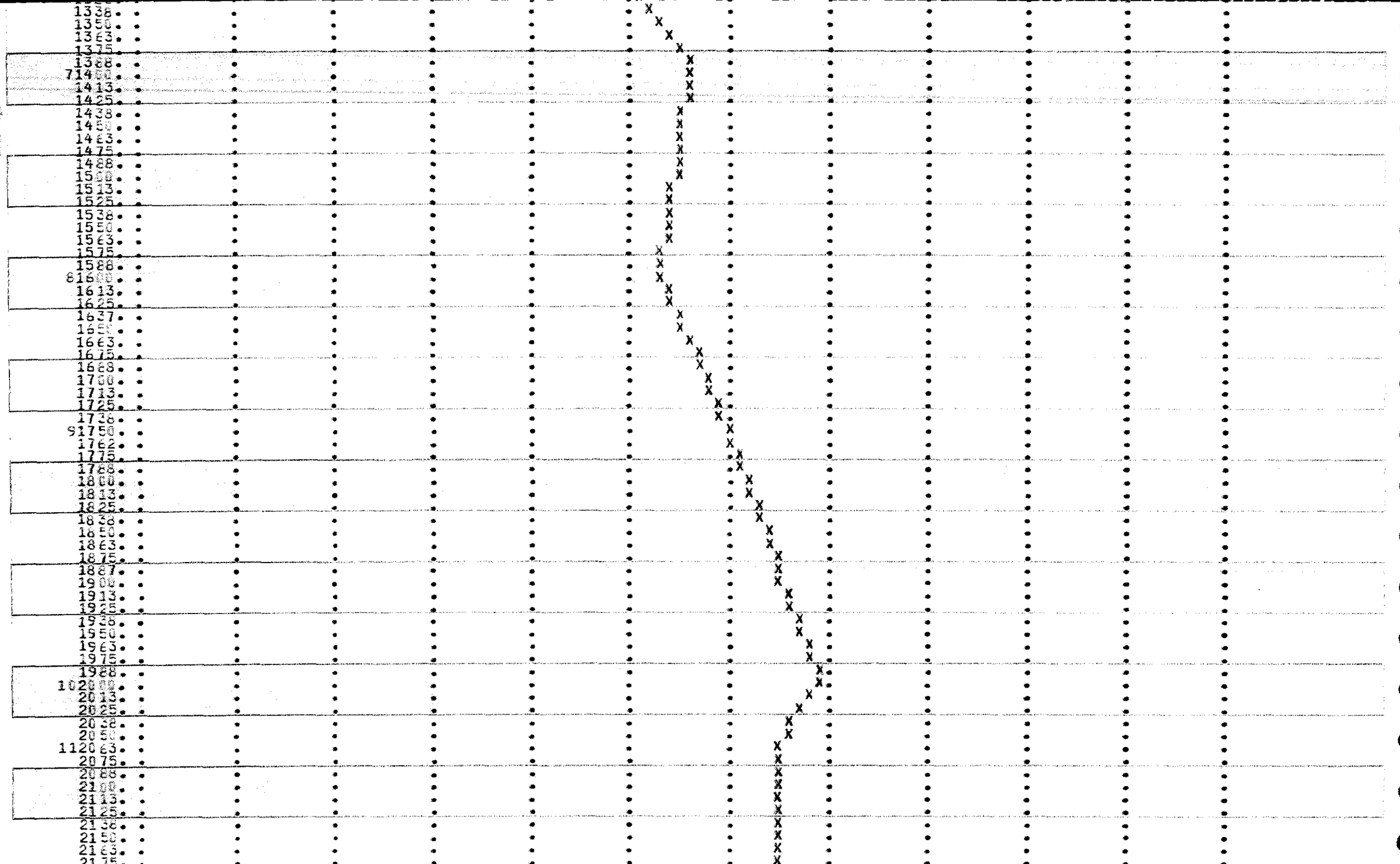
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CROSS SECTION 11.28
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLR,E=ENERGY GRADIENT,C=CRITICAL WSEL



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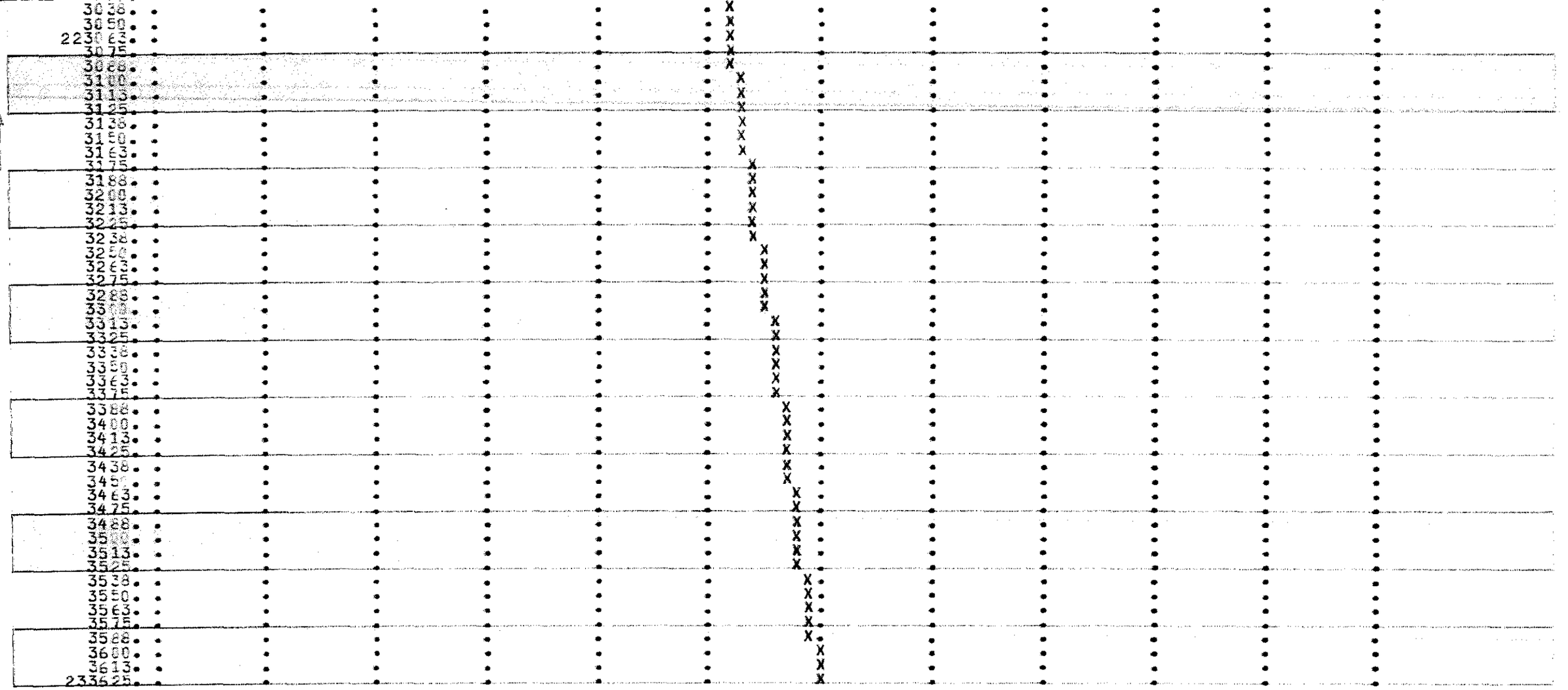


Continuous Interfolded @ Moore Business Forms, Inc.

BANK

BANK

Continuous Interfolded @ Moore Business Forms, Inc.



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2301.00	700.00	2300.00	760.00	2296.00	920.00	2294.00	1060.00	2294.00	1280.00
2298.00	1400.00	2296.50	1600.00	2300.00	1750.00	2304.50	2000.00	2302.30	2066.00
2303.00	2258.00	2300.50	2304.00	2292.10	2376.00	2288.60	2416.00	2273.90	2439.00
2273.90	2582.00	2288.10	2523.00	2288.10	2556.00	2288.80	2587.00	2292.00	2690.00
2296.00	3060.00	2300.00	3630.00						

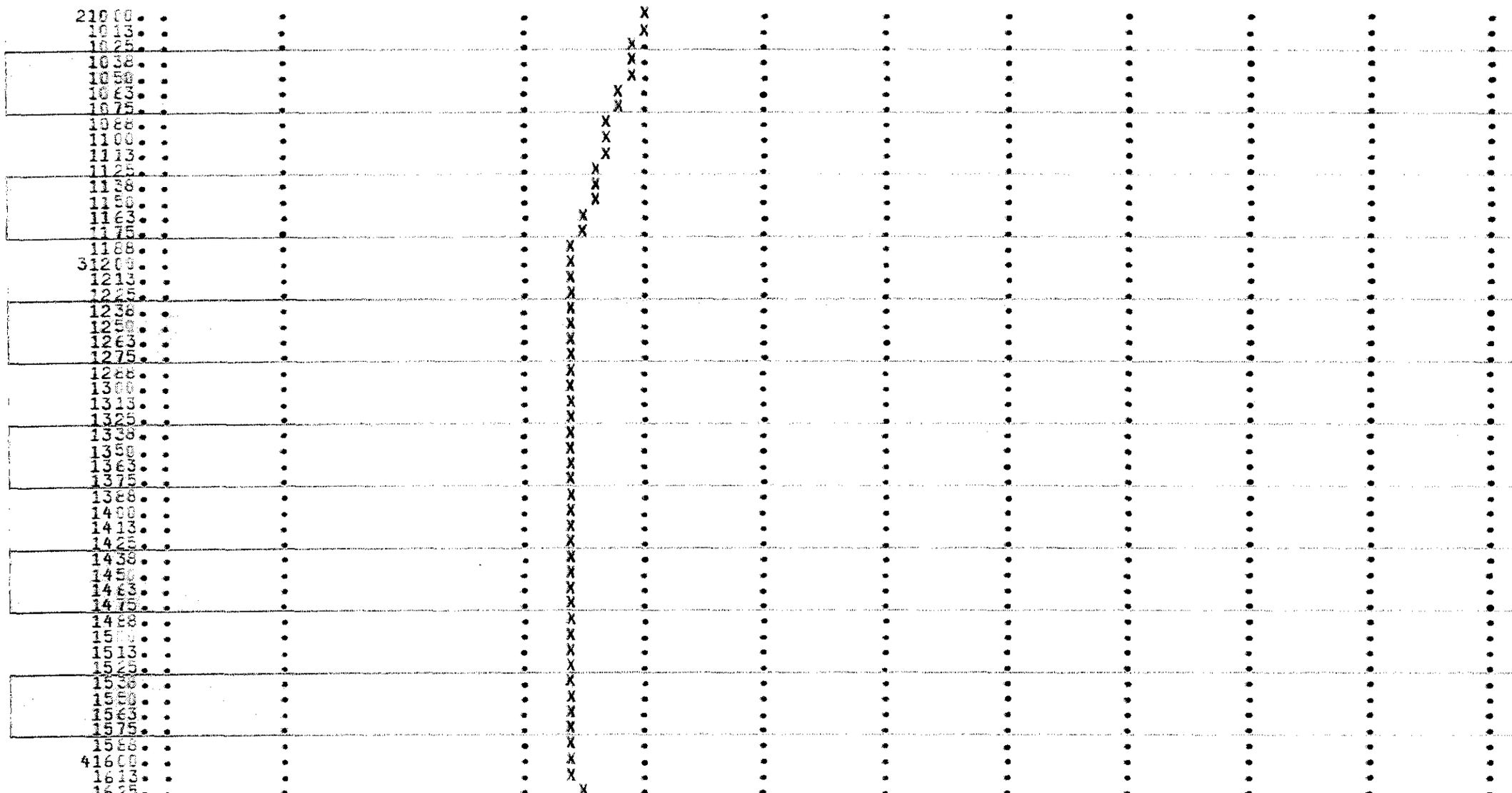
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CROSS SECTION 11.31
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

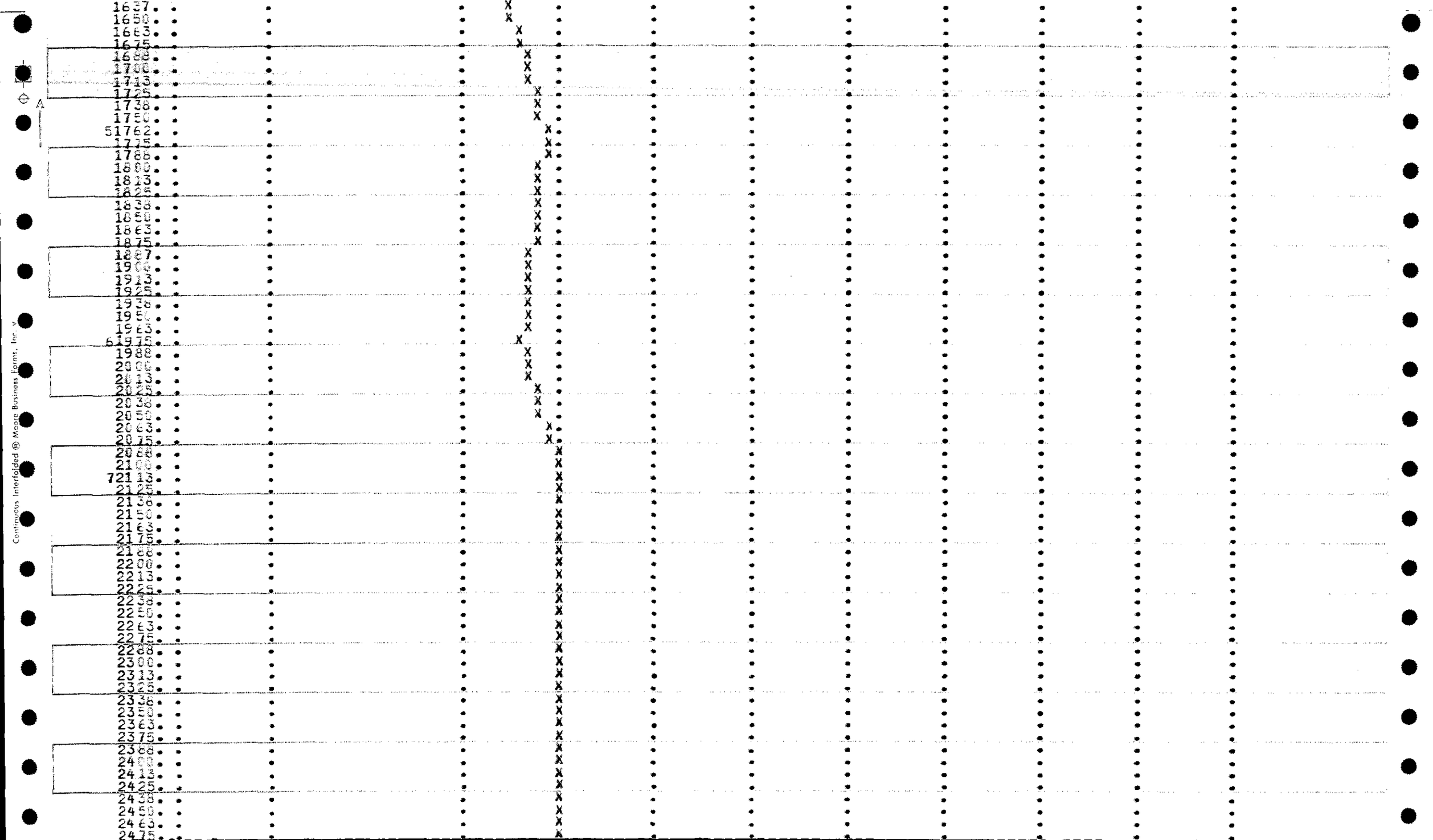
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

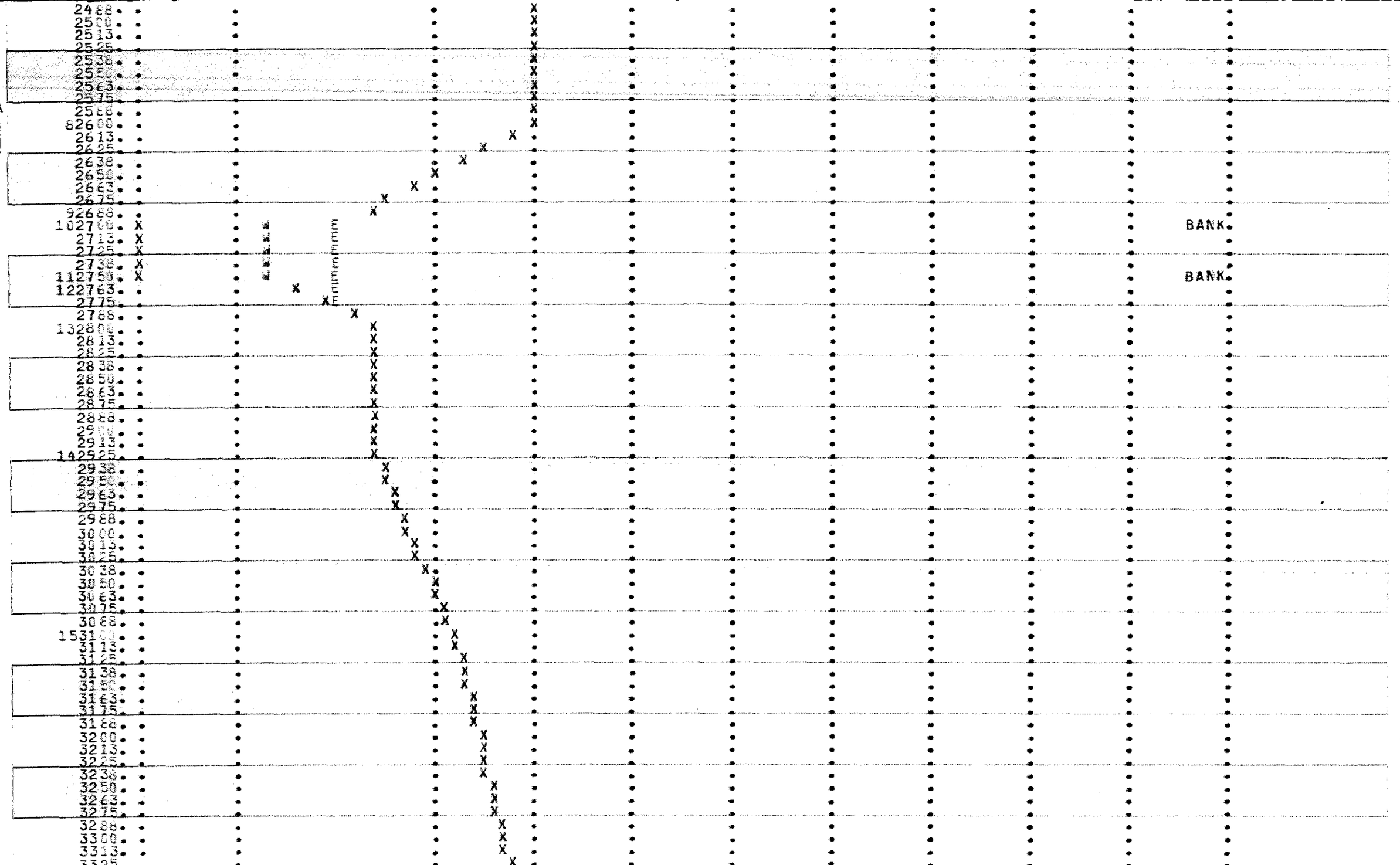
ELEV 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315. 2320. 2325. 2330.

STA-FEET

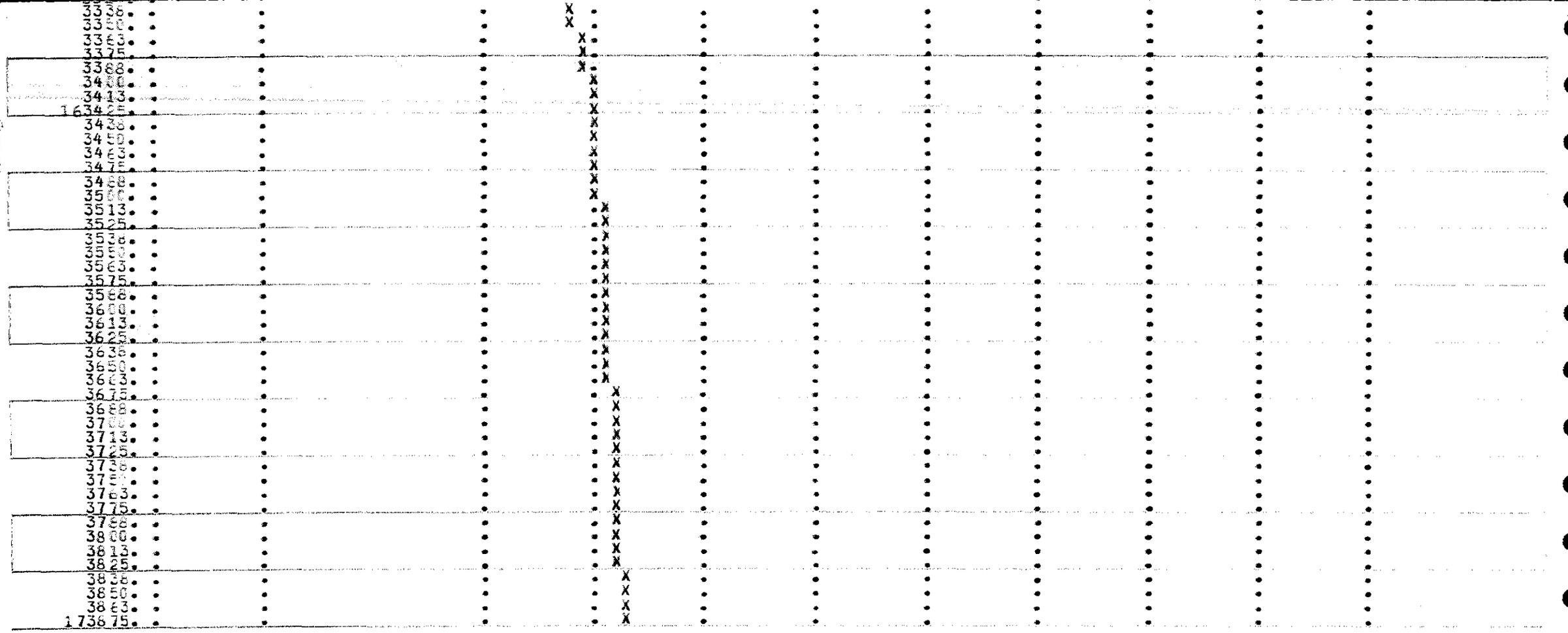


Continuous Interfolded ® Moore Business Forms, Inc.





Continuous Interfolded @ Moore Business Forms, Inc. Y



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)									
2300.00	1000.00	2297.00	1200.00	2297.00	1600.00	2295.40	1760.00	2296.20	1980.00
2300.00	2110.00	2300.00	2600.00	2292.00	2682.00	2280.00	2704.00	2280.00	2746.00
2288.00	2768.00	2292.00	2800.00	2292.00	2920.00	2296.00	3100.00	2300.00	3420.00
2301.40	3570.00								

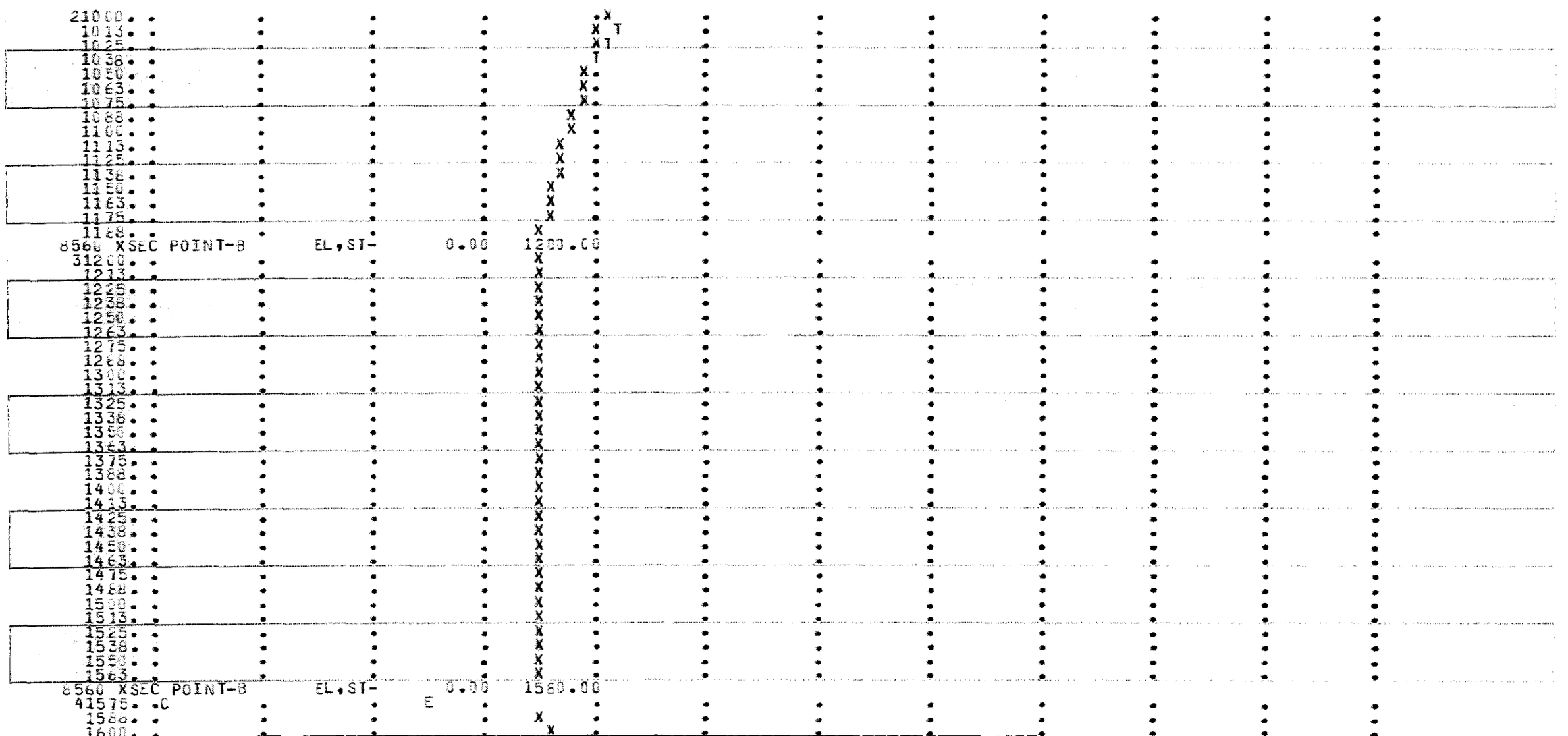
Continuous Interfolded ® Moore Business Forms, Inc. Y

CROSS SECTION 11.32
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

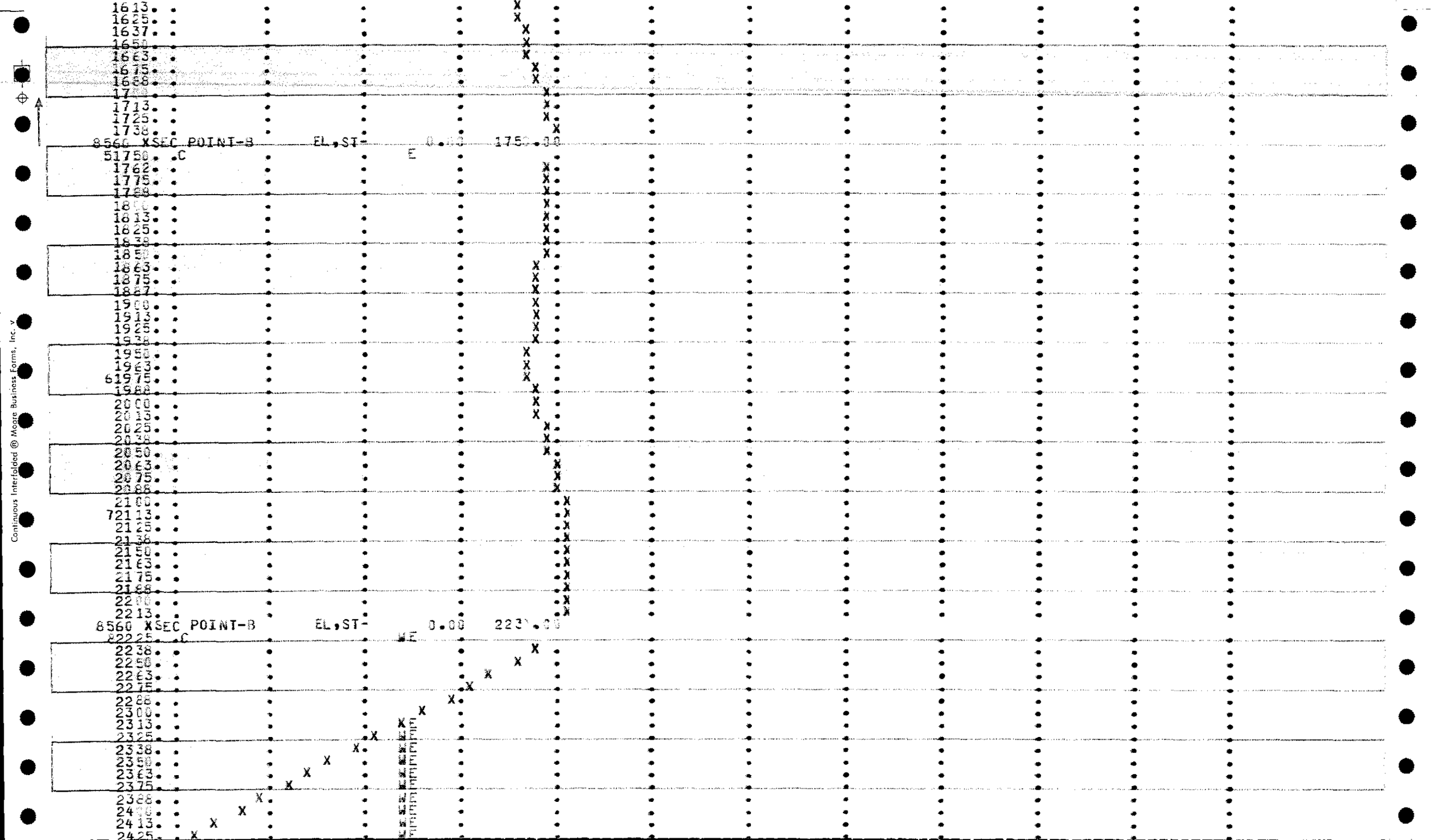
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2280. 2285. 2290. 2295. 2300. 2305. 2310. 2315. 2320. 2325. 2330.

STA-FEET



Continuous Interfolded @ Moore Business Forms, Inc. v.

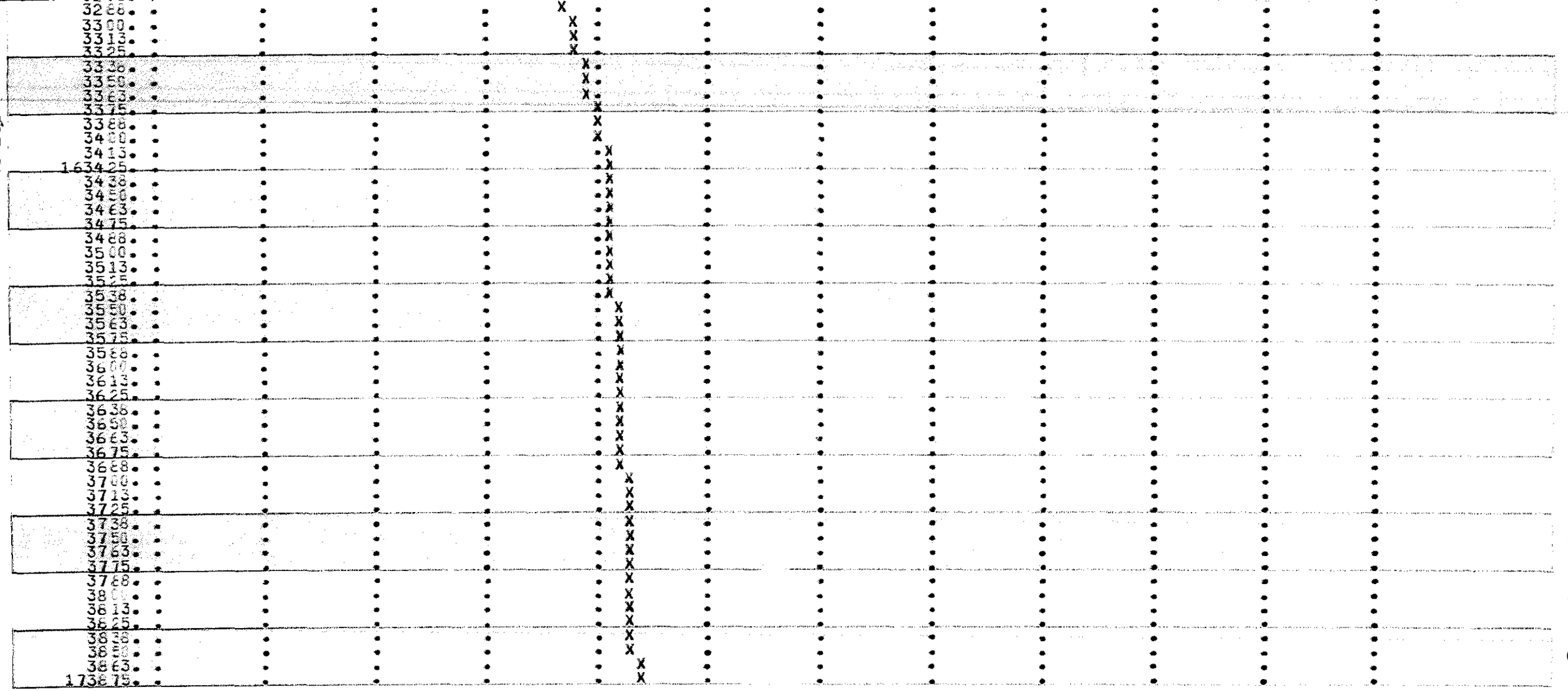


Continuous Interfolded @ Moore Business Forms, Inc. V

BANK

BANK

Continuous Interfolded @ Moore Business Forms, Inc. Y



NRD= 14 ELLC= 2288.40 ELTRD= 2291.40

0.00	0.00	2300.00	460.00	0.00	2299.70	710.00	0.00	2299.60	
1050.00	0.00	2296.00	1200.00	0.00	2294.30	1380.00	0.00	2293.00	
1560.00	0.00	2292.00	1650.00	0.00	2291.40	1750.00	0.00	2292.00	
1820.00	0.00	2292.40	2150.00	0.00	2296.00	2230.00	0.00	2300.00	

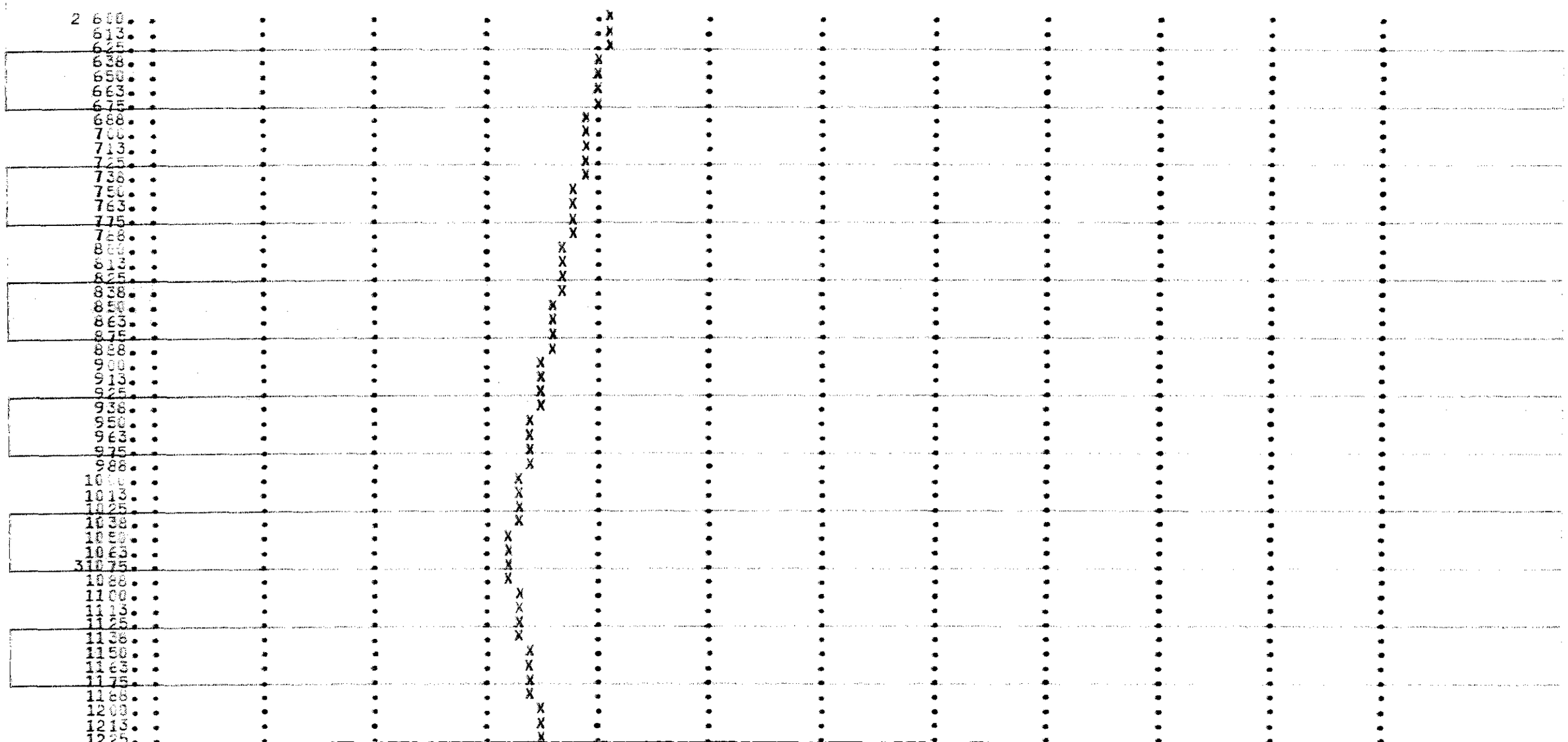
EL(I),STA(I)

2300.40	1700.00	2297.40	1200.00	2297.40	1600.00	2299.80	1760.00	2298.60	1980.00
2300.40	2110.00	2300.40	2600.00	2292.40	2682.00	2280.40	2704.00	2280.40	2746.00
2288.40	2768.00	2292.40	2800.00	2292.40	2920.00	2296.40	3100.00	2300.40	3420.00
2301.80	3879.00								

Continuous Interfolded @ Moore Business Forms, Inc. Y

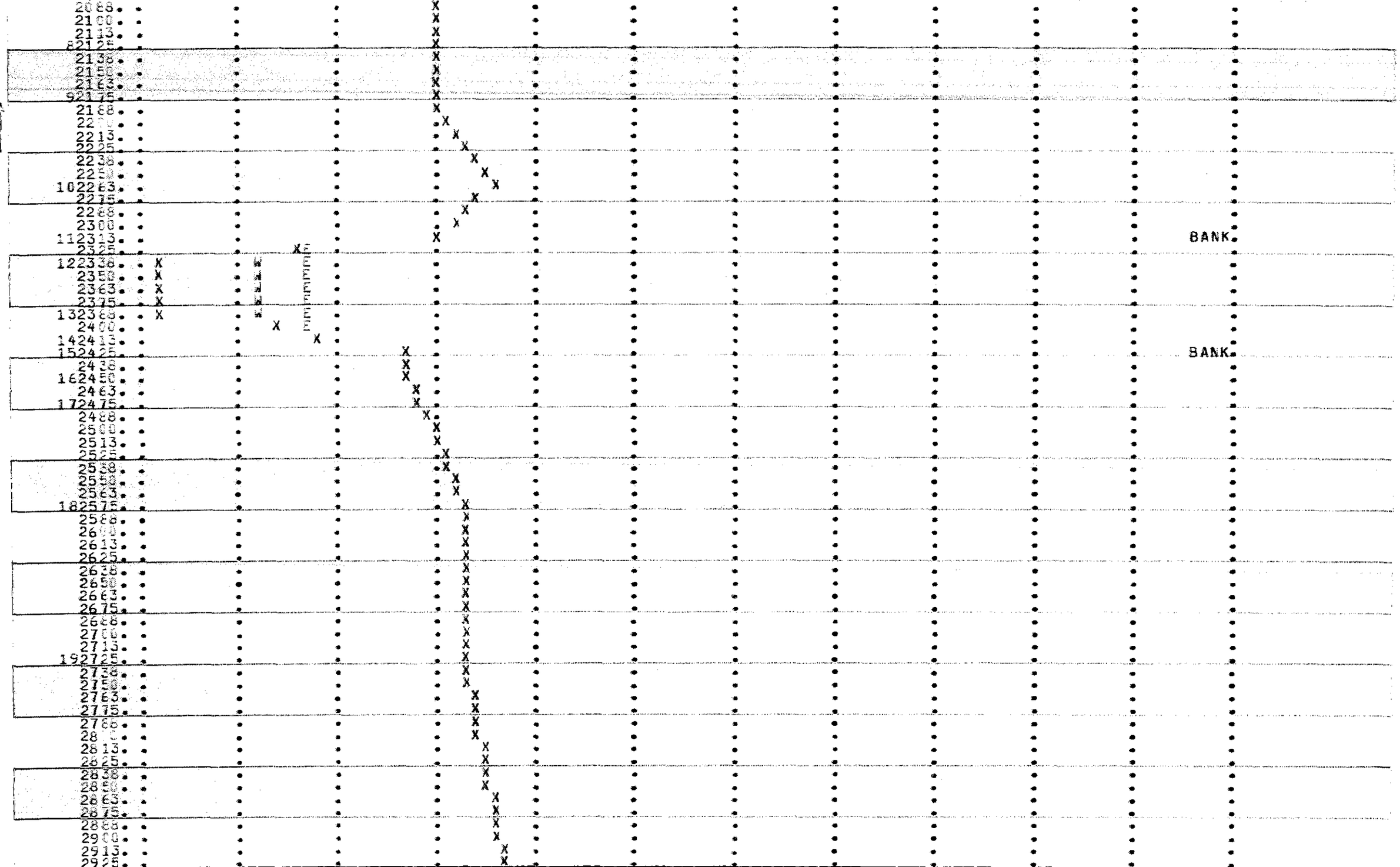
CROSS SECTION 11.45
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLR,E=ENERGY GRADIENT,C=CRITICAL WSEL

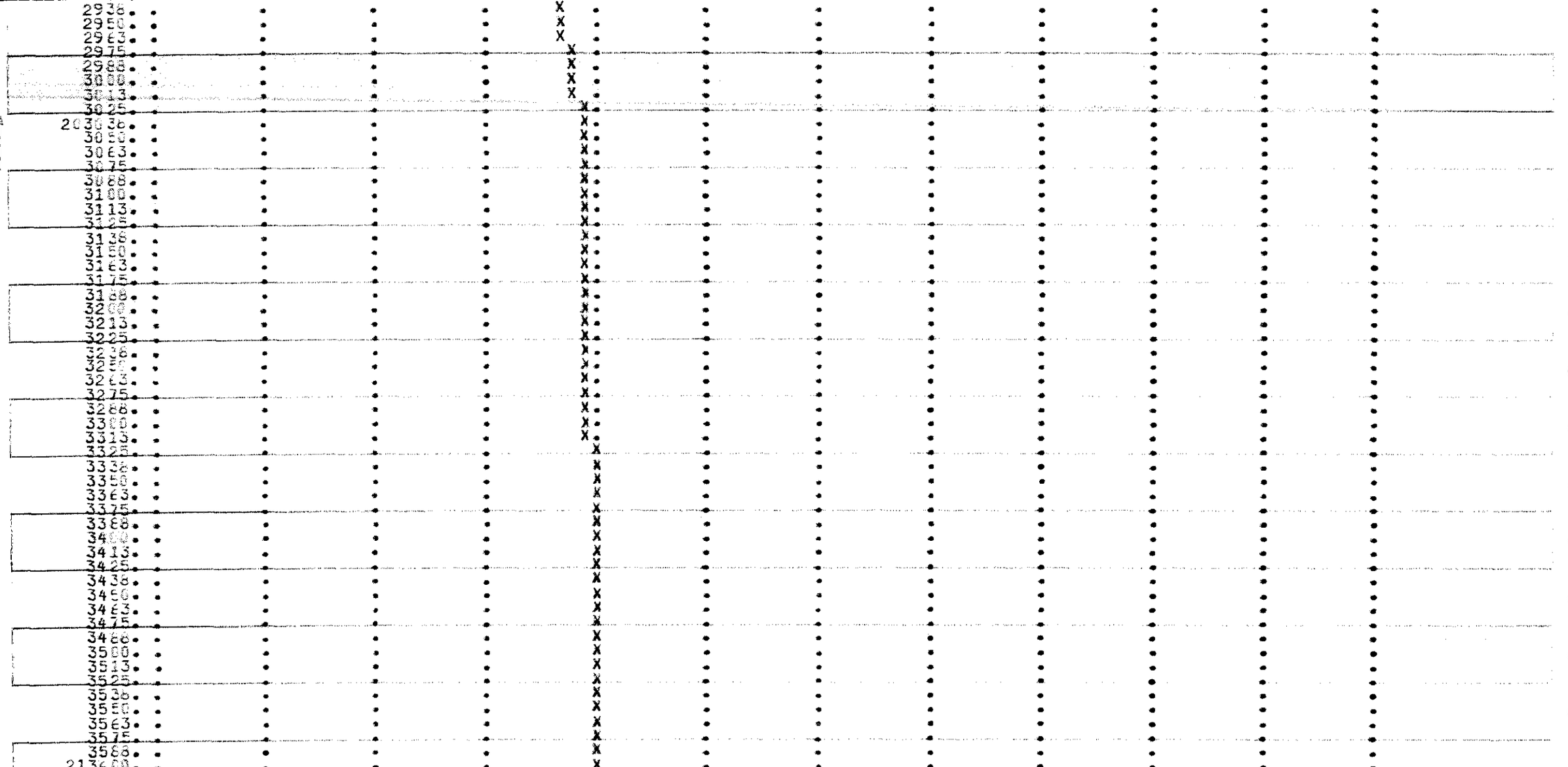


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Continuous Interfoldad © Moore Business Forms, Inc. Y



Continuous Interfolded @ Moore Business Forms, Inc. V



NRD= 5 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I)	STA(I)							
2308.60	600.00	2304.00	1070.00	2307.00	1360.00	2302.50	1630.00	2304.80	1780.00
2304.10	2000.00	2302.80	2129.00	2302.80	2170.00	2305.90	2260.00	2303.20	2311.00
2288.90	2335.10	2288.90	2392.00	2296.90	2408.00	2301.60	2428.00	2301.60	2444.00
2302.20	2478.00	2304.40	2572.00	2304.50	2720.00	2307.50	3040.00	2308.00	3600.00

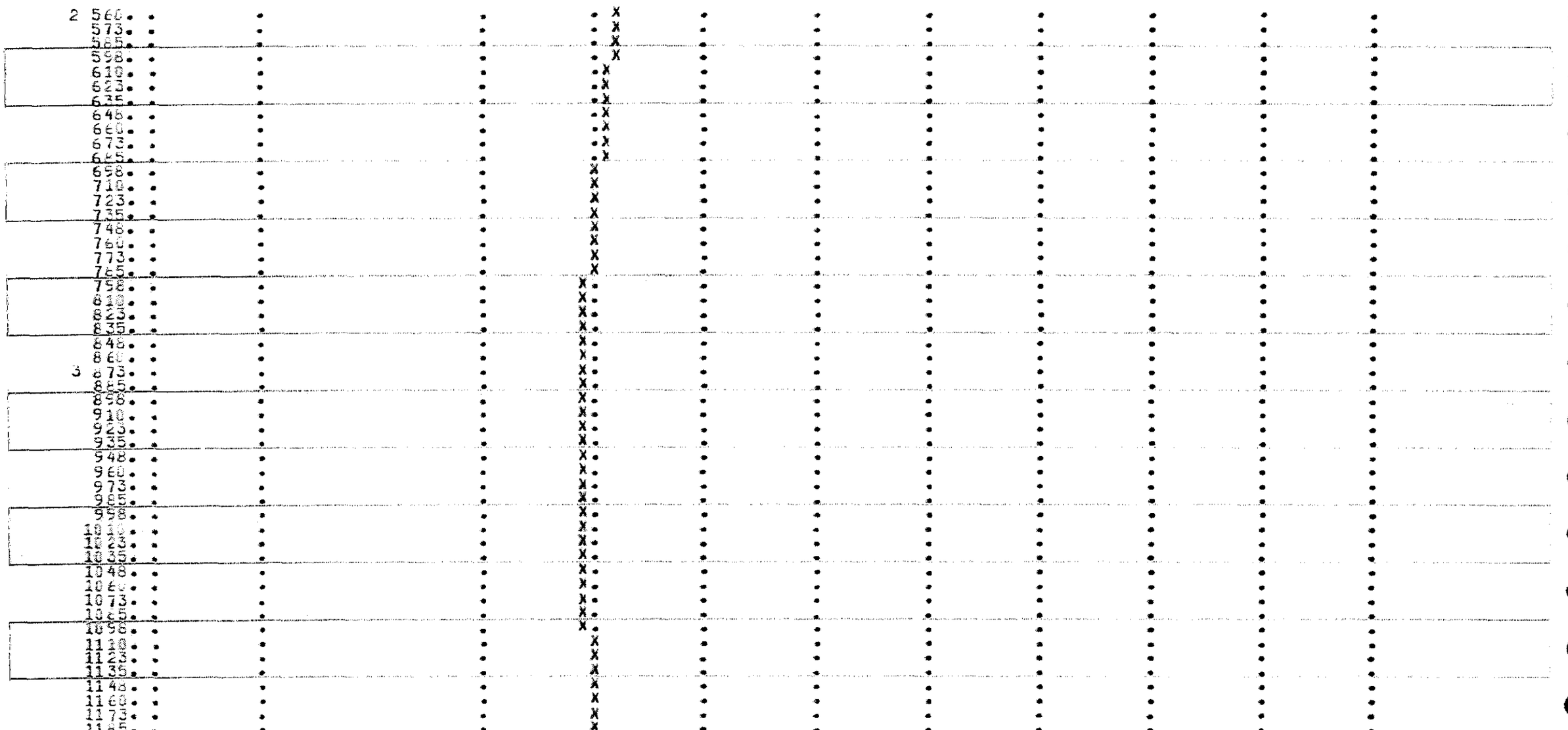
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CROSS SECTION 11.64
STREAM FLAMINGO ASH, REACH 2 +
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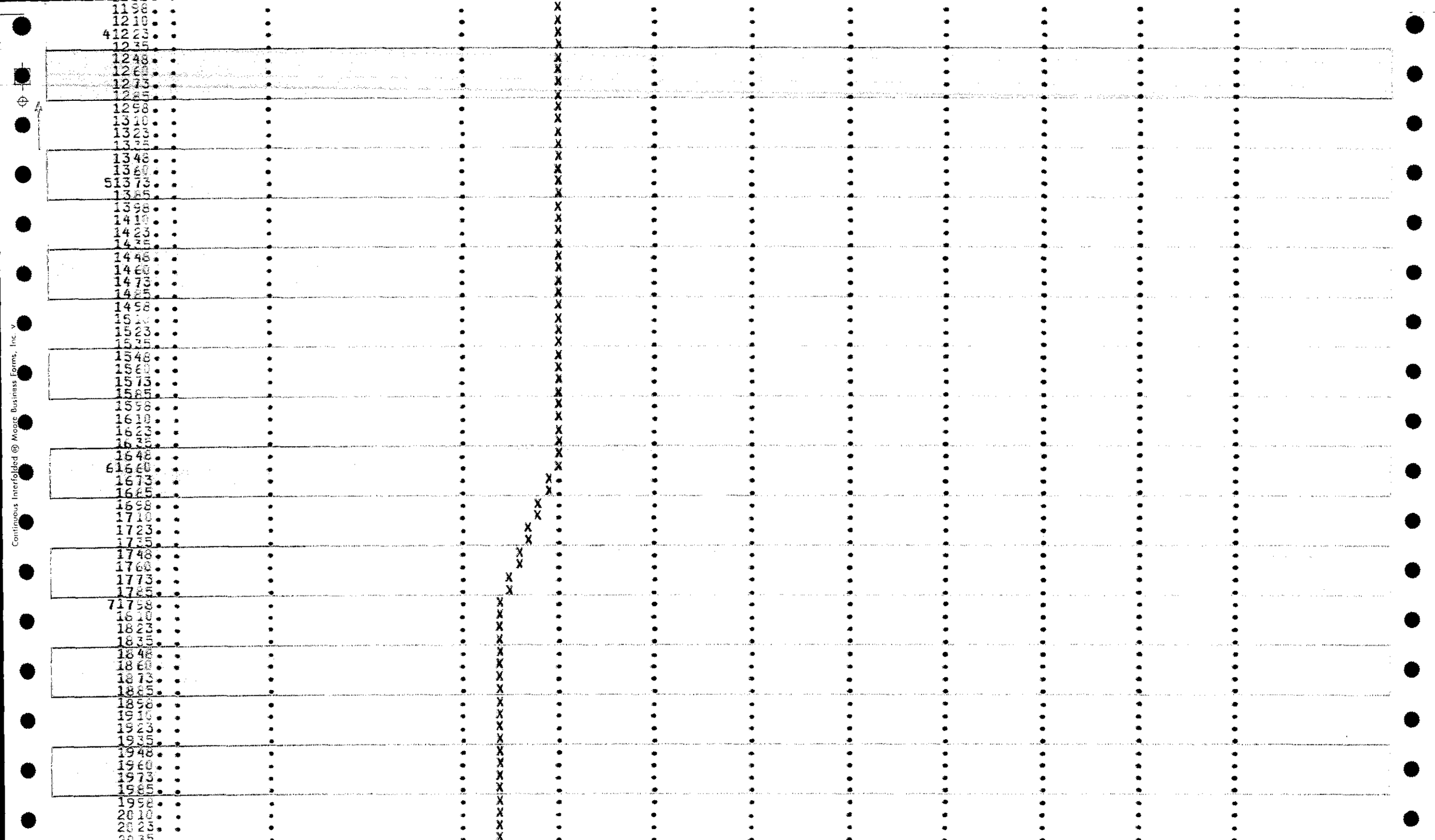
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

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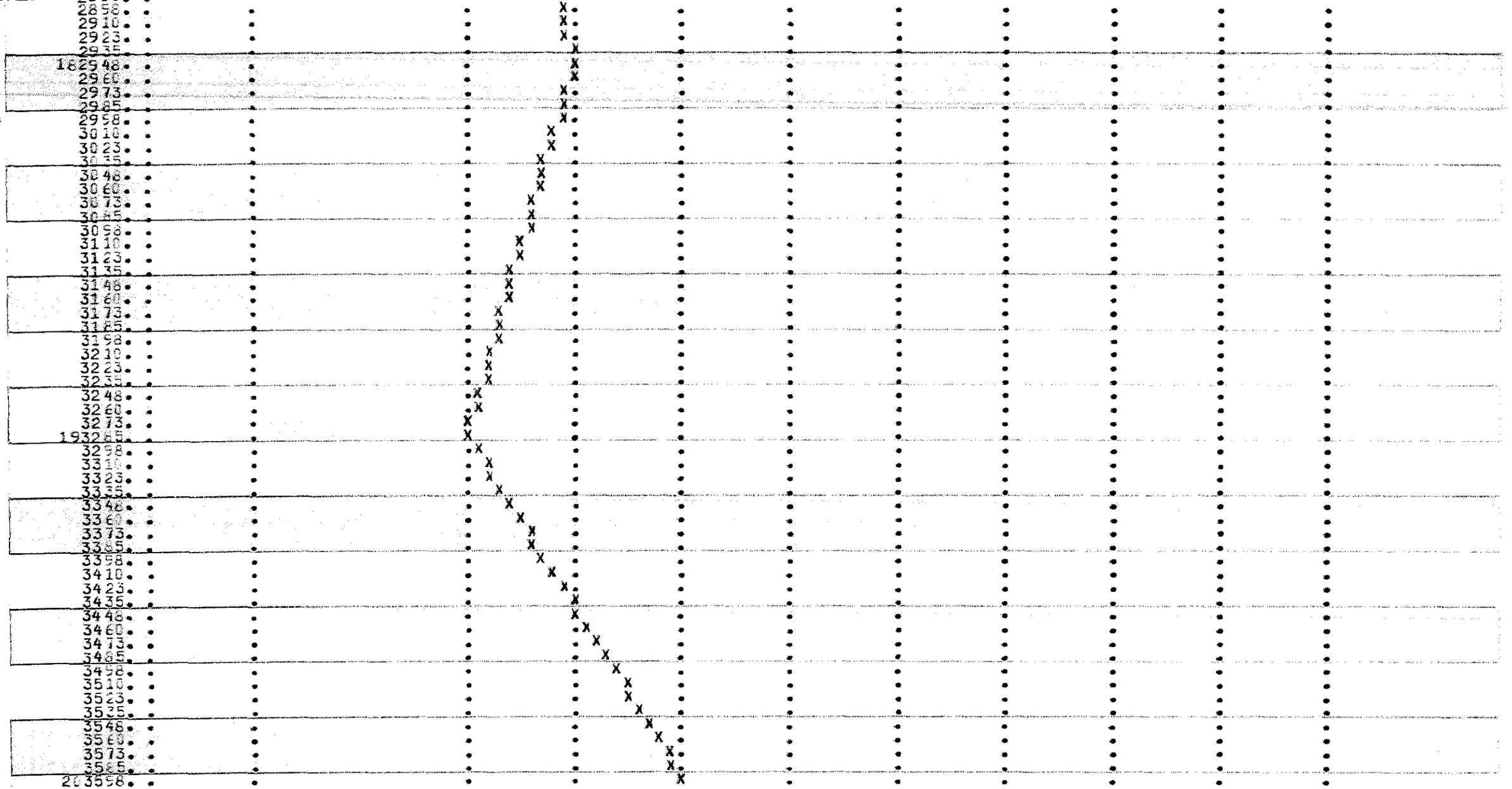


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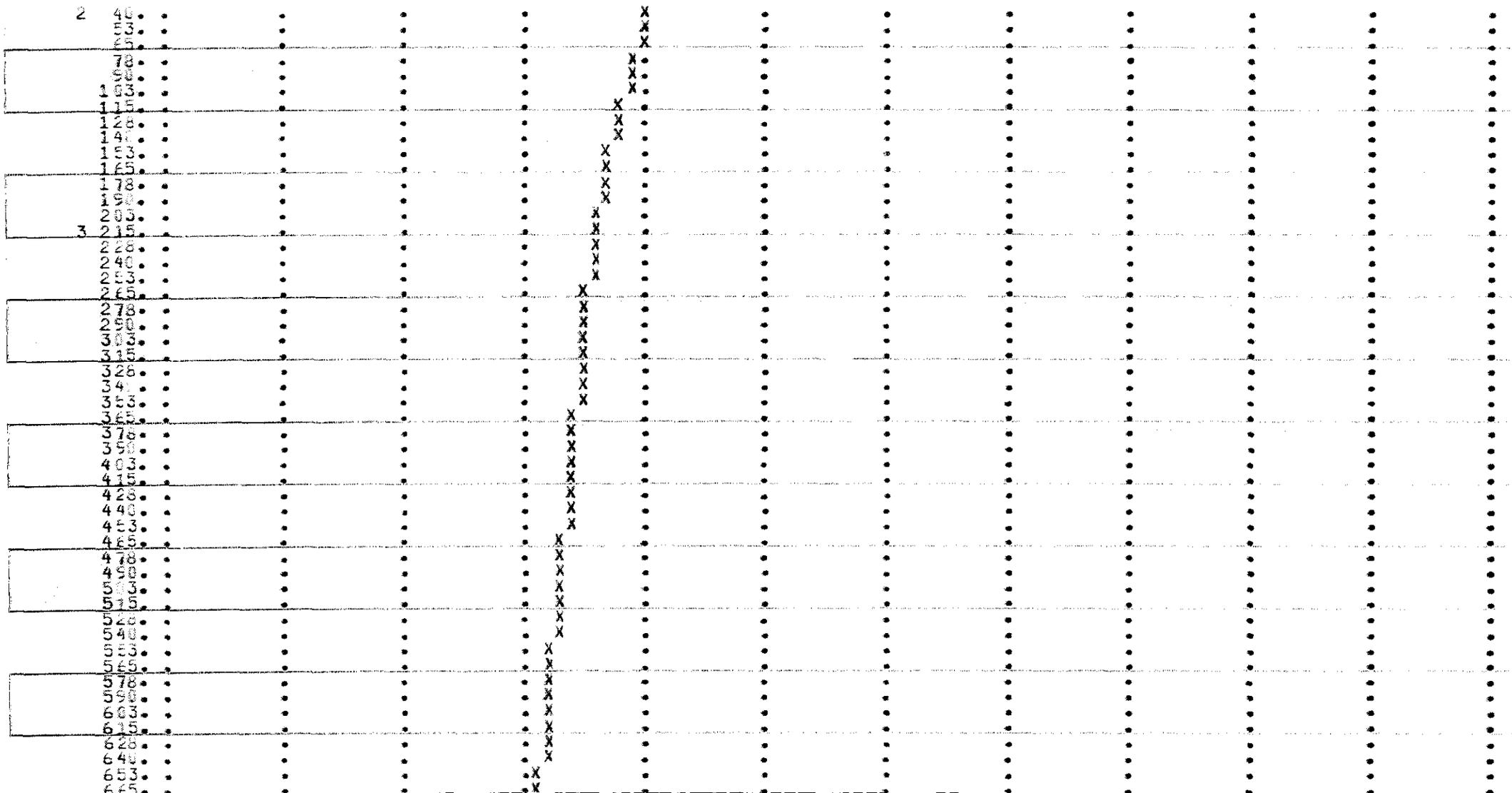
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CROSS SECTION 11.79
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

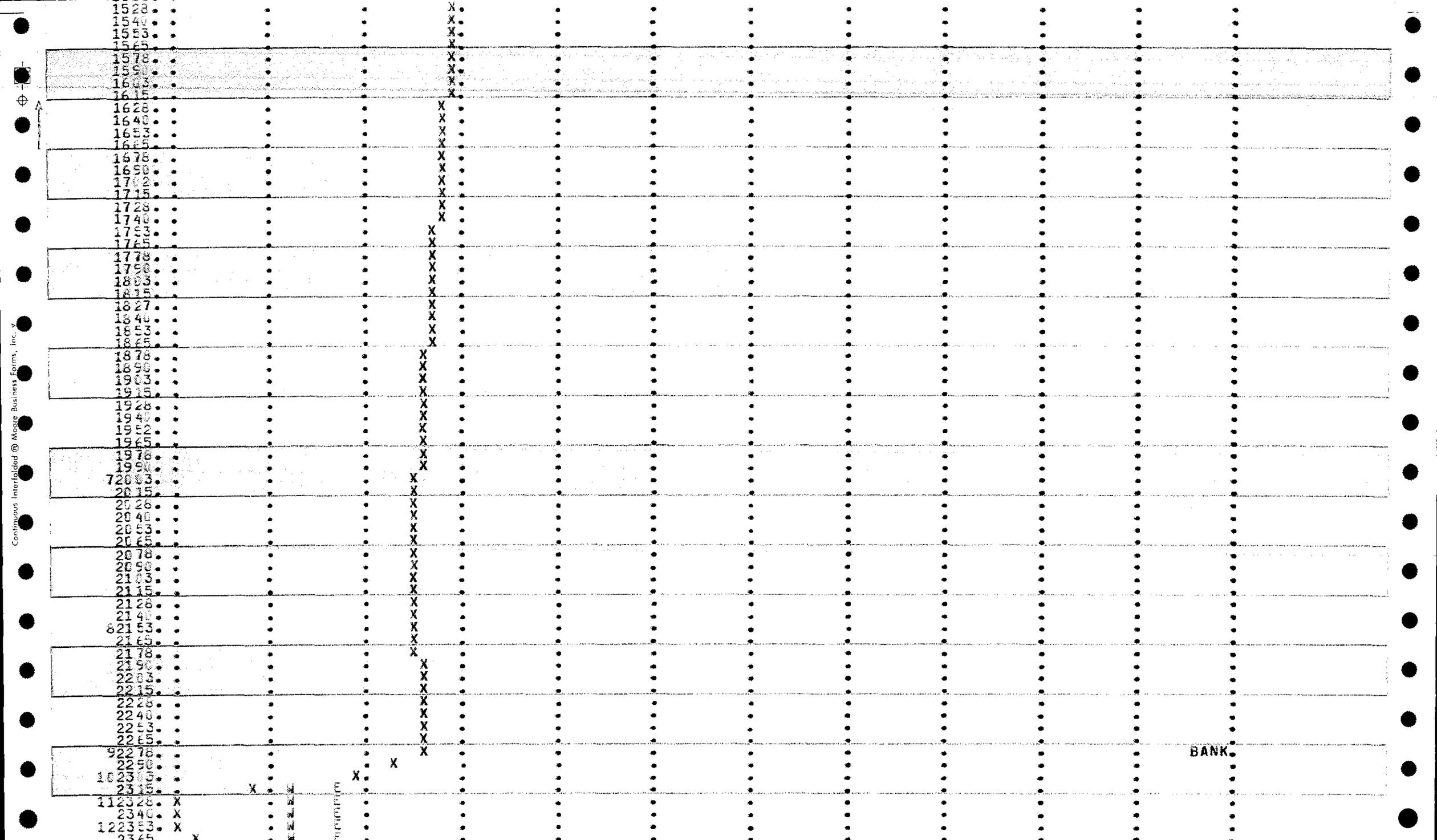
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STA-FEET

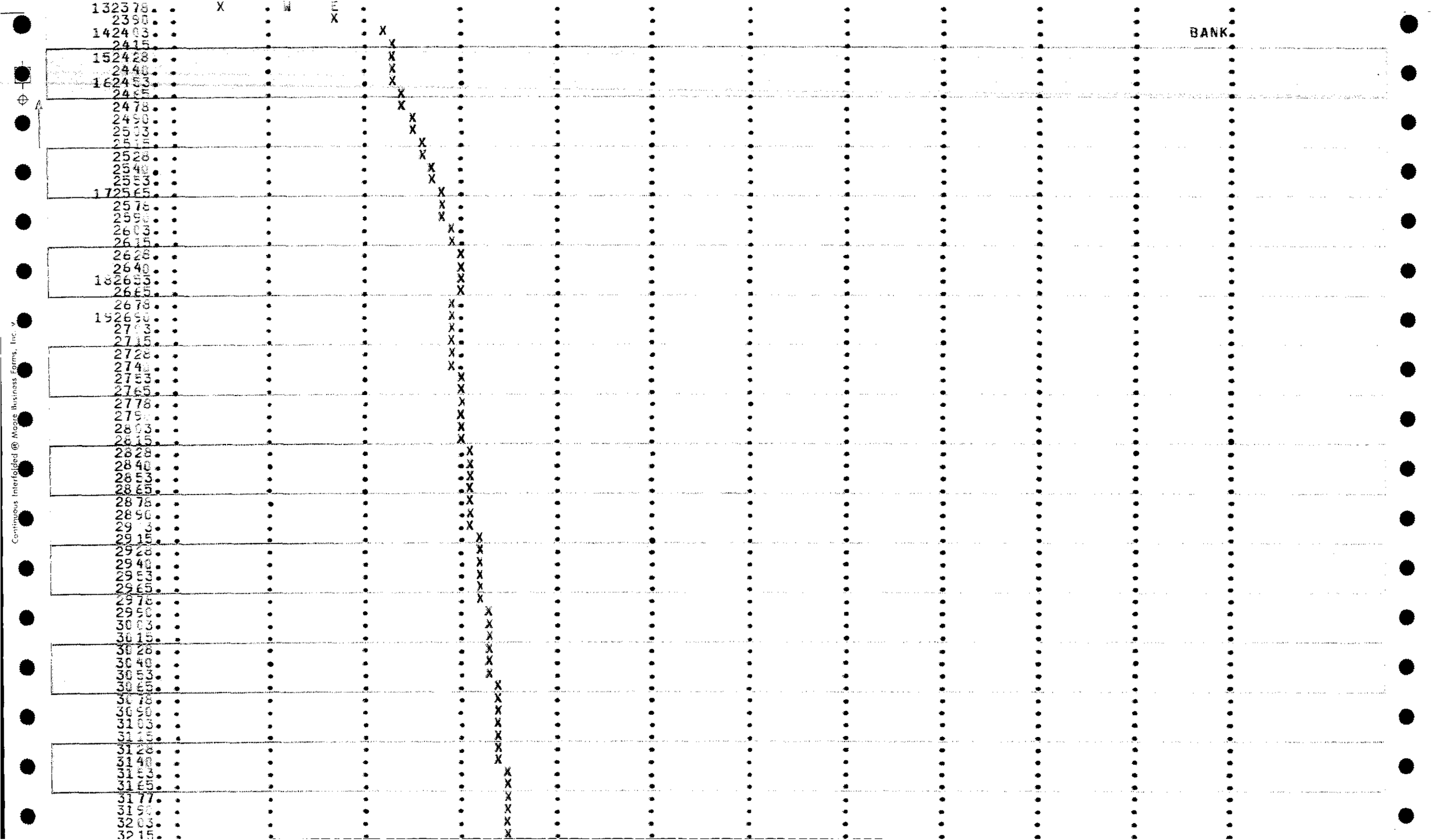


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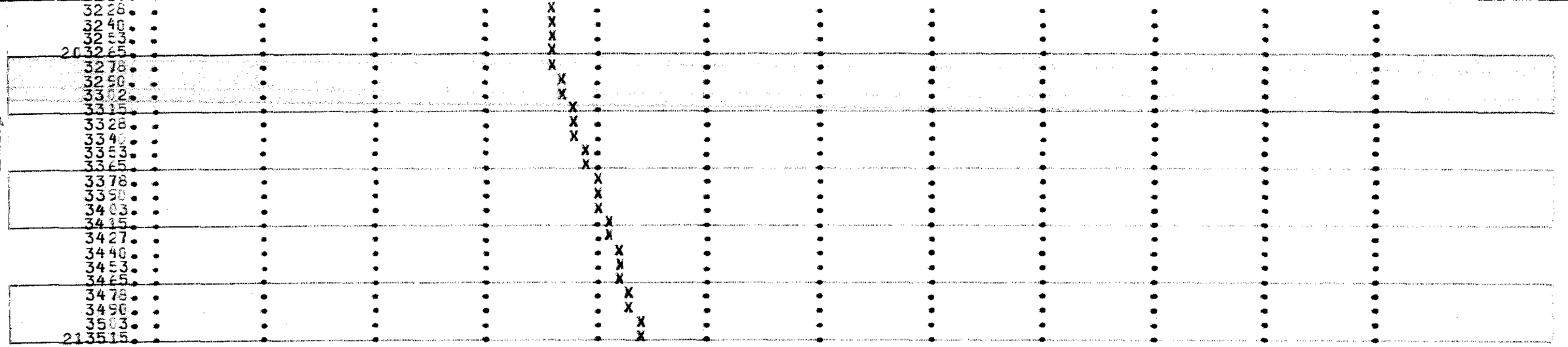
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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

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2318.70	2000.00	2318.60	2149.00	2319.20	2282.00	2315.70	2308.00	2306.00	2329.00
2306.00	2348.00	2308.30	2381.00	2316.90	2399.00	2317.70	2427.00	2317.70	2458.00
2319.80	2569.00	2321.20	2656.00	2320.40	2688.00	2324.00	3260.00	2328.00	3510.00

Continuous Interfolded @ Moore Business Forms, Inc.

CROSS SECTION 11.82
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

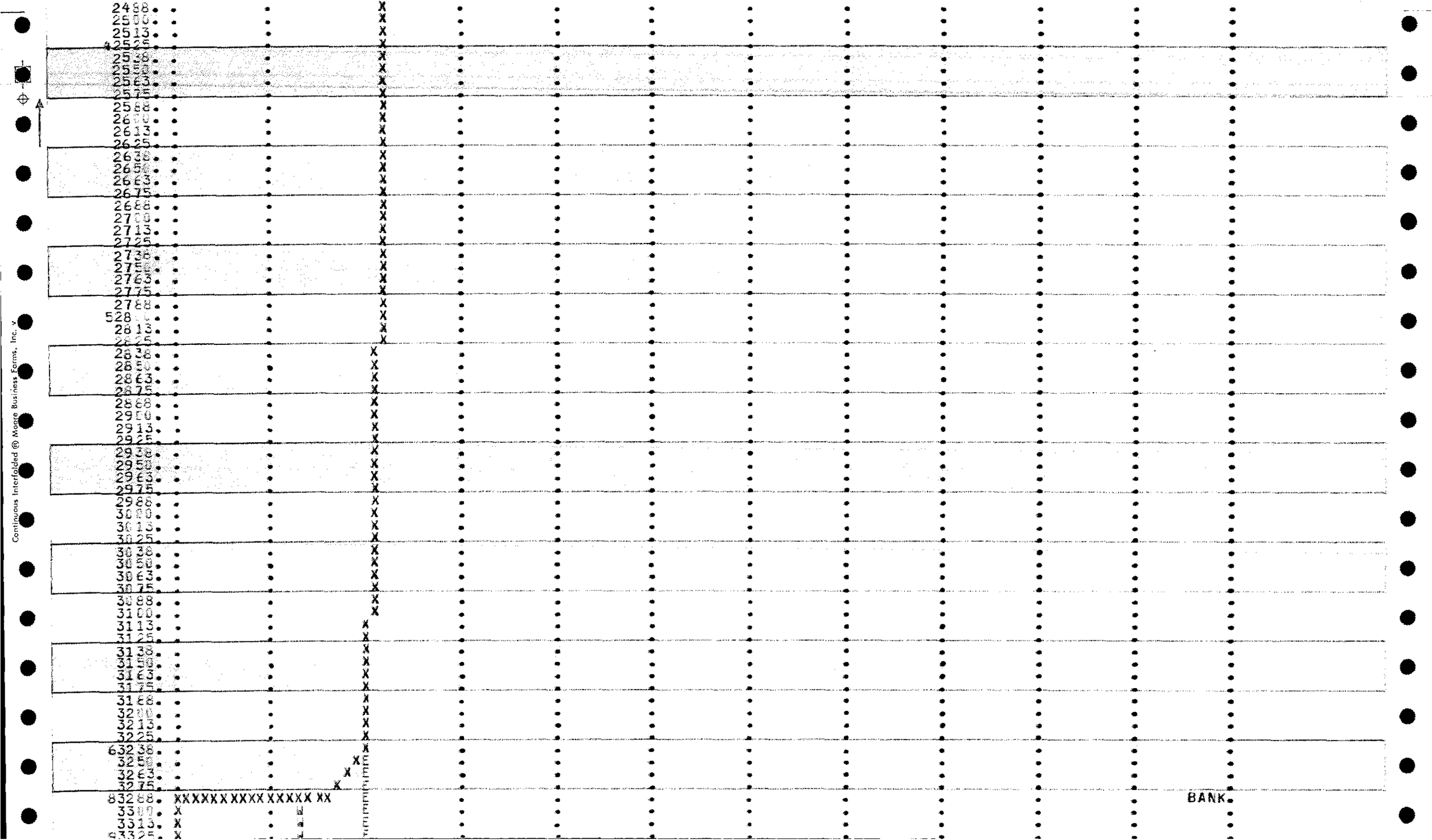
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	2310.	2315.	2320.	2325.	2330.	2335.	2340.	2345.	2350.	2355.	2360.

STA-FEET

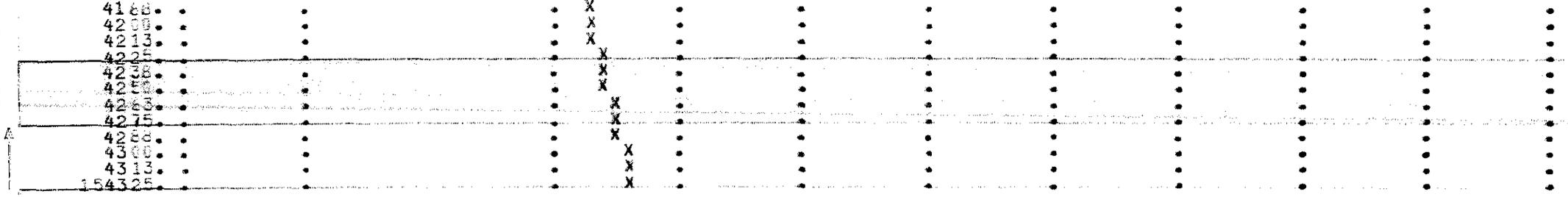
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Continuous Interfolded @ Moore Business Forms, Inc.



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2326.00	1330.00	2321.30	2200.00	2321.00	2520.00	2320.80	2800.00	2320.00	3240.00
2318.00	3289.00	2313.00	3289.50	2310.00	3331.00	2318.00	3331.50	2320.00	3380.00
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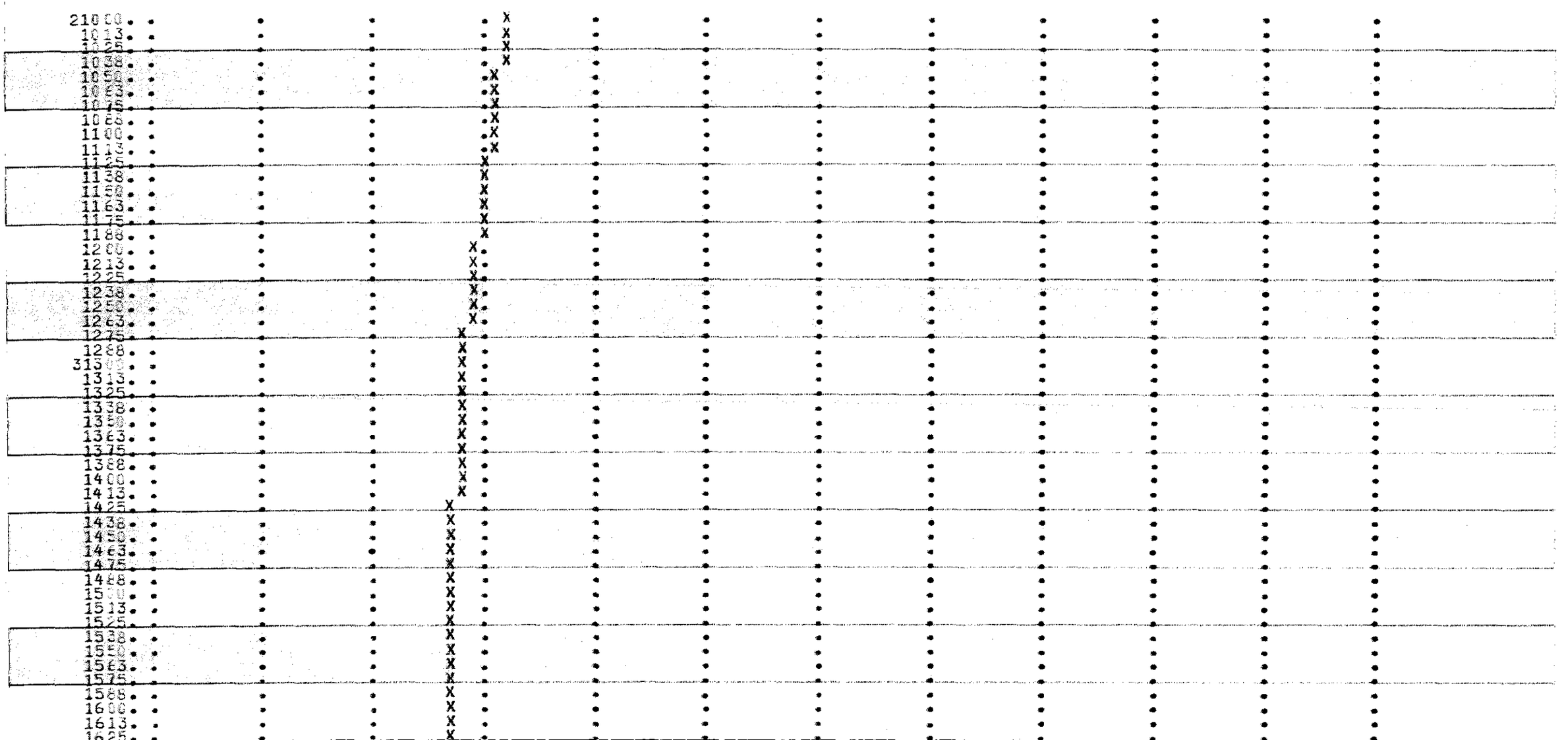
Continuous Interfolded @ Moore Business Forms, Inc. V

CROSS SECTION 11.84
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

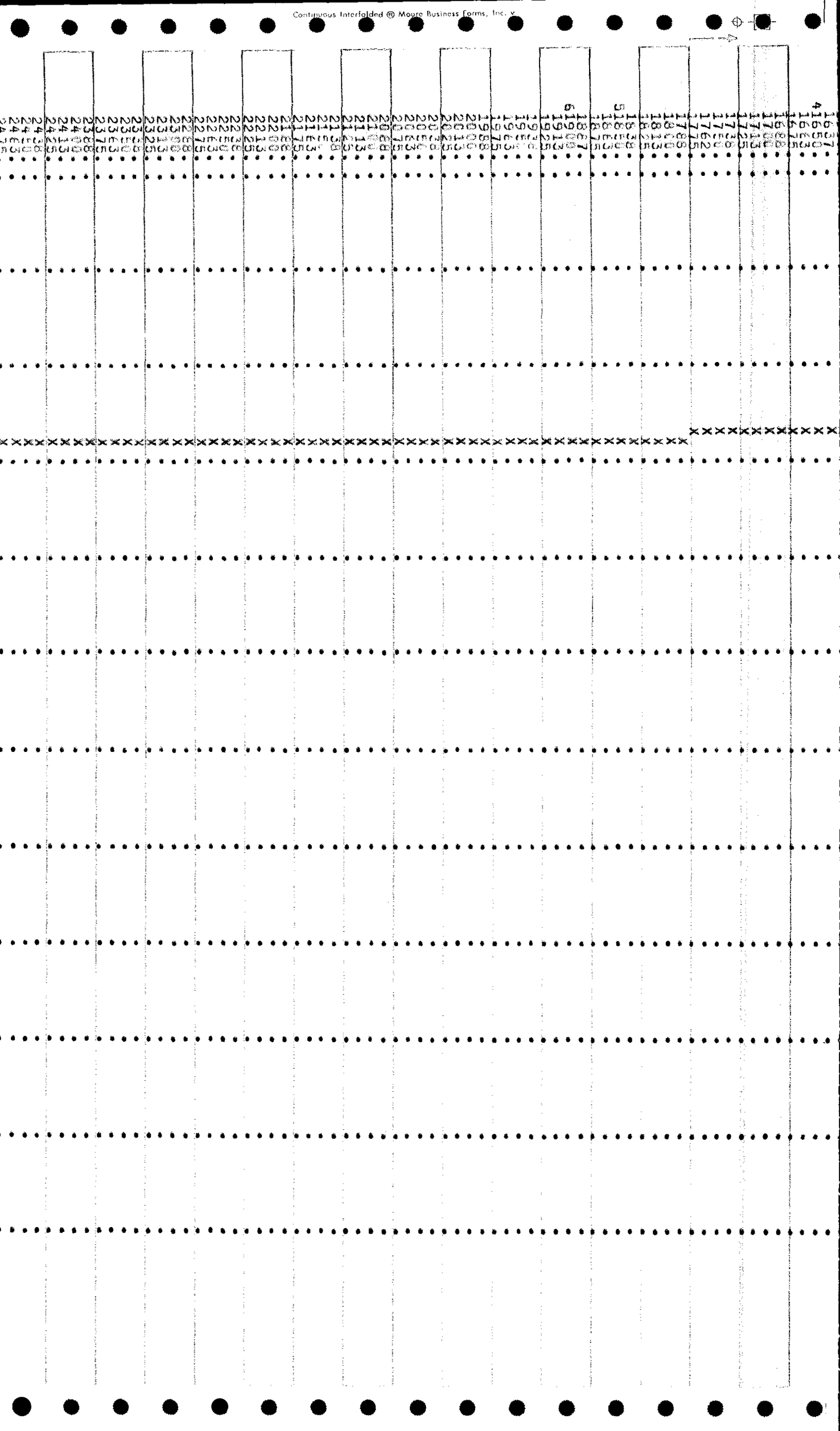
ELEV 2310. 2315. 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360.

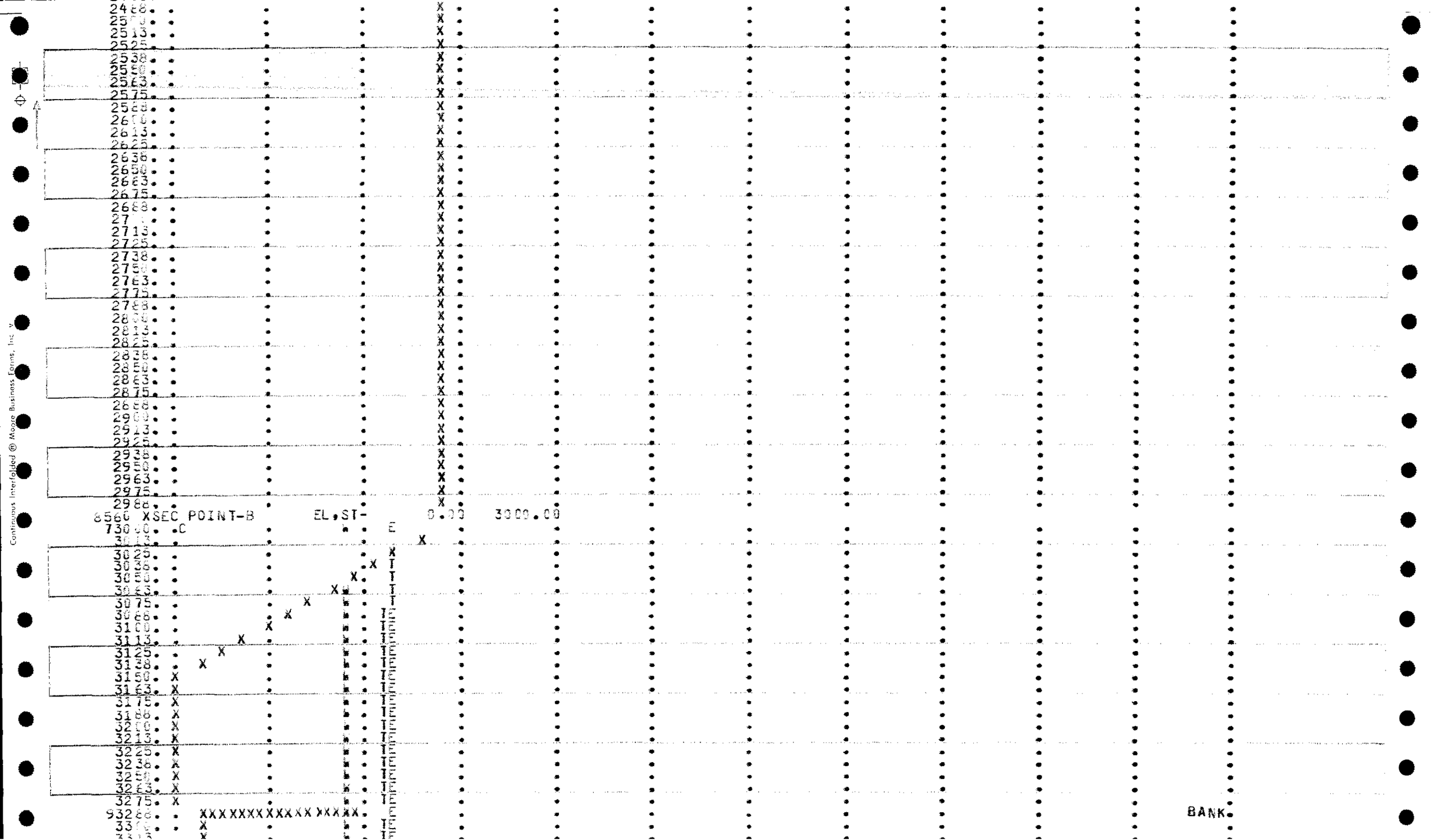
STA-FEET

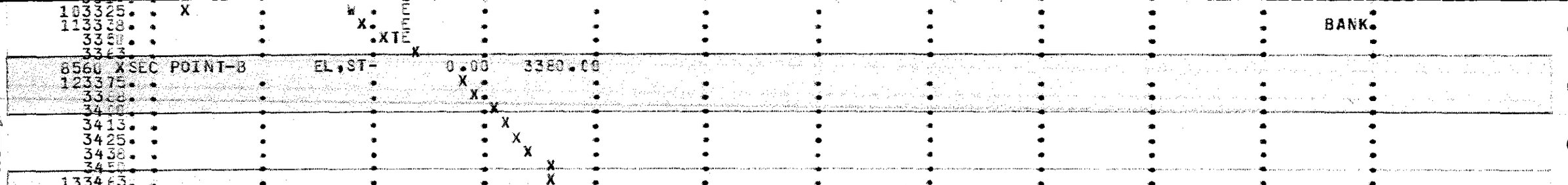


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8560 XSEC POINT-B EL,ST- 0.00 3000.00
BANK



8560 XSEC POINT-8 EL,ST- 0.00 3380.00

NRD= 6 ELLC= 2319.00 ELTRD= 2320.70

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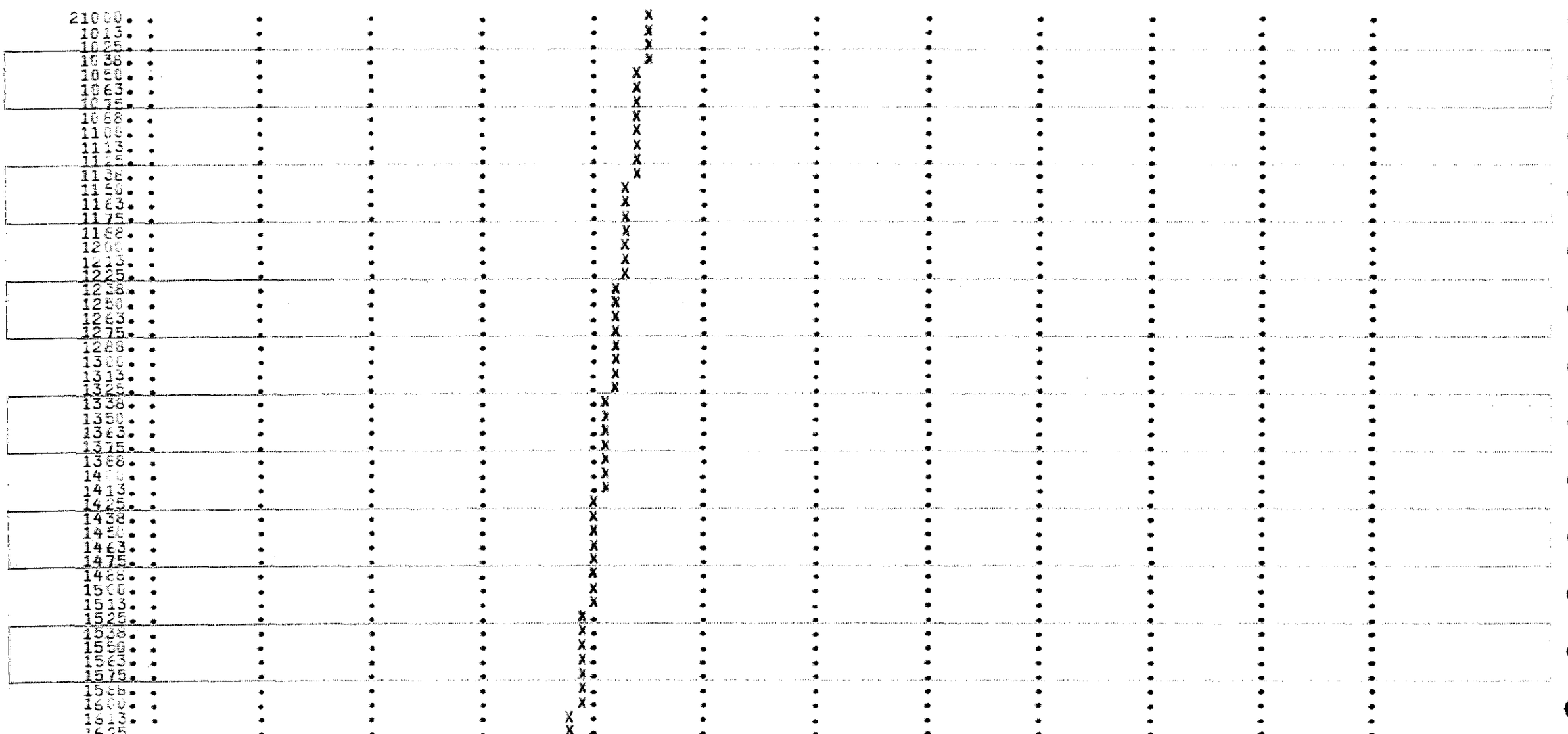
EL(I),STA(I)

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CROSS SECTION 11.37
STREAM FLAMINGO WASH, REACH 2 +
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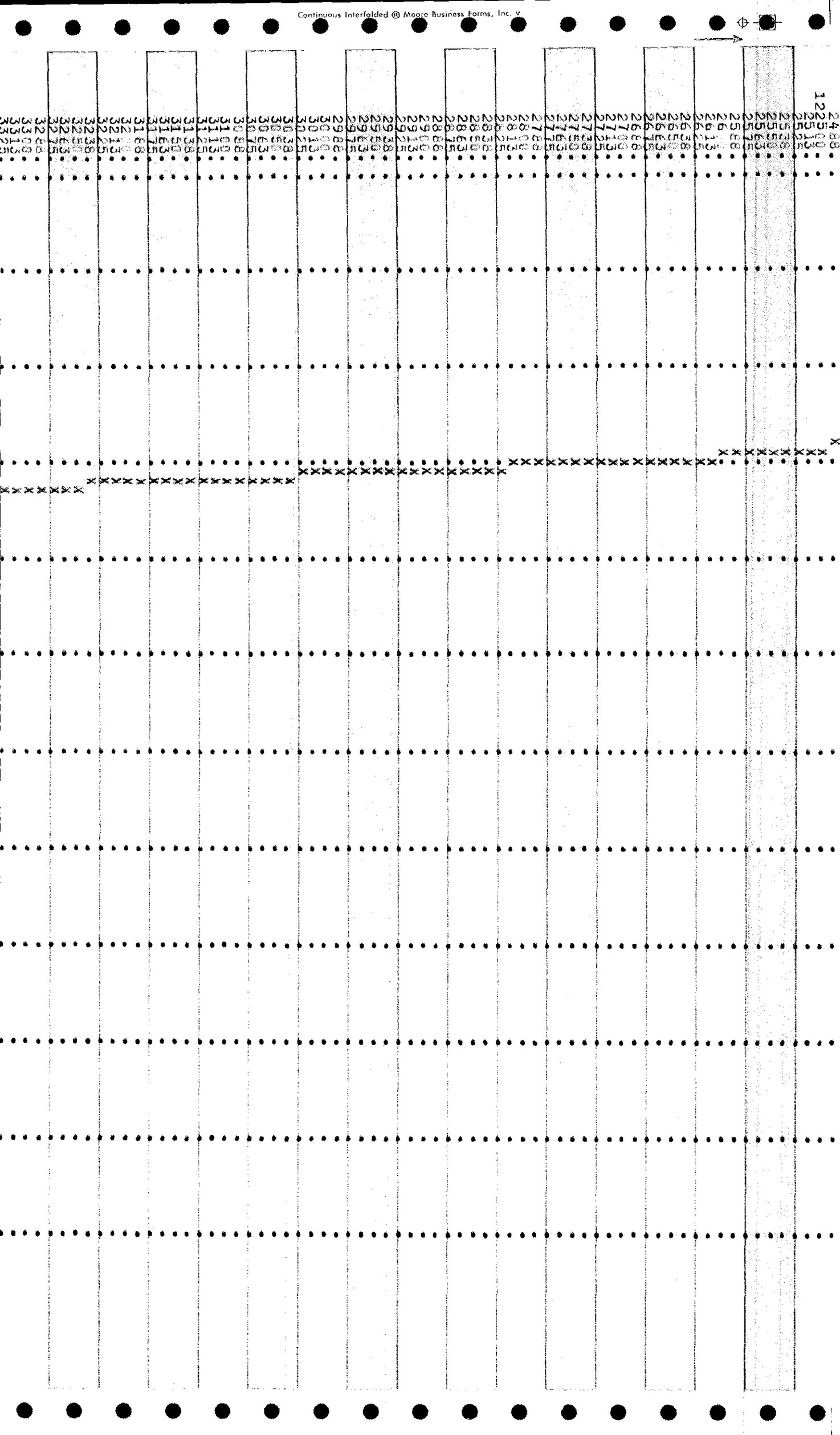
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SLR,E=ENERGY GRADIENT,C=CRITICAL WSEL

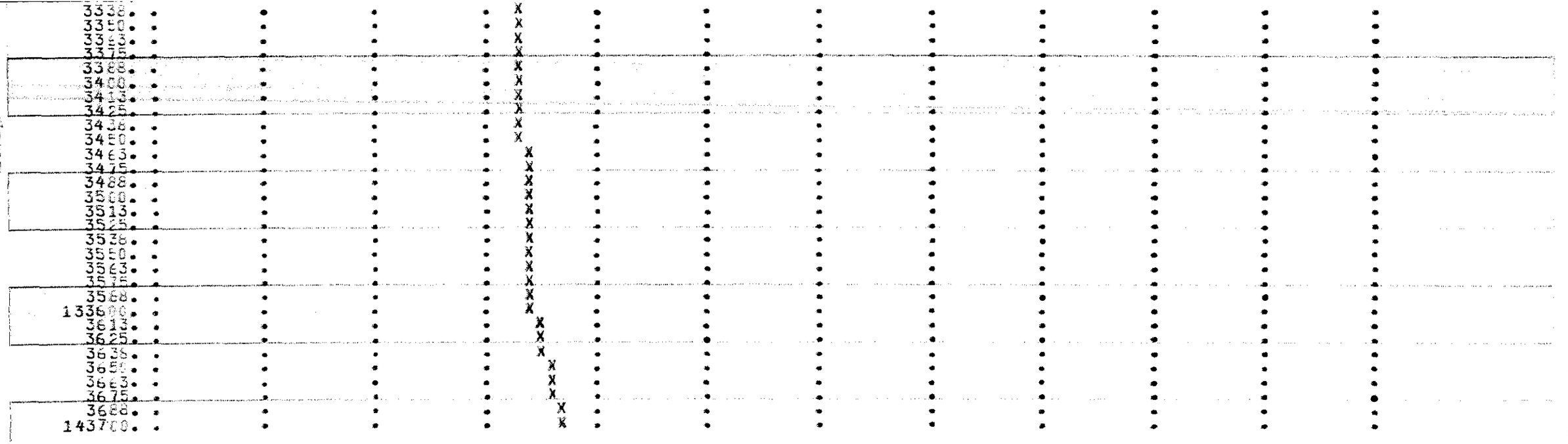


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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2337.50	1000.00	2333.50	1750.00	2329.50	2050.00	2325.50	2280.00	2321.50	2300.00
2315.00	2315.00	2315.00	2360.00	2317.50	2370.00	2321.50	2380.00	2325.50	2400.00
2329.50	2500.00	2332.10	3600.00	2333.50	3700.00				

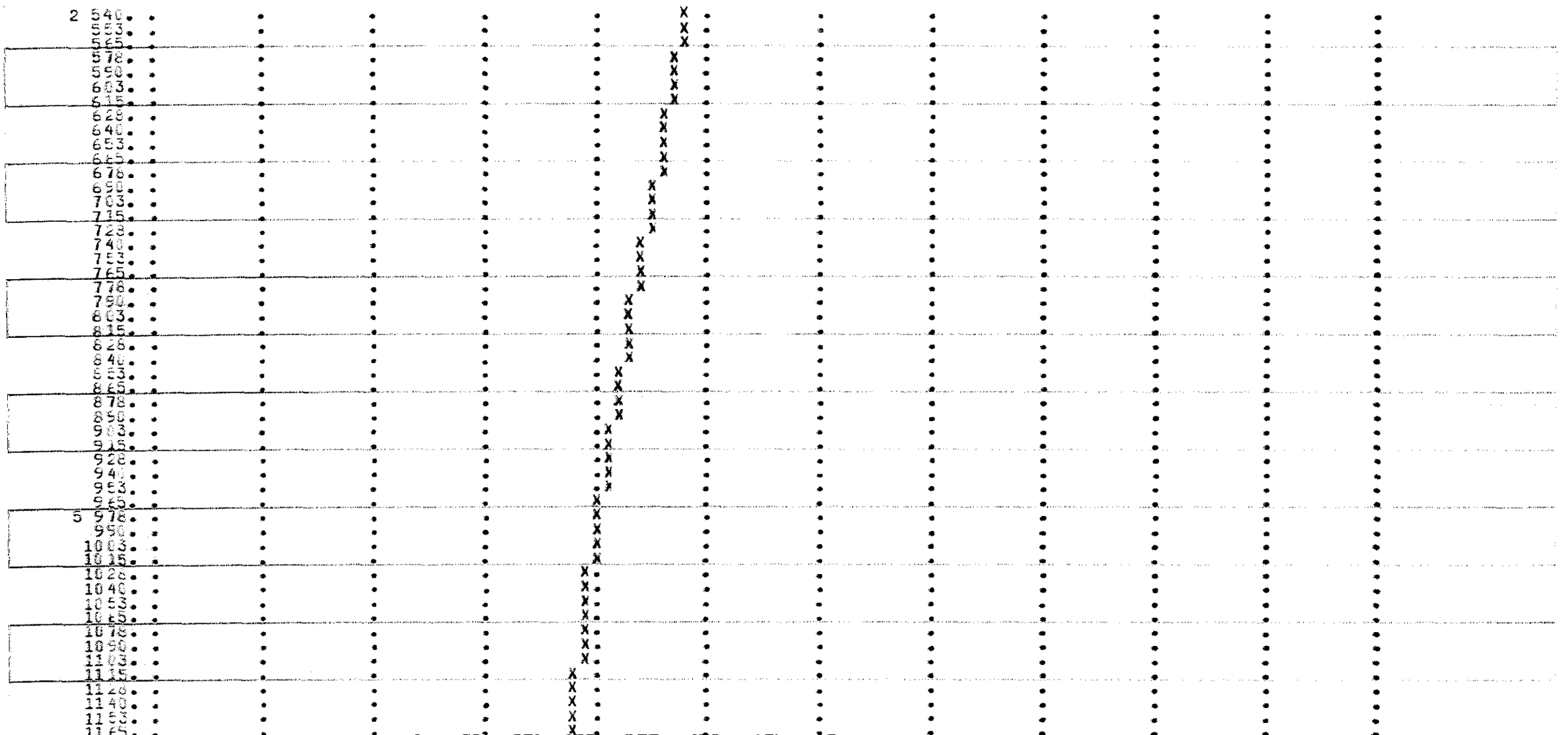
Continuous Interfolded @ Moore Business Forms, Inc.

CROSS SECTION 11.99
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

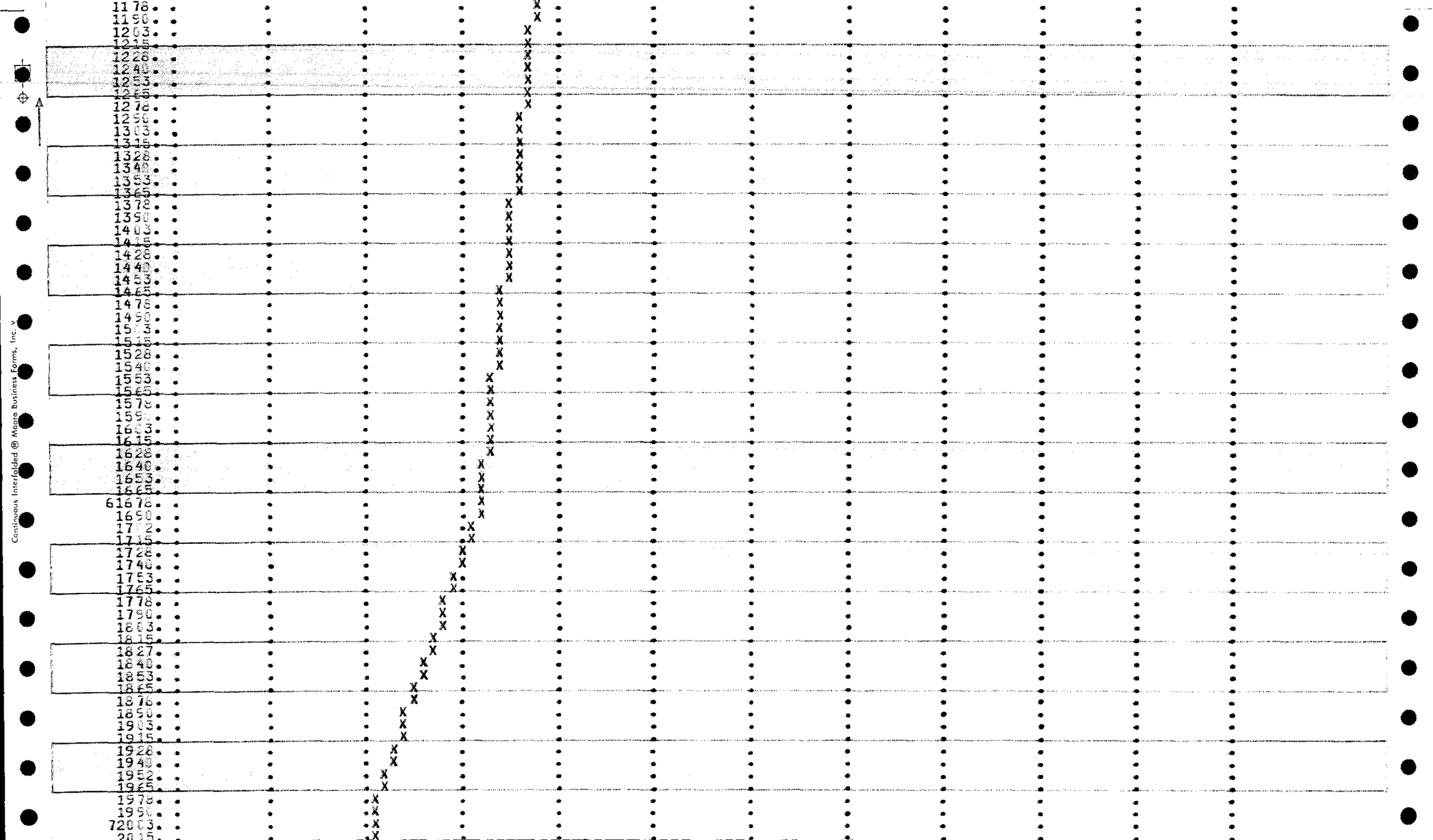
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2320. 2325. 2330. 2335. 2340. 2345. 2350. 2355. 2360. 2365. 2370.

STA-FEET



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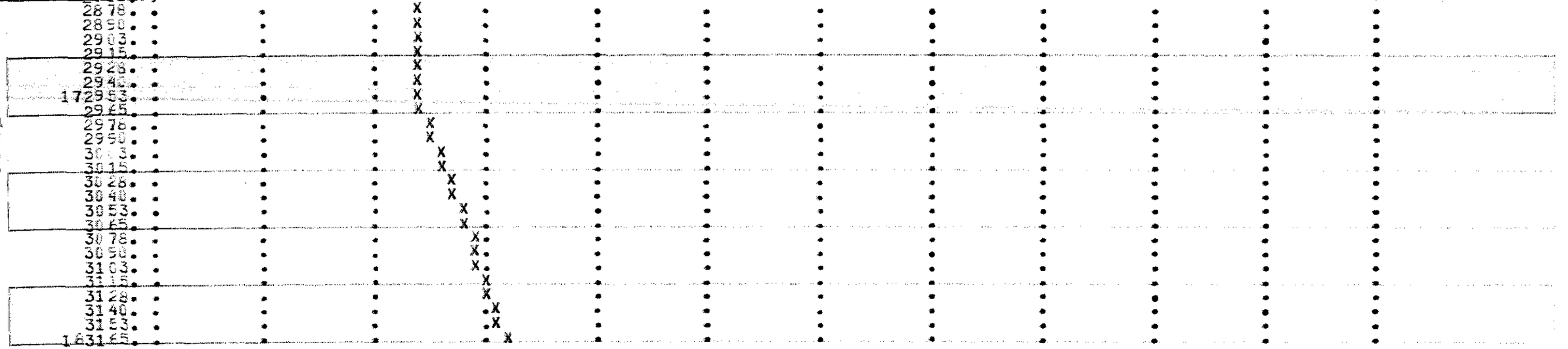


Continuous Interfolded @ Moore Business Forms, Inc. v

BANK

BANK

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NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2344.00	540.00	2340.00	980.00	2340.00	980.00	2340.00	980.00	2336.00	1680.00
2330.30	2000.00	2330.80	2154.00	2320.90	2183.00	2320.90	2233.00	2322.60	2247.00
2331.10	2261.00	2332.90	2270.00	2331.70	2294.00	2333.80	2416.00	2332.00	2780.00
2332.00	2950.00	2336.00	3170.00						

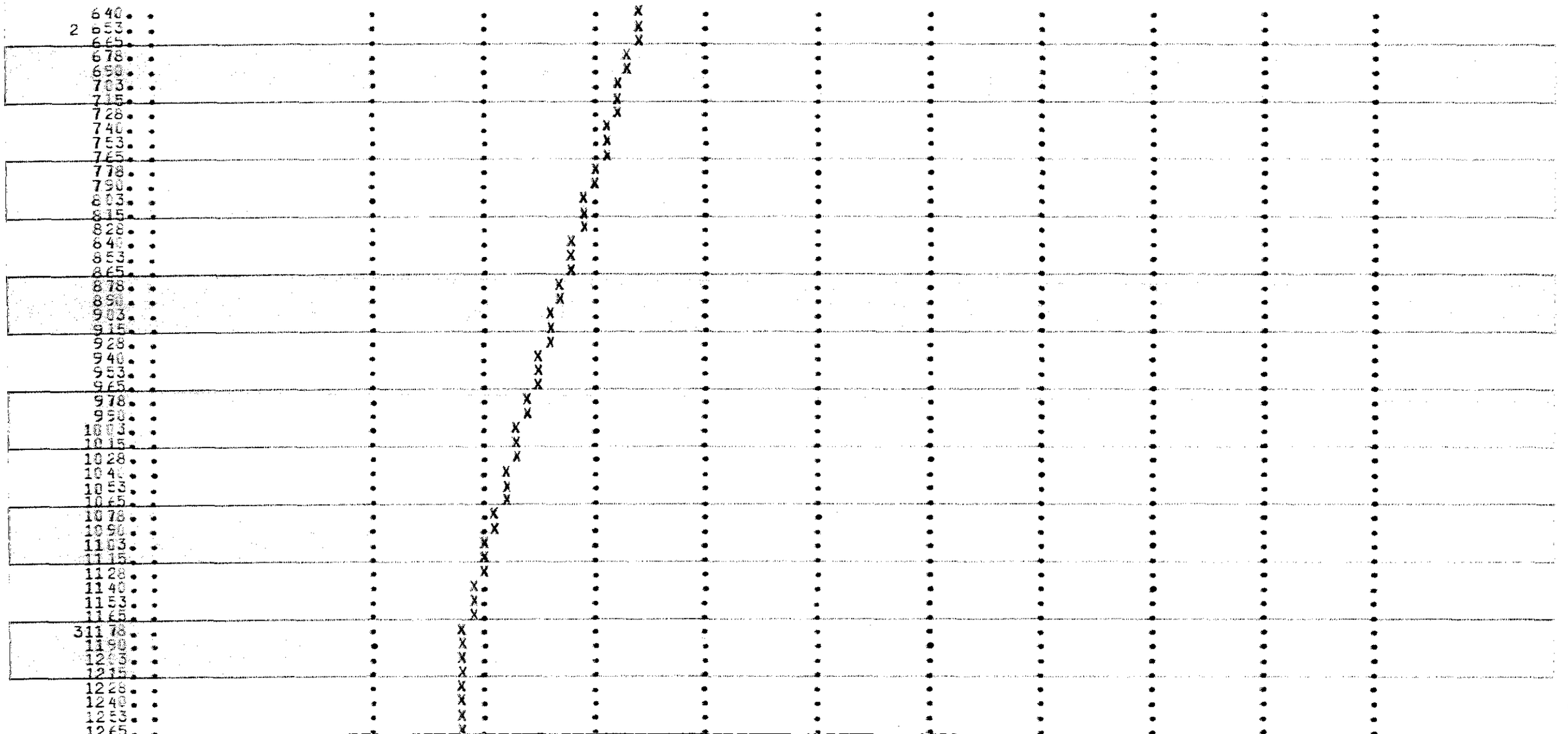
Continuous Interfolded @ Moore Business Forms, Inc.

CROSS SECTION 12.10
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 41[illegible].

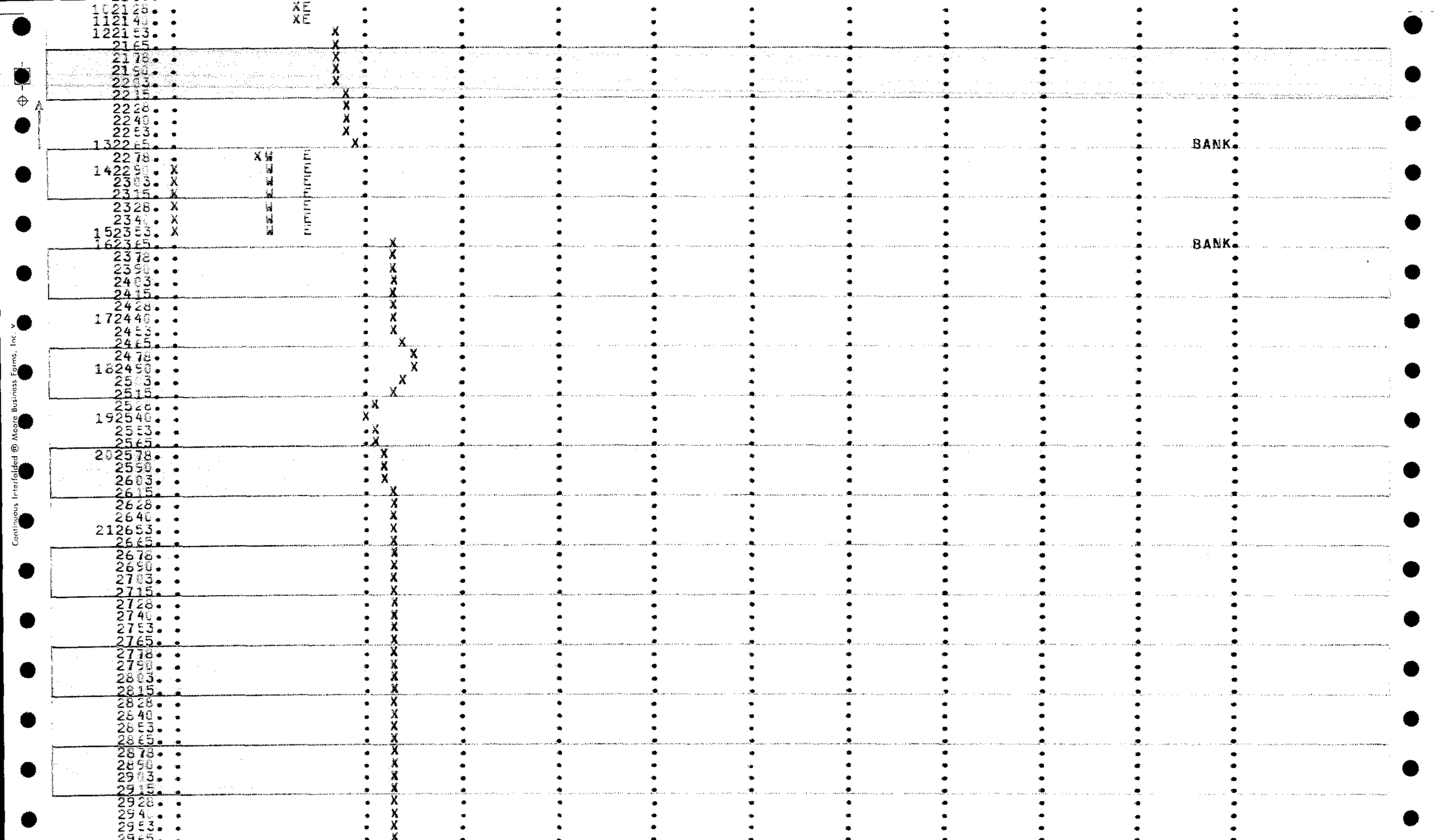
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2326. 2331. 2336. 2341. 2346. 2351. 2356. 2361. 2366. 2371. 2376.

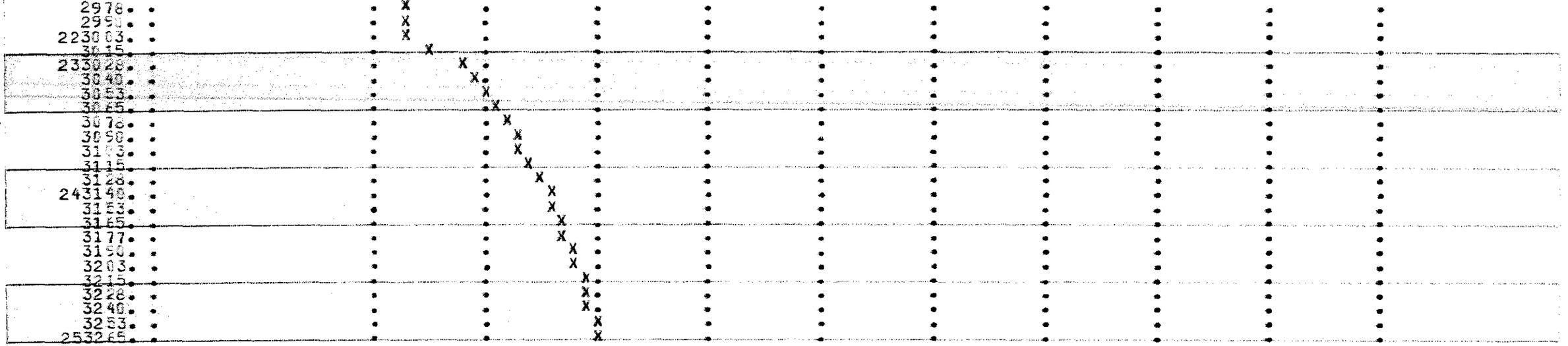
STA-FEET



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NRD= 6 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2348.00	650.00	2340.00	1180.00	2339.80	1530.00	2335.00	1850.00	2336.00	1940.00
2334.70	2080.00	2332.10	2079.00	2332.90	2104.00	2332.50	2122.00	2332.50	2136.00
2334.30	2147.00	2335.30	2264.00	2326.00	2288.00	2326.00	2349.00	2327.50	2371.00
2337.40	2435.00	2338.70	2488.00	2336.00	2537.00	2337.00	2578.00	2337.50	2650.00
2337.50	3000.00	2340.70	3030.00	2344.00	3140.00	2346.00	3260.00		

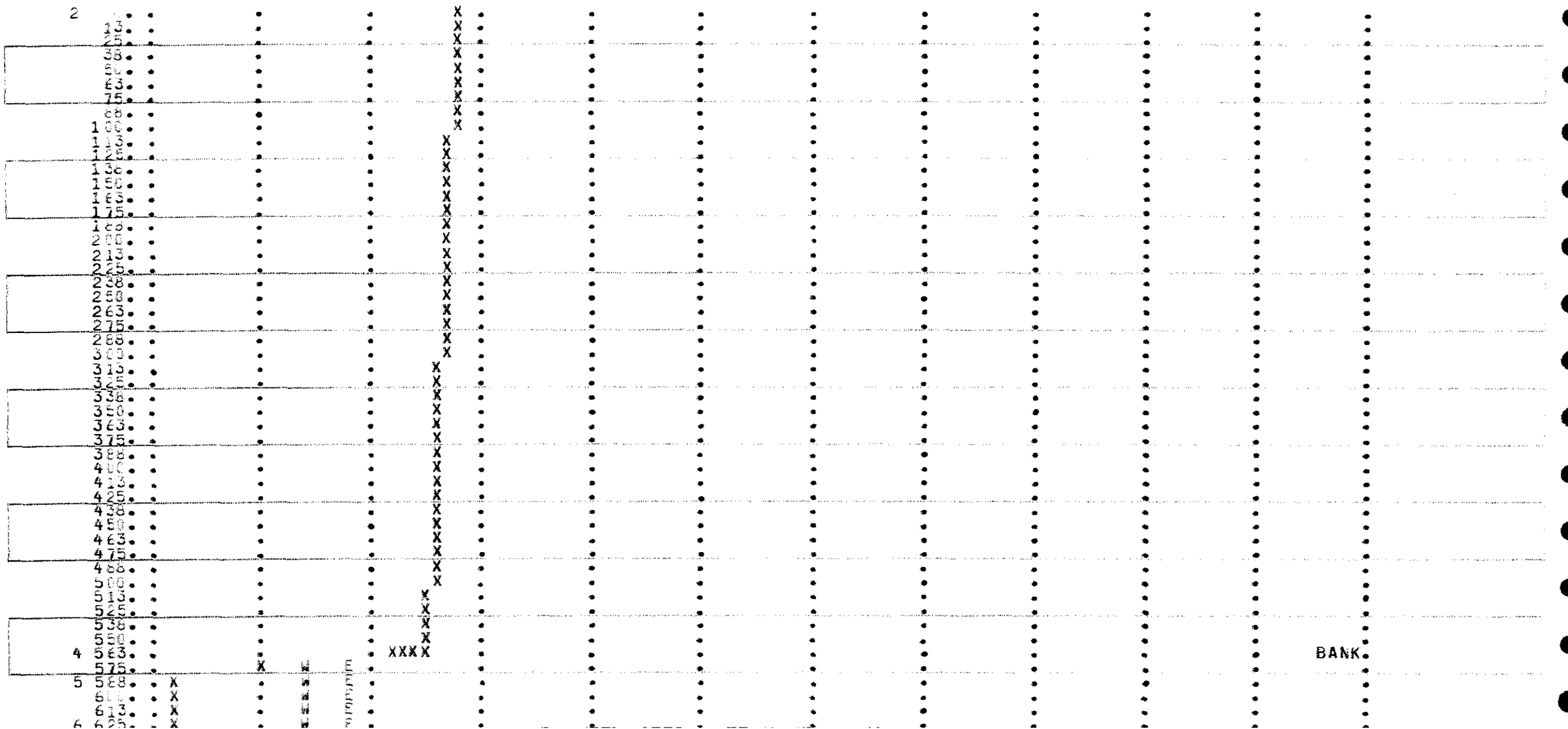
Continuous Interfolded @ Moore Business Forms, Inc.

CROSS SECTION 12.15
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

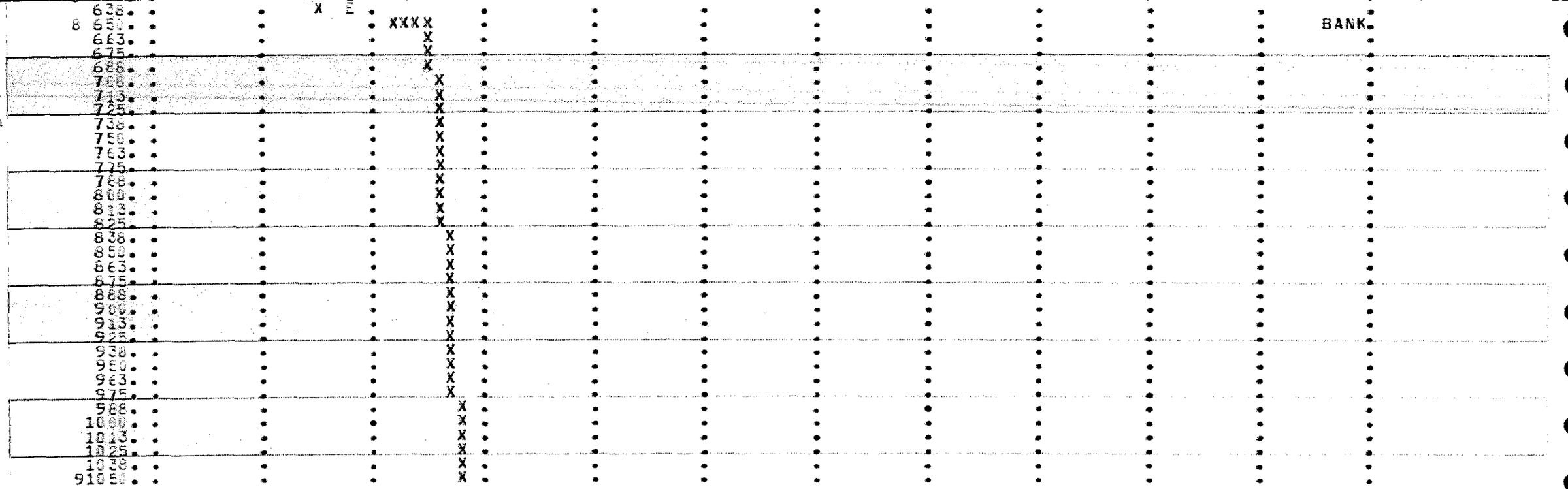
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2326. 2331. 2336. 2341. 2346. 2351. 2356. 2361. 2366. 2371. 2376.

STA-FEET



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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I)	STA(I)								
2340.00	0.00	2338.60	562.00	2337.10	562.00	2327.10	582.00	2327.10	630.00
2337.10	650.00	2338.60	650.00	2340.00	1050.00				

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CROSS SECTION 12.19
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

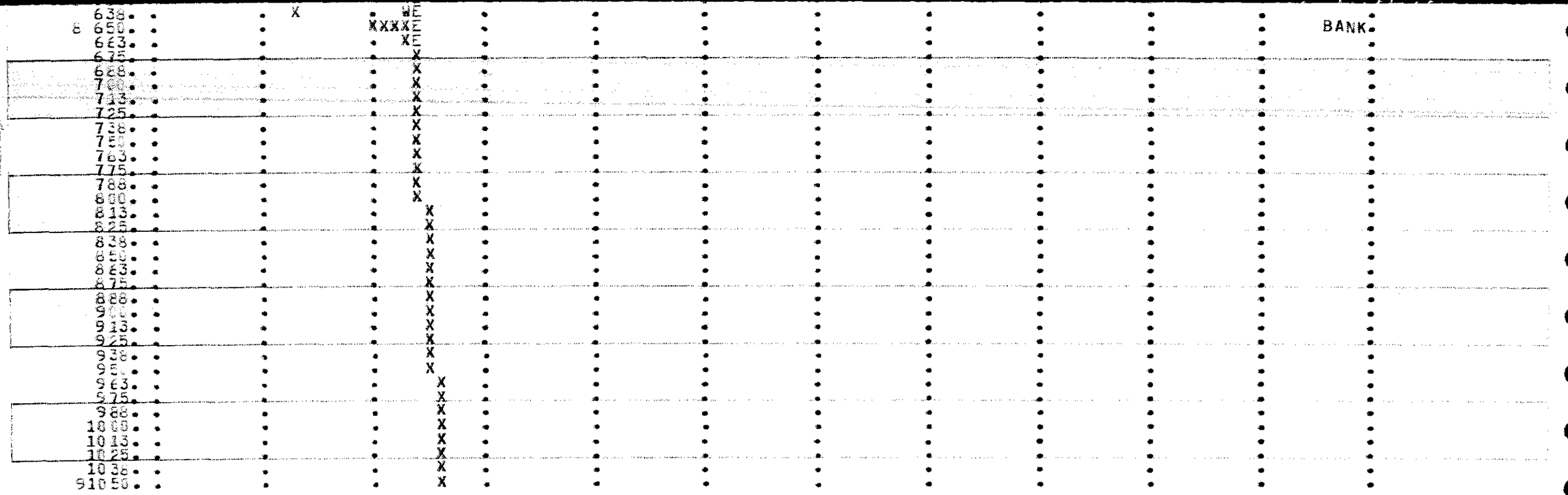
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2328. 2333. 2338. 2343. 2348. 2353. 2358. 2363. 2368. 2373. 2378.

STA-FEET

BANK.

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NRD= 0 ELLC= 2337.10 ELTRD= 2338.60

EL(I),STA(I)									
2341.10	0.00	2339.70	562.00	2338.20	562.00	2328.20	582.00	2328.20	630.00
2338.20	650.00	2339.70	650.00	2341.10	1050.00				

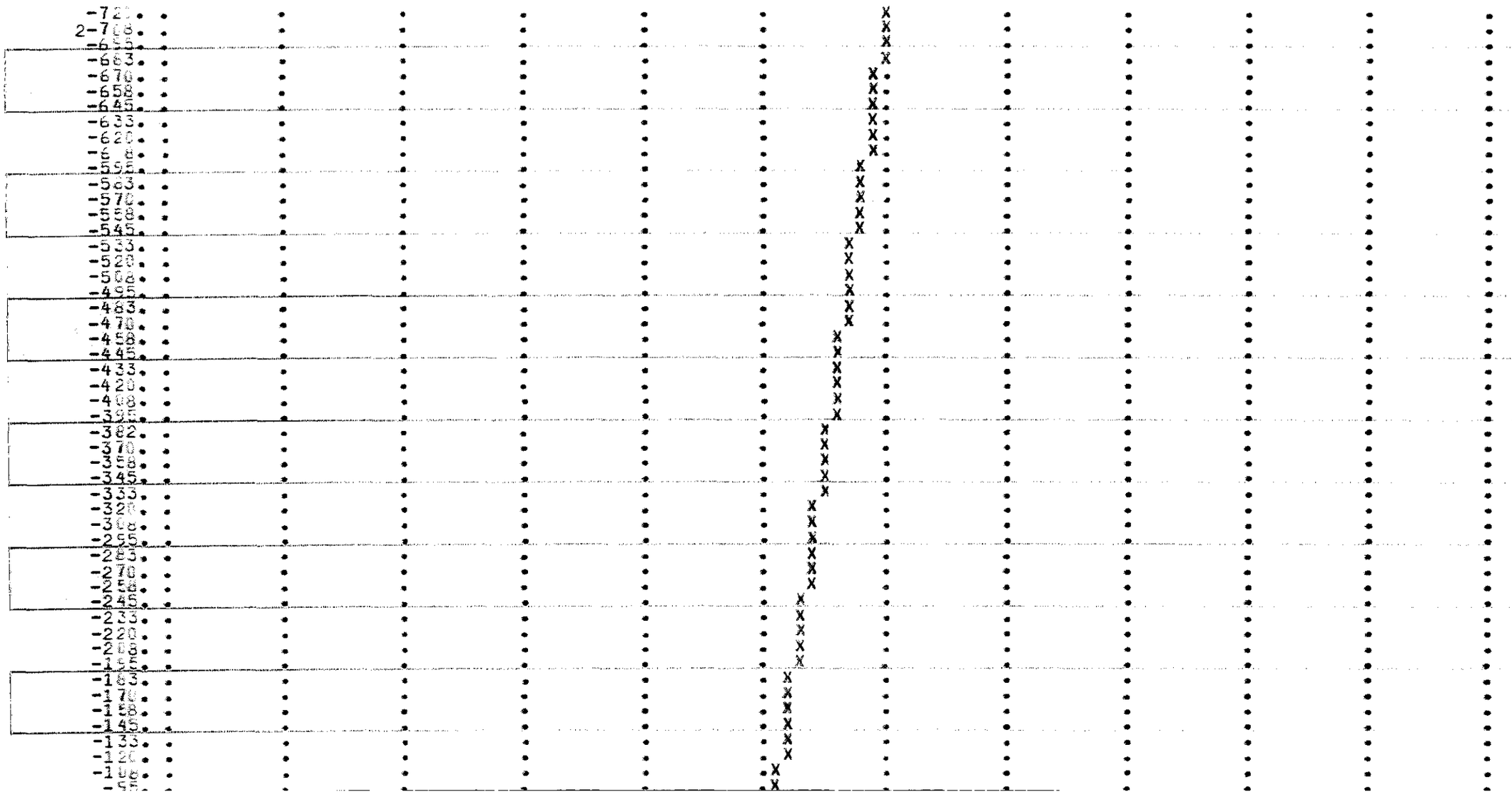
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CROSS SECTION 12.32
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

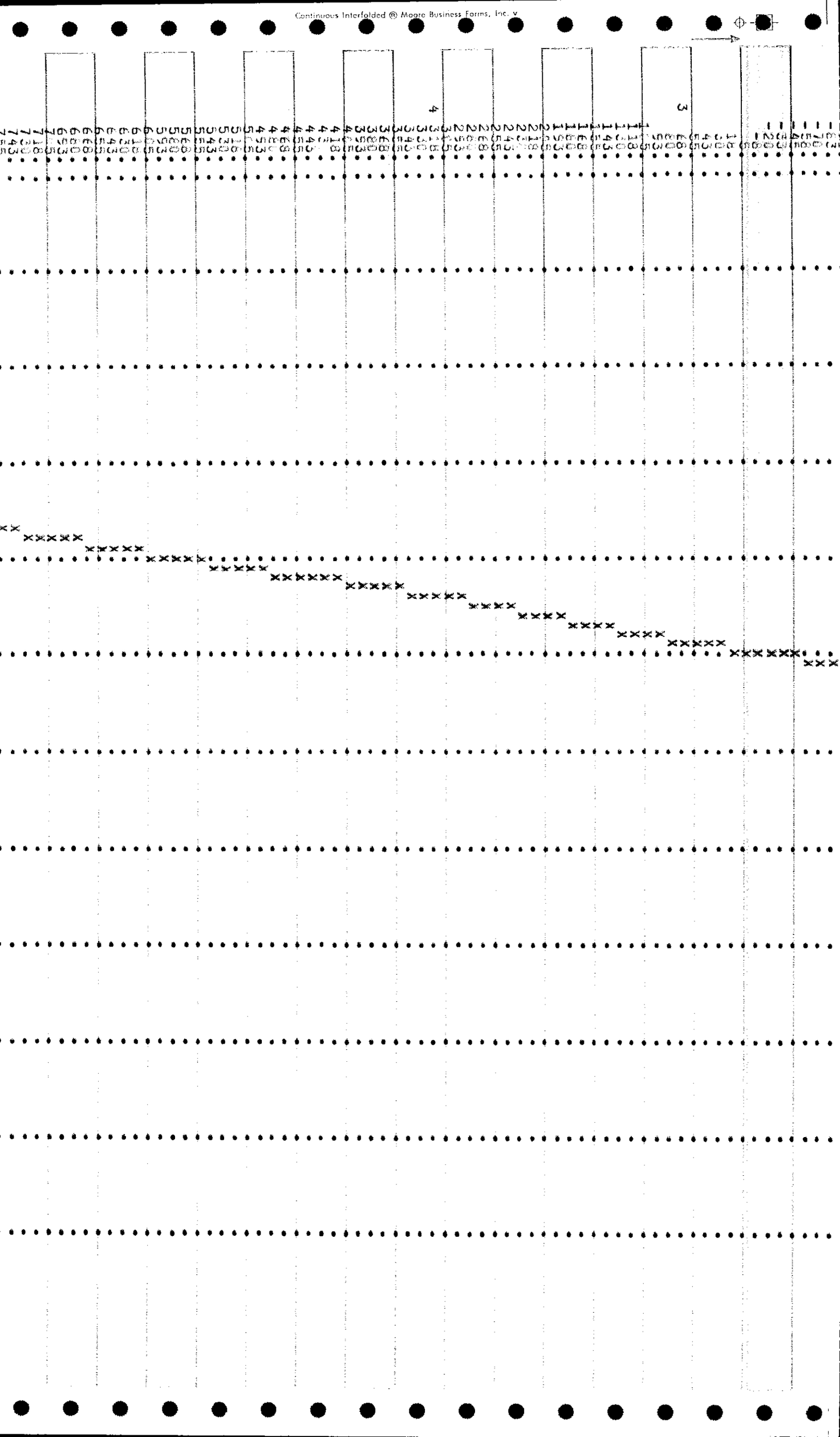
ELEV 2330. 2335. 2340. 2345. 2350. 2355. 2360. 2365. 2370. 2375. 2380.

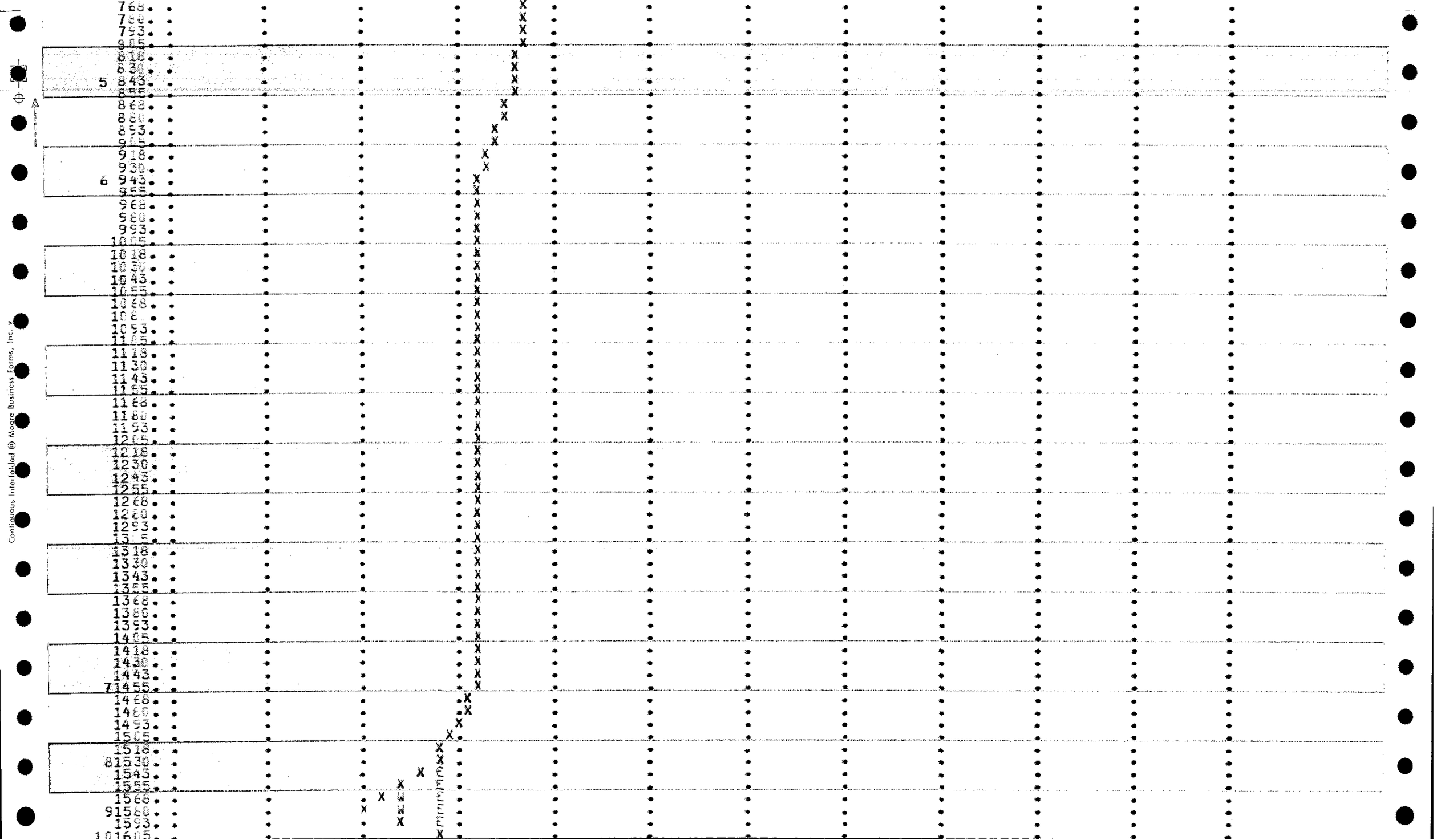
STA-FEET

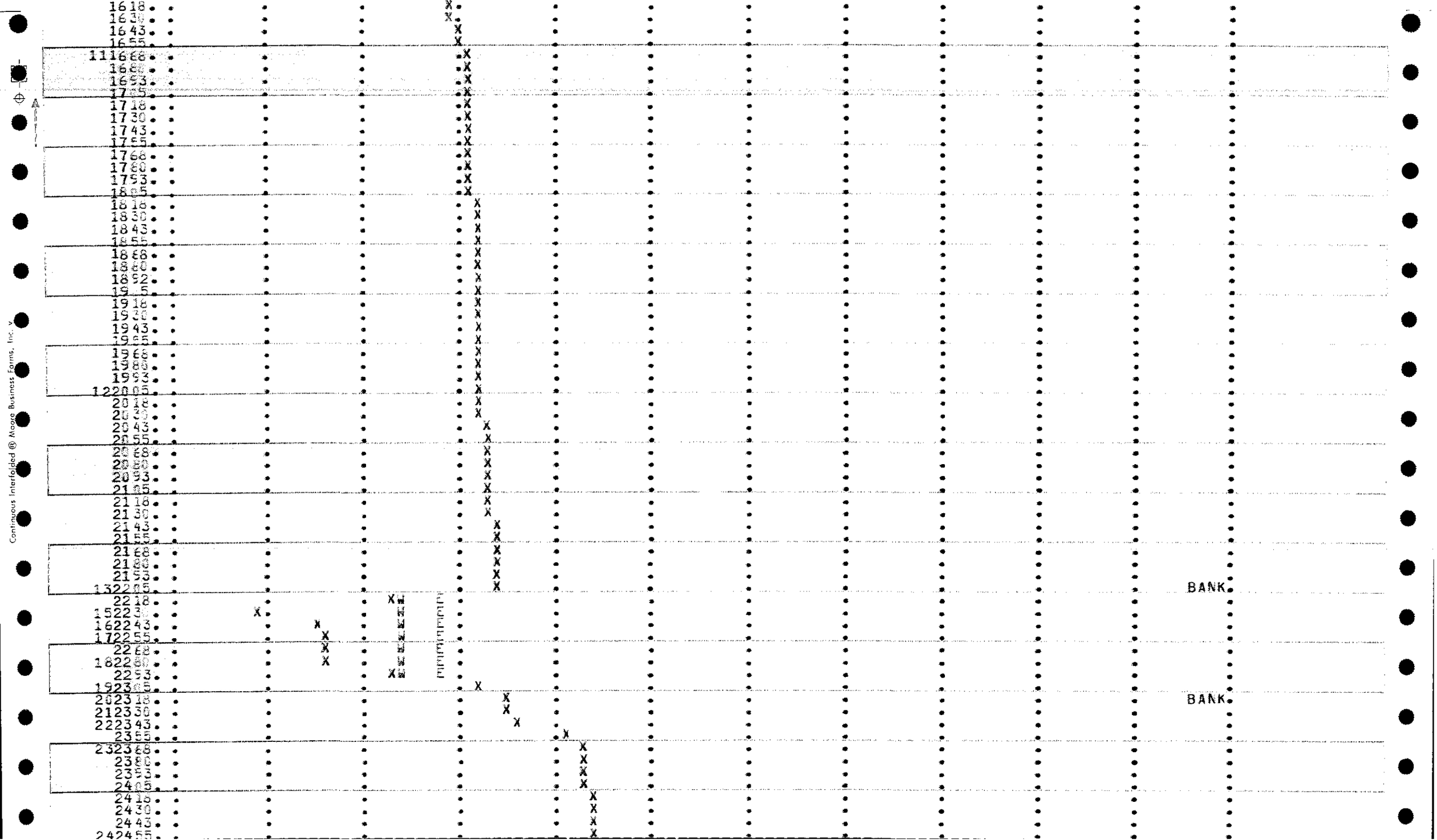


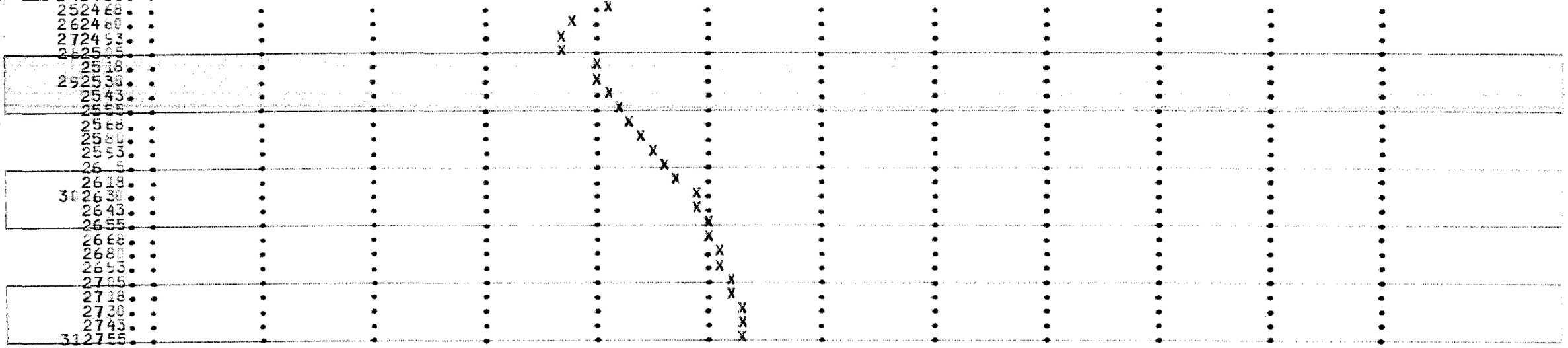
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Continuous interfolded @ Moore Business Forms, Inc.


BANK
BANK



NRD= 0 ELLC= 9999999. ELTRD= 9999999.00

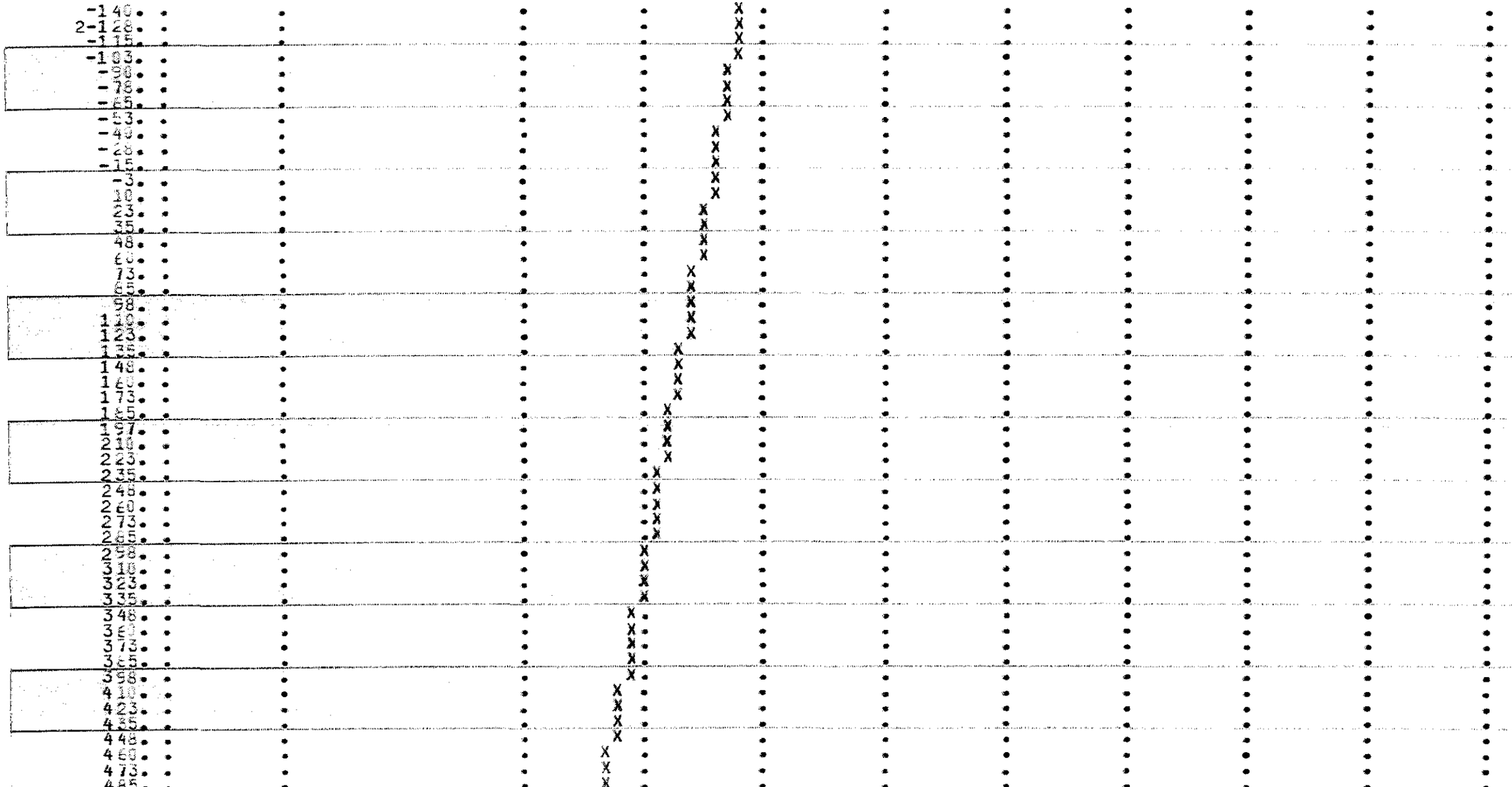
EL(I),STA(I)

2360.00	-710.00	2354.40	70.00	2352.00	320.00	2348.00	840.00	2346.00	940.00
2346.00	1460.00	2344.00	1530.00	2340.00	1580.00	2344.00	1605.00	2345.50	1670.00
2346.10	2000.00	2347.10	2199.00	2334.70	2227.00	2334.70	2234.00	2337.30	2242.00
2337.90	2258.30	2337.90	2278.00	2346.20	2308.00	2347.40	2319.00	2347.40	2334.00
2347.90	2348.00	2351.30	2364.00	2352.20	2451.00	2350.40	2463.00	2349.20	2486.00
2348.60	2494.00	2348.60	2509.00	2350.10	2524.00	2354.40	2634.00	2356.70	2756.00

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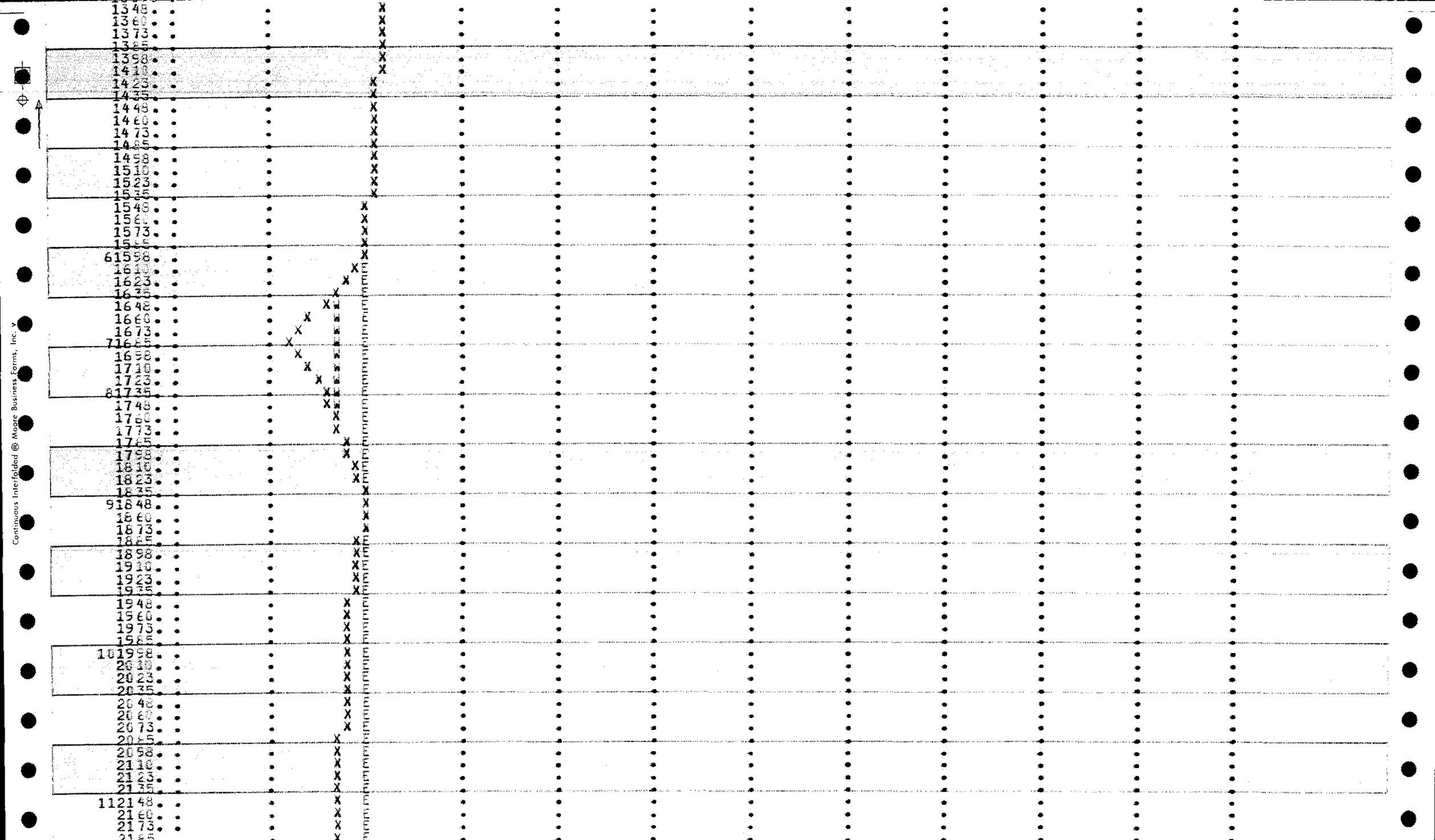
CROSS SECTION 12.42
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4130.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

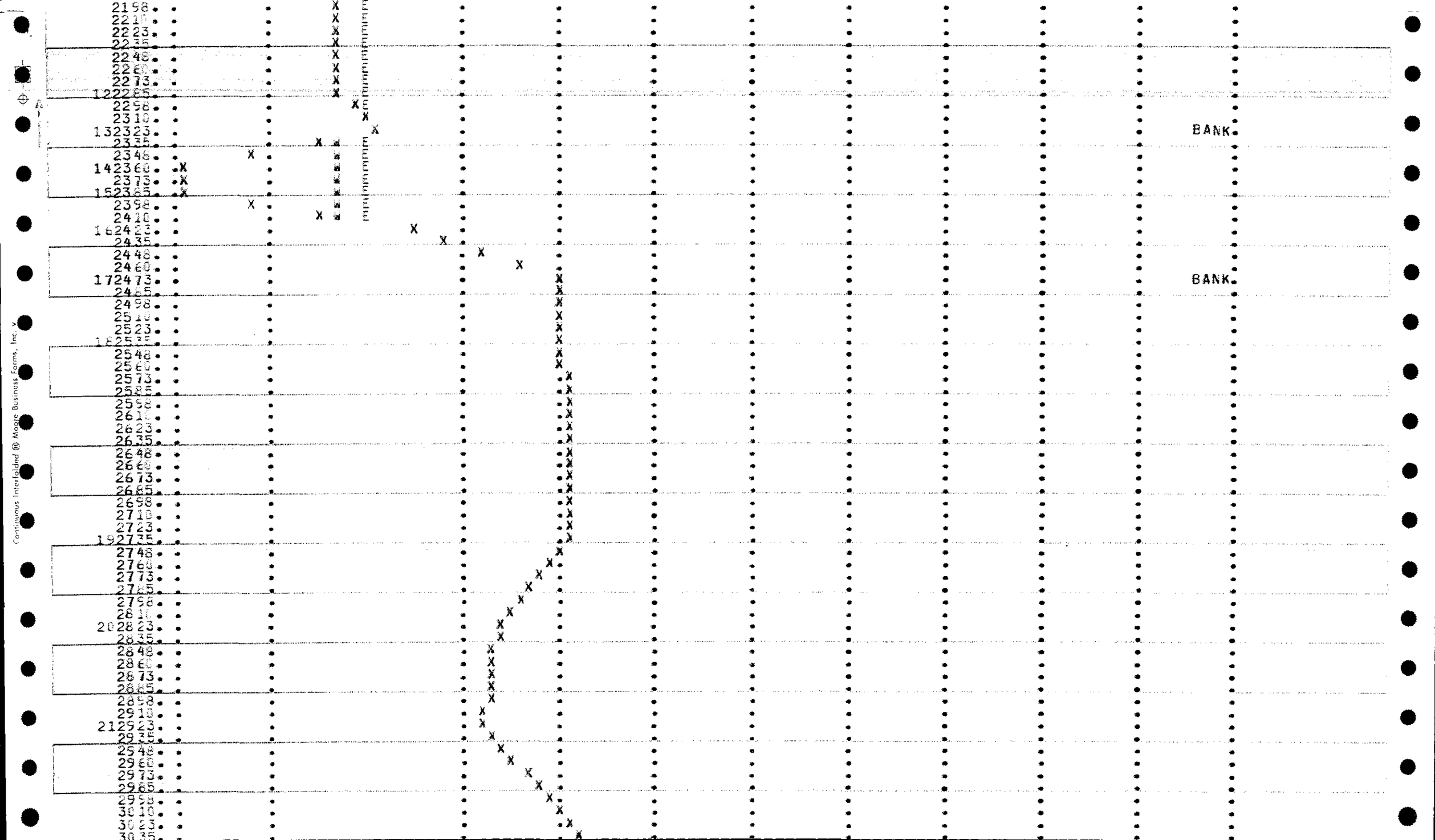


Continuous Interfolded ® Moore Business Forms, Inc.

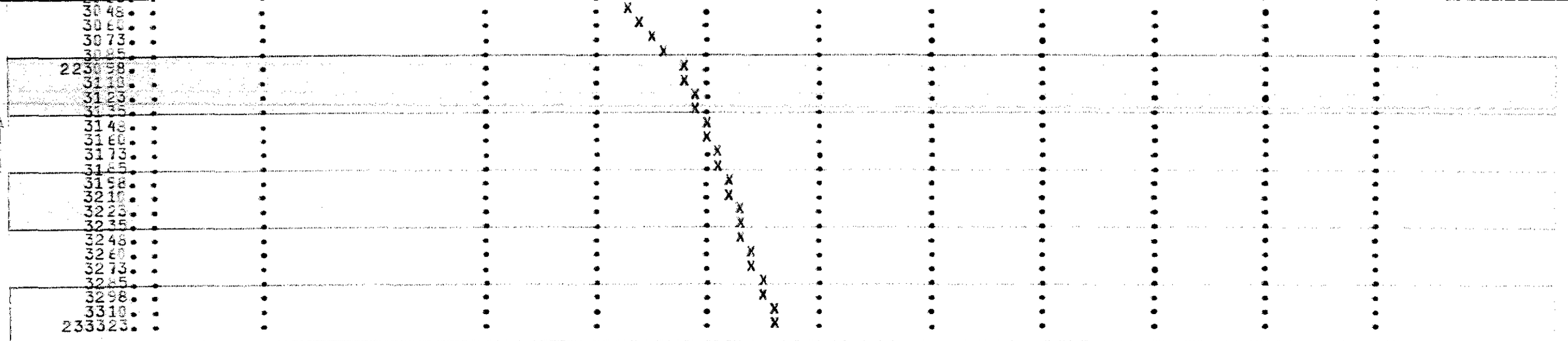
Continuous Interfolded @ Moore Business Forms, Inc. V



Continuous Interfolded @ Moore Business Forms, Inc. Y



Continuous Interfolded @ Moore Business Forms, Inc.



NRD= 0 ELLC= 9995995.00 ELTRD= 9999999.00

EL(I)	STA(I)								
2354.[illegible]	-130.[illegible]	2356.00	760.00	2352.00	1120.00	2351.20	1310.00	2350.40	1600.00
2346.00	1690.00	2348.00	1740.00	2350.00	1850.00	2348.80	2000.00	2348.70	2152.00
2348.40	2288.00	2350.60	2320.00	2340.70	2358.[illegible]	2340.70	2384.00	2352.30	2426.00
2360.20	2477.00	2360.20	2531.00	2360.50	2733.00	2356.90	2826.00	2356.10	2919.00
2364.00	3100.[illegible]	2368.00	3320.00						

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CROSS SECTION 12.48
STREAM FLAMINGO ASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2342.     2347.     2352.     2357.     2362.     2367.     2372.     2377.     2382.     2387.     2392.

     STA-FEET

 22150.  :  :      :      :      :      :X     :      :      :      :      :      :      :      :
 32163.  :  :      :      :      :      :X     :      :      :      :      :      :      :BANK  :
 42175.  :  :X     :      :      :      :      :      :      :      :      :      :      :      :
  2188.  :  :X     :      :      :      :      :      :      :      :      :      :      :      :
  2200.  :  :X     :      :      :      :      :      :      :      :      :      :      :      :
  2213.  :  :X     :      :      :      :      :      :      :      :      :      :      :      :
 52225.  :  :X     :      :      :      :      :      :      :      :      :      :      :      :
 62238.  :  :      :      :      :      :      :X     :      :      :      :      :      :BANK  :
 72250.  :  :      :      :      :      :      :X     :      :      :      :      :      :      :

NRD=       0 ELLC=  9999999.00 ELRD=  9999999.00

  EL(I),STA(I)
    2358.50      2150.00      2358.50      2160.00      2343.50      2175.00      2343.50      2225.00      2360.00      2240.00
    2360.00      2250.00
```

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CROSS SECTION 12.49
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4100.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

```
ELEV 2344.     2349.     2354.     2359.     2364.     2369.     2374.     2379.     2384.     2389.     2394.

     STA-FEET

 22156.  .         :         :         :X        :         :         :         :         :         :         :
 32163.  .         :         :         :X        :         :         :         :         :         :         :    BANK.
 42176.  .X        :         :         :         :         :         :         :         :         :         :
 21688.  .X        :         :         :         :         :         :         :         :         :         :
 22208.  .X        :         :         :         :         :         :         :         :         :         :
 22213.  .X        :         :         :         :         :         :         :         :         :         :
 52225.  .X        :         :         :         :         :         :         :         :         :         :
 62228.  .         :         :         :         X         :         :         :         :         :         :    BANK.
 72250.  .         :         :         :         X         :         :         :         :         :         :

NRD=       0 ELLC=     2358.50 ELTRD=     2360.00

  EL(I),STA(I)
    2359.50     2150.00     2359.50     2160.00     2344.50     2175.00     2344.50     2225.00     2361.00     2240.00
    2361.00     2250.00
```

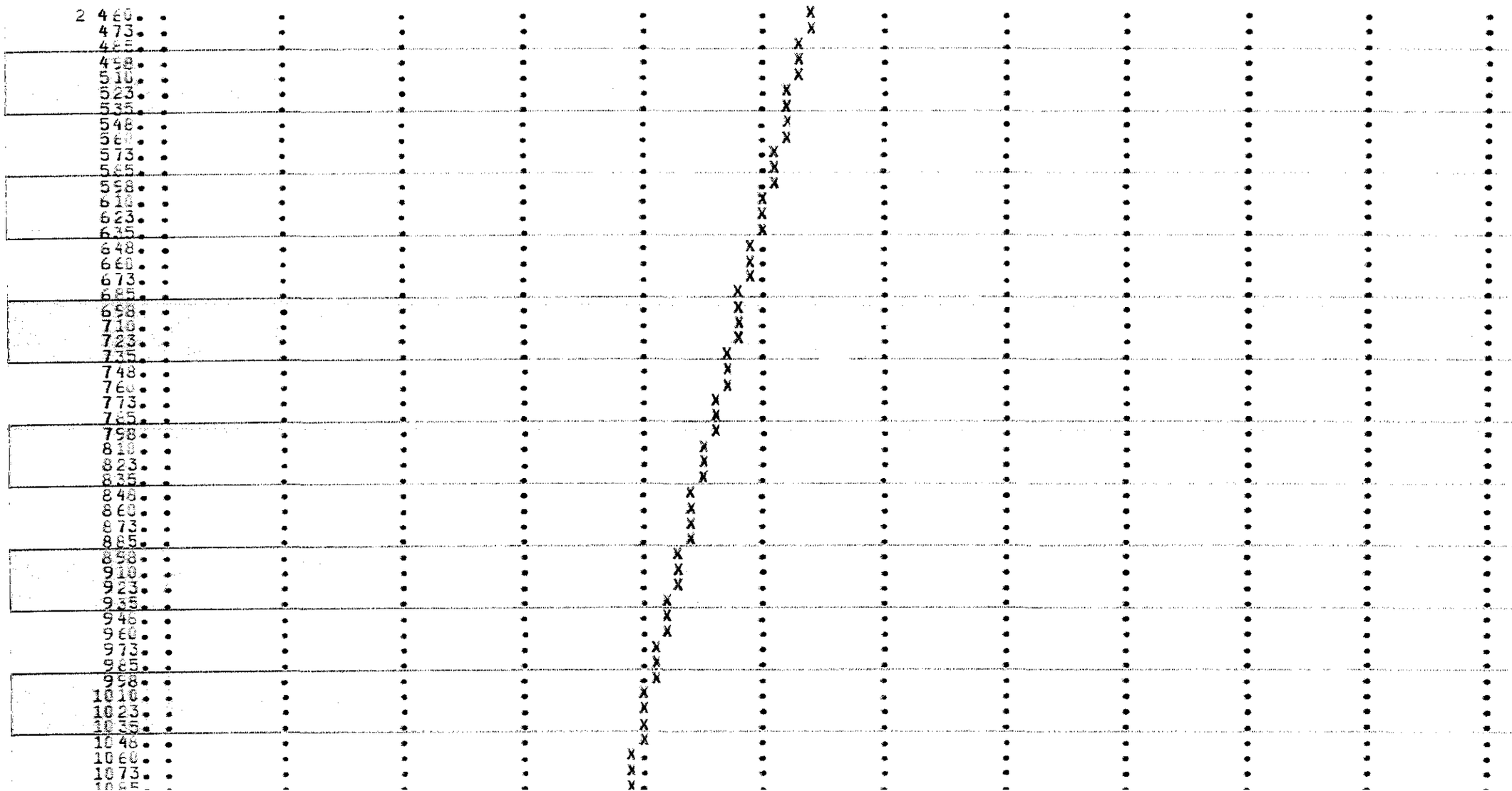
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CROSS SECTION 12.55
STREAM FLAMINGO WASH, REACH 2 +
DISCHARGE= 4[illegible]

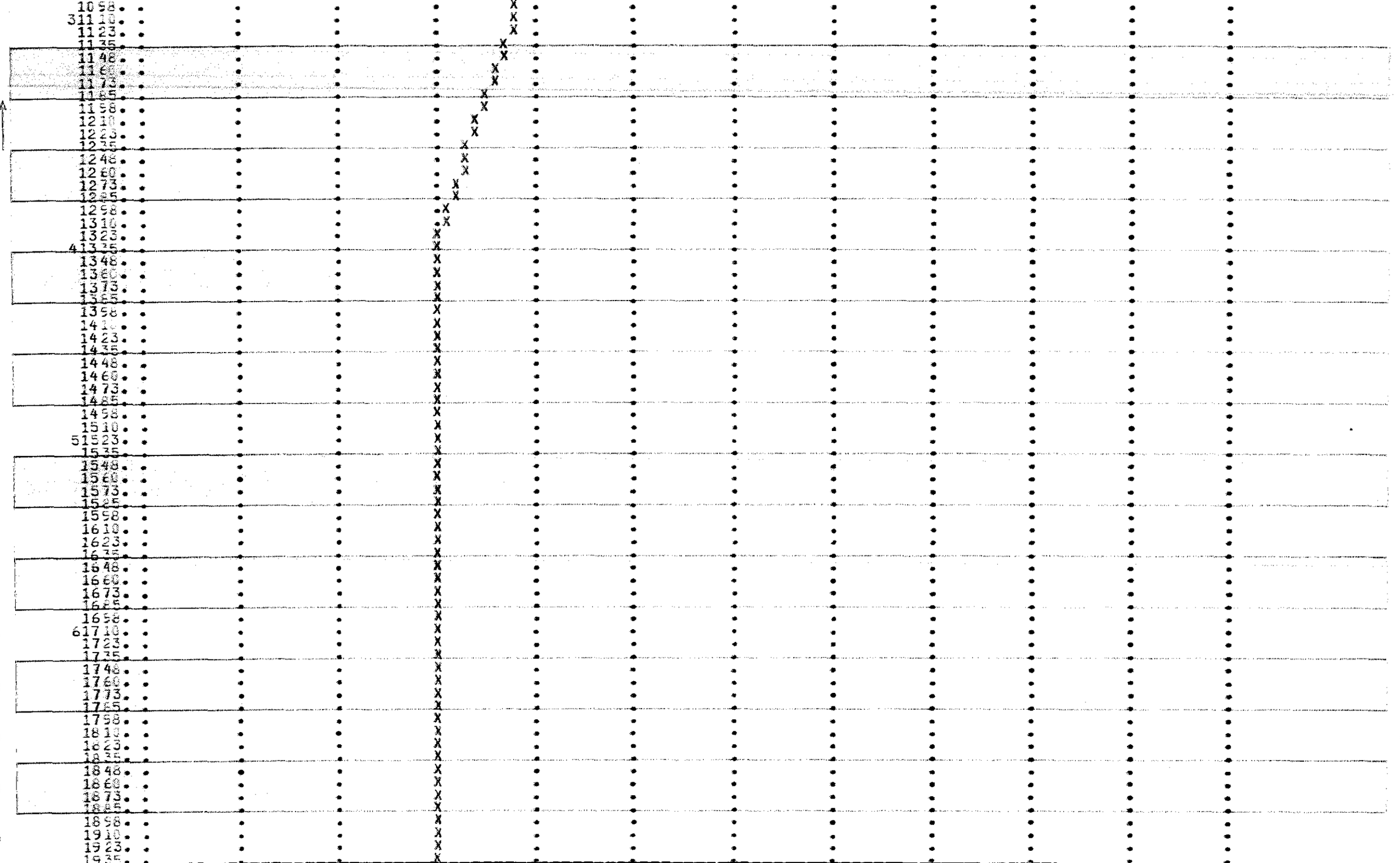
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 2345. 2350. 2355. 2360. 2365. 2370. 2375. 2380. 2385. 2390. 2395.

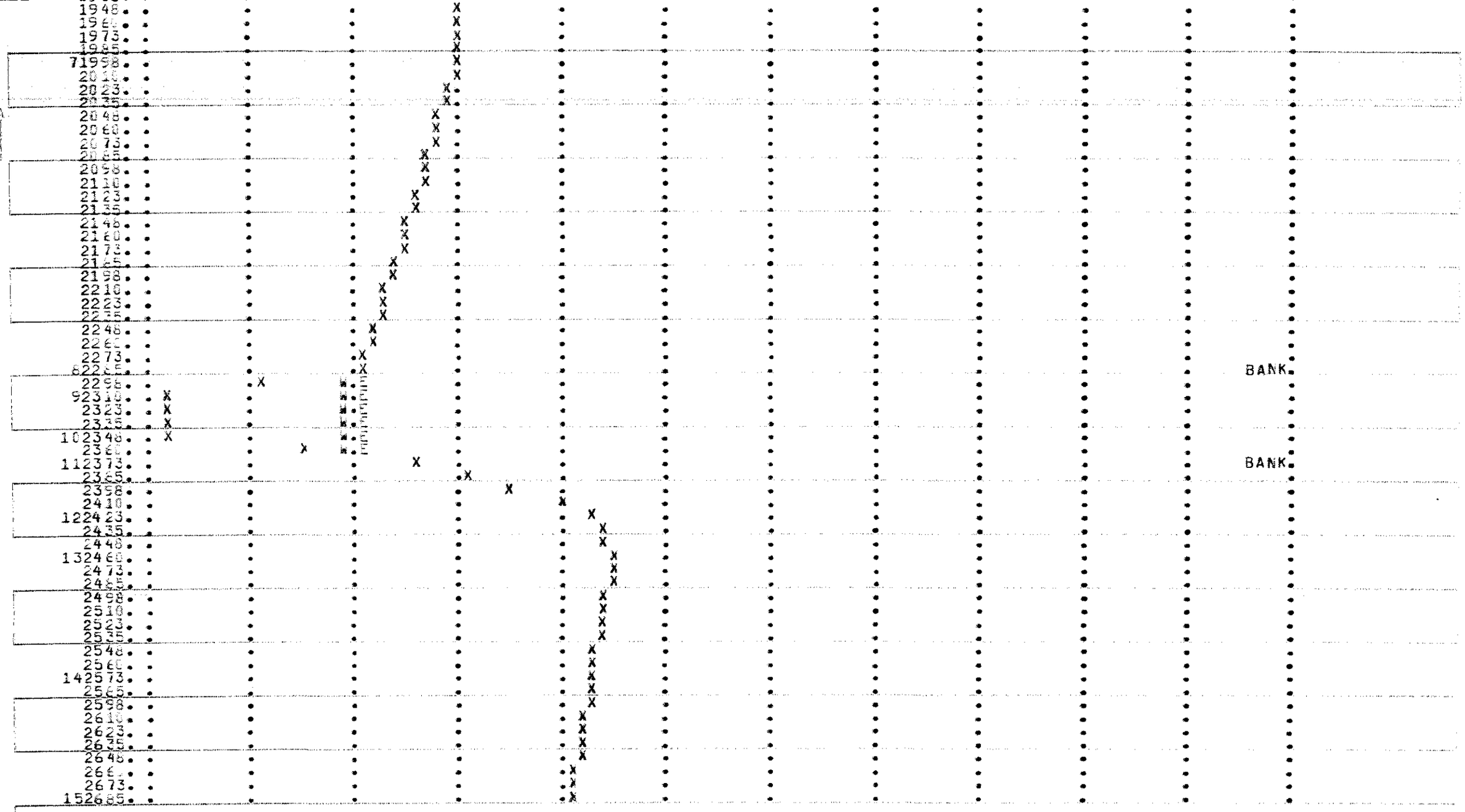
STA-FEET



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NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)

2372.00	460.00	2364.00	1110.00	2360.00	1330.00	2360.00	1520.00	2360.00	1710.00
2360.00	2100.00	2355.60	2283.00	2346.20	2305.00	2346.20	2352.00	2358.10	2375.00
2366.60	2421.00	2367.50	2462.00	2366.50	2568.00	2365.40	2681.00		

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THIS RUN EXECUTED 22 FEB 89 13:04:28

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**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**********************************************
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH, REACH 2 *

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	8.641	0.00	0.00	0.00	2131.60	4100.00	2135.93	2135.93	2137.90	59.78	11.24	364.74	530.26
*	8.650	10.00	0.00	0.00	2132.00	4100.00	2137.12	2135.83	2138.20	25.33	8.32	492.79	814.58
*	8.660	50.00	2144.60	2137.80	2132.30	4100.00	2140.44	0.00	2140.86	5.87	5.25	781.27	1692.70
*	8.740	450.00	0.00	0.00	2137.30	4100.00	2140.75	2140.75	2142.25	127.46	9.80	418.41	363.15
	8.940	1060.00	0.00	0.00	2143.30	4100.00	2149.52	0.00	2149.96	45.86	5.67	936.76	605.43
*	9.180	1230.00	0.00	0.00	2153.90	4100.00	2158.67	2158.67	2160.66	153.50	11.32	362.22	330.93
	9.430	1330.00	0.00	0.00	2171.30	4100.00	2175.51	2174.95	2176.72	96.65	8.84	523.19	417.06
	9.620	1920.00	0.00	0.00	2182.80	4100.00	2186.93	0.00	2187.49	114.95	7.07	1101.68	382.40
	9.810	975.00	0.00	0.00	2192.10	4100.00	2197.59	2197.52	2198.73	113.18	8.81	515.71	385.39
*	10.040	1245.00	0.00	0.00	2213.00	4100.00	2220.00	2220.00	2220.64	62.89	7.27	1058.69	517.02
*	10.130	470.00	0.00	0.00	2217.20	4100.00	2223.48	2223.48	2224.36	99.91	8.67	692.96	410.18
	10.310	920.00	0.00	0.00	2224.90	4100.00	2231.06	0.00	2232.19	72.03	8.53	480.73	483.10
*	10.330	110.00	0.00	0.00	2230.00	4100.00	2237.12	2237.12	2240.69	185.76	15.16	270.52	300.82
*	10.340	95.00	2242.00	2241.00	2230.50	4100.00	2239.33	0.00	2241.65	88.42	12.22	335.64	436.03
	10.490	730.00	0.00	0.00	2238.40	4100.00	2244.45	0.00	2244.57	14.81	2.84	1445.16	1095.43
*	10.700	1110.00	0.00	0.00	2252.80	4100.00	2254.88	2254.88	2255.66	206.54	7.11	576.43	285.29
	10.960	1365.00	0.00	0.00	2263.00	4100.00	2269.59	0.00	2270.18	63.94	6.86	739.39	512.76

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	SECNO	XLCH	ELTRC	ELLC	ELMIN	Q	CWSEL	CRITS	EG	10K*S	VCH	AREA	.01K
	11.150	1010.00	0.00	0.00	2269.40	4100.00	2275.24	0.00	2276.89	62.22	10.31	397.57	519.80
	11.280	645.00	0.00	0.00	2273.90	4100.00	2279.40	0.00	2281.09	67.80	10.44	392.53	497.92
*	11.310	180.00	0.00	0.00	2280.00	4100.00	2286.64	2286.64	2290.00	75.36	14.70	278.88	472.30
*	11.320	70.00	2291.40	2288.40	2280.40	4100.00	2291.93	0.00	2292.66	8.87	7.29	822.04	1376.76
*	11.450	650.00	0.00	0.00	2288.90	4100.00	2294.01	2294.01	2296.28	114.63	12.08	339.53	382.94
	11.640	1010.00	0.00	0.00	2297.40	4100.00	2303.31	0.00	2304.88	66.01	10.07	407.11	504.65
*	11.790	810.00	0.00	0.00	2306.00	4100.00	2312.11	2312.11	2314.43	113.87	12.24	335.01	384.21
*	11.820	155.00	0.00	0.00	2310.00	4100.00	2316.68	2316.68	2320.01	177.25	14.65	279.81	307.96
*	11.840	75.00	2320.70	2319.00	2311.50	4100.00	2319.06	0.00	2321.65	121.40	12.91	317.48	372.12
	11.870	180.00	0.00	0.00	2315.00	4100.00	2321.96	0.00	2323.24	50.77	9.07	452.28	575.42
	11.990	645.00	0.00	0.00	2320.90	4100.00	2326.02	0.00	2327.99	104.29	11.29	363.28	401.48
	12.100	580.00	0.00	0.00	2326.00	4100.00	2331.18	0.00	2333.02	72.89	10.90	376.08	480.22
	12.150	300.00	0.00	0.00	2327.10	4100.00	2333.20	0.00	2335.14	65.39	11.15	367.55	507.01
*	12.186	188.00	2338.60	2337.10	2328.20	4100.00	2339.46	0.00	2339.87	6.96	5.19	790.56	1553.77
*	12.320	800.00	0.00	0.00	2334.70	4100.00	2342.09	2342.09	2344.23	116.92	11.74	349.16	379.17
	12.420	550.00	0.00	0.00	2340.70	4100.00	2348.28	0.00	2349.82	87.51	9.98	410.97	438.29
*	12.460	50.00	0.00	0.00	2343.50	4100.00	2349.19	2349.19	2351.81	150.96	12.99	315.63	333.70
*	12.490	90.00	2360.00	2358.50	2344.50	4100.00	2353.45	0.00	2354.40	33.03	7.82	524.19	713.43
	12.550	310.00	0.00	0.00	2346.20	4100.00	2354.45	0.00	2355.37	28.75	7.69	533.34	764.63

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FLAMINGO WASH, REACH 2 +

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	8.641	4100.00	2135.33	0.00	0.00	5.83	93.30	0.00
*	8.650	4100.00	2137.12	0.00	1.19	0.00	96.00	10.00
*	8.660	4100.00	2140.44	0.00	3.31	0.00	96.00	58.00
*	8.740	4100.00	2140.75	0.00	0.32	0.00	142.40	450.00
	8.940	4100.00	2149.52	0.00	8.77	0.00	604.17	1060.00
*	9.180	4100.00	2158.67	0.00	9.15	0.00	92.29	1230.00
	9.430	4100.00	2175.51	0.00	16.84	0.00	360.37	1330.00
	9.620	4100.00	2186.93	0.00	11.41	0.00	886.13	1020.00
	9.810	4100.00	2197.59	0.00	10.67	0.00	230.08	975.00
*	10.040	4100.00	2220.00	0.00	22.41	0.00	1007.64	1245.00
*	10.130	4100.00	2223.48	0.00	3.48	0.00	398.98	470.00
	10.310	4100.00	2231.06	0.00	7.58	0.00	105.91	920.00
*	10.330	4100.00	2237.12	0.00	6.06	0.00	38.00	110.00
*	10.340	4100.00	2239.33	0.00	2.21	0.00	38.00	55.00
	10.490	4100.00	2244.45	0.00	5.11	0.00	492.51	790.00
*	10.700	4100.00	2254.88	0.00	10.43	0.00	374.44	1110.00
	10.960	4100.00	2269.59	0.00	14.72	0.00	397.00	1365.00
	11.150	4100.00	2275.24	0.00	5.65	0.00	76.53	1010.00
	11.280	4100.00	2279.40	0.00	4.16	0.00	79.74	645.00
*	11.310	4100.00	2286.64	0.00	7.24	0.00	42.00	180.00
*	11.320	4100.00	2291.93	0.00	5.29	0.00	113.41	70.00
*	11.450	4100.00	2294.01	0.00	2.08	0.00	75.81	660.00
	11.640	4100.00	2303.31	0.00	9.29	0.00	77.87	1000.00
*	11.790	4100.00	2312.11	0.00	8.80	0.00	73.18	810.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	11.820	4100.00	2316.68	0.00	4.57	0.00	42.33	155.00
*	11.840	4100.00	2319.06	0.00	2.38	0.00	42.45	75.00
	11.870	4100.00	2321.96	0.00	2.91	0.00	84.68	160.00
	11.990	4100.00	2326.02	0.00	4.05	0.00	84.60	645.00
	12.100	4100.00	2331.18	0.00	5.16	0.00	84.27	580.00
	12.150	4100.00	2333.20	0.00	2.03	0.00	72.42	300.00
*	12.186	4100.00	2339.46	0.00	6.25	0.00	88.00	188.00
*	12.320	4100.00	2342.09	0.00	2.63	0.00	82.81	900.00
	12.420	4100.00	2348.28	0.00	6.19	0.00	82.50	550.00
*	12.480	4100.00	2349.19	0.00	0.92	0.00	60.87	50.00
*	12.490	4100.00	2353.45	0.00	4.26	0.00	67.09	90.00
	12.550	4100.00	2354.45	0.00	1.00	0.00	82.26	310.00

Continuous Interfolded @ Moore Business Forms, Inc.

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 8.641 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 8.650 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 8.660 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 8.740 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.740 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 9.180 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.180 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.340 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.040 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.130 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.130 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.330 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.330 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.330 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 10.340 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 10.700 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.700 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 10.700 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.310 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.310 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.310 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.320 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 11.450 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.450 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.450 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.790 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.790 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 11.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 11.840 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 12.186 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 12.320 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.320 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

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```
CAUTION  SECNO=    12.320  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    12.480  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    12.480  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    12.480  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    12.490  PROFILE= 1  HYDRAULIC JUMP D.S.
```

Continuous Interfolded ® Moore Business Forms, Inc.

THIS RUN EXECUTED 22 FEB 89 13:04:32

```
**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**********************************************
```

```
STOP
===> $EOJ

****** JOB EXITS ON 22 FEB 89 13:04:33                ******
****** CPU TIME=                  5 MINS  48.10 SECS ******
****** CONNECT TIME=      3 HOURS 13 MINS  12.00 SECS ******
```

Continuous Interfolded @ Moore Business Forms, Inc.

```
1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   00:39:08          *
*************************************************
```


```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER*
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
```


Reach 2

Sc - all to 2013

```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X              X     X
X     X  X        X                    X     X
XXXXXXX  XXXX     X           XXXXX    XXXXX
X     X  X        X                    X
X     X  X        X     X              X
X     X  XXXXXXX  XXXXX                XXXXXXX
```

1
27-APR-88 00:39:08 PAGE 1

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY       25-YEAR EVENT
T3      FLAMINGO WASH  SECOND REACH (Decater to I-15)   DMH 10/6/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       2.        0.        0.  0.000000      0.00      0.3       0.  2130.100     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.025     0.025     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT      4.000  4100.000  5340.000  5880.000 20200.000     0.000     0.000     0.000     0.000     0.000
        ####  Model starts at Union Pacific Railroad crossing.  Reach    ####
        ####  from Koval Lane to UPRR (through casino property and       ####
        ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting  ####
        ####  WSEL's are taken from COE HEC2 run.                        ####
        ####        Centerline =  2060                                   ####
X1      8.541     4.000  2000.000  2113.000     3.000     3.000     3.000     0.000     0.000     0.000
GR   2140.600  2000.000  2131.600  2014.000  2131.600  2089.000  2140.600  2113.000     0.000     0.000

NC      0.000     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
        ##########################################################################
        ####                  UNION PACIFIC RAILROAD                          ####
        ####                  Special Bridge Routine                          ####
        ##########################################################################
X1      8.550     4.000  2000.000  2096.000    10.000    10.000    10.000     0.000     0.000     0.000
```

```
GR     2144.700    2098.000    2152.000    2098.000    2152.000    2098.000    2144.000    2098.000       0.000       0.000

SB        1.250       1.560       2.600      96.000      96.000      36.000     330.000       0.000    2132.300    2132.000
          ####  All floods except the 25-year event will overflow along    ####
          ####  the UPRR to the north and cross to the east by either       ####
          ####  weiring over the UPRR or crossing at Sring Mountain Rd.     ####
          ####  Flows leaving the channel to north = 0, 860, 2080, 3580     ####
X1        8.660       0.000       0.000       0.000      58.000      58.000      58.000       0.000       0.300       0.000
X2        0.000       0.000       1.000    2137.800    2144.600       0.000       0.000       0.000       0.000       0.000

NC        0.045       0.045       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
QT        4.000    4100.000    7000.000   10500.000   29500.000       0.000       0.000       0.000       0.000       0.000
```



```
          ##########################################################################
          ####                  FLAMINGO ROAD OVERPASS                          ####
          ####              Normal Ground Section Utilized                      ####
          ##########################################################################
          ####                Centerline =  2160                                ####
          ####  There is a 500-year overflow crossing the UPRR and flows        ####
          ####  south of Flamingo Wash.  Flows adjusted upstream based          ####
          ####  on results of split flow analysis for UPRR (UPRRI15_SPLIT)      ####
X1        8.740      12.000    2041.000    2229.000     450.000     450.000     450.000       0.000       0.000       0.000
X4        2.000    2140.000    2080.000    2140.000    2220.000       0.000       0.000       0.000       0.000       0.000
GR     2160.000     250.000    2153.100     830.000    2152.000     920.000    2149.000    1250.000    2152.000    1550.000
GR     2168.200    2000.000    2166.300    2041.000    2137.300    2111.000    2137.300    2202.000    2145.300    2229.000
GR     2145.300    2246.000    2145.900    2260.000       0.000       0.000       0.000       0.000       0.000       0.000

NC        0.045       0.045       0.040       0.100       0.300       0.000       0.000       0.000       0.000       0.000
QT        4.000    4100.000    7000.000   10500.000   34800.000       0.000       0.000       0.000       0.000       0.000
          ####                Centerline =  2610                                ####
          ####  VALLEY VIEW BOULEVARD not modeled.  This is a swale xing        ####
          ####  that is near grade at the channel and acually cuts into         ####
          ####  channel banks or abutments.  Xing is at mile 9.00               ####
X1        8.940      34.000    2551.000    2790.000    1030.000    1355.000    1060.000       0.000       0.000       0.000
GR     2160.000    1630.000    2160.000    1630.000    2160.000    1630.000    2160.000    1630.000    2160.000    1630.000
GR     2152.700    2000.000    2152.800    2100.000    2151.500    2134.000    2149.500    2198.000    2148.200    2325.000
GR     2149.200    2551.000    2147.900    2581.000    2143.300    2623.000    2143.300    2649.000    2144.600    2669.000
GR     2149.700    2674.000    2152.100    2683.000    2151.500    2721.000    2147.700    2739.000    2146.000    2751.000
GR     2145.600    2767.000    2150.200    2790.000    2149.500    2821.000    2148.300    2840.000    2150.900    2869.000
GR     2149.700    2953.000    2148.300    2972.000    2148.800    2989.000    2150.900    3001.000    2153.200    3092.000
GR     2150.900    3132.000    2153.700    3210.000    2157.200    3310.000    2160.000    3370.000    2160.000    3700.000

NC        0.179       0.170       0.040       0.000       0.000       0.000       0.000       0.000       0.000       0.000
          ####                Centerline =  2200                                ####
X1        9.180      20.000    2144.000    2382.000    1240.000    1170.000    1230.000       0.000       0.000       0.000
GR     2172.300    1130.000    2168.000    1210.000    2164.000    1600.000    2164.000    1730.000    2165.000    1820.000
GR     2161.700    2000.000    2162.300    2103.000    2161.600    2144.000    2156.200    2157.000    2153.900    2185.000
GR     2153.900    2233.000    2166.800    2261.000    2168.400    2382.000    2167.300    2514.000    2168.500    2544.000
GR     2168.200    2567.000    2168.900    2635.000    2168.000    2880.000    2165.000    3670.000    2172.000    3750.000

QT        4.000    4100.000    7000.000   10500.000   34900.000       0.000       0.000       0.000       0.000       0.000
NH        4.000       0.045    2272.000       0.040    2395.000       0.170    3700.000       5.000    4500.000       0.000
          ####                Centerline =  2300                                ####
X1        9.430      19.000    2272.000    2395.000    1315.000    1280.000    1330.000       0.000       0.000       0.000
GR     2181.500    2000.000    2181.200    2124.000    2179.800    2215.000    2176.800    2241.000    2176.900    2272.000
GR     2172.300    2276.000    2171.300    2289.000    2171.300    2357.000    2172.200    2388.000    2176.100    2395.000
GR     2176.500    2470.000    2177.600    2587.000    2177.400    2709.000    2175.000    2930.000    2177.000    3260.000
GR     2175.000    3360.000    2180.500    4240.000    2180.000    4490.000    2181.000    4500.000       0.000       0.000

QT        4.000    4100.000    7000.000   10500.000   35000.000       0.000       0.000       0.000       0.000       0.000
ET        0.000       9.100       9.100       9.100       9.100       0.000       0.000       0.000    1870.000    3630.000
NH        4.000       0.045    2493.000       0.040    2652.000       0.060    3630.000       0.090    5330.000       0.000
```

```
          ####              Centerline =  2590                          ####
X1          9.620      33.000    2453.000    2691.000     985.000    1005.000    1020.000       0.000       0.000       0.000
GR       2194.000    1870.000    2154.000    1870.000    2194.000    1870.000    2194.000    1870.000    2194.000    1870.000
GR       2193.300    2000.000    2191.400    2136.000    2191.600    2179.000    2191.500    2255.000    2190.000    2280.000
GR       2189.500    2307.000    2189.000    2335.000    2188.500    2372.000    2190.000    2388.000    2187.900    2418.000
GR       2186.300    2426.000    2186.300    2432.000    2188.100    2444.000    2189.300    2493.000    2186.300    2558.000
GR       2184.400    2577.000    2184.400    2591.000    2182.800    2607.000    2182.800    2652.000    2185.900    2691.000
GR       2187.400    2717.000    2189.300    2782.000    2189.500    3027.000    2189.500    3630.000    2185.000    4520.000
GR       2188.000    5020.000    2192.000    5240.000    2195.000    5330.000       0.000       0.000       0.000       0.000

NC          0.045       0.045       0.045       0.000       0.000       0.000       0.000       0.000       0.000       0.000
          ####              Centerline =  2670                          ####
X1          9.310      32.000    2629.000    2775.000     950.000     950.000     975.000       0.000       0.000       0.000
X3         10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR       2208.000    1380.000    2204.000    1600.000    2204.000    1740.000    2207.000    1800.000    2207.000    1950.000
GR       2206.000    2000.000    2204.000    2122.000    2203.500    2199.000    2203.200    2344.000    2203.400    2411.000
GR       2202.000    2468.000    2198.900    2513.000    2196.400    2543.000    2196.400    2581.000    2197.400    2555.000
GR       2196.800    2629.000    2192.100    2653.000    2192.100    2678.000    2193.300    2706.000    2196.600    2724.000
GR       2196.300    2755.000    2203.200    2775.000    2202.600    2903.000    2202.600    3014.000    2201.600    3061.000
GR       2199.200    3097.000    2200.100    3140.000    2199.800    3192.000    2201.800    3224.000    2203.800    3266.000
GR       2204.000    3310.000    2208.000    3430.000       0.000       0.000       0.000       0.000       0.000       0.000

ET          0.000       6.100       6.100       6.100       6.100    9490.000   10150.000       0.000       0.000       0.000
NH          4.000       0.060    9490.000       0.060    9950.000       0.040   10060.000       0.045   10150.000       0.000
          ####              Centerline = 10000                          ####
          ####  CAMERON STREET not modeled.  This is a swale xing       ####
          ####  that is near grade at the channel and acually cuts into ####
          ####  channel banks or abutments.  Xing is at mile 10.09      ####
          ####  Left bank ineffective flow at sta 9490.
X1         10.340      12.000    9950.000   10060.000    1095.000    1250.000    1245.000       0.000       0.000       0.000
GR       2228.000    8180.000    2224.000    8240.000    2220.000    8880.000    2218.600    9490.000    2220.500    9880.000
GR       2220.000    9950.000    2216.000    9970.000    2213.000   10000.000    2216.000   10030.000    2220.000   10060.000
GR       2224.000   10100.000    2228.000   10150.000       0.000       0.000       0.000       0.000       0.000       0.000

ET          0.000       6.100       6.100       6.100       6.100    2288.000    3083.000       0.000       0.000       0.000
NH          4.000       0.060    2288.000       0.060    2489.000       0.040    2587.000       0.045    3083.000       0.000
          ####              Centerline =  2530                          ####
          ####  Left bank ineffective flow at sta 2288.
X1         10.130      23.000    2489.000    2587.000     350.000     500.000     470.000       0.000       0.000       0.000
GR       2236.000    1150.000    2232.000    1180.000    2228.000    1350.000    2228.000    1350.000    2224.000    1860.000
GR       2221.700    2000.000    2220.900    2097.000    2224.500    2111.000    2224.400    2288.000    2222.700    2373.000
GR       2224.400    2489.000    2221.300    2504.000    2221.300    2521.000    2218.800    2547.000    2217.200    2569.000
GR       2217.200    2578.000    2225.600    2587.000    2225.600    2614.000    2234.700    2638.000    2237.000    2796.000
GR       2237.800    2947.000    2240.300    2959.000    2241.000    3083.000       0.000       0.000       0.000       0.000
EJ          0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
1
  27-APR-88     00:39:38                                                                                    PAGE     4

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


   *PROF 1

   CCHV=   0.100  CEHV=   0.300
   *SECNO 8.641
   3720 CRITICAL DEPTH ASSUMED
          ####  Model starts at Union Pacific Railroad crossing.  Reach  ####
          ####  from Koval Lane to UPRR (through casino property and     ####
          ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting ####
          ####  WSEL's are taken from COE HEC2 run.                      ####
          ####              Centerline =  2060                           ####
       8.64       4.34   2135.94   2135.94   2130.10   2137.90      1.96      0.00      0.00   2140.60
    4100.       0.        4100.       1.        0.       365.       0.        0.        0.     2140.60
```

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```
 0.00      0.00     11.24      0.00      0.025     0.025     0.025     0.000   2131.60   2097.26
0.005975     3.        3.        3.         0        14         0      0.00     93.30   2100.56
 )
 CCHV=   0.300  CEHV=   0.500
 *SECNO 8.650

 3301 HV CHANGED MORE THAN HVINS

          ##################################################################
          ####                  UNION PACIFIC RAILROAD                  ####
          ####                  Special Bridge Routine                  ####
          ##################################################################
    8.65      5.12   2137.12      0.00      0.00   2138.20      1.08      0.04      0.26   2144.00
  4100.         0.      4100.        0.        0.       491.        0.        0.        0.   2144.00
    0.00      0.00      8.34      0.00     0.025     0.025     0.025     0.000   2132.00   2000.00
0.002558      10.       10.       10.         5         0         0      0.00     96.00   2096.00
 )

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   2134.35 ,NOT   2137.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        AREA       SS         ELCHU      ELCHD
      1.25       1.56       2.60      96.00      96.00      36.00     330.00      0.00    2132.30    2132.00

 *SECNO 8.660
  PRESS FLOW BECAUSE EGLWC OF   2141.03  EXCEEDS 1.5 DEPTH

 3301 HV CHANGED MORE THAN HVINS

 1
  27-APR-88     00:39:08                                                                          PAGE     5

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 PRESSURE FLOW

  EGPRS       EGLWC        H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                        AREA
  2140.86    2141.03      0.00         0.      4100.       330.       330.      2137.80    2144.60

          ####  All floods except the 25-year event will overflow along   ####
          ####  the UPRR to the north and cross to the east by either     ####
          ####  weiring over the UPRR or crossing at Sring Mountain Rd.   ####
          ####  Flows leaving the channel to north = 0, 860, 2080, 3580   ####
    8.66      8.13   2140.43      0.00      0.00   2140.86      0.43      2.66      0.00   2144.30
  4100.         0.      4100.        0.        0.       780.        0.        1.        0.   2144.30
    0.00      0.00      5.25      0.00     0.025     0.025     0.025     0.000   2132.30   2000.00
0.000589      58.       58.       58.         2         0         0      0.00     96.00   2096.00
 )
 *SECNO 8.740

 1645 INT SEC ADDED BY RAISING SEC      8.74,  -3.750FT AND MULTIPLYING BY   0.773

    1.01      6.95   2140.50      0.00      0.00   2141.00      0.50      0.10      0.04   2162.55
  4100.         0.      4100.        0.        0.       723.        0.        3.        0.   2141.55
    0.01      0.00      5.67      0.00     0.045     0.035     0.045     0.000   2133.55   1660.27
0.001665     113.      113.      113.         3         0         0      0.00    118.71   1778.97
 )

 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.250FT AND MULTIPLYING BY   1.098
```

```
      1.02       5.87   2140.67       0.00       0.00   2141.28       0.61       0.23       0.05   2163.80
      4100.         0.      4100.         0.         0.      655.         0.         5.         1.   2142.80
       0.01       0.00       6.26       0.00      0.045      0.035      0.045      0.000   2134.80   1799.44
  0.002515       113.       113.       113.          3          0          0       0.00    127.40   1926.83
0

1645 INT SEC ADDED BY RAISING SEC      1.02,   1.250FT AND MULTIPLYING BY   1.089

      1.03       4.89   2140.94       0.00       0.00   2141.72       0.78       0.36       0.09   2165.05
      4100.         0.      4100.         0.         0.      578.         0.         6.         1.   2144.05
       0.02       0.00       7.09       0.00      0.045      0.035      0.045      0.000   2136.05   1938.71
  0.004107       113.       113.       113.          3          0          0       0.00    135.85   2074.57
0
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK       EG         HV         HL        QLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB        ACH        AROB       VOL       TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL         XNCH       XNR        WTN       ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL      IDC        ICONT      CORAR     TOPWID      ENDST


1645 INT SEC ADDED BY RAISING SEC      1.03,   1.250FT AND MULTIPLYING BY   1.082

          ##########################################################################
          ####                  FLAMINGO ROAD OVERPASS                          ####
          ####              Normal Ground Section Utilized                      ####
          ##########################################################################
          ####              Centerline =  2160                                  ####
          ####  There is a 500-year overflow crossing the UPRR and flows        ####
          ####  south of Flamingo Wash.  Flows adjusted upstream based          ####
          ####  on results of split flow analysis for UPRR (UPRRI15_SPLIT)      ####
      8.74       4.11   2141.41       0.00       0.00   2142.41       1.00       0.58       0.11   2166.30
      4100.         0.      4100.         0.         0.      512.         0.         8.         1.   2145.30
       0.02       0.00       8.01       0.00      0.045      0.035      0.045      0.000   2137.30   2077.91
  0.006652       113.       113.       113.          3          0          0       0.00    144.48   2222.39
3
CCHV=   0.100  CEHV=   0.300
*SECNO 8.940
1645 INT SEC ADDED BY RAISING SEC      8.94,  -3.000FT AND MULTIPLYING BY   1.359

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

      1.01       5.24   2145.54       0.00       0.00   2146.22       0.68       3.78       0.03   2146.20
      4100.        23.      4075.         2.         25.      613.         3.         15.         5.   2147.20
       0.04       0.89       6.65       0.70      0.045      0.040      0.045      0.000   2140.30   2529.18
  0.007682       515.       530.       673.          3          0          0       0.00    382.20   3464.51
3

1645 INT SEC ADDED BY RAISING SEC      1.01,   3.000FT AND MULTIPLYING BY   0.736

3265 DIVIDED FLOW

          ####              Centerline =  2610                                  ####
          ####  VALLEY VIEW BOULEVARD not modeled.  This is a swale xing        ####
          ####  that is near grade at the channel and acually cuts into         ####
1
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```

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```
          ####  channel banks or abutments.  Xing is at mile 9.00          ####
      8.94      6.00   2149.30      0.00      0.00   2149.87      0.57      3.64      0.01   2149.20
    4100.       358.     3680.       62.       197.      578.       34.       24.       11.    2150.20
      0.07      1.82     6.36      1.32     0.045     0.040     0.045     0.000   2143.30   2216.98
 0.006170       515.      530.       678.         3         0         0      0.00    571.44   2991.89
```

*SECNO 9.180

1645 INT SEC ADDED BY RAISING SEC 9.18, -7.950FT AND MULTIPLYING BY 1.154

3301 HV CHANGED MORE THAN HVINS

```
      1.01      5.12   2151.07      0.00      0.00   2152.33      1.26      2.25      0.21   2153.65
    4100.         0.     4100.        0.        0.      456.        0.       28.       13.    2160.45
      0.08      0.00     9.00      0.00     0.170     0.040     0.170     0.000   2145.95   2307.38
 0.008806       310.      308.       293.         2         0         0      0.00    108.36   2415.74
```

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.650FT AND MULTIPLYING BY 0.956

```
      1.02      5.19   2153.79      0.00      0.00   2155.12      1.33      2.77      0.02   2156.30
    4100.         0.     4100.        0.        0.      442.        0.       31.       14.    2163.10
      0.09      0.00     9.27      0.00     0.170     0.040     0.170     0.000   2148.60   2254.81
 0.009203       310.      308.       293.         2         0         0      0.00    103.88   2358.69
```

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.650FT AND MULTIPLYING BY 0.953

```
      1.03      5.33   2156.58      0.00      0.00   2157.95      1.37      2.82      0.01   2158.95
    4100.         0.     4100.        0.        0.      436.        0.       34.       14.    2165.75
      0.10      0.00     9.40      0.00     0.179     0.040     0.170     0.000   2151.25   2202.06
 0.009154       310.      308.       293.         2         0         0      0.00     99.75   2301.81
```

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.650FT AND MULTIPLYING BY 0.951

```
          ####              Centerline =  2200                          ####
      9.18      5.47   2159.37      0.00      0.00   2160.79      1.42      2.83      0.02   2161.60
    4100.         0.     4100.        0.        0.      428.        0.       37.       15.    2168.40
      0.11      0.00     9.57      0.00     0.170     0.040     0.170     0.000   2153.90   2149.36
 0.009223       310.      308.       293.         2         0         0      0.00     95.51   2244.88
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST
```

1490 NH CARD USED
*SECNO 9.430

```
          ####              Centerline =  2300                          ####
      9.43      3.68   2174.98   2174.95      0.00   2176.63      1.65     15.77      0.07   2176.90
    4100.         0.     4100.        0.        0.      397.        0.       50.       18.    2176.10
      0.14      0.00    10.32      0.00     0.045     0.040     0.170     0.000   2171.30   2273.88
 0.015794      1315.     1330.     1280.         7        18         0      0.00    119.10   2392.98
```

1490 NH CARD USED
*SECNO 9.620

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVTOL

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

```
####                Centerline =  2590                          ####
     9.62      5.09  2187.89      0.00      0.00  2188.59      0.70     11.87      0.10  2188.30
     4100.      80.      3929.      91.      24.      574.      36.      62.      23.      2185.90
      0.18      3.28      6.84      2.50     0.045     0.060     0.060     0.000  2182.80  2418.04
 0.008935       985.      1020.     1005.       4         0         0      0.00   252.19  2733.85
```

*SECNO 9.810

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2196.80 ELREA= 2203.20

```
####                Centerline =  2670                          ####
     9.81      5.45  2197.55  2197.52      0.00  2198.73      1.18      9.99      0.14  2196.80
     4100.     249.      3851.      0.      76.      430.      0.      75.      28.      2203.20
      0.22      3.28      8.97      0.00     0.045     0.040     0.045     0.000  2192.10  2529.21
 0.011910       950.      975.      950.       6         8         0      0.00   229.41  2758.62
```

1490 NH CARD USED
*SECNO 10.040

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY

1


```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROP      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST
```

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9490.0 10150.0 TYPE= 1 TARGET= 660.000

```
####                Centerline = 10000                          ####
####  CAMERON STREET not modeled.  This is a swale xing         ####
####  that is near grade at the channel and acually cuts into   ####
####  channel banks or abutments.  Xing is at mile 10.09        ####
####  Left bank ineffective flow at sta 9490.
    10.04      6.87  2219.87  2219.87      0.00  2221.07      1.20     13.54      0.00  2220.00
    4100.      307.      3793.      0.      167.      416.      0.      98.      36.      2220.00
     0.26      1.84      9.11      0.00     0.060     0.040     0.045     0.000  2213.00  9490.00
0.010123      1095.     1245.     1250.       2        11         0      0.00   370.03 10059.06
```

1490 NH CARD USED
*SECNO 10.130

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 2283.0 3083.0 TYPE= 1 TARGET= 795.000

```
####                Centerline =  2530                          ####
####  Left bank ineffective flow at sta 2288.
    10.13      7.10  2224.30  2224.16      0.00  2225.51      1.22      4.44      0.01  2224.40
    4100.      309.      3791.      0.      151.      413.      0.      96.      39.      2225.60
     0.27      2.04      9.19      0.00     0.060     0.040     0.045     0.000  2217.20  2293.03
0.009162       350.      470.      500.       4         5         0      0.00   285.23  2585.61
```

1

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2  50 YEAR FLOODPLAIN RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.       3.        0.        0.  0.000000      0.00      0.3       0.  2130.700     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

*PROF 2
CCHV=   0.100  CEHV=   0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
          ####  Model starts at Union Pacific Railroad crossing.  Reach   ####
          ####  from Koval Lane to UPRR (through casino property and      ####
          ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting ####
          ####  WSEL's are taken from COE HEC2 run.                       ####
          ####            Centerline =  2960                              ####
      8.64      5.11  2136.71  2136.71  2130.70  2139.01      2.30      0.00      0.00  2140.60
      5340.        0.     5340.        3.        0.      439.        0.        0.        0.   2140.60
      0.00      0.00     12.17      0.00     0.025     0.025     0.025     0.000  2131.60  2006.04
  0.005758         3.        3.        3.         0        17         0      0.00     96.59  2102.64
}
CCHV=   0.300  CEHV=   0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

          ##################################################################
          ####                    UNION PACIFIC RAILROAD                  ####
          ####                  Special Bridge Routine                    ####
          ##################################################################
      8.65      6.02  2138.02      0.00      0.00  2139.34      1.32      0.84      0.29  2144.00
      5340.        0.     5340.        0.        0.      578.        0.        0.        0.   2144.00
      0.00      0.00      9.24      0.00     0.025     0.025     0.025     0.000  2132.00  2000.00
  0.002579        10.       10.       10.         5         0         0      0.00     96.00  2096.00
}

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2134.80 ,NOT   2138.02 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      2.60     96.00     96.00     36.00    330.00      0.00  2132.30   2132.00
```

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*SECNO 8.880

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2144.36	2142.71	0.00	0.	5340.	330.	330.	2137.80	2144.60

All floods except the 25-year event will overflow along
the UPRR to the north and cross to the east by either
weiring over the UPRR or crossing at Spring Mountain Rd.
Flows leaving the channel to north = 0, 860, 2080, 3580

8.66	11.71	2144.01	0.00	0.00	2144.36	0.35	5.02	0.00	2144.30
5340.	0.	5340.	0.	0.	1124.	0.	1.	0.	2144.30
0.00	0.00	4.75	0.00	0.025	0.025	0.025	0.000	2132.30	2000.00
0.000321	58.	58.	58.	2	0	0	0.00	56.00	2096.00

*SECNO 8.740

1645 INT SEC ADDED BY RAISING SEC 8.74, -2.500FT AND MULTIPLYING BY 0.832

3280 CROSS SECTION 1.01 EXTENDED 0.67 FEET

1.01	9.27	2144.07	0.00	0.00	2144.56	0.50	0.13	0.07	2163.80
6170.	0.	6135.	35.	0.	1081.	29.	7.	1.	2142.80
0.01	0.00	5.68	1.20	0.045	0.035	0.045	0.000	2134.80	1765.32
0.001133	225.	225.	225.	3	0	0	0.00	157.95	1923.27

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.500FT AND MULTIPLYING BY 1.201

3301 HV CHANGED MORE THAN HVINS

FLAMINGO ROAD OVERPASS
Normal Ground Section Utilized
Centerline = 2160
There is a 500-year overflow crossing the UPRR and flows
south of Flamingo Wash. Flows adjusted upstream based

on results of split flow analysis for UPRR (UPRRI15_SPLIT)

8.74	6.98	2144.28	0.00	0.00	2145.14	0.36	0.39	0.18	2166.30
7000.	0.	7000.	0.	0.	940.	0.	12.	2.	2145.30
0.02	0.00	7.45	0.00	0.045	0.035	0.045	0.000	2137.30	2073.66
0.002817	225.	225.	225.	3	0	0	0.00	153.61	2227.26

CCHV= 0.100 CEHV= 0.300
*SECNO 8.940

1645 INT SEC ADDED BY RAISING SEC 8.94, -3.000FT AND MULTIPLYING BY 1.122

3265 DIVIDED FLOW

1.01	6.42	2146.72	0.00	0.00	2147.51	0.78	2.36	0.01	2146.20
7000.	1123.	5685.	192.	386.	733.	72.	25.	7.	2147.20
0.04	2.91	7.75	2.56	0.045	0.040	0.045	0.000	2140.30	2259.04
0.008027	515.	530.	673.	3	0	0	0.00	706.38	3160.45

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.000FT AND MULTIPLYING BY 0.891

3265 DIVIDED FLOW

Centerline = 2610
VALLEY VIEW BOULEVARD not modeled. This is a swale xing
that is near grade at the channel and acually cuts into
channel banks or abutments. Xing is at mile 9.00

8.94	7.01	2150.31	0.00	0.00	2150.81	0.50	3.28	0.03	2149.20
7000.	1711.	4946.	343.	559.	761.	138.	42.	16.	2150.20
0.07	3.06	6.49	2.49	0.045	0.040	0.045	0.000	2143.30	2172.14
0.004870	515.	530.	678.	3	0	0	0.00	727.08	2997.62

*SECNO 9.180

1645 INT SEC ADDED BY RAISING SEC 9.18, -7.950FT AND MULTIPLYING BY 1.234

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	5.77	2151.72	2151.72	0.00	2154.11	2.39	2.39	0.57	2153.65
7000.	0.	7000.	0.	0.	564.	0.	49.	19.	2160.45
0.08	0.00	12.41	0.00	0.170	0.040	0.170	0.000	2145.95	2386.71
0.014353	310.	308.	293.	4	15	0	0.00	119.54	2506.25

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.650FT AND MULTIPLYING BY 0.937

3301 HV CHANGED MORE THAN HVINS

1.02	7.10	2155.70	0.00	0.00	2157.34	1.64	3.15	0.08	2156.30
7000.	0.	7000.	0.	0.	681.	1.	53.	20.	2163.10
0.09	0.00	10.28	0.00	0.170	0.040	0.170	0.000	2148.60	2303.68
0.007660	310.	308.	293.	3	0	0	0.00	118.99	2422.66

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.650FT AND MULTIPLYING BY 0.933

3301 HV CHANGED MORE THAN HVINS

1.03	6.84	2158.09	0.00	0.00	2160.15	2.06	2.69	0.13	2158.95
7000.	0.	7000.	0.	0.	607.	0.	58.	21.	2165.75

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0.09	0.00	11.52	0.00	0.170	0.040	0.170	0.000	2151.23	2225.22
0.010102	310.	308.	293.	2	0	0	0.00	109.72	2334.94

0

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.650FT AND MULTIPLYING BY 0.928

Centerline = 2200

9.18	7.21	2161.11	0.00	0.00	2163.21	2.10	3.05	0.01	2161.60
7000.	0.	7000.	0.	0.	601.	0.	62.	21.	2168.40
0.10	0.00	11.64	0.00	0.170	0.040	0.170	0.000	2153.90	2145.18
0.009722	310.	308.	293.	2	0	0	0.00	103.47	2248.65

0

1490 NH CARD USED
*SECNO 9.430

1645 INT SEC ADDED BY RAISING SEC 9.43, -11.600FT AND MULTIPLYING BY 0.972

3265 DIVIDED FLOW

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

1.01	5.94	2165.64	2165.57	0.00	2166.79	1.15	3.48	0.10	2165.30
7000.	17.	6047.	936.	12.	653.	1221.	74.	28.	2164.50
0.12	1.37	9.26	0.77	0.045	0.040	0.170	0.000	2159.70	2230.51
0.006498	438.	443.	427.	4	12	0	0.00	1266.47	3668.44

3

1645 INT SEC ADDED BY RAISING SEC 1.01, 5.800FT AND MULTIPLYING BY 1.015

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	5.80	2171.30	2171.30	0.00	2172.54	1.24	3.03	0.03	2171.10
7000.	9.	6152.	839.	8.	647.	1095.	92.	40.	2170.30
0.13	1.11	9.52	0.77	0.045	0.040	0.170	0.000	2165.50	2234.99
0.007266	438.	443.	427.	20	10	0	0.00	1237.80	3672.27

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 5.800FT AND MULTIPLYING BY 1.014

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2300

9.43	5.72	2177.02	2177.02	0.00	2178.30	1.28	3.29	0.01	2176.90
7000.	5.	6218.	777.	6.	646.	1026.	110.	53.	2176.10
0.15	0.89	9.62	0.76	0.045	0.170	0.170	0.000	2171.30	2239.06
0.007635	438.	443.	427.	3	8	0	0.00	1226.96	3683.87

3

1490 NH CARD USED
*SECNO 9.620

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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000
Centerline = 2590

9.62	5.61	2188.41	2188.41	2187.89	2189.79	1.38	10.84	0.03	2188.30
7000.	224.	6534.	242.	50.	674.	63.	139.	71.	2185.90
0.18	4.50	9.69	3.83	0.045	0.060	0.060	0.000	2182.80	2410.72
0.015850	985.	1020.	1005.	3	5	0	0.00	340.80	2751.53

*SECNO 9.810

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2196.80 ELREA= 2203.20

Centerline = 2670

9.81	7.00	2199.10	0.30	2197.55	2200.24	1.14	10.42	0.02	2196.80
7000.	1203.	5797.	0.	245.	634.	0.	157.	77.	2203.20
0.21	4.91	9.15	0.10	0.045	0.040	0.015	0.000	2192.10	2510.11
0.007736	950.	975.	950.	5	0	0	0.00	253.00	2763.11

1490 NH CARD USED
*SECNO 10.040
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9490.0 10150.0 TYPE= 1 TARGET= 660.000
Centerline = 10000
CAMERON STREET not modeled. This is a swale xing
that is near grade at the channel and acually cuts into
channel banks or abutments. Xing is at mile 11.09
Left bank ineffective flow at sta 9490.

10.04	8.14	2221.14	2221.14	2219.87	2222.13	0.99	9.02	0.01	2220.00
7000.	1880.	5108.	12.	681.	555.	6.	185.	88.	2220.00
0.25	2.76	9.20	1.91	0.060	0.040	0.045	0.000	2213.00	9490.00
0.007168	1095.	1245.	1250.	20	9	0	0.00	581.38	10071.38

1490 NH CARD USED
*SECNO 10.130
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 2288.0 3083.0 TYPE= 1 TARGET= 795.000
Centerline = 2530
Left bank ineffective flow at sta 2288.

10.13	8.23	2225.43	2225.43	2224.30	2226.91	1.48	3.61	0.15	2224.40
7000.	1383.	5617.	0.	379.	523.	0.	196.	92.	2225.60
0.27	3.65	10.74	0.00	0.060	0.040	0.045	0.000	2217.20	2288.00

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2   100 YEAR FLOODPAIN RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.       4.        0.        0.  0.000000      0.00      0.3       0.  2131.100     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST

*PROF 3

CCHV=   0.100  CEHV=   0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
          ####  Model starts at Union Pacific Railroad crossing.  Reach    ####
          ####  from Koval Lane to UPRR (through casino property and       ####
          ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting  ####
          ####  WSEL's are taken from COE HEC2 run.                        ####
          ####           Centerline =  2060                                ####
      8.64      5.44  2137.04  2137.04  2131.10  2139.47      2.43      0.00      0.00  2140.60
      5880.        0.     5880.        0.        0.      470.        0.        0.        0.  2140.60
      0.00      0.00     12.50      0.00     0.025     0.025     0.025     0.000  2131.60  2005.54
 0.005648         3.        3.        3.         0        17         0      0.00     97.97  2103.51

CCHV=   0.300  CEHV=   0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

          ##################################################################
          ####                  UNION PACIFIC RAILROAD                    ####
          ####                  Special Bridge Routine                    ####
          ##################################################################
      8.65      6.36  2138.36      0.00      0.00  2139.80      1.44      0.04      0.30  2144.00
      5880.        0.     5880.        0.        0.      611.        0.        0.        0.  2144.00
      0.00      0.00     9.62      0.00     0.025     0.025     0.025     0.000  2132.00  2000.00
 0.002629        10.       10.       10.         5         0         0      0.00     96.00  2096.00
```

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2134.98 ,NOT 2138.36 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEC	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.60	96.00	96.00	36.00	330.00	0.00	2132.30	2132.00

*SECNO 8.660
3280 CROSS SECTION 8.56 EXTENDED 0.84 FEET

3301 HV CHANGED MORE THAN HVIAS

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	FB	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2146.05	2143.40	0.00	209.	5660.	330.	330.	2137.80	2144.60

All floods except the 25-year event will overflow along #### #### the UPRR to the north and cross to the east by either #### #### weiring over the UPRR or crossing at Sring Mountain Rd. #### #### Flows leaving the channel to north = 0, 860, 2080, 3580

8.66	12.84	2145.14	0.00	0.00	2145.49	0.35	5.69	0.00	2144.30
5880.	0.	5880.	0.	0.	1232.	0.	1.	0.	2144.30
0.00	0.00	4.77	0.00	0.025	0.025	0.025	0.000	2132.30	2000.00
0.000294	58.	58.	58.	2	0	2	0.00	96.00	2096.00

3
*SECNO 8.740

1645 INT SEC ADDED BY RAISING SEC 8.74, -3.750FT AND MULTIPLYING BY 0.743

3280 CROSS SECTION 1.01 EXTENDED 2.98 FEET

1.01	11.58	2145.13	0.00	0.00	2145.60	0.47	0.05	0.06	2162.55
7035.	0.	6876.	159.	0.	1241.	79.	5.	0.	2141.55
0.01	0.00	5.54	2.01	0.045	0.035	0.045	0.000	2133.55	1600.03
0.000808	113.	113.	113.	2	0	0	0.00	143.54	1743.58

6

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.250FT AND MULTIPLYING BY 1.115

3280 CROSS SECTION 1.02 EXTENDED 1.75 FEET

1.02	10.35	2145.15	0.00	0.00	2145.82	0.67	0.12	0.10	2163.80
8190.	0.	8077.	113.	0.	1220.	57.	8.	1.	2142.80
0.01	0.00	6.62	1.98	0.045	0.035	0.045	0.000	2134.80	1757.14
0.001327	113.	113.	113.	2	0	0	0.00	158.58	1915.72

9
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TCPWID ENDST

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.250FT AND MULTIPLYING BY 1.103

3280 CROSS SECTION 1.03 EXTENDED 0.54 FEET

3301 HV CHANGED MORE THAN HVINS

1.03	9.14	2145.19	0.00	0.00	2146.17	0.98	0.19	0.15	2165.05
9345.	0.	9300.	45.	0.	1169.	28.	11.	1.	2144.05
0.02	0.00	7.96	1.58	0.045	0.035	0.045	0.000	2136.05	1914.55
0.002255	113.	113.	113.	3	0	0	0.00	173.31	2087.86

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.250FT AND MULTIPLYING BY 1.094

3301 HV CHANGED MORE THAN HVINS

```
##############################################################
####                FLAMINGO ROAD OVERPASS                ####
####            Normal Ground Section Utilized            ####
##############################################################
####          Centerline =  2160                          ####
####  There is a 500-year overflow crossing the UPRR ard flows ####
####  south of Flamingo Wash.  Flows adjusted upstream based    ####
####  on results of split flow analysis for UPRR (UPRRI15_SPLIT)####
```

8.74	8.80	2145.30	0.00	0.00	2146.72	1.42	0.33	0.22	2166.30
10500.	0.	10500.	0.	0.	1099.	0.	14.	2.	2145.30
0.02	0.00	9.56	0.02	0.045	0.035	0.045	0.000	2137.30	2072.14
0.003890	113.	113.	113.	3	0	0	0.00	173.88	2246.02

CCHV= 0.100 CEHV= 0.300
*SECNO 8.940

1645 INT SEC ADDED BY RAISING SEC 8.94, -4.000FT AND MULTIPLYING BY 1.182

3265 DIVIDED FLOW

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SECNO DEPTH CWSEL CRIWS WSELK EG HV HL OLOSS BANK ELEV
Q QLOB QCH QROB ALOB ACH AROB VOL TWA LEFT/RIGHT
TIME VLOB VCH VROB XNL XNCH XNR WTN ELMIN SSTA
SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TCPWID ENDST

3301 HV CHANGED MORE THAN HVINS

1.01	8.38	2147.60	0.00	0.00	2147.88	0.28	1.05	0.11	2145.20
10500.	3663.	5712.	1125.	1185.	1116.	458.	30.	7.	2146.20
0.05	3.09	5.12	2.45	0.045	0.040	0.045	0.000	2139.30	2182.51
0.002309	343.	353.	452.	3	0	0	0.00	986.96	3306.74

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.000FT AND MULTIPLYING BY 0.954

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3301 HV CHANGED MORE THAN HVINS

1.02	7.30	2148.60	0.00	0.00	2149.36	0.75	1.33	0.14	2147.20
10500.	2900.	6955.	644.	708.	860.	199.	49.	14.	2148.20
0.06	4.10	8.09	3.24	0.045	0.040	0.045	0.000	2141.30	2189.74
0.006972	343.	353.	452.	3	0	0	0.00	804.17	3069.17

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.000FT AND MULTIPLYING BY 0.951

3265 DIVIDED FLOW

Centerline = 2610
VALLEY VIEW BOULEVARD not modeled. This is a swale xing
that is near grade at the channel and acually cuts into
channel banks or abutments. Xing is at mile 9.00

8.94	7.64	2150.94	0.00	0.00	2151.55	0.61	2.18	0.01	2149.20
10500.	3202.	6507.	791.	803.	882.	255.	64.	21.	2150.20
0.08	3.99	7.38	3.10	0.045	0.040	0.045	0.000	2143.30	2152.05
0.005372	343.	353.	452.	2	0	0	0.00	806.95	3133.00

*SECNO 9.180

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 9.18, -7.950FT AND MULTIPLYING BY 1.273

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	7.21	2153.16	2153.16	0.00	2156.08	2.92	2.47	0.69	2153.65
10500.	0.	10500.	0.	0.	766.	0.	74.	25.	2160.45
0.08	0.00	13.71	0.00	0.170	0.040	0.170	0.000	2145.95	2422.61
0.013302	310.	308.	293.	20	12	0	0.00	131.77	2554.38

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.650FT AND MULTIPLYING BY 0.928

3301 HV CHANGED MORE THAN HVINS

1.02	8.49	2157.09	2156.07	0.00	2159.32	2.23	3.17	0.07	2156.30
10500.	36.	10464.	0.	84.	871.	0.	80.	26.	2163.10
0.09	0.43	12.01	0.00	0.170	0.040	0.170	0.000	2148.60	2113.94
0.008245	310.	308.	293.	6	8	0	0.00	341.81	2455.75

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.650FT AND MULTIPLYING BY 0.923

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.03	8.32	2159.57	2159.35	0.00	2162.34	2.77	2.86	0.16	2158.95

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10500.	17.	10483.	0.	45.	789.	0.	56.	29.	2165.75
0.10	0.38	13.37	0.00	0.170	0.040	0.170	0.000	2151.25	2048.16
0.010549	310.	308.	293.	4	8	0	0.00	285.53	2353.19

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.650FT AND MULTIPLYING BY 0.917

####		Centerline = 2200						####	
9.18	8.80	2162.70	2162.50	0.00	2165.52	2.81	3.16	0.01	2161.60
10500.	88.	10412.	0.	131.	771.	1.	92.	31.	2168.40
0.10	0.67	13.51	0.00	0.170	0.040	0.170	0.000	2153.90	1945.19
0.010014	310.	308.	293.	4	8	0	0.00	306.92	2252.11

1490 NH CARD USED
*SECNO 9.432

1645 INT SEC ADDED BY RAISING SEC 9.43, -11.600FT AND MULTIPLYING BY 0.834

3301 HV CHANGED MORE THAN HVINS

1.01	7.87	2167.57	0.00	0.00	2168.21	0.64	2.48	0.22	2165.30
10500.	253.	6256.	3990.	80.	760.	3404.	118.	40.	2164.50
0.13	3.15	8.24	1.17	0.045	0.040	0.144	0.000	2159.70	2183.97
0.003602	438.	443.	427.	4	0	0	0.00	1507.78	3691.75

1645 INT SEC ADDED BY RAISING SEC 1.01, 5.800FT AND MULTIPLYING BY 1.099

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	7.01	2172.51	2172.51	0.00	2174.01	1.49	2.22	0.26	2171.10
10500.	176.	8186.	2137.	51.	738.	2511.	155.	55.	2170.30
0.14	3.48	11.09	0.85	0.045	0.040	0.236	0.000	2165.50	2209.03
0.007643	438.	443.	427.	20	14	0	0.00	1524.59	3733.62

1645 INT SEC ADDED BY RAISING SEC 1.02, 5.800FT AND MULTIPLYING BY 1.090

7185 MINIMUM SPECIFIC ENERGY

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
9.43	6.85	2178.15	2178.15	0.00	2179.56	1.41	3.29	0.01	2176.90
10500.	153.	8362.	1985.	48.	785.	2495.	188.	70.	2176.10

0.15	3.17	10.66	0.39	0.045	0.170	0.236	0.000	2171.30	2229.31
0.007328	438.	443.	427.	5	8	0	0.00	1634.60	3863.91

1490 NH CARD USED
*SECNO 9.620

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1873.0 3630.0 TYPE= 1 TARGET= 1760.000

####	Centerline = 2590						####	
9.62	7.10	2189.90	2189.90	2187.89	2190.83	0.93	7.54	0.05	2188.30
10500.	1067.	8294.	1133.	261.	970.	550.	247.	104.	2185.90
0.19	4.08	8.56	2.17	0.045	0.060	0.060	0.000	2182.80	2286.64
0.007527	985.	1020.	1005.	3	8	0	0.00	1340.90	3630.00

*SECNO 9.810

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 2196.80 ELREA= 2203.20

####	Centerline = 2670						####	
9.81	7.51	2199.61	2199.61	2197.55	2201.53	1.92	8.99	0.30	2196.80
10500.	2105.	8395.	0.	307.	702.	0.	278.	122.	2203.20
0.22	6.85	11.95	0.10	0.045	0.040	0.045	0.000	2192.10	2502.73
0.011694	950.	975.	950.	2	8	0	0.00	261.86	2764.59

1490 NH CARD USED
*SECNO 10.040

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9490.0 10150.0 TYPE= 1 TARGET= 660.000

####	Centerline = 10000						####	
####	CAMERON STREET not modeled. This is a swale xing						####	
####	that is near grade at the channel and acually cuts into						####	
####	channel banks or abutments. Xing is at mile 10.09						####	
####	Left bank ineffective flow at sta 9490.						####	
10.04	8.68	2221.68	2221.68	2219.87	2223.04	1.36	12.50	0.06	2220.00
10500.	3570.	6890.	40.	931.	615.	14.	313.	133.	2220.00
0.25	3.83	11.20	2.82	0.060	0.040	0.045	0.000	2213.00	9490.00
0.009274	1095.	1245.	1250.	2	11	0	0.00	586.81	10076.31

1490 NH CARD USED
*SECNO 10.130
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2283.0 3083.0 TYPE= 1 TARGET= 795.000

```
****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
****************************************************

TI          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2    500 YEAR FLOODPLAIN RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.       5.        3.        0.  0.000000      0.00      0.3       0.  2136.200      0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 4

CCHV=   0.100  CEHV=   0.300
*SECNO 8.641
3280 CROSS SECTION       8.64 EXTENDED      2.45 FEET

3720 CRITICAL DEPTH ASSUMED
          ####  Model starts at Union Pacific Railroad crossing.  Reach    ####
          ####  from Koval Lane to UPRR (through casino property and       ####
          ####  closed conduit) was modeled by COE in LVWFWBCL.  Starting  ####
          ####  WSEL's are taken from COE HEC2 run.                        ####
          ####            Centerline =  2060                               ####
     8.64     11.45  2143.05  2143.05  2136.20  2148.08      5.02      0.00      0.00  2140.60
 20200.        0.   20200.        0.        0.   1123.         3.         0.         0.  2140.60
     0.00      0.00    17.98      0.00     0.025    0.025     0.025     0.000  2131.60  2000.00
0.004751        3.       3.        3.        0       16         0      0.00    113.00  2113.00

CCHV=   0.300  CEHV=   0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                                                                   ####
```

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```
          ####                    UNION PACIFIC RAILROAD                    ####
          ####                    Special Bridge Routine                    ####
          ##########################################################################
      8.65    11.11   2143.11   2143.11      0.00   2148.68      5.57      0.05      0.28   2144.00
  20200.        5.   20200.        3.         0.      1066.        3.         0.         0.   2144.00
      0.00     0.00     18.94      0.33      0.025     0.025     0.025     0.000   2132.00   2000.00
  0.005409      10.      10.       10.          3         8         0      0.00     96.00   2096.00
)
 SPECIAL BRIDGE
 5227 DOWNSTREAM ELEV IS   2138.79 ,NOT   2143.11 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 SB  XK         XKOR       COFQ       ROLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.60       96.00      96.00      36.00      330.00      0.00    2132.30    2132.00

 *SECNO 8.660
 3280 CROSS SECTION      8.66 EXTENDED     12.51 FEET

 3301 HV CHANGED MORE THAN HVINS
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       H3        QWEIR       QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                        AREA
   2233.87    2161.96       0.00    12172.      8168.       330.       330.     2137.80    2144.60

          ####  All floods except the 25-year event will overflow along   ####
          ####  the UPRR to the north and cross to the east by either     ####
          ####  weiring over the UPRR or crossing at Sring Mountain Rd.   ####
          ####  Flows leaving the channel to north = 0, 860, 2080, 3580   ####
      8.66    24.50   2156.80      0.00      0.00   2157.95      1.14      9.27      0.00   2144.30
  20200.        0.   20200.        3.         0.      2353.        0.         3.         0.   2144.30
      0.00     0.00     8.59      0.00      0.025     0.025     0.025     0.000   2132.30   2000.00
  0.000508      58.      58.       53.          2         0         4      0.00     96.00   2096.00
)
 *SECNO 8.740
 1645 INT SEC ADDED BY RAISING SEC      8.74,  -3.750FT AND MULTIPLYING BY    0.704

 3265 DIVIDED FLOW
 3280 CROSS SECTION      1.01 EXTENDED     16.05 FEET

 3301 HV CHANGED MORE THAN HVINS

      1.01    24.65   2158.20      0.00      0.00   2158.29      0.08      0.02      0.32   2162.55
  22525.    13013.      8981.      631.      8847.     2756.      360.        21.        2.   2141.55
      0.02     1.47      3.22      1.75      0.045     0.035     0.045     0.000   2133.55    250.00
  0.000107      113.      113.      113.          2         0         0      0.00   1258.95   1664.43
)
1
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```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.250FT AND MULTIPLYING BY 1.140

3265 DIVIDED FLOW

3280 CROSS SECTION 1.02 EXTENDED 14.80 FEET

1.02	23.40	2158.20	0.00	0.00	2158.32	0.11	0.01	0.01	2163.80
24850.	13339.	10766.	745.	8523.	2961.	380.	82.	5.	2142.80
0.03	1.57	3.64	1.96	0.045	0.035	0.045	0.000	2134.80	250.00
0.000142	113.	113.	113.	2	0	0	0.00	1406.26	1862.96

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.250FT AND MULTIPLYING BY 1.123

3265 DIVIDED FLOW

3280 CROSS SECTION 1.03 EXTENDED 13.55 FEET

1.03	22.15	2158.20	0.00	0.00	2158.35	0.15	0.02	0.02	2165.05
27175.	13332.	12972.	871.	7864.	3124.	352.	82.	9.	2144.05
0.04	1.70	4.15	2.22	0.045	0.035	0.045	0.000	2136.05	291.65
0.000195	113.	113.	113.	2	0	0	0.00	1504.68	2061.48

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.250FT AND MULTIPLYING BY 1.110

3265 DIVIDED FLOW

3280 CROSS SECTION 8.74 EXTENDED 12.30 FEET

```
          ##########################################################################
          ####                  FLAMINGO ROAD OVERPASS                          ####
          ####              Normal Ground Section Utilized                      ####
          ##########################################################################
          ####              Centerline =  2160                                  ####
          ####  There is a 500-year overflow crossing the UPRR and flows        ####
          ####  south of Flamingo Wash.  Flows adjusted upstream based          ####
```

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```
          ####  on results of split flow analysis for UPRR (UPRRI15_SPLIT)####
```

8.74	20.90	2158.20	0.00	0.00	2158.41	0.21	0.03	0.03	2166.30
29500.	12972.	15524.	1004.	6981.	3245.	396.	110.	13.	2145.30
0.05	1.86	4.78	2.54	0.045	0.035	0.045	0.000	2137.30	401.64
0.000275	113.	113.	113.	2	0	0	0.00	1527.46	2260.00

CCHV= 0.100 CEHV= 0.300

*SECNO 8.940

```
          ####              Centerline =  2610                                  ####
          ####  VALLEY VIEW BOULEVARD not modeled.  This is a swale xing        ####
          ####  that is near grade at the channel and acually cuts into         ####
          ####  channel banks or abutments.  Xing is at mile 9.00               ####
```

8.94	15.35	2158.65	0.00	0.00	2158.79	0.14	0.37	0.01	2149.20
34800.	15426.	10187.	9187.	5723.	2689.	3585.	395.	53.	2150.20
0.15	2.70	3.79	2.56	0.045	0.040	0.045	0.000	2143.30	1698.43

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```
 0.000421     1030.     1060.     1355.        5          0          0        0.00   1642.64   3341.07
 0
 *SECNO 9.180

 1645 INT SEC ADDED BY RAISING SEC      9.18,  -7.950FT AND MULTIPLYING BY   1.424

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.01     14.12   2160.07   2160.07      0.00   2161.51      1.44      0.34      0.39   2153.65
     34800.     9298.    23677.     1825.     4753.     2037.     1839.      467.        69.    2160.45
       0.16      1.96     11.62      0.99     0.170     0.040     0.170     0.000   2145.95   1243.32
  0.007641      310.      308.      293.        20        13         0      0.00   2959.91   4796.19
 0

 1645 INT SEC ADDED BY RAISING SEC      1.01,   2.650FT AND MULTIPLYING BY   0.901

 3265 DIVIDED FLOW

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.02     14.41   2163.01   2163.11      0.00   2164.43      1.42      2.47      0.00   2156.30
     34800.     9903.    22566.     2331.     4627.     1917.     2026.      527.        89.    2163.10
       0.17      2.14     11.77      1.15     0.170     0.040     0.170     0.000   2148.60   1224.69
  0.008460      310.      308.      293.        20         5         0      0.00   2884.21   4436.52
 0
 1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 1645 INT SEC ADDED BY RAISING SEC      1.02,   2.650FT AND MULTIPLYING BY   0.890

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.03     14.44   2165.69   2165.69      0.00   2167.44      1.75      2.90      0.10   2158.95
     34800.     9968.    22447.     2385.     4149.     1713.     1839.      584.       108.    2165.75
       0.18      2.40     13.10      1.30     0.170     0.040     0.170     0.000   2151.25   1213.59
  0.010583      310.      308.      293.         0         5         0      0.00   2589.54   4072.55
 0

 1645 INT SEC ADDED BY RAISING SEC      1.03,   2.650FT AND MULTIPLYING BY   0.876

          ####              Centerline =  2200                              ####
      9.18     15.00   2168.90   2168.71      0.00   2170.54      1.64      3.10      0.01   2161.60
     34800.    10253.    21293.     3254.     4167.     1635.     2299.      639.       126.    2168.40
       0.19      2.46     13.03      1.42     0.170     0.040     0.170     0.000   2153.90   1191.99
  0.009630      310.      308.      293.         5         9         0      0.00   2522.58   3714.58
```

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1490 NH CARD USED
*SECNO 9.430

1645 INT SEC ADDED BY RAISING SEC 9.43, -13.050FT AND MULTIPLYING BY 0.936

3280 CROSS SECTION 1.01 EXTENDED 3.43 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	13.13	2171.38	0.00	0.00	2172.22	0.84	1.59	0.08	2163.85
34825.	5213.	15453.	14159.	1061.	1457.	13780.	730.	144.	2163.05
0.21	4.91	10.60	1.13	0.045	0.040	0.291	0.000	2158.25	2000.00
0.002918	329.	333.	320.	2	0	0	0.00	2339.87	4339.87

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.350FT AND MULTIPLYING BY 1.023

3280 CROSS SECTION 1.02 EXTENDED 0.86 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	10.56	2173.16	2173.16	0.00	2175.42	2.26	1.54	0.43	2168.20
34850.	2547.	19114.	13189.	415.	1187.	8908.	829.	161.	2167.40
0.21	6.14	16.10	1.48	0.045	0.040	0.266	0.000	2162.60	2000.00
0.008795	329.	333.	320.	20	15	0	0.00	2393.25	4393.25

1645 INT SEC ADDED BY RAISING SEC 1.02, 4.350FT AND MULTIPLYING BY 1.022

3280 CROSS SECTION 1.03 EXTENDED 0.78 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	10.48	2177.43	2177.43	0.00	2179.67	2.24	2.87	0.00	2172.55
34875.	2475.	19254.	13146.	405.	1205.	8960.	907.	179.	2171.75
0.22	6.11	15.97	1.47	0.045	0.040	0.265	0.000	2166.95	2000.00
0.008736	329.	333.	320.	20	5	0	0.00	2446.63	4446.63

1645 INT SEC ADDED BY RAISING SEC 1.03, 4.350FT AND MULTIPLYING BY 1.022

3280 CROSS SECTION 9.43 EXTENDED 0.67 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2300

9.43	10.37	2181.67	2181.67	0.00	2183.90	2.23	2.88	0.00	2176.90
34900.	2522.	19331.	13046.	383.	1217.	8911.	985.	197.	2176.10
0.23	6.59	15.88	1.46	0.042	0.040	0.264	0.000	2171.30	2000.00
0.008863	329.	333.	320.	20	5	0	0.00	2500.00	4500.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 9.620

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

####		Centerline = 2590						####	
9.62	9.19	2191.99	0.00	2187.89	2193.43	1.44	9.45	0.08	2188.30
35000.	5563.	17266.	12170.	803.	1384.	2515.	1160.	244.	2185.90
0.26	6.93	12.48	4.84	0.045	0.060	0.060	0.000	2182.80	2102.37
0.009890	985.	1020.	1005.	4	0	0	0.00	1527.63	3630.00

*SECNO 9.810

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2670						####	
9.81	12.18	2204.28	2204.28	2197.55	2205.99	1.71	7.58	0.08	2196.80
35000.	10500.	17893.	6605.	1395.	1366.	1222.	1256.	275.	2203.20
0.29	7.53	13.10	5.41	0.045	0.040	0.045	0.000	2192.10	1584.50
0.006415	950.	975.	950.	3	14	0	0.00	1374.77	3318.45

1490 NH CARD USED
*SECNO 10.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9490.0 10150.0 TYPE= 1 TARGET= 660.000

####		Centerline = 10000						####	
#### CAMERON STREET not modeled. This is a swale xing								####	
#### that is near grade at the channel and acually cuts into								####	
#### channel banks or abutments. Xing is at mile 11.09								####	
#### Left bank ineffective flow at sta 9490.									
10.04	11.96	2224.96	2224.96	2219.87	2227.24	2.28	9.48	0.17	2220.00
35000.	18502.	15671.	823.	2440.	976.	124.	1357.	302.	2220.00
0.32	7.58	16.06	6.56	0.060	0.040	0.045	0.000	2213.00	9490.00
0.010294	1095.	1245.	1251.	20	6	0	0.00	622.02	10112.02

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 10.130

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2283.0 3083.0 TYPE= 1 TARGET= 795.000
####
Centerline = 2530
Left bank ineffective flow at sta 2288.

10.13	13.53	2230.73	2230.73	2224.30	2234.37	3.64	4.49	0.41	2224.40
35000.	13891.	19441.	1668.	1443.	1042.	173.	1385.	306.	2225.60
0.33	9.62	18.66	9.53	0.060	0.040	0.045	0.000	2217.20	2288.00
0.011346	350.	470.	500.	20	8	0	0.00	339.53	2627.53

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH SECOND RE

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	8.641	0.00	0.00	0.00	2131.60	4100.00	2135.94	2135.94	2137.90	59.75	11.24	364.81	530.43
*	8.641	0.00	0.00	0.00	2131.60	5340.00	2136.71	2136.71	2139.01	57.58	12.17	438.81	703.72
*	8.641	0.00	0.00	0.00	2131.60	5880.00	2137.04	2137.04	2139.47	56.48	12.50	470.49	782.38
*	8.641	0.00	0.00	0.00	2131.60	20200.00	2143.05	2143.05	2148.08	47.51	17.98	1123.37	2930.70
	8.650	10.00	0.00	0.00	2132.00	4100.00	2137.12	0.00	2138.20	25.58	8.34	491.32	810.70
	8.650	10.00	0.00	0.00	2132.00	5340.00	2138.02	0.00	2139.34	25.79	9.24	578.16	1051.42
	8.650	10.00	0.00	0.00	2132.00	5880.00	2138.36	0.00	2139.80	26.20	9.62	611.25	1148.75
*	8.650	10.00	0.00	0.00	2132.00	20200.00	2143.11	2143.11	2148.68	54.09	18.94	1066.27	2746.46
*	8.660	58.00	2144.60	2137.80	2132.30	4100.00	2140.43	0.00	2140.86	5.89	5.25	780.38	1689.67
*	8.660	58.00	2144.60	2137.80	2132.30	5340.00	2144.01	0.00	2144.36	3.21	4.75	1124.41	2980.28
*	8.660	58.00	2144.60	2137.80	2132.30	5880.00	2145.14	0.00	2145.49	2.94	4.77	1232.25	3428.86
*	8.660	58.00	2144.60	2137.80	2132.30	20200.00	2156.80	0.00	2157.95	5.08	8.59	2352.69	8962.90
*	8.740	450.00	0.00	0.00	2137.30	4100.00	2141.41	0.00	2142.41	66.52	8.01	512.00	502.68
*	8.740	450.00	0.00	0.00	2137.30	7000.00	2144.28	0.00	2145.14	28.17	7.45	939.77	1318.83
*	8.740	450.00	0.00	0.00	2137.30	10500.00	2145.30	0.00	2146.72	38.90	9.56	1098.65	1683.51
*	8.740	450.00	0.00	0.00	2137.30	29500.00	2158.20	0.00	2158.41	2.75	4.78	10621.51	17782.34
*	8.940	1060.00	0.00	0.00	2143.30	4100.00	2149.30	0.00	2149.87	61.70	6.36	809.08	521.96
*	8.940	1060.00	0.00	0.00	2143.30	7000.00	2150.31	0.00	2150.81	48.70	6.49	1458.12	1003.10
*	8.940	1060.00	0.00	0.00	2143.30	10500.00	2150.94	0.00	2151.55	53.72	7.38	1939.57	1432.61
	8.940	1060.00	0.00	0.00	2143.30	34800.00	2158.65	0.00	2158.79	4.21	3.79	11996.92	16959.92
*	9.180	1230.00	0.00	0.00	2153.90	4100.00	2159.37	0.00	2160.79	92.23	9.57	428.27	426.92
*	9.180	1230.00	0.00	0.00	2153.90	7000.00	2161.11	0.00	2163.21	97.22	11.64	601.29	709.95
*	9.180	1230.00	0.00	0.00	2153.90	10500.00	2162.70	2162.50	2165.52	100.14	13.51	901.64	1049.25
*	9.180	1230.00	0.00	0.00	2153.90	34800.00	2168.90	2168.71	2170.54	96.30	13.03	8100.40	3546.28

	9.430	1330.00	0.00	0.00	2171.30	4100.00	2174.98	2174.95	2176.63	157.94	10.32	397.21	326.24
•	9.430	1330.00	0.00	0.00	2171.30	7000.00	2177.02	2177.02	2178.30	76.35	9.62	1677.51	801.09
*	9.430	1330.00	0.00	0.00	2171.30	10500.00	2178.15	2178.15	2179.56	73.28	10.66	3327.93	1226.58
•	9.430	1330.00	0.00	0.00	2171.30	34900.00	2181.67	2181.67	2183.90	88.63	15.88	10510.44	3707.20

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	9.620	1020.00	0.00	0.00	2182.80	4100.00	2187.89	0.00	2188.59	89.35	6.84	635.22	433.75
•	9.620	1020.00	0.00	0.00	2182.80	7000.00	2188.41	2188.41	2189.75	158.50	9.69	786.90	556.02
*	9.620	1020.00	0.00	0.00	2182.80	10500.00	2189.90	2189.90	2190.83	75.27	8.56	1781.35	1210.24
	9.620	1020.00	0.00	0.00	2182.80	35000.00	2191.99	0.00	2193.43	98.90	12.48	4700.81	3519.35
	9.810	975.00	0.00	0.00	2192.10	4100.00	2197.55	2197.52	2198.73	119.10	8.97	585.47	375.69
	9.810	975.00	0.00	0.00	2192.10	7000.00	2199.10	0.00	2200.24	77.36	9.15	878.90	795.87
*	9.810	975.00	0.00	0.00	2192.10	10500.00	2199.61	2199.61	2201.53	116.94	11.95	1009.88	970.96
•	9.810	975.00	0.00	0.00	2192.10	35000.00	2204.28	2204.28	2205.99	64.15	13.10	3983.19	4369.98
•	10.040	1245.00	0.00	0.00	2213.00	4100.00	2219.87	2219.87	2221.07	101.23	9.11	582.99	407.50
•	10.040	1245.00	0.00	0.00	2213.00	7000.00	2221.14	2221.14	2222.13	71.68	9.20	1242.94	826.80
•	10.040	1245.00	0.00	0.00	2213.00	10500.00	2221.68	2221.68	2223.04	92.74	11.20	1560.51	1090.33
*	10.040	1245.00	0.00	0.00	2213.00	35000.00	2224.96	2224.96	2227.24	102.94	16.06	3540.38	3449.68
	10.130	470.00	0.00	0.00	2217.20	4100.00	2224.30	2224.16	2225.51	91.62	9.19	563.91	428.34
*	10.130	470.00	0.00	0.00	2217.20	7000.00	2225.43	2225.43	2226.91	93.96	10.74	901.84	722.14
*	10.130	470.00	0.00	0.00	2217.20	10500.00	2226.37	2226.37	2228.21	101.53	12.41	1203.52	1042.05
*	10.130	470.00	0.00	0.00	2217.20	35000.00	2230.73	2230.73	2234.37	113.46	18.66	2658.61	3285.88

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FLAMINGO WASH SECOND RE

SUMMARY PRINTOUT TABLE 159

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	8.641	4100.00	2135.94	0.00	0.00	5.84	93.30	0.00
*	8.641	5340.00	2136.71	0.78	0.00	6.01	96.59	0.00
*	8.641	5880.00	2137.04	0.33	0.00	5.94	97.97	0.00
*	8.641	20200.00	2143.05	6.01	0.00	6.85	113.00	0.00
	8.650	4100.00	2137.12	0.00	1.18	0.00	96.00	10.00
	8.650	5340.00	2138.02	0.90	1.30	0.00	96.00	10.00
	8.650	5880.00	2138.36	0.34	1.32	0.00	96.00	10.00
*	8.650	20200.00	2143.11	4.74	0.05	0.00	96.00	10.00
*	8.660	4100.00	2140.43	0.00	3.31	0.00	96.00	58.00
*	8.660	5340.00	2144.01	3.58	5.99	0.00	96.00	58.00
*	8.660	5880.00	2145.14	1.12	6.77	0.00	96.00	58.00
*	8.660	20200.00	2156.80	11.67	13.70	0.00	96.00	58.00
*	8.740	4100.00	2141.41	0.00	0.47	0.00	144.48	450.00
*	8.740	7000.00	2144.28	2.87	0.21	0.00	153.61	450.00
*	8.740	10500.00	2145.30	1.02	0.11	0.00	173.88	450.00
*	8.740	29500.00	2156.20	12.90	-0.01	0.00	1527.46	450.00
*	8.940	4100.00	2149.30	0.00	3.76	0.00	571.44	1060.00
*	8.940	7000.00	2150.31	1.00	3.59	0.00	727.08	1060.00
*	8.940	10500.00	2150.94	0.63	2.33	0.00	806.95	1060.00
	8.940	34800.00	2158.65	7.71	0.45	0.00	1642.64	1060.00
*	9.180	4100.00	2159.37	0.00	2.79	0.00	95.51	1230.00

*	9.180	7000.00	2161.11	1.74	3.02	0.00	183.47	1230.00
*	9.180	10500.00	2162.70	1.59	3.13	0.01	306.92	1230.00
*	9.180	34800.00	2168.90	6.20	3.21	0.01	2522.58	1230.00
	9.430	4100.00	2174.98	0.00	15.60	0.00	119.10	1330.00
*	9.430	7000.00	2177.02	2.05	5.72	0.00	1226.96	1330.00
*	9.430	10500.00	2178.15	1.13	5.64	0.00	1634.60	1330.00
*	9.430	34900.00	2181.67	3.52	4.23	0.00	2500.00	1330.00
	9.620	4100.00	2187.89	0.00	12.92	0.00	252.19	1020.00
*	9.620	7000.00	2188.41	0.52	11.39	0.52	340.80	1020.00
*	9.620	10500.00	2189.90	1.49	11.75	2.01	1340.90	1020.00
	9.620	35000.00	2191.99	2.09	10.33	4.10	1527.63	1020.00
	9.810	4100.00	2197.55	0.00	9.66	0.00	229.41	975.00
	9.810	7000.00	2199.10	1.55	10.69	1.55	253.00	975.00
*	9.810	10500.00	2199.61	0.51	9.71	2.05	261.86	975.00
*	9.810	35000.00	2204.28	4.67	12.29	6.73	1374.77	975.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	10.040	4100.00	2219.87	0.00	22.33	0.00	370.03	1245.00
*	10.040	7000.00	2221.14	1.26	22.04	1.26	581.38	1245.00
*	10.040	10500.00	2221.68	0.54	22.07	1.81	586.81	1245.00
*	10.040	35000.00	2224.96	3.28	20.68	5.09	622.02	1245.00
	10.130	4100.00	2224.30	0.00	4.42	0.00	285.23	470.00
*	10.130	7000.00	2225.43	1.14	4.30	1.14	298.82	470.00
*	10.130	10500.00	2226.37	0.94	4.69	2.07	328.03	470.00
*	10.130	35000.00	2230.73	4.36	5.77	6.43	339.53	470.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 8.641 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 8.650 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.650 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 8.660 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 8.740 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 8.940 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.940 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.940 PROFILE= 3 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 9.180 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 9.180 PROFILE= 2 INTERPOLATED XSECTIONS USED

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 CAUTION  SECNO=     9.180  PROFILE= 3  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.180  PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=     9.430  PROFILE= 2  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.430  PROFILE= 3  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.430  PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=     9.620  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.620  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     9.620  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.620  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     9.810  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.810  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     9.810  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.810  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    10.040  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040  PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    10.040  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
1
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 CAUTION  SECNO=    10.130  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

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 **************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **************************************************



 EOF..
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      36
   8.641 ####  Model starts at Union Pacific Railroad crossing.  Reach    ####
   8.641 ####  from Koval Lane to UPRR (through casino property and       ####
   8.641 ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting  ####
   8.641 ####  WSEL's are taken from COE HEC2 run.                        ####
   8.641 ####            Centerline =  2060                               ####
    8.65 ##################################################################
    8.65 ####                UNION PACIFIC RAILROAD                      ####
    8.65 ####                Special Bridge Routine                      ####
    8.65 ##################################################################
    8.66 ####  All floods except the 25-year event will overflow along    ####
    8.66 ####  the UPRR to the north and cross to the east by either      ####
    8.66 ####  weiring over the UPRR or crossing at Sring Mountain Rd.    ####
    8.66 ####  Flows leaving the channel to north = 0, 860, 2080, 3580    ####
    8.74 ##################################################################
    8.74 ####                FLAMINGO ROAD OVERPASS                      ####
    8.74 ####             Normal Ground Section Utilized                 ####
    8.74 ##################################################################
    8.74 ####            Centerline =  2160                               ####
    8.74 ####  There is a 500-year overflow crossing the UPRR and flows   ####
    8.74 ####  south of Flamingo Wash.  Flows adjusted upstream based     ####
    8.74 ####  on results of split flow analysis for UPRR (UPRRI15_SPLIT) ####
    8.94 ####            Centerline =  2610                               ####
    8.94 ####  VALLEY VIEW BOULEVARD not modeled.  This is a swale xing   ####
    8.94 ####  that is near grade at the channel and acually cuts into    ####
    8.94 ####  channel banks or abutments.  Xing is at mile 9.00          ####
    9.18 ####            Centerline =  2200                               ####
    9.43 ####            Centerline =  2300                               ####
    9.62 ####            Centerline =  2590                               ####
    9.81 ####            Centerline =  2670                               ####
   10.04 ####            Centerline = 10000                               ####
   10.04 ####  CAMERON STREET not modeled.  This is a swale xing          ####
   10.04 ####  that is near grade at the channel and acually cuts into    ####
   10.04 ####  channel banks or abutments.  Xing is at mile 10.09         ####
   10.04 ####  Left bank ineffective flow at sta 9490.
   10.13 ####            Centerline =  2530                               ####
   10.13 ####  Left bank ineffective flow at sta 2288.
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY      25-YEAR EVENT
T3       FLAMINGO WASH  SECOND REACH (Decater to I-15)   DMH 10/26/87
J1           2                                    .3          2130.1
J2     1          -1
NC   .025     .025     .025      .1       .3
QT       4     4100     5340     5880    20200
X1 8.641       4        2000     2113        3        3        3
GR2140.6     2000   2131.6     2014   2131.6     2089   2140.6     2113
NC                              .3       .5
X1   8.65       4        2000     2096       10       10       10
GR   2144    2000     2132     2000     2132     2096     2144     2096
SB   1.25    1.56      2.6       96       96       36      330          2132.3     2132
X1   8.66                               58       58       58               .3
X2                        1   2137.8   2144.6
NC   .045     .045     .035
QT       4     4100     7000    10500    29500
X1   8.74       12     2041     2229      450      450      450
X4       2  2140.0     2080   2140.0     2220
GR   2160      250   2153.1      830     2152      920     2149     1250     2152     1550
GR2168.2     2000   2166.3     2041   2137.3     2111   2137.3     2202   2145.3     2229
GR2145.3     2246   2145.9     2260
NC   .045     .045      .04       .1       .3
QT       4     4100     7000    10500    34800
X1   8.94       34     2551     2750     1030     1355     1060
GR   2160     1630     2160     1630     2160     1630     2160     1630     2160     1630
```

Reach 2

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```
GR2152.7     2000     2152.6     2100     2151.5     2154     2149.5     2158     2148.2     2325
GR2149.2     2551     2147.9     2581     2143.3     2623     2143.3     2649     2144.6     2669
GR2149.7     2674     2152.1     2683     2151.5     2721     2147.7     2739     2146.0     2751
GR2145.6     2767     2150.2     2790     2149.5     2821     2148.3     2840     2150.9     2869
GR2149.7     2953     2148.3     2972     2148.8     2989     2150.9     3001     2153.2     3092
GR2150.9     3132     2153.7     3210     2157.2     3310     2160       3370     2160.0     3700
NC   .170    .170      .040
K1   9.18      20     2144       2382     1240       1170     1230
GR   2172     1130     2168       1210     2164       1600     2164       1730     2165       1820
GR2161.7     2000     2162.3     2103     2151.5     2144     2156.2     2157     2153.9     2185
GR2153.9     2233     2166.8     2261     2168.4     2382     2167.3     2514     2168.5     2544
GR2168.2     2567     2168.9     2635     2168       2880     2165       3670     2172       3750
QT       4   4100     7000      10500     34900
NH       4   .045     2272       .040     2395       .170     3700          5     4500
K1   9.43      19     2272       2395     1315       1280     1330
GR2181.5     2000     2181.2     2124     2179.8     2215     2176.8     2241     2176.9     2272
GR2172.8     2276     2171.3     2289     2171.3     2357     2172.2     2388     2176.1     2395
GR2176.5     2470     2177.6     2587     2177.4     2709     2175       2930     2177       3260
GR   2175    3360     2180.5     4240     2180       4490     2181       4580
QT       4   4100     7000      10500     35000
ET           9.1       9.1        9.1       9.1                                   1870       3630
NH       4   .045     2493       .04      2652        .06     3630       .090     5330
K1   9.62      33     2493       2691      985       1005     1020
GR   2194    1870     2194       1870     2194       1870     2194       1870     2194       1870
GR2193.8     2000     2191.4     2136     2191.6     2179     2191.5     2255     2190.0     2280
GR2189.6     2307     2189.0     2335     2188.5     2372     2190.0     2388     2187.9     2418
GR2186.3     2426     2186.3     2432     2188.1     2444     2188.3     2493     2186.3     2558
GR2184.4     2577     2184.4     2591     2182.8     2607     2182.8     2652     2185.9     2691
GR2187.4     2717     2189.3     2782     2189.5     3027     2189.5     3630     2185       4520
GR   2188    5020     2192       5240     2195       5330
NC   .045    .045      .04
K1   9.81      32     2529       2775      950        950      975
K3     10
GR   2208    1380     2204       1600     2204       1740     2207       1800     2207       1950
GR2206.0     2000     2204.0     2122     2203.5     2199     2203.2     2344     2203.4     2411
GR2202.0     2468     2198.9     2513     2196.4     2543     2196.4     2581     2197.4     2595
GR2196.8     2629     2192.1     2653     2192.1     2678     2193.3     2706     2196.6     2724
GR2196.3     2755     2203.2     2775     2202.6     2903     2202.6     3014     2201.6     3061
GR2199.2     3097     2200.1     3140     2199.3     3192     2201.8     3224     2203.8     3266
GR   2204    3310     2208       3430
ET           6.1       6.1        6.1       6.1      9490      10150
NH       4   0.06     9490       .060     9950       .040     10060       .045    10150
K1  10.04      12     9550      10060     1095       1250      1245
GR   2228    8180     2224       8240     2220       8880     2218.6     9490     2220.5     9880
GR   2220    9950     2216       9970     2213      10000     2216      10030     2220      10060
GR   2224   10100     2228      10150
ET           6.1       6.1        6.1       6.1      2288      3083
NH       4   0.06     2288       .060     2489       .040     2587        .045     3083
K1  10.13      23     2489       2587      350        500      470
GR   2236    1150     2232       1180     2228       1350     2228       1350     2224       1860
GR2221.7     2000     2220.9     2097     2224.5     2111     2224.4     2288     2222.7     2373
GR2224.4     2489     2221.3     2504     2221.3     2521     2218.8     2547     2217.2     2569
GR2217.2     2578     2225.6     2587     2225.6     2614     2234.7     2638     2237.0     2796
GR2237.8     2947     2240.3     2959     2241.0     3083
EJ
T1           LAS VEGAS WASH OVERFLOW STUDY
T2           James M. Montgomery Consulting Engineers, Inc.
T3           Flamingo Wash  REACH 2  50 YEAR FLOODPLAIN RUN
J1             3                                        .3          2130.7
J2     2              -1
T1           LAS VEGAS WASH OVERFLOW STUDY
T2           James M. Montgomery Consulting Engineers, Inc.
T3           Flamingo Wash  REACH 2   100 YEAR FLOODPAIN RUN
J1             4                                        .3          2131.1
J2     3              -1
T1           LAS VEGAS WASH OVERFLOW STUDY
T2           James M. Montgomery Consulting Engineers, Inc.
T3           Flamingo Wash  REACH 2    500 YEAR FLOODPLAIN RUN
```

```
J1          3                .5          2136.2
J2     15              -1
```

```
ER
EOF..
```

```
     36
  8.641 ####  Model starts at Union Pacific Railroad crossing.  Reach    ####
  8.641 ####  from Koval Lane to UPRR (through casino property and       ####
  8.641 ####  closed conduit) was modeled by COE in LVWFWBOL.  Starting  ####
  8.641 ####  WSEL's are taken from COE HEC2 run.                        ####
  8.641 ####            Centerline = 2060                                ####
   8.65 ##########################################################################
   8.65 ####                  UNION PACIFIC RAILROAD                     ####
   8.65 ####                  Special Bridge Routine                     ####
   8.65 ##########################################################################
   8.66 ####  All floods except the 25-year event will overflow along    ####
   8.66 ####  the UPRR to the north and cross to the east by either      ####
   8.66 ####  weiring over the UPRR or crossing at Spring Mountain Rd.   ####
   8.66 ####  Flows leaving the channel to north = 0, 860, 2080, 3580    ####
   8.74 ##########################################################################
   8.74 ####                  FLAMINGO ROAD OVERPASS                     ####
   8.74 ####             Normal Ground Section Utilized                  ####
   8.74 ##########################################################################
   8.74 ####                  Centerline = 2150                          ####
   8.74 ####  There is a 500-year overflow crossing the UPRR and flows   ####
   8.74 ####  south of Flamingo Wash.  Flows adjusted upstream based     ####
   8.74 ####  on results of split flow analysis for UPRR (UPRR115_SPLIT) ####
   8.94 ####                  Centerline = 2610                          ####
   8.94 ####  VALLEY VIEW BOULEVARD not modeled.  This is a swale xing   ####
   8.94 ####  that is near grade at the channel and acually cuts into    ####
   8.94 ####  channel banks or abutments.  Xing is at mile 9.00          ####
   9.18 ####            Centerline = 2200                                ####
   9.43 ####            Centerline = 2300                                ####
   9.62 ####            Centerline = 2590                                ####
   9.81 ####            Centerline = 2670                                ####
  10.04 ####            Centerline = 10000                               ####
  10.04 ####  CAMERON STREET not modeled.  This is a swale xing          ####
  10.04 ####  that is near grade at the channel and acually cuts into    ####
  10.04 ####  channel banks or abutments.  Xing is at mile 10.09         ####
  10.04 ####  Left bank ineffective flow at sta 9490.
  10.13 ####            Centerline = 2530                                ####
  10.13 ####  Left bank ineffective flow at sta 2288.
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY      25-YEAR EVENT
T3       FLAMINGO WASH  SECOND REACH (Decater to I-15)   DMH 10/6/87
J1             2                                    .3          2130.1
J2       1            -1
NC   .025    .025     .025      .1       .3
QT       4    4100     5340     5890    20200
X1  8.641       4     2000     2113        3         3
GR2140.6    2000  2131.6     2014   2131.6     2089  2140.6     2113
NC                              .3       .5
X1   8.65       4     2000     2096       10        10        10
GR   2144    2000     2132     2000     2132      2096      2144      2096
SB   1.25    1.56      2.6       96       96        36       330            2132.3      2132
X1   8.66                                 58        58        58                .3
X2                        1  2137.8   2144.6
NC   .045    .045     .035
QT       4    4100     7000    10500    29500
X1   8.74      12     2041     2229      450       450       450
X4       2 2140.0     2080   2140.0     2220
GR   2160     250  2153.1      830     2152       920      2149      1250      2152      1550
GR2168.2    2000  2166.3     2041   2137.3      2111  2137.3      2202  2145.3      2229
GR2145.3    2246  2145.9     2260
NC   .045    .045      .04       .1       .3
QT       4    4100     7000    10500    34800
X1   8.94      34     2551     2790     1030      1355      1060
GR   2160    1630     2160     1630     2160      1630      2160      1630      2160      1630
```

Branch A 1125

Sec 8.641 to 10.13

```
GR2152.7    2000    2152.8    2100    2151.5    2134    2149.5    2198    2148.2    2325
GR2149.2    2551    2147.9    2581    2143.3    2623    2143.3    2649    2144.6    2669
GR2149.7    2674    2152.1    2683    2151.5    2721    2147.7    2739    2146.0    2751
GR2145.6    2767    2150.2    2750    2149.5    2821    2148.3    2840    2150.9    2869
GR2149.7    2953    2148.3    2972    2146.8    2989    2150.9    3001    2153.2    3092
GR2150.9    3132    2153.7    3210    2157.2    3310    2160      3370    2160.0    3700
NC   .170    .170     .040
X1   9.18      20    2144    2382    1240    1170    1230
GR   2172    1130    2168    1210    2164    1600    2164    1730    2165    1820
GR2161.7    2000    2162.3    2103    2151.6    2144    2156.2    2157    2153.5    2185
GR2153.9    2233    2166.8    2261    2158.4    2382    2167.3    2514    2168.5    2544
GR2168.2    2567    2168.9    2635    2168      2880    2165      3670    2172      3750
QT       4  4100    7000   10500   34900
NH       4  .045    2272     .040    2395    .170    3700       5    4500
X1   9.43      19    2272    2395    1315    1280    1330
GR2181.5    2000    2181.2    2124    2179.8    2215    2176.8    2241    2176.9    2272
GR2172.8    2276    2171.3    2289    2171.3    2357    2172.2    2388    2176.1    2395
GR2176.5    2470    2177.6    2587    2177.4    2709    2175      2930    2177      3260
GR   2175    3360    2180.5    4240    2180      4490    2181      4500
QT       4  4100    7000   10500   35000
ET          9.1       9.1       9.1       9.1                         1870      3630
NH       4  .045    2493     .04     2652    .06     3630    .090     5330
X1   9.62      33    2493    2691     985    1005    1020
GR   2194    1870    2194    1870    2194    1870    2194    1870    2194    1870
GR2193.8    2000    2191.4    2135    2191.6    2179    2191.5    2255    2190.0    2280
GR2189.6    2307    2189.0    2335    2188.5    2372    2190.0    2388    2187.9    2418
GR2186.3    2426    2186.3    2432    2188.1    2444    2188.3    2493    2186.3    2558
GR2184.4    2577    2184.4    2591    2182.8    2607    2182.8    2652    2185.9    2691
GR2187.4    2717    2189.3    2782    2189.5    3027    2189.5    3630      2185    4520
GR   2188    5020      2192    5240      2195    5330
NC   .045    .045      .04
X1   9.81      32      2629    2775     950     950     975
X3     10
GR   2208    1380      2204    1600      2204    1740    2207    1800      2207    1950
GR2206.0    2000    2204.0    2122    2203.5    2199    2203.2    2344    2203.4    2411
GR2202.0    2468    2198.9    2513    2196.4    2543    2196.4    2581    2197.4    2595
GR2196.8    2629    2192.1    2653    2192.1    2678    2193.3    2706    2196.6    2724
GR2196.3    2755    2203.2    2775    2202.6    2903    2202.6    3014    2201.6    3061
GR2199.2    3097    2200.1    3140    2199.8    3192    2201.8    3224    2203.8    3266
GR   2204    3310      2208    3430
ET          6.1       6.1       6.1       6.1    9490    10150
NH       4  0.06    9490     .060    9950    .040    10060    .045    10150
X1  10.04      12    9950   10069     1095    1250    1245
GR   2228    8180      2224    8240      2220    8880    2218.6    9490    2220.5    9880
GR   2220    9950      2216    9970      2213   10000      2216   10030      2220   10060
GR   2224   10100      2228   10150
ET          6.1       6.1       6.1       6.1    2288    3083
NH       4  0.06      2288     .060    2489    .040    2587    .045    3083
X1  10.13      23    2489    2587     350     500     470
GR   2236    1150      2232    1180      2228    1350    2228    1350      2224    1860
GR2221.7    2000    2220.9    2097    2224.5    2111    2224.4    2288    2222.7    2373
GR2224.4    2489    2221.3    2504    2221.3    2521    2218.8    2547    2217.2    2569
GR2217.2    2578    2225.6    2587    2225.6    2614    2234.7    2638    2237.0    2796
GR2237.8    2947    2240.3    2959    2241.0    3083
EJ
T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2  50 YEAR FLOODPLAIN RUN
J1             3                                    .3          2130.7
J2       2              -1
T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2   100 YEAR FLOODPAIN RUN
J1             4                                    .3          2131.1
J2       3              -1
T1          LAS VEGAS WASH OVERFLOW STUDY
T2          James M. Montgomery Consulting Engineers, Inc.
T3          Flamingo Wash  REACH 2    500 YEAR FLOODPLAIN RUN
```

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J1
J2    15          5          -1                    .3          2136.2
```

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ER
EOF..
```

```
1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   00:39:08          *
*************************************************
```


```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER*
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
```


Reach 2

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1
27-APR-88 00:39:08 PAGE 1

```
*************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
*************************************************
```

```
C
I1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY      25-YEAR EVENT
T3      FLAMINGO WASH  SECOND REACH (DECATER TO I-15)   DMH 10/6/87

J1  ICHECK     INQ      NINV      IDIR      SIRI      METRIC     HVINS      Q          WSEL      FQ
          0.        2.        0.        0.  0.000000      0.00       0.3        0.  2130.100     0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.025     0.025     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT      4.000  4100.000  5340.000  5880.000 20200.000     0.000     0.000     0.000     0.000     0.000
         ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
         ####  FROM KOVAL LANE TO UPRR (THROUGH CASINO PROPERTY AND      ####
         ####  CLOSED CONDUIT) WAS MODELED BY COE IN LVWFLBCL.  STARTING ####
         ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                       ####
         ####          CENTERLINE =  2060                                ####
X1      8.641     4.000  2000.000  2113.000     3.000     3.000     3.000     0.000     0.000     0.000
GR   2140.600  2000.000  2131.600  2014.000  2131.600  2089.000  2140.600  2113.000     0.000     0.000

NC      0.000     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
         ##########################################################################
         ####                  UNION PACIFIC RAILROAD                          ####
         ####                  SPECIAL BRIDGE ROUTINE                          ####
         ##########################################################################
X1      8.650     4.000  2000.000  2096.000    10.000    10.000    10.000     0.000     0.000     0.000
```

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```
GR   2144.000   2000.000   2132.000   2000.000   2132.000   2096.000   2144.000   2096.000      0.000      0.000
SB       1.250      1.560      2.600     96.000     96.000     36.000    330.000      0.000   2132.300   2132.000
         ####  ALL FLOWS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG  ####
         ####  THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER   ####
         ####  WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.####
         ####  FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3560 ####
X1       6.660      0.000      0.000      0.000     58.000     58.000     58.000      0.000      0.300      0.000
X2       0.000      0.000      1.000   2137.800   2144.600      0.000      0.000      0.000      0.000      0.000

NC       0.045      0.045      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GT       4.000   4100.000   7000.000  10500.000  29500.000      0.000      0.000      0.000      0.000      0.000
1
 27-APR-88     00:39:08                                                                                  PAGE     2


         ##########################################################################
         ####                  FLAMINGO ROAD OVERPASS                          ####
         ####              NORMAL GROUND SECTION UTILIZED                      ####
         ##############################################################        ####
         ####                  CENTERLINE =  2160                              ####
         ####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS        ####
         ####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED          ####
         ####  ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR15_SPLIT)       ####
X1       8.740     12.000   2041.000   2229.000    450.000    450.000    450.000      0.000      0.000      0.000
X4       2.000   2140.000   2080.000   2140.000   2220.000      0.000      0.000      0.000      0.000      0.000
GR    2160.000    250.000   2153.100    830.000   2152.000    920.000   2145.000   1250.000   2152.000   1550.000
GR    2166.200   2000.000   2166.300   2041.000   2137.300   2111.000   2137.300   2202.000   2145.300   2229.000
GR    2145.300   2246.000   2145.900   2260.000      0.000      0.000      0.000      0.000      0.000      0.000

NC       0.045      0.045      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
GT       4.000   4100.000   7000.000  10500.000  34800.000      0.000      0.000      0.000      0.000      0.000
         ####                  CENTERLINE =  2610                              ####
         ####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SWALE XING         ####
         ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO          ####
         ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00                ####
X1       8.940     34.000   2551.000   2790.000   1030.000   1355.000   1060.000      0.000      0.000      0.000
GR    2160.000   1630.000   2160.000   1630.000   2160.000   1630.000   2160.000   1630.000   2160.000   1630.000
GR    2152.700   2000.000   2152.800   2100.000   2151.500   2134.000   2149.500   2198.000   2148.200   2325.000
GR    2149.200   2551.000   2147.900   2581.000   2143.300   2623.000   2143.300   2649.000   2144.600   2669.000
GR    2149.700   2674.000   2152.100   2683.000   2151.500   2721.000   2147.700   2739.000   2146.000   2751.000
GR    2145.600   2767.000   2150.200   2790.000   2149.500   2821.000   2148.300   2840.000   2150.900   2869.000
GR    2149.700   2953.000   2148.300   2972.000   2148.800   2989.000   2150.900   3001.000   2152.200   3092.000
GR    2150.900   3132.000   2153.700   3210.000   2157.200   3310.000   2160.000   3370.000   2160.000   3700.000

NC       0.170      0.170      0.040      0.000      0.000      0.000      0.000      0.000      0.000      0.000
         ####                  CENTERLINE =  2200                              ####
X1       9.180     20.000   2144.000   2382.000   1240.000   1170.000   1230.000      0.000      0.000      0.000
GR    2172.000   1130.000   2168.000   1210.000   2164.000   1600.000   2164.000   1730.000   2165.000   1820.000
GR    2161.700   2000.000   2162.300   2103.000   2161.600   2144.000   2156.200   2157.000   2153.900   2185.000
GR    2153.900   2233.000   2166.800   2261.000   2168.400   2382.000   2167.300   2514.000   2168.500   2544.000
GR    2168.200   2567.000   2168.900   2635.000   2168.000   2880.000   2165.000   3670.000   2172.000   3750.000

GT       4.000   4100.000   7000.000  10500.000  34900.000      0.000      0.000      0.000      0.000      0.000
NH       4.000      0.045   2272.000      0.040   2395.000      0.170   3700.000      5.000   4500.000      0.000
         ####                  CENTERLINE =  2300                              ####
X1       9.430     19.000   2272.300   2395.000   1315.000   1280.000   1330.000      0.000      0.000      0.000
GR    2181.500   2000.000   2181.200   2124.000   2179.800   2215.000   2178.800   2241.000   2176.900   2272.000
GR    2172.600   2276.000   2171.300   2289.000   2171.300   2357.000   2172.200   2388.000   2176.100   2395.000
GR    2176.500   2470.000   2177.600   2587.000   2177.400   2709.000   2175.000   2930.000   2177.000   3260.000
GR    2175.000   3360.000   2180.500   4240.000   2180.000   4490.000   2181.000   4500.000      0.000      0.000

GT       4.000   4100.000   7000.000  10500.000  35000.000      0.000      0.000      0.000      0.000      0.000
ET       0.000      9.100      9.100      9.100      9.100      0.000      0.000      0.000   1870.000   3630.000
NH       4.000      0.045   2493.000      0.040   2652.000      0.060   3630.000      0.050   5330.000      0.000
1
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          ####                CENTERLINE =   2590                                                ####
X1          9.620          33.000        2493.000        2691.000         985.000        1005.000        1020.000           0.000           0.000           0.000
GR       2194.000        1870.000        2194.000        1870.000        2194.000        1870.000        2194.000        1870.000        2154.000        1870.000
GR       2193.800        2000.000        2191.400        2136.000        2191.600        2179.000        2191.500        2255.000        2190.600        2280.000
GR       2189.600        2307.000        2189.000        2335.000        2188.500        2372.000        2190.000        2388.000        2187.900        2418.000
GR       2186.300        2426.000        2186.300        2432.000        2188.100        2444.000        2188.300        2493.000        2186.300        2558.000
GR       2184.400        2577.000        2184.400        2591.000        2182.800        2607.000        2182.800        2652.000        2185.900        2691.000
GR       2187.400        2717.000        2189.300        2782.000        2189.500        3827.000        2189.500        3630.000        2185.000        4520.000
GR       2188.000        5020.000        2192.000        5240.000        2195.000        5330.000           0.000           0.000           0.000           0.000

NC          0.045           0.045           0.040           0.000           0.000           0.000           0.000           0.000           0.000           0.000
          ####                CENTERLINE =   2670                                                ####
X1          9.810          32.000        2629.000        2775.000         950.000         950.000         975.000           0.000           0.000           0.000
X3         10.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000
GR       2208.000        1380.000        2204.000        1600.000        2204.000        1740.000        2207.000        1800.000        2207.000        1950.000
GR       2206.000        2000.000        2204.000        2122.000        2203.500        2199.000        2203.200        2344.000        2203.400        2411.000
GR       2202.000        2468.000        2198.900        2513.000        2196.400        2543.000        2196.400        2581.000        2197.400        2595.000
GR       2196.800        2629.000        2192.100        2653.000        2192.100        2678.000        2193.300        2706.000        2196.600        2724.000
GR       2196.300        2755.000        2203.200        2775.000        2202.600        2903.000        2202.600        3014.000        2201.600        3061.000
GR       2199.200        3097.000        2200.100        3140.000        2199.800        3192.000        2201.800        3224.000        2203.800        3266.000
GR       2204.000        3310.000        2208.000        3430.000           0.000           0.000           0.000           0.000           0.000           0.000

ET          0.000           6.100           6.100           6.100           6.100        9490.000       10150.000           0.000           0.000           0.000
NH          4.000           0.060        9490.000           0.060        9950.000           0.040       10060.000           0.045       10150.000           0.000
          ####                CENTERLINE =   9490.                                               ####
          ####  CAMERON STREET NOT MODELED.  THIS IS A SWALE XING                                 ####
          ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO                           ####
          ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09                                ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.
X1         10.040          12.000        9950.000       10060.000       10095.000        1250.000        1245.000           0.000           0.000           0.000
GR       2228.000        8180.000        2224.000        8240.000        2220.000        8880.000        2218.600        9490.000        2220.500        9880.000
GR       2220.000        9950.000        2216.000        9970.000        2213.000       10000.000        2216.000       10030.000        2220.000       10060.000
GR       2224.000       10100.000        2228.000       10150.000           0.000           0.000           0.000           0.000           0.000           0.000

ET          0.000           6.100           6.100           6.100           6.100        2288.000        3083.000           0.000           0.000           0.000
NH          4.000           0.060        2288.000           0.060        2489.000           0.040        2587.000           0.045        3083.000           0.000
          ####                CENTERLINE =   2530                                               ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
X1         10.130          23.000        2489.000        2587.000         350.000         500.000         470.000           0.000           0.000           0.000
GR       2236.000        1150.000        2232.000        1180.000        2228.000        1350.000        2228.000        1350.000        2224.000        1860.000
GR       2221.700        2000.000        2220.900        2097.000        2224.500        2111.000        2224.400        2288.000        2222.700        2373.000
GR       2224.400        2489.000        2221.300        2504.000        2221.300        2521.000        2218.800        2547.000        2217.200        2569.000
GR       2217.200        2578.000        2225.600        2587.000        2225.600        2614.000        2224.700        2638.000        2237.000        2796.000
GR       2237.800        2947.000        2240.300        2959.000        2241.000        3083.000           0.000           0.000           0.000           0.000
EJ          0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000
1
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    SECNO       DEPTH      CWSEL      CRIWS      WSELK      EG         HV         BL         CLOSS    BANK ELEV
    Q           QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        I&A    LEFT/RIGHT
    TIME        VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE       XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

*PROF 1

CCHV=   0.100  CEHV=   0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
          ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH                          ####
          ####  FROM KOWAL LANE TO UPRR (THROUGH CASING PROPERTY AND                             ####
          ####  CLOSED CONDUIT) WAS MODELED BY COE IN LWWFWBOL.  STARTING                        ####
          ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                                              ####
          ####                CENTERLINE =   2060                                               ####
      8.64          4.34     2135.94     2135.94     2130.10     2137.90        1.96        0.00           0.00     2140.60
    4100.             0.        4100.           0.          0.         365.          0.          0.           0.        2140.60
```

```
      0.00        0.00       11.24        0.00       0.025       0.025       0.025       0.000    2131.60    2007.26
  0.005975          3.          3.          3.           0          14           0        0.00      93.30    2100.56
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 8.650

 3301 HV CHANGED MORE THAN HVINS

            ##########################################################################
            ####                    UNION PACIFIC RAILROAD                        ####
            ####                    SPECIAL BRIDGE ROUTINE                        ####
            ##########################################################################
      8.65        5.12    2137.12        0.00       0.00    2138.20        1.08        0.04        0.26    2144.00
      4100.          5.      4100.          0.         0.      491.          0.          0.          0.      2144.00
      0.00        0.00        8.34        0.00       0.025       0.025       0.025       0.000    2132.00    2000.00
  0.002558          10.         10.         10.           5           0           0        0.00      56.00    2096.00
0

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS    2134.35 ,NOT    2137.12 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.56        2.60       96.00       96.00       36.00      330.00        0.00     2132.30     2132.00

 *SECNO 8.660
  PRESS FLOW BECAUSE EGLWC OF    2141.03  EXCEEDS 1.5 DEPTH

 3301 HV CHANGED MORE THAN HVINS

1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS    BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        ARCH       WOL        IWA      LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST

 PRESSURE FLOW

  EGPRS      EGLWC       H3        QWEIR      QPR        EAREA    TRAPEZOID      ELLC       ELTRD
                                                                     AREA
   2140.86    2141.03        0.00          0.      4100.       330.       330.     2137.80    2144.60

            ####  ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG    ####
            ####  THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER      ####
            ####  WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.   ####
            ####  FLOWS LEAVING THE CHANNEL TO NORTH = 0., 860., 2080., 3580.  ####
      8.66        8.13    2140.43        0.00       0.00    2140.86        0.43        2.66        0.00    2144.30
      4100.          0.      4100.          0.         0.      780.          0.          1.          0.      2144.30
      0.00        0.00        5.25        0.00       0.025       0.025       0.025       0.000    2132.30    2000.00
  0.000589          58.         58.         58.           2           0           0        0.00      56.00    2096.00
0
 *SECNO 8.740

 1645 INT SEC ADDED BY RAISING SEC      8.74,  -3.750FT AND MULTIPLYING BY    0.773

      1.01        6.95    2140.50        0.00       0.00    2141.00        0.50        0.10        0.04    2162.55
      4100.          0.      4100.          0.         0.      723.          0.          3.          0.      2141.55
      0.01        0.00        5.67        0.00       0.045       0.035       0.045       0.000    2133.55    1660.27
  0.001665         113.        113.        113.           3           0           0        0.00     118.71    1778.97
0

 1645 INT SEC ADDED BY RAISING SEC      1.01,   1.250FT AND MULTIPLYING BY    1.058
```

1.02	5.87	2140.67	0.00	0.00	2141.28	0.61	0.23	0.05	2163.80
4100.	0.	4100.	0.	0.	656.	0.	5.	1.	2142.80
0.01	0.10	6.26	0.00	0.045	0.035	0.045	0.000	2134.80	1799.44
0.002515	113.	113.	113.	3	0	0	0.00	127.40	1926.83

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.250FT AND MULTIPLYING BY 1.089

1.03	4.89	2140.94	0.00	0.00	2141.72	0.78	0.36	0.09	2165.05
4100.	0.	4100.	0.	0.	578.	0.	6.	1.	2144.05
0.02	0.00	7.09	0.00	0.045	0.035	0.045	0.000	2136.05	1938.71
0.004107	113.	113.	113.	3	0	0	0.00	135.85	2074.57

0
1

SECNO	DEPTH	CHSEL	CRIWS	HSELK	EG	HV	HL	CLCSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	I&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.250FT AND MULTIPLYING BY 1.082

```
##########################################################################
####                  FLAMINGO ROAD OVERPASS                          ####
####            NORMAL GROUND SECTION UTILIZED                        ####
##########################################################################
####              CENTERLINE =  2160                                  ####
####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS        ####
####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED          ####
####  ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRRI15_SPLIT)      ####
```

8.74	4.11	2141.41	0.00	0.00	2142.41	1.00	0.58	0.11	2166.30
4100.	0.	4100.	0.	0.	512.	0.	8.	1.	2145.30
0.02	0.00	8.01	0.00	0.045	0.035	0.045	0.000	2137.30	2077.91
0.006652	113.	113.	113.	3	0	0	0.00	144.48	2222.39

0

CCHV= 0.10 CEHV= 0.300
*SECNO 8.940

1645 INT SEC ADDED BY RAISING SEC 8.94, -3.000FT AND MULTIPLYING BY 1.359

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.01	5.24	2145.54	0.00	0.00	2146.22	0.68	3.78	0.03	2146.20
4100.	23.	4075.	2.	25.	613.	3.	15.	5.	2147.20
0.04	0.89	6.65	0.70	0.045	0.040	0.045	0.000	2140.30	2529.18
0.007682	515.	530.	678.	3	0	0	0.00	382.20	3464.51

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.000FT AND MULTIPLYING BY 0.736

3265 DIVIDED FLOW

```
####              CENTERLINE =  2610                                  ####
####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SMALE XING        ####
####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO         ####
```

1

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          ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00          ####
      8.94      6.00   2149.33      0.00      0.00   2149.87      0.57      3.64      0.01   2149.20
    4100.       358.     3680.       62.       197.     578.       34.       24.       11.    2150.20
      0.07      1.82      6.36      1.82     0.045     0.040     0.045     0.000   2143.30   2216.98
 0.006170       515.      530.       678.         3         0         0      0.00    571.44   2991.89
0
 *SECNO 9.180

 1645 INT SEC ADDED BY RAISING SEC      9.18,  -7.950FT AND MULTIPLYING BY    1.154

 3301 HV CHANGED MORE THAN HVINS

      1.01      5.12   2151.07      0.00      0.00   2152.33      1.26      2.25      0.21   2153.65
    4100.         0.     4100.       0.        0.     456.        0.       28.       13.    2160.45
      0.08      0.00      9.00      0.00     0.170     0.040     0.170     0.000   2145.95   2307.38
 0.008806       310.      308.       293.         2         0         0      0.00    108.36   2415.74
0
 1645 INT SEC ADDED BY RAISING SEC      1.01,   2.650FT AND MULTIPLYING BY    0.956

      1.02      5.19   2153.79      0.00      0.00   2155.12      1.33      2.77      0.02   2156.30
    4100.         1.     4100.       0.        0.     442.        0.       31.       14.    2163.10
      0.09      0.00      9.27      0.00     0.170     0.040     0.170     0.000   2148.60   2254.81
 0.009203       310.      308.       293.         2         0         0      0.00    103.88   2358.69
0
 1645 INT SEC ADDED BY RAISING SEC      1.02,   2.650FT AND MULTIPLYING BY    0.953

      1.03      5.33   2156.58      0.00      0.00   2157.95      1.37      2.82      0.01   2158.95
    4100.         3.     4100.       0.        0.     436.        0.       34.       14.    2165.75
      0.10      0.00      9.40      0.00     0.170     0.040     0.170     0.000   2151.25   2202.06
 0.009154       310.      308.       293.         2         0         0      0.00     99.75   2301.81
0
 1645 INT SEC ADDED BY RAISING SEC      1.03,   2.650FT AND MULTIPLYING BY    0.951

          ####              CENTERLINE =  2200                              ####
      9.18      5.47   2159.37      0.00      0.00   2160.79      1.42      2.83      0.02   2161.60
    4100.         3.     4100.       0.        0.     428.        0.       37.       15.    2168.40
      0.11      0.00      9.57      0.00     0.170     0.040     0.170     0.000   2153.50   2149.36
 0.009223       310.      308.       293.         2         0         0      0.00     95.51   2244.88
0
1
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    SECNO      DEPTH     CHSEL     CRIWS     *SELK     EG        HV        HL        CLOSS     BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TCPHID      ENDST

 1490 NH CARD USED
 *SECNO 9.430
          ####              CENTERLINE =  2300                              ####
      9.43      3.68   2174.98   2174.95      0.00   2176.63      1.65     15.77      0.07   2176.90
    4100.         3.     4100.       0.        0.     397.        0.       50.       18.    2176.10
      0.14      0.00     10.32      0.00     0.045     0.040     0.170     0.000   2171.30   2273.88
 0.015794      1315.     1330.      1280.         7        18         0      0.00    115.10   2392.98
0
 1490 NH CARD USED
 *SECNO 9.620

 3265 DIVIDED FLOW
```

```
3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=    1870.0    3620.0  TYPE=      1  TARGET=     1760.000
        ####          CENTERLINE =  2590                          ####
        9.62      5.19  2187.89      0.00      0.00  2188.59      0.70     11.87      0.10  2188.30
      4100.       80.     3929.       91.       24.     574.      36.       62.       23.  2185.90
        0.18      3.28      6.84      2.50     0.045    0.060    0.060     0.000  2182.80  2418.04
    0.008935      985.     1020.     1005.         4        0        0      0.00   252.19  2733.85
0
*SECNO 9.810

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2196.80 ELREA=     2203.20
        ####          CENTERLINE =  2670                          ####
        9.81      5.45  2197.55  2197.52      0.00  2198.73      1.18      9.99      0.14  2196.80
      4100.      249.     3851.       0.       76.     430.       0.       75.       28.  2203.20
        0.22      3.28      8.97      0.00     0.045    0.040    0.045     0.000  2192.10  2529.21
    0.011910      950.     975.      950.         6        8        0      0.00   229.41  2758.62
0
1490 NH CARD USED
*SECNO 10.040

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    9490.0   10150.0  TYPE=      1  TARGET=      660.000
        ####          CENTERLINE = 10000                          ####
        ####  CAMERON STREET NOT MODELED.  THIS IS A SWALE XING     ####
        ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO   ####
        ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09        ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.
       10.04      6.87  2219.87  2219.87      0.00  2221.07      1.20     13.54      0.00  2220.00
      4100.      307.     3793.       0.      167.     416.       0.       90.       36.  2220.00
        0.26      1.84      9.11      0.00     0.060    0.040    0.045     0.000  2213.00  9490.00
    0.010123     1095.     1245.     1250.         2       11        0      0.00   370.03 10059.06
0
1490 NH CARD USED
*SECNO 10.130

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=    2288.0    3083.0  TYPE=      1  TARGET=      795.000
        ####          CENTERLINE =  2530                          ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
       10.13      7.10  2224.30  2224.16      0.00  2225.51      1.22      4.44      0.01  2224.40
      4100.      309.     3791.       0.      151.     413.       0.       96.       39.  2225.60
        0.27      2.04      9.19      0.00     0.060    0.040    0.045     0.000  2217.20  2293.03
    0.009162      350.     470.      500.         4        5        0      0.00   285.23  2585.61
0
1
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  31,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH  REACH 2  50 YEAR FLOOD PLAIN RUN

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         3.         0.         0.   0.000000       0.00       0.3         0.   2130.700       0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
      2.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTA        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


*PROF 2

CCHV=   0.100 CEHV=    0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
            ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
            ####  FROM KOVAL LANE TO UPRR (THROUGH CASING PROPERTY AND       ####
            ####  CLOSED CONDUIT) WAS MODELED BY COE IN LVWFWBOL.  STARTING ####
            ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                        ####
            ####              CENTERLINE =  2960                             ####
      8.64       5.11  2135.71  2136.71  2130.70  2139.01       2.30       0.00          0.00  2140.60
      5340.         0.     5340.        0.       0.      439.       0.         0.          0.    2140.60
      0.00       0.00     12.17       0.00     0.025    0.025     0.025      0.000    2131.60  2006.04
  0.005758          3.        3.         3.         0       17         0       0.00      96.99  2102.64
0
CCHV=   0.300 CEHV=    0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

            ##################################################################
            ####                    UNION PACIFIC RAILROAD                  ####
            ####                    SPECIAL BRIDGE ROUTINE                  ####
            ##################################################################
      8.65       6.02  2138.02     0.00       0.00  2139.34       1.32       0.04          0.29  2144.00
      5340.         0.     5340.        0.       0.      578.       0.         0.          0.    2144.00
      0.00       0.00      9.24       0.00     0.025    0.025     0.025      0.000    2132.00  2000.00
  0.002579         10.       10.        10.         5        0         0       0.00      96.00  2096.00
E

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2134.80 ,NOT   2139.02 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFG       RDLEN      BWC        EWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.60      96.00      96.00      36.00     330.00       0.00    2132.30    2132.00
```

*SECNO 8.660

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CHSEL	CRIWS	%SELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	WOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2144.36	2142.71	0.00	0.	5340.	330.	330.	2137.80	2144.60

ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG
THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER
WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.
FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3560

8.66	11.71	2144.01	0.00	0.00	2144.36	0.35	5.02	0.00	2144.30
5340.	0.	5340.	0.	0.	1124.	0.	1.	0.	2144.30
0.00	0.00	4.75	0.00	0.025	0.025	0.025	0.000	2132.30	2000.00
0.000321	58.	58.	58.	2	0	0	0.00	96.00	2096.00

0
*SECNO 8.740

1645 INT SEC ADDED BY RAISING SEC 8.74, -2.500FT AND MULTIPLYING BY 0.832

328(CROSS SECTION 1.01 EXTENDED 0.67 FEET

1.01	9.27	2144.07	0.00	0.00	2144.56	0.50	0.13	0.07	2163.80
6170.	0.	6135.	35.	0.	1081.	29.	7.	1.	2142.80
0.01	0.00	6.68	1.20	0.045	0.035	0.045	0.000	2134.80	1765.32
0.001133	225.	225.	225.	3	0	0	0.00	157.95	1923.27

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.500FT AND MULTIPLYING BY 1.201

3301 HV CHANGED MORE THAN HVINS

FLAMINGO ROAD OVERPASS
NORMAL GROUND SECTION UTILIZED
CENTERLINE = 2160
THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS
SOUTH OF FLAMINGO WASH. FLOWS ADJUSTED UPSTREAM BASED

ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRRI15_SPLIT)

8.74	6.98	2144.28	0.00	0.00	2145.14	0.86	0.39	0.18	2166.30
7000.	0.	7000.	0.	0.	940.	0.	12.	2.	2145.30
0.02	0.00	7.45	0.00	0.045	0.035	0.045	0.000	2137.30	2073.66
0.002817	225.	225.	225.	3	0	0	0.00	153.61	2227.26

0
CCHV= 0.10(CEHV= 0.300
*SECNO 8.940

1645 INT SEC ADDED BY RAISING SEC 8.94, -3.000FT AND MULTIPLYING BY 1.122

3265 DIVIDED FLOW

1.01	6.42	2146.72	0.00	0.00	2147.51	0.78	2.36	0.01	2146.20
7000.	1123.	5685.	192.	386.	733.	72.	25.	7.	2147.20
0.04	2.91	7.75	2.56	0.045	0.040	0.045	0.000	2140.38	2259.04
0.008027	515.	530.	678.	3	0	0	0.00	706.38	3160.45

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 3.000FT AND MULTIPLYING BY 0.851

3265 DIVIDED FLOW

CENTERLINE = 2610
VALLEY VIEW BOULEVARD NOT MODELED. THIS IS A SWALE XING
THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO
CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 9.08

8.94	7.01	2150.31	0.00	0.00	2150.81	0.50	3.28	0.03	2149.20
7000.	1711.	4946.	343.	559.	761.	138.	42.	16.	2150.20
0.07	3.06	6.49	2.49	0.045	0.040	0.045	0.000	2143.30	2172.14
0.004870	515.	530.	678.	3	0	0	0.00	727.08	2997.62

0

*SECNO 9.180

1645 INT SEC ADDED BY RAISING SEC 9.18, -7.950FT AND MULTIPLYING BY 1.234

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	5.77	2151.72	2151.72	0.00	2154.11	2.39	2.39	0.57	2153.65
7000.	0.	7000.	0.	0.	564.	0.	49.	19.	2160.45
0.06	0.00	12.41	0.00	0.170	0.040	0.170	0.000	2145.95	2386.71
0.014353	310.	308.	293.	4	15	0	0.00	119.54	2506.25

0
1

SECNO	DEPTH	CHSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.650FT AND MULTIPLYING BY 0.937

3301 HV CHANGED MORE THAN HVINS

1.02	7.10	2155.79	0.00	0.00	2157.34	1.64	3.15	0.08	2156.30
7000.	0.	7000.	0.	0.	681.	0.	53.	20.	2163.10
0.09	0.00	10.28	0.00	0.170	0.040	0.170	0.000	2148.60	2303.68
0.007660	310.	308.	293.	3	0	0	0.00	118.99	2422.66

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.650FT AND MULTIPLYING BY 0.933

3301 HV CHANGED MORE THAN HVINS

1.03	6.84	2158.09	0.00	0.00	2160.15	2.06	2.69	0.13	2158.95
7000.	0.	7000.	0.	0.	607.	0.	58.	21.	2165.75

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SECNO	DEPTH	CHSEL	CRIWS	ASELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	ICPAID	ENDST

0.09 0.00 11.52 0.00 0.170 0.040 0.170 0.000 2151.25 2225.22
0.010102 310. 308. 293. 2 0 0 0.00 109.72 2334.94

0

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.650FT AND MULTIPLYING BY 0.928

CENTERLINE = 2200

9.18 7.21 2161.11 0.00 0.00 2163.21 2.10 3.05 0.01 2161.60
7000. 0. 7000. 0. 0. 601. 0. 62. 21. 2168.40
0.10 0.00 11.64 0.00 0.170 0.040 0.170 0.000 2153.50 2145.18
0.009722 310. 308. 293. 2 0 0 0.00 103.47 2248.65

0

1490 NH CARD USED
*SECNO 9.430

1645 INT SEC ADDED BY RAISING SEC 9.43, -11.600FT AND MULTIPLYING BY 0.572

3265 DIVIDED FLOW

1

3301 HV CHANGED MORE THAN HVINS

1.01 5.94 2165.64 2165.57 0.00 2166.79 1.15 3.48 0.10 2165.30
7000. 17. 6047. 936. 12. 653. 1221. 74. 28. 2164.50
0.12 1.37 9.26 0.77 0.045 0.040 0.170 0.000 2159.70 2230.51
0.006498 438. 443. 427. 4 12 0 0.00 1266.47 3668.44

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 5.600FT AND MULTIPLYING BY 1.015

3265 DIVIDED FLOW

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
1.02 5.80 2171.30 2171.30 0.00 2172.54 1.24 3.03 0.03 2171.10
7000. 9. 6152. 839. 8. 647. 1055. 92. 40. 2170.30
0.13 1.11 9.52 0.77 0.045 0.040 0.170 0.000 2165.50 2234.99
0.007266 438. 443. 427. 20 10 0 0.00 1237.80 3672.27

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 5.800FT AND MULTIPLYING BY 1.014

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2300

9.43 5.72 2177.02 2177.02 0.00 2178.30 1.28 3.29 0.01 2176.90
7000. 5. 6218. 777. 6. 646. 1026. 110. 53. 2176.10
0.15 0.89 9.62 0.76 0.045 0.170 0.170 0.000 2171.30 2239.06
0.007635 438. 443. 427. 3 8 0 0.00 1226.56 3683.87

0

1490 NH CARD USED
*SECNO 9.620

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 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
     &          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        ANCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


 3470 ENCROACHMENT STATIONS=     1870.0     3630.0  TYPE=       1  TARGET=     1760.000
          ####                CENTERLINE =   2590                              ####
        9.62       5.61   2188.41   2188.41   2187.89   2189.79       1.38      10.84       0.03   2188.30
      7000.        224.      6534.      242.       50.       674.        63.       138.        71.    2185.90
        0.18       4.50       9.69      3.83     0.045     0.060      0.060     0.000    2182.80    2410.72
   0.015850        985.      1020.      1005.         3         5          0      0.00     340.80    2751.53
0
 *SECNO 9.810

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2196.80 ELREA=     2203.20

          ####                CENTERLINE =   2670                              ####
        9.81       7.00   2199.10      0.00   2197.55   2200.24       1.14      10.42       0.02   2196.80
      7000.        1203.      5797.        0.       245.       634.        0.       157.        77.    2203.20
        0.21       4.91       9.15      0.00     0.045     0.040      0.045     0.000    2192.10    2510.11
   0.007736        950.       975.       950.         5         0          0      0.00     283.00    2763.11
0
 1490 NH CARD USED
 *SECNO 10.040
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     9490.0    10150.0  TYPE=       1  TARGET=      660.000
          ####                CENTERLINE = 10000                               ####
          ####  CAMERON STREET NOT MODELED.  THIS IS A SWALE XING              ####
          ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO        ####
          ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09             ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.
       10.04       8.14   2221.14   2221.14   2219.87   2222.13       0.99       9.02       0.01   2220.00
      7000.        1882.      5108.       12.       681.       555.        6.       185.        88.    2220.00
        0.25       2.76       9.20      1.91     0.060     0.040      0.045     0.000    2213.00    9490.00
   0.007168        1095.      1245.      1250.        20         5          0      0.00     581.38   10071.38
0
 1490 NH CARD USED
 *SECNO 10.130
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
     &          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        ANCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


 3470 ENCROACHMENT STATIONS=     2288.0     3083.0  TYPE=       1  TARGET=      795.000
          ####                CENTERLINE =   2530                              ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
       10.13       8.23   2225.43   2225.43   2224.30   2226.91       1.48       3.61       0.15   2224.40
      7000.        1383.      5617.        0.       375.       522.        0.       196.        92.    2225.60
        0.27       3.65      10.74      0.00     0.060     0.040      0.045     0.000    2217.20    2288.00
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0.009396      350.      470.      500.         3         5         0      0.00    298.82   2586.82
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**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH  REACH 2   100 YEAR FLOODPAIN RUN

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
              0.        4.        3.        0.  0.000000      0.00      0.2        0.  2131.100      0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       3.000     0.000    -1.000     0.300     0.300     0.000     0.100     0.000     0.000     0.000
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VCL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     ICPWID       ENDST

*PROF 3

CCHV=   0.100  CEHV=   0.300
*SECNO 8.641
3720 CRITICAL DEPTH ASSUMED
          ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
          ####  FROM KOVAL LANE TO UPRR (THROUGH CASING PROPERTY AND       ####
          ####  CLOSED CONDUIT) WAS MODELED BY COE IN LVWFWBOL.  STARTING ####
          ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                       ####
          ####              CENTERLINE =  2060                            ####
      8.64       5.44  2137.04   2137.04   2131.10   2139.47      2.43      0.00      0.00   2140.60
    5880.          0.     5880.        0.        0.       470.       0.        0.        0.   2140.60
      0.00       0.00     12.50      0.00     0.025     0.025     0.025     0.000  2131.60   2005.54
 0.005648          3.        3.        3.                  17         0      0.00     97.97   2103.51
0
CCHV=   0.300  CEHV=   0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                  UNION PACIFIC RAILROAD                          ####
          ####                  SPECIAL BRIDGE ROUTINE                          ####
          ##########################################################################
      8.65       6.36  2138.36      0.00      0.00   2139.80      1.44      0.04      0.30   2144.00
    5880.          0.     5880.        0.        0.       611.       0.        0.        0.   2144.00
      0.00       0.00      9.62      0.00     0.025     0.025     0.025     0.000  2132.00   2000.00
 0.002620         10.       10.       10.         5         0         0      0.00     96.00   2096.00
0
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2134.98 ,NOT 2138.36 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.60	96.00	96.00	36.00	330.00	0.00	2132.30	2132.00

*SECNO 8.660
3280 CROSS SECTION 8.66 EXTENDED 0.84 FEET

3301 HV CHANGED MORE THAN HVINS

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2146.05	2143.40	0.00	209.	5668.	330.	330.	2137.80	2144.60

ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG #### THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER #### WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD. #### FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3560

8.66	12.34	2145.14	0.00	0.00	2145.49	0.35	5.69	0.00	2144.30
5880.	0.	5880.	0.	0.	1232.	0.	1.	0.	2144.30
0.00	0.00	4.77	0.00	0.025	0.025	0.025	0.000	2132.30	2000.00
0.000294	58.	58.	58.	2	0	2	0.00	96.00	2096.00

0
*SECNO 8.740

1645 INT SEC ADDED BY RAISING SEC 8.74, -3.750FT AND MULTIPLYING BY 0.743

3280 CROSS SECTION 1.01 EXTENDED 2.98 FEET

1.01	11.58	2145.13	0.00	0.00	2145.60	0.47	0.05	0.06	2162.55
7035.	0.	6876.	159.	0.	1241.	79.	5.	0.	2141.55
0.01	0.00	5.54	2.01	0.045	0.035	0.045	0.000	2133.55	1600.03
0.000808	113.	113.	113.	2	0	0	0.00	143.54	1743.58

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.250FT AND MULTIPLYING BY 1.115

3280 CROSS SECTION 1.02 EXTENDED 1.75 FEET

1.02	10.35	2145.15	0.00	0.00	2145.82	0.67	0.12	0.10	2163.80
8190.	0.	8077.	113.	0.	1220.	67.	8.	1.	2142.80
0.01	0.00	6.62	1.98	0.045	0.035	0.045	0.000	2134.80	1757.14
0.001327	113.	113.	113.	2	0	0	0.00	158.58	1915.72

0
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.250FT AND MULTIPLYING BY 1.103

3280 CROSS SECTION 1.03 EXTENDED 0.54 FEET

3301 HV CHANGED MORE THAN HVINS

1.43	9.14	2145.19	0.00	0.00	2146.17	0.58	0.19	0.15	2165.05
9345.	0.	9300.	45.	0.	1165.	28.	11.	1.	2144.05
0.02	0.00	7.96	1.58	0.045	0.035	0.045	0.000	2136.05	1914.55
0.002255	113.	113.	113.	3	0	0	0.00	173.31	2087.86

0

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.250FT AND MULTIPLYING BY 1.094

3301 HV CHANGED MORE THAN HVINS

```
##########################################################################
####                  FLAMINGO ROAD OVERPASS                          ####
####              NORMAL GROUND SECTION UTILIZED                      ####
##########################################################################
####              CENTERLINE =  2160                                  ####
####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS        ####
####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED ON       ####
####  RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRRI15_SPLIT)         ####
```

8.74	8.00	2145.30	0.00	0.00	2146.72	1.42	0.33	0.22	2166.30
10500.	0.	10500.	0.	0.	1099.	0.	14.	2.	2145.30
0.02	0.00	9.56	0.02	0.045	0.035	0.045	0.000	2137.30	2072.14
0.003850	113.	113.	113.	3	0	0	0.00	173.88	2246.02

0

CCHV= 0.100 CEHV= 0.300

*SECNO 8.940

1645 INT SEC ADDED BY RAISING SEC 8.94, -4.000FT AND MULTIPLYING BY 1.102

3265 DIVIDED FLOW

1

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SECNO	DEPTH	CHSEL	CRIWS	LSELK	EG	HV	HL	CLOSS	BANK ELEV
&	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

1.01	8.30	2147.60	0.00	0.00	2147.88	0.28	1.05	0.11	2145.20
10500.	3663.	5712.	1125.	1185.	1116.	458.	30.	7.	2146.20
0.05	3.09	5.12	2.45	0.045	0.040	0.045	0.000	2139.30	2182.51
0.002309	343.	353.	452.	3	0	0	0.00	986.56	3306.74

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.000FT AND MULTIPLYING BY 0.554

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.02	7.30	2148.60	0.00	0.00	2149.36	0.75	1.33	0.14	2147.20
10500.	2900.	6955.	644.	708.	860.	199.	45.	14.	2148.20
0.06	4.10	8.09	3.24	0.045	0.040	0.045	0.000	2141.30	2189.74
0.006972	343.	353.	452.	3	0	0	0.00	804.17	3069.17

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.000FT AND MULTIPLYING BY 0.951

3265 DIVIDED FLOW

CENTERLINE = 2610
VALLEY VIEW BOULEVARD NOT MODELED. THIS IS A SMALE XING
THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO
CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 9.00

8.94	7.64	2150.94	0.00	0.00	2151.55	0.61	2.18	0.01	2149.20
10500.	3202.	6507.	791.	803.	882.	255.	64.	21.	2150.20
0.08	3.99	7.38	3.10	0.045	0.040	0.045	0.000	2143.20	2152.05
0.005372	343.	353.	452.	2	0	0	0.00	806.95	3133.00

0

*SECNO 9.180

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 9.18, -7.950FT AND MULTIPLYING BY 1.273

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	7.21	2153.16	2153.16	0.00	2156.08	2.92	2.47	0.69	2153.65
10500.	0.	10500.	0.	0.	766.	0.	74.	25.	2160.45
0.08	0.00	13.71	0.00	0.170	0.040	0.170	0.000	2145.95	2422.61
0.013302	310.	308.	293.	20	12	9	0.00	131.77	2554.38

0

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.650FT AND MULTIPLYING BY 0.928

3301 HV CHANGED MORE THAN HVINS

1.02	8.49	2157.09	2156.07	0.00	2159.32	2.23	3.17	0.07	2156.30
10500.	36.	10464.	0.	84.	871.	0.	80.	26.	2163.10
0.09	0.43	12.01	0.00	0.170	0.040	0.170	0.000	2148.60	2113.94
0.008245	310.	308.	293.	6	8	0	0.00	341.81	2455.75

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 2.650FT AND MULTIPLYING BY 0.923

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

1.03	8.32	2159.57	2159.05	0.00	2162.34	2.77	2.86	0.16	2158.95

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SECNO	DEPTH	CWSEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
&	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	I&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.03, 2.650FT AND MULTIPLYING BY 0.917

####		CENTERLINE = 2200						####	
9.18	8.80	2162.70	2162.50	0.00	2165.52	2.81	3.16	0.01	2161.60
10500.	88.	10412.	0.	131.	771.	0.	92.	31.	2168.40
0.10	0.67	13.51	0.00	0.170	0.040	0.170	0.000	2153.90	1945.19
0.010014	310.	308.	293.	4	8	0	0.00	306.92	2252.11

1490 NH CARD USED
*SECNO 9.430

1645 INT SEC ADDED BY RAISING SEC 9.43, -11.600FT AND MULTIPLYING BY 0.834

3301 HV CHANGED MORE THAN HVINS

1.01	7.87	2167.57	0.09	0.00	2168.21	0.64	2.48	0.22	2165.30
10500.	253.	6256.	3990.	80.	760.	3404.	118.	40.	2164.50
0.13	3.15	8.24	1.17	0.045	0.040	0.144	0.000	2159.70	2183.97
0.003602	433.	443.	427.	4	0	0	0.00	1507.78	3691.75

1645 INT SEC ADDED BY RAISING SEC 1.01, 5.800FT AND MULTIPLYING BY 1.859

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED &SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	7.01	2172.51	2172.51	0.00	2174.01	1.49	2.22	0.26	2171.10
10500.	176.	8136.	2137.	51.	738.	2511.	155.	55.	2170.30
0.14	3.48	11.09	0.85	0.045	0.040	0.236	0.000	2165.50	2209.03
0.007643	438.	443.	427.	20	14	0	0.00	1524.59	3733.62

1645 INT SEC ADDED BY RAISING SEC 1.02, 5.800FT AND MULTIPLYING BY 1.050

7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
&	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	I&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2300						####	
9.43	6.85	2178.15	2178.15	0.00	2179.56	1.41	3.29	0.01	2176.90
10500.	153.	8362.	1986.	48.	785.	2495.	188.	70.	2176.10

```
      0.15        3.17       10.66        0.80       0.045       0.170       0.236       0.000    2171.30    2229.31
 0.007328         438.        443.        427.           5           8           0        0.00    1634.60    3863.91
0
1490 NH CARD USED
*SECNO 9.620

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1870.0     3630.0   TYPE=       1   TARGET=     1760.000
        ####                CENTERLINE =   2590                              ####
      9.62        7.10    2189.90    2189.90    2187.89    2190.83       0.93       7.54       0.05    2188.30
     10500.      1067.       8294.      1138.       261.       970.       550.       247.       104.    2185.90
      0.19        4.08        8.56       2.07      0.045      0.060      0.060      0.000    2182.80    2286.64
 0.007527         985.       1020.       1005.          3          8          0       0.00    1340.90    3630.00
0
*SECNO 9.810

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     2196.80 ELREA=     2203.20

        ####                CENTERLINE =   2670                              ####
      9.81        7.51    2199.61    2199.61    2197.55    2201.93       1.92       8.99       0.30    2196.80
     10500.      2105.       8395.         0.        307.        702.         0.        278.       122.    2203.20
      0.22        6.85       11.95       0.00      0.045      0.040      0.045      0.000    2192.10    2502.73
 0.011694         950.        975.        950.          2          8          0       0.00     261.86    2764.59
0
1490 NH CARD USED
*SECNO 10.040
1
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   SECNO      DEPTH      CHSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        ARCB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      COPAR      TOPWID       ENDST


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9490.0    10150.0   TYPE=       1   TARGET=      660.000
        ####                CENTERLINE =  10000                              ####
        ####  CAMERON STREET NOT MODELED.  THIS IS A SWALE XING              ####
        ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO        ####
        ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 10.09             ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 9490.
     10.04        8.68    2221.68    2221.68    2219.87    2223.04       1.36      12.50       0.06    2220.00
     10500.      3570.       6890.        40.        931.        615.        14.        313.       133.    2220.00
      0.25        3.83       11.20       2.82      0.060      0.040      0.045      0.000    2213.00    9490.00
 0.009274        1095.       1245.       1250.          2         11          0       0.00     586.81   10076.81
0
1490 NH CARD USED
*SECNO 10.130
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     2288.0     3083.0   TYPE=       1   TARGET=      795.000
```

```
          ####          CENTERLINE =   2530                                  ####
          ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
    10.13      9.17  2226.37  2226.37  2224.30  2228.21      1.84      4.21      0.15  2224.40
 10500.      2807.     7633.     60.      567.     615.       22.      326.      137.   2225.60
     0.27      4.95     12.41     2.76     0.060    0.040     0.045    0.000  2217.20  2288.00
0.010153      350.      470.      500.        1        8         0     0.00    328.03  2616.03
```



```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1          LAS VEGAS WASH OVERFLOW STUDY
T2          JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH  REACH 2    500 YEAR FLOODPLAIN RUN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ

              5.        0.        0.  0.000000      0.00      0.3       0.  2136.200      0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST


*PROF 4

CCHV=   0.100 CEHV=   0.300
*SECNO 8.641
3280 CROSS SECTION       8.64 EXTENDED       2.45 FEET

3720 CRITICAL DEPTH ASSUMED
          ####  MODEL STARTS AT UNION PACIFIC RAILROAD CROSSING.  REACH    ####
          ####  FROM KOVAL LANE TO UPRR (THROUGH CASING PROPERTY AND       ####
          ####  CLOSED CONDUIT) WAS MODELED BY COE IN LWWFWBOL.  STARTING ####
          ####  WSEL'S ARE TAKEN FROM COE HEC2 RUN.                        ####
          ####            CENTERLINE =   2060                              ####
    8.64     11.45  2143.05  2143.05  2136.20  2148.08      5.82      0.00      0.00  2140.60
 20200.         0.    20200.        0.        0.     1123.        0.        0.        0.   2140.60
    0.00      0.00     17.98     0.00     0.025    0.025     0.025    0.000  2131.60  2000.00
0.004751        3.        3.        3.        0        16        0     0.00    113.00  2113.00

CCHV=   0.300 CEHV=   0.500
*SECNO 8.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################
```

```
          ####                    UNION PACIFIC RAILROAD                    ####
          ####                    SPECIAL BRIDGE ROUTINE                    ####
          ##########################################################################
     8.65     11.11  2143.11  2143.11     0.00  2148.66     5.57     0.05     0.28  2144.00
   20200.        3.    20200.       0.       0.     1866.       0.       0.       0.  2144.00
     0.00      0.00     18.94     0.00    0.025    0.025    0.025    0.000  2132.00  2000.00
 0.005409       10.       10.       10.        3        8        0     0.00    96.00  2096.00
0
 SPECIAL BRIDGE
 5227 DOWNSTREAM ELEV IS   2138.79 ,NOT   2143.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCRAR     TOPWID      ENDST

 SB  XK        XKOR      COEQ      RDLEN     BWC       EWP       BAREA     SS        ELCHO     ELCHD
      1.25      1.56      2.60     96.00     96.00     36.00    330.00     0.00   2132.30   2132.00

 *SECNO 8.660
 3280 CROSS SECTION       8.66 EXTENDED     12.51 FEET

 3301 HV CHANGED MORE THAN HVINS
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC       H3        QWEIR      QPR       EAREA   TRAPEZOID      ELLC      ELTRD
                                                                    AREA
  2233.87   2161.96      0.00     12172.     8168.      330.      330.     2137.80   2144.60

          ####  ALL FLOODS EXCEPT THE 25-YEAR EVENT WILL OVERFLOW ALONG    ####
          ####  THE UPRR TO THE NORTH AND CROSS TO THE EAST BY EITHER      ####
          ####  WEIRING OVER THE UPRR OR CROSSING AT SPRING MOUNTAIN RD.   ####
          ####  FLOWS LEAVING THE CHANNEL TO NORTH = 0, 860, 2080, 3580    ####
     8.66     24.30  2156.80     0.00      0.00  2157.95     1.14     5.27     0.00  2144.30
   20200.        0.    20200.       0.       0.     2353.       0.       3.       0.  2144.30
     0.00      0.00     8.59      0.00    0.025    0.025    0.025    0.000  2132.30  2000.00
 0.000506       58.       58.       58.        2        0        4     0.00    96.00  2096.00
0
 *SECNO 8.740
 1645 INT SEC ADDED BY RAISING SEC      8.74,  -3.750FT AND MULTIPLYING BY    0.704

 3265 DIVIDED FLOW
 3280 CROSS SECTION       1.01 EXTENDED     16.05 FEET

 3301 HV CHANGED MORE THAN HVINS

     1.01     24.65  2158.20     0.00      0.00  2158.29     0.08     0.02     0.32  2162.55
   22525.    13013.     8881.     631.     8847.     2756.     360.      21.       2.  2141.55
     0.02      1.47     3.22      1.75    0.045    0.035    0.045    0.000  2133.55   250.00
 0.000107       113.      113.      113.        2        0        0     0.00  1258.55  1664.43
0
1
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SECNO	DEPTH	CHSEL	CRIWS	XSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	INA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.250FT AND MULTIPLYING BY 1.140

3265 DIVIDED FLOW

3280 CROSS SECTION 1.02 EXTENDED 14.80 FEET

1.02	23.40	2158.20	0.00	0.00	2158.32	0.11	0.01	0.01	2163.80
24850.	13339.	10766.	745.	8523.	2961.	380.	52.	5.	2142.80
0.03	1.57	3.64	1.96	0.045	0.035	0.045	0.000	2134.80	250.00
0.000142	113.	113.	113.	2	0	0	0.00	1406.26	1862.96

0

1645 INT SEC ADDED BY RAISING SEC 1.02, 1.250FT AND MULTIPLYING BY 1.123

3265 DIVIDED FLOW

3280 CROSS SECTION 1.03 EXTENDED 13.55 FEET

1.03	22.15	2158.20	0.00	0.00	2158.35	0.15	0.02	0.02	2165.05
27175.	13332.	12972.	871.	7864.	3124.	392.	82.	9.	2144.05
0.04	1.70	4.15	2.22	0.045	0.035	0.045	0.000	2136.05	291.65
0.000195	113.	113.	113.	2	0	0	0.00	1504.68	2061.48

0

1645 INT SEC ADDED BY RAISING SEC 1.03, 1.250FT AND MULTIPLYING BY 1.110

3265 DIVIDED FLOW

3280 CROSS SECTION 8.74 EXTENDED 12.30 FEET

```
          ##########################################################################
          ####                  FLAMINGO ROAD OVERPASS                          ####
          ####             NORMAL GROUND SECTION UTILIZED                       ####
          ##########################################################################
          ####             CENTERLINE =  2160                                   ####
          ####  THERE IS A 500-YEAR OVERFLOW CROSSING THE UPRR AND FLOWS        ####
          ####  SOUTH OF FLAMINGO WASH.  FLOWS ADJUSTED UPSTREAM BASED          ####
```

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```
          ####  ON RESULTS OF SPLIT FLOW ANALYSIS FOR UPRR (UPRR115_SPLIT)####
```

8.74	20.90	2158.20	0.00	0.00	2158.41	0.21	0.03	0.03	2166.30
29500.	12972.	15524.	1004.	6981.	3245.	396.	110.	13.	2145.30
0.05	1.86	4.78	2.54	0.045	0.035	0.045	0.000	2137.30	401.64
0.000275	113.	113.	113.	2	0	0	0.00	1527.46	2260.00

0

CCHV= 0.100 CEHV= 0.300

*SECNO 8.940

```
          ####             CENTERLINE =  2610                                   ####
          ####  VALLEY VIEW BOULEVARD NOT MODELED.  THIS IS A SCALE XING        ####
          ####  THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO         ####
          ####  CHANNEL BANKS OR ABUTMENTS.  XING IS AT MILE 9.00               ####
```

8.94	15.35	2158.65	0.00	0.00	2158.79	0.14	0.37	0.01	2149.20
34800.	15426.	10187.	9187.	5723.	2689.	3585.	395.	53.	2150.20
0.15	2.79	3.79	2.56	0.045	0.040	0.045	0.000	2143.30	1698.43

```
 0.000421     1030.     1060.     1355.        5          0          0       0.00   1642.64   3341.07
0
 *SECNO 9.180

 1645 INT SEC ADDED BY RAISING SEC      9.18,  -7.950FT AND MULTIPLYING BY   1.424

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.01     14.12   2160.07   2160.07       0.00   2161.51       1.44       0.34       0.39   2153.65
     34800.     9298.    23677.     1825.     4753.     2037.     1839.      467.         65.    2160.45
      0.16      1.96      11.62      0.99     0.170     0.040     0.170     0.000   2145.95    1243.32
 0.007641       310.       308.       293.        20         13          0       0.00   2955.51   4796.19
0

 1645 INT SEC ADDED BY RAISING SEC      1.01,   2.650FT AND MULTIPLYING BY   0.501

 3265 DIVIDED FLOW

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.02     14.41   2163.01   2163.01       0.00   2164.43       1.42       2.47       0.00   2156.30
     34800.     9903.    22566.     2331.     4627.     1917.     2026.      527.         89.    2163.10
      0.17      2.14      11.77      1.15     0.170     0.040     0.170     0.000   2148.60    1224.69
 0.008460       310.       308.       293.        20          5          0       0.00   2864.21   4436.52
0
1
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    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG         HV         HL        QLOSS     BANK ELEV
    Q          QLOB      QCH       QROB      ALOB       ACH        AROB       VOL       TIME    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL        XNCH       XNR        WTN       ELMIN        SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL     IDC        ICONT      CORAR     TOPWID       ENDST

 1645 INT SEC ADDED BY RAISING SEC      1.02,   2.650FT AND MULTIPLYING BY   0.850

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.03     14.44   2165.69   2165.69       0.00   2167.44       1.75       2.90       0.10   2158.95
     34800.     9968.    22447.     2385.     4149.     1713.     1839.      584.        108.    2165.75
      0.18      2.40      13.10      1.30     0.170     0.040     0.170     0.000   2151.25    1213.59
 0.010583       310.       308.       293.         8          5          0       0.00   2589.54   4072.55
0

 1645 INT SEC ADDED BY RAISING SEC      1.03,   2.650FT AND MULTIPLYING BY   0.876

         ####              CENTERLINE =  2200                          ####
      9.18     15.  0   2168.90   2168.71       0.00   2170.54       1.64       3.10       0.01   2161.60
     34800.    10253.    21293.     3254.     4167.     1635.     2299.      639.        126.    2168.40
      0.19      2.46      13.03      1.42     0.170     0.040     0.170     0.000   2153.90    1191.99
 0.009630       310.       308.       293.         5          5          0       0.00   2522.58   3714.58
```

1498 NH CARD USED
*SECNO 9.430

1645 INT SEC ADDED BY RAISING SEC 9.43, -13.050FT AND MULTIPLYING BY 0.936

3280 CROSS SECTION 1.01 EXTENDED 3.43 FEET

3301 HV CHANGED MORE THAN HVINS

1.01	13.13	2131.38	0.00	0.00	2172.22	0.84	1.59	0.08	2163.85
34825.	5213.	15453.	14159.	1061.	1457.	13780.	730.	144.	2163.05
0.21	4.91	10.60	1.03	0.045	0.040	0.291	0.000	2158.25	2000.00
0.002918	329.	333.	320.	2	0	0	0.00	2339.87	4339.87

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 4.350FT AND MULTIPLYING BY 1.023

3280 CROSS SECTION 1.02 EXTENDED 0.86 FEET

3301 HV CHANGED MORE THAN HVINS

3686 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	10.56	2173.16	2173.16	0.00	2175.42	2.26	1.54	0.43	2168.20
34850.	2547.	19114.	13189.	415.	1187.	8908.	829.	161.	2167.40
0.21	6.14	16.10	1.48	0.045	0.040	0.266	0.000	2162.60	2000.00
0.008795	329.	333.	320.	20	15	0	0.00	2393.25	4393.25

1645 INT SEC ADDED BY RAISING SEC 1.02, 4.350FT AND MULTIPLYING BY 1.022

3280 CROSS SECTION 1.03 EXTENDED 0.78 FEET

3686 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.03	10.48	2177.43	2177.43	0.00	2179.67	2.24	2.87	0.00	2172.55
34875.	2475.	19254.	13146.	405.	1208.	8960.	907.	179.	2171.75
0.22	6.11	15.97	1.47	0.045	0.040	0.265	0.000	2166.95	2000.00
0.008736	329.	333.	320.	20	5	0	0.00	2446.63	4446.63

1645 INT SEC ADDED BY RAISING SEC 1.03, 4.350FT AND MULTIPLYING BY 1.022

3280 CROSS SECTION 9.43 EXTENDED 0.67 FEET

3686 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2300

9.43	10.37	2181.67	2181.67	0.00	2183.90	2.23	2.88	0.00	2176.90
34900.	2522.	19331.	13046.	383.	1217.	8911.	985.	197.	2176.10
0.23	6.59	15.88	1.46	0.042	0.040	0.264	0.000	2171.30	2000.00
0.008863	329.	333.	320.	20	5	0	0.00	2500.00	4500.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 9.620

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

####		CENTERLINE = 2590						####	
9.62	9.19	2191.59	0.00	2187.89	2193.43	1.44	9.45	0.08	2188.30
35000.	5563.	17266.	12170.	803.	1384.	2515.	1160.	244.	2185.90
0.26	6.93	12.48	4.84	0.045	0.060	0.060	0.000	2182.80	2182.37
0.009890	985.	1020.	1005.	4	6	0	0.00	1527.63	3630.00

0
*SECNO 9.810

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2670						####	
9.81	12.18	2204.28	2204.28	2197.55	2205.59	1.71	7.58	0.08	2196.80
35000.	10508.	17893.	6606.	1395.	1366.	1222.	1256.	275.	2203.20
0.29	7.53	13.10	5.41	0.045	0.040	0.045	0.000	2192.10	1584.50
0.006415	950.	975.	950.	3	14	0	0.00	1374.77	3318.45

0
1490 NH CARD USED
*SECNO 10.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9490.0 10150.0 TYPE= 1 TARGET= 660.000

####		CENTERLINE = 10000						####	
#### CAMERON STREET NOT MODELED. THIS IS A SWALE XING								####	
#### THAT IS NEAR GRADE AT THE CHANNEL AND ACUALLY CUTS INTO								####	
#### CHANNEL BANKS OR ABUTMENTS. XING IS AT MILE 10.09								####	
#### LEFT BANK INEFFECTIVE FLOW AT STA 9490.									
10.04	11.96	2224.96	2224.96	2219.87	2227.24	2.28	9.48	0.17	2220.00
35000.	18502.	15671.	828.	2440.	976.	124.	1357.	302.	2220.00
0.32	7.58	16.06	6.66	0.060	0.040	0.045	0.000	2213.00	9490.00
0.010294	1095.	1245.	1250.	20	6	0	0.00	622.02	10112.02

0
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 10.130

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3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED ASEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    2288.0    3083.0  TYPE=      1  TARGET=     755.000
        ####                CENTERLINE =  2535                    ####
        ####  LEFT BANK INEFFECTIVE FLOW AT STA 2288.
    10.13     13.53   2230.73   2230.73   2224.30   2234.37      3.64      4.49      0.41   2224.40
   35000.    13891.    19441.    16680.    14422.    10426.     1736.     1385.      306.   2225.60
    0.33      9.62     18.66      9.63     0.060     0.040     0.045     0.000   2217.20   2288.00
0.011346      357.      473.      500.        20         8         0      0.00    339.53   2627.53
0
1
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 ***********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***********************************************

 NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

 FLAMINGO WASH  SECOND RE
 SUMMARY PRINTOUT TABLE  150

       SECNO      XLCH      ELTRD     ELLC      ELMIN     Q         CWSEL     CRIWS     EG        10K*S    VCH     AREA      .01K
 *     8.641      0.00      0.00      0.00      2131.60   4100.00   2135.94   2135.94   2137.90   59.75    11.24   364.81    530.43
 *     8.641      0.00      0.00      0.00      2131.60   5340.00   2136.71   2136.71   2139.01   57.58    12.17   438.81    703.72
 *     8.641      0.00      0.00      0.00      2131.60   5880.00   2137.04   2137.04   2139.47   56.48    12.50   470.49    782.38
 *     8.641      0.00      0.00      0.00      2131.60   20200.00  2143.05   2143.05   2148.08   47.51    17.98   1123.37   2930.76

       8.650      10.00     0.00      0.00      2132.00   4100.00   2137.12      0.00   2138.20   25.58    8.34    491.32    810.76
       8.650      10.00     0.00      0.00      2132.00   5340.00   2138.02      0.00   2139.34   25.79    9.24    578.16    1051.42
       8.650      10.00     0.00      0.00      2132.00   5880.00   2138.36      0.00   2139.80   26.20    9.62    611.25    1148.75
 *     8.650      10.00     0.00      0.00      2132.00   20200.00  2143.11   2143.11   2148.68   54.09    18.94   1066.27   2746.46

 *     8.660      58.00     2144.60   2137.80   2132.30   4100.00   2140.43      0.00   2140.86   5.89     5.25    780.38    1689.67
 *     8.660      58.00     2144.60   2137.80   2132.30   5340.00   2144.01      0.00   2144.36   3.21     4.75    1124.41   2980.26
 *     8.660      58.00     2144.60   2137.80   2132.30   5880.00   2145.14      0.00   2145.49   2.94     4.77    1232.25   3428.86
 *     8.660      58.00     2144.60   2137.80   2132.30   20200.00  2156.80      0.00   2157.95   5.08     8.59    2352.69   8962.98

 *     8.740      450.00    0.00      0.00      2137.30   4100.00   2141.41      0.00   2142.41   66.52    8.01    512.00    502.66
 *     8.740      450.00    0.00      0.00      2137.30   7000.00   2144.28      0.00   2145.14   28.17    7.45    939.77    1318.85
 *     8.740      450.00    0.00      0.00      2137.30   10500.00  2145.30      0.00   2146.72   38.90    5.56    1098.65   1683.51
 *     8.740      450.00    0.00      0.00      2137.30   29500.00  2158.20      0.00   2158.41   2.75     4.78    10621.51  17782.34

 *     8.940      1060.00   0.00      0.00      2143.30   4100.00   2149.30      0.00   2149.87   61.70    6.36    809.08    521.96
 *     8.940      1060.00   0.00      0.00      2143.30   7000.00   2150.31      0.00   2150.81   48.70    6.49    1458.12   1003.14
 *     8.940      1060.00   0.00      0.00      2143.30   10500.00  2150.94      0.00   2151.55   53.72    7.38    1939.57   1432.61
       8.940      1060.00   0.00      0.00      2143.30   34800.00  2158.65      0.00   2158.79   4.21     3.79    11996.92  16959.92

 *     9.180      1230.00   0.00      0.00      2153.90   4100.00   2159.37      0.00   2160.79   92.23    9.57    428.27    426.92
 *     9.180      1230.00   0.00      0.00      2153.90   7000.00   2161.11      0.00   2163.21   97.22    11.64   601.29    709.95
 *     9.180      1230.00   0.00      0.00      2153.90   10500.00  2162.70   2162.50   2165.52   100.14   13.51   901.64    1049.26
 *     9.180      1230.00   0.00      0.00      2153.90   34800.00  2168.98   2168.71   2170.54   96.30    13.03   8100.40   3546.26
```

	9.430	1330.00	0.00	0.00	2171.30	4100.00	2174.98	2174.95	2176.63	157.94	10.32	397.21	326.24
*	9.430	1330.00	0.00	0.00	2171.30	7000.00	2177.02	2177.02	2178.30	76.35	9.62	1677.51	801.09
*	9.430	1330.00	0.00	0.00	2171.30	10500.00	2178.15	2178.15	2179.56	73.28	10.66	3327.93	1226.56
*	9.430	1330.00	0.00	0.00	2171.30	34900.00	2181.67	2181.67	2183.90	88.63	15.88	10510.44	3707.26

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CMSEL	CRIMS	EG	10K*S	VCH	AREA	.01K
	9.620	1020.00	0.00	0.00	2182.80	4100.00	2187.89	0.00	2188.59	89.35	6.84	635.22	433.75
*	9.620	1020.00	0.00	0.00	2182.80	7000.00	2188.41	2188.41	2189.79	158.50	9.69	786.98	556.02
*	9.620	1020.00	0.00	0.00	2182.80	10500.00	2189.90	2189.90	2190.83	75.27	8.56	1781.35	1210.24
	9.620	1020.00	0.00	0.00	2182.80	35000.00	2191.99	0.00	2193.43	98.50	12.48	4700.81	3519.35
	9.810	975.00	0.00	0.00	2192.10	4100.00	2197.55	2197.52	2198.73	119.10	8.97	505.47	375.69
	9.810	975.00	0.00	0.00	2192.10	7000.00	2199.10	0.00	2200.24	77.36	9.15	878.90	795.87
*	9.810	975.00	0.00	0.00	2192.10	10500.00	2199.61	2199.61	2201.53	116.94	11.95	1009.88	970.96
*	9.810	975.00	0.00	0.00	2192.10	35000.00	2204.28	2204.28	2205.99	64.15	13.10	3983.19	4369.96
*	10.040	1245.00	0.00	0.00	2213.00	4100.00	2219.87	2219.87	2221.07	101.23	9.11	582.99	407.50
*	10.040	1245.00	0.00	0.00	2213.00	7000.00	2221.14	2221.14	2222.13	71.68	9.20	1242.94	826.81
*	10.040	1245.00	0.00	0.00	2213.00	10500.00	2221.68	2221.68	2223.04	92.74	11.20	1560.51	1090.35
*	10.040	1245.00	0.00	0.00	2213.00	35000.00	2224.96	2224.96	2227.24	102.94	16.06	3540.38	3449.66
	10.130	470.00	0.00	0.00	2217.20	4100.00	2224.30	2224.16	2225.51	91.62	9.19	563.91	428.34
*	10.130	470.00	0.00	0.00	2217.20	7000.00	2225.43	2225.43	2226.91	93.96	10.74	901.84	722.14
*	10.130	470.00	0.00	0.00	2217.20	10500.00	2226.37	2226.37	2228.21	101.53	12.41	1203.52	1042.05
*	10.130	470.00	0.00	0.00	2217.20	35000.00	2230.73	2230.73	2234.37	113.46	18.66	2658.61	3285.88

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FLAMINGO WASH SECOND RE

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CMSEL	DIFMSP	DIFMSX	DIFKMS	TOPMID	XLCH
*	8.641	4100.00	2135.94	0.00	0.00	5.84	93.30	0.00
*	8.641	5340.00	2136.71	0.78	0.00	6.01	96.59	0.00
*	8.641	5880.00	2137.04	0.33	0.00	5.94	97.97	0.00
*	8.641	20200.00	2143.05	6.01	0.00	6.85	113.00	0.00
	8.650	4100.00	2137.12	0.00	1.16	0.00	96.00	10.00
	8.650	5340.00	2138.02	0.90	1.30	0.00	96.00	10.00
	8.650	5880.00	2138.36	0.34	1.32	0.00	96.00	10.00
*	8.650	20200.00	2143.11	4.74	0.05	0.00	96.00	10.00
*	8.660	4100.00	2140.43	0.00	3.31	0.00	96.00	58.00
*	8.660	5340.00	2144.01	3.58	5.99	0.00	96.00	58.00
*	8.660	5880.00	2145.14	1.12	6.77	0.00	96.00	58.00
*	8.660	20200.00	2156.80	11.67	13.70	0.00	96.00	58.00
*	8.740	4100.00	2141.41	0.00	0.47	0.00	144.48	450.00
*	8.740	7000.00	2144.28	2.87	0.21	0.00	153.61	450.00
*	8.740	10500.00	2145.30	1.02	0.11	0.00	173.88	450.00
*	8.740	29500.00	2158.20	12.90	-0.01	0.00	1527.46	450.00
*	8.940	4100.00	2149.30	0.00	3.76	0.00	571.44	1060.00
*	8.940	7000.00	2150.31	1.00	3.59	0.00	727.08	1060.00
*	8.940	10500.00	2150.94	0.63	2.33	0.00	806.95	1060.00
	8.940	34300.00	2158.65	7.71	0.45	0.00	1642.64	1060.00
*	9.180	4100.00	2159.37	0.00	2.79	0.00	95.51	1230.00

*	9.180	7000.00	2161.11	1.74	3.02	0.00	103.47	1230.00
*	9.180	10500.00	2162.70	1.59	2.13	0.00	306.92	1230.00
*	9.180	34800.00	2168.90	6.20	3.21	0.00	2522.58	1230.00
	9.430	4100.00	2174.98	0.00	15.60	0.00	119.10	1330.00
*	9.430	7000.00	2177.02	2.05	5.72	0.00	1226.96	1330.00
*	9.430	10500.00	2178.15	1.13	5.64	0.00	1634.60	1330.00
*	9.430	34900.00	2181.67	3.52	4.23	0.00	2500.00	1330.00
	9.620	4100.00	2187.89	0.00	12.92	0.00	252.19	1020.00
*	9.620	7000.00	2188.41	0.52	11.39	0.52	340.80	1020.00
*	9.620	10500.00	2189.90	1.49	11.75	2.01	1340.90	1020.00
	9.620	35000.00	2191.99	2.09	10.33	4.10	1527.63	1020.00
	9.810	4100.00	2197.55	0.00	9.66	0.00	229.41	975.00
	9.810	7000.00	2199.10	1.55	10.69	1.55	253.00	975.00
*	9.810	10500.00	2199.61	0.51	9.71	2.06	261.86	975.00
*	9.810	35000.00	2204.28	4.67	12.29	6.73	1374.77	975.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	10.040	4100.00	2219.87	0.00	22.33	0.00	370.03	1245.00
*	10.040	7000.00	2221.14	1.26	22.84	1.26	561.38	1245.00
*	10.040	10500.00	2221.68	0.54	22.87	1.81	586.81	1245.00
*	10.040	35000.00	2224.96	3.28	20.68	5.09	622.02	1245.00
	10.130	4100.00	2224.30	0.00	4.42	0.00	285.23	470.00
*	10.130	7000.00	2225.43	1.14	4.30	1.14	298.82	470.00
*	10.130	10500.00	2226.37	0.94	4.69	2.07	328.03	470.00
*	10.130	35000.00	2230.73	4.36	5.77	6.43	339.53	470.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 8.641 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.641 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 8.650 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.650 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 8.660 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 8.660 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 8.740 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.740 PROFILE= 4 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 8.940 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.940 PROFILE= 2 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 8.940 PROFILE= 3 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 9.180 PROFILE= 1 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 9.180 PROFILE= 2 INTERPOLATED XSECTIONS USED

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 CAUTION  SECNO=     9.180   PROFILE= 3  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.180   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=     9.430   PROFILE= 2  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.430   PROFILE= 3  INTERPOLATED XSECTIONS USED
 CAUTION  SECNO=     9.430   PROFILE= 4  INTERPOLATED XSECTIONS USED

 CAUTION  SECNO=     9.620   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.620   PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     9.620   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.620   PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     9.810   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.810   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     9.810   PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     9.810   PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    10.040   PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040   PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    10.040   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040   PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.040   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.040   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

1
  27-APR-88     00:39:08                                              PAGE   41


 CAUTION  SECNO=    10.130   PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130   PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130   PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130   PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130   PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    10.130   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    10.130   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

1
  27-APR-88     00:39:43                                              PAGE    1


 **************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 **************************************************



 EOF..
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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   15:15:03          *
*************************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER*
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
```


Split Flows @ UPRR 12:15

Sub 7.93 - 2.43

```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X         X     X            X     X
X     X  X         X                  X     X
XXXXXXX  XXXX      X           XXXXX    XXXXX
X     X  X         X                  X
X     X  X         X     X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

27-APR-88 15:15:04 PAGE 1

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************
```

SPLIT FLOW BEING PERFORMED

SF SPLIT FLOW ANALYSIS OF FLAMINGO WASH ALONG UPRR AND I15

TW	WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62										
WS	8	9.43	9.62	-1	3.0						
WC	0	2181	200	2184	350	2185.8	520	2188	670	2188.6	
WC	910	2192	1030	2192.7	1180	2194.2					
TW	WEIR Q OVER UPRR BETWEEN 9.18 AND 9.43										
WS	6	9.18	9.43	-1	3.0						
WC	0	2173	350	2176	560	2176.4	870	2179.3	930	2180	
WC	1220	2181.0									
TW	WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18										
WS	6	8.94	9.18	-1	3.0						
WC	0	2160	450	2164	690	2164	900	2168	1350	2172	
WC	1450	2173									
TW	WEIR OVER UPRR WITH RAILS										
WS	10	8.74	8.94	-1	2.75						
WC	0	2147.2	50	2147.4	120	2148.7	430	2150.5	700	2151.2	
WC	830	2152.7	1020	2154.0	1090	2156	1160	2160	1190	2164	
TW	WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS										
WS	2	8.68	8.74	-1	2.75						

```
WC       0  2145.4      400  2147.2

TC        RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES
CS     15      8.66      8.68        -1
CR      0  2132.2      3500 2137.38     4000 2137.87     4500 2138.33     4800 2138.62
CR   4900 2138.69      4950 2140.08     5000 2141.46     5500 2143.04     6000 2144.7
CR   6210  2145.4      6355 2145.83     6500 2146.27     7000 2147.57     8000 2149.85

TW       WEIR OVER UPRR WITH RAILS
WS      5      8.53      8.66        -1      2.75
WC      0  2139.7       200  2142.7       470  2143.7       580  2144.7       700  2145.2

TW       WEIR OVER UPRR WITH RAILS
WS      5      8.37      8.53        -1      2.75
WC      0  2132.7       340  2135.2       500  2136.7       620  2138.2       820  2139.7
1
 27-APR-88    15:15:04                                                                    PAGE     2


TW       UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS
WS      3      8.24      8.37        -1      2.75
WC      0  2127.1       150  2128.7       700  2132.7

TN       UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS
NS     10      8.23      8.24        -1      .040    .0078
NG      0      2149        23      2127        23      2123        28      2123        31  2126.7
NG     45  2126.7          48  2126.7          63  2126.7          63      2128        86      2149

TW       I-15 WEIR FLOW
WS      2      8.02      8.23        -1       3.0
WC      0  2144.5       1000  2154.9

TN       SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984
NS      7      7.92      8.02        -1      .030    .0111
NG      0      2131        40      2128        41  2119.7       100  2119.7       101      2128
NG    150      2131       810      2136
1
 27-APR-88    15:15:04                                                                    PAGE     3


C
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q25

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q           WSEL       FQ
          0.        2.         0.         0.  0.001700       0.00       0.0         0.  2117.000      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW         CHNIM      ITRACE
      1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.065      0.040      0.030      0.200      0.400      0.000      0.000      0.000      0.000      0.000
QT      4.000   4100.000   7000.000  10500.000  35000.000      0.000      0.000      0.000      0.000      0.000
          This  is a split flow analysis to determine weir flows over UPRR
          and flows thru UPRR and I-15 underpasses.  HEC-2 coding taker from
          input file supplied by COE (LVWFWRRW).  After split flows were
          calculated, Q's put back in regular R2 run.

          WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
          X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN '74 AND '84 TOPO
          STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
             Subsequent results submitted by COE showed difference in flow
             split at Spring Mtn Rd; JM4 not given input data.  Final COE
             results have 0/670/1730/3030 flowing east thru Spring Mtn Rd
```

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Rest of run is ok.

X1	7.920	8.000	9940.000	10050.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2135.000	9000.000	2130.000	9350.000	2125.000	9650.000	2125.000	9800.000	2120.000	9940.000
GR	2119.000	10000.000	2120.000	10050.000	2135.000	10090.000	0.000	0.000	0.000	0.000
NC	0.165	0.040	0.045	0.100	0.300	0.000	0.000	0.000	0.000	0.000
X1	8.320	9.000	9950.000	10015.000	520.000	520.000	520.000	0.000	0.000	0.000
GR	2136.000	8750.000	2131.000	9000.000	2125.000	9430.000	2121.000	9750.000	2120.000	9950.000
GR	2117.000	10000.000	2121.000	10015.000	2145.500	10075.000	2145.500	10250.000	0.000	0.000

U/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT

X1	8.230	11.000	9940.000	9954.000	830.000	1130.000	1130.000	0.000	0.000	0.000
GR	2144.300	8080.000	2140.000	8300.000	2136.000	8450.000	2132.000	8950.000	2128.000	9200.000
GR	2124.300	9550.000	2124.000	9900.000	2122.000	9940.000	2122.000	9950.000	2124.000	9954.000
GR	2154.300	10000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT

X1	8.240	13.000	9985.000	10004.000	30.000	30.000	30.000	0.000	0.000	0.000
GR	2144.000	7920.000	2140.000	8100.000	2136.000	8460.000	2132.000	8900.000	2128.000	9200.000
GR	2124.400	9550.000	2124.000	9900.000	2122.000	9985.000	2122.000	10000.000	2127.100	10004.000
GR	2127.100	10035.000	2128.000	10035.000	2149.000	10057.000	0.000	0.000	0.000	0.000

1

NC	0.145	0.045	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	8.370	9.000	9970.000	10000.000	700.000	700.000	700.000	0.000	0.000	0.000
GR	2140.000	8900.000	2136.000	9000.000	2132.000	9170.000	2128.000	9600.000	2124.000	9850.000
GR	2124.300	9970.000	2223.500	10000.000	2124.000	10010.000	2132.700	10020.000	0.000	0.000
X1	8.530	8.000	9950.000	9970.000	830.000	830.000	830.000	0.000	0.000	0.000
GR	2148.300	9150.000	2144.000	9250.000	2140.000	9550.000	2136.000	9800.000	2133.500	9950.000
GR	2136.000	9970.000	2140.000	10020.000	2139.000	10040.000	0.000	0.000	0.000	0.000

D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE

X1	8.660	9.000	9870.000	10000.000	700.000	700.000	700.000	0.000	0.000	0.000
GR	2152.000	8850.000	2148.000	8880.000	2144.000	9150.000	2141.100	9580.000	2140.000	9800.000
GR	2140.000	9870.000	2140.000	10000.000	2142.000	10015.000	2145.200	10040.000	0.000	0.000
NC	0.065	0.045	0.045	0.200	0.400	0.000	0.000	0.000	0.000	0.000
X1	8.680	9.000	9950.000	10004.000	100.000	100.000	100.000	0.000	0.000	0.000
GR	2152.000	8850.000	2148.000	8900.000	2144.000	9160.000	2141.900	9470.000	2140.000	9850.000
GR	2136.000	9950.000	2132.200	10000.000	2136.000	10004.000	2145.400	10040.000	0.000	0.000
NC	0.145	0.045	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000

U/S SIDE FLAMINGO RD OVERPASS OVER I-15

X1	8.740	6.000	9920.000	10062.000	500.000	450.000	450.000	0.000	0.000	0.000
GR	2168.000	9920.000	2140.000	9920.000	2137.300	9921.000	2137.300	10054.000	2140.000	10055.000
GR	2147.200	10062.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.045	0.045	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CL = 2636

X1	8.940	35.000	2551.000	2683.000	1030.000	1355.000	1060.000	0.000	0.000	0.000
GR	2160.000	1630.000	2160.000	1630.000	2160.000	1630.000	2160.000	1630.000	2160.000	1630.000
GR	2152.700	2000.000	2152.800	2100.000	2151.500	2134.000	2149.500	2198.000	2148.200	2325.000
GR	2149.200	2551.000	2147.900	2581.000	2143.300	2623.000	2143.300	2649.000	2144.600	2669.000
GR	2149.700	2674.000	2152.100	2683.000	2151.500	2721.000	2147.700	2739.000	2146.000	2751.000
GR	2145.600	2767.000	2150.200	2790.000	2149.500	2821.000	2148.300	2840.000	2150.900	2869.000
GR	2149.700	2953.000	2148.300	2972.000	2148.800	2989.000	2150.900	3001.000	2153.200	3052.000
GR	2150.300	3132.000	2153.700	3210.000	2157.200	3310.000	2160.000	3370.000	2160.000	3700.000
NC	0.170	0.170	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	9.180	20.000	2144.000	2382.000	1240.000	1170.000	1230.000	0.000	0.000	0.000
GR	2172.000	1130.000	2168.000	1210.000	2164.000	1600.000	2164.000	1730.000	2165.000	1820.000
GR	2161.700	2000.000	2162.300	2103.000	2161.600	2144.000	2156.200	2157.000	2153.900	2185.000
GR	2153.900	2233.000	2166.800	2261.000	2168.400	2382.000	2167.300	2514.000	2168.500	2544.000

GR	2168.200	2567.000	2168.900	2635.000	2168.000	2880.000	2165.000	3670.000	2172.000	3750.000
NH	4.000	0.045	2272.000	0.040	2395.000	0.170	3700.000	5.000	4500.000	0.000
X1	9.430	19.000	2272.000	2395.000	1315.000	1280.000	1330.000	0.000	0.000	0.000
GR	2181.300	2000.000	2181.200	2124.000	2179.800	2215.000	2176.800	2241.000	2176.900	2272.000
GR	2172.800	2276.000	2171.300	2289.000	2171.300	2357.000	2172.200	2388.000	2176.100	2395.000
GR	2176.500	2470.000	2177.600	2587.000	2177.400	2709.000	2175.000	2930.000	2177.000	3260.000
GR	2175.000	3360.000	2180.500	4240.000	2180.000	4490.000	2181.000	4500.000	0.000	0.000

1

ET	0.000	9.100	9.100	9.100	9.100	0.000	0.000	0.000	1870.000	3630.000
NH	4.000	0.045	2493.000	0.040	2652.000	0.060	3630.000	0.090	5330.000	0.000
X1	9.520	33.000	2493.000	2691.000	985.000	1005.000	1020.000	0.000	0.000	0.000
GR	2194.100	1870.000	2194.000	1870.000	2194.000	1870.000	2194.000	1870.000	2194.000	1870.000
GR	2193.800	2000.000	2191.400	2136.000	2191.600	2179.000	2191.500	2255.000	2190.000	2280.000
GR	2189.600	2307.000	2189.000	2335.000	2188.500	2372.000	2190.000	2388.000	2187.900	2418.000
GR	2186.300	2426.000	2186.300	2432.000	2188.100	2444.000	2188.300	2493.000	2186.300	2558.000
GR	2184.400	2577.000	2184.400	2591.000	2182.800	2607.000	2182.800	2652.000	2185.500	2691.000
GR	2187.400	2717.000	2189.300	2782.000	2189.500	3027.000	2189.500	3630.000	2185.000	4520.000
GR	2188.000	5020.000	2192.000	5240.000	2195.000	5330.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.200 CEHV= 0.400

*SECNO 7.920

This is a split flow analysis to determine weir flows over UPRR and flows thru UPRR and I-15 underpasses. HEC-2 coding taken from input file supplied by COE (LVWFWRRW). After split flows were calculated, Q's put back in regular R2 run.

WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN *74 AND *84 TOPO
STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
Subsequent results submitted by COE showed difference in flow split at Spring Mtn Rd; JMM not given input data. Final COE results have 0/670/1730/3030 flowing east thru Spring Mtn Rd opening and 0/860/2080/3580 cfs flowing north over Spring Mtn Rd. Rest of run is ok.

7.92	0.82	2119.82	0.00	2117.00	2119.83	0.02	0.00	0.00	2120.00
41.	0.	41.	0.	6.	37.	0.	0.	0.	2120.00
0.00	0.00	1.12	0.00	0.065	0.030	0.040	0.000	2119.00	9951.97
0.001695	0.	0.	0.	0	0	6	0.00	89.70	10040.77

CCHV= 0.100 CEHV= 0.300

*SECNO 8.020

8.02	2.98	2119.98	0.00	0.00	2119.98	0.00	0.15	0.00	2120.00
41.	0.	41.	0.	0.	91.	0.	1.	1.	2121.00
8.32	0.00	0.45	0.00	0.165	0.045	0.040	0.000	2117.00	9550.33
0.000111	520.	520.	520.	6	0	0	0.00	60.84	10011.17

*SECNO 8.230

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
U/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT

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8.23	0.73	2122.73	2122.73	0.00	2125.03	0.31	0.44	0.09	2122.00
41.	4.	37.	3.	5.	8.	0.	2.	2.	2124.00
0.39	0.85	4.67	0.00	0.165	0.045	0.040	0.000	2122.00	9925.43
0.034032	830.	1130.	1130.	20	11	0	0.00	26.02	9951.46

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.240
D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT

8.24	1.20	2123.20	0.00	0.00	2123.23	0.14	0.17	0.03	2122.00
41.	9.	32.	0.	30.	18.	0.	2.	2.	2127.10
0.40	0.31	1.71	0.00	0.165	0.045	0.040	0.000	2122.00	9934.18
0.002311	30.	30.	33.	3	0	0	0.00	66.76	10000.94

*SECNO 8.370

3265 DIVIDED FLOW

8.37	0.77	2124.77	0.00	0.00	2124.77	0.00	1.54	0.00	2124.00
41.	41.	0.	0.	111.	0.	0.	3.	4.	2223.50
0.92	0.37	0.35	0.61	0.145	0.045	0.045	0.000	2124.00	9802.01
0.002089	700.	700.	700.	4	0	0	0.00	169.18	10010.88

*SECNO 8.530

3235 SLOPE TOO STEEP,EXCEEDS 0.10

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.53	0.73	2134.23	2134.23	0.00	2134.42	0.19	5.41	0.06	2133.50
41.	29.	12.	0.	16.	2.	0.	5.	6.	2136.00
1.00	1.80	5.78	0.00	0.145	0.045	0.045	0.000	2133.50	9906.26
0.118691	830.	830.	830.	20	11	0	0.00	49.57	9955.83

*SECNO 8.660
D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE

8.66	0.32	2140.32	0.00	0.00	2140.33	0.01	5.89	0.02	2140.00
41.	7.	34.	0.	32.	41.	0.	5.	9.	2140.00
1.28	0.22	0.81	0.51	0.145	0.045	0.045	0.000	2140.00	9736.48
0.002801	700.	700.	700.	7	0	0	0.00	265.90	10002.38

CCHV= 0.200 CEHV= 0.400
*SECNO 8.680

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVTAS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3720 CRITICAL DEPTH ASSUMED

8.68	7.32	2139.52	2139.52	0.00	2141.27	1.75	1.31	0.70	2136.00

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TW WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	17	2174.933	2187.924	9.430	9.620

TW WEIR Q OVER UPRR BETWEEN 9.18 AND 9.43

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	17	2159.515	2174.933	9.180	9.430

TW WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	17	2148.921	2159.515	8.940	9.180

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	17	2143.288	2148.921	8.740	8.940

TW WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	17	2139.515	2143.288	8.680	8.740

TC RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
4944.17	4944.19	0.00	4944.17	4944.19	0.00	17	2140.322	2139.515	8.660	8.680

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	4944.17	4944.19	0.00	17	2134.229	2140.322	8.530	8.660

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	4944.17	4944.19	0.00	17	2124.771	2134.229	8.370	8.530

TW UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	4944.17	4944.19	0.00	17	2123.197	2124.771	8.240	8.370

TN UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS

TOTAL	AVG	MAX	AVG	TOP	TOP

AREA	VELOCITY	DEPTH	DEPTH	WIDTH	WIDTH
0.0	0.00	0.00	0.00	86.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	4944.17	4944.19	0.00	17	2122.728	2123.197	8.230	8.240

TW I-15 WEIR FLOW

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	4944.17	4944.19	0.00	17	2119.980	2122.728	8.020	8.230

TN SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
7.7	1.33	0.14	0.13	810.0	59.9

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
10.37	10.29	0.83	4954.54	4954.48	0.00	17	2119.815	2119.980	7.920	8.020


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  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q50

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.001700	0.00	0.0	0.	2117.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.200 CEHV= 0.400
*SECNO 7.920
This is a split flow analysis to determine weir flows over UPRR and flows thru UPRR and I-15 underpasses. HEC-2 coding taker from input file supplied by COE (LVWFWRRW). After split flows were calculated, 0*s put back in regular R2 run.

WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN *74 AND *84 TOPO

STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
Subsequent results submitted by COE showed difference in flow split at Spring Mtn Rd; JMM not given input data. Final COE results have 0/670/1730/3030 flowing east thru Spring Mtn Rd opening and 0/860/2080/3580 cfs flowing north over Spring Mtn Rd. Rest of run is ok.

7.92	2.39	2121.39	0.00	2117.00	2121.54	0.15	0.00	0.00	2120.00
673.	20.	650.	3.	27.	208.	3.	0.	0.	2120.00
0.00	0.74	3.12	1.15	0.065	0.030	0.040	0.000	2119.00	9900.98
0.001697	0.	0.	0.	0	0	5	0.00	152.74	10053.72

CCHV= 0.100 CEHV= 0.300

*SECNO 8.020

8.02	5.59	2122.59	2121.29	0.00	2122.82	0.23	1.25	0.03	2120.00
1525.	375.	1145.	5.	522.	259.	3.	6.	3.	2121.00
0.04	0.72	4.42	1.53	0.165	0.045	0.040	0.000	2117.00	9622.17
0.002879	520.	520.	520.	10	17	0	0.00	396.75	10018.91

*SECNO 8.230

U/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT

8.23	4.28	2126.28	0.00	0.00	2126.39	0.12	3.56	0.01	2122.00
1525.	1200.	315.	10.	1159.	56.	4.	26.	13.	2124.00
0.18	1.04	5.63	2.48	0.165	0.045	0.040	0.000	2122.00	9350.11
0.004786	830.	1130.	1130.	3	0	8	0.00	607.30	9957.41

*SECNO 8.240

D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT

8.24	4.43	2126.43	0.00	0.00	2126.53	0.10	0.13	0.00	2122.00
1559.	1285.	374.	0.	1269.	74.	1.	27.	14.	2127.10
0.18	1.01	5.05	0.00	0.165	0.045	0.040	0.000	2122.00	9353.16
0.004251	30.	30.	30.	2	0	0	0.00	650.31	10003.47

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	LOB	CH	ROB	LOB	CH	ROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.370

3265 DIVIDED FLOW

8.37	4.82	2128.82	0.00	0.00	2128.84	0.02	2.31	0.01	2124.00
1659.	1620.	5.	35.	1322.	4.	15.	49.	23.	2223.50
0.34	1.23	1.33	2.37	0.145	0.045	0.045	0.000	2124.00	9511.34
0.002627	700.	700.	700.	2	0	0	0.00	466.14	10015.55

*SECNO 8.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

8.53	3.21	2136.71	2136.71	0.00	2137.57	0.86	5.94	0.25	2133.50
1659.	1159.	487.	13.	310.	39.	3.	65.	29.	2136.00
0.37	3.75	12.44	3.99	0.145	0.045	0.045	0.000	2133.50	9755.69
0.058466	830.	830.	830.	20	19	0	0.00	223.17	9978.86

*SECNO 8.660

3301 HV CHANGED MORE THAN HVINS

D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE

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    8.66      2.52   2142.52      0.00      0.00   2142.62      0.10      4.97      0.08   2140.00
    1659.      538.      1020.      51.      758.      327.      24.      77.      36.      2140.00
    0.46      0.78      3.12      2.14      0.145      0.045      0.045      0.000   2140.00   9369.89
 0.002605      700.      700.      703.      5      0      0      0.00   649.15   10019.04
 J
 CCHV=   0.200  CEHV=   0.400
 *SECNO 8.630

 3301 HV CHANGED MORE THAN HVINS

    8.68      10.35   2142.55   2141.53      0.00   2143.17      0.61      0.34      0.21   2136.00
    7000.      2916.      3728.      355.      1095.      456.      82.      80.      38.      2136.00
    0.46      2.66      8.17      4.33      0.065      0.045      0.045      0.000   2132.20   9373.92
 0.003702      100.      100.      100.      17      23      0      0.00   655.17   10029.09
 J
 1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA     LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 8.740
          U/S SIDE FLAMINGO RD OVERPASS OVER I-15
    8.74      6.94   2144.24      0.00      0.00   2145.10      0.85      1.83      0.10   2168.00
    7000.      0.      7000.      0.      0.      944.      0.      94.      42.      2147.20
    0.48      0.00      7.41      0.00      0.045      0.045      0.045      0.000   2137.30   9920.00
 0.004295      500.      450.      450.      3      0      0      0.00   139.13   10059.13
 J
 CCHV=   0.100  CEHV=   0.300
 *SECNO 8.940

 3265 DIVIDED FLOW

          CL = 2636
    8.94      6.76   2150.06      0.00      0.00   2150.74      0.68      5.63      0.02   2149.20
    7000.      1473.      4298.      1229.      467.      546.      271.      122.      53.      2152.10
    0.53      3.15      7.87      4.53      0.045      0.040      0.045      0.000   2143.30   2179.96
 0.006421      1030.      1060.      1355.      2      0      0      0.00   689.24   2996.22
 J
 *SECNO 9.180

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
    9.18      6.55   2160.45   2160.45      0.00   2163.12      2.67      11.14      0.60   2161.60
    7000.      0.      7000.      0.      0.      534.      0.      147.      64.      2168.40
    0.56      0.00      13.11      0.00      0.170      0.040      0.170      0.000   2153.90   2146.76
 0.013838      1248.      1230.      1178.      2      8      0      0.00   100.46   2247.22
 J
 1490 NH CARD USED
 *SECNO 9.430

 3265 DIVIDED FLOW


 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
    9.43      5.59   2176.89   2176.89      0.00   2178.31      1.41      14.20      0.13   2176.90
    7000.      1.      6321.      678.      1.      630.      890.      178.      82.      2176.10
    0.60      0.38      10.03      0.76      0.045      0.040      0.170      0.000   2171.30   2240.19
 0.008510      1315.      1330.      1281.      5      17      0      0.00   1153.93   3662.93
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 9.620
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

9.62	5.65	2188.45	2188.45	2188.45	2189.79	1.34	11.32	0.01	2188.30
7000.	234.	6518.	248.	53.	682.	65.	205.	100.	2185.90
0.63	4.40	9.55	3.78	0.045	0.060	0.060	0.000	2182.80	2410.14
0.015144	985.	1020.	1005.	2	5	0	0.00	342.80	2752.94

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TW WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	9	2176.893	2188.450	9.430	9.620

TW WEIR Q OVER UPRR BETWEEN 9.18 AND 9.43

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	9	2160.452	2176.893	9.180	9.430

TW WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	9	2150.063	2160.452	8.940	9.180

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	9	2144.243	2150.063	8.740	8.940

TW WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	9	2142.554	2144.243	8.680	8.740

TC RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
5340.75	5340.63	0.00	5340.75	5340.63	0.00	9	2142.518	2142.554	8.660	8.680

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5340.75	5340.63	0.00	9	2136.709	2142.518	8.530	8.660

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5340.75	5340.63	0.00	9	2128.816	2136.709	8.370	8.530

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TW UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5340.75	5340.63	0.00	9	2126.426	2128.816	8.240	8.370

TN UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
21.1	6.47	3.32	2.74	86.0	7.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
134.25	136.43	1.60	5475.01	5477.05	0.04	9	2126.276	2126.426	8.230	8.240

TW I-15 WEIR FLOW

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5475.01	5477.05	0.04	9	2122.589	2126.276	8.020	8.230

TN SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
118.5	7.43	1.84	1.62	810.0	73.2

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
851.51	880.42	3.34	6326.52	6357.47	0.49	9	2121.394	2122.589	7.920	8.020

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  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.001700	0.00	0.0	0.	2117.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.200 CEHV= 0.400

*SECNO 7.920

This is a split flow analysis to determine weir flows over UPRR and flows thru UPRR and I-15 underpasses. HEC-2 coding taken from input file supplied by COE (LVWFWRRW). After split flows were calculated, Q's put back in regular R2 run.

WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN '74 AND '84 TOPO
STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
Subsequent results submitted by COE showed difference in flow split at Spring Mtn Rd; JMM not given input data. Final COE results have 0/670/1730/3030 flowing east thru Spring Mtn Rd opening and 0/860/2080/3580 cfs flowing north over Spring Mtn Rd.
Rest of run is ok.

7.92	3.58	2122.58	0.00	2117.00	2122.85	0.27	0.00	0.00	2120.00
1589.	104.	1468.	15.	93.	339.	9.	0.	0.	2120.00
0.00	1.12	4.33	1.74	0.065	0.030	0.040	0.000	2119.00	9867.70
0.001703	0.	0.	0.	0	0	5	0.00	189.15	10056.89

CCHV= 0.100 CEHV= 0.300

*SECNO 8.020

8.02	7.09	2124.09	2122.75	0.00	2124.56	0.47	1.65	0.06	2120.00
3772.	1318.	2417.	37.	1102.	356.	12.	11.	4.	2121.00
0.03	1.20	6.79	3.14	0.165	0.045	0.040	0.000	2117.00	9502.48
0.004429	520.	520.	523.	7	14	0	0.00	520.10	10022.58

*SECNO 8.230

U/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT

8.23	6.26	2128.26	0.00	0.00	2128.37	0.11	3.78	0.04	2122.00
3772.	3194.	533.	44.	2497.	84.	14.	52.	17.	2124.00
0.16	1.28	6.37	3.26	0.165	0.045	0.040	0.000	2122.00	9183.58
0.003584	830.	1130.	1130.	3	0	0	0.00	776.78	9960.37

*SECNO 8.240

D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT

8.24	6.37	2128.37	0.00	0.00	2128.48	0.11	0.11	0.00	2122.00
4327.	3555.	668.	103.	2682.	111.	39.	54.	17.	2127.10
0.16	1.33	6.03	2.51	0.165	0.045	0.040	0.000	2122.00	9172.11
0.003733	30.	30.	30.	2	0	0	0.00	863.28	10035.39

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.370

3265 DIVIDED FLOW

8.37	6.99	2130.99	0.00	0.00	2131.04	0.05	2.55	0.01	2124.00
4617.	4494.	15.	108.	2568.	7.	31.	97.	30.	2223.50

```
    0.27        1.75        1.55        3.54        0.145       0.045       0.045       0.000     2124.00     9278.45
 0.003569       700.        700.        700.           2           0           0        0.00      702.40    10018.04
)
 *SECNO 8.530

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
    8.53        4.91     2138.41     2138.41        0.00     2139.67        1.26        7.11        0.36     2133.50
  4617.       3169.       1171.        277.        730.         73.         36.        130.         40.      2136.00
    0.38        4.34       16.00        7.65       0.145       0.045       0.045       0.000     2133.50     9649.56
 0.042123       830.        830.        930.           4          19           0        0.00      350.52    10000.09
)
 *SECNO 8.660

 3301 HV CHANGED MORE THAN HVINS

          D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE
    8.66        4.26     2144.26        0.00        0.00     2144.43        0.17        4.65        0.11     2140.00
  4617.       1966.       2436.        215.       1846.        553.         69.        157.         50.      2140.00
    0.37        1.07        4.41        3.13       0.145       0.045       0.045       0.000     2140.00     9132.99
 0.002585       700.        700.        700.           4           0           0        0.00      899.60    10032.59
)
 CCHV=   0.200 CEHV=   0.400
 *SECNO 8.680
    8.68       12.17     2144.37     2142.54        0.00     2144.73        0.36        0.23        0.08     2136.00
 10500.       6043.       3935.        522.       2381.        555.        134.        163.         52.      2136.00
    0.38        2.54        7.10        3.89       0.065       0.045       0.045       0.000     2132.20     9135.94
 0.002153       100.        100.        100.          16          20           0        0.00      900.11    10036.06
)
 *SECNO 8.740
1
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    SECNO       DEPTH       CWSEL       CRIWS       WSELK       EG          HV          HL          OLOSS       BANK ELEV
    Q           OLOB        OCH         OROB        ALOB        ACH         AROB        VOL         TWA      LEFT/RIGHT
    TIME        VLOB        VCH         VROB        XNL         XNCH        XNR         WTN         ELMIN         SSTA
    SLOPE       XLOBL       XLCH        XLOBR       ITRIAL      IDC         ICONT       CORAR       TCPWID        ENDST


 3301 HV CHANGED MORE THAN HVINS

          U/S SIDE FLAMINGO RD OVERPASS OVER I-15
    8.74        8.00     2145.30        0.00        0.00     2146.74        1.44        1.57        0.43     2168.00
 10500.          0.      10500.          0.          0.       1991.          0.        186.         58.      2147.20
    0.39        0.00        9.62        0.00       0.045       0.045       0.045       0.000     2137.30     9920.00
 0.006106       500.        450.        450.           3           0           0        0.00      140.15    10060.15
)
 CCHV=   0.100 CEHV=   0.300
 *SECNO 8.940

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

          CL = 2636
    8.94        8.04     2151.34        0.00        0.00     2151.77        0.43        4.94        0.10     2149.20
 10500.       3468.       4776.       2255.        967.         708.        602.        229.         71.      2152.10
    0.45        3.59        6.75        3.75       0.045       0.040       0.045       0.000     2143.30     2139.10
 0.003511       1030.       1060.       1355.           2           0           0        0.00      857.67     3144.28
)
 *SECNO 9.130

 3301 HV CHANGED MORE THAN HVINS
```

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.18	8.60	2162.50	2162.50	0.00	2165.51	3.01	7.03	0.77	2161.60
10500.	53.	10447.	0.	92.	749.	0.	272.	87.	2168.40
0.47	0.57	13.95	0.00	0.170	0.040	0.170	0.000	2153.90	1956.22
0.011030	1240.	1230.	1170.	20	8	0	0.00	295.46	2251.67

1490 NH CARD USED
*SECNO 9.430

3301 HV CHANGED MORE THAN HVINS

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.43	6.81	2178.11	2178.11	0.00	2179.57	1.46	11.88	0.16	2176.90
10500.	146.	8424.	1931.	47.	780.	2438.	334.	116.	2176.10
0.52	3.13	10.80	0.79	0.045	0.040	0.237	0.000	2171.30	2229.64
0.007427	1315.	1330.	1280.	4	15	0	0.00	1628.01	3857.66

1490 NH CARD USED
*SECNO 9.620

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

9.62	7.10	2189.90	2189.90	2189.90	2190.83	0.93	7.59	0.05	2188.30
10500.	1068.	8291.	1141.	262.	970.	552.	352.	150.	2185.90
0.55	4.08	8.55	2.07	0.045	0.060	0.060	0.000	2182.80	2286.51
0.007510	985.	1020.	1005.	3	8	0	0.00	1341.08	3630.00

1
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TW WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	11	2178.110	2189.904	9.430	9.620

TW WEIR Q OVER UPRR BETWEEN 9.18 AND 9.43

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	11	2162.503	2178.110	9.180	9.430

TW WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO

0.00	0.00	0.00	0.00	0.00	0.00	11	2151.340	2162.503	8.940	9.180	

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	11	2145.299	2151.340	8.740	8.940

TW WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	11	2144.370	2145.299	8.680	8.740

TC RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
5883.10	5883.50	0.01	5333.10	5883.50	0.01	11	2144.256	2144.370	8.660	8.680

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5883.10	5883.50	0.01	11	2138.407	2144.256	8.530	8.660

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	5883.10	5883.50	0.01	11	2130.992	2138.407	8.370	8.530

TW UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
290.29	293.83	1.21	6173.39	6177.33	0.06	11	2128.372	2130.992	8.240	8.370

TN UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
89.7	6.22	5.30	2.15	86.0	41.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
555.04	557.59	0.46	6728.44	6734.92	0.10	11	2128.261	2128.372	8.230	8.240

TW I-15 WEIR FLOW

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	6728.44	6734.92	0.10	11	2124.094	2128.261	8.020	8.230

TN SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
213.5	10.22	3.07	2.57	810.0	83.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
2183.98	2183.31	0.03	8912.42	8918.23	0.07	11	2122.582	2124.094	7.920	8.020

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  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - 0500

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
       0.        5.         0.         0.   0.001700       0.00       0.0        0.   2117.000      0.000
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     15.000     0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 4

CCHV=   0.200  CEHV=   0.400
*SECNO 7.920
         This  is a split flow analysis to determine weir flows over UPRR
         and flows thru UPRR and I-15 underpasses.  HEC-2 coding taken from
         input file supplied by COE (LVWFWRRW).  After split flows were
         calculated, Q's put back in regular R2 run.

         WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
         X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN '74 AND '84 TOPO
         STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
            Subsequent results submitted by COE showed difference in flow
            split at Spring Mtn Rd: JMM not given input data.  Final COE
            results have 0/670/1730/3030 flowing east thru Spring Mtn Rd
            opening and 0/860/2080/3583 cfs flowing north over Spring Mtn Rd.
            Rest of run is ok.
     7.92       4.65  2123.65       0.00  2117.00  2124.04       0.39       0.00       0.00  2120.00
     2709.       263.       2408.       39.       187.       457.       13.        0.         0.    2120.00
        0.00       1.41       5.27       2.19      0.065      0.030      0.040      0.000  2119.00  9837.75
 0.001698          0.         0.         0.          0          0          6       0.00   221.99 10059.74

CCHV=   0.100  CEHV=   0.300
*SECNO 8.020
     8.02       8.31  2125.31  2123.90       0.00  2125.98       0.67       1.86       0.09  2120.00
     6489.      2666.      3725.       98.      1702.       435.       23.        17.        5.    2121.00
        0.03       1.57       8.57       4.33      0.165      0.045      0.040      0.000  2117.00  9408.11
 0.005406          520.       520.       520.         10         14          0       0.00   617.43 10025.54

*SECNO 8.230

3301 HV CHANGED MORE THAN HVINS
```

D/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT

8.23	7.81	2129.81	0.00	0.00	2129.93	0.13	3.90	0.05	2122.00
6489.	5642.	751.	97.	3746.	105.	25.	76.	20.	2124.00
0.14	1.51	7.12	3.34	0.165	0.045	0.040	0.000	2122.00	9086.55
0.003292	830.	1130.	1130.	2	0	0	0.00	876.13	9562.68

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 8.240
D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT

8.24	7.90	2129.90	0.00	0.00	2130.04	0.14	0.10	0.00	2122.00
7740.	6383.	974.	383.	4012.	140.	89.	79.	20.	2127.10
0.15	1.59	6.96	4.32	0.165	0.045	0.040	0.000	2122.00	9057.47
0.003655	30.	30.	30.	2	0	0	0.00	979.52	10036.99

*SECNO 8.370

3265 DIVIDED FLOW

3280 CROSS SECTION 8.37 EXTENDED 0.47 FEET

8.37	9.17	2133.17	0.00	0.00	2133.28	0.11	3.24	0.00	2124.00
11344.	11026.	38.	280.	4288.	13.	52.	148.	35.	2223.50
0.22	2.57	2.96	5.34	0.145	0.045	0.045	0.000	2124.00	9120.12
0.005535	700.	700.	700.	3	0	0	0.00	863.56	10020.00

*SECNO 8.530
3280 CROSS SECTION 8.53 EXTENDED 2.62 FEET

3301 HV CHANGED MORE THAN HVINS

8.53	8.12	2141.62	0.00	0.00	2143.18	1.57	9.46	0.44	2133.50
14895.	9713.	2602.	2580.	2032.	137.	223.	212.	49.	2136.00
0.25	4.78	18.95	11.55	0.145	0.045	0.045	0.000	2133.50	9428.77
0.025492	830.	830.	830.	3	0	0	0.00	611.24	10040.00

*SECNO 8.660
3280 CROSS SECTION 8.66 EXTENDED 2.56 FEET

3301 HV CHANGED MORE THAN HVINS

D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE

8.66	7.76	2147.76	0.00	0.00	2148.24	0.48	4.95	0.11	2140.00
18963.	9731.	7997.	1236.	4844.	1008.	205.	280.	63.	2140.00
0.29	2.01	7.93	6.12	0.145	0.045	0.045	0.000	2140.00	8896.41
0.003755	700.	700.	700.	3	0	0	0.00	1143.59	10040.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.200 CEHV= 0.400

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*SECNO 8.680
3280 CROSS SECTION 8.68 EXTENDED 2.75 FEET

8.68	15.96	2148.16	2144.80	0.00	2148.49	0.33	0.22	0.03	2136.00
26135.	19103.	5762.	1270.	5924.	759.	268.	295.	66.	2136.00
0.30	3.22	7.59	4.74	0.065	0.045	0.045	0.000	2132.20	8858.10
0.001623	100.	100.	100.	13	14	0	0.00	1141.90	10040.00

*SECNO 8.740
3280 CROSS SECTION 8.74 EXTENDED 1.43 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
U/S SIDE FLAMINGO RD OVERPASS OVER I-15

8.74	11.32	2148.63	2148.63	0.00	2154.19	5.56	1.85	2.09	2168.00
29551.	0.	29551.	0.	0.	1561.	0.	343.	73.	2147.20
0.30	0.00	18.93	0.00	0.045	0.045	0.045	0.000	2137.30	9920.00
0.015600	500.	450.	450.	20	19	0	0.00	142.00	10062.00

CCHV= 0.100 CEHV= 0.300
*SECNO 8.940

3301 HV CHANGED MORE THAN HVINS

CL = 2636

8.94	13.55	2156.85	0.00	0.00	2157.10	0.25	2.38	0.53	2149.20
34826.	15131.	7806.	11888.	4270.	1434.	3453.	483.	95.	2152.10
0.38	3.54	5.44	3.44	0.045	0.040	0.045	0.000	2143.30	1789.69
0.000918	1030.	1060.	1355.	4	0	0	0.00	1510.29	3299.98

*SECNO 9.180

3265 DIVIDED FLOW

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.18	14.68	2168.58	2168.58	0.00	2170.54	1.96	2.75	0.51	2161.60
34826.	10167.	21891.	2768.	3861.	1558.	1888.	713.	149.	2168.40
0.42	2.63	14.05	1.47	0.170	0.040	0.170	0.000	2153.50	1198.45
0.011951	1240.	1230.	1170.	20	8	0	0.00	2393.30	3710.68

1490 NH CARD USED
*SECNO 9.430
3280 CROSS SECTION 9.43 EXTENDED 0.75 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.43	10.45	2181.75	2181.75	0.00	2183.92	2.16	13.21	0.06	2176.90
34906.	2455.	19276.	13176.	406.	1228.	9094.	981.	222.	2176.10
0.45	6.04	15.70	1.45	0.045	0.040	0.265	0.000	2171.30	2000.00

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0.008558 1315. 1330. 1280. 5 16 0 0.00 2500.00 4500.00

1490 NH CARD USED
*SECNO 9.620

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1870.0 3630.0 TYPE= 1 TARGET= 1760.000

9.62	9.20	2192.00	2192.00	2192.00	2193.43	1.43	0.25	0.07	2188.30
35000.	5572.	17233.	12195.	807.	1386.	2525.	1160.	268.	2185.90
0.49	6.91	12.44	4.33	0.045	0.060	0.060	0.000	2182.80	2181.76
0.009802	985.	1020.	1005.	4	9	0	0.00	1528.24	3630.00

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TW WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
93.68	94.09	0.43	93.68	94.09	0.43	13	2181.755	2192.004	9.430	9.620

TW WEIR Q OVER UPRR BETWEEN 9.18 AND 9.43

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
80.41	80.80	0.49	174.09	174.89	0.46	13	2168.577	2181.755	9.180	9.430

TW WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	174.09	174.89	0.46	13	2156.849	2168.577	8.940	9.180

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
5275.13	5194.79	1.53	5449.22	5369.68	1.47	13	2148.625	2156.849	8.740	8.940

TW WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3416.25	3367.29	1.44	8865.47	8736.96	1.46	13	2148.156	2148.625	8.680	8.740

TC RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
7171.11	7169.44	0.02	16036.58	15906.40	0.82	13	2147.756	2148.156	8.660	8.680

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
4068.21	4049.06	0.47	20104.79	19955.46	0.75	13	2141.616	2147.756	8.530	8.660

TW WEIR OVER UPRR WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3551.11	3532.97	0.51	23655.89	23488.43	0.71	13	2133.174	2141.616	8.370	8.530

TW UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3603.97	3541.22	1.76	27259.37	27029.65	0.85	13	2129.900	2133.174	8.240	8.370

TN UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOF WIDTH	TOP WIDTH
156.3	7.94	6.84	3.47	86.0	45.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
1250.92	1241.87	0.73	28510.79	28271.52	0.84	13	2129.807	2129.900	8.230	8.240

TW I-15 WEIR FLOW

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	28510.79	28271.52	0.84	13	2125.306	2129.807	8.020	8.230

TN SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOF WIDTH	TOP WIDTH
308.2	12.30	4.16	3.36	810.0	91.8

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3779.71	3789.04	0.25	32290.50	32060.56	0.71	13	2123.652	2125.306	7.920	8.020

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SPLIT FLOW ANALYSIS OF W

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7.920	0.00	0.00	0.00	2119.00	41.00	2119.82	0.00	2119.83	16.95	1.12	36.57	9.96
7.920	0.00	0.00	0.00	2119.00	673.48	2121.39	0.00	2121.54	16.97	3.12	238.07	163.51
7.920	0.00	0.00	0.00	2119.00	1587.58	2122.58	0.00	2122.85	17.03	4.33	441.29	384.71
7.920	0.00	0.00	0.00	2119.00	2709.50	2123.65	0.00	2124.04	16.98	5.27	661.19	657.53
8.020	520.00	0.00	0.00	2117.00	41.00	2119.98	0.00	2119.98	1.11	0.45	90.65	38.85
8.020	520.00	0.00	0.00	2117.00	1524.99	2122.59	2121.29	2122.82	28.79	4.42	783.69	284.24
8.020	520.00	0.00	0.00	2117.00	3771.56	2124.09	2122.75	2124.56	44.29	6.79	1469.51	566.74
8.020	520.00	0.00	0.00	2117.00	6489.21	2125.31	2123.90	2125.98	54.06	8.57	2159.71	882.56

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*	8.230	1130.00	0.00	0.00	2122.00	41.00	2122.73	2122.73	2123.03	340.32	4.67	13.12	2.22
	8.230	1130.00	0.00	0.00	2122.00	1524.99	2126.28	0.00	2126.39	47.86	5.63	1219.09	220.44
	8.230	1130.00	0.00	0.00	2122.00	3771.56	2128.26	0.00	2128.37	35.84	6.37	2593.80	629.95
	8.230	1130.00	0.00	0.00	2122.00	6489.21	2129.81	0.00	2129.93	32.92	7.12	3876.85	1130.99
	8.240	30.00	0.00	0.00	2122.00	41.00	2123.20	0.00	2123.23	23.11	1.71	48.88	8.53
	8.240	30.00	0.00	0.00	2122.00	1659.25	2126.43	0.00	2126.53	42.51	5.05	1342.98	254.48
	8.240	30.00	0.00	0.00	2122.00	4326.61	2128.37	0.00	2128.48	37.33	6.03	2832.46	708.09
	8.240	30.00	0.00	0.00	2122.00	7740.13	2129.90	0.00	2130.04	36.55	6.96	4240.88	1280.25
	8.370	700.00	0.00	0.00	2124.00	41.00	2124.77	0.00	2124.77	20.89	0.35	111.01	8.97
	8.370	700.00	0.00	0.00	2124.00	1659.25	2128.82	0.00	2128.84	26.27	1.33	1339.76	323.75
	8.370	700.00	0.00	0.00	2124.00	4616.90	2130.99	0.00	2131.04	35.69	1.98	2605.58	772.86
	8.370	700.00	0.00	0.00	2124.00	11344.11	2133.17	0.00	2133.28	55.35	2.96	4353.28	1524.85
*	8.530	830.00	0.00	0.00	2133.50	41.00	2134.23	2134.23	2134.42	1186.91	5.78	18.07	1.19
*	8.530	830.00	0.00	0.00	2133.50	1659.25	2136.71	2136.71	2137.57	584.66	12.44	351.88	68.62
*	8.530	830.00	0.00	0.00	2133.50	4616.90	2138.41	2138.41	2139.67	421.23	16.00	838.92	224.95
	8.530	830.00	0.00	0.00	2133.50	14895.22	2141.62	0.00	2143.18	254.92	18.95	2392.53	932.92
	8.650	700.00	0.00	0.00	2140.00	41.00	2140.32	0.00	2140.33	28.01	0.81	73.98	7.75
	8.650	700.00	0.00	0.00	2140.00	1659.25	2142.52	0.00	2142.62	26.05	3.12	1108.83	325.12
	8.650	700.00	0.00	0.00	2140.00	4616.90	2144.26	0.00	2144.43	25.85	4.41	2467.36	908.05
	8.650	700.00	0.00	0.00	2140.00	18963.43	2147.76	0.00	2148.24	37.55	7.93	6057.39	3094.56

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	8.680	100.00	0.00	0.00	2132.20	4100.00	2139.52	2139.52	2141.27	133.87	11.55	470.52	354.35
	8.680	100.00	0.00	0.00	2132.20	7000.00	2142.55	2141.53	2143.17	37.02	8.17	1633.17	1150.55
	8.680	100.00	0.00	0.00	2132.20	10500.00	2144.37	2142.54	2144.73	21.53	7.10	3070.11	2262.73
	8.680	100.00	0.00	0.00	2132.20	26134.54	2148.16	2144.80	2148.49	16.23	7.59	6951.47	6486.78
	8.740	450.00	0.00	0.00	2137.30	4100.00	2143.29	0.00	2143.68	23.94	5.05	811.21	837.96
	8.740	450.00	0.00	0.00	2137.30	7000.00	2144.24	0.00	2145.10	42.95	7.41	944.22	1068.14
	8.740	450.00	0.00	0.00	2137.30	10500.00	2145.30	0.00	2146.74	61.06	9.62	1090.92	1343.73
*	8.740	450.00	0.00	0.00	2137.30	29550.78	2148.63	2148.63	2154.19	156.00	18.93	1561.34	2365.98
*	8.940	1060.00	0.00	0.00	2143.30	4100.00	2148.92	2148.92	2149.84	94.24	8.23	610.26	422.35
	8.940	1060.00	0.00	0.00	2143.30	7000.00	2150.86	0.00	2150.74	64.21	7.87	1284.70	873.55
	8.940	1060.00	0.00	0.00	2143.30	10500.00	2151.34	0.00	2151.77	35.11	6.75	2276.48	1771.98
	8.940	1060.00	0.00	0.00	2143.30	34825.91	2156.85	0.00	2157.10	9.18	5.44	9156.66	11494.45
	9.180	1230.00	0.00	0.00	2153.90	4100.00	2159.52	0.00	2160.85	83.85	9.28	441.98	447.75
*	9.180	1230.00	0.00	0.00	2153.90	7000.00	2160.45	2160.45	2163.12	138.38	13.11	534.07	595.05
*	9.180	1230.00	0.00	0.00	2153.90	10500.00	2162.50	2162.50	2165.51	110.30	13.95	840.76	999.77
*	9.180	1230.00	0.00	0.00	2153.90	34825.91	2168.58	2168.58	2170.54	119.51	14.05	7306.44	3185.69
*	9.430	1330.00	0.00	0.00	2171.30	4100.00	2174.93	2174.93	2176.63	164.64	10.46	392.10	319.53
*	9.430	1330.00	0.00	0.00	2171.30	7000.00	2176.89	2176.89	2178.31	85.10	10.03	1521.28	758.80
*	9.430	1330.00	0.00	0.00	2171.30	10500.00	2178.11	2178.11	2179.57	74.27	10.80	3264.21	1218.34
*	9.430	1330.00	0.00	0.00	2171.30	34906.32	2181.75	2181.75	2183.92	85.58	15.70	10728.34	3773.31
	9.620	1020.00	0.00	0.00	2182.80	4100.00	2187.92	0.00	2188.61	86.76	6.76	643.27	440.18
*	9.620	1020.00	0.00	0.00	2182.80	7000.00	2188.45	2188.45	2189.79	151.44	9.55	801.00	568.82
*	9.620	1020.00	0.00	0.00	2182.80	10500.00	2189.90	2189.90	2190.83	75.10	8.55	1783.97	1211.63
*	9.620	1020.00	0.00	0.00	2182.80	35000.00	2192.00	2192.00	2193.43	98.02	12.44	4717.22	3535.26

SPLIT FLOW ANALYSIS OF W

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SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	7.920	41.00	2119.82	0.00	0.00	2.82	89.78	0.00
	7.920	673.48	2121.39	1.58	0.00	4.39	152.74	0.00
	7.920	1587.58	2122.58	1.19	0.00	5.58	189.19	0.00
	7.920	2709.50	2123.65	1.07	0.00	6.65	221.99	0.00
	8.020	41.00	2119.98	0.00	0.16	0.00	60.84	520.00
	8.020	1524.99	2122.59	2.61	1.20	0.00	396.75	520.00
	8.020	3771.56	2124.09	1.51	1.51	0.00	520.10	520.00
	8.020	6489.21	2125.31	1.21	1.65	0.00	617.43	520.00
*	8.230	41.00	2122.73	0.00	2.75	0.00	26.02	1130.00
	8.230	1524.99	2126.28	3.55	3.69	0.00	607.30	1130.00
	8.230	3771.56	2128.26	1.99	4.17	0.00	776.78	1130.00
	8.230	6489.21	2129.81	1.55	4.50	0.00	876.13	1130.00
	8.240	41.00	2123.20	0.00	0.47	0.00	66.76	30.00
	8.240	1659.25	2126.43	3.23	0.15	0.00	650.31	30.00
	8.240	4326.61	2128.37	1.95	0.11	0.00	863.28	30.00
	8.240	7740.13	2129.90	1.53	0.09	0.00	979.52	30.00
	8.370	41.00	2124.77	0.00	1.57	0.00	169.18	700.00
	8.370	1659.25	2128.82	4.05	2.39	0.00	466.14	700.00
	8.370	4616.90	2130.99	2.18	2.62	0.00	702.40	700.00
	8.370	11344.11	2133.17	2.18	3.27	0.00	863.56	700.00
*	8.530	41.00	2134.23	0.00	9.46	0.00	49.57	830.00
*	8.530	1659.25	2136.71	2.48	7.89	0.00	223.17	830.00
*	8.530	4616.90	2139.41	1.70	7.42	0.00	350.52	830.00
	8.530	14895.22	2141.62	3.21	8.44	0.00	611.24	830.00
	8.650	41.00	2140.32	0.00	6.09	0.00	265.90	700.00
	8.650	1659.25	2142.52	2.20	5.81	0.00	649.15	700.00
	8.650	4616.90	2144.26	1.74	5.85	0.00	899.60	700.00
	8.650	18963.43	2147.76	3.50	6.14	0.00	1143.59	700.00
*	8.680	4100.00	2139.52	0.00	-0.81	0.00	155.34	100.00
	8.680	7000.00	2142.55	3.04	0.04	0.00	655.17	100.00
	8.680	10500.00	2144.37	1.82	0.11	0.00	900.11	100.00
	8.680	26134.54	2148.16	3.79	0.40	0.00	1141.90	100.00
	8.740	4100.00	2143.29	0.00	3.77	0.00	138.20	450.00
	8.740	7000.00	2144.24	0.95	1.69	0.00	139.13	450.00
	8.740	10500.00	2145.30	1.06	0.93	0.00	140.15	450.00
*	8.740	29550.78	2148.63	3.33	0.47	0.00	142.00	450.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	8.940	4100.00	2146.92	0.00	5.63	0.00	442.32	1060.00
	8.940	7000.00	2150.06	1.14	5.82	0.00	689.24	1060.00
	8.940	10500.00	2151.34	1.28	6.04	0.00	857.67	1060.00
	8.940	34825.91	2156.85	5.51	8.22	0.00	1510.29	1060.00
	9.180	4100.00	2159.52	0.00	10.59	0.00	96.17	1230.00
*	9.180	7000.00	2160.45	0.94	10.39	0.00	100.46	1230.00
*	9.180	10500.00	2162.50	2.05	11.16	0.00	295.46	1230.00
*	9.180	34825.91	2168.58	6.07	11.73	0.00	2393.30	1230.00
*	9.430	4100.00	2174.93	0.00	15.42	0.00	118.99	1330.00
*	9.430	7000.00	2176.89	1.96	16.44	0.00	1153.93	1330.00

*	9.430	10500.00	2178.11	1.22	15.61	0.00	1628.01	1330.00
*	9.430	34906.32	2181.75	3.64	13.18	0.00	2500.00	1330.00
	9.620	4100.00	2187.92	0.00	12.99	0.00	254.90	1020.00
*	9.620	7000.00	2188.45	0.53	11.56	0.00	342.80	1020.00
*	9.620	10500.00	2189.90	1.45	11.79	0.00	1341.08	1020.00
*	9.620	35000.00	2192.00	2.10	10.25	0.00	1528.24	1020.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 8.230 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.230 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 8.230 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 8.530 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.530 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 8.530 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 8.530 PROFILE= 1 SLOPE TOO STEEP
CAUTION SECNO= 8.530 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.530 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 8.530 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 8.530 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.530 PROFILE= 3 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 8.680 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.680 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 8.740 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.740 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 8.740 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 8.940 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8.940 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 9.180 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.180 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.180 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.180 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.180 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 9.180 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.180 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.180 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 9.430 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.430 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.430 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.430 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.430 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.430 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.430 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.430 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 9.620 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.620 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.620 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.620 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 9.620 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 9.620 PROFILE= 4 MINIMUM SPECIFIC ENERGY

Continuous Interfolded @ Mosaic Business Forms, Inc.

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   01,02,03,04,05
  MODIFICATION -   50,51,52,53,54,55
**************************************************


EOF..
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```
1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  28-APR-88 TIME   16:54:23          *
*************************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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Sta 7.35 - 1467

1

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```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************
```

```
C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH - WINNICK AVE     Q25
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.000000	0.00	0.0	0.	2070.320	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000

QT	4.000	4100.000	5340.000	5880.000	15500.000	0.000	0.000	0.000	0.000	0.000
NC	0.045	0.045	0.033	0.100	0.300	0.000	0.000	0.000	0.000	0.000
X1	7.350	12.000	2201.000	2416.000	1040.000	1040.000	1035.000	0.000	0.000	0.000
X4	1.000	2072.600	2000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2072.600	1300.000	2068.300	2127.000	2069.300	2165.000	2069.600	2201.000	2068.100	2233.000
GR	2065.300	2252.000	2065.200	2282.000	2068.700	2320.000	2069.900	2416.000	2072.600	2553.000
GR	2073.200	2899.000	2074.700	3280.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	4.000	4100.000	5340.000	5880.000	16600.000	0.000	0.000	0.000	0.000	0.000
NC	0.060	0.060	0.025	0.100	0.300	0.000	0.000	0.000	0.000	0.000

```
     ##########################################################
     ####                    KOVAL LANE                    ####
     ####  This is a swale crossing with minor drains for low flow  ####
     ####  Debris is assumed to block drains.  This crossing has     ####
     ####  been modeled as a regular ground section.                 ####
     ####  Flow right of sta 3500 runs to Trop Wash; reduce FW 0500  ####
```

```
     ####  ET used to encroach to eff flow width
     ##########################################################################
X1       7.380      11.000    2495.000    2575.000     150.000     150.000     150.000       0.000       0.000       0.000
X2       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000      15.000
X4       2.000    2074.700    1950.000    2075.200    2000.000       0.000       0.000       0.000       0.000       0.000
GR    2075.100    1650.000    2074.800    2200.000    2074.000    2360.000    2073.700    2495.000    2073.700    2575.000
GR    2073.300    2701.000    2074.400    2790.000    2075.600    3250.000    2075.700    3600.000    2075.800    4050.000
GR    2076.000    4850.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

ET       0.000       9.100       9.100       0.000       0.000       0.000       0.000       0.000    2476.000    3260.000
NC       0.120       0.120       0.025       0.100       0.300       0.000       0.000       0.000       0.000       0.000
1
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     ####              Centerline =  2630                                          ####
     ####  ET used to encroach to eff flow based on exit from culvert.
X1       7.470      20.000    2600.000    2693.000     460.000     460.000     460.000       0.000       0.000       0.000
GR    2080.100    1550.000    2076.500    1750.000    2076.500    1750.000    2076.500    1750.000    2076.500    1750.000
GR    2079.500    2250.000    2076.900    2331.000    2078.200    2476.000    2076.400    2600.000    2074.300    2610.000
GR    2073.700    2645.000    2074.300    2690.000    2076.500    2693.000    2076.500    2995.000    2078.200    3202.000
GR    2080.000    3260.000    2080.000    3600.000    2078.500    3750.000    2078.500    4150.000    2080.000    4300.000

ET       0.000       9.100       9.100       0.000       0.000       0.000       0.000       0.000    2300.000    2620.000
NH       4.000       0.050    2000.000       0.120    2396.000       0.025    2500.000       0.120    4950.000       0.000
     ####  Flamingo Wash follows an inverted crown on Wimnick Ave.     ####
     ####              Centerline =  2450                              ####
     ####  Flamingo Wash follows an inverted crown on Wimnick Ave.     ####
     ####  Includes returring I-15 breakout Q's from Caesars Palace    ####
     ####  and south of Flamingo Rd.                                   ####
     ####  ET used to encroach to eff flow based on exit from culvert.
X1       7.590      16.000    2396.000    2500.000     575.000     680.000     650.000       0.000       0.000       0.000
GR    2285.000    1360.000    2284.500    1850.000    2285.000    2000.000    2285.000    2000.000    2285.000    2000.000
GR    2085.000    2310.000    2081.900    2396.000    2078.400    2437.000    2078.200    2458.000    2078.900    2485.000
GR    2082.100    2500.000    2085.000    2620.000    2085.000    3100.000    2284.000    3350.000    2284.000    4500.000
GR    2288.000    4950.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

QT       4.000    4100.000    5340.000    5800.000    5800.000       0.000       0.000       0.000       0.000       0.000
NC       0.120       0.120       0.025       0.000       0.000       0.000       0.000       0.000       0.000       0.000
     ####  Only use culvert Q's; limit to effective flow width.
X1       7.570       6.000    2060.000    2120.000     400.000     430.000     400.000       0.000       0.000       0.000
X4       1.000    2084.000    2050.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR    2091.100    2049.900    2084.000    2060.000    2083.000    2075.000    2083.000    2090.000    2084.000    2120.000
GR    2088.100    2150.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
EJ       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
1
  28-APR-88     16:54:24                                                                                      PAGE     3


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


  *PROF 1

  CCHV=   0.100  CEHV=   0.300
  *SECNO 7.350
       7.35       5.12   2070.32       0.00   2070.32   2071.06       0.74       0.00       0.00   2069.60
       4100.       594.      3500.         5.      149.       482.         4.         0.         0.   2069.90
          0.00       3.98       7.27       1.27     0.045     0.038     0.045     0.000   2065.20   2067.34
    0.011807     1040.      1035.      1040.          0         0         0      0.00     369.98   2437.32
J
  CCHV=   0.100  CEHV=   0.300
  *SECNO 7.380
  3280 CROSS SECTION       7.38 EXTENDED       0.32 FEET
```

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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                        KOVAL LANE                                ####
          ####  This is a swale crossing with minor drains for low flow         ####
          ####  Debris is assumed to block drains.  This crossing has           ####
          ####  been modeled as a regular ground section.                       ####
          ####  Flow right of sta 3600 runs to Trop Wash; reduce FW @500        ####
          ####  ET used to encroach to eff flow width                           ####
          ##########################################################################
     7.38      1.72  2075.42  2075.42      0.00  2075.82      0.40      1.64      0.03  2073.70
     4100.     1514.     1180.     1406.     634.      138.      527.       3.        3.  2073.70
      0.01      2.39      8.58      2.67    0.060     0.025     0.060     0.000  2073.70  1650.00
0.010100       150.      150.      150.       20        23         0      0.00  1530.94  3180.94
```

FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.42

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3181.
PER Q=	4.1	2.6	2.9	10.0	17.4	28.8	18.0	8.6	7.7	
AREA=	104.0	70.5	84.0	163.2	211.9	137.6	210.4	117.5	199.4	
VEL=	1.6	1.5	1.4	2.5	3.4	8.6	3.5	3.0	1.6	

CCHV= 0.100 CEHV= 0.300
*SECNO 7.470

3301 HV CHANGED MORE THAN HVINS


```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2475.0 3260.0 TYPE= 1 TARGET= 784.000

```
          ####              Centerline =  2630                            ####
          ####   ET used to encroach to eff flow based on exit from culvert.
     7.47      4.56  2078.25  2078.26      0.00  2079.35      1.09      2.63      0.21  2076.40
     4100.       87.     3450.      563.      119.      378.      618.       16.       15.  2076.50
      0.03      0.73      9.12      0.91    0.120     0.025     0.120     0.000  2073.70  2476.00
0.003669       460.      460.      460.         3        14         0      0.00   727.94  3203.94
```

1490 NH CARD USED
*SECNO 7.590

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2300.0 2620.0 TYPE= 1 TARGET= 320.000

```
          ####  Flamingo Wash follows an inverted crown on Wimnick Ave.       ####
          ####              Centerline =  2450                                ####
          ####  Flamingo Wash follows an inverted crown on Wimnick Ave.       ####
          ####  Includes returning I-15 breakout Q's from Caesars Palace      ####
          ####  and south of Flamingo Rd.                                     ####
          ####  ET used to encroach to eff flow based on exit from culvert.
     7.59      4.88  2083.08  2083.08      0.00  2084.83      1.75      2.94      0.20  2081.90
     4100.       13.     4073.       15.       19.      383.       23.       28.       22.  2082.00
      0.04      0.66     10.64      0.52    0.120     0.025     0.120     0.000  2078.20  2363.16
```

```
 0.005678      575.      650.      683.        20         8         0      0.00    180.19   2543.35
3
 *SECNO 7.670
 3280 CROSS SECTION       7.67 EXTENDED       0.47 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
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          ####  Only use culvert 0's; limit to effective flow width.
      7.67      5.47  2088.47  2088.47     0.00  2090.87      2.40      2.19      0.20   2084.00
      4100.      85.      3896.      119.      45.      306.      74.      32.      23.    2084.00
       0.05     1.90     12.75     1.61    0.120    0.025    0.120    0.000  2083.00   2049.94
 0.005259      400.      400.      430.       20         8         0      0.00   100.06   2150.00
3
1
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 ********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 ********************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       FLAMINGO WASH - WINNICK AVE                    Q50

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ

          0.        3.        0.        0.  0.000000      0.00      0.0       0.  2070.590     0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      15.000     0.000    -1.000     0.300     0.000     0.000     0.000     0.000     0.000     0.000

1
 28-APR-88    16:54:24                                                                          PAGE     7

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *PROF 2

 CCHV=   0.100  CEHV=   0.300
 *SECNO 7.350
       7.35      5.39  2070.59  2070.43  2070.59  2071.52      0.93      0.00      0.00   2069.60
      5340.      867.     4450.      22.      187.     540.      12.       0.        0.     2069.90
       0.00     4.65      8.25     1.35    0.045    0.038    0.045    0.000  2065.20   2059.36
  0.013061     1040.     1035.     1040.        0         4         0      0.00   391.65   2451.02
3
 CCHV=   0.100  CEHV=   0.300
 *SECNO 7.380
 3280 CROSS SECTION       7.38 EXTENDED       0.50 FEET
```

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
#########################################################################
####                        KOVAL LANE                               ####
####  This is a swale crossing with minor drains for low flow        ####
####  Debris is assumed to block drains.  This crossing has          ####
####  been modeled as a regular ground section.                      ####
####  Flow right of sta 3600 runs to Trop Wash; reduce FW @500       ####
####  ET used to encroach to eff flow width                          ####
#########################################################################
```

7.38	1.90	2075.60	2075.50	0.00	2076.04	0.45	1.75	0.05	2073.70
5340.	2095.	1417.	1828.	784.	152.	641.	4.	3.	2073.70
0.01	2.67	9.33	2.85	0.060	0.025	0.060	0.000	2073.70	1650.00
0.010486	150.	150.	150.	20	22	0	0.00	1599.25	3249.25

FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.60

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3249.
PER Q=	5.2	3.5	4.0	10.3	16.3	26.5	16.7	8.3	9.3	
AREA=	139.6	97.2	119.5	191.7	236.0	151.9	232.9	133.3	275.1	
VEL=	2.0	1.9	1.8	2.9	3.7	9.3	3.8	3.3	1.8	

CCHV= 0.100 CEHV= 0.300
*SECNO 7.470

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2475.0 3260.0 TYPE= 1 TARGET= 784.000

```
####              Centerline =  2530                                ####
####   ET used to encroach to eff flow based on exit from culvert.  ####
```

7.47	5.03	2078.73	2078.73	2078.26	2079.95	1.22	2.73	0.23	2076.40
5340.	171.	4212.	957.	177.	422.	860.	20.	16.	2076.50
0.03	0.97	5.98	1.11	0.120	0.025	0.120	0.000	2073.70	2476.00
0.003809	460.	460.	460.	3	17	0	0.00	742.95	3218.95

1490 NH CARD USED
*SECNO 7.590

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2300.0 2620.0 TYPE= 1 TARGET= 320.000

```
####  Flamingo Wash follows an inverted crown on Wirnick Ave.       ####
####              Centerline =  2450                                ####
####  Flamingo Wash follows an inverted crown on Wirnick Ave.       ####
####  Includes returning I-15 breakout Q's from Caesars Palace      ####
####  and south of Flamingo Rd.                                     ####
####  ET used to encroach to eff flow based on exit from culvert.   ####
```

7.59	5.63	2083.83	2083.83	2083.08	2085.80	1.97	2.85	0.22	2081.50
5340.	45.	5240.	55.	52.	460.	67.	35.	23.	2082.00

```
    0.04        0.86       11.58        0.35        0.120       0.025       0.120       0.000     2078.20     2342.44
 0.005076      575.        650.        680.          20           8           0          0.00      230.78      2573.22
0
 *SECNO 7.670
 3280 CROSS SECTION       7.67 EXTENDED      1.39 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
  28-APR-88     16:54:24                                                                          PAGE     9

          ####  Only use culvert Q*s; limit to effective flow width.
       7.67        6.39     2089.39     2089.39     2088.47     2092.24        2.85        2.03        0.26     2084.00
     5340.         109.        5036.        195.         54.         361.        102.         40.         25.      2084.00
       0.05        2.02       13.94        1.91       0.120       0.025       0.120       0.000     2083.00     2045.92
 0.005032         400.         400.         430.          20           8           0          0.00      100.88      2150.00
0
1
  28-APR-88     16:54:24                                                                          PAGE    10



 ************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ************************************************

 NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

 FLAMINGO WASH - WINNICK

 SUMMARY PRINTOUT TABLE  150

        SECNO       XLCH       ELTRD      ELLC       ELMIN        Q          CWSEL      CRIWS      EG         10K*S      VCH      AREA       .01K
         7.350       0.00       0.00       0.00     2065.20    4100.00    2070.32       0.00    2071.06     118.07      7.27     635.46     377.32
         7.350       0.00       0.00       0.00     2065.20    5340.00    2070.59    2070.49    2071.52     130.61      8.25     738.29     467.26

 *       7.380     150.00       0.00       0.00     2073.70    4100.00    2075.42    2075.42    2075.82     101.00      8.58    1298.38     407.97
 *       7.380     150.00       0.00       0.00     2073.70    5340.00    2075.60    2075.60    2076.04     104.86      9.33    1577.32     521.49

 *       7.470     460.00       0.00       0.00     2073.70    4100.00    2078.26    2078.26    2079.35      36.69      9.12    1115.67     676.91
 *       7.470     460.00       0.00       0.00     2073.70    5340.00    2078.73    2078.73    2079.95      38.09      9.98    1458.43     865.24

 *       7.590     650.00       0.00       0.00     2078.20    4100.00    2083.08    2083.08    2084.83      56.78     10.64     425.58     544.10
 *       7.590     650.00       0.00       0.00     2078.20    5340.00    2083.83    2083.83    2085.80      50.76     11.38     579.05     749.50

 *       7.670     400.00       0.00       0.00     2083.00    4100.00    2088.47    2088.47    2090.87      52.59     12.75     424.32     565.39
 *       7.670     400.00       0.00       0.00     2083.00    5340.00    2089.39    2089.39    2092.24      50.32     13.94     517.09     752.78
1
  28-APR-88     16:54:24                                                                          PAGE    11

 FLAMINGO WASH - WINNICK

 SUMMARY PRINTOUT TABLE  150
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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	7.350	4100.00	2070.32	0.00	0.00	0.00	369.98	0.00
	7.350	5340.00	2070.59	0.27	0.00	0.00	391.65	0.00
*	7.380	4100.00	2075.42	0.00	5.10	0.00	1530.94	150.00
*	7.380	5340.00	2075.60	0.18	5.01	0.00	1599.25	150.00
*	7.470	4100.00	2078.26	0.00	2.84	0.00	727.94	460.00
*	7.470	5340.00	2078.73	0.47	3.13	0.47	742.95	460.00
*	7.590	4100.00	2083.08	0.00	4.82	0.00	180.19	650.00
*	7.590	5340.00	2083.83	0.75	5.10	0.75	230.78	650.00
*	7.670	4100.00	2088.47	0.00	5.38	0.00	100.06	400.00
*	7.670	5340.00	2089.39	0.93	5.56	0.93	100.08	400.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 7.380 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.380 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.380 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 7.380 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.380 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.380 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 7.470 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.470 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.470 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.470 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 7.590 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.590 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.590 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 7.590 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.590 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.590 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 7.670 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.670 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.670 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 7.670 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.670 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7.670 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

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     17
7.38 ##########################################################################
7.39 ####                          KOVAL LANE                                ####
7.38 ####  This is a swale crossing with minor drains for low flow          ####
7.38 ####  Debris is assumed to block drains.  This crossing has            ####
7.38 ####  been modeled as a regular ground section.                         ####
7.38 ####  Flow right of sta 3600 runs to Trop Wash; reduce FW Q500          ####
7.38 ####  ET used to encroach to eff flow width                             ####
7.38 ##########################################################################
7.47 ####              Centerline =  2630                                    ####
7.47 ####   ET used to encroach to eff flow based on exit from culvert.
7.59 ####  Flamingo Wash follows an inverted crown on Winnick Ave.           ####
7.59 ####              Centerline =  2450                                    ####
7.59 ####  Flamingo Wash follows an inverted crown on Winnick Ave.           ####
7.59 ####  Includes returning I-15 breakout Q's from Caesars Palace          ####
7.59 ####  and south of Flamingo Rd.                                         ####
7.59 ####  ET used to encroach to eff flow based on exit from culvert.
7.67 ####  Only use culvert Q's; limit to effective flow width.
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH - WINNICK AVE     Q25
J1             2                                                  2070.32
J2       1            -1
QT       4     4100     5340     5880    15500
NC   .045     .045     .038      0.1      0.3
K1  7.35       12     2201     2416     1040     1040     1035
X4       1 2072.6     2000
GR2072.6     1300  2068.3     2127  2069.3     2165  2069.6     2201  2068.1     2233
GR2065.8     2252  2065.2     2282  2068.7     2320  2069.9     2416  2072.6     2553
GR2073.2     2899  2074.7     3280
QT       4     4100     5340     5880    16600
NC   .060     .060     .025       .1       .3
K1  7.38       11     2495     2575      150      150      150
X2                                                                          15
X4       2 2074.7     1850  2075.2     2000
GR2075.1     1650  2074.8     2200     2074     2360  2073.7     2495  2073.7     2575
GR2073.8     2701  2074.4     2790  2075.6     3250  2075.7     3600  2075.8     4050
GR2076.0     4850
ET             9.1      9.1                                                2476     3260
NC   .12      .12     .025       .1       .3
K1  7.47       20     2600     2693      460      460      460
GR   2080     1550  2076.5     1750  2076.5     1750  2076.5     1750  2076.5     1750
GR2079.5     2250  2076.9     2331  2078.2     2476  2076.4     2600  2074.3     2610
GR2073.7     2645  2074.3     2650  2076.5     2693  2076.9     2995  2078.2     3202
GR   2080     3260     2080     3600  2078.5     3750  2078.5     4150     2080     4300
ET             9.1      9.1                                                2300     2620
NH       4     .050     2000     0.12     2396     .025     2500     0.12     4950
K1  7.59       16     2396     2500      575      680      650
GR   2285     1360  2284.5     1850     2285     2000     2285     2000     2285     2000
GR2085.0     2310  2081.9     2396  2078.4     2437  2078.2     2458  2078.9     2485
GR   2082     2500  2085.0     2620     2085     3100     2284     3350     2284     4500
GR   2288     4950
QT       4     4100     5340     5800     5800
NC   .12      .12     .025
K1  7.67        6     2060     2120      400      430      400
X4       1     2084     2050
GR   2091 2049.9     2084     2060     2083     2075     2083     2090     2084     2120
GR   2088     2150
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH - WINNICK AVE                Q50
J1             3                                                  2070.59
```

KOVAL LANE CROSSING

SEE 7.38 TO 7.67

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```
     55
5.57 ####  Starting water levels at 5.57 based on Reach 4 analysis      ####
5.57 ####            Centerline =  2030                                 ####
5.57 ####  Near Algonquin Drive Alignment                               ####
5.82 ####            Centerline =  2450                                 ####
5.85 ##########################################################################
5.85 ####                    MARYLAND PARKWAY                           ####
5.85 ####                 Special Bridge Routine                        ####
5.85 ##########################################################################
5.85 ####  Centerline = 10000                                           ####
5.87 ####  Repeat of x-5.85                                             ####
5.93 ####  Centerline = 2465
6.08 ####            Centerline =  2300                                 ####
6.10 ##########################################################################
6.10 ####                    CAMBRIDGE STREET                           ####
6.10 ####                 Special Bridge Routine                        ####
6.10 ##########################################################################
6.10 ####  Centerline = 2165                                            ####
6.11 ####  Repeat of x-6.10                                             ####
6.18 ####            Centerline =  2670                                 ####
6.18 ####  Confluence with Tropicana Wash.  U/S breakout flows return.  ####
6.31 ####            Centerline =  2300                                 ####
6.35 ##########################################################################
6.35 ####                    SWENSON STREET                             ####
6.35 ####                 Special Bridge Routine                        ####
6.35 ##########################################################################
6.35 ####  Centerline = 2300                                            ####
6.36 ####  Repeat of x-6.35                                             ####
6.50 ####            Centerline =  2380                                 ####
6.60 ##########################################################################
6.60 ####                    PALOS VERDE STREET                         ####
6.60 ####  This is a swale crossing with minor drains for low flow      ####
6.60 ####  Debris is assumed to block drains.  This crossing has        ####
6.60 ####  been modeled as a regular ground section.                    ####
6.60 ##########################################################################
6.75 ####            Centerline = 2700                                  ####
6.83 ##########################################################################
6.83 ####                    PARADISE ROAD                              ####
6.83 ####  This is a swale crossing with minor drains for low flow      ####
6.83 ####  Debris is assumed to block drains.  This crossing has        ####
6.83 ####  been modeled as a regular ground section.  0500 reduced      ####
6.83 ####  due to breakout over Flamingo Rd (separate split flow run)   ####
6.83 ##########################################################################
6.87 ####            Centerline =  2280                                 ####
7.16 ####            Centerline =  3550                                 ####
7.16 ####  500-year overflows to the south return at this section.      ####
7.35 ####            Centerline =  2290                                 ####
7.38 ##########################################################################
7.38 ####                      KOVAL LANE                               ####
7.38 ####  This is a swale crossing with minor drains for low flow      ####
7.38 ####  Debris is assumed to block drains.  This crossing has        ####
7.38 ####  been modeled as a regular ground section.                    ####
7.38 ####  Flow right of sta 3600 runs to Trop Wash; reduce FW 0500     ####
7.38 ####  This run connects to COE HEC-2 run for Flamingo main         ####\
7.38 ####  thru Caesars/Imperial area - LVWFWBOL                        ####
7.38 ##########################################################################
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)
J1          2                                                    1959.58
J2     1              -1
NC   .14     .18     .025      .1       .3
QT     4     6000    7300      8860     22500
```

Reach 3

Sta 5.57 to 7.38

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X1	5.57	16	2002	2059	1320	1320	1320		
GR	1976	970	1972	1240	1972	1240	1972	1240	1968	1710
GR	1964	2000	1961	2002	1951.72	2008	1951.72	2053	1961	2059
GR	1964	2062	1967.5	2250	1965.8	2870	1968	2980	1972	3110
GR	1976	3350								
NC	.14	.18	.025	.1	.3					
X1	5.82	15	2389	2488	1310	1310	1310			
GR	1996	1150	1992	1350	1992	1350	1992	1350	1988.5	1520
GR	1986.1	2000	1982.2	2389	1970.5	2407	1969.6	2451	1968.8	2459
GR	1967.9	2468	1977.2	2488	1987.7	2502	1989.6	2846	1996.0	3170
NC				.3	.5					
X1	5.85	12	9985	10020	170	170	170			
X3	10							1987	1987	
X4	1	1992	8940	1991	9830					
GR	1996	8740	1990	9075	1990	9450	1988	9600	1987	9830
GR	1980	9940	1976.5	9985	1976.5	10020	1978	10040	1988	10060
GR	1992	10240	1996	10410						
SB	1.25	1.550	2.63		34.5	9.5	250		1977	1976.5
X1	5.87				85	85	85		.5	
X2			1	1987	1988.2					
X3	10							1988.2	1988.2	
BT	10	2000	1991.4		2100	1990.8		2280	1991.3	
BT	2430	1989.5		2600	1988.7		2935	1988.5	1987	2973.5
BT	1988.5	1987	3130	1990.7		3300	1994.8		3470	1998.2
BT										
X1	5.93	12	2400	2520	330	330	330			
GR	2000.0	2000	1999.5	2050	1999.5	2150	1996.0	2270	1995.0	2400
GR	1984.0	2430	1980.0	2455	1980.0	2485	1992.0	2520	1992.0	2570
GR	1996.0	2930	2000.0	2920						
NC				.1	.3					
X1	6.08	14	2244	2355	780	780	780			
GR	2011	1600	2008	1740	2004	2080	2002.8	2244	1988	2275
GR	1985.9	2237.0	1985.9	2296	1989.4	2305	1989	2319	1989.2	2331
GR	1993.7	2339	2002.5	2355	2002	2377	2012	3200		
NC				.3	.5					
X1	6.10	10	2136	2173.5	50	210	100		-.5	
X3	10							1996.5	1996.5	
X4	2	2008	1600	2008	2000					
GR	2010	1400	2000	2050	1989.5	2130	1989.0	2136	1989.0	2173.5
GR	1989.5	2180	2000	2250	2008	2330	2008	2550	2012	2660
SB	1.25	1.560	2.63		33.5	9.75	168		1989.5	1989
NC	.16	.06	.035							
X1	6.11				75	75	75		.5	
X2			1	1996.5	1999.5					
X3	10							1999.5	1999.5	
BT	6	0	2008		50	2000		120	1999.7	
BT	190	1999.4		250	2000		330	2008		
NC			.038							
X1	6.18	21	2534	2754	400	270	365			
GR	2016	1500	2012.2	1970	2012	2140	2012	2140	2012	2140
GR	2012	2140	2012	2140	2009.7	2534	2002.5	2574	2002.4	2633
GR	1995.6	2659	1995.1	2677	1999	2700	1994.9	2730	2008.3	2754
GR	2011.3	2769	2011.7	2810	2014.6	2890	2016.2	3018	2015.1	3268
GR	2019.5	3422								
BT	4	4100	5300	5860	16200					
NC	.16	.045		.1	.3					
X1	6.31	17	2263	2343	745	685	710			
GR	2025.2	1450	2025.2	1450	2025.2	1450	2025.2	1450	2024.0	1600
GR	2022.0	2000	2022.5	2246	2017.4	2263	2012.9	2280	2010.8	2306
GR	2012.4	2322	2017.4	2343	2021.1	2388	2023.6	2430	2025.1	2469
GR	2026.8	2499	2025.8	2581						
NC	.16	.15	.045	.3	.5					
X1	6.35	11	2260	2290	50	210	170			
X3	10							2015.8	2015.8	
X4	1	2025.2	1450							
GR	2025.5	1200	2024.0	1600	2022.0	2000	2022.0	2180	2020.0	2210
GR	2010.3	2260	2010.3	2290	2016.0	2310	2020.0	2360	2024.0	2470
GR	2428.0	2600								

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```
SB   1.25    1.560      2.63                  29.5          9      103.1                2010.8    2010.3
X1   6.36                                      55         55         55                    .5
X2                            1    2015.8    2020.3
X3     10                                                                  2020.3    2020.3
BT      8      2000     2025.2                  2250    2023.8                2430    2023.7
BT   2660    2022.8                  2810    2020.3    2015.8    2841.5    2020.3    2015.8      2990
BT2023.3                  3150    2027.1
NC    .16       .16       .035
X1   6.50        16       2331      2431       780       700       755
GR   2036       250       2032      1160      2029      1550      2029      1550      2030      1600
GR2032.1      2000     2033.2      2194    2032.6      2331    2022.2      2353    2021.5      2373
GR2023.6      2397     2027.0      2413    2030.7      2431    2032.3      2593    2031.5      2762
GR2034.5      2950
NC    .16       .12       .035        .1        .3
X1   6.60          7       9920     10190       510       510       510
X4      1      2038     10300
GR   2040       7720      2036      9740    2035.5      9920    2035.7     10000    2037.6     10190
GR2039.3     10360     2039.8     10670
NH      4        .18       1400       .06      2533      .035      2807       .06      3412
X1   6.75         23       2584      2807       740       800       825
K4      1      2043      1400
GR   2048        570      2044      1090    2042.7      1660    2044.2      2280    2044.2      2280
GR2044.2      2280     2044.2      2280    2043.2      2533    2042.0      2578    2044.3      2584
GR2043.6      2627     2041.9      2677    2040.3      2687    2040.1      2697    2040.3      2708
GR2042.9      2715     2044.3      2735    2044.7      2807    2046.8      2888    2047.5      2969
GR2046.4      3019     2045.6      3060    2046.3      3412
NC    .08       .06       .035
X1   6.83         11       9800     10170       500       350       410
GR   2052       7730      2049      8530    2050.5      9450      2051      9600    2049.7      9800
GR2045.1     10000     2048.3     10170    2049.2     10370    2048.9     10600    2048.3     10750
GR   2052     11050
QT      4                                    17500
ET                6.1       6.1       6.1                 -150      2550
NC   .045      .045      .045
X1   6.87         23       2160      2308       160       240       205
K2                                                                                              15
GR   2056       -150      2053       520      2054       930      2051      1240    2052.3      1390
GR   2051       1720      2051      1720      2051      1720      2051      1720      2051      1720
GR2053.5      2000     2052.6     2160    2048.9      2214    2048.9      2253    2044.6      2266
GR2043.7      2293     2050.2     2308    2048.6      2319    2050.5      2435    2050.0      2627
GR   2052       2747      2052      3030      2052      3540
NC   .045      .045      .045        .1        .3
X1   7.16         39       3299      3869      1415      1515      1520
X3                                  3126
GR2060.1      2000     2060.9     2339    2061.8      2562    2063.8      2660    2061.6      2688
GR2064.4      2889     2060.8     2920    2060.8      3015    2066.7      3034    2069.6      3126
GR2063.2      3168     2063.5     3218    2064.9      3299    2063.8      3355    2061.6      3378
GR2060.4      3393     2060.4     3429    2060.6      3480    2058.7      3510    2057.7      3532
GR2056.7      3554     2056.6     3562    2058.0      3565    2060.2      3588    2060.0      3614
GR2060.9      3628     2061.8     3673    2060.6      3714    2061.6      3754    2062.7      3805
GR2063.6      3835     2066.2     3869    2065.5      3900    2065.5      3941    2066.8      3992
GR2070.1      4068     2071.7     4137    2069.6      4263    2067.6      4440
NC                        .038
X1   7.35         12       2201      2416      1040      1040      1035
X4      1    2072.6       2000
GR2072.6      1330     2068.3     2127    2069.3      2165    2069.6      2201    2068.1      2233
GR2065.8      2252     2065.2     2282    2068.7      2320    2069.9      2416    2072.6      2553
GR2073.2      2899     2074.7     3280
QT      4      4100       5300      5960     19500
NC   .060      .060       .025        .1        .3
X1   7.38         11       2495      2575       150       150       150
X2                                                                                              15
X4      2    2074.7       1850    2075.2      2000
GR2075.1      1650     2074.8     2200      2074      2360    2073.7      2495    2073.7      2575
GR2073.8      2701     2074.4     2790    2075.6      3250    2075.7      3600    2075.8      4050
GR2076.0      4850
EJ
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
```

```
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            3                                                    1960.7
J2     2             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            4                                                    1961.7
J2     3             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            5                                                    1970.7
J2    15              -1


ER
EOF..
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Reach 3
Sec 5.57 to 7.38

```
     55
5.57 ####   Starting Water levels at 5.57 based on Reach 4 analysis      ####
5.57 ####              Centerline =  2030                                ####
5.57 ####   Near Algonquin Drive Alignment                               ####
5.82 ####              Centerline =  2450                                ####
5.85 ######################################################################
5.85 ####                  MARYLAND PARKWAY                              ####
5.85 ####              Special Bridge Routine                            ####
5.85 ######################################################################
5.85 ####   Centerline = 10000                                           ####
5.87 ####   Repeat of x-5.85                                             ####
5.93 ####   Centerline = 2465
6.08 ####              Centerline =  2300                                ####
6.10 ######################################################################
6.10 ####                  CAMBRIDGE STREET                              ####
6.10 ####              Special Bridge Routine                            ####
6.10 ######################################################################
6.10 ####   Centerline = 2165                                        ####
6.11 ####   Repeat of x-6.10                                             ####
6.18 ####              Centerline =  2670                                ####
6.18 ####   Confluence with Tropicana Wash.  U/S breakout flows return.  ####
6.31 ####              Centerline =  2300                                ####
6.35 ######################################################################
6.35 ####                  SWENSON STREET                                ####
6.35 ####              Special Bridge Routine                            ####
6.35 ######################################################################
6.35 ####   Centerline = 2300                                        ####
6.36 ####   Repeat of x-6.35                                             ####
6.50 ####              Centerline =  2380                                ####
6.60 ######################################################################
6.60 ####                  PALOS VERDE STREET                            ####
6.60 ####   This is a swale crossing with minor drains for low flow      ####
6.60 ####   Debris is assumed to block drains.  This crossing has        ####
6.60 ####   been modeled as a regular ground section.                     ####
6.60 ######################################################################
6.75 ####              Centerline =  2700                                ####
6.83 ######################################################################
6.83 ####                  PARADISE ROAD                                 ####
6.83 ####   This is a swale crossing with minor drains for low flow      ####
6.83 ####   Debris is assumed to block drains.  This crossing has        ####
6.83 ####   been modeled as a regular ground section.  Q500 reduced      ####
6.83 ####   due to breakout over Flamingo Rd (separate split flow run)   ####
6.83 ######################################################################
6.87 ####              Centerline =  2280                                ####
7.16 ####              Centerline =  3550                                ####
7.16 ####   500-year overflows to the south return at this section.      ####
7.35 ####              Centerline =  2290                                ####
7.38 ######################################################################
7.38 ####                  KOVAL LANE                                    ####
7.38 ####   This is a swale crossing with minor drains for low flow      ####
7.38 ####   Debris is assumed to block drains.  This crossing has        ####
7.38 ####   been modeled as a regular ground section.                     ####
7.38 ####   Flow right of sta 3600 runs to Trop Wash; reduce FW Q500      ####
7.38 ####   This run connects to COE HEC-2 run for Flamingo main          ####\
7.38 ####   thru Caesars/Imperial area - LVWFWBOL                         ####
7.38 ######################################################################
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)
J1            2                                                1959.58
J2     1            -1
NC   .14     .18     .025      .1       .3
QT      4     6000    7300      8860     22500
```

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X1	5.57	15	2002	2039	1520	1520			
GR	1976	970	1972	1240	1972	1240	1972	1240	1968	1710
GR	1964	2000	1961	2002	1951.72	2008	1951.72	2053	1961	2059
GR	1964	2062	1967.5	2250	1965.8	2870	1968	2930	1972	3110
GR	1976	3350								
NC	.14	.18	.025	.1	.3					
X1	5.82	15	2389	2488	1310	1310	1310			
GR	1996	1150	1992	1350	1992	1350	1992	1350	1988.5	1520
GR	1986.1	2000	1982.2	2389	1970.5	2407	1969.6	2451	1968.8	2459
GR	1967.9	2458	1977.2	2488	1987.7	2502	1989.6	2846	1996.0	3170
NC				.3	.5					
X1	5.85	12	9985	10020	170	170	170			
X3	10							1987	1987	
X4	1	1992	8940	1991	9030					
GR	1996	8740	1990	9075	1990	9450	1988	9600	1987	9830
GR	1980	9940	1976.5	9985	1976.5	10020	1978	10040	1988	10060
GR	1992	10240	1996	10410						
SB	1.25	1.560	2.63		34.5	9.5	250		1977	1976.5
X1	5.87				85	85	85		.5	
X2			1	1987	1988.2					
X3	10							1988.2	1988.2	
BT	10	2000	1991.4		2100	1990.8		2280	1991.3	
BT	2430	1989.5		2600	1988.7		2935	1988.5	1987	2973.5
BT	1988.5	1987	3130	1990.7		3300	1994.8		3470	1998.2
BT										
X1	5.93	12	2400	2520	330	330	330			
GR	2000.0	2000	1999.5	2050	1999.5	2150	1996.0	2270	1995.0	2400
GR	1984.0	2430	1980.0	2455	1980.0	2485	1992.0	2520	1992.0	2570
GR	1996.0	2830	2000.0	2920						
NC				.1	.3					
X1	6.08	14	2244	2355	780	780	780			
GR	2011	1600	2008	1740	2004	2080	2002.8	2244	1988	2275
GR	1985.9	2287.0	1985.9	2296	1989.4	2305	1989	2319	1989.2	2331
GR	1993.7	2339	2002.5	2355	2002	2377	2012	3200		
NC				.3	.5					
X1	6.10	10	2136	2173.5	50	210	100		-.5	
X3	10							1996.5	1996.5	
X4	2	2008	1600	2008	2000					
GR	2010	1400	2000	2050	1989.5	2130	1989.0	2136	1989.0	2173.5
GR	1989.5	2180	2000	2250	2008	2330	2008	2550	2012	2660
SB	1.25	1.560	2.63		33.5	9.75	168		1989.5	1989
NC	.16	.06	.035							
X1	6.11				75	75	75		.5	
X2			1	1996.5	1999.5					
X3	10							1999.5	1999.5	
BT	6	0	2008		50	2000		120	1999.7	
BT	190	1999.4		250	2000		330	2008		
NC			.038							
X1	6.18	21	2534	2754	400	270	365			
GR	2016	1500	2012.2	1970	2012	2140	2012	2140	2012	2140
GR	2012	2140	2012	2140	2009.7	2534	2002.5	2574	2002.4	2633
GR	1995.6	2659	1995.1	2677	1999	2700	1994.9	2730	2008.3	2754
GR	2011.3	2769	2011.7	2810	2014.6	2890	2016.2	3018	2015.1	3268
GR	2019.5	3422								
QT	4	4100	5300	5860	16200					
NC	.16	.045		.1	.3					
X1	6.31	17	2263	2343	745	685	710			
GR	2025.2	1450	2025.2	1450	2025.2	1450	2025.2	1450	2024.0	1600
GR	2022.0	2000	2022.5	2246	2017.4	2263	2012.9	2280	2010.8	2306
GR	2012.4	2322	2017.4	2343	2021.1	2388	2023.6	2430	2025.1	2469
GR	2026.0	2499	2025.8	2581						
NC	.16	.16	.045	.3	.5					
X1	6.35	11	2260	2290	50	210	170			
X3	10							2015.8	2015.8	
X4	1	2025.2	1450							
GR	2025.5	1200	2024.0	1600	2022.0	2000	2022.0	2180	2020.0	2210
GR	2010.3	2260	2010.3	2290	2016.0	2310	2020.0	2360	2024.0	2470
GR	2428.0	2600								

```
SB   1.25      1.560        2.65                  2943                  1863.1                2010.8   2010.5
X1   6.36                                  55              55              55                    .5
X2                          1    2015.8   2020.3
X3       10                                                                      2020.3   2020.3
BT        8      2000      2025.2                2250      2023.8                2430     2023.7
BT     2660   2022.8                    2810    2020.3    2015.8    2841.5      2020.3   2015.8     2990
BT2023.3                    3150    2027.1
NC     .16       .16       .035
X1   6.50        16        2331      2431       780       700       755
GR     2036       250       2032      1160      2029      1550      2029      1550     2030      1600
GR2032.1          2000    2033.2      2154    2032.6      2331    2022.2      2353   2021.5      2373
GR2023.6          2397    2027.0      2413    2030.7      2431    2032.3      2593   2031.5      2762
GR2034.5          2950
NC     .16       .12       .035        .1        .3
X1   6.60          7       9920     10190       510       510       510
X4      1       2038      10300
GR     2040       7720      2036      9740    2035.5      9920    2035.7     10000   2037.6     10190
GR2039.3          10360   2039.8     10670
NH         4       .18       1400       .06      2533      .035      2807       .06     3412
X1   6.75          23       2584      2807       740       800       825
X4      1       2043      1400
GR     2048        570       2044      1090    2042.7      1660    2044.2      2280   2044.2      2280
GR2044.2          2280    2044.2      2280    2043.2      2533    2042.0      2578   2044.3      2584
GR2043.6          2627    2041.9      2677    2040.3      2687    2040.1      2697   2040.3      2708
GR2042.9          2715    2044.3      2735    2044.7      2807    2046.8      2888   2047.5      2969
GR2046.4          3019    2045.6      3060    2046.3      3412
NC     .08       .06       .035
X1   6.83          11       9800     10170       500       350       410
GR     2052       7780      2049      8930    2050.6      9450      2051      9600   2049.7      9800
GR2045.1          10000   2048.3     10170    2049.2     10370    2048.9     10600   2048.3     10750
GR     2052      11050
QT         4                                   17500
ET                6.1       6.1       6.1                 -150      2550
NC    .045       .045      .045
X1   6.87          23       2160      2308       160       240       205
X2                                                                                                  15
GR     2056       -150      2053       520      2054       930      2051      1240   2052.3      1390
GR     2051       1720      2051      1720      2051      1720      2051      1720     2051      1720
GR2053.5          2000    2052.6      2160    2048.9      2214    2048.9      2253   2044.6      2266
GR2043.7          2293    2050.2      2308    2048.6      2319    2050.5      2435   2050.0      2627
GR     2052       2747      2052      3030      2052      3540
NC    .045       .045      .045        .1        .3
X1   7.16          39       3299      3869      1415      1515      1520
X3                                    3126
GR2060.1          2000    2060.9      2339    2061.8      2562    2063.8      2660   2061.6      2688
GR2064.4          2889    2060.8      2520    2060.8      3015    2066.7      3034   2069.6      3126
GR2063.2          3168    2063.5      3218    2064.9      3299    2063.8      3355   2061.6      3378
GR2060.4          3393    2060.4      3429    2060.6      3480    2058.7      3510   2057.7      3532
GR2056.7          3554    2056.6      3562    2058.0      3565    2060.2      3588   2060.0      3614
GR2060.9          3628    2061.8      3673    2060.6      3714    2061.6      3754   2062.7      3805
GR2063.6          3835    2066.2      3869    2065.5      3900    2065.5      3941   2066.8      3992
GR2070.1          4068    2071.7      4137    2069.6      4263    2067.6      4440
NC                        .038
X1   7.35          12       2201      2416      1040      1040      1035
X4      1    2072.6       2000
GR2072.6          1300    2068.3      2127    2069.3      2165    2069.6      2201   2068.1      2233
GR2065.8          2252    2065.2      2282    2068.7      2320    2069.9      2416   2072.6      2553
GR2073.2          2899    2074.7      3280
QT         4      4100      5300      5860     19500
NC    .060       .060      .025        .1        .3
X1   7.38          11       2495      2575       150       150       150
X2                                                                                                  15
X4         2  2074.7       1850    2075.2      2000
GR2075.1          1650    2074.8      2200      2074      2360    2073.7      2495   2073.7      2575
GR2073.8          2701    2074.4      2750    2075.6      3250    2075.7      3600   2075.8      4050
GR2076.0          4850
EJ
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
```

```
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            3                                                    1960.7
J2    2               -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            4                                                    1961.7
J2    3               -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            5                                                    1970.7
J2   15               -1
```

ER
EOF..

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```
   55
5.57 ####  Starting Water levels at 5.57 based on Reach 4 analysis     ####
5.57 ####            Centerline =  2030                               ####
5.57 ####  Near Algonquin Drive Alignment                             ####
5.82 ####            Centerline =  2450                               ####
5.85 ##########################################################################
5.85 ####                    MARYLAND PARKWAY                         ####
5.85 ####                 Special Bridge Routine                      ####
5.85 ##########################################################################
5.85 ####  Centerline = 10000                                         ####
5.87 ####  Repeat of x-5.85                                           ####
5.93 ####  Centerline = 2465
6.08 ####            Centerline =  2300                               ####
6.10 ##########################################################################
6.10 ####                    CAMBRIDGE STREET                         ####
6.10 ####                 Special Bridge Routine                      ####
6.10 ##########################################################################
6.10 ####  Centerline = 2165                                    ####
6.11 ####  Repeat of x-6.10                                           ####
6.18 ####            Centerline =  2670                               ####
6.18 ####  Confluence with Tropicana Wash.  U/S breakout flows return.####
6.31 ####            Centerline =  2300                               ####
6.35 ##########################################################################
6.35 ####                    SWENSON STREET                           ####
6.35 ####                 Special Bridge Routine                      ####
6.35 ##########################################################################
6.35 ####  Centerline = 2300                                    ####
6.36 ####  Repeat of x-6.35                                           ####
6.50 ####            Centerline =  2380                               ####
6.60 ##########################################################################
6.60 ####                    PALOS VERDE STREET                       ####
6.60 ####  This is a swale crossing with minor drains for low flow    ####
6.60 ####  Debris is assumed to block drains.  This crossing has      ####
6.60 ####  been modeled as a regular ground section.                  ####
6.60 ##########################################################################
6.75 ####            Centerline =  2700                               ####
6.83 ##########################################################################
6.83 ####                    PARADISE ROAD                            ####
6.83 ####  This is a swale crossing with minor drains for low flow    ####
6.83 ####  Debris is assumed to block drains.  This crossing has      ####
6.83 ####  been modeled as a regular ground section.  Q500 reduced    ####
6.83 ####  due to breakout over Flamingo Rd (separate split flow run) ####
6.83 ##########################################################################
6.87 ####            Centerline =  2280                               ####
7.16 ####            Centerline =  3550                               ####
7.16 ####  500-year overflows to the south return at this section.    ####
7.35 ####            Centerline =  2290                               ####
7.38 ##########################################################################
7.38 ####                      KOVAL LANE                             ####
7.38 ####  This is a swale crossing with minor drains for low flow    ####
7.38 ####  Debris is assumed to block drains.  This crossing has      ####
7.38 ####  been modeled as a regular ground section.                  ####
7.38 ####  Flow right of sta 3600 runs to Trop Wash; reduce FW Q500   ####
7.38 ####  This run connects to COE HEC-2 run for Flamingo main       ####\
7.38 ####  thru Caesars/Imperial area - LVWFWBOL                      ####
7.38 ##########################################################################
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)
J1            2                                                  1959.58
J2     1              -1
NC   .14      .18     .025       .1        .3
QT     4     6000     7300     8860     22500
```

Reach 3

X1	5.57	12	2002	2059	1320	1320	1320			
GR	1976	970	1972	1240	1972	1240	1972	1240	1968	1710
GR	1964	2000	1961	2002	1951.72	2008	1951.72	2053	1961	2059
GR	1964	2062	1967.5	2250	1965.8	2870	1968	2980	1972	3110
GR	1976	3350								
NC	.14	.18	.025	.1	.3					
X1	5.82	15	2389	2488	1313	1310	1310			
GR	1996	1150	1992	1350	1992	1350	1992	1350	1988.5	1520
GR	1986.1	2000	1982.2	2389	1970.5	2407	1969.6	2451	1968.8	2459
GR	1967.9	2468	1977.2	2488	1987.7	2502	1989.6	2846	1996.0	3170
NC				.3	.5					
X1	5.85	12	9985	10020	170	170	170			
X3	10							1987	1987	
X4	1	1992	8940	1991	9030					
GR	1996	8740	1990	9075	1990	9450	1988	9600	1987	9830
GR	1980	9940	1976.5	9985	1976.5	10020	1978	10040	1988	10060
GR	1992	10240	1996	10410						
SB	1.25	1.550	2.63		34.5	9.5	250		1977	1976.5
X1	5.87				85	85	85		.5	
X2			1	1987	1988.2					
X3	10							1988.2	1988.2	
BT	10	2000	1991.4		2100	1990.8		2280	1991.3	
BT	2430	1989.5		2600	1988.7		2935	1988.5	1987	2973.5
BT	1988.5	1937	3130	1990.7		3300	1994.8		3470	1998.2
BT										
X1	5.93	12	2400	2520	330	330	330			
GR	2000.0	2000	1999.5	2050	1999.5	2150	1996.0	2270	1995.0	2400
GR	1984.0	2430	1980.0	2455	1980.0	2485	1992.0	2520	1992.0	2570
GR	1996.0	2830	2000.0	2920						
NC				.1	.3					
X1	6.08	14	2244	2355	780	780	780			
GR	2011	1600	2008	1740	2004	2080	2002.8	2244	1988	2275
GR	1985.9	2297.0	1985.9	2296	1989.4	2305	1989	2319	1989.2	2331
GR	1993.7	2339	2002.5	2355	2002	2377	2012	3200		
NC				.3	.5					
X1	6.10	10	2136	2173.5	50	210	100		-.5	
X3	10							1996.5	1996.5	
X4	2	2008	1600	2008	2000					
GR	2010	1400	2000	2050	1989.5	2130	1989.0	2136	1989.0	2173.5
GR	1989.5	2180	2000	2250	2008	2330	2008	2550	2012	2660
SB	1.25	1.560	2.63		33.5	9.75	168		1989.5	1989
NC	.16	.06	.035							
X1	6.11				75	75	75		.5	
X2			1	1996.5	1999.5					
X3	10							1999.5	1999.5	
BT	6	0	2008		50	2000		120	1999.7	
BT	190	1999.4		250	2000		330	2008		
NC			.038							
X1	6.18	21	2534	2754	400	270	365			
GR	2016	1500	2012.2	1970	2012	2140	2012	2140	2012	2140
GR	2012	2140	2012	2140	2009.7	2534	2002.5	2574	2002.4	2633
GR	1995.6	2659	1995.1	2677	1999	2700	1994.9	2730	2008.3	2754
GR	2011.3	2769	2011.7	2910	2014.6	2890	2016.2	3018	2015.1	3268
GR	2019.5	3422								
BT	4	4100	5300	5860	16200					
NC	.16	.045		.1	.3					
X1	6.31	17	2263	2343	745	685	710			
GR	2025.2	1450	2025.2	1450	2025.2	1450	2025.2	1450	2024.0	1600
GR	2022.0	2000	2022.5	2246	2017.4	2263	2012.9	2280	2010.8	2306
GR	2012.4	2322	2017.4	2343	2021.1	2388	2023.6	2430	2025.1	2469
GR	2026.8	2499	2025.8	2581						
NC	.16	.16	.045	.3	.5					
X1	6.35	11	2260	2290	50	210	170			
X3	10							2015.8	2015.8	
X4	1	2025.2	1450							
GR	2025.5	1200	2024.0	1600	2022.0	2000	2022.0	2180	2020.0	2210
GR	2010.3	2260	2010.3	2290	2016.0	2310	2020.0	2360	2024.0	2470
GR	2428.0	2600								

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SB  1.25      1.500       2.50                    2520.0                  2510.0  2510.5
X1  6.36                              55      55      55                      .5
X2                        1   2015.8  2020.3
X3     10                                                   2020.3  2020.3
BT      8      2000  2025.2                  2250  2023.8                2430  2023.7
BT   2660   2022.8                  2810  2020.3  2015.8  2841.5  2020.3  2015.8    2990
BT2023.3                3150  2027.1
NC    .16       .16     .035
X1  6.50        16      2331      2431       780      700       755
GR   2036       250      2032      1160      2029     1550      2029      1550      2030      1600
GR2032.1       2000    2033.2      2194    2032.6      2331    2022.2      2353    2021.5      2373
GR2023.6       2397    2027.0      2413    2030.7      2431    2032.3      2593    2031.5      2762
GR2034.5       2950
NC    .16       .12       .035        .1        .3
X1  6.60          7       9920     10190       510       510       510
X4     1       2038     10300
GR   2040       7720      2036      9740    2035.5      9920    2035.7     10000    2037.6     10190
GR2039.3      10360    2039.8     10670
NH      4        .18       1400       .06      2533      .035      2807       .06      3412
X1  6.75         23       2584      2807       740       800       825
X4     1       2043       1400
GR   2048        570       2044      1050    2042.7      1660    2044.2      2280    2044.2      2280
GR2044.2       2280    2044.2      2280    2043.2      2533    2042.0      2578    2044.3      2584
GR2043.6       2627    2041.9      2677    2040.3      2687    2040.1      2697    2040.3      2708
GR2042.9       2715    2044.3      2735    2044.7      2807    2046.8      2888    2047.5      2969
GR2046.4       3019    2045.6      3060    2046.3      3412
NC    .08        .06       .035
X1  6.83         11       9800     10170       500       350       410
GR   2052       7780      2049      8930    2050.6      9450      2051      9600    2049.7      9800
GR2045.1      10000    2048.3     10170    2049.2     10370    2048.9     10600    2048.3     10750
GR   2052      11050
QT      4                                   17500
ET                6.1       6.1       6.1                 -150      2550
NC   .045       .045      .045
X1  6.87         23       2160      2308       163       240       205
X2                                                                                                15
GR   2056       -150       2053       520      2054       930      2051      1240    2052.3      1390
GR   2051       1720       2051      1720      2051      1720      2051      1720      2051      1720
GR2053.5       2000    2052.6      2160    2048.9      2214    2048.9      2253    2044.6      2266
GR2043.7       2293    2050.2      2308    2048.6      2319    2050.5      2435    2050.0      2627
GR   2052       2747      2052      3030      2052      3540
NC   .045       .045      .045        .1        .3
X1  7.16         39       3299      3869      1415      1515      1520
X3                                  3126
GR2060.1       2000    2060.9      2339    2061.8      2562    2063.8      2660    2061.6      2688
GR2064.4       2889    2060.8      2920    2060.8      3015    2066.7      3034    2069.6      3126
GR2063.2       3168    2063.5      3218    2064.9      3299    2063.8      3355    2061.6      3378
GR2060.4       3393    2060.4      3429    2060.6      3480    2058.7      3510    2057.7      3532
GR2056.7       3554    2056.6      3562    2058.0      3565    2060.2      3588    2060.9      3614
GR2060.9       3628    2061.8      3673    2060.6      3714    2061.6      3754    2062.7      3805
GR2063.6       3835    2066.2      3869    2065.5      3900    2065.5      3941    2066.8      3992
GR2070.1       4068    2071.7      4137    2069.6      4263    2067.6      4440
NC                       .038
X1  7.35         12       2201      2416      1040      1040      1035
X4     1    2072.6       2000
GR2072.6       1300    2068.3      2127    2069.3      2165    2069.6      2201    2069.1      2233
GR2065.8       2252    2065.2      2282    2068.7      2320    2069.9      2416    2072.6      2553
GR2073.2       2899    2074.7      3280
QT      4       4100       5300      5860     19500
NC   .060       .060      .025        .1        .3
X1  7.38         11       2495      2575       150       150       150
X2                                                                                                15
X4     2    2074.7       1850    2075.2      2000
GR2075.1       1650    2074.8      2200      2074      2360    2073.7      2495    2073.7      2575
GR2073.8       2701    2074.4      2750    2075.6      3250    2075.7      3698    2075.8      4050
GR2076.0       4850
EJ
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
```

```
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            3                                                  1960.7
J2     2              -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH 3   (ALGONQUIN DR. TO KOVAL LANE)
J1            4                                                  1961.7
J2     3              -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)
J1            5                                                  1970.7
J2    15               -1


ER
EOF..
```

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*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED AUGUST 1983                              *
*                                                   *
*  RUN DATE  27-APR-88 TIME   00:26:55              *
*****************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


```
X     X  XXXXXXX   XXXXX                 XXXXX
X     X  X         X     X               X     X
X     X  X         X                     X     X
XXXXXXX  XXXX      X           XXXXX     XXXXX
X     X  X         X                     X
X     X  X         X     X               X
X     X  XXXXXXX   XXXXX                 XXXXXXX
```



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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*****************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       2.        0.        0.  0.000000      0.00      0.0       0.  1955.580     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT      4.000  6000.000  7300.000  8860.000 22500.000     0.000     0.000     0.000     0.000     0.000
        ####  Starting Water Levels at 5.57 based on Reach 4 analysis    ####
        ####              Centerline =  2330                             ####
        ####  Near Algonquin Drive Alignment                             ####
X1      5.570    16.000  2002.000  2059.000  1320.000  1320.000  1320.000     0.000     0.000     0.000
GR   1976.000   970.000  1972.000  1240.000  1972.000  1240.000  1972.000  1240.000  1968.000  1710.000
GR   1964.000  2000.000  1961.000  2002.000  1951.720  2008.000  1951.720  2053.000  1961.000  2059.000
GR   1964.000  2062.000  1967.500  2250.000  1965.800  2870.000  1968.000  2980.000  1972.000  3110.000
GR   1976.000  3350.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
        ####              Centerline =  2450                             ####
X1      5.920    15.000  2389.000  2488.000  1310.000  1310.000  1310.000     0.000     0.000     0.000
GR   1996.000  1150.000  1992.000  1350.000  1992.000  1350.000  1992.000  1350.000  1988.500  1520.000
GR   1986.100  2000.000  1982.200  2389.000  1970.500  2407.000  1969.600  2451.000  1968.800  2459.000
```

Continuous Interfolded @ Moore Business Forms, Inc.

GR	1987.900	2480.000	1977.200	2480.000	1987.700	2582.000	1989.000	2648.000	1998.000	3170.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

MARYLAND PARKWAY
Special Bridge Routine
Centerline = 10000

X1	5.350	12.000	9985.000	10020.000	170.000	170.000	170.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1987.000	1987.000	0.000
X4	1.000	1992.000	8940.000	1991.000	9030.000	0.000	0.000	0.000	0.000	0.000
GR	1996.000	8740.000	1990.000	9075.000	1990.000	9450.000	1988.000	9600.000	1987.000	9830.000
GR	1980.000	9940.000	1976.500	9985.000	1976.500	10020.000	1978.000	10040.000	1988.000	10060.000
GR	1992.000	10240.000	1996.000	10410.000	0.000	0.000	0.000	0.000	0.000	0.000

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SB	1.250	1.560	2.630	0.000	34.500	9.500	250.000	0.000	1977.000	1976.500

Repeat of x-5.85

X1	5.370	0.000	0.000	0.000	85.000	85.000	85.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	1987.000	1988.200	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1988.200	1988.200	0.000
BT	10.000	2000.000	1991.400	0.000	2100.000	1990.800	0.000	2280.000	1991.300	0.000
BT	2430.000	1989.500	0.000	2600.000	1988.700	0.000	2935.000	1988.500	1987.000	2973.500
BT	1988.500	1987.000	3130.000	1990.700	0.000	3300.000	1994.800	0.000	3470.000	1998.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2465

X1	5.930	12.000	2400.000	2520.000	330.000	330.000	330.000	0.000	0.000	0.000
GR	2000.000	2000.000	1999.500	2050.000	1999.500	2150.000	1996.000	2270.000	1995.000	2400.000
GR	1984.300	2430.000	1980.000	2455.000	1980.000	2485.000	1992.000	2520.000	1992.000	2570.000
GR	1996.000	2830.000	2000.000	2920.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000

Centerline = 2300

X1	6.380	14.000	2244.000	2355.000	780.000	780.000	780.000	0.000	0.000	0.000
GR	2011.000	1600.000	2008.000	1740.000	2004.000	2080.000	2002.800	2244.000	1988.000	2275.000
GR	1985.900	2287.000	1985.900	2296.000	1989.400	2305.000	1989.000	2319.000	1989.200	2331.000
GR	1993.700	2339.000	2002.500	2355.000	2002.000	2377.000	2012.000	3200.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

CAMBRIDGE STREET
Special Bridge Routine
Centerline = 2165

X1	6.100	10.000	2136.000	2173.500	50.000	210.000	100.000	0.000	-0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1996.500	1996.500	0.000
X4	2.000	2008.000	1600.000	2008.000	2000.000	0.000	0.000	0.000	0.000	0.000
GR	2010.000	1400.000	2000.000	2050.000	1989.500	2130.000	1989.000	2136.000	1989.000	2173.500
GR	1989.500	2180.000	2000.000	2250.000	2008.000	2330.000	2008.000	2558.000	2012.000	2660.000
SB	1.250	1.560	2.630	0.000	33.500	9.750	168.000	0.000	1989.500	1989.000
NC	0.160	0.060	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Repeat of x-6.10

X1	6.110	0.000	0.000	0.000	75.000	75.000	75.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	1996.500	1999.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1999.500	1999.500	0.000
BT	6.000	0.000	2008.000	0.000	50.000	2000.000	0.000	120.000	1999.700	0.000
BT	190.000	1999.400	0.000	250.000	2000.000	0.000	330.000	2008.000	0.000	0.000
NC	0.000	0.000	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2670
Confluence with Tropicana Wash. U/S breakout flows return.

X1	6.180	21.000	2534.000	2754.000	400.000	270.000	365.000	0.000	0.000	0.000
GR	2016.000	1500.000	2012.200	1970.000	2012.000	2140.000	2012.000	2140.000	2012.000	2140.000

GR	2012.000	2140.000	2012.000	2140.000	2009.700	2534.000	2002.300	2574.000	2002.400	2633.000
GR	1995.600	2659.000	1995.100	2677.000	1999.000	2700.000	1994.900	2730.000	2008.300	2754.000
GR	2011.300	2769.000	2011.700	2810.000	2014.600	2898.000	2016.200	3018.000	2015.100	3268.000
GR	2019.500	3422.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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QT	4.000	4100.000	5300.000	5860.000	16200.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.045	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2300			####			
X1	6.310	17.000	2263.000	2343.000	745.000	685.000	710.000	0.000	0.000	0.000
GR	2025.200	1450.000	2025.200	1450.000	2025.200	1450.000	2025.200	1450.000	2024.000	1600.000
GR	2022.300	2000.000	2022.500	2246.000	2017.400	2263.000	2012.900	2280.000	2010.800	2306.000
GR	2012.400	2322.000	2017.400	2343.000	2021.100	2388.000	2023.600	2430.000	2025.100	2469.000
GR	2026.300	2499.000	2025.800	2581.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.045	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	##########									
	####			SWENSON STREET				####		
	####			Special Bridge Routine				####		
	##########							##########		
	####	Centerline =	2300				####			
X1	6.350	11.000	2260.000	2290.000	50.000	210.000	170.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2015.800	2015.800	0.000
X4	1.300	2025.200	1450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2025.300	1200.000	2024.000	1600.000	2022.000	2000.000	2022.000	2180.000	2020.000	2210.000
GR	2010.300	2260.000	2010.300	2290.000	2016.000	2310.000	2020.000	2360.000	2024.000	2470.000
GR	2428.000	2600.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.630	0.000	29.500	9.000	103.100	0.000	2010.800	2010.300
	####	Repeat of x-6.35					####			
X1	6.350	0.000	0.000	0.000	55.000	55.000	55.000	0.000	0.500	0.000
X2	0.300	0.000	1.001	2015.800	2020.300	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	2020.300	2020.300	0.000
BT	8.000	2000.000	2025.200	0.000	2250.000	2023.800	0.000	2430.000	2023.700	0.000
BT	2660.000	2022.800	0.000	2810.000	2020.300	2015.800	2841.500	2020.300	2015.800	2950.000
BT	2023.300	0.000	3150.000	2027.100	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2380			####			
X1	6.500	16.000	2331.000	2431.000	780.000	700.000	755.000	0.000	0.000	0.000
GR	2036.300	250.000	2032.000	1160.000	2029.000	1550.000	2029.000	1550.000	2030.000	1600.000
GR	2032.100	2000.000	2033.200	2194.000	2032.600	2331.000	2022.200	2353.000	2021.500	2373.000
GR	2023.500	2397.000	2027.000	2413.000	2030.700	2431.000	2032.300	2593.000	2031.500	2762.000
GR	2034.500	2950.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.120	0.035	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	##########									
	####			PALOS VERDE STREET				####		
	####	This is a swale crossing with minor drains for low flow						####		
	####	Debris is assumed to block drains. This crossing has						####		
	####	been modeled as a regular ground section.						####		
	##########							##########		
X1	6.500	7.000	9920.000	10190.000	510.000	510.000	510.000	0.000	0.000	0.000
X4	1.300	2038.000	10360.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2040.300	7720.000	2036.000	9740.000	2035.500	9920.000	2035.700	10000.000	2037.600	10190.000
GR	2039.300	10360.000	2039.800	10670.000	0.000	0.000	0.000	0.000	0.000	0.000

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NH	4.300	0.180	1400.000	0.060	2533.000	0.035	2807.000	0.060	3412.000	0.000
	####		Centerline =	2700			####			
X1	6.750	23.000	2584.000	2807.000	740.000	800.000	825.000	0.000	0.000	0.000
X4	1.300	2043.000	1400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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GR  2044.200  2280.000  2044.200  2280.000  2043.200  2533.000  2042.000  2578.000  2044.300  2584.000
GR  2043.600  2627.000  2041.900  2677.000  2040.300  2687.000  2040.100  2697.000  2040.300  2708.000
GR  2042.900  2715.000  2044.300  2735.000  2044.700  2807.000  2046.800  2888.000  2047.500  2969.000
GR  2045.400  3019.000  2045.600  3060.000  2046.300  3412.000     0.000     0.000     0.000     0.000

NC     0.080     0.060     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
       ##########################################################################
       ####                    PARADISE ROAD                                 ####
       ####  This is a swale crossing with minor drains for low flow         ####
       ####  Debris is assumed to block drains.  This crossing has           ####
       ####  been modeled as a regular ground section.  Q500 reduced         ####
       ####  due to breakout over Flamingo Rd (separate split flow run)      ####
       ##########################################################################
X1     6.330    11.000  9800.000 10170.000   500.000   350.000   410.000     0.000     0.000     0.000
GR  2052.300  7780.000  2049.000  8930.000  2050.600  9450.000  2051.000  9600.000  2049.700  9800.000
GR  2045.100 10000.000  2048.300 10170.000  2049.200 10370.000  2048.900 10600.000  2048.300 10750.000
GR  2052.300 11050.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

QT     4.000     0.000     0.000     0.000 17500.000     0.000     0.000     0.000     0.000     0.000
ET     0.000     6.100     6.100     6.100     0.000  -150.000  2550.000     0.000     0.000     0.000
NC     0.045     0.045     0.045     0.000     0.000     0.000     0.000     0.000     0.000     0.000
       ####          Centerline =  2280                          ####
X1     6.870    23.000  2160.000  2308.000   160.000   240.000   205.000     0.000     0.000     0.000
X2     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000    15.000
GR  2056.300  -150.000  2053.000   520.000  2054.000   930.000  2051.000  1240.000  2052.300  1350.000
GR  2051.000  1720.000  2051.000  1720.000  2051.000  1720.000  2051.000  1720.000  2051.000  1720.000
GR  2053.500  2000.000  2052.600  2160.000  2048.900  2214.000  2048.900  2253.000  2044.600  2266.000
GR  2043.700  2293.000  2050.200  2308.000  2048.600  2319.000  2050.500  2435.000  2050.000  2627.000
GR  2052.300  2747.000  2052.000  3030.000  2052.000  3540.000     0.000     0.000     0.000     0.000

NC     0.045     0.045     0.045     0.100     0.300     0.000     0.000     0.000     0.000     0.000
       ####          Centerline =  3550                          ####
       ####  500-year overflows to the south return at this section.  ####
X1     7.160    39.000  3299.000  3869.000  1415.000  1515.000  1520.000     0.000     0.000     0.000
X3     0.300     0.000     0.000  3126.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  2060.100  2000.000  2060.900  2339.000  2061.800  2562.000  2063.800  2660.000  2061.600  2688.000
GR  2064.400  2889.000  2060.800  2920.000  2060.800  3015.000  2066.700  3034.000  2069.600  3126.000
GR  2063.200  3168.000  2063.500  3218.000  2064.900  3299.000  2063.800  3355.000  2061.600  3378.000
GR  2060.400  3393.000  2060.400  3429.000  2060.600  3480.000  2058.700  3510.000  2057.700  3532.000
GR  2056.700  3554.000  2056.600  3562.000  2058.000  3565.000  2060.200  3588.000  2060.000  3614.000
GR  2060.900  3628.000  2061.800  3673.000  2060.600  3714.000  2061.600  3754.000  2062.700  3805.000
GR  2063.500  3835.000  2066.200  3869.000  2065.500  3900.000  2065.500  3941.000  2066.800  3992.000
GR  2070.100  4068.000  2071.700  4137.000  2069.600  4263.000  2067.600  4440.000     0.000     0.000
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NC     0.000     0.000     0.033     0.000     0.000     0.000     0.000     0.000     0.000     0.000
       ####          Centerline =  2290                          ####
X1     7.350    12.000  2201.000  2416.000  1040.000  1040.000  1035.000     0.000     0.000     0.000
X4     1.000  2072.600  2000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  2072.600  1300.000  2068.300  2127.000  2069.300  2165.000  2069.600  2201.000  2068.100  2233.000
GR  2065.300  2252.000  2065.200  2282.000  2068.700  2320.000  2069.900  2416.000  2072.600  2553.000
GR  2073.200  2899.000  2074.700  3280.000     0.000     0.000     0.000     0.000     0.000     0.000

QT     4.000  4100.000  5300.000  5860.000 19500.000     0.000     0.000     0.000     0.000     0.000
NC     0.060     0.060     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
       ##########################################################################
       ####                    KOVAL LANE                                    ####
       ####  This is a swale crossing with minor drains for low flow         ####
       ####  Debris is assumed to block drains.  This crossing has           ####
       ####  been modeled as a regular ground section.                       ####
       ####  Flow right of sta 3500 runs to Trop Wash; reduce FW Q500        ####
       ####  This run connects to COE HEC-2 run for Flamingo main            ####\
       ####  thru Caesars/Imperial area - LVWFWBOL                           ####
       ##########################################################################
```

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X1	7.380	11.000	2495.000	2575.000	150.000	150.000	150.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000
X4	2.000	2074.700	1850.000	2075.200	2000.000	0.000	0.000	0.000	0.000	0.000
GR	2075.100	1650.000	2074.800	2200.000	2074.000	2360.000	2073.700	2495.000	2073.700	2575.000
GR	2073.300	2701.000	2074.400	2790.000	2075.600	3250.000	2075.700	3600.000	2075.800	4050.000
GR	2076.000	4850.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
Starting water levels at 5.57 based on Reach 4 analysis
Centerline = 2030
Near Algonquin Drive Alignment

5.57	7.87	1959.59	1959.59	1959.58	1963.19	3.60	0.00	0.00	1961.00
6000.	0.	6000.	0.	0.	394.	0.	0.	0.	1961.00
0.00	0.00	15.23	0.00	0.140	0.025	0.180	0.000	1951.72	2002.91
0.005786	1320.	1320.	1320.	0	4	0	0.00	55.17	2058.09

CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2450

5.82	7.82	1975.72	1975.72	0.00	1978.42	2.70	7.46	0.09	1982.20
6000.	0.	6000.	0.	0.	455.	0.	13.	2.	1977.20
0.03	0.00	13.19	0.00	0.140	0.025	0.180	0.000	1967.90	2398.97
0.005611	1310.	1310.	1310.	20	5	0	0.00	85.86	2484.82

CCHV= 0.300 CEHV= 0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1987.00 ELREA= 1987.00

MARYLAND PARKWAY
Special Bridge Routine

1

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Centerline = 10000

5.85	9.58	1986.08	1986.08	0.00	1991.05	4.97	0.85	1.13	1976.50
6000.	0.	6000.	0.	0.	335.	0.	14.	2.	1976.50
0.03	0.00	17.89	0.00	0.140	0.025	0.180	0.000	1976.50	9985.00
0.004449	170.	170.	170.	20	14	0	0.00	35.00	10020.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1982.98 ,NOT 1986.08 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	CCFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
PRESS FLOW BECAUSE EGLWC OF 2000.41 EXCEEDS 1.5 DEPTH
6870 D.S. ENERGY OF 1991.05 HIGHER THAN COMPUTED ENERGY OF 1990.18

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2000.04	2000.41	0.00	2751.	3252.	250.	250.	1987.00	1988.20

	#### Repeat of x-5.85							####		
5.87	13.30	1990.30	0.00	0.00	1991.05	0.75	0.00	0.00	1977.00	
6000.	1640.	3965.	395.	1865.	466.	460.	17.	3.	1977.00	
0.03	0.88	8.52	0.85	0.140	0.025	0.180	0.000	1977.00	9464.69	
0.000651	85.	85.	85.	2	0	6	0.00	676.49	10141.18	

*SECNO 5.930

	#### Centerline = 2465									
5.93	10.47	1990.47	0.00	0.00	1991.49	1.01	0.30	0.13	1995.00	
6000.	3.	6000.	3.	0.	744.	0.	31.	6.	1992.00	
0.05	0.00	8.07	0.00	0.140	0.025	0.180	0.000	1980.00	2412.33	
0.001379	330.	330.	330.	2	0	0	0.00	103.23	2515.56	

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
6.08	8.66	1994.56	1994.56	0.00	1997.41	2.85	1.92	0.55	2002.80
6000.	0.	6000.	0.	0.	443.	0.	41.	8.	2002.50
0.06	0.00	13.55	0.00	0.140	0.025	0.180	0.000	1985.90	2261.26
0.005581	780.	780.	780.	20	15	0	0.00	79.31	2340.57

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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                ##########################################################################
                ####                    CAMBRIDGE STREET                              ####
                ####                 Special Bridge Routine                           ####
                ##########################################################################
                ####  Centerline = 2155                                                ####
      6.10        8.32   1996.82   1996.82      0.00   2000.28      3.46      0.50      0.31   1988.50
     6000.         543.      5066.      391.      281.      312.      256.       43.         8.   1988.50
       0.06        1.93      16.24      1.53     0.140     0.025     0.180     0.000   1988.50   2070.43
  0.004428          50.        100.       210.        20         8         0      0.00    161.69   2232.12
)
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1995.52 ,NOT   1996.82 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
  SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.63       0.00      33.50       9.75     168.00       0.00     1989.50    1989.00
  *SECNO 6.110
  3301 HV CHANGED MORE THAN HVINS
  PRESSURE AND WEIR FLOW
1
  27-APR-88     00:26:56                                                                                PAGE     9

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST

   ESPRS       EGLWC       H3        QWEIR       QPR       BAREA    TRAPEZOID       ELLC       ELTRD
                                                                     AREA
    2027.72    2012.19       0.00      3360.      2680.      168.      166.      1996.50    1999.50

                ####  Repeat of x-6.10                                                 ####
      6.11       13.54   2002.54      0.00       0.00   2002.98      0.44      2.70      0.00   1989.00
     6000.         753.      3417.      1831.      722.      508.      664.       45.         8.   1989.00
       0.07        1.04      6.73       2.75     0.160     0.035     0.060     0.000   1989.00   2035.03
  0.000777          75.        75.        75.         2         0         5      0.00    240.42   2275.45
)
  *SECNO 6.180
  3301 HV CHANGED MORE THAN HVINS
                ####                Centerline =  2670                                ####
                ####  Confluence with Tropicana Wash.  U/S breakout flows return.     ####
      6.18        7.79   2002.69      0.00       0.00   2004.25      1.56      0.70      0.56   2009.70
     6000.          0.      6000.         0.         0.      599.         0.       55.        10.   2008.30
       0.08        0.00      10.02      0.30     0.160     0.038     0.060     0.000   1994.90   2572.95
  0.012706         400.       365.       270.         3         0         0      0.00    171.01   2743.95
)
  CCHV=   0.100  CEHV=   0.300
  *SECNO 6.310
  3301 HV CHANGED MORE THAN HVINS
  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
                ####                Centerline =  2300                                ####
      6.31        6.81   2017.61   2017.61      0.00   2019.81      2.20      9.26      0.19   2017.40
     4100.          0.      4100.         0.         0.      344.         0.       63.        12.   2017.40
```

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0.09 0.01 11.91 0.54 0.160 0.058 0.045 0.000 2010.80 2262.32
0.013546 745. 710. 685. 20 15 0 0.00 83.18 2345.49

CCHV= 0.300 CEHV= 0.500
*SECNO 6.350

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

##
SWENSON STREET
Special Bridge Routine
##
Centerline = 2300

6.35	9.55	2019.85	0.00	0.00	2021.39	1.54	1.38	0.20	2010.30
4100.	461.	3213.	426.	235.	287.	227.	65.	12.	2010.30
0.10	1.96	11.21	1.38	0.160	0.045	0.160	0.000	2010.30	2210.76
0.005696	50.	170.	210.	2	0	0	0.00	147.40	2358.16

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2015.75 ,NOT 2019.85 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	29.50	9.00	103.10	0.00	2010.80	2010.30

*SECNO 6.360

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2058.16	2028.90	0.00	2815.	1289.	103.	103.	2015.80	2020.30

Repeat of x-6.35

6.36	12.16	2022.96	0.00	0.00	2023.63	0.67	2.24	0.00	2010.80
4100.	616.	2858.	627.	517.	365.	494.	66.	13.	2010.80
0.10	1.19	7.83	1.27	0.160	0.045	0.160	0.000	2010.80	1905.93
0.002807	55.	55.	55.	2	0	8	0.00	522.00	2427.93

*SECNO 6.500

3301 HV CHANGED MORE THAN HVINS

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2380

6.50	6.59	2028.09	2028.09	0.00	2030.32	2.23	3.00	0.78	2032.60	
4100.	0.	4100.	0.	0.	342.	0.	81.	18.	2030.70	
0.12	0.00	11.99	0.00	0.160	0.035	0.160	0.000	2021.50	2340.54	
0.011420	780.	755.	700.	20	11	0	0.00	77.77	2418.31	

CCHV= 0.100 CEHV= 0.300
*SECNO 6.600

3301 HV CHANGED MORE THAN HVINS

PALOS VERDE STREET
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section.

6.60	2.15	2037.65	2037.58	0.00	2038.19	0.54	7.70	0.17	2035.50	
4100.	1509.	2591.	0.	1026.	353.	0.	91.	26.	2037.60	
0.15	1.47	7.34	0.15	0.160	0.035	0.120	0.000	2035.50	8908.40	
0.020879	510.	510.	510.	7	18	0	0.00	1294.45	10202.86	

1490 NH CARD USED
*SECNO 6.750

Centerline = 2700

6.75	4.43	2044.53	0.00	0.00	2044.62	0.09	6.39	0.05	2044.30	
4100.	3073.	1027.	0.	1758.	284.	0.	121.	52.	2044.70	
0.24	1.75	3.61	0.00	0.064	0.035	0.060	0.000	2040.10	1020.40	
0.004358	740.	825.	800.	8	0	0	0.00	1756.98	2777.37	

*SECNO 6.830

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

PARADISE ROAD
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section. Q500 reduced
due to breakout over Flamingo Rd (separate split flow run)

6.83	3.39	2048.49	2048.49	0.00	2049.34	0.85	3.22	0.23	2049.70	
4100.	0.	4094.	6.	0.	554.	10.	135.	64.	2048.30	
0.26	0.00	7.39	0.62	0.080	0.035	0.060	0.000	2045.10	9852.62	
0.014415	500.	410.	350.	1	19	0	0.00	422.36	10765.38	

*SECNO 6.870

3265 DIVIDED FLOW

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                ####                Centerline =   2280                                  ####
      6.87      7.42   2051.12       0.00          0.00   2051.85       0.74       2.51       0.01   2052.60
    4100.         2.      3197.        901.           4.       430.        200.       138.         56.    2050.20
      0.27      0.50      7.44       4.50         0.045      0.045      0.045      0.000   2043.70   1228.04
 0.010156       150.       205.        240.             2          0          0       0.00    320.98   2435.80

 FLOW DISTRIBUTION FOR SECNO=       6.87          CWSEL=    2051.12

 STA=    1228.     1253.     1720.     1733.     2308.     2319.     2435.
   PER Q=     0.0       0.0       0.0      78.0       2.2      19.8
    AREA=     1.5       1.7       0.7     429.6      18.9     181.6
     VEL=     0.5       0.5       0.5       7.4       4.7       4.5

 CCHV=   0.100  CEHV=    0.300
 *SECNO 7.160

 3470 ENCROACHMENT STATIONS=     3125.0     4440.0  TYPE=      1  TARGET=    -3126.000
          ####                Centerline =   3550                                  ####
          ####  500-year overflows to the south return at this section.            ####
      7.16      6.06   2062.66       0.00          0.00   2062.93       0.27      11.03       0.05   2064.90
    4100.         0.      4100.         0.            0.       981.         0.       166.         79.    2066.20
      0.37      0.00      4.18       0.00         0.045      0.045      0.045      0.000   2056.60   3366.93
 0.005446      1415.      1520.      1515.             5          0          0       0.00    436.15   3803.09

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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     ES        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST

 *SECNO 7.350
          ####                Centerline =   2290                                  ####
      7.35      5.13   2070.32       0.00          0.00   2071.06       0.73       7.99       0.14   2069.60
    4100.       594.      3500.         6.          150.       482.         5.       185.         89.    2069.90
      0.41      3.97      7.26       1.27         0.045      0.038      0.045      0.000   2065.20   2067.27
 0.011764      1040.      1035.      1043.             3          0          0       0.00    370.15   2437.43

 CCHV=   0.100  CEHV=    0.300
 *SECNO 7.380
 3280 CROSS SECTION       7.38 EXTENDED       0.32 FEET

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      KOVAL LANE                                  ####
          ####  This is a swale crossing with minor drains for low flow         ####
          ####  Debris is assumed to block drains.  This crossing has           ####
          ####  been modeled as a regular ground section.                       ####
          ####  Flow right of sta 3600 runs to Trop Wash; reduce FW Q500        ####
          ####  This run connects to COE HEC-2 run for Flamingo main            ####\
          ####  thru Caesars/Imperial area - LVWFWBOL                           ####
          ##########################################################################
      7.38      1.72   2075.42   2075.42       0.00   2075.82       0.40       1.63       0.03   2073.70
    4100.      1514.      1180.      1405.         634.       138.       527.       189.         92.    2073.70
      0.42      2.39      8.58       2.57         0.060      0.025      0.060      0.000   2073.70   1650.00
 0.010100       150.       150.       150.            20         23          0       0.00   1530.94   3180.94

 FLOW DISTRIBUTION FOR SECNO=       7.38          CWSEL=    2075.42

 STA=    1650.     1850.     2000.     2200.     2360.     2495.     2575.     2701.     2790.     3181.
   PER Q=     4.1       2.6       2.9      10.0      17.4      28.8      18.0       8.6       7.7
    AREA=   104.0      70.5      84.3     163.2     211.9     137.6     210.4     117.5     199.4
     VEL=     1.6       1.5       1.4       2.5       3.4       8.6       3.5       3.0       1.6
```

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       3.        0.        0.  0.000000      0.00      0.0       0.  1960.700     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    2.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 2

 CCHV=   0.100  CEHV=   0.300
 *SECNO 5.570
           ####  Starting water levels at 5.57 based on Reach 4 analysis    ####
           ####              Centerline =  2030                             ####
           ####  Near Algonquin Drive Alignment                             ####
      5.57      8.98   1960.70   1960.63   1960.70   1964.68      3.98      0.80      0.00   1961.00
    7300.         0.    7300.        0.        0.      456.         0.        0.        0.   1961.00
       0.00      0.00     16.00      0.00      0.140     0.025     0.180     0.000  1951.72   2002.19
 0.005545     1320.     1320.     1320.         0         4         0      0.00     56.61   2058.81
 CCHV=   0.100  CEHV=   0.300
 *SECNO 5.820

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
           ####              Centerline =  2450                             ####
      5.82      8.65   1976.55   1976.55      0.00   1979.53      2.97      7.12      0.10   1982.20
    7300.         0.    7300.        0.        0.      528.         0.       15.        2.   1977.20
       0.03      0.00     13.84      0.00      0.140     0.025     0.180     0.000  1967.90   2397.69
 0.005333     1310.     1310.     1310.        20         8         0      0.00     88.93   2486.61
 CCHV=   0.300  CEHV=   0.500
 *SECNO 5.850

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
```

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

MARYLAND PARKWAY
Special Bridge Routine
Centerline = 10000

5.85	10.71	1987.21	1987.21	0.00	1989.60	2.39	0.60	0.17	1976.50
7300.	1435.	5396.	468.	816.	375.	284.	19.	3.	1976.50
0.03	1.76	14.40	1.65	0.140	0.025	0.180	0.000	1976.50	9782.39
0.002486	170.	170.	170.	20	19	0	0.00	276.12	10058.42

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1983.89 .NOT 1987.21 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2007.86	2000.40	0.00	4347.	2983.	250.	250.	1987.00	1988.20

Repeat of x-5.85

5.87	12.01	1989.01	0.00	0.00	1990.66	1.65	1.06	0.00	1977.00
7300.	1680.	5149.	471.	1257.	421.	342.	22.	4.	1977.00
0.03	1.34	12.24	1.39	0.140	0.025	0.180	0.000	1977.00	9561.40
0.001542	85.	85.	85.	3	0	6	0.00	521.76	10083.16

*SECNO 5.930

Centerline = 2465

5.93	9.54	1989.54	0.00	0.00	1991.50	1.96	0.69	0.16	1995.00
7300.	0.	7300.	0.	0.	649.	0.	32.	6.	1992.00
0.04	0.00	11.25	0.00	0.140	0.025	0.180	0.000	1980.00	2414.90
0.002988	330.	330.	330.	2	0	0	0.00	97.92	2512.82

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2300

6.08	9.52	1995.42	1995.42	0.00	1998.57	3.15	3.06	0.36	2002.80
7300.	0.	7300.	0.	0.	512.	0.	43.	8.	2002.50
0.06	0.00	14.25	0.00	0.140	0.025	0.180	0.000	1985.90	2259.45
0.005385	780.	780.	780.	20	5	0	0.00	82.68	2342.13

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CAMBRIDGE STREET
Special Bridge Routine
Centerline = 2165

6.10	9.31	1997.81	1997.81	0.00	2001.71	3.91	0.49	0.38	1988.50
7300.	719.	6066.	515.	350.	349.	317.	45.	8.	1988.50
0.06	2.05	17.38	1.62	0.140	0.025	0.180	0.000	1988.50	2062.89
0.004365	50.	100.	210.	20	5	0	0.00	175.82	2238.72

J

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1996.44 ,NOT 1997.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	166.00	0.00	1989.50	1989.00

*SECNO 6.110

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2043.54	2015.32	0.00	4677.	2628.	168.	166.	1996.50	1999.50

Repeat of x-6.10

6.11	14.18	2003.18	0.00	0.00	2003.74	0.55	2.02	0.00	1989.00
7300.	942.	4062.	2296.	788.	532.	732.	47.	8.	1989.00
0.06	1.19	7.64	3.14	0.160	0.035	0.050	0.000	1989.00	2031.26
0.000942	75.	75.	75.	2	0	6	0.00	250.59	2281.86

J
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.120

3301 HV CHANGED MORE THAN HVINS

```
          ####          Centerline =  2570                                  ####
          ####  Confluence with Tropicana Wash.  U/S breakout flows return.####
      6.18      8.57  2003.47      0.00      0.00   2005.00      1.54      0.78      0.49   2009.70
      7300.        0.      7300.        0.        0.       734.        0.       58.       10.   2008.30
       0.07      0.00      9.94      0.00     0.160     0.038     0.000     0.000   1994.90   2568.61
  0.009963       400.       365.       273.         3         0         0      0.00    176.73   2745.35
)
 CCHV=   0.100  CEHV=   0.300
 *SECNO 6.310

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####          Centerline =  2300                                  ####
      6.31      7.70  2018.50  2018.50      0.00   2021.00      2.50      7.63      0.29   2017.40
      5300.        1.      5281.       18.        2.       416.        7.       68.       12.   2017.40
       0.09      0.66     12.70      2.42     0.160     0.038     0.045     0.000   2010.80   2259.34
  0.011987       745.       710.       685.        20        11         0      0.00     97.01   2356.35
)
 CCHV=   0.300  CEHV=   0.500
 *SECNO 6.350
          ##########################################################################
          ####                        SWENSON STREET                            ####
          ####                  Special Bridge Routine                          ####
          ##########################################################################
          ####  Centerline = 2300                                         ####
      6.35     10.27  2020.57      0.00      0.00   2022.62      2.05      1.49      0.13   2010.30
      5300.       645.      4037.      618.      273.       308.      281.       70.       13.   2010.30
       0.09      2.36     13.10      2.20     0.160     0.045     0.160     0.000   2010.30   2201.44
  0.007050        50.       170.       210.         3         0         0      0.00    174.25   2375.69
)
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   2016.77 ,NOT   2020.57 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      CQFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      2.63      0.00     29.50      9.00    103.10      0.00   2010.80   2010.30

 *SECNO 6.360

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD
  2084.59   2032.50      0.00      4069.     1238.      103.      103.      2015.80   2020.30


          ####  Repeat of x-6.35                                            ####
      6.36     12.13  2022.93      0.00      0.00   2024.07      1.14      1.45      0.00   2010.80
      5300.       790.      3704.      807.      503.       364.      489.       72.       13.   2010.80
       0.09      1.57     10.18      1.65     0.160     0.045     0.160     0.000   2010.80   1913.60
```

0.003406 55. 55. 55. 3 0 8 0.00 513.28 2426.88

*SECNO 6.500

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2380

6.50	7.48	2028.98	2028.98	0.00	2031.53	2.55	4.26	0.70	2032.60
5300.	0.	5300.	0.	0.	414.	0.	87.	18.	2030.70
0.11	0.00	12.80	0.00	0.160	0.035	0.160	0.000	2021.50	2338.66
0.011216	780.	755.	700.	20	14	0	0.00	83.97	2422.63

CCHV= 0.100 CEHV= 0.300

*SECNO 6.600

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

PALOS VERDE STREET
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section.

6.60	2.48	2037.98	2037.81	0.00	2038.54	0.56	6.81	0.20	2035.50
5300.	1967.	3323.	10.	1389.	443.	20.	100.	28.	2037.60
0.14	1.42	7.51	0.52	0.160	0.035	0.120	0.000	2035.50	8741.16
0.016187	510.	510.	510.	13	17	0	0.00	1552.77	10293.92

1490 NH CARD USED

*SECNO 6.750

Centerline = 2700

6.75	4.53	2044.73	0.00	0.00	2044.82	0.10	6.24	0.05	2044.30
5300.	4080.	1220.	0.	2058.	324.	0.	137.	57.	2044.70
0.23	1.98	3.76	0.02	0.065	0.035	0.060	0.000	2040.10	995.58
0.004788	740.	825.	800.	6	0	0	0.00	1812.44	2808.02

*SECNO 6.830

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

PARADISE ROAD
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section. Q500 reduced
due to breakout over Flamingo Rd (separate split flow run)

6.83	3.83	2048.93	2048.93	0.00	2049.76	0.83	3.14	0.22	2049.70
5300.	0.	5164.	136.	0.	698.	110.	154.	70.	2048.30
0.24	0.00	7.40	1.24	0.080	0.035	0.060	0.000	2045.10	9833.49

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0.011486 500. 410. 359. 1 12 0 0.00 700.33 10801.05

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.870

3265 DIVIDED FLOW

####		Centerline = 2280						####	
6.87	7.67	2051.37	2051.32	2051.12	2052.35	0.98	2.54	0.05	2052.60
5300.	45.	3969.	1286.	38.	461.	231.	157.	73.	2050.20
0.25	1.19	8.61	5.56	0.045	0.045	0.045	0.000	2043.70	1202.86
0.012851	160.	205.	240.	3	11	0	0.00	466.97	2435.00

FLOW DISTRIBUTION FOR SECNO= 6.87 CWSEL= 2051.37

STA=	1203.	1240.	1281.	1720.	1760.	2308.	2319.	2435.
PER Q=	0.2	0.2	0.4	0.2	74.9	2.4	21.9	
AREA=	6.7	7.5	16.4	7.2	460.8	21.6	209.9	
VEL=	1.2	1.2	1.2	1.2	8.6	5.8	5.5	

CCHV= 0.100 CEHV= 0.300
*SECNO 7.160

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 3125.0 4440.0 TYPE= 1 TARGET= -3126.000

####		Centerline = 3550						####	
####	500-year overflows to the south return at this section.							####	
7.16	6.60	2063.20	0.00	2062.66	2063.49	0.29	11.07	0.07	2064.90
5300.	0.	5300.	0.	0.	1223.	0.	191.	89.	2066.20
0.35	0.00	4.33	0.00	0.045	0.045	0.045	0.000	2056.60	3361.29
0.004690	1415.	1520.	1515.	5	0	0	0.00	460.32	3821.61

*SECNO 7.350

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2290						####	
7.35	5.38	2070.58	2070.58	2070.32	2071.51	0.93	7.58	0.19	2069.60
5300.	858.	4420.	22.	186.	538.	12.	215.	95.	2069.90
0.39	4.63	8.21	1.84	0.045	0.038	0.045	0.000	2065.20	2059.56
0.012994	1040.	1035.	1043.	5	14	0	0.00	391.12	2450.68

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 7.380
3280 CROSS SECTION 7.38 EXTENDED 0.49 FEET

```
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                        KOVAL LANE                                ####
          ####  This is a swale crossing with minor drains for low flow         ####
          ####  Debris is assumed to block drains.  This crossing has           ####
          ####  been modeled as a regular ground section.                       ####
          ####  Flow right of sta 3600 runs to Trop Wash; reduce FW 9500        ####
          ####  This run connects to COE HEC-2 run for Flamingo main            ####
          ####  thru Caesars/Imperial area - LVWFWBOL                           ####
          ##########################################################################
      7.38      1.89   2075.59   2075.59   2075.42   2076.04      0.44      1.74      0.05   2073.70
      5300.     2077.     1409.     1814.      781.      152.      639.      219.      103.    2073.70
      0.40      2.66      9.29      2.84     0.060     0.025     0.060     0.000   2073.70   1650.00
 0.010429       150.      150.      150.        20        22         0      0.00   1557.85   3247.85

FLOW DISTRIBUTION FOR SECNO=      7.38          CWSEL=   2075.59

 STA=    1650.     1850.     2000.     2200.     2360.     2495.     2575.     2701.     2790.     3248.
  PER Q=     5.2       3.4       4.0      10.3      16.3      26.6      16.7       8.3       9.3
   AREA=   138.9      96.7     118.9     191.1     235.5     151.5     232.4     133.0     273.4
    VEL=     2.0       1.9       1.8       2.8       3.7       9.3       3.8       3.3       1.8

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 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       FLAMINGO WASH  REACH 3   (ALGONQUIN DR. TO KOVAL LANE)

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
          0.       4.        0.        0.  0.000000      0.00      0.0       0.  1961.700     0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 +PROF 3

 CCHV=   0.100 CEHV=   0.300
 *SECNO 5.570
 3720 CRITICAL DEPTH ASSUMED
          ####  Starting water levels at 5.57 based on Reach 4 analysis         ####
          ####              Centerline =  2030                                  ####
          ####  Near Algonquin Drive Alignment                                  ####
```

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8860.	0.	8860.	0.	0.	517.	0.	0.	0.	1961.00
0.00	0.28	17.14	0.26	0.140	0.025	0.180	0.000	1951.72	2001.49
0.005460	1320.	1320.	1320.	0	4	0	0.00	58.28	2059.77

CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2450

5.82	9.48	1977.38	1977.38	0.00	1980.74	3.36	7.03	0.12	1982.20
8860.	0.	8860.	0.	0.	602.	1.	17.	2.	1977.20
0.02	0.00	14.71	0.01	0.140	0.025	0.130	0.000	1967.90	2396.41
0.005273	1310.	1310.	1310.	20	11	0	0.00	91.83	2488.24

CCHV= 0.300 CEHV= 0.500
*SECNO 5.850
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##
MARYLAND PARKWAY
Special Bridge Routine
##
Centerline = 10000

5.85	10.53	1987.03	1987.03	0.00	1990.73	3.70	0.77	0.17	1976.50
8860.	1710.	6582.	568.	783.	368.	277.	21.	3.	1976.50
0.03	2.18	17.87	2.35	0.140	0.025	0.180	0.000	1976.50	9823.82
0.003915	170.	170.	170.	20	12	0	0.00	234.23	10058.05

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1984.90 ,VOT 1987.03 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2017.45	2004.61	0.00	5670.	3194.	250.	250.	1987.00	1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

Repeat of x-5.85

5.87	11.42	1988.42	1988.22	0.00	1991.32	2.90	0.28	-0.28	1977.00

```
      8850.    1857.    8497.     373.    10172.     700.     312.      67.      7.    1977.00
        0.03     1.85    16.03     1.83     0.140    0.025    0.180    0.000  1977.00   9618.17
  0.002826       85.      85.       85.       20       26        0        0    0.00    441.68  10059.84
 )
 *SECNO 5.930
          ####  Centerline = 2465
        5.93     9.82  1989.82     0.00     0.00  1992.48     2.66     1.09     0.07  1995.00
        8860.       0.    8860.       0.       0.     676.       0.      33.       6.  1992.00
        0.04     0.00    13.10     0.00     0.140    0.025    0.180    0.000  1980.00   2414.14
  0.003922      330.     330.      330.        5        0        0    0.00     99.48   2513.62
 )
 CCHV=   0.100  CEHV=   0.300
 *SECNO 6.080

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
 1
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          ####            Centerline =  2300                                  ####
        5.08    10.45  1996.35  1996.35     0.00  1999.84     3.49     3.52     0.25  2002.80
        8860.       0.    8860.       0.       0.     591.       0.      44.       7.  2002.50
        0.05     0.00    14.99     0.00     0.140    0.025    0.180    0.000  1985.90   2257.51
  0.005245      780.     780.      780.       20        8        0    0.00     86.31   2343.82
 )
 CCHV=   0.300  CEHV=   0.500
 *SECNO 6.100

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    CAMBRIDGE STREET                      ####
          ####                Special Bridge Routine                    ####
          ##################################################################
          ####  Centerline = 2165                                   ####
        6.10    10.39  1998.89  1998.89     0.00  2003.28     4.39     0.48     0.45  1988.50
        8860.     947.    7237.     675.     433.     390.     392.      47.       8.  1988.50
        0.05     2.19    18.58     1.72     0.140    0.025    0.180    0.000  1988.50   2054.65
  0.004308       50.     100.      210.       20        6        0    0.00    191.27   2245.93
 )

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1997.46 ,NOT   1998.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      COFG      RDLEN      BWC       BWP       BAREA      SS        ELCHU     ELCHD
       1.25      1.56      2.63      0.00     33.50      9.75    168.00      0.00    1989.50   1989.00

 *SECNO 6.110

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC       H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                  AREA
  2066.25   2018.82      0.00      5312.     2571.      163.      166.     1996.50   1999.50

          ####  Repeat of x-6.10                                              ####
```

6.11	14.87	2003.87	0.00	0.00	2004.56	0.70	1.28	0.00	1989.00
8860.	1174.	4814.	2873.	862.	558.	808.	50.	8.	1989.00
0.06	1.36	8.63	3.55	0.160	0.035	0.060	0.000	1989.00	2027.23
0.001130	75.	75.	75.	2	0	6	0.00	261.48	2288.71

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

Centerline = 2670

Confluence with Tropicana Wash. U/S breakout flows return.

6.18	9.38	2004.28	0.00	0.00	2005.85	1.58	0.85	0.44	2009.70
8860.	0.	8860.	0.	0.	879.	0.	62.	10.	2008.30
0.07	0.00	10.08	0.00	0.160	0.038	0.050	0.000	1994.90	2564.12
0.008411	400.	365.	270.	3	0	0	0.00	182.67	2746.80

CCHV= 0.100 CEHV= 0.300

*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2300

6.31	8.08	2018.88	2018.88	0.00	2021.50	2.62	6.72	0.31	2017.40
5860.	3.	5818.	39.	4.	447.	13.	73.	12.	2017.40
0.08	0.79	13.03	2.39	0.160	0.038	0.045	0.000	2010.80	2258.05
0.011463	745.	710.	685.	20	15	0	0.00	102.99	2361.04

CCHV= 0.300 CEHV= 0.500

*SECNO 6.350

SWENSON STREET

Special Bridge Routine

Centerline = 2300

6.35	10.54	2020.84	2019.58	0.00	2023.14	2.30	1.54	0.10	2010.30
5860.	734.	4413.	713.	290.	316.	306.	75.	13.	2010.30
0.09	2.53	13.96	2.33	0.160	0.045	0.160	0.000	2010.30	2197.39
0.007726	50.	170.	210.	7	8	0	0.00	185.73	2383.12

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2017.22 ,YOT 2020.84 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEB	BDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD

1.29 1.58 2.83 3.09 29.39 9.09 103.10 0.00 2010.80 2010.39

*SECNO 6.360

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2099.09	2034.11	0.00	4652.	1220.	103.	103.	2015.80	2020.30

Repeat of x-6.35

6.36	11.95	2022.75	0.00	0.00	2024.23	1.48	1.09	0.00	2010.80
5860.	846.	4140.	874.	446.	359.	465.	77.	13.	2010.80
0.09	1.90	11.54	1.88	0.160	0.045	0.160	0.000	2010.80	1948.44
0.004467	55.	55.	55.	3	0	0	0.00	473.65	2422.09

*SECNO 6.500

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2380

6.50	8.04	2029.54	2029.54	0.00	2032.02	2.49	4.85	0.51	2032.60
5860.	10.	5850.	3.	26.	462.	0.	92.	19.	2030.70
0.10	0.39	12.67	0.00	0.160	0.035	0.160	0.000	2021.50	1480.33
0.010097	780.	755.	700.	3	14	0	0.00	184.32	2425.34

CCHV= 0.100 CEHV= 0.300

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.600

3301 HV CHANGED MORE THAN HVINS

PALOS VERDE STREET
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section.

6.60	2.57	2038.07	2037.92	0.00	2038.68	0.61	6.47	0.19	2035.50
5860.	2183.	3658.	19.	1497.	467.	30.	106.	29.	2037.60
0.13	1.46	7.83	0.56	0.160	0.035	0.120	0.000	2035.50	8695.66
0.016408	510.	510.	510.	9	17	0	0.00	1607.47	10303.14

1490 NH CARD USED
*SECNO 6.750

3301 HV CHANGED MORE THAN HVINS

Centerline = 2700

6.75	4.73	2044.83	0.00	0.00	2044.93	0.10	6.20	0.05	2044.30

```
 58 60.    4512.    1348.      0.    2219.     348.      0.     146.      39.   2044.70
  0.22     2.04     3.90     0.27    0.065    0.035    0.060    0.000  2040.10   982.96
0.004710   740.     825.     800.        7        0        0     0.00  1828.80  2811.76
 )
  *SECNO 6.830

  3265 DIVIDED FLOW


  3301 HV CHANGED MORE THAN HVINS

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      PARADISE ROAD                               ####
          ####  This is a swale crossing with minor drains for low flow         ####
          ####  Debris is assumed to block drains.  This crossing has           ####
          ####  been modeled as a regular ground section.  Q500 reduced         ####
 1
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          ####  due to breakout over Flamingo Rd (separate split flow run) ####
          ##########################################################################
      6.83     4.11  2049.21  2049.21     0.00  2049.91     0.71     2.80     0.18  2049.70
     58 60.       6.     55 05.      349.       15.      792.      251.      165.       74.  2048.30
      0.24     0.39     6.95     1.39    0.080    0.035    0.060    0.000  2045.10  8851.11
 0.008956      500.     410.     350.       20       12        0     0.00  1147.74 10823.44
 )
  *SECNO 6.870

  3265 DIVIDED FLOW

  7185 MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2280                              ####
      6.87     7.91  2051.61  2051.61  2051.12  2052.53     0.93     2.14     0.07  2052.60
     58 60.     173.     41 71.     1516.      107.      493.      263.      170.       79.  2050.20
      0.24     1.61     8.46     5.77    0.045    0.045    0.045    0.000  2043.70  1177.36
 0.011722      160.     205.     240.        3       17        0     0.00   614.85  2435.00
 )
  FLOW DISTRIBUTION FOR SECNO=      5.87          CWSEL=   2051.61

  STA=    1177.    1240.    1310.    1720.    1788.    2308.    2319.    2435.
    PER Q=     0.5      0.6      1.3      0.6     71.2      2.5     23.4
     AREA=    19.0     21.2     46.5     20.6    493.3     24.3    238.5
      VEL=     1.6      1.6      1.6      1.6      8.5      6.3      5.7

  CCHV=   0.100 CEHV=   0.300
  *SECNO 7.160

  3265 DIVIDED FLOW


  3301 HV CHANGED MORE THAN HVINS

  3470 ENCROACHMENT STATIONS=    3125.0    4440.0  TYPE=     1  TARGET=   -3126.000
          ####                Centerline =  3550                              ####
          ####  500-year overflows to the south return at this section.       ####
      7.16     6.73  2063.33     0.00  2062.66  2063.65     0.32    11.06     0.06  2064.90
     58 60.       1.     58 59.        0.        1.     1283.        0.      207.       97.  2066.20
      0.34     0.36     4.57     0.00    0.045    0.045    0.045    0.000  2056.60  3167.16
 0.004965     1415.    1520.    1515.        6        0        0     0.00   468.20  3825.94
 )
  *SECNO 7.350
 1
```

Continuous Interfolded @ Moore Business Forms, Inc.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2290

7.35	5.58	2070.78	2070.78	2070.32	2071.71	0.93	7.58	0.18	2069.60
5860.	1016.	4803.	41.	215.	581.	20.	232.	108.	2069.90
0.37	4.74	8.26	2.09	0.045	0.038	0.045	0.000	2065.20	2053.63
0.011866	1040.	1035.	1040.	4	10	0	0.00	407.23	2460.87

3
CCHV= 0.100 CEHV= 0.300
*SECNO 7.380
3280 CROSS SECTION 7.38 EXTENDED 0.58 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
##################################################################
####                      KOVAL LANE                          ####
####  This is a swale crossing with minor drains for low flow ####
####  Debris is assumed to block drains.  This crossing has   ####
####  been modeled as a regular ground section.               ####
####  Flow right of sta 3600 runs to Trop Wash; reduce FW 0500 ####
####  This run connects to COE HEC-2 run for Flamingo main    ####\
####  thru Caesars/Imperial area - LVWFWBOL                   ####
##################################################################
```

7.38	1.98	2075.68	2075.68	2075.42	2076.12	0.45	1.65	0.05	2073.70
5860.	2338.	1497.	2024.	852.	158.	707.	236.	112.	2073.70
0.38	2.74	9.46	2.36	0.060	0.025	0.060	0.000	2073.70	1650.00
0.010189	150.	150.	150.	20	22	0	0.00	1876.41	3526.41

3
FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.68

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3526.
PER Q=	5.6	3.8	4.5	10.3	15.8	25.6	16.1	8.1	10.3	0.1	
AREA=	155.8	109.4	135.8	204.6	246.9	158.3	243.0	140.5	312.3	10.9	
VEL=	2.1	2.0	1.9	2.9	3.7	9.5	3.9	3.4	1.9	0.3	

1


```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 3 (ALGONQUIN DR. TO KOVAL LANE)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.000000	0.00	0.0	0.	1970.700	0.000

Continuous Interfolded @ Mogan Business Forms, Inc.

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
Starting water levels at 5.57 based on Reach 4 analysis
Centerline = 2030
Near Algonquin Drive Alignment

5.57	19.14	1970.86	1970.86	1970.70	1973.72	2.87	0.00	0.00	1961.00
22500.	2148.	16443.	3909.	1904.	1035.	4160.	0.	0.	1961.00
0.00	1.13	15.89	0.94	0.140	0.025	0.180	0.000	1951.72	1374.41
0.001860	1320.	1320.	1320.	0	4	0	0.00	1698.41	3072.82

3
CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2450

5.82	15.47	1983.37	1983.37	0.00	1989.00	5.62	3.47	0.83	1982.20
22500.	33.	22443.	24.	69.	1178.	25.	126.	29.	1977.20
0.02	0.47	19.05	0.95	0.140	0.025	0.180	0.000	1967.90	2271.87
0.004072	1310.	1310.	1310.	20	16	0	0.00	224.36	2496.23

3
CCHV= 0.300 CEHV= 0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
MARYLAND PARKWAY
Special Bridge Routine
Centerline = 10000

5.85	16.86	1993.36	1993.36	0.00	1996.14	2.78	0.52	0.85	1976.50
22500.	9596.	11165.	1739.	5389.	590.	1173.	142.	32.	1976.50
0.02	1.78	18.92	1.48	0.140	0.025	0.180	0.000	1976.50	8872.10
0.002344	170.	170.	170.	20	8	0	0.00	1425.61	10297.71

3
4

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1992.14 ,VOT 1993.36 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
6870 D.S. ENERGY OF 1996.14 HIGHER THAN COMPUTED ENERGY OF 1994.04
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2189.57	2024.28	0.00	21192.	1326.	250.	250.	1987.00	1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

	####	Repeat at x-5.85							####	
5.87	16.89	1993.89	1993.87	0.00	1996.64	2.75	0.20	-0.20	1977.00	
22500.	9619.	11138.	1742.	5420.	591.	1181.	156.	35.	1977.00	
0.03	1.77	18.85	1.48	0.140	0.025	0.180	0.000	1977.00	8870.70	
0.002320	85.	85.	85.	20	5	0	0.00	1428.20	10298.90	

*SECNO 5.930

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	Centerline = 2465								
5.93	14.95	1994.95	1994.95	0.00	1999.76	4.81	1.00	1.03	1995.00
22500.	0.	22146.	354.	0.	1249.	430.	190.	42.	1992.00
0.03	0.00	17.73	0.82	0.140	0.025	0.180	0.000	1980.00	2400.14
0.004097	330.	330.	330.	20	11	0	0.00	361.55	2761.69

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
6.08	16.66	2002.56	2002.56	0.00	2007.99	5.43	3.34	0.19	2002.80
22500.	0.	22495.	5.	0.	1203.	21.	216.	47.	2002.50
0.04	0.00	18.70	0.24	0.140	0.025	0.180	0.000	1985.90	2244.49
0.004484	780.	780.	780.	20	8	0	0.00	178.96	2423.45

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

Continuous Interfolded @ Moore Business Forms, Inc.

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3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    CAMBRIDGE STREET                              ####
          ####                 Special Bridge Routine                           ####
          ##########################################################################
          ####  Centerline = 2165                                                ####
      6.10     17.76   2006.26   2006.26      0.00   2012.62      6.35      0.40      0.46   1988.50
    22500.     3781.     15954.     2764.     1201.      566.     1183.      222.       47.    1988.50
       0.04      3.15      23.95      2.34     0.140     0.025     0.180     0.000   1988.50   2010.22
  0.003503       50.       100.       210.        20         9         0      0.00    307.40   2317.62
)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2004.75 ,VOT   2006.26 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COPG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      33.50       9.75     168.00      0.00    1989.50    1989.00

*SECNO 6.110
6870 D.S. ENERGY OF 2012.62 HIGHER THAN COMPUTED ENERGY OF 2009.82
3280 CROSS SECTION       6.11 EXTENDED       1.99 FEET

1
 27-APR-88     00:26:56                                                                          PAGE    36

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         OLOB      QCH       QROB      ALOB      ACH       AROP      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

  EGPRS      EGLWC       FB        QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                    AREA
 2440.76    2042.25      0.00     20661.     2036.      168.       166.     1996.50   1999.50

          ####  Repeat of x-6.10                                                 ####
      6.11     23.00   2012.00      0.00      0.00   2012.62      0.61      0.00      0.00   1989.00
    22500.     4195.     8338.     9968.     3850.      862.     3092.      231.       49.    1989.00
       0.05      1.09      9.67      3.22     0.160     0.035     0.050     0.000   1989.00   1400.00
  0.000793       75.       75.       75.         3         0         6      0.00   1259.84   2659.84
)
 *SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

          ####            Centerline =  2670                                     ####
          ####  Confluence with Tropicana Wash.  U/S breakout flows return.      ####
      6.18     17.23   2012.13      0.00      0.00   2013.32      1.19      0.42      0.29   2009.70
    22500.      252.     22158.      91.       514.     2512.       64.      275.       57.     2008.30
       0.05      0.49      8.82      1.43     0.160     0.038     0.060     0.000   1994.90   2026.04
  0.002047       400.      365.      270.         2         0         0      0.00    795.93   2821.97
)
 CCHV=   0.100  CEHV=   0.300
 *SECNO 6.310
```

```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3593 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####                Centerline =  2300                          ####
      6.31    13.93  2024.73  2024.73     0.00  2027.04     2.31     2.00     0.34  2017.40
     16200.    1519.   12490.    2191.    1413.     914.     365.     323.     72.   2017.40
       0.08     1.07    13.67     6.04    0.160    0.038    0.045    0.000  2010.80  1509.34
  0.004854      745.     710.      685.       20       15        0     0.00   949.91  2459.26
 3
 1
  27-APR-88     00:26:56                                                                    PAGE    37

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

  CCHV=   0.300 CEHV=   0.500
  *SECNO 6.350
  3280 CROSS SECTION       6.35 EXTENDED       0.96 FEET

  3301 HV CHANGED MORE THAN HVINS

            ##########################################################################
            ####                    SWENSON STREET                                ####
            ####                Special Bridge Routine                            ####
            ##########################################################################
            ####  Centerline =  2300                                          ####
      6.35    16.16  2026.46  2026.03     0.00  2028.00     1.53     0.72     0.23  2010.30
     16200.    6090.    7161.    2948.    3468.     485.    1180.     332.     74.   2010.30
       0.08     1.76    14.78     2.50    0.160    0.045    0.150    0.000  2010.30  1200.00
  0.004901       50.     170.      210.        7        8        0     0.00  1270.79  2470.79
 3
  SPECIAL BRIDGE

  5227 DOWNSTREAM ELEV IS   2023.93 ,NOT   2026.46 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

  SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
       1.25      1.56      2.63      0.00     29.50      9.00     103.10     0.00   2010.80   2010.30

  *SECNO 6.360
  6870 D.S. ENERGY OF 2028.00 HIGHER THAN COMPUTED ENERGY OF 2027.02
  3280 CROSS SECTION       6.36 EXTENDED       0.71 FEET

  PRESSURE AND WEIR FLOW

    EGPRS       EGLWC       H3        QWEIR       QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                          AREA
    2624.53   2053.72      0.00     15704.      494.      183.      103.      2015.80   2020.30

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3710 WSEL ASSUMED BASED ON MIN DIFF
          ####  Repeat of x-6.35                                              ####
      6.36    15.91  2026.71     0.00     0.00  2028.45     1.75     0.00     0.00  2010.80
     16200.    5842.    7403.    2955.    3206.     477.    1135.     338.     75.   2010.80
       0.08     1.82    15.51     2.50    0.160    0.045    0.150    0.000  2010.80  1200.00
  0.005514       55.      55.       55.       20        0        8     0.00  1270.71  2470.71
 3
 1
```

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2380						####	
6.50	12.57	2034.07	2034.07	0.00	2035.51	1.44	3.67	0.09	2032.60
16200.	4534.	10664.	1002.	3757.	902.	992.	430.	106.	2030.70
0.11	1.21	11.82	1.01	0.160	0.035	0.160	0.000	2021.50	688.37
0.004301	780.	755.	700.	5	14	0	0.00	2234.88	2923.25

CCHV= 0.100 CEHV= 0.300
*SECNO 6.600
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

PALOS VERDE STREET
This is a swale crossing with minor drains for low flow
Debris is assumed to block drains. This crossing has
been modeled as a regular ground section.

6.60	3.87	2039.37	2039.37	0.00	2040.51	1.14	3.81	0.03	2035.50
16200.	6573.	9207.	419.	3514.	818.	217.	489.	133.	2037.60
0.13	1.87	11.26	1.93	0.160	0.035	0.120	0.000	2035.50	8039.63
0.016058	510.	510.	510.	16	17	0	0.00	2361.92	10401.55

1490 NH CARD USED
*SECNO 6.750

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2700						####	
6.75	6.07	2046.17	0.00	0.00	2046.37	0.20	5.77	0.09	2044.30
16200.	12447.	3635.	117.	4484.	646.	131.	574.	174.	2044.70
0.19	2.78	5.63	0.90	0.068	0.035	0.060	0.000	2040.10	808.16
0.004278	740.	825.	800.	5	0	0	0.00	2370.15	3345.59

*SECNO 6.830

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Continuous Interfolded @ Moore Business Forms, Inc.

```
                                PARADISE ROAD                                  ####
            ####  This is a swale crossing with minor drains for low flow      ####
            ####  Debris is assumed to block drains.  This crossing has        ####
            ####  been modeled as a regular ground section.  Q500 reduced      ####
            ####  due to breakout over Flamingo Rd (separate split flow run)   ####
            ##########################################################################
      6.83      5.45  2050.55  2050.55     0.00  2051.41     0.86     2.53     0.20  2049.70
    16200.    1248.    11250.    3702.     903.     1284.    1201.     620.     199.   2048.30
      0.21      1.38     8.76     3.38    0.080    0.035    0.060    0.000  2045.10  8336.75
  0.008115     500.      410.     350.       20       15        0     0.00  2358.83 10932.24
)
 *SECNO 6.870

 3265 DIVIDED FLOW

 3280 CROSS SECTION       6.87 EXTENDED       0.73 FEET

            ####              Centerline =  2280                               ####
      6.87      9.04  2052.74  2052.72     0.00  2053.41     0.67     1.98     0.02  2052.60
    17500.    2889.     5953.    8658.     846.     653.    1674.     635.     209.   2050.20
      0.22      3.41     9.12     5.17    0.045    0.045    0.045    0.000  2043.70  1060.76
  0.010735     160.      205.     240.        4       18        0     0.00  2257.44  3540.00
)
 FLOW DISTRIBUTION FOR SECNO=       6.87          CWSEL=   2052.74

 STA=    1061.     1390.     1720.     2160.     2308.     2435.     2627.     2747.     3030.     3540.
   PER Q=     6.1       7.4       3.0      34.0      17.2      17.1       5.9       3.3       6.0
    AREA=   318.1     357.9     170.1     653.1     406.1     477.0     208.2     207.9     374.7
     VEL=     3.4       3.6       3.1       9.1       7.4       6.3       4.9       2.8       2.8

1
  27-APR-88     00:26:56                                                                    PAGE    40

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 CCHV=   0.100 CEHV=   0.300
 *SECNO 7.160

 3470 ENCROACHMENT STATIONS=    3126.0    4440.0  TYPE=     1  TARGET=   -3126.000
            ####              Centerline =  3550                               ####
            ####  500-year overflows to the south return at this section.      ####
      7.16      8.80  2065.40     0.00     0.00  2066.15     0.76    12.72     0.02  2064.90
    17500.     795.    16705.       0.     216.     2355.       0.     734.     260.   2066.20
      0.28      3.69     7.09     0.00    0.045    0.045    0.045    0.000  2056.60  3153.56
  0.006801     1415.     1520.    1515.        5        0        0     0.00   704.97  3858.54
)
 *SECNO 7.350
 3280 CROSS SECTION       7.35 EXTENDED       0.79 FEET

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
            ####              Centerline =  2290                               ####
      7.35      8.19  2073.39  2073.39     0.00  2074.31     0.91     6.66     0.05  2069.60
    17500.    5359.    10606.    1535.     1246.     1142.     469.     799.     288.   2069.90
      0.32      4.30     9.28     3.27    0.045    0.038    0.045    0.000  2065.20  1300.00
  0.006891     1040.     1035.    1040.        4       10        0     0.00  1648.11  2948.11
)
 CCHV=   0.100 CEHV=   0.300
 *SECNO 7.388
 3280 CROSS SECTION       7.38 EXTENDED       1.56 FEET

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
```

3720 CRITICAL DEPTH ASSUMED

```
##########################################################################
####                        KOVAL LANE                                ####
####  This is a swale crossing with minor drains for low flow         ####
####  Debris is assumed to block drains.  This crossing has           ####
####  been modeled as a regular ground section.                       ####
####  Flow right of sta 3600 runs to Trop Wash; reduce FW Q500        ####
####  This run connects to COE HEC-2 run for Flamingo main            ####\
####  thru Caesars/Imperial area - LVWFWBOL                           ####
##########################################################################
      7.38      2.96   2076.66   2076.66      0.00   2077.27      0.61      1.23      0.03   2873.70
     19500.    7182.     3090.     9223.     1685.      237.     2738.      812.      296.    2073.70
         0.33     4.26     13.03     3.37    0.060     0.025     0.060     0.000   2073.70   1650.00
 0.011285       150.      150.      150.       20        19         0      0.00   3200.00   4850.00
```

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2076.66

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3600.	4050.	4850.
PER Q=	6.9	5.0	6.3	8.4	10.2	15.8	10.1	5.8	14.5	4.8	5.2	6.9	
AREA=	352.8	257.1	332.3	362.2	379.9	237.1	367.2	228.2	765.5	354.9	411.3	611.1	
VEL=	3.8	3.8	3.7	4.5	5.2	13.0	5.4	4.9	3.7	2.7	2.5	2.2	

1


```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
```

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	5.570	0.00	0.00	0.00	1951.72	6000.00	1959.59	1959.59	1963.19	57.86	15.23	393.98	788.82
*	5.570	0.00	0.00	0.00	1951.72	7300.00	1960.70	1960.63	1964.68	55.45	16.00	456.24	980.32
*	5.570	0.00	0.00	0.00	1951.72	8860.00	1961.77	1961.77	1966.33	54.60	17.14	517.52	1199.01
*	5.570	0.00	0.00	0.00	1951.72	22500.00	1970.86	1970.86	1973.72	18.60	15.89	7099.75	5217.39
*	5.820	1310.00	0.00	0.00	1967.90	6000.00	1975.72	1975.72	1978.42	56.11	13.19	454.91	801.01
*	5.820	1310.00	0.00	0.00	1967.90	7300.00	1976.55	1976.55	1979.53	53.33	13.84	527.62	999.61
*	5.820	1310.00	0.00	0.00	1967.90	8860.00	1977.38	1977.38	1980.74	52.73	14.71	602.44	1220.17
*	5.820	1310.00	0.00	0.00	1967.90	22500.00	1983.37	1983.37	1989.00	40.72	19.05	1271.99	3525.84
*	5.850	170.00	0.00	0.00	1976.50	6000.00	1986.08	1986.08	1991.05	44.49	17.89	335.41	899.53
*	5.850	170.00	0.00	0.00	1976.50	7300.00	1987.21	1987.21	1989.60	24.86	14.40	1474.52	1464.02
*	5.850	170.00	0.00	0.00	1976.50	8860.00	1988.03	1988.03	1990.73	39.15	17.87	1428.46	1416.04

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*	5.850	170.00	0.00	0.00	1978.50	22500.00	1993.58	1993.58	1996.14	23.44	18.92	7191.81	4647.03
*	5.870	85.00	1988.20	1987.00	1977.00	6000.00	1990.30	0.00	1991.05	6.51	8.52	2751.39	2351.59
*	5.870	85.00	1988.20	1987.00	1977.00	7300.00	1989.01	0.00	1990.66	15.42	12.24	2018.88	1859.05
*	5.870	85.00	1988.20	1987.00	1977.00	8860.00	1988.42	1988.22	1991.32	28.26	16.03	1730.63	1666.60
*	5.870	85.00	1988.20	1987.00	1977.00	22500.00	1993.89	1993.87	1996.64	23.20	18.85	7191.88	4671.15
	5.930	330.00	0.00	0.00	1980.00	6000.00	1990.47	0.00	1991.49	13.79	8.07	743.73	1615.73
	5.930	330.00	0.00	0.00	1980.00	7300.00	1989.54	0.00	1991.50	29.88	11.25	649.10	1335.39
	5.930	330.00	0.00	0.00	1980.00	8860.00	1989.82	0.00	1992.48	39.22	13.10	676.34	1414.69
*	5.930	330.00	0.00	0.00	1980.00	22500.00	1994.95	1994.95	1999.76	40.97	17.73	1678.99	3515.34
*	6.080	780.00	0.00	0.00	1985.90	6000.00	1994.56	1994.56	1997.41	55.81	13.55	442.72	803.14
*	6.080	780.00	0.00	0.00	1985.90	7300.00	1995.42	1995.42	1998.57	53.85	14.25	512.44	994.83
*	6.080	780.00	0.00	0.00	1985.90	8860.00	1996.35	1996.35	1999.84	52.45	14.99	590.90	1223.39
*	6.080	780.00	0.00	0.00	1985.90	22500.00	2002.56	2002.56	2007.99	44.84	18.70	1222.79	3360.18
*	6.100	100.00	0.00	0.00	1988.50	6000.00	1996.82	1996.82	2000.28	44.28	16.24	849.41	901.70
*	6.100	100.00	0.00	0.00	1988.50	7300.00	1997.81	1997.81	2001.71	43.65	17.38	1016.37	1104.91
*	6.100	100.00	0.00	0.00	1988.50	8860.00	1998.89	1998.89	2003.28	43.08	18.58	1214.67	1349.95
*	6.100	100.00	0.00	0.00	1988.50	22500.00	2006.26	2006.26	2012.62	35.03	23.95	3049.98	3801.57

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EE	10K*S	VCH	AREA	.01K
*	6.110	75.00	1999.50	1996.50	1989.00	6000.00	2002.54	0.00	2002.98	7.77	6.73	1894.73	2152.03
*	6.110	75.00	1999.50	1996.50	1989.00	7300.00	2003.18	0.00	2003.74	9.42	7.64	2052.07	2378.84
*	6.110	75.00	1999.50	1996.50	1989.00	8860.00	2003.87	0.00	2004.56	11.30	8.63	2227.62	2635.54
*	6.110	75.00	1999.50	1996.50	1989.00	22500.00	2012.00	0.00	2012.62	7.93	9.67	7804.33	7989.48
	6.180	365.00	0.00	0.00	1994.90	6000.00	2002.69	0.00	2004.25	127.06	10.02	598.55	532.30
	6.180	365.00	0.00	0.00	1994.90	7300.00	2003.47	0.00	2005.00	99.63	9.94	734.10	731.37
	6.180	365.00	0.00	0.00	1994.90	8860.00	2004.28	0.00	2005.85	84.11	10.08	879.35	966.05
	6.180	365.00	0.00	0.00	1994.90	22500.00	2012.13	0.00	2013.32	20.47	8.82	3088.74	4572.68
*	6.310	710.00	0.00	0.00	2010.80	4100.00	2017.61	2017.61	2019.81	135.46	11.91	344.58	352.28
*	6.310	710.00	0.00	0.00	2010.80	5300.00	2018.50	2018.50	2021.00	119.87	12.70	425.03	484.07
*	6.310	710.00	0.00	0.00	2010.80	5860.00	2018.88	2018.88	2021.50	114.63	13.03	463.58	547.32
*	6.310	710.00	0.00	0.00	2010.80	16200.00	2024.73	2024.73	2027.04	48.54	13.67	2689.50	2325.34
	6.350	170.00	0.00	0.00	2010.30	4100.00	2019.85	0.00	2021.39	56.86	11.21	748.61	543.73
	6.350	170.00	0.00	0.00	2010.30	5300.00	2020.57	0.00	2022.62	70.50	13.10	863.00	631.23
	6.350	170.00	0.00	0.00	2010.30	5860.00	2020.84	2019.58	2023.14	77.26	13.96	911.64	666.68
	6.350	170.00	0.00	0.00	2010.30	16200.00	2026.46	2026.03	2028.00	49.01	14.78	5133.01	2314.04
*	6.360	55.00	2020.30	2015.80	2010.80	4100.00	2022.96	0.00	2023.63	20.07	7.83	1375.84	915.29
*	6.360	55.00	2020.30	2015.80	2010.80	5300.00	2022.93	0.00	2024.07	34.06	10.18	1356.00	908.15
*	6.360	55.00	2020.30	2015.80	2010.80	5860.00	2022.75	0.00	2024.23	44.67	11.54	1270.05	876.80
*	6.360	55.00	2020.30	2015.80	2010.80	16200.00	2026.71	0.00	2028.45	55.14	15.51	4818.43	2181.60
*	6.500	755.00	0.00	0.00	2021.50	4100.00	2028.09	2028.09	2030.32	114.20	11.99	342.05	383.66
*	6.500	755.00	0.00	0.00	2021.50	5300.00	2028.98	2028.98	2031.53	112.16	12.80	413.95	500.45
*	6.500	755.00	0.00	0.00	2021.50	5860.00	2029.54	2029.54	2032.02	100.97	12.67	487.56	583.18
*	6.500	755.00	0.00	0.00	2021.50	16200.00	2034.07	2034.07	2035.51	43.01	11.82	5650.80	2470.07
	6.600	510.00	0.00	0.00	2035.50	4100.00	2037.65	2037.58	2038.19	208.79	7.34	1379.53	283.75
	6.600	510.00	0.00	0.00	2035.50	5300.00	2037.98	2037.81	2038.54	161.87	7.51	1850.94	416.57
	6.600	510.00	0.00	0.00	2035.50	5860.00	2038.07	2037.92	2038.68	164.08	7.83	1993.45	457.48
*	6.600	510.00	0.00	0.00	2035.50	16200.00	2039.37	2039.37	2040.51	160.58	11.26	4547.98	1278.39
	6.750	825.00	0.00	0.00	2040.10	4100.00	2044.53	0.00	2044.62	43.58	3.61	2041.64	621.04
	6.750	825.00	0.00	0.00	2040.10	5300.00	2044.73	0.00	2044.82	47.88	3.76	2382.68	765.92
	6.750	825.00	0.00	0.00	2040.10	5860.00	2044.83	0.00	2044.93	47.10	3.90	2559.36	853.85
	6.750	825.00	0.00	0.00	2040.10	16200.00	2046.17	0.00	2046.37	42.78	5.63	5260.11	2476.82

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*	6.830	410.00	0.00	0.00	2045.10	4100.00	2048.45	2048.45	2049.34	144.15	7.39	563.97	341.49
*	6.830	410.00	0.00	0.00	2045.10	5300.00	2048.93	2048.93	2049.76	114.86	7.40	807.75	494.52
*	6.830	410.00	0.00	0.00	2045.10	5860.00	2049.21	2049.21	2049.91	89.56	6.95	1058.53	619.21
*	6.830	410.00	0.00	0.00	2045.10	16200.01	2050.55	2050.55	2051.41	81.15	8.76	3387.85	1798.29
	6.870	205.00	0.00	0.00	2043.70	4100.00	2051.12	0.00	2051.85	101.56	7.44	633.96	406.83
	6.870	205.00	0.00	0.00	2043.70	5300.00	2051.37	2051.32	2052.35	128.51	8.61	729.96	467.53
*	6.870	205.00	0.00	0.00	2043.70	5860.00	2051.61	2051.61	2052.53	117.22	8.46	863.42	541.24
	6.870	205.00	0.00	0.00	2043.70	17500.00	2052.74	2052.72	2053.41	107.35	9.12	3172.99	1689.01

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	7.160	1520.00	0.00	0.00	2056.60	4100.00	2062.66	0.00	2062.93	54.46	4.18	981.04	555.57
	7.160	1520.00	0.00	0.00	2056.60	5300.00	2063.20	0.00	2063.49	46.90	4.33	1223.01	773.93
	7.160	1520.00	0.00	0.00	2056.60	5860.00	2063.33	0.00	2063.65	49.65	4.57	1284.58	831.65
	7.160	1520.00	0.00	0.00	2056.60	17500.00	2065.40	0.00	2066.15	68.01	7.09	2570.75	2121.96
	7.350	1035.00	0.00	0.00	2065.20	4100.00	2070.32	0.00	2071.06	117.64	7.26	636.27	378.01
*	7.350	1035.00	0.00	0.00	2065.20	5300.00	2070.58	2070.58	2071.51	129.94	8.21	735.71	464.94
*	7.350	1035.00	0.00	0.00	2065.20	5860.00	2070.78	2070.78	2071.71	118.66	8.26	815.81	537.96
*	7.350	1035.00	0.00	0.00	2065.20	17500.00	2073.39	2073.39	2074.31	60.91	9.28	2856.94	2242.24
*	7.380	150.00	0.00	0.00	2073.70	4100.00	2075.42	2075.42	2075.82	101.00	8.58	1298.38	407.97
*	7.380	150.00	0.00	0.00	2073.70	5300.00	2075.59	2075.59	2076.04	104.29	9.29	1571.41	518.98
*	7.380	150.00	0.00	0.00	2073.70	5860.00	2075.68	2075.68	2076.12	101.89	9.46	1717.48	580.53
*	7.380	150.00	0.00	0.00	2073.70	19500.00	2076.66	2076.66	2077.27	112.85	13.03	4660.12	1835.61

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.570	6000.00	1959.59	0.00	0.00	0.01	55.17	0.00
*	5.570	7300.00	1960.70	1.11	0.00	0.00	56.61	0.00
*	5.570	8860.00	1961.77	1.07	0.00	0.07	58.28	0.00
*	5.570	22500.00	1970.86	9.09	0.00	0.15	1698.41	0.00
*	5.820	6000.00	1975.72	0.00	16.14	0.00	85.86	1310.00
*	5.820	7300.00	1976.55	0.83	15.85	0.00	88.93	1310.00
*	5.820	8860.00	1977.38	0.83	15.61	0.00	91.83	1310.00
*	5.820	22500.00	1983.37	5.99	12.52	0.00	224.36	1310.00
*	5.850	6000.00	1986.08	0.00	10.36	0.00	35.88	170.00
*	5.850	7300.00	1987.21	1.12	10.65	0.00	276.12	170.00
*	5.850	8860.00	1987.03	-0.18	9.64	0.01	234.23	170.00
*	5.850	22500.00	1993.36	6.33	9.98	0.00	1425.61	170.00
*	5.870	6000.00	1990.30	0.00	4.22	0.00	676.49	85.00
*	5.870	7300.00	1989.01	-1.30	1.80	0.00	521.76	85.00
*	5.870	8860.00	1988.42	-0.58	1.39	0.01	441.68	85.00
*	5.870	22500.00	1993.89	5.46	0.53	0.00	1428.20	85.00
	5.930	6000.00	1990.47	0.00	0.17	0.00	103.23	330.00
	5.930	7300.00	1989.54	-0.94	0.53	0.00	97.92	330.00
	5.930	8860.00	1989.82	0.28	1.40	0.02	99.48	330.00
*	5.930	22500.00	1994.95	5.13	1.06	0.01	361.55	330.00
*	6.080	6000.00	1994.56	0.00	4.09	0.00	79.31	780.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	6.080	7300.00	1996.42	0.88	5.88	0.00	82.88	780.00
*	6.080	8860.00	1996.35	0.93	6.53	0.00	86.31	780.00
*	6.080	22500.00	2002.56	6.21	7.62	0.00	178.96	780.00
*	6.100	6000.00	1996.82	0.00	2.26	0.00	161.69	100.00
*	6.100	7300.00	1997.81	0.99	2.39	0.00	175.82	100.00
*	6.100	8860.00	1998.89	1.08	2.54	0.00	191.27	100.00
*	6.100	22500.00	2006.26	7.37	3.70	0.00	307.40	100.00
*	6.110	6000.00	2002.54	0.00	5.72	0.00	240.42	75.00
*	6.110	7300.00	2003.18	0.64	5.37	0.00	250.59	75.00
*	6.110	8860.00	2003.87	0.68	4.98	0.00	261.48	75.00
*	6.110	22500.00	2012.00	8.14	5.74	0.00	1259.84	75.00
	6.180	6000.00	2002.69	0.00	0.14	0.00	171.01	365.00
	6.180	7300.00	2003.47	0.78	0.29	0.00	176.73	365.00
	6.180	8860.00	2004.28	0.81	0.41	0.00	182.67	365.00
	6.180	22500.00	2012.13	7.85	0.13	0.00	795.93	365.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	6.310	4100.00	2017.61	0.00	14.92	0.00	83.18	710.00
*	6.310	5300.00	2018.50	0.89	15.03	0.00	97.01	710.00
*	6.310	5860.00	2018.88	0.39	14.61	0.00	102.59	710.00
*	6.310	16200.00	2024.73	5.84	12.59	0.00	949.91	710.00
	6.350	4100.00	2019.85	0.00	2.24	0.00	147.40	170.00
	6.350	5300.00	2020.57	0.72	2.07	0.00	174.25	170.00
	6.350	5860.00	2020.84	0.26	1.95	0.00	185.73	170.00
	6.350	16200.00	2026.46	5.63	1.74	0.00	1270.79	170.00
*	6.360	4100.00	2022.96	0.00	3.12	0.00	522.00	55.00
*	6.360	5300.00	2022.93	-0.03	2.36	0.00	513.28	55.00
*	6.360	5860.00	2022.75	-0.18	1.92	0.00	473.65	55.00
*	6.360	16200.00	2026.71	3.96	0.25	0.00	1270.71	55.00
*	6.500	4100.00	2028.09	0.00	5.13	0.00	77.77	755.00
*	6.500	5300.00	2028.98	0.89	6.05	0.00	83.97	755.00
*	6.500	5860.00	2029.54	0.56	6.78	0.00	184.32	755.00
*	6.500	16200.00	2034.07	4.54	7.36	0.00	2234.88	755.00
	6.600	4100.00	2037.65	0.00	9.56	0.00	1294.45	510.00
	6.600	5300.00	2037.98	0.33	9.00	0.00	1552.77	510.00
	6.600	5860.00	2038.07	0.10	8.54	0.00	1607.47	510.00
*	6.600	16200.00	2039.37	1.29	5.29	0.00	2361.92	510.00
	6.750	4100.00	2044.53	0.00	6.89	0.00	1756.98	825.00
	6.750	5300.00	2044.73	0.19	6.75	0.00	1812.44	825.00
	6.750	5860.00	2044.83	0.10	6.76	0.00	1828.80	825.00
	6.750	16200.00	2046.17	1.34	6.80	0.00	2370.15	825.00
*	6.830	4100.00	2048.49	0.00	3.96	0.00	422.36	410.00
*	6.830	5300.00	2048.93	0.44	4.28	0.00	700.33	410.00
*	6.830	5860.00	2049.21	0.28	4.38	0.00	1147.74	410.00
*	6.830	16200.00	2050.55	1.34	4.38	0.00	2358.83	410.00
	6.870	4100.00	2051.12	0.00	2.63	0.00	320.98	205.00
	6.870	5300.00	2051.37	0.25	2.44	0.25	466.97	205.00
*	6.870	5860.00	2051.61	0.24	2.40	0.49	614.85	205.00
	6.870	17500.00	2052.74	1.13	2.19	0.00	2257.44	205.00
	7.150	4100.00	2062.66	0.00	11.55	0.00	436.15	1520.00
	7.150	5300.00	2063.20	0.54	11.83	0.54	460.32	1520.00
	7.150	5860.00	2063.33	0.13	11.72	0.67	488.20	1520.00

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7.350	4100.00	2070.32	0.00	7.66	0.00	370.15	1035.00
* 7.350	5300.00	2070.58	0.26	7.39	0.25	391.12	1035.00
* 7.350	5860.00	2070.78	0.20	7.46	0.46	407.23	1035.00
* 7.350	17500.00	2073.39	2.61	7.99	0.01	1648.11	1035.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
7.380	4100.00	2075.42	0.00	5.09	0.00	1530.94	150.00
* 7.380	5300.00	2075.59	0.17	5.01	0.17	1597.85	150.00
* 7.380	5860.00	2075.68	0.08	4.89	0.26	1876.41	150.00
* 7.380	19500.00	2076.66	0.99	3.27	0.01	3200.00	150.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 5.570 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 5.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.850 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.870 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.870 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 5.930 PROFILE= 4 CRITICAL DEPTH ASSUMED

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 CAUTION  SECNO=     6.110  PROFILE= 3  HYDRAULIC JUMP D.S.
 CAUTION  SECNO=     6.110  PROFILE= 4  HYDRAULIC JUMP D.S.

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 CAUTION  SECNO=     6.500  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     6.500  PROFILE= 4  MINIMUM SPECIFIC ENERGY
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 CAUTION  SECNO=    6.600  PROFILE= 4  MINIMUM SPECIFIC ENERGY

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 CAUTION  SECNO=    6.830  PROFILE= 1  MINIMUM SPECIFIC ENERGY
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 CAUTION  SECNO=    6.830  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=    6.870  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.870  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.350  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.380  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```



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 ********************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ********************************************************

EOF..
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Continuous Interfolded © Micro Application

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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   00:26:55          *
*************************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER*
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
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X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
*************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ       NINM      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
              0.        2.        0.        0.  0.000000      0.00      0.        0.  1959.580     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW        CHNIM     ITRACE
          1.000     0.000    -1.000     0.500     0.000     0.000     0.000     0.000     0.000     0.000

NC        0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT        4.000  6000.000  7300.000  8860.000 22500.000     0.000     0.000     0.000     0.000     0.000
              ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS    ####
              ####          CENTERLINE =  2030                                ####
              ####  NEAR ALGONQUIN DRIVE ALIGNMENT                            ####
X1        5.570    16.000  2002.000  2059.000  1320.000  1320.000  1320.000     0.000     0.000     0.000
GR     1976.000   970.000  1972.000  1240.000  1972.000  1240.000  1972.000  1240.000  1968.000  1710.000
GR     1964.000  2000.000  1961.000  2002.000  1951.720  2008.000  1951.720  2053.000  1961.000  2059.000
GR     1964.000  2062.000  1967.500  2250.000  1965.800  2870.000  1968.000  2980.000  1972.000  3110.000
GR     1976.000  3350.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC        0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
              ####          CENTERLINE =  2450                                ####
X1        5.820    15.000  2389.000  2488.000  1310.000  1310.000  1310.000     0.000     0.000     0.000
GR     1996.000  1150.000  1992.000  1350.000  1992.000  1350.000  1992.000  1350.000  1988.500  1520.000
GR     1986.100  2000.000  1982.200  2389.000  1970.500  2407.000  1969.600  2451.000  1968.800  2459.000
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GR   1967.900   2468.000   1977.200   2488.000   1987.700   2502.000   1985.600   2846.000   1996.000   3170.000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
        ##########################################################################################
        ####                    MARYLAND PARKWAY                                            ####
        ####                 SPECIAL BRIDGE ROUTINE                                         ####
        ##########################################################################################
        ####  CENTERLINE = 10000                                                            ####
X1      5.850     12.000   9985.000  10020.000    170.000    170.000    170.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1987.000   1987.000      0.000
X4      1.000   1992.000   8940.000   1991.000   9030.000      0.000      0.000      0.000      0.000      0.000
GR   1996.000   8740.000   1990.000   9075.000   1990.000   9450.000   1988.000   9600.000   1987.000   9830.000
GR   1980.000   9940.000   1976.500   9985.000   1976.500  10020.000   1978.000  10040.000   1988.000  10060.000
GR   1992.000  10240.000   1996.000  10410.000      0.000      0.000      0.000      0.000      0.000      0.000
1
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SB      1.250      1.560      2.630      0.000     34.500      9.500    250.000      0.000   1977.000   1976.500
        ####  REPEAT OF X-5.85                                                              ####
X1      5.875      0.000      0.000      0.000     85.000     85.000     85.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   1987.000   1988.200      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1988.200   1988.200      0.000
BT     10.000   2000.000   1991.400      0.000   2100.000   1990.600      0.000   2280.000   1991.300      0.000
BT   2430.000   1989.500      0.000   2600.000   1988.700      0.000   2935.000   1988.500   1987.000   2973.500
BT   1988.500   1987.000   3130.000   1990.700      0.000   3300.000   1994.800      0.000   3470.000   1998.200
BT      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

        ####  CENTERLINE = 2465
X1      5.930     12.000   2480.000   2520.000    330.000    330.000    330.000      0.000      0.000      0.000
GR   2000.000   2000.000   1999.500   2050.000   1999.500   2150.000   1996.000   2270.000   1995.000   2480.000
GR   1984.000   2430.000   1980.000   2455.000   1980.000   2485.000   1992.000   2520.000   1992.000   2570.000
GR   1996.000   2830.000   2000.000   2920.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####              CENTERLINE =  2300                                              ####
X1      6.080     14.000   2244.000   2355.000    780.000    780.000    780.000      0.000      0.000      0.000
GR   2011.000   1600.000   2008.000   1740.000   2004.000   2080.000   2002.800   2244.000   1988.000   2275.000
GR   1985.900   2287.000   1985.900   2296.000   1985.400   2305.000   1989.000   2319.000   1989.200   2331.000
GR   1993.700   2339.000   2002.500   2355.000   2002.000   2377.000   2012.000   3200.000      0.000      0.000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
        ##########################################################################################
        ####                    CAMBRIDGE STREET                                            ####
        ####                 SPECIAL BRIDGE ROUTINE                                         ####
        ##########################################################################################
        ####  CENTERLINE = 2165                                                             ####
X1      6.100     10.000   2136.000   2173.500     50.000    210.000    100.000      0.000     -0.500      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1996.500   1996.500      0.000
X4      2.000   2008.000   1600.000   2008.000   2000.000      0.000      0.000      0.000      0.000      0.000
GR   2010.000   1400.000   2000.000   2050.000   1989.500   2130.000   1989.000   2136.000   1989.000   2173.500
GR   1989.500   2180.000   2000.000   2250.000   2008.000   2330.000   2008.000   2550.000   2012.000   2660.000

SB      1.250      1.560      2.630      0.000     33.500      9.750    168.000      0.000   1989.500   1989.000
NC      0.160      0.000      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####  REPEAT OF X-6.10                                                              ####
X1      6.110      0.000      0.000      0.000     75.000     75.000     75.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   1996.500   1999.500      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1999.500   1999.500      0.000
BT      6.000      0.000   2008.000      0.000     50.000   2000.000      0.000    120.000   1999.700      0.000
BT    190.000   1999.400      0.000    250.000   2000.000      0.000    330.000   2008.000      0.000      0.000

NC      0.000      0.000      0.038      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####              CENTERLINE =  2670                                              ####
        ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.                  ####
X1      6.180     21.000   2534.000   2754.000    400.000    270.000    265.000      0.000      0.000      0.000
GR   2016.000   1500.000   2012.200   1970.000   2012.000   2140.000   2012.000   2140.000   2012.000   2140.000
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GR   2012.000   2140.000   2012.000   2140.000   2009.700   2534.700   2002.500   2574.000   2002.400   2633.000
GR   1995.600   2659.000   1995.100   2677.000   1999.000   2700.000   1994.900   2730.000   2008.300   2754.000
GR   2011.300   2769.000   2011.700   2810.000   2014.600   2890.000   2016.200   3018.000   2015.100   3268.000
GR   2019.500   3422.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```



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QT      4.000   4100.000   5300.000   5860.000  16200.000      0.000      0.000      0.000      0.000      0.000
NC      0.160      0.045      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          ####          CENTERLINE =  2301                                  ####
X1      6.310     17.000   2263.000   2343.000    745.000    685.000    710.000      0.000      0.000      0.000
GR   2025.200   1450.000   2025.200   1450.000   2025.200   1450.000   2025.200   1450.000   2024.000   1600.000
GR   2022.000   2000.000   2022.500   2246.000   2017.400   2263.000   2012.900   2280.000   2010.800   2306.000
GR   2012.400   2322.000   2017.400   2343.000   2021.100   2388.000   2023.600   2430.000   2025.100   2469.000
GR   2026.000   2499.000   2025.800   2581.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.160      0.160      0.045      0.300      0.500      0.000      0.000      0.000      0.000      0.000
          ##########################################################################
          ####                    SWENSON STREET                                ####
          ####              SPECIAL BRIDGE ROUTINE                              ####
          ##########################################################################
          ####  CENTERLINE = 2300                                          ####
X1      6.350     11.000   2260.000   2290.000     50.000    210.000    170.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   2015.800   2015.800      0.000
X4      1.000   2025.200   1450.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   2025.500   1200.000   2024.000   1600.000   2022.000   2000.000   2022.000   2180.000   2020.000   2210.000
GR   2010.300   2260.000   2010.300   2290.000   2016.000   2310.000   2020.000   2360.000   2024.000   2470.000
GR   2428.000   2600.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB      1.250      1.560      2.630      0.000     29.500      9.000    103.100      0.000   2010.800   2010.300
          ####  REPEAT OF  X-6.35                                          ####
X1      6.360      0.000      0.000      0.000     55.000     55.000     55.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   2015.800   2020.300      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   2020.300   2020.300      0.000
BT      8.000   2000.000   2025.200      0.000   2250.000   2023.800      0.000   2430.000   2023.700      0.000
BT   2660.000   2022.800      0.000   2810.000   2020.300   2015.800   2841.500   2020.300   2015.800   2990.000
BT   2023.300      0.000   3150.000   2027.100      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.160      0.160      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####          CENTERLINE =  2380                                  ####
X1      6.500     16.000   2331.000   2431.000    780.000    700.000    755.000      0.000      0.000      0.000
GR   2036.000    250.000   2032.000   1160.000   2029.000   1550.000   2029.000   1550.000   2030.000   1600.000
GR   2032.100   2000.000   2033.200   2194.000   2032.600   2331.000   2022.200   2353.000   2021.500   2373.000
GR   2023.600   2397.000   2027.000   2413.000   2030.700   2431.000   2032.300   2593.000   2021.500   2762.000
GR   2034.500   2950.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.160      0.120      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          ##########################################################################
          ####                    PALOS VERDE STREET                            ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS           ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                       ####
          ##########################################################################
X1      6.600      7.000   9920.000  10190.000    510.000    510.000    510.000      0.000      0.000      0.000
X4      1.000   2038.000  10300.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   2040.000   7720.000   2036.000   9740.000   2035.500   9920.000   2035.700  10000.000   2037.600  10190.000
GR   2039.300  10360.000   2039.800  10670.000      0.000      0.000      0.000      0.000      0.000      0.000
```



```
NH      4.000      0.180   1400.000      0.060   2533.000      0.035   2807.000      0.060   3412.000      0.000
          ####          CENTERLINE =  2700                                  ####
X1      6.750     23.000   2384.000   2807.000    740.000    800.000    825.000      0.000      0.000      0.000
X4      1.000   2043.000   1400.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```

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GR  2048.000   570.000  2044.000  1090.000  2042.700  1660.000  2044.200  2280.000  2044.200  2280.000
GR  2044.200  2280.000  2044.200  2280.000  2043.200  2533.000  2042.300  2578.000  2044.300  2584.000
GR  2043.600  2627.000  2041.900  2677.000  2040.300  2687.000  2040.100  2697.000  2040.300  2708.000
GR  2042.900  2715.000  2044.300  2735.000  2044.700  2807.000  2046.800  2888.000  2047.500  2969.000
GR  2046.400  3019.000  2045.600  3060.000  2046.300  3412.000     0.000     0.000     0.000     0.000

NC    0.080     0.060     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
      ##########################################################################
      ####                    PARADISE ROAD                                 ####
      ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
      ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
      ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED          ####
      ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)       ####
      ##########################################################################
X1    6.830    11.000  9800.000 10170.000   500.000   350.000   410.000     0.000     0.000     0.000
GR 2052.000  7780.000  2049.000  8930.000  2050.600  9450.000  2051.000  9600.000  2049.700  9800.000
GR 2045.100 10000.000  2048.300 10170.000  2049.200 10370.000  2048.900 10600.000  2048.300 10750.000
GR 2052.000 11050.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

GT    4.000     0.000     0.000     0.000 17500.000     0.000     0.000     0.000     0.000     0.000
ET    0.000     6.100     6.100     6.100     0.000  -150.000  2550.000     0.000     0.000     0.000
NC    0.045     0.045     0.045     0.000     0.000     0.000     0.000     0.000     0.000     0.000
        ####          CENTERLINE =  2280                                  ####
X1    6.870    23.000  2160.000  2308.000   160.000   240.000   205.000     0.000     0.000     0.000
X2    0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000    15.000
GR 2056.000  -150.000  2053.000   520.000  2054.000   930.000  2051.000  1240.000  2052.300  1390.000
GR 2051.000  1720.000  2051.000  1720.000  2051.000  1720.000  2051.000  1720.000  2051.000  1720.000
GR 2053.500  2000.000  2052.600  2160.000  2048.900  2214.000  2048.900  2253.000  2044.600  2266.000
GR 2043.700  2293.000  2050.200  2308.000  2048.600  2319.000  2050.500  2435.000  2050.000  2627.000
GR 2052.000  2747.000  2052.000  3030.000  2052.000  3540.000     0.000     0.000     0.000     0.000

NC    0.045     0.045     0.045     0.100     0.300     0.000     0.000     0.000     0.000     0.000
        ####          CENTERLINE =  3550                                  ####
        ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.      ####
X1    7.160    39.000  3299.000  3869.000  1415.000  1515.000  1520.000     0.000     0.000     0.000
X3    0.000     0.000     0.000  3126.000     0.000     0.000     0.000     0.000     0.000     0.000
GR 2060.100  2000.000  2060.900  2339.000  2061.800  2562.000  2063.800  2660.000  2061.600  2688.000
GR 2064.400  2889.000  2060.800  2920.000  2060.800  3015.000  2066.700  3034.000  2069.600  3126.000
GR 2063.200  3168.000  2063.500  3218.000  2064.900  3299.000  2063.800  3355.000  2061.600  3378.000
GR 2060.400  3393.000  2060.400  3429.000  2060.600  3480.000  2058.700  3510.000  2057.700  3532.000
GR 2056.700  3554.000  2056.600  3562.000  2058.000  3565.000  2060.200  3588.000  2060.000  3614.000
GR 2060.900  3628.000  2061.800  3673.000  2060.600  3714.000  2061.600  3754.000  2062.700  3805.000
GR 2063.600  3835.000  2066.200  3869.000  2065.500  3900.000  2065.500  3941.000  2066.800  3992.000
GR 2070.100  4068.000  2071.700  4137.000  2065.600  4263.000  2067.600  4440.000     0.000     0.000
1
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NC    0.000     0.000     0.038     0.000     0.000     0.000     0.000     0.000     0.000     0.000
        ####          CENTERLINE =  2290                                  ####
X1    7.350    12.000  2201.000  2416.000  1040.000  1040.000  1035.000     0.000     0.000     0.000
X4    1.000  2072.600  2000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR 2072.600  1300.000  2068.300  2127.000  2065.300  2165.000  2065.600  2201.000  2068.100  2233.000
GR 2065.800  2252.000  2065.200  2282.000  2068.700  2320.000  2069.900  2416.000  2072.600  2553.000
GR 2073.200  2899.000  2074.700  3280.000     0.000     0.000     0.000     0.000     0.000     0.000

GT    4.000  4100.000  5300.000  5860.000 19500.000     0.000     0.000     0.000     0.000     0.000
NC    0.060     0.060     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
      ##########################################################################
      ####                    KOVAL LANE                                    ####
      ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
      ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
      ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
      ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW 6500         ####
      ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN             ####
      ####  THRU CAESARS/IMPERIAL AREA - LVLFLBOL                            ####
      ##########################################################################
```

X1	7.380	11.000	2495.000	2575.000	150.000	150.000	150.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000
X4	2.000	2074.700	1850.000	2075.200	2000.000	0.000	0.000	0.000	0.000	0.000
GR	2075.100	1650.000	2074.800	2200.000	2074.000	2360.000	2073.700	2495.000	2073.700	2575.000
GR	2073.800	2701.300	2074.400	2790.000	2075.600	3250.000	2075.700	3600.000	2075.800	4050.000
GR	2076.000	4850.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS
CENTERLINE = 2030
NEAR ALGONQUIN DRIVE ALIGNMENT

5.57	7.87	1959.59	1959.59	1959.58	1963.19	3.60	0.00	0.00	1961.00
6000.	0.	6000.	0.	0.	394.	0.	0.	0.	1961.00
0.00	0.00	15.23	0.00	0.140	0.025	0.180	0.000	1951.72	2002.91
0.005786	1320.	1320.	1320.	0	4	0	0.00	65.17	2058.09

CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2450

5.82	7.82	1975.72	1975.72	0.00	1978.42	2.70	7.46	0.09	1982.20
6000.	0.	6000.	0.	0.	455.	0.	13.	2.	1977.20
0.03	0.00	13.19	0.00	0.140	0.025	0.180	0.000	1967.90	2398.97
0.005611	1310.	1310.	1310.	20	5	0	0.00	85.86	2484.82

CCHV= 0.300 CEHV= 0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1987.00 ELREA= 1987.00

MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE

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CENTERLINE = 10000

5.85	9.58	1986.08	1986.08	0.00	1991.05	4.97	0.85	1.13	1976.50
6000.	0.	6000.	0.	0.	335.	0.	14.	2.	1976.50
0.03	0.00	17.89	0.00	0.140	0.025	0.180	0.000	1976.50	9985.00
0.004449	170.	170.	170.	20	14	0	0.00	35.00	10020.00

Continuous Interfolded @ Mayer Business Forms, Inc.

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1982.98 ,NOT 1986.08 HYDRALLIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
PRESS FLOW BECAUSE EGLWC OF 2000.41 EXCEEDS 1.5 DEPTH
6870 D.S. ENERGY OF 1991.05 HIGHER THAN COMPUTED ENERGY OF 1990.18

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2000.04	2000.41	0.00	2751.	3252.	250.	250.	1987.00	1988.20

####	REPEAT OF X-5.85							####		
5.87	13.30	1990.30	0.00	0.00	1991.05	0.75	0.00	0.00	1977.00	
6000.	1640.	3965.	395.	1865.	466.	460.	17.	3.	1977.00	
0.03	0.38	8.52	0.86	0.141	0.025	0.180	0.000	1977.00	9464.69	
0.000651	85.	85.	85.	2	0	6	0.00	676.49	10141.18	

*SECNO 5.930

####	CENTERLINE = 2465									
5.93	10.47	1990.47	0.00	0.00	1991.49	1.01	0.30	0.13	1985.00	
6000.	0.	6000.	0.	0.	744.	0.	31.	6.	1992.00	
0.05	0.00	8.07	0.00	0.140	0.025	0.180	0.000	1980.00	2412.33	
0.001379	330.	330.	330.	2	0	0	0.00	103.23	2515.56	

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV LEFT/RIGHT
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	SSTA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	ENDST
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####	CENTERLINE = 2300							####		
6.08	8.66	1994.56	1994.56	0.00	1997.41	2.85	1.92	0.55	2002.80	
6000.	0.	6000.	0.	0.	443.	0.	41.	8.	2002.50	
0.06	0.00	13.55	0.00	0.140	0.025	0.180	0.000	1985.50	2261.26	
0.005581	780.	780.	780.	20	15	0	0.00	79.31	2340.57	

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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                ##########################################################################
                ####                    CAMBRIDGE STREET                              ####
                ####                SPECIAL BRIDGE ROUTINE                            ####
                ##########################################################################
                ####  CENTERLINE = 2165                                                ####
      6.10      8.32  1996.82  1996.82      0.00   2000.28      3.46      0.50      0.31   1988.50
    6000.       543.      5066.       391.       281.       312.       256.       43.        8.   1988.50
      0.06      1.93      16.24       1.53      0.140      0.025      0.180      0.000  1988.50  2070.43
 0.004428        50.       100.       210.         20          8          0       0.00   161.69  2232.12
0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1995.52 ,NOT   1996.82 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COEG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      33.50       9.75     168.00       0.00    1989.50    1989.00

*SECNO 6.110

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTA        ELMIN        SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      ICRWID       ENDST


  EGRS       EGLWC       H3         QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                     AREA
  2027.72    2012.19      0.00       3360.      2680.      168.       166.       1996.50    1999.50


          ####  REPEAT OF X-6.10                                                 ####
      6.11      13.54  2002.54       0.00       0.00  2002.98       0.44       2.70       0.00   1989.00
    6000.       753.      3417.      1831.       722.       508.       664.       45.        8.   1989.00
      0.07      1.04      6.73       2.76      0.160      0.038      0.060      0.000  1989.00  2035.03
 0.000777        75.       75.        75.          2          0          5       0.00   240.42  2275.45
0
*SECNO 6.160

3301 HV CHANGED MORE THAN HVINS

          ####              CENTERLINE =  2670                                       ####
          ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.          ####
      6.18      7.79  2002.69       0.00       0.00  2004.25       1.56       0.70       0.56   2009.70
    6000.         0.      6000.         0.         0.       599.         0.       55.       10.    2008.30
      0.08      0.00      10.02       0.00      0.160      0.038      0.060      0.000  1994.90  2572.95
 0.012706        400.       365.       270.          3          0          0       0.00   171.01  2743.95
0
CCHV=   0.100  CEHV=   0.300
*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2300                                       ####
      6.31      6.81  2017.61  2017.61       0.00   2019.81       2.20       9.26       0.19   2017.40
    4100.         0.      4100.         0.         0.       344.         0.       63.       12.    2017.40
```

0.09	0.01	11.91	0.84	0.160	0.038	0.045	0.000	2010.80	2262.32
0.013546	745.	710.	685.	20	15	0	0.00	83.18	2345.49

0
CCHV= 0.300 CEHV= 0.500
*SECNO 6.350
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SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	T&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

SWENSON STREET
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2300

6.35	9.55	2019.85	0.00	0.00	2021.39	1.54	1.38	0.20	2010.30
4100.	461.	3213.	426.	235.	287.	227.	65.	12.	2010.30
0.10	1.96	11.21	1.88	0.160	0.045	0.160	0.000	2010.30	2210.76
0.005686	55.	170.	210.	2	0	0	0.00	147.40	2358.16

0
SPECIAL BRIDGE
5227 DOWNSTREAM ELEV IS 2015.75 ,NOT 2019.85 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	29.50	9.00	103.10	0.00	2010.80	2010.30

*SECNO 6.360
3301 HV CHANGED MORE THAN HVINS
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2058.16	2028.90	0.00	2815.	1289.	103.	103.	2015.80	2020.30

REPEAT OF X-6.35

6.36	12.16	2022.96	0.00	0.00	2023.63	0.67	2.24	0.00	2010.80
4100.	616.	2858.	627.	517.	365.	494.	66.	12.	2010.80
0.10	1.19	7.83	1.27	0.160	0.045	0.160	0.000	2010.80	1905.93
0.002007	55.	55.	55.	2	0	8	0.00	522.00	2427.93

0
*SECNO 6.500
3301 HV CHANGED MORE THAN HVINS
1
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SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	T&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

```
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                CENTERLINE =  2380                                  ####
      6.50      6.59  2028.09  2028.09      0.00  2030.32      2.23      3.00      0.78  2032.60
    4100.        0.    4100.       0.        0.      342.        0.      81.      18.    2030.70
      0.12      0.00    11.99      0.00     0.160    0.035     0.160    0.000  2021.50  2340.54
 0.011420       780.     755.      700.        20       11         0     0.00    77.77  2418.31
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 6.600

 3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                  PALOS VERDE STREET                              ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
          ##########################################################################
      6.60      2.15  2037.65  2037.58      0.00  2038.19      0.54      7.70      0.17  2035.50
    4100.     1509.    2591.       0.     1026.      353.        0.      91.      26.    2037.60
      0.15      1.47     7.34      0.15     0.160    0.035     0.120    0.000  2035.50  8908.40
 0.020879       510.     510.      510.         7       18         0     0.00  1294.45 10202.86
0
 1490 NH CARD USED
 *SECNO 6.750
          ####                CENTERLINE =  2700                                  ####
      6.75      4.43  2044.53      0.00      0.00  2044.62      0.09      6.39      0.05  2044.30
    4100.     3073.    1027.       0.     1758.      284.        0.     121.      52.    2044.70
      0.24      1.75     3.61      0.00     0.064    0.035     0.060    0.000  2040.10  1020.40
 0.004358       740.     825.      800.         8        0         0     0.00  1756.58  2777.37
0
 *SECNO 6.830

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TBA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     ICPWID      ENDST

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                  PARADISE ROAD                                   ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED          ####
          ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)       ####
          ##########################################################################
      6.83      3.39  2048.49  2048.49      0.00  2049.24      0.85      3.22      0.23  2049.70
    4100.        0.    4094.       6.        0.      554.       10.     135.      64.    2048.30
      0.26      0.00     7.39      0.62     0.080    0.035     0.060    0.000  2045.10  9852.62
 0.014415       500.     410.      350.         1       19         0     0.00   422.36 10765.38
0
 *SECNO 6.870

 3265 DIVIDED FLOW
```

```
          ####                CENTERLINE =  2280                                  ####
      6.87      7.42  2051.12       0.00       0.00  2051.85       0.74       2.51       0.01  2052.60
    4100.        2.       3197.       901.         4.      430.       200.       138.        66.  2050.20
      0.27      0.53       7.44       4.50       0.045      0.045      0.045      0.000  2043.70  1228.04
 0.010156       160.       205.       240.          2          0          0       0.00   320.98  2435.00

FLOW DISTRIBUTION FOR SECNO=       6.87          CWSEL=    2051.12

STA=    1228.     1253.     1720.     1733.     2308.     2319.     2435.
  PER Q=     0.0       0.0       0.0      79.0       2.2      19.8
    AREA=    1.5       1.7       0.7     429.6      18.5     181.6
     VEL=    0.5       0.3       0.5       7.4       4.7       4.5

CCHV=   0.100 CEHV=    0.300
*SECNO 7.160

3470 ENCROACHMENT STATIONS=    3126.0     4440.0  TYPE=      1  TARGET=   -3126.000
          ####                CENTERLINE =  3550                                  ####
          ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.            ####
      7.16      6.06  2062.66       0.00       0.00  2062.93       0.27      11.03       0.05  2064.90
    4100.        1.       4100.         0.         0.      981.         0.       166.        79.  2066.20
      0.37      0.00       4.18       0.00       0.045      0.045      0.045      0.000  2056.60  3366.93
 0.005446      1415.      1520.      1515.          5          0          0       0.00   436.15  3803.09

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
    6         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WIN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCRAR     TOPWID      ENDST


*SECNO 7.350
          ####                CENTERLINE =  2290                                  ####
      7.35      5.13  2070.32       0.00       0.00  2071.06       0.73       7.99       0.14  2069.60
    4100.      594.       3503.         6.       150.      482.         5.       185.        85.  2069.90
      0.41      3.97       7.26       1.27       0.045      0.038      0.045      0.000  2065.20  2067.27
 0.011764      1040.      1035.      1040.          3          0          0       0.00   370.15  2437.43

CCHV=   0.100 CEHV=    0.300
*SECNO 7.360
3280 CROSS SECTION       7.38 EXTENDED       0.32 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    KOVAL LANE                                    ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
          ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW Q500         ####
          ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN             ####\
          ####  THRU CAESARS/IMPERIAL AREA - LWWELBOL                            ####
          ##########################################################################
      7.38      1.72  2075.42  2075.42       0.00  2075.82       0.40       1.63       0.03  2073.70
    4100.     1514.       1180.      1406.       634.      138.       527.       189.        92.  2073.70
      0.42      2.39       8.58       2.67       0.060      0.025      0.060      0.000  2073.70  1650.00
 0.010100       150.       150.       150.         20         23          0       0.00  1530.94  3180.94

FLOW DISTRIBUTION FOR SECNO=       7.38          CWSEL=    2075.42

STA=    1650.     1850.     2000.     2200.     2360.     2495.     2575.     2701.     2790.     3181.
  PER Q=     4.1       2.6       2.9      10.0      17.4      28.8      18.0       8.6       7.7
    AREA=  104.3      70.5      84.0     163.2     211.9     137.6     210.4     117.5     199.4
     VEL=    1.6       1.2       1.4       2.5       3.4       8.6       3.5       3.0       1.6
```

```
**********************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
**********************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.        3.         0.         0.  0.000000       0.00       0.0         0.  1960.700       0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
      2.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 2

CCHV=   0.100  CEHV=   0.300
*SECNO 5.570
          ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS     ####
          ####            CENTERLINE =  2030                               ####
          ####  NEAR ALGONQUIN DRIVE ALIGNMENT                             ####
     5.57      8.98  1960.70  1960.63  1960.70  1964.68     3.98     0.00     0.00  1961.00
     7300.        0.     7300.        0.       0.      456.        0.       0.       0.  1961.00
      0.00     0.30     16.00     0.00     0.140    0.025    0.180    0.000  1951.72  2002.19
 0.005545     1320.     1320.     1320.        0        4        0     0.00    56.61  2058.81

CCHV=   0.100  CEHV=   0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####            CENTERLINE =  2450                               ####
     5.82      8.65  1976.55  1976.55     0.00  1979.53     2.97     7.12     0.10  1982.20
     7300.        0.     7300.        0.       0.      528.        0.      15.       2.  1977.20
      0.03     0.30     13.84     0.00     0.140    0.025    0.180    0.000  1967.90  2397.69
 0.005333     1310.     1310.     1310.       20        8        0     0.00    88.93  2486.61

CCHV=   0.300  CEHV=   0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
```

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

MARYLAND PARKWAY #### SPECIAL BRIDGE ROUTINE #### #### CENTERLINE = 10000

5.85	10.71	1987.21	1987.21	8.00	1589.68	2.39	0.60	0.17	1976.50
7300.	1435.	5396.	468.	816.	375.	284.	19.	3.	1976.50
0.03	1.76	14.40	1.65	0.140	0.025	0.180	0.000	1976.50	9782.30
0.002486	170.	170.	170.	20	19	0	0.00	276.12	10058.42

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1983.89 ,NOT 1987.21 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2007.86	2000.40	0.00	4347.	2983.	250.	250.	1987.00	1988.20

REPEAT OF X-5.85

5.67	12.01	1989.01	0.00	0.00	1590.66	1.65	1.06	0.00	1977.00
7300.	1680.	5149.	471.	1257.	421.	342.	22.	4.	1977.00
0.03	1.34	12.24	1.38	0.140	0.025	0.180	0.000	1977.00	9561.40
0.001542	85.	85.	85.	3	0	6	0.00	521.76	10083.16

0
*SECNO 5.930

CENTERLINE = 2465

5.93	9.54	1989.54	0.00	0.00	1591.50	1.96	0.69	0.16	1995.00
7300.	0.	7300.	0.	0.	649.	0.	32.	6.	1992.00
0.04	0.00	11.25	0.00	0.140	0.025	0.180	0.000	1980.00	2414.90
0.002988	330.	330.	330.	2	0	0	0.00	97.92	2512.82

0
CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2300

6.08	9.52	1995.42	1995.42	0.00	1998.57	3.15	3.06	0.36	2002.80
7300.	0.	7300.	0.	0.	512.	0.	43.	8.	2002.50
0.06	0.00	14.25	0.00	0.140	0.025	0.180	0.000	1985.90	2259.45
0.005385	780.	780.	780.	20	5	0	0.00	82.68	2342.13

SECNO	DEPTH	Q SEL	CRIWS	ASELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	INA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED ASEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CAMBRIDGE STREET
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2165

6.10	9.31	1997.81	1997.81	0.00	2001.71	3.91	0.49	0.38	1988.50
7300.	719.	6066.	515.	350.	349.	317.	45.	8.	1988.50
0.06	2.05	17.38	1.62	0.140	0.025	0.180	0.000	1988.50	2062.89
0.004365	53.	100.	210.	20	5	0	0.00	175.82	2238.72

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1996.44 ,NOT 1997.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	168.00	0.00	1989.50	1989.00

*SECNO 6.110

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2043.54	2015.32	0.00	4677.	2628.	168.	166.	1996.50	1995.50

REPEAT OF X-6.10

6.11	14.18	2003.18	0.00	0.00	2003.74	0.55	2.02	0.00	1989.00
7300.	942.	4062.	2296.	788.	532.	732.	47.	8.	1989.00
0.06	1.19	7.64	3.14	0.160	0.035	0.060	0.000	1989.00	2031.26
0.000942	75.	75.	75.	2	0	6	0.00	250.59	2281.86

SECNO	DEPTH	Q SEL	CRIWS	ASELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	INA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

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          ####              CENTERLINE =  2670                                  ####
          ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.####
      6.18      8.57  2003.47      0.00      0.00   2005.00      1.54      0.78      0.49   2009.70
    7300.         0.    7300.         0.        0.     734.         0.       58.       10.   2008.30
      0.07      0.10      9.94      0.00      0.160     0.038     0.060     0.000  1994.90   2568.61
 0.009963      400.       365.      270.         3         0         0      0.00    176.73   2745.35

CCHV=   0.100 CEHV=   0.300
*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2300                                  ####
      6.31      7.70  2018.50  2018.50      0.00   2021.00      2.50      7.63      0.29   2017.40
    5300.         1.    5281.       18.       2.      416.        7.        68.       12.   2017.40
      0.09      0.66      12.70      2.42      0.160     0.038     0.045     0.000  2010.80   2259.34
 0.011987      745.       710.      685.        20        11         0      0.00     97.01   2356.35

CCHV=   0.300 CEHV=   0.500
*SECNO 6.350
          ##########################################################################
          ####                    SWENSON STREET                                ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ##########################################################################
          ####  CENTERLINE = 2300                                           ####
      6.35     10.27  2020.57      0.00      0.00   2022.62      2.05      1.49      0.13   2010.30
    5300.       645.    4037.       618.      273.      308.      281.       76.       13.   2010.30
      0.09      2.36      13.10      2.20      0.160     0.045     0.160     0.000  2010.30   2201.44
 0.007050        50.       170.      210.         3         0         0      0.00    174.25   2375.69

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       I&A     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2016.77 ,NOT   2020.57 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFG      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      2.83      0.00     29.50      9.00    103.10      0.00   2010.80   2010.30

*SECNO 6.360

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA   TRAPEZOID AREA    ELLC      ELTRD
 2084.59   2032.50      0.00      4069.     1238.      103.       103.      2015.80   2020.30

          ####  REPEAT OF X-6.35                                              ####
      6.36     12.13  2022.93      0.00      0.00   2024.07      1.14      1.45      0.00   2010.80
    5300.       791.    3704.       807.      503.      364.      489.       72.       13.   2010.80
      0.09      1.57      10.18      1.65      0.160     0.045     0.160     0.000  2010.80   1913.60
```

```
 0.003405      55.      55.      55.        3        0        8     0.00   513.28  2426.88
0
 *SECNO 6.500

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####          CENTERLINE =  2380                                  ####
      6.50      7.48  2028.98  2028.98      0.00  2031.53      2.55      4.26      0.70  2032.60
      5300.        0.     5300.        0.        0.      414.        0.      87.      18.  2030.70
       0.11      0.00     12.80     0.00      0.160     0.035     0.160     0.000  2021.50  2338.66
  0.011216      780.      755.      700.         20        14         0      0.00    83.97  2422.63
0
 CCHV=  0.100 CEHV=  0.300
 *SECNO 6.600
1
  27-APR-88     00:26:56                                                                    PAGE   20

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        GLOSS     BANK ELEV
     6         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WIN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                    PALOS VERDE STREET                            ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS           ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                       ####
          ##########################################################################
      6.60      2.48  2037.98  2037.81      0.00  2038.54      0.56      6.81      0.20  2035.50
      5300.     1967.     3323.       10.     1389.      443.       20.      100.       28.  2037.60
       0.14      1.42      7.51      0.52     0.160     0.035     0.120     0.000  2035.50  8741.16
  0.016187       513.      510.      510.        13        17         0      0.00  1552.77 10293.92
0
 1490 NH CARD USED
 *SECNO 6.750
          ####          CENTERLINE =  2700                                  ####
      6.75      4.63  2044.73      0.00      0.00  2044.82      0.10      6.24      0.05  2044.30
      5300.     4080.     1220.        0.     2058.      324.        0.      137.      57.  2044.70
       0.23      1.98      3.76      0.02     0.065     0.035     0.060     0.000  2040.10   995.58
  0.004788       740.      825.      800.         6         0         0      0.00  1812.44  2808.02
0
 *SECNO 6.830

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      PARADISE ROAD                               ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS           ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED         ####
          ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)      ####
          ##########################################################################
      6.83      3.83  2048.93  2048.93      0.00  2049.76      0.83      3.14      0.22  2049.70
      5300.        0.     5164.      136.        0.      698.      110.      154.      70.  2048.30
       0.24      0.00      7.48      1.24     0.080     0.035     0.060     0.000  2845.10  9833.49
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Contiguous Interfolded ® Mohawk Business Forms, Inc.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.870

3265 DIVIDED FLOW

####		CENTERLINE =	2280					####	
6.87	7.67	2051.37	2051.32	2051.12	2052.35	0.98	2.54	0.05	2052.60
5300.	45.	3969.	1286.	38.	461.	231.	157.	73.	2050.20
0.25	1.19	8.61	5.56	0.045	0.045	0.045	0.000	2043.70	1202.86
0.012851	160.	205.	240.	3	11	0	0.00	466.97	2435.00

FLOW DISTRIBUTION FOR SECNO= 6.87 CWSEL= 2051.37

STA=	1203.	1240.	1281.	1720.	1760.	2308.	2319.	2435.
PER Q=	0.2	0.2	0.4	0.2	74.5	2.4	21.9	
AREA=	6.7	7.5	16.4	7.2	460.8	21.6	209.9	
VEL=	1.2	1.2	1.2	1.2	8.6	5.8	8.5	

CCHV= 0.10 CEHV= 0.300
*SECNO 7.160

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 3126.0 4440.0 TYPE= 1 IARGET= -3126.000

####		CENTERLINE =	3550					####	
####	500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.							####	
7.16	6.60	2063.20	0.00	2062.66	2063.49	0.29	11.07	0.07	2064.90
5300.	3.	5330.	0.	0.	1223.	0.	191.	89.	2066.20
0.35	0.00	4.33	0.00	0.045	0.045	0.045	0.000	2056.60	3361.29
0.004690	1415.	1520.	1515.	5	0	0	0.00	460.32	3821.61

*SECNO 7.350

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE =	2290					####	
7.35	5.38	2070.58	2070.58	2070.32	2071.51	0.93	7.58	0.19	2069.60
5300.	858.	4420.	22.	186.	538.	12.	215.	99.	2069.90
0.39	4.63	8.21	1.84	0.045	0.038	0.045	0.000	2065.20	2059.56
0.012994	1040.	1035.	1040.	5	14	0	0.00	391.12	2450.68

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 7.380
3280 CROSS SECTION 7.38 EXTENDED 0.49 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##############################################################################
          ####                          KOVAL LANE                                  ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW              ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS                ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                            ####
          ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW 6500             ####
          ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN                 ####\
          ####  THRU CAESARS/IMPERIAL AREA - LW,FB,EOL                               ####
          ##############################################################################
      7.38      1.89  2075.59  2075.59  2075.42  2076.04      0.44      1.74      0.05  2073.70
      5300.     2077.     1439.     1814.      781.      152.      635.      215.      103.  2073.70
      0.40      2.66      9.29      2.84     0.060     0.025     0.060     0.000  2073.70  1650.00
 0.010429       150.      150.      150.        20        22         0      0.00  1597.85  3247.85

0
FLOW DISTRIBUTION FOR SECNO=      7.38          CWSEL=   2075.59

STA=    1650.     1850.     2000.     2200.     2360.     2495.     2575.     2701.     2790.     3248.
  PER Q=     5.2       3.4       4.0      10.3      16.3      26.6      16.7       8.2       9.3
   AREA=   138.9      96.7     113.9     191.1     235.5     151.6     232.4     133.0     273.4
    VEL=     2.       1.9       1.8       2.8       3.7       5.3       3.8       3.2       1.8

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 3   (ALGONQUIN DR. TO KOVAL LANE)

J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
          0.       4.        0.        0.  0.000000      0.00      0.0       0.  1961.700      0.000

J2   NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTA       ELMIN        SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST

*PROF 3

CCHV=   0.100 CEHV=    0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
          ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS     ####
          ####           CENTERLINE =  2030                                 ####
          ####  NEAR ALGONQUIN DRIVE ALIGNMENT                             ####
```

5.57	10.05	1961.77	1961.77	1961.70	1966.33	4.56	0.00	0.00	1961.00	
8860.	1.	8860.	0.	0.	517.	0.	0.	0.	1961.00	
0.00	0.28	17.14	0.26	0.140	0.025	0.180	0.000	1951.72	2001.49	
0.005460	1320.	1320.	1320.	0	4	0	0.00	58.28	2059.77	

0

CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2450

5.82	9.48	1977.38	1977.38	0.00	1980.74	3.36	7.03	0.12	1982.20
8860.	0.	8860.	0.	0.	602.	0.	17.	2.	1977.20
0.02	0.00	14.71	0.01	0.140	0.025	0.180	0.000	1967.90	2396.41
0.005273	1310.	1310.	1310.	20	11	0	0.00	91.83	2488.24

0

CCHV= 0.300 CEHV= 0.500
*SECNO 5.850
3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##
MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE
##
CENTERLINE = 10000

5.85	10.53	1987.03	1987.03	0.00	1990.72	3.70	0.77	0.17	1976.50
8860.	1710.	6582.	568.	783.	368.	277.	21.	3.	1976.50
0.03	2.18	17.87	2.05	0.140	0.025	0.180	0.000	1976.50	9823.82
0.003915	170.	170.	170.	20	12	0	0.00	234.23	10058.05

0
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1984.90 ,NOT 1987.03 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGFRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2017.45	2004.61	0.00	5670.	3194.	250.	250.	1987.00	1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

REPEAT OF X-5.85

5.87	11.42	1988.42	1988.22	0.00	1991.32	2.90	0.28	-0.28	1977.00

8860.	1884.	6407.	570.	1015.	400.	312.	24.	4.	1977.00	
0.03	1.85	16.03	1.83	0.140	0.025	0.180	0.000	1977.00	9618.17	
0.002826	85.	85.	85.	20	26	0	0.00	441.68	10059.84	

0

*SECNO 5.930

CENTERLINE = 2465

5.93	9.82	1989.82	0.00	0.00	1992.48	2.66	1.09	0.07	1995.00
8860.	0.	8860.	0.	0.	676.	0.	33.	6.	1992.00
0.04	0.00	13.10	0.00	0.140	0.025	0.180	0.000	1980.00	2414.14
0.003922	330.	330.	330.	5	6	0	0.00	99.48	2513.62

0

CCHV= 0.100 CEHV= 0.300

*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1

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CENTERLINE = 2300

6.08	10.45	1996.35	1996.35	0.00	1999.84	3.49	3.52	0.25	2002.80
8860.	0.	8860.	0.	0.	591.	0.	44.	7.	2002.50
0.05	0.00	14.99	0.00	0.140	0.025	0.180	0.000	1985.90	2257.51
0.005245	780.	780.	780.	20	8	0	0.00	86.31	2343.82

0

CCHV= 0.300 CEHV= 0.500

*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

CAMBRIDGE STREET

SPECIAL BRIDGE ROUTINE

CENTERLINE = 2165

6.10	10.39	1998.89	1998.89	0.00	2003.28	4.39	0.48	0.45	1988.50
8860.	947.	1237.	676.	433.	390.	392.	47.	8.	1988.50
0.05	2.19	18.58	1.72	0.140	0.025	0.180	0.000	1988.50	2054.65
0.004308	60.	100.	210.	20	6	0	0.00	191.27	2245.93

0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1997.46 ,NOT 1998.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHO	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	168.00	0.00	1989.50	1989.00

*SECNO 6.110

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2066.26	2018.82	0.00	6312.	2571.	168.	166.	1996.50	1999.50

REPEAT OF X-6.10

6.11	14.87	2003.87	0.00	0.00	2004.56	0.70	1.28	0.00	1989.00	
8860.	1174.	4814.	2873.	862.	558.	808.	50.	8.	1989.00	
0.06	1.36	8.63	3.55	0.160	0.035	0.060	0.000	1989.00	2027.23	
0.001130	75.	75.	75.	2	0	6	0.00	261.48	2288.71	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE = 2670						####	
####	CONFLUENCE WITH TROPICANA WASH.				L/S BREAKOUT FLOWS RETURN.			####	
6.18	9.38	2004.28	0.00	0.00	2005.85	1.58	0.85	0.44	2009.70
8860.	0.	8860.	0.	0.	875.	0.	62.	10.	2008.30
0.07	0.00	10.08	0.00	0.160	0.038	0.060	0.000	1954.90	2564.12
0.008411	400.	365.	270.	3	0	0	0.00	182.67	2746.80

CCHV= 0.100 CEHV= 0.300
*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2300						####	
6.31	8.38	2018.88	2018.88	0.00	2021.50	2.62	6.72	0.31	2017.40
5860.	3.	5818.	39.	4.	447.	13.	73.	12.	2017.40
0.08	0.79	13.03	2.89	0.160	0.038	0.045	0.000	2010.80	2258.05
0.011463	745.	710.	685.	20	15	0	0.00	102.59	2361.04

CCHV= 0.300 CEHV= 0.500
*SECNO 6.350

##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
####		SWENSON STREET						####	
####		SPECIAL BRIDGE ROUTINE						####	
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
####	CENTERLINE = 2300						####		
6.35	10.54	2020.84	2019.58	0.00	2023.14	2.30	1.54	0.10	2010.30
5860.	734.	4413.	713.	290.	316.	306.	75.	13.	2010.30
0.09	2.53	13.96	2.33	0.160	0.045	0.160	0.000	2010.30	2197.39
0.007726	50.	170.	210.	7	8	0	0.00	185.73	2383.12

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2017.22 ,NOT 2020.84 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	KK	KKOR	COEF	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD

1.25	1.56	2.63	0.00	29.50	9.00	103.10	0.00	2010.80	2010.30

*SECNO 6.360

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2099.09	2034.11	0.00	4652.	1220.	103.	103.	2015.80	2020.30

REPEAT OF X-6.35

6.36	11.95	2022.75	0.00	0.00	2024.23	1.48	1.09	0.00	2010.80
5860.	846.	4140.	874.	446.	359.	465.	77.	13.	2010.80
0.09	1.90	11.54	1.88	0.160	0.045	0.160	0.000	2010.80	1948.44
0.004467	55.	55.	55.	3	0	0	0.00	473.65	2422.09

0

*SECNO 6.500

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2380

6.50	8.04	2029.54	2029.54	0.00	2032.62	2.49	4.85	0.51	2032.60
5860.	10.	5850.	0.	26.	462.	0.	92.	15.	2030.70
0.10	0.39	12.67	0.00	0.160	0.035	0.160	0.000	2021.50	1460.33
0.010097	780.	755.	700.	3	14	0	0.00	184.32	2425.34

0

CCHV= 0.100 CEHV= 0.300

1

SECNO	DEPTH	CWSEL	CRIWS	SELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	ICPWID	ENDST

*SECNO 6.600

3301 HV CHANGED MORE THAN HVINS

PALOS VERDE STREET

THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW
DEBRIS IS ASSUMED TO BLOCK DRAINS. THIS CROSSING HAS
BEEN MODELED AS A REGULAR GROUND SECTION.

6.60	2.57	2038.07	2037.92	0.00	2038.68	0.61	6.47	0.19	2035.50
5860.	2183.	3658.	19.	1497.	467.	30.	106.	29.	2037.60
0.13	1.46	7.83	0.66	0.160	0.035	0.120	0.000	2035.50	8695.66
0.016408	510.	510.	510.	9	17	0	0.00	1607.47	10303.14

0

1490 NH CARD USED
*SECNO 6.750

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2700

6.75	4.73	2044.83	0.00	0.00	2044.93	0.10	6.20	0.05	2044.30

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```
     5860.      4512.      1348.         0.      2213.       346.         0.       146.        55.   2044.70
        0.22       2.04       3.90       0.27       0.065      0.035      0.060      0.000  2040.10    982.96
  0.004710     740.       825.       800.          7            0            0         0.00  1828.80   2811.76

 *SECNO 6.830

 3265 DIVIDED FLOW


 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3695 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    PARADISE ROAD                         ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW  ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS    ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.  G500 REDUCED  ####

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          ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN) ####
          ##################################################################
       6.83       4.11  2049.21  2049.21       0.00  2049.91       0.71       2.80       0.18  2049.70
     5860.         0.      5505.       349.        15.       792.       251.       165.        74.   2048.30
        0.24       0.39       6.95       1.39       0.080      0.035      0.060      0.000  2045.10   5851.11
  0.008956     570.       410.       350.         28           12            0         0.00  1147.74  10823.44

 *SECNO 6.870

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####          CENTERLINE =  2280                                    ####
       6.87       7.91  2051.61  2051.61  2051.12  2052.53       0.93       2.14       0.07  2052.60
     5860.       173.      4171.      1516.       107.       493.       263.       170.        75.   2050.20
        0.24       1.61       8.46       5.77       0.045      0.045      0.045      0.000  2043.70   1177.36
  0.011722     160.       205.       240.          3           17            0         0.00   614.85   2435.00

 FLOW DISTRIBUTION FOR SECNO=      6.87          CWSEL=   2051.61

 STA=    1177.     1240.     1310.     1720.     1788.     2308.     2319.     2435.
   PER Q=      0.5       3.6       1.3       0.6      71.2       2.5      23.4
    AREA=     19.0      21.2      46.6      20.6     493.3      24.3     238.5
     VEL=      1.6       1.6       1.6       1.6       8.5       6.0       5.7

 CCHV=   0.100  CEHV=   0.300
 *SECNO 7.160

 3265 DIVIDED FLOW


 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=    3126.0    4440.0  TYPE=      1  TARGET=   -3126.000
          ####          CENTERLINE =  3550                                    ####
          ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.       ####
       7.16       6.73  2063.33       0.00  2062.66  2063.65       0.32      11.06       0.06  2064.90
     5860.         1.      5859.         0.         1.      1283.         0.       207.        97.   2066.20
        0.34       0.36       4.57       0.00       0.045      0.045      0.045      0.000  2056.60   3167.16
  0.004965    1415.     1520.     1515.          6            0            0         0.00   488.20   3825.94

 *SECNO 7.350
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE =	2290					####	
7.35	5.58	2070.78	2070.78	2070.32	2071.71	0.93	7.58	0.18	2069.60
5860.	1016.	4803.	41.	215.	581.	20.	232.	108.	2069.90
0.37	4.74	8.26	2.09	0.045	0.038	0.045	0.000	2065.20	2053.63
0.011866	1047.	1035.	1040.	4	10	0	0.00	407.23	2460.87

0
CCHV= 0.100 CEHV= 0.300
*SECNO 7.38
3280 CROSS SECTION 7.38 EXTENDED 0.58 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
##############################################################################
####                                                                      ####
####                          KOVAL LANE                                  ####
####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW             ####
####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS               ####
####  BEEN MODELED AS A REGULAR GROUND SECTION.                           ####
####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW Q500            ####
####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN                ####\
####  THRU CAESARS/IMPERIAL AREA - LVWFWBOL                               ####
##############################################################################
```

7.38	1.98	2075.68	2075.68	2075.42	2076.12	0.45	1.65	0.05	2073.70
5860.	2338.	1497.	2024.	852.	158.	707.	236.	112.	2073.70
0.38	2.74	9.46	2.86	0.060	0.025	0.060	0.000	2073.70	1650.00
0.010189	150.	150.	150.	23	22	0	0.00	1876.41	3526.41

0
FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.68

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3526.
PER Q=	5.6	3.8	4.5	10.3	15.8	25.6	16.1	8.1	10.3	0.1	
AREA=	155.8	109.4	135.8	204.6	246.9	158.3	243.0	140.5	312.3	10.9	
VEL=	2.1	2.0	1.9	2.9	3.7	9.5	3.9	3.4	1.9	0.3	

1


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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  1,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
**************************************************
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 3 (ALGONQUIN DR. TO KOVAL LANE)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.000000	0.00	0.0	0.	1970.700	0.000

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1992.14 ,NOT 1993.36 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
6870 D.S. ENERGY OF 1996.14 HIGHER THAN COMPUTED ENERGY OF 1994.04
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2189.57	2024.28	0.00	21192.	1326.	250.	250.	1987.00	1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY
REPEAT OF X-5.85

5.87	16.89	1993.89	1993.87	0.00	1996.64	2.75	0.20	-0.20	1977.00	
22500.	9619.	11138.	1742.	5420.	591.	1181.	156.	35.	1977.00	
0.03	1.77	18.85	1.48	0.140	0.025	0.180	0.000	1977.00	8870.70	
0.002320	85.	85.	85.	20	5	0	0.00	1428.20	10298.90	

0
*SECNO 5.930

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2465

5.93	14.95	1994.95	1994.95	0.00	1999.76	4.81	1.00	1.03	1995.00	
22500.	0.	22146.	354.	0.	1249.	430.	190.	42.	1992.00	
0.03	0.00	17.73	0.82	0.140	0.025	0.180	0.000	1980.00	2400.14	
0.004097	33.	330.	330.	20	11	0	0.00	361.55	2761.69	

0
CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2300

6.08	16.66	2002.56	2002.56	0.00	2007.99	5.43	3.34	0.19	2002.80	
22500.	0.	22495.	5.	0.	1203.	20.	216.	47.	2002.50	
0.04	0.00	18.70	0.24	0.140	0.025	0.180	0.000	1985.90	2244.49	
0.004484	780.	780.	780.	20	8	0	0.00	178.96	2423.45	

0
CCHV= 0.300 CEHV= 0.500
*SECNO 6.105

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J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS
CENTERLINE = 2030
NEAR ALGONQUIN DRIVE ALIGNMENT

5.57	19.14	1970.86	1970.86	1970.70	1973.72	2.87	0.00	0.00	1961.00
22500.	2148.	16443.	3909.	1904.	1035.	4160.	0.	0.	1961.00
0.00	1.13	15.89	0.94	0.140	0.025	0.180	0.000	1951.72	1374.41
0.001860	1320.	1320.	1320.	0	4	0	0.00	1698.41	3072.82

0
CCHV= 0.100 CEHV= 0.300
*SECNO 5.625

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2450

5.62	15.47	1983.37	1983.37	0.00	1989.00	5.62	3.47	0.83	1982.20
22500.	33.	22443.	24.	69.	1178.	25.	126.	25.	1977.20
0.02	0.47	19.05	0.96	0.140	0.025	0.180	0.000	1967.60	2271.87
0.004072	1310.	1310.	1310.	20	16	0	0.00	224.36	2496.23

0
CCHV= 0.300 CEHV= 0.500
*SECNO 5.650

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE
CENTERLINE = 10000

5.65	16.36	1993.36	1993.36	0.00	1996.14	2.78	0.52	0.85	1976.50
22500.	9596.	11165.	1739.	5389.	590.	1173.	142.	32.	1976.50
0.02	1.78	18.92	1.48	0.140	0.025	0.180	0.000	1976.50	8872.10
0.002344	170.	170.	170.	20	8	0	0.00	1425.81	10297.71

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3692 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                    CAMBRIDGE STREET                              ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ##########################################################################
          ####  CENTERLINE = 2165                                          ####
     6.10      17.76   2006.26   2006.26      0.00   2012.62      6.35      0.40      0.46   1988.50
   22500.       3781.    15954.     2764.     1201.      666.     1183.      222.       47.    1988.50
     0.04       3.15     23.95      2.34     0.140     0.025     0.180     0.000   1988.50   2010.22
0.003503        50.      100.       210.        20         5         0      0.00    307.40   2317.62
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2004.75 ,NOT 2006.26 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	168.00	0.00	1989.50	1989.00

*SECNO 6.110
6870 D.S. ENERGY OF 2012.62 HIGHER THAN COMPUTED ENERGY OF 2009.82
3280 CROSS SECTION 6.11 EXTENDED 1.99 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	ICPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
2440.76	2042.26	0.03	20661.	2036.	168.	166.	1996.50	1999.50

```
          ####  REPEAT OF X-6.10                                            ####
     6.11      23.10   2012.00      0.00      0.00   2012.62      0.61      0.00      0.00   1989.00
   22500.       4195.     8338.     9968.     3850.      862.     3092.      231.       45.    1989.00
     0.05       1.09      9.67      3.22     0.160     0.035     0.060     0.000   1989.00   1400.00
0.000793         75.       75.       75.         3         0         6      0.00   1259.84   2659.84
```

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

```
          ####          CENTERLINE =  2670                                    ####
          ####  CONFLUENCE WITH TROPICANA WASH.  U/S BREAKOUT FLOWS RETURN.####
     6.18      17.23   2012.13      0.00      0.00   2013.32      1.19      0.42      0.29   2009.70
   22500.       252.    22158.       91.       514.     2512.       64.      275.       57.    2008.30
     0.06       0.49      8.32      1.43     0.160     0.038     0.060     0.000   1994.50   2026.04
0.002047        400.      365.      270.         2         0         0      0.00    755.93   2821.97
```

CCHV= 0.100 CEHV= 0.300
*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

	####	CENTERLINE = 2300						####		
	6.31	13.93	2024.73	2024.73	0.00	2027.04	2.31	2.00	0.34	2017.40
	16200.	1519.	12498.	2191.	1413.	914.	363.	323.	72.	2017.40
	0.08	1.07	13.67	6.04	0.160	0.038	0.045	0.000	2010.80	1509.34
	0.004854	745.	710.	685.	20	15	0	0.00	949.91	2459.26

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCRWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 6.350
3280 CROSS SECTION 6.35 EXTENDED 0.96 FEET

3301 HV CHANGED MORE THAN HVINS

##
SWENSON STREET
SPECIAL BRIDGE ROUTINE
##
CENTERLINE = 2300

6.35	16.16	2026.46	2026.03	0.00	2028.00	1.53	0.72	0.23	2010.30
16200.	609.	7161.	2948.	3468.	485.	1180.	332.	74.	2010.30
0.08	1.76	14.78	2.50	0.160	0.045	0.160	0.000	2010.30	1200.00
0.004901	50.	170.	210.	7	8	0	0.00	1270.79	2470.79

0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2023.93 ,NOT 2026.46 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	29.50	9.00	103.10	0.00	2010.80	2010.30

*SECNO 6.360
6870 D.S. ENERGY OF 2028.00 HIGHER THAN COMPUTED ENERGY OF 2027.02
3280 CROSS SECTION 6.36 EXTENDED 0.71 FEET

PRESSURE AND WEIR FLOW

EGFRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2024.53	2023.72	0.00	1571.	494.	103.	103.	2015.80	2020.30

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

####	REPEAT CF X=6.35						####		
6.36	15.91	2026.71	0.00	0.00	2028.45	1.75	0.00	0.00	2010.89
16200.	5842.	7403.	2955.	3206.	477.	1135.	338.	75.	2010.80
0.08	1.82	15.51	2.60	0.160	0.045	0.160	0.000	2010.80	1200.00
0.005514	55.	55.	55.	20	0	8	0.00	1270.71	2470.71

0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE =	2380					####	
6.50	12.57	2034.07	2034.07	0.38	2035.51	1.44	3.67	0.09	2032.60
16200.	4534.	10664.	1002.	3757.	902.	992.	430.	106.	2030.70
0.11	1.21	11.82	1.01	0.160	0.035	0.160	0.000	2021.50	688.37
0.004301	780.	755.	700.	5	14	0	0.00	2234.88	2923.25

CCHV= 0.10 CEHV= 0.300
*SECNO 6.600
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

PALOS VERDE STREET #### THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW #### DEBRIS IS ASSUMED TO BLOCK DRAINS. THIS CROSSING HAS #### BEEN MODELED AS A REGULAR GROUND SECTION.

6.60	3.87	2039.37	2039.37	0.00	2040.51	1.14	3.81	0.03	2035.50
16200.	6573.	9207.	419.	3514.	818.	217.	489.	133.	2037.60
0.13	1.87	11.26	1.93	0.160	0.035	0.120	0.000	2035.50	6039.63
0.016458	510.	510.	510.	16	17	0	0.00	2361.92	10401.55

1490 NH CARD USED
*SECNO 6.750

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE =	2700					####	
6.75	6.07	2046.17	0.00	0.00	2046.37	0.20	5.77	0.09	2044.30
16200.	12447.	3635.	117.	4484.	646.	131.	574.	174.	2044.70
0.19	2.78	5.63	0.90	0.068	0.035	0.060	0.000	2040.10	808.16
0.004278	740.	825.	800.	5	0	0	0.00	2370.15	3345.59

*SECNO 6.830

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Computronics Interfolded @ Modern Business Systems, Inc.

```
          ####                    PARADISE ROAD                                  ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED          ####
          ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)       ####
          ##########################################################################
     6.83      5.45  2050.55  2050.55     0.00  2051.41     0.86     2.53     0.20  2049.70
   16200.      1245.  11250.   3702.      903.    1284.     1201.     620.      199.  2048.30
     0.21      1.38     8.76     3.08    0.080    0.035    0.060    0.003  2045.10  8336.75
0.008115       500.      410.      350.       20       15        0     0.00  2358.83 10932.24

*SECNO 6.870

3265 DIVIDED FLOW

3280 CROSS SECTION      6.87 EXTENDED      0.73 FEET

          ####            CENTERLINE =  2280                                   ####
     6.87      9.04  2052.74  2052.72     0.00  2053.41     0.67     1.98     0.02  2052.60
   17500.      2889.    5953.    8658.      846.     653.     1674.     635.      209.  2050.20
     0.22      3.41     9.12     5.17    0.045    0.045    0.045    0.000  2043.70  1060.76
0.010735       160.      205.      240.        4       18        0     0.00  2257.44  3540.00

FLOW DISTRIBUTION FOR SECNO=      6.87          CWSEL=   2052.74

STA=    1061.    1390.    1720.    2160.    2308.    2435.    2627.    2747.    3030.    3540.
 PER Q=     6.1      7.4      3.0     34.0     17.2     17.1      5.9      3.3      6.0
  AREA=   318.1    357.9    170.1    653.1    406.1    477.0    208.2    207.9    374.7
   VEL=     3.4      3.6      3.1      9.1      7.4      6.3      4.9      2.8      2.8

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       ILA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.10  CEHV=    0.300
*SECNO 7.160

3470 ENCROACHMENT STATIONS=    3126.0    4440.0  TYPE=      1  TARGET=   -3126.000
          ####            CENTERLINE =  3550                                   ####
          ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.         ####
     7.16      8.80  2065.40     0.00     0.00  2066.15     0.76    12.72     0.02  2064.90
   17500.      795.    16705.      0.      216.     2355.       0.     734.      260.  2066.20
     0.28      3.69     7.09     0.00    0.045    0.045    0.045    0.000  2056.60  3153.56
0.006801      1415.     1520.     1515.        5        0        0     0.00   704.97  3858.54

*SECNO 7.350
3280 CROSS SECTION      7.35 EXTENDED      0.79 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####            CENTERLINE =  2290                                   ####
     7.35      8.19  2073.39  2073.39     0.00  2074.31     0.91     6.66     0.05  2069.60
   17500.      5359.   10606.    1535.    1246.    1142.     465.     799.      288.  2069.90
     0.32      4.30     9.28     3.27    0.045    0.038    0.045    0.008  2065.20  1300.00
0.006091       1040.     1035.     1040.        4       10        0     0.00  1648.11  2948.11

CCHV=   0.100 CEHV=    0.300
*SECNO 7.380
3280 CROSS SECTION      7.38 EXTENDED      1.56 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
```

3720 CRITICAL DEPTH ASSUMED

```
##########################################################################
####                        KOVAL LANE                                ####
####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS           ####
####  BEEN MODELED AS A REGULAR GROUND SECTION.                       ####
####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW 6500        ####
####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN            ####
####  THRU CAESARS/IMPERIAL AREA - LW&FW&OL                           ####
##########################################################################
```

7.38	2.96	2076.66	2076.66	0.00	2077.27	0.61	1.23	0.03	2073.70
19500.	7182.	3090.	9228.	1685.	237.	2738.	812.	296.	2073.70
0.33	4.26	13.03	3.37	0.060	0.025	0.060	0.000	2073.70	1650.00
0. 11285	150.	150.	150.	20	19	0	0.00	3200.00	4850.00

0
1

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 7.38 C&SEL= 2076.66

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3600.	4050.	4850.
PER Q=	6.9	3.0	6.3	8.4	10.2	15.8	10.1	5.8	14.5	4.8	5.2	6.9	
AREA=	352.3	257.1	332.8	362.2	379.9	237.1	367.2	228.2	765.5	354.9	411.3	611.1	
VEL=	3.3	3.8	3.7	4.5	5.2	13.0	5.4	4.9	3.7	2.7	2.5	2.2	

1


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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  1,2,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	C&SEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	5.570	0.00	0.00	0.00	1951.72	6000.00	1959.59	1959.59	1963.19	57.86	15.23	393.98	788.82
	5.570	0.00	0.00	0.00	1951.72	7300.00	1960.70	1960.63	1964.68	55.45	16.00	456.24	980.32
*	5.570	0.00	0.00	0.00	1951.72	8860.00	1961.77	1961.77	1966.33	54.60	17.14	517.52	1199.01
*	5.570	0.00	0.00	0.00	1951.72	22500.00	1970.86	1970.86	1973.72	18.60	15.89	7099.75	5217.35
*	5.820	1310.00	0.00	0.00	1964.90	6000.00	1975.72	1975.72	1978.42	56.11	13.19	454.91	801.01
*	5.820	1310.00	0.00	0.00	1964.90	7300.00	1976.55	1976.55	1979.53	53.33	13.84	527.62	999.61
*	5.820	1310.00	0.00	0.00	1964.90	8860.00	1977.38	1977.38	1980.74	52.73	14.71	602.44	1220.17
*	5.820	1310.00	0.00	0.00	1964.90	22500.00	1983.37	1983.37	1989.00	40.72	19.05	1271.99	3525.84
*	5.850	170.00	0.00	0.00	1976.50	6000.00	1986.08	1986.08	1991.05	44.49	17.89	335.41	899.53
*	5.850	170.00	0.00	0.00	1976.50	7300.00	1987.21	1987.21	1989.60	24.86	14.40	1474.52	1464.02
*	5.850	170.00	0.00	0.00	1976.50	8860.00	1987.03	1987.03	1990.73	39.15	17.87	1428.46	1416.84

*	5.850	170.00	0.00	0.00	1976.50	22500.00	1993.36	1993.36	1996.14	23.44	18.92	7151.81	4647.03
*	5.870	85.00	1988.20	1987.00	1977.00	6000.00	1990.30	0.00	1991.05	6.51	8.52	2791.39	2351.59
*	5.870	85.00	1988.20	1987.00	1977.00	7300.00	1989.01	0.00	1990.66	15.42	12.24	2018.88	1859.05
*	5.870	85.00	1988.20	1987.00	1977.00	8860.00	1988.42	1988.22	1991.32	28.26	16.03	1730.63	1666.60
*	5.870	85.00	1988.20	1987.00	1977.00	22500.00	1993.89	1993.87	1996.64	23.20	18.85	7191.88	4671.15
	5.930	330.00	0.00	0.00	1980.00	6000.00	1990.47	0.00	1991.49	13.75	8.07	743.73	1615.73
	5.930	330.00	0.00	0.00	1980.00	7300.00	1989.54	0.00	1991.50	29.88	11.25	649.10	1335.39
	5.930	330.00	0.00	0.00	1980.00	8860.00	1989.82	0.00	1992.48	39.22	13.10	676.34	1414.69
*	5.930	330.00	0.00	0.00	1980.00	22500.00	1994.95	1994.95	1999.76	40.97	17.73	1678.99	3515.34
*	6.080	780.00	0.00	0.00	1985.90	6000.00	1994.56	1994.56	1997.41	55.81	13.55	442.72	803.14
*	6.080	780.00	0.00	0.00	1985.90	7300.00	1995.42	1995.42	1998.57	53.85	14.25	512.44	994.83
*	6.080	780.00	0.00	0.00	1985.90	8860.00	1996.35	1996.35	1999.84	52.45	14.99	590.90	1223.39
*	6.080	780.00	0.00	0.00	1985.90	22500.00	2002.56	2002.56	2007.99	44.84	18.70	1222.79	3360.16
*	6.100	100.00	0.00	0.00	1988.50	6000.00	1996.82	1996.82	2000.28	44.28	16.24	849.41	901.70
*	6.100	100.00	0.00	0.00	1988.50	7300.00	1997.81	1997.81	2001.71	43.65	17.38	1016.37	1104.91
*	6.100	100.00	0.00	0.00	1988.50	8860.00	1998.89	1998.89	2003.28	43.08	18.58	1214.87	1349.95
*	6.100	100.00	0.00	0.00	1988.50	22500.00	2006.26	2006.26	2012.62	35.03	23.95	3049.98	3801.57

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	C&SEL	CRI&S	EG	10K*S	VCH	AREA	.01K
*	6.110	75.00	1999.50	1996.50	1989.00	6000.00	2002.54	0.00	2002.98	7.77	6.73	1894.73	2152.03
*	6.110	75.00	1999.50	1996.50	1989.00	7300.00	2003.18	0.00	2003.74	9.42	7.64	2052.07	2378.84
*	6.110	75.00	1999.50	1996.50	1989.00	8860.00	2003.87	0.00	2004.56	11.30	8.63	2227.62	2635.54
*	6.110	75.00	1999.50	1996.50	1989.00	22500.00	2012.00	0.00	2012.62	7.93	9.67	7804.33	7989.48
	6.180	365.00	0.00	0.00	1994.90	6000.00	2002.69	0.00	2004.25	127.06	10.02	598.55	532.36
	6.180	365.00	0.00	0.00	1994.90	7300.00	2003.47	0.00	2005.00	99.63	9.94	734.10	731.37
	6.180	365.00	0.00	0.00	1994.90	8860.00	2004.28	0.00	2005.85	84.11	10.08	879.35	966.05
	6.180	365.00	0.00	0.00	1994.90	22500.00	2012.13	0.00	2013.32	20.47	8.82	3088.74	4972.68
*	6.310	710.00	0.00	0.00	2010.80	4100.00	2017.61	2017.61	2019.81	135.46	11.91	344.58	352.28
*	6.310	710.00	0.00	0.00	2010.80	5300.00	2018.50	2018.50	2021.00	119.87	12.70	425.03	484.07
*	6.310	710.00	0.00	0.00	2010.80	5860.00	2018.88	2018.88	2021.50	114.63	13.03	463.58	547.32
*	6.310	710.00	0.00	0.00	2010.80	16200.00	2024.73	2024.73	2027.04	48.54	13.67	2689.50	2325.34
	6.350	170.00	0.00	0.00	2010.30	4100.00	2019.85	0.00	2021.39	56.86	11.21	748.61	543.73
	6.350	170.00	0.00	0.00	2010.30	5300.00	2020.57	0.00	2022.62	70.50	13.10	863.00	631.23
	6.350	170.00	0.00	0.00	2010.30	5860.00	2020.84	2019.58	2023.14	77.26	13.96	911.64	666.66
	6.350	170.00	0.00	0.00	2010.30	16200.00	2026.46	2026.03	2028.00	49.01	14.78	5133.01	2314.04
*	6.360	55.00	2020.30	2015.80	2010.80	4100.00	2022.96	0.00	2023.63	20.07	7.83	1375.84	915.25
*	6.360	55.00	2020.30	2015.80	2010.80	5300.00	2022.93	0.00	2024.07	34.06	10.18	1356.00	908.15
*	6.360	55.00	2020.30	2015.80	2010.80	5860.00	2022.75	0.00	2024.23	44.67	11.54	1270.05	876.80
*	6.360	55.00	2020.30	2015.80	2010.80	16200.00	2026.71	0.00	2028.45	55.14	15.51	4818.43	2181.60
*	6.500	755.00	0.00	0.00	2021.50	4100.00	2028.09	2028.09	2030.32	114.20	11.99	342.05	383.66
*	6.500	755.00	0.00	0.00	2021.50	5300.00	2028.98	2028.98	2031.53	112.16	12.80	413.95	500.45
*	6.500	755.00	0.00	0.00	2021.50	5860.00	2029.54	2029.54	2032.02	100.97	12.67	487.56	583.18
*	6.500	755.00	0.00	0.00	2021.50	16200.00	2034.07	2034.07	2035.51	43.01	11.82	5650.80	2470.07
	6.600	510.00	0.00	0.00	2035.50	4100.00	2037.65	2037.58	2038.19	208.79	7.34	1379.53	283.75
	6.600	510.00	0.00	0.00	2035.50	5300.00	2037.98	2037.81	2038.54	161.87	7.51	1850.94	416.57
	6.600	510.00	0.00	0.00	2035.50	5860.00	2038.07	2037.92	2038.68	164.08	7.83	1993.45	457.48
*	6.600	510.00	0.00	0.00	2035.50	16200.00	2039.37	2039.37	2040.51	160.58	11.26	4547.98	1278.39
	6.750	825.00	0.00	0.00	2040.10	4100.00	2044.53	0.00	2044.62	43.58	3.61	2041.64	621.04
	6.750	825.00	0.00	0.00	2040.10	5300.00	2044.73	0.00	2044.82	47.88	3.76	2382.68	765.92
	6.750	825.00	0.00	0.00	2040.10	5860.00	2044.83	0.00	2044.93	47.10	3.98	2559.36	853.85
	6.750	825.00	0.00	0.00	2040.10	16200.00	2046.17	0.00	2046.37	42.78	5.63	5260.11	2476.82

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*	6.830	410.00	0.00	0.00	2045.10	4100.00	2048.49	2048.49	2049.34	144.15	7.39	563.97	341.49
*	6.830	410.00	0.00	0.00	2045.10	5300.00	2048.93	2048.93	2049.76	114.86	7.40	807.75	494.52
*	6.830	410.00	0.00	0.00	2045.10	5860.00	2049.21	2049.21	2049.91	89.56	6.95	1058.53	619.21
*	6.830	410.00	0.00	0.00	2045.10	16200.00	2050.55	2050.55	2051.41	81.15	8.76	3387.85	1798.25
	6.870	205.00	0.00	0.00	2043.70	4100.00	2051.12	0.00	2051.85	101.56	7.44	633.96	406.83
	6.870	205.00	0.00	0.00	2043.70	5300.00	2051.37	2051.32	2052.35	128.51	8.61	729.96	467.56
*	6.870	205.00	0.00	0.00	2043.70	5860.00	2051.61	2051.61	2052.53	117.22	8.46	863.42	541.24
	6.870	205.00	0.00	0.00	2043.70	17500.00	2052.74	2052.72	2053.41	107.35	9.12	3172.99	1689.01

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	7.160	1520.00	0.00	0.00	2056.60	4100.00	2062.66	0.00	2062.93	54.46	4.18	981.04	555.57
	7.160	1520.00	0.00	0.00	2056.60	5300.00	2063.20	0.00	2063.49	46.90	4.33	1223.01	773.93
	7.160	1520.00	0.00	0.00	2056.60	5860.00	2063.33	0.00	2063.65	49.65	4.57	1284.58	831.65
	7.160	1520.00	0.00	0.00	2056.60	17500.00	2065.40	0.00	2066.15	68.01	7.09	2570.75	2121.96
	7.350	1035.00	0.00	0.00	2065.20	4100.00	2070.32	0.00	2071.06	117.64	7.26	636.27	378.01
*	7.350	1035.00	0.00	0.00	2065.20	5300.00	2070.58	2070.58	2071.51	129.94	8.21	735.71	464.94
*	7.350	1035.00	0.00	0.00	2065.20	5860.00	2070.78	2070.78	2071.71	118.66	8.26	815.81	537.96
*	7.350	1035.00	0.00	0.00	2065.20	17500.00	2073.39	2073.39	2074.31	60.91	9.28	2856.94	2242.24
*	7.380	150.00	0.00	0.00	2073.70	4100.00	2075.42	2075.42	2075.82	101.00	8.58	1298.38	407.97
*	7.380	150.00	0.00	0.00	2073.70	5300.00	2075.59	2075.59	2076.04	104.25	9.29	1571.41	518.96
*	7.380	150.00	0.00	0.00	2073.70	5860.00	2075.68	2075.68	2076.12	101.89	9.46	1717.48	580.56
*	7.380	150.00	0.00	0.00	2073.70	19500.00	2076.66	2076.66	2077.27	112.85	13.03	4660.12	1835.61

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.570	6000.00	1959.59	0.00	0.00	0.01	55.17	0.00
	5.570	7300.00	1960.70	1.11	0.00	0.00	56.61	0.00
*	5.570	8860.00	1961.77	1.07	0.00	0.07	58.28	0.00
*	5.570	22500.00	1970.86	9.09	0.00	0.16	1698.41	0.00
*	5.820	6000.00	1975.72	0.00	16.14	0.00	85.86	1310.00
*	5.820	7300.00	1976.55	0.83	15.65	0.00	88.93	1310.00
*	5.820	8860.00	1977.38	0.83	15.61	0.00	91.83	1310.00
*	5.820	22500.00	1983.37	5.99	12.52	0.00	224.36	1310.00
*	5.850	6000.00	1986.08	0.00	10.36	0.00	35.00	170.00
*	5.850	7300.00	1987.21	1.12	10.65	0.00	276.12	170.00
*	5.850	8860.00	1987.03	-0.18	9.64	0.00	234.23	170.00
*	5.850	22500.00	1993.36	6.33	9.98	0.00	1425.61	170.00
*	5.870	6000.00	1990.30	0.00	4.22	0.00	676.49	85.00
*	5.870	7300.00	1989.01	-1.30	1.80	0.00	521.76	85.00
*	5.870	8860.00	1988.42	-0.58	1.39	0.00	441.68	85.00
*	5.870	22500.00	1993.89	5.46	0.53	0.00	1428.20	85.00
	5.930	6000.00	1990.47	0.00	0.17	0.00	103.23	330.00
	5.930	7300.00	1989.54	-0.94	0.53	0.00	97.92	330.00
	5.930	8860.00	1989.82	0.28	1.40	0.00	99.48	330.00
*	5.930	22500.00	1994.95	5.13	1.06	0.00	361.55	330.00
*	6.080	6000.00	1994.56	0.00	4.09	0.00	79.31	788.00

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*	6.080	7300.00	1995.42	0.86	5.88	0.00	82.68	780.00
*	6.080	8860.00	1996.35	0.93	6.53	0.00	86.31	780.00
*	6.080	22500.00	2002.56	6.21	7.62	0.00	178.96	780.00
*	6.100	6000.00	1996.82	0.00	2.26	0.00	161.69	100.00
*	6.100	7300.00	1997.81	0.99	2.39	0.00	175.82	100.00
*	6.100	8860.00	1998.89	1.08	2.54	0.00	191.27	100.00
*	6.100	22500.00	2006.26	7.37	3.70	0.00	307.40	100.00
*	6.110	6000.00	2002.54	0.00	5.72	0.00	240.42	75.00
*	6.110	7300.00	2003.18	0.64	5.37	0.00	250.59	75.00
*	6.110	8860.00	2003.87	0.68	4.98	0.00	261.48	75.00
*	6.110	22500.00	2012.00	8.14	5.74	0.00	1259.84	75.00
	6.180	6000.00	2002.69	0.00	0.14	0.00	171.01	365.00
	6.180	7300.00	2003.47	0.78	0.29	0.00	176.73	365.00
	6.180	8860.00	2004.28	0.81	0.41	0.00	182.67	365.00
	6.180	22500.00	2012.13	7.85	0.13	0.00	795.93	365.00

	SECNO	Q	CHSEL	DIFWSP	DIFHSX	DIFKWS	TOPMID	XLCH
*	6.310	4100.00	2017.61	0.00	14.92	0.00	83.18	710.00
*	6.310	5300.00	2018.50	0.89	15.03	0.00	97.01	710.00
*	6.310	5860.00	2018.88	0.39	14.61	0.00	102.99	710.00
*	6.310	16200.00	2024.73	5.84	12.59	0.00	949.91	710.00
	6.350	4100.00	2019.85	0.00	2.24	0.00	147.40	170.00
	6.350	5300.00	2020.57	0.72	2.07	0.00	174.25	170.00
	6.350	5860.00	2020.84	0.26	1.95	0.00	185.73	170.00
	6.350	16200.00	2026.46	5.63	1.74	0.00	127 .79	170.00
*	6.360	4100.00	2022.96	0.00	3.12	0.00	522.00	55.00
*	6.360	5300.00	2022.93	-0.03	2.36	0.00	513.28	55.00
*	6.360	5860.00	2022.75	-0.18	1.92	0.00	473.65	55.00
*	6.360	16200.00	2026.71	3.96	0.25	0.00	1270.71	55.00
*	6.500	4100.00	2028.09	0.00	5.13	0.00	77.77	755.00
*	6.500	5300.00	2028.98	0.89	6.05	0.00	83.97	755.00
*	6.500	5860.00	2029.54	0.56	6.78	0.00	184.32	755.00
*	6.500	16200.00	2034.07	4.54	1.36	0.00	2234.88	755.00
	6.600	4100.00	2037.65	0.00	5.56	0.00	1294.45	510.00
	6.600	5300.00	2037.98	0.33	5.00	0.00	1552.77	510.00
	6.600	5860.00	2038.07	0.10	6.54	0.00	1607.47	510.00
*	6.600	16200.00	2039.37	1.29	5.29	0.00	2361.92	510.00
	6.750	4100.00	2044.53	0.00	6.89	0.00	1756.98	825.00
	6.750	5300.00	2044.73	0.19	6.75	0.00	1812.44	825.00
	6.750	5860.00	2044.83	0.10	6.76	0.00	1828.80	825.00
	6.750	16200.00	2046.17	1.34	6.80	0.00	2370.15	825.00
*	6.830	4100.00	2048.49	0.00	3.96	0.00	422.36	410.00
*	6.830	5300.00	2048.93	0.44	4.20	0.00	700.33	410.00
*	6.830	5860.00	2049.21	0.28	4.38	0.00	1147.74	410.00
*	6.830	16200.00	2050.55	1.34	4.38	0.00	2358.83	410.00
	6.870	4100.00	2051.12	0.00	2.63	0.00	320.98	205.00
	6.870	5300.00	2051.37	0.25	2.44	0.25	466.97	205.00
*	6.870	5860.00	2051.61	0.24	2.40	0.45	614.85	205.00
	6.870	17500.00	2052.74	1.13	2.19	0.00	2257.44	205.00
	7.160	4100.00	2062.66	0.00	11.55	0.00	436.15	1520.00
	7.160	5300.00	2063.20	0.54	11.83	0.54	460.32	1520.00
	7.160	5860.00	2063.33	0.13	11.72	0.67	488.20	1520.00

	7.160	17500.00	2065.40	2.07	12.66	0.00	704.97	1520.00
	7.350	4100.00	2070.32	0.00	7.66	0.00	370.15	1035.00
*	7.350	5300.00	2071.58	0.26	7.39	0.26	391.12	1035.00
*	7.350	5360.00	2070.78	0.20	7.46	0.46	407.23	1035.00
*	7.350	17500.00	2073.39	2.61	7.99	0.00	1648.11	1035.00

	SECNO	Q	CHSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	7.380	4100.00	2075.42	0.00	5.09	0.00	1530.94	150.00
*	7.380	5300.00	2075.59	0.17	5.01	0.17	1597.85	150.00
*	7.380	5860.00	2075.68	0.08	4.89	0.26	1876.41	150.00
*	7.380	19500.00	2076.66	0.99	3.27	0.00	3200.00	150.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 5.570 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 5.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.850 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.870 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.870 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 5.930 PROFILE= 4 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 5.930 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.930 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 6.080 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.080 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.080 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.080 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.080 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.080 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.080 PROFILE= 3 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 6.080 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.080 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.080 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.080 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.080 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 6.100 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.100 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.100 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.100 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.100 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.100 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.100 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.100 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.100 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.100 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.100 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.100 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 6.110 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.110 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.110 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.110 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 6.310 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.310 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.310 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.310 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.310 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.310 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.310 PROFILE= 3 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 6.310 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.310 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.310 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.310 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 6.360 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.360 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.360 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 6.360 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 6.360 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.360 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 6.500 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.500 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.500 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.500 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.500 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6.500 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.500 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6.500 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.500 PROFILE= 4 MINIMUM SPECIFIC ENERGY

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 CAUTION  SECNO=    6.600  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.600  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    6.830  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    6.830  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=    6.870  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.870  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.350  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.380  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```



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 ********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ********************************************


EOF..
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1*********************************************
*  WATER SURFACE PROFILES                     *
*  VERSION OF NOVEMBER 1976                   *
*  UPDATED AUGUST 1983                        *
*                                             *
*  RUN DATE  27-APR-88 TIME   00:26:55        *
*********************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER*
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
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Reach 3

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX  XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX  XXXXX              XXXXXXX
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27-APR-88 00:26:56

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*********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*********************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 1075/87
T3      FLAMINGO WASH  REACH 3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.        2.        0.        0.  0.000000      0.00      0.0       0.  1955.580     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
GT      4.000  6000.000  7300.000  8860.000 22500.000     0.000     0.000     0.000     0.000     0.000
          ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS      ####
          ####            CENTERLINE =  2030                                ####
          ####  NEAR ALGONQUIN DRIVE ALIGNMENT                              ####
X1      5.570    16.000  2002.000  2059.000  1320.000  1320.000  1320.000     0.000     0.000     0.000
GR   1976.000   970.000  1972.000  1240.000  1972.000  1240.000  1972.000  1240.000  1968.000  1710.000
GR   1964.000  2000.000  1961.000  2002.000  1951.720  2008.000  1951.720  2053.000  1961.000  2059.000
GR   1964.000  2062.000  1967.500  2250.000  1965.800  2870.000  1968.000  2980.000  1972.000  3110.000
GR   1976.000  3350.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.140     0.180     0.025     0.100     0.300     0.000     0.000     0.000     0.000     0.000
          ####            CENTERLINE =  2450                                ####
X1      5.820    15.000  2389.300  2488.000  1310.000  1310.000  1310.000     0.000     0.000     0.000
GR   1996.000  1150.000  1992.000  1350.000  1992.000  1350.000  1992.000  1350.000  1988.500  1520.000
GR   1986.100  2000.000  1982.200  2389.000  1976.500  2407.000  1969.600  2451.000  1968.800  2459.000
```

GR	1967.900	2468.000	1977.200	2488.000	1987.700	2502.000	1989.600	2846.000	1996.000	3170.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE
CENTERLINE = 10000

X1	5.850	12.000	9985.000	10020.000	170.000	170.000	170.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1987.000	1987.000	0.000
X4	1.000	1992.000	8940.000	1991.000	9030.000	0.000	0.000	0.000	0.000	0.000
GR	1996.000	8740.000	1990.000	9075.000	1990.000	9450.000	1988.000	9600.000	1987.000	9830.000
GR	1980.000	9940.000	1976.500	9985.000	1976.500	10020.000	1978.000	10040.000	1988.000	10060.000
GR	1992.000	10240.000	1996.000	10410.000	0.000	0.000	0.000	0.000	0.000	0.000

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SB	1.250	1.560	2.630	0.000	34.500	9.500	250.000	0.000	1977.000	1976.500

REPEAT OF X-5.85

X1	5.870	0.000	0.000	0.000	85.000	85.000	85.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	1987.000	1988.200	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1988.200	1988.200	0.000
BT	10.000	2000.000	1991.400	0.000	2100.000	1990.600	0.000	2280.000	1991.300	0.000
BT	2430.000	1989.500	0.000	2600.000	1988.700	0.000	2935.000	1988.500	1987.000	2973.500
BT	1988.500	1987.000	3130.000	1990.700	0.000	3300.000	1994.200	0.000	3470.000	1998.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2465

X1	5.930	12.000	2400.000	2520.000	330.000	330.000	330.000	0.000	0.000	0.000
GR	2000.000	2000.000	1999.500	2050.000	1999.500	2150.000	1996.000	2270.000	1995.000	2400.000
GR	1984.000	2430.000	1980.000	2455.000	1980.000	2485.000	1992.000	2520.000	1992.000	2570.000
GR	1996.000	2830.000	2000.000	2920.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2300

X1	6.080	14.000	2244.000	2355.000	780.000	780.000	780.000	0.000	0.000	0.000
GR	2011.000	1600.000	2008.000	1740.000	2004.000	2080.000	2002.800	2244.000	1588.000	2275.000
GR	1985.900	2287.000	1985.900	2296.000	1989.400	2305.000	1989.000	2319.000	1989.200	2331.000
GR	1993.700	2339.000	2002.500	2355.000	2002.000	2377.000	2012.000	3200.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

CAMBRIDGE STREET
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2165

X1	6.100	10.000	2136.700	2173.500	50.000	210.000	100.000	0.000	-0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1996.500	1996.500	0.000
X4	2.000	2008.000	1600.000	2008.000	2000.000	0.000	0.000	0.000	0.000	0.000
GR	2010.000	1400.000	2000.000	2050.000	1989.500	2130.000	1989.000	2136.000	1989.000	2173.500
GR	1989.500	2180.000	2000.000	2250.000	2008.000	2330.000	2008.000	2550.000	2012.000	2660.000
SB	1.250	1.560	2.630	0.000	33.500	9.750	168.000	0.000	1989.500	1989.000
NC	0.160	0.060	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

REPEAT OF X-6.10

X1	6.110	0.000	0.000	0.000	75.000	75.000	75.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	1996.500	1999.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1999.500	1999.500	0.000
BT	6.000	0.000	2008.000	0.000	50.000	2000.000	0.000	120.000	1999.700	0.000
BT	190.000	1999.400	0.000	250.000	2000.000	0.000	330.000	2008.000	0.000	0.000
NC	0.000	0.000	0.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2670
CONFLUENCE WITH TROPICANA WASH. L/S BREAKOUT FLOWS RETURN.

X1	6.180	21.000	2534.000	2754.000	400.000	270.000	365.000	0.000	0.000	0.000
GR	2016.000	1500.000	2012.200	1970.000	2012.000	2140.000	2012.000	2140.000	2012.000	2140.000

Continuous Interfolded © Moore Business Forms, Inc.

GR	2012.000	2140.000	2012.000	2140.000	2009.700	2534.000	2002.500	2574.000	2002.400	2633.000
GR	1995.600	2659.000	1995.100	2677.000	1999.000	2700.000	1994.900	2730.000	2008.300	2754.000
GR	2011.300	2769.000	2011.700	2810.000	2014.600	2890.000	2016.200	3018.000	2015.100	3268.000
GR	2019.500	3422.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

GT	4.000	4100.000	5300.000	5860.000	16200.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.045	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####		CENTERLINE =	2300			####			
X1	6.310	17.000	2263.000	2343.000	745.000	685.000	710.000	0.000	0.000	0.000
GR	2025.200	1450.000	2025.200	1450.000	2025.200	1450.000	2025.200	1450.000	2024.000	1600.000
GR	2022.000	2080.000	2022.500	2246.000	2017.400	2263.000	2012.900	2280.000	2010.800	2306.000
GR	2012.400	2322.000	2017.400	2343.000	2021.100	2388.000	2023.600	2430.000	2025.100	2469.000
GR	2026.000	2499.000	2025.800	2581.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.16	0.160	0.045	0.300	0.500	0.000	0.000	0.000	0.000	0.000

```
##########################################################################
####                    SWENSON STREET                                ####
####              SPECIAL BRIDGE ROUTINE                              ####
##########################################################################
####  CENTERLINE = 2300                                                 ####
```

X1	6.350	11.000	2260.000	2290.000	50.000	210.000	170.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2015.800	2015.800	0.000
X4	1.000	2025.200	1450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2025.500	1200.000	2024.000	1600.000	2022.000	2000.000	2022.000	2180.000	2020.000	2210.000
GR	2010.300	2260.000	2010.300	2290.000	2016.000	2310.000	2020.000	2360.000	2024.000	2470.000
GR	2426.000	2600.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.562	2.630	0.000	29.500	9.000	103.100	0.000	2010.800	2010.300
	####	REPEAT OF X-6.35					####			
X1	6.360	0.000	0.000	0.000	55.000	55.000	55.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	2015.800	2020.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2020.300	2020.300	0.000
BT	8.000	2000.000	2025.200	0.000	2250.000	2023.800	0.000	2430.000	2023.700	0.000
BT	2660.000	2022.800	0.000	2810.000	2020.300	2015.800	2841.500	2020.300	2015.800	2990.000
BT	2023.300	0.000	3150.000	2027.100	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		CENTERLINE =	2380			####			
X1	6.500	16.000	2331.000	2431.000	780.000	700.000	755.000	0.000	0.000	0.000
GR	2036.000	250.000	2032.000	1160.000	2029.000	1550.000	2029.000	1550.000	2030.000	1600.000
GR	2032.100	2003.000	2033.200	2194.000	2032.600	2331.000	2022.200	2353.000	2021.500	2373.000
GR	2023.600	2397.000	2027.000	2413.000	2030.700	2431.000	2032.300	2593.000	2031.500	2762.000
GR	2034.500	2950.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.120	0.035	0.100	0.300	0.000	0.000	0.000	0.000	0.000

```
##########################################################################
####                    PALOS VERDE STREET                            ####
####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
##########################################################################
```

X1	6.600	7.000	9920.000	10190.000	510.000	510.000	510.000	0.000	0.000	0.000
X4	1.000	2038.000	10300.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2040.000	7720.000	2036.000	9740.000	2035.500	9920.000	2035.700	10000.000	2037.600	10190.000
GR	2039.300	10360.000	2039.800	10670.000	0.000	0.000	0.000	0.000	0.000	0.000

NH	4.000	0.180	1400.100	0.060	2533.000	0.035	2807.000	0.060	3412.000	0.000
	####		CENTERLINE =	2700			####			
X1	6.750	23.000	2584.000	2807.000	740.000	800.000	825.000	0.000	0.000	0.000
X4	1.000	2043.000	1400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
GR     2048.000     570.000     2044.000     1090.000     2042.700     1660.000     2044.200     2280.000     2044.200     2280.000
GR     2044.200    2280.000     2044.200     2280.000     2043.200     2533.000     2042.300     2578.000     2044.300     2584.000
GR     2043.600    2627.000     2041.900     2677.000     2040.300     2687.000     2040.100     2697.000     2040.300     2708.000
GR     2042.900    2715.000     2044.300     2735.000     2044.700     2807.000     2046.800     2888.000     2047.500     2969.000
GR     2046.400    3019.000     2045.600     3060.000     2046.300     3412.900        0.000        0.000        0.000        0.000

NC        0.080       0.060        0.035        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ##########################################################################
          ####                    PARADISE ROAD                                 ####
          ####   THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
          ####   DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS          ####
          ####   BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED        ####
          ####   DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)     ####
          ##########################################################################
X1        6.830       11.000     9800.000    10170.000      500.000      350.000      410.000        0.000        0.000        0.000
GR     2052.000     7780.000     2049.000     8930.000     2050.600     9450.000     2051.000     9600.000     2049.700     9800.000
GR     2045.100    10000.000     2048.300    10170.000     2049.200    10370.000     2048.900    10600.000     2048.300    10750.000
GR     2052.000    11050.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000

GT        4.000        0.000        0.000        0.000    17500.000        0.000        0.000        0.000        0.000        0.000
ET        0.000        6.100        6.100        6.100        0.000     -150.000     2550.000        0.000        0.000        0.000
NC        0.045        0.045        0.045        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ####              CENTERLINE =   2280                                 ####
X1        6.870       23.000     2160.000     2308.000      160.000      240.000      205.000        0.000        0.000        0.000
X2        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000       15.000
GR     2056.000     -150.000     2053.000      520.000     2054.000      930.000     2051.000     1240.000     2052.300     1390.000
GR     2051.000     1720.000     2051.000     1720.000     2051.000     1720.000     2051.000     1720.000     2051.000     1720.000
GR     2053.500     2000.000     2052.600     2160.000     2048.900     2214.000     2048.900     2253.000     2044.600     2266.000
GR     2043.700     2293.000     2050.200     2308.000     2048.600     2319.000     2050.500     2435.000     2050.000     2627.000
GR     2052.000     2747.000     2052.000     3030.000     2052.000     3540.000        0.000        0.000        0.000        0.000

NC        0.045        0.045        0.045        0.100        0.300        0.000        0.000        0.000        0.000        0.000
          ####              CENTERLINE =   3550                                 ####
          ####   500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.         ####
X1        7.160       39.000     3299.000     3869.000     1415.000     1515.000     1520.000        0.000        0.000        0.000
X3        0.000        0.000        0.000     3126.000        0.000        0.000        0.000        0.000        0.000        0.000
GR     2060.100     2000.000     2060.900     2339.000     2061.800     2562.000     2063.800     2660.000     2061.600     2688.000
GR     2064.400     2889.000     2060.800     2920.000     2060.800     3015.000     2066.700     3034.000     2069.600     3126.000
GR     2063.200     3168.000     2063.500     3218.000     2064.900     3299.000     2063.800     3355.000     2061.600     3378.000
GR     2060.400     3393.000     2060.400     3429.000     2060.600     3480.000     2058.700     3510.000     2057.700     3532.000
GR     2056.700     3554.000     2055.600     3582.000     2058.000     3565.000     2060.200     3588.000     2060.000     3614.000
GR     2060.900     3628.000     2061.800     3673.000     2060.600     3714.000     2061.600     3754.000     2062.700     3805.000
GR     2063.600     3835.000     2066.200     3869.000     2065.500     3900.000     2065.500     3941.000     2066.800     3992.000
GR     2070.100     4068.000     2071.700     4137.000     2069.600     4263.000     2067.600     4440.000        0.000        0.000
1
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NC        0.000        0.000        0.038        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ####              CENTERLINE =   2290                                 ####
X1        7.350       12.000     2201.000     2416.000     1040.000     1040.000     1035.000        0.000        0.000        0.000
X4        1.000     2072.600     2000.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000
GR     2072.600     1300.000     2068.300     2127.000     2069.300     2165.000     2069.600     2201.000     2068.100     2233.000
GR     2065.800     2252.000     2065.200     2282.000     2068.700     2320.000     2069.900     2416.000     2072.600     2553.000
GR     2073.200     2899.000     2074.700     3288.000        0.000        0.000        0.000        0.000        0.000        0.000

GT        4.000     4100.000     5300.000     5860.000    19500.000        0.000        0.000        0.000        0.000        0.000
NC        0.060        0.060        0.025        0.100        0.300        0.000        0.000        0.000        0.000        0.000
          ##########################################################################
          ####                    KOVAL LANE                                    ####
          ####   THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
          ####   DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS          ####
          ####   BEEN MODELED AS A REGULAR GROUND SECTION.                      ####
          ####   FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW Q600       ####
          ####   THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN           ####
          ####   THRU CAESARS/IMPERIAL AREA - LVWFLBOL                          ####
          ##########################################################################
```

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X1	7.380	11.000	2495.000	2575.000	150.000	150.000	150.000	0.000	0.000	0.000	
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000	
X4	2.000	2074.700	1850.000	2075.200	2000.000	0.000	0.000	0.000	0.000	0.000	
GR	2075.100	1650.000	2074.800	2200.000	2074.000	2360.000	2073.700	2495.000	2073.700	2575.000	
GR	2073.800	2701.000	2074.400	2790.000	2075.600	3250.000	2075.700	3600.000	2075.800	4050.000	
GR	2076.000	4850.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS
CENTERLINE = 2030
NEAR ALGONQUIN DRIVE ALIGNMENT

5.57	7.87	1959.59	1959.59	1959.58	1963.19	3.60	0.00	0.00	1961.00
6000.	0.	6000.	0.	0.	394.	0.	0.	0.	1961.00
0.00	0.00	15.23	0.00	0.140	0.025	0.180	0.000	1951.72	2002.91
0.005786	1320.	1320.	1320.	0	4	0	0.00	55.17	2058.09

0
CCHV= 0.100 CEHV= 0.300
*SECNO 5.620

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2450

5.82	7.82	1975.72	1975.72	0.00	1978.42	2.70	7.46	0.09	1982.20
6000.	0.	6000.	0.	0.	455.	0.	13.	2.	1977.20
0.03	0.00	13.19	0.00	0.140	0.025	0.180	0.000	1967.90	2398.97
0.005611	1310.	1310.	1310.	20	5	0	0.00	85.86	2484.82

0
CCHV= 0.300 CEHV= 0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1987.00 ELREA= 1987.00

MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE

1

CENTERLINE = 10000

5.85	9.58	1986.08	1986.08	0.00	1991.05	4.97	0.85	1.13	1976.50
6000.	0.	6000.	0.	0.	335.	0.	14.	2.	1976.50
0.03	0.00	17.89	0.00	0.140	0.025	0.180	0.000	1976.50	9985.00
0.004449	170.	170.	170.	20	14	0	0.00	35.00	10020.00

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1982.98 ,NOT 1986.08 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
PRESS FLOW BECAUSE EGLWC OF 2000.41 EXCEEDS 1.5 DEPTH
6870 D.S. ENERGY OF 1991.05 HIGHER THAN COMPUTED ENERGY OF 1990.18

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2000.04	2000.41	0.00	2751.	3252.	250.	250.	1987.00	1988.20

	####	REPEAT OF X-5.85							####	
5.87	13.30	1999.30	0.00	0.00	1991.05	0.75	.00	0.00	1977.00	
6000.	1640.	3965.	395.	1865.	466.	460.	17.	3.	1977.00	
0.03	0.38	8.52	0.86	0.140	0.025	0.180	0.000	1977.00	5464.69	
0.000651	85.	85.	85.	2	0	6	0.00	676.49	10141.18	

*SECNO 5.930

	####	CENTERLINE = 2465								
5.93	10.47	1990.47	0.00	0.00	1991.49	1.01	0.30	0.13	1995.00	
6000.	0.	6000.	0.	0.	744.	0.	31.	6.	1992.00	
0.05	0.00	8.07	0.01	0.140	0.025	0.180	0.000	1980.00	2412.33	
0.001379	330.	330.	330.	2	0	0	0.00	103.22	2515.56	

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

	####	CENTERLINE = 2390							####	
6.08	8.66	1994.56	1994.56	0.00	1997.41	2.85	1.92	0.55	2002.80	
6000.	0.	6000.	0.	0.	443.	0.	41.	8.	2002.50	
0.06	0.00	13.55	0.00	0.140	0.025	0.180	0.000	1985.50	2261.26	
0.005581	780.	780.	780.	20	15	0	0.00	79.31	2340.57	

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##################################################################
          ####                    CAMBRIDGE STREET                      ####
          ####                SPECIAL BRIDGE ROUTINE                    ####
          ##################################################################
          ####  CENTERLINE = 2165                                         ####
     6.10      8.32  1996.82  1996.82      0.00   2000.28      3.46      0.50      0.31   1988.50
     6000.      543.     5066.      391.      281.      312.      256.       43.       8.   1988.50
      0.06     1.93     16.24     1.53     0.140     0.025     0.180     0.000   1988.50   2070.43
 0.004428      50.      100.      210.        20         8         0      0.00    161.69   2232.12

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1995.52 ,NOT   1996.82 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR       COFG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.63       0.00      33.50       9.75     168.00      0.00    1989.50    1989.00

 *SECNO 6.110

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS     BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


  EGPRS       EGLWC        H3        QWEIR       QPR        BAREA   TRAPEZOID      ELLC       ELTRD
                                                                        AREA
  2027.72    2012.19       0.00      3360.      2680.       168.      166.      1996.50    1999.50

          ####  REPEAT OF X-6.10                                          ####
     6.11     13.54  2002.54      0.00      0.00   2002.98      0.44      2.70      0.00   1989.00
     6000.      753.     3417.     1831.      722.      508.      664.       45.       8.   1989.00
      0.07     1.04     6.73      2.76     0.160     0.035     0.060     0.000   1989.00   2035.03
 0.000777       75.      75.       75.         2         0         5      0.00    240.42   2275.45

 *SECNO 6.180

 3301 HV CHANGED MORE THAN HVINS

          ####            CENTERLINE =  2670                              ####
          ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.####
     6.18      7.79  2002.69      0.00      0.00   2004.25      1.56      0.70      0.56   2009.70
     6000.       0.      6000.        0.        0.      595.        0.       55.      10.   2008.30
      0.08     0.00     10.02     0.00     0.160     0.038     0.060     0.000   1994.90   2572.95
 0.012706      400.      365.      270.         3         0         0      0.00    171.01   2743.95

 CCHV=   0.100 CEHV=   0.300
 *SECNO 6.310

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####            CENTERLINE =  2300                              ####
     6.31      6.81  2017.61  2017.61      0.00   2019.81      2.20      5.26      0.19   2017.40
     4100.       0.      4100.        0.        0.      344.        0.       63.      12.   2017.40
```

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0.09	0.11	11.91	0.84	0.160	0.038	0.045	0.000	2010.80	2262.32
0.013546	745.	710.	685.	20	15	0	0.00	83.18	2345.49

0
CCHV= 0.300 CEHV= 0.500
*SECNO 6.350

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

##
SWENSON STREET
SPECIAL BRIDGE ROUTINE
##
CENTERLINE = 2300

6.35	9.55	2019.85	0.00	0.00	2021.39	1.54	1.38	0.20	2010.30
4100.	461.	3213.	426.	235.	287.	227.	65.	12.	2010.30
0.10	1.96	11.21	1.88	0.160	0.045	0.160	0.000	2010.30	2210.76
0.005686	50.	170.	210.	2	0	0	0.00	147.40	2358.16

0
SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2015.75 ,NOT 2019.85 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	29.50	9.00	103.10	0.00	2010.80	2010.30

*SECNO 6.360
3301 HV CHANGED MORE THAN HVINS
PRESSURE AND WEIR FLOW

EGRRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2058.16	2028.90	0.00	2815.	1289.	103.	103.	2015.80	2020.30

REPEAT OF X-6.35

6.36	12.16	2022.96	0.00	0.00	2023.63	0.67	2.24	0.00	2010.80
4100.	616.	2858.	627.	517.	365.	494.	66.	13.	2010.80
0.10	1.19	7.83	1.27	0.160	0.045	0.160	0.000	2010.80	1505.93
0.002007	55.	55.	55.	2	0	8	0.00	522.00	2427.93

0
*SECNO 6.500
3301 HV CHANGED MORE THAN HVINS

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TBA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                CENTERLINE =  2380                                  ####
      6.50       6.59  2028.09  2028.09       0.00  2030.32       2.23       3.00       0.78  2032.60
     4100.         0.     4100.       0.         0.      342.         0.       81.         18.   2030.70
      0.12       0.00    11.99       0.00     0.160    0.035      0.160    0.000    2021.50  2340.54
  0.011420       780.     755.      700.        20       11          0     0.00      77.77  2418.31
0
 CCHV=   0.100  CEHV=   0.300
 *SECNO 6.600

 3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                    PALOS VERDE STREET                            ####
          ####   THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
          ####   DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS          ####
          ####   BEEN MODELED AS A REGULAR GROUND SECTION.                      ####
          ##########################################################################
      6.60       2.15  2037.65  2037.58       0.00  2038.19       0.54       7.70       0.17  2035.50
     4100.      1569.     2591.       0.      1026.      353.         0.       91.         26.   2037.60
      0.15       1.47     7.34       0.15     0.160    0.035      0.120    0.000    2035.50  8508.40
  0.120879       510.     510.      510.         7       18          0     0.00    1254.45 10202.86
0
 1496 NH CARD USED
 *SECNO 6.750
          ####                CENTERLINE =  2700                                  ####
      6.75       4.43  2044.53       0.00       0.00  2044.62       0.09       6.39       0.05  2044.30
     4100.      3073.     1027.         0.      1758.      284.         0.      121.         52.   2044.70
      0.24       1.75     3.61       0.00     0.064    0.035      0.060    0.000    2040.10  1020.40
  0.004358       740.     825.      800.         8          0          0     0.00    1756.58  2777.37
0
 *SECNO 6.830

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

1
 27-APR-88     00:26:56                                                                    PAGE   12

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      ANL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COPAR     TOPWID      ENDST

 7165 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    PARADISE ROAD                                 ####
          ####   THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
          ####   DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS          ####
          ####   BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED        ####
          ####   DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)     ####
          ##########################################################################
      6.63       3.39  2048.49  2048.49       0.00  2049.24       0.85       3.22       0.23  2049.70
     4100.         0.     4094.       6.         0.      554.        10.      135.         64.   2048.30
      0.26       0.00     7.39       0.62     0.080    0.035      0.060    0.000    2045.10  9652.62
  0.014415       510.     410.      350.         1         19          0     0.00     422.36 10765.38
0
 *SECNO 6.870

 3265 DIVIDED FLOW
```

```
          ####                CENTERLINE =   2280                                  ####
     6.87      7.42  2051.12       0.00        0.00   2051.85       0.74       2.51       0.01   2052.60
     4100.        2.     3197.       901.          4.      430.       200.       138.        66.    2050.20
     0.27       0.50     7.44       4.50       0.045     0.045      0.045      0.000   2043.70   1228.04
 0.010156       150.      205.       240.           2         0          0       0.00    320.98   2435.00
0
 FLOW DISTRIBUTION FOR SECNO=      6.87          CWSEL=   2051.12

 STA=    1228.    1253.    1720.    1733.    2308.    2319.    2435.
   PER Q=     0.       0.       0.     78.0      2.2     19.8
    AREA=     1.5      1.7      0.7    429.6     18.9    181.6
     VEL=     0.5      0.5      0.5      7.4      4.7      4.5

 CCHV=   0.100 CEHV=   0.300
 *SECNO 7.160

 3470 ENCROACHMENT STATIONS=    3126.0     4440.0  TYPE=     1  TARGET=   -3126.000
          ####                CENTERLINE =   3550                                  ####
          ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.            ####
     7.16      6.16  2062.66       0.00        0.00   2062.93       0.27      11.03       0.05   2064.90
     4100.        0.     4100.        0.          0.      981.         0.       166.        79.    2066.20
     0.37       0.00     4.18       0.00       0.045     0.045      0.045      0.000   2056.60   3366.93
 0.005446      1415.     1520.     1515.           5         0          0       0.00    436.15   3803.09
0
1
 27-APR-88    00:26:56                                                                          PAGE   13

    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 7.350
          ####                CENTERLINE =   2290                                  ####
     7.35      5.13  2070.32       0.00        0.00   2071.06       0.73       7.99       0.14   2069.60
     4100.      594.     3500.        6.         150.      482.         5.      185.        89.    2069.90
     0.41       3.97     7.26       1.27       0.045     0.038      0.045      0.000   2065.20   2067.27
 0.011764      1040.     1035.     1040.           3         0          0       0.00    370.15   2437.43
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 7.380
 3280 CROSS SECTION       7.38 EXTENDED       0.32 FEET

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      KOVAL LANE                                  ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
          ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FM Q500         ####
          ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN             ####\
          ##########################################################################
     7.38      1.72  2075.42  2075.42       0.00   2075.82       0.40       1.63       0.03   2073.70
     4100.     1514.     1180.     1406.        634.      138.        527.      189.        92.    2073.70
     0.42       2.39     8.58       2.67       0.060     0.025      0.060      0.000   2073.70   1650.00
 0.010100       150.      150.      150.           20        23          0       0.00   1530.94   3180.94
0
 FLOW DISTRIBUTION FOR SECNO=      7.38          CWSEL=   2075.42

 STA=    1650.    1850.    2000.    2200.    2360.    2495.    2575.    2701.    2750.    3181.
   PER Q=     4.1      2.6      2.9     10.0     17.4     28.8     16.0      8.6      7.7
    AREA=   104.0     70.5     84.0    163.2    211.9    137.6    210.4    117.5    159.4
     VEL=     1.6      1.5      1.4      2.5      3.4      8.6      3.5      3.0      1.6
```

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**********************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
**********************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH  3  (ALGONQUIN DR. TO KOVAL LANE)

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.       3.         0.         0.   0.000000       0.00       0.0        0.    1960.700      0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
    2.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```



```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        AREA       LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 2

CCHV=   0.100  CEHV=    0.300
*SECNO 5.570
          ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS     ####
          ####              CENTERLINE =  2030                             ####
          ####  NEAR ALGONQUIN DRIVE ALIGNMENT                             ####
      5.57      8.98  1960.70  1960.63  1560.70  1564.68      3.98       0.00       0.00  1961.00
    7300.         0.     7300.        0.       0.      456.       0.         0.         0.  1961.00
      0.00       0.00     16.00       0.00     0.140    0.025     0.180      0.000  1951.72  2002.19
 0.005545     1320.     1320.     1320.        0         4          0       0.00      56.61  2058.81
0
CCHV=   0.100  CEHV=    0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM  SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2450                             ####
      5.82      8.65  1976.55  1976.55     0.00  1979.53      2.97       7.12       0.10  1982.20
    7300.         0.     7300.        0.       0.      528.       0.        15.         2.  1977.20
      0.03       0.00     13.84       0.00     0.140    0.025     0.180      0.000  1967.90  2397.69
 0.005333     1310.     1310.     1310.       20         8          0       0.00      88.93  2486.61
0
CCHV=   0.300  CEHV=    0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
```

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3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE
CENTERLINE = 10000

5.85	10.71	1987.21	1987.21	0.00	1989.60	2.39	0.60	0.17	1976.50	
7300.	1435.	5396.	468.	816.	375.	284.	19.	3.	1976.50	
0.03	1.76	14.40	1.65	0.140	0.025	0.180	0.000	1976.50	9782.30	
0.002466	170.	170.	170.	20	15	0	0.00	276.12	10058.42	

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SECNO	DEPTH	CWSEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWIC	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1983.89 ,NOT 1987.21 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2007.86	2000.40	0.00	4347.	2983.	250.	250.	1987.00	1988.20

REPEAT OF X-5.85

5.87	12.01	1989.01	0.00	0.00	1990.66	1.65	1.06	0.00	1977.00
7300.	1680.	5149.	471.	1257.	421.	342.	22.	4.	1977.00
0.03	1.34	12.24	1.38	0.140	0.025	0.180	0.000	1977.00	9561.40
0.001542	85.	85.	85.	3	0	6	0.00	521.76	10083.16

*SECNO 5.930

CENTERLINE = 2465

5.93	9.54	1989.54	0.00	0.00	1991.50	1.96	0.69	0.16	1995.00
7300.	0.	7300.	0.	0.	649.	0.	32.	6.	1992.00
0.04	0.00	11.25	0.00	0.140	0.025	0.180	0.000	1980.00	2414.90
0.002988	330.	330.	330.	2	0	0	0.00	97.92	2512.82

CCHW= 0.100 CEHW= 0.300
*SECNO 6.080

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2300

6.08	9.52	1995.42	1995.42	0.00	1998.57	3.15	3.06	0.36	2002.80
7300.	0.	7300.	0.	0.	512.	0.	43.	8.	2002.50
0.06	0.00	14.25	0.00	0.140	0.025	0.180	0.000	1985.90	2259.45
0.005385	780.	780.	780.	20	5	0	0.00	82.68	2342.13

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 1.500
*SECNO 6.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CAMBRIDGE STREET
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2165

6.10	9.51	1997.81	1997.81	0.00	2001.71	3.91	0.49	0.38	1988.50
7300.	719.	6066.	515.	350.	349.	317.	45.	8.	1988.50
0.06	2.05	17.38	1.62	0.140	0.025	0.180	0.000	1988.50	2062.89
0.004365	50.	100.	210.	20	6	0	0.00	175.82	2238.72

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1996.44 ,NOT 1997.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	168.00	0.00	1989.50	1989.00

*SECNO 6.110

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2043.54	2015.32	0.00	4677.	2628.	168.	166.	1996.50	1999.50

REPEAT OF X-6.10

6.11	14.18	2003.18	0.00	0.00	2003.74	0.55	2.02	0.00	1989.00
7300.	942.	4062.	2296.	788.	532.	732.	47.	8.	1989.00
0.06	1.19	7.64	3.14	0.161	0.035	0.060	0.000	1989.00	2031.26
0.000542	75.	75.	75.	2	0	6	0.00	250.59	2281.86

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

```
          ####              CENTERLINE =  2670                              ####
          ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.####
      6.18      8.57  2003.47       0.00       0.00  2005.00       1.54       0.78       0.49  2009.70
    7300.         0.     7300.         0.         0.     734.         0.       58.       10.    2008.30
      0.07      0.00       9.94       0.00       0.160     0.038      0.060     0.000  1994.50  2568.61
 0.0009963       400.      365.       270.          3         0          0      0.00   176.73  2745.35
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 6.310

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2300                              ####
      6.31      7.70  2018.50  2018.50       0.00  2021.00       2.50       7.63       0.29  2017.40
    5300.         1.     5281.        18.        2.     416.         7.       68.       12.    2017.40
      0.09      0.66      12.70       2.42       0.160     0.038      0.045     0.000  2010.80  2259.34
 0.011987       745.      710.       685.         20        11          0      0.00    97.01  2356.35
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 6.350
          ##########################################################################
          ####                      SWENSON STREET                              ####
          ####                 SPECIAL BRIDGE ROUTINE                           ####
          ##########################################################################
          ####  CENTERLINE = 2300                                          ####
      6.35     10.27  2020.57       0.00       0.00  2022.62       2.05       1.49       0.13  2010.30
    5300.       645.     4037.       618.       273.     308.       281.       70.       13.    2010.30
      0.09      2.36      13.10       2.20       0.160     0.045      0.160     0.000  2010.30  2201.44
 0.0007050        50.      170.       210.          3         0          0      0.00   174.25  2375.69
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
    6         QLOB      QCH       QROB      ALOB      ECH       ARCB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   2016.77 ,NOT   2020.57 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      COFG      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
       1.25      1.56      2.63      0.00     29.50      9.00    103.10      0.00   2010.80   2010.30

 *SECNO 6.360

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS     EGLWC     H3        QWEIR     QPR       EAREA   TRAPEZOID AREA     ELLC      ELTRD
  2084.59   2032.50      0.00      4069.     1238.      103.      103.      2015.80   2020.30

          ####  REPEAT OF X-6.35                                           ####
      6.36     12.13  2022.93       0.00       0.00  2024.07       1.14       1.45       0.00  2010.80
    5300.       790.     3704.       807.       503.     364.       489.       72.       13.    2010.80
      0.09      1.57      10.18       1.65       0.160     0.045      0.160     0.000  2010.80  1913.60
```

```
 0.003406      55.       55.       55.        3         0         8      0.00    513.28   2426.88
0
 *SECNO 6.500

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####              CENTERLINE =  2380                                  ####
     6.50      7.48  2028.98  2028.98      0.00   2031.53      2.55      4.26      0.70  2032.60
   5300.        0.     5300.        0.        0.       414.       3.       87.       18.  2030.70
     0.11      0.00     12.80     0.00     0.160     0.035     0.160     0.000  2021.50  2338.66
 0.011216      780.      755.      700.        20        14         0      0.00    83.57  2422.63
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 6.600
1
  27-APR-88     00:26:56                                                                    PAGE   20

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        GLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TBA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST


 3301 HV CHANGED MORE THAN HVINS

        ##########################################################################
        ####                    PALOS VERDE STREET                            ####
        ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
        ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
        ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
        ##########################################################################
     6.60      2.48  2037.98  2037.81      0.00   2038.54      0.56      6.81      0.20  2035.50
   5300.     1967.     3323.       13.     1389.       443.      20.       100.      28.  2037.60
     0.14      1.42      7.51      0.52     0.160     0.035     0.120     0.000  2035.50  8741.16
 0.016187      510.      510.      510.        13        17         0      0.00  1552.77 10293.92
0
 1490 NH CARD USED
 *SECNO 6.750
        ####              CENTERLINE =  2703                                  ####
     6.75      4.63  2044.73      0.00      0.00   2044.82      0.10      6.24      0.05  2044.30
   5300.     4080.     1220.        0.      2058.       324.      0.       137.       57.  2044.70
     0.23      1.98      3.76      0.02     0.065     0.035     0.060     0.000  2040.10   995.58
 0.004788      740.      825.      800.         6         0         0      0.00  1812.44  2808.02
0
 *SECNO 6.830

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 372  CRITICAL DEPTH ASSUMED
        ##########################################################################
        ####                    PARADISE ROAD                                 ####
        ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
        ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
        ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED          ####
        ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN)       ####
        ##########################################################################
     6.83      3.83  2048.93  2048.93      0.00   2049.76      0.83      3.14      0.22  2049.70
   5300.        0.     5164.      136.        0.      698.      110.      154.       76.  2048.30
     0.24      0.00      7.40      1.24     0.080     0.035     0.060     0.000  2045.10  9833.49
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.870

3265 DIVIDED FLOW

	####	CENTERLINE =	2280					####	
	6.87	7.67	2051.37	2051.32	2051.12	2052.35	0.98	2.54	0.05	2052.60
	5300.	45.	3969.	1286.	38.	461.	231.	157.	73.	2050.20
	0.25	1.19	8.61	5.56	0.045	0.045	0.045	0.000	2043.70	1202.86
	0.012851	160.	205.	240.	3	11	0	0.00	466.97	2435.00

FLOW DISTRIBUTION FOR SECNO= 6.87 CWSEL= 2051.37

STA=	1203.	1240.	1281.	1720.	1760.	2308.	2319.	2435.
PER Q=	0.2	0.2	0.4	0.2	74.9	2.4	21.9	
AREA=	6.7	7.5	16.4	7.2	463.8	21.6	209.9	
VEL=	1.2	1.2	1.2	1.2	8.6	8.8	8.5	

CCHV= 0.100 CEHV= 0.300
*SECNO 7.160

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 3126.0 4440.0 TYPE= 1 TARGET= -3126.000

	####	CENTERLINE =	3550					####	
	####	500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.						####	
	7.16	6.60	2063.20	0.00	2062.66	2063.49	0.29	11.07	0.07	2064.90
	5300.	0.	5300.	0.	0.	1223.	0.	191.	89.	2066.20
	0.35	0.00	4.33	0.00	0.045	0.045	0.045	0.000	2056.60	3361.29
	0.004650	1415.	1520.	1515.	5	0	0	0.00	460.32	3821.61

*SECNO 7.350

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

	####	CENTERLINE =	2290					####	
	7.35	5.38	2070.58	2070.58	2070.32	2071.51	0.93	7.58	0.19	2069.60
	5300.	858.	4420.	22.	186.	538.	12.	215.	99.	2069.90
	0.39	4.63	8.21	1.84	0.045	0.038	0.045	0.000	2065.20	2059.56
	0.012994	1040.	1035.	1040.	5	14	0	0.00	391.12	2450.68

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 7.380
3280 CROSS SECTION 7.38 EXTENDED 0.49 FEET

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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
         ##########################################################################
         ####                        KOVAL LANE                                ####
         ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
         ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
         ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
         ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW 6500         ####
         ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN             ####\
         ####  THRU CAESARS/IMPERIAL AREA - LWLFLBOL                            ####
         ##########################################################################
     7.38      1.89  2075.59  2075.59  2075.42  2076.04      8.44      1.74      0.05  2073.70
   5300.     2077.     1409.     1814.      781.      152.      639.      219.      102.  2073.70
     0.40      2.66      9.29      2.84     0.060     0.025     0.060     0.000  2073.70  1650.00
0.010429      150.      150.      150.        20        22         0      0.00  1597.85  3247.85
```

FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.59

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3248.
PER Q=	5.2	3.4	4.0	10.3	16.3	26.6	16.7	8.3	9.3	
AREA=	138.9	96.7	118.9	191.1	235.5	151.6	232.4	133.0	273.4	
VEL=	2.0	1.9	1.8	2.8	3.7	9.3	3.8	3.2	1.8	

1
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```
**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********************************************
```

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 3 (ALGONQUIN DR. TO KOVAL LANE)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.000000	0.00	0.	0.	1961.700	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED

```
         ####  STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS          ####
         ####           CENTERLINE =  2038                                      ####
         ####  NEAR ALGONQUIN DRIVE ALIGNMENT                                   ####
```

```
      5.57      10.05   1961.77   1961.77   1961.70   1966.33      4.56      0.00      0.00   1961.00
      8860.        0.      8860.        0.        0.       517.       0.        0.        0.     1961.00
      0.00      0.28      17.14      0.26      0.140     0.025     0.180     0.000  1951.72   2001.49
 0.005460      1320.     1320.      1320.         3         4         0      0.00     58.28   2059.77

CCHV=   0.100 CEHV=   0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                CENTERLINE =  2450                                    ####
      5.82      9.48   1977.38   1977.38      0.00   1980.74      3.36      7.03      0.12   1982.20
      8860.        0.      8860.        0.        0.       602.       0.       17.        2.     1977.20
      0.02      0.00      14.71      0.01      0.140     0.025     0.180     0.000  1967.90   2356.41
 0.005273      1310.     1310.      1310.        20        11         0      0.00     91.83   2488.24

CCHV=   0.300 CEHV=   0.500
*SECNO 5.850
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    MARYLAND PARKWAY                          ####
          ####                SPECIAL BRIDGE ROUTINE                        ####
          ##################################################################
          ####  CENTERLINE = 10000                                          ####
      5.85     10.53   1987.03   1987.03      0.00   1990.73      3.70      0.77      0.17   1976.50
      8860.    1710.     6582.      568.      783.      368.      277.       21.        3.     1976.50
      0.03      2.18      17.87      2.05      0.140     0.025     0.180     0.000  1976.50   9823.82
 0.003915       170.      170.       170.        20        12         0      0.00    234.23  10058.05

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1984.90 ,NOT   1987.03 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COFG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      34.50       9.50     250.00       0.00   1977.00    1976.50

*SECNO 5.870

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3        QWEIR      QPR        EAREA    TRAPEZOID       ELLC       ELTRD
                                                                    AREA
  2017.45   2004.61       0.00      5670.      3154.      250.       250.      1987.00    1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
          ####  REPEAT OF X-5.85                                                    ####
      5.87     11.42   1988.42   1988.22      0.00   1991.32      2.90      1.28     -0.28   1977.00
```

```
    8860.     1884.     6407.      570.     1015.      400.      312.       24.        4.     1977.00
      0.03      1.85     16.03      1.83     0.140     0.025     0.180     0.000  1977.00  9618.17
 0.002826       85.       85.       85.        20        26         0      0.00   441.68 10059.84
0
 *SECNO 5.930
         ####  CENTERLINE = 2465
      5.93      9.82  1989.82      0.00      0.00   1992.48      2.66      1.09      0.07  1995.00
    8860.        0.     8860.        0.        0.       676.       0.       33.        6.  1992.00
      0.04      0.00     13.10      0.00     0.140     0.025     0.180     0.000  1980.00  2414.14
 0.003522       330.      330.      330.         5         0         0      0.00    99.48  2513.62
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 6.080

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
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         ####              CENTERLINE =  2300                                        ####
      6.08     10.45  1996.35  1996.35      0.00   1999.84      3.49      3.52      0.25  2002.80
    8860.        0.     8860.        0.        0.       591.       0.       44.        7.  2002.50
      0.05      0.00     14.99      0.00     0.140     0.025     0.180     0.000  1985.50  2257.51
 0.005245       780.      780.      780.        20         8         0      0.00    86.31  2343.82
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 6.100

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
         ##########################################################################
         ####                  CAMBRIDGE STREET                                ####
         ####              SPECIAL BRIDGE ROUTINE                              ####
         ##########################################################################
         ####  CENTERLINE = 2165                                         ####
      6.10     10.39  1998.89  1998.89      0.00   2003.28      4.39      0.48      0.45  1988.50
    8860.       947.     7237.      676.      433.       390.      392.       47.        8.  1988.50
      0.05      2.19     18.58      1.72     0.140     0.025     0.180     0.000  1988.50  2054.65
 0.004308         50.      100.      210.        20         6         0      0.00   191.27  2245.93
0

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1997.46 ,NCT   1998.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB   XK        XKOR       COFG      RDLEN       BWC       BWP      BAREA       SS        ELCHU     ELCHD
       1.25      1.56       2.63       0.00     33.50      9.75    168.00      0.00   1989.50   1989.00

 *SECNO 6.110

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC        H3        QWEIR       QPR       BAREA    TRAPEZOID       ELLC      ELTRD
                                                                       AREA
  2066.26   2018.82       0.00       6312.      2571.       168.       166.     1996.50   1999.50

         ####  REPEAT OF X-6.10                                                    ####
```

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6.11	14.87	2003.87	0.00	0.00	2004.56	0.70	1.28	0.00	1989.00
8860.	1174.	4814.	2373.	862.	558.	808.	50.	8.	1989.00
0.06	1.36	8.63	3.55	0.160	0.035	0.060	0.000	1989.00	2027.23
0.001130	75.	75.	75.	2	0	6	0.00	261.48	2288.71

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

CENTERLINE = 2670
CONFLUENCE WITH TROPICANA WASH. L/S BREAKOUT FLOWS RETURN.

6.18	9.38	2004.28	0.00	0.00	2005.85	1.58	0.85	0.44	2009.70
8860.	3.	8860.	0.	0.	879.	0.	62.	10.	2008.30
0.07	0.00	10.08	0.00	0.160	0.038	0.060	0.000	1994.50	2564.12
0.008411	400.	365.	270.	3	0	0	0.00	182.67	2746.80

CCHV= 0.100 CEHV= 0.300
*SECNO 6.310

3301 HV CHANGED MORE THAN HVINS

3665 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2300

6.31	8.08	2018.88	2018.88	0.00	2021.50	2.62	6.72	0.31	2017.40
5860.	3.	5818.	39.	4.	447.	13.	73.	12.	2017.40
0.08	0.79	13.03	2.89	0.160	0.038	0.045	0.000	2010.80	2258.05
0.011463	745.	710.	685.	20	15	0	0.00	102.59	2361.04

CCHV= 0.300 CEHV= 0.500
*SECNO 6.350

SWENSON STREET
SPECIAL BRIDGE ROUTINE
CENTERLINE = 2300

6.35	10.54	2020.84	2019.58	0.00	2023.14	2.30	1.54	0.10	2010.30
5860.	734.	4413.	713.	290.	316.	306.	75.	12.	2010.30
0.09	2.53	13.96	2.33	0.160	0.045	0.160	0.000	2010.30	2197.39
0.007726	50.	170.	210.	7	8	0	0.00	185.73	2383.12

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2017.22 ,NOT 2020.84 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEF	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD

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```
     1.25      1.56      2.63      0.00     29.50      9.00    103.10      0.00   2010.80   2010.30

*SECNO 6.360
3301 HV CHANGED MORE THAN HVINS
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3        QWEIR      QPR       EAREA   TRAPEZOID AREA     ELLC      ELTRD
 2099.09   2034.11      0.00      4652.     1220.      103.       103.          2015.80   2020.30

          ####  REPEAT OF X-6.35                                                  ####
     6.36    11.95  2022.75      0.00      0.00   2024.23      1.48      1.09      0.00   2010.80
     5860.    846.     4140.     874.      446.      355.      465.       77.       13.    2010.80
     0.09     1.90     11.54     1.88     0.160     0.045    0.160     0.000   2010.80   1948.44
 0.004467      55.      55.       55.        3         0         0      0.00    473.65    2422.09
0
*SECNO 6.500
3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####          CENTERLINE =  2360                                        ####
     6.50      8.14  2029.64  2029.54      0.00   2032.02      2.49      4.85      0.51   2032.60
     5860.       10.     5850.       0.      26.      462.       0.        92.       19.    2030.70
     0.10      0.39     12.67     0.00     0.160     0.035    0.160     0.000   2021.50   1480.33
 0.010097      780.      755.      700.        3        14         0      0.00    184.32    2425.34
0
CCHV=   0.100 CEHV=   0.300
1
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   SECNO     DEPTH     CHSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   6         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       JLA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COPAR     TOPWID       ENDST

*SECNO 6.600
3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                    PALOS VERDE STREET                            ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
          ##########################################################################
     6.60      2.57  2038.07  2037.92      0.00   2038.68      0.61      6.47      0.19   2035.50
     5860.     2183.     3658.       19.     1497.      467.       38.       106.       29.    2037.60
     0.13      1.46      7.83      0.66     0.160     0.035    0.120     0.000   2035.50   8695.66
 0.016408       510.      510.      510.         9        17         0      0.00   1607.47  10303.14
0
1490 NH CARD USED
*SECNO 6.750
3301 HV CHANGED MORE THAN HVINS

          ####          CENTERLINE =  2700                                        ####
     6.75      4.73  2044.83      0.00      0.00   2044.93      0.10      6.20      0.05   2044.30
```

```
   5860.      4512.      1348.         0.      2213.       346.         0.       146.        55.    2044.70
      0.22       2.04       3.90       0.27       0.065      0.035      0.060      0.000  2040.10     982.96
 0.004710        74.       825.       800.          7          0          0       0.00  1828.80    2811.76
```

*SECNO 6.830

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##################################################################
          ####                      PARADISE ROAD                       ####
          ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW    ####
          ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS      ####
          ####  BEEN MODELED AS A REGULAR GROUND SECTION.  Q500 REDUCED    ####
```



```
          ####  DUE TO BREAKOUT OVER FLAMINGO RD (SEPARATE SPLIT FLOW RUN) ####
          ##################################################################
      6.83       4.11  2049.21  2049.21       0.00  2049.91       0.71       2.80       0.18  2049.70
    5860.          6.     5505.      349.        15.      792.       251.       165.        74.  2048.30
      0.24       0.39       6.95       1.39       0.080      0.035      0.060      0.000  2045.10  8851.11
 0.008956        505.       410.       350.         20         12          0       0.00  1147.74 10823.44
```

*SECNO 6.870

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####          CENTERLINE =  2280                              ####
      6.87       7.91  2051.61  2051.61  2051.12  2052.53       0.93       2.14       0.07  2052.60
    5860.        173.     4171.     1516.      107.      493.       263.       170.        79.  2050.20
      0.24       1.61       8.46       5.77       0.045      0.045      0.045      0.000  2043.70  1177.36
 0.011722        160.       205.       240.          3         17          0       0.00   614.85  2435.00
```

FLOW DISTRIBUTION FOR SECNO= 6.87 CWSEL= 2051.61

```
STA=    1177.    1240.    1310.    1720.    1788.    2308.    2319.    2435.
 PER Q=    0.5      0.6      1.3      0.6     71.2      2.5     23.4
  AREA=   19.3     21.2     46.6     20.6    493.3     24.3    238.5
   VEL=    1.6      1.6      1.6      1.6      8.5      6.0      5.7
```

CCHV= 0.100 CEHV= 0.300
*SECNO 7.160

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 3126.0 4440.0 TYPE= 1 TARGET= -3126.000

```
          ####          CENTERLINE =  3550                              ####
          ####  500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.  ####
      7.16       6.73  2063.33       0.00  2062.66  2063.65       0.32      11.06       0.06  2064.90
    5860.          1.     5859.        0.        1.     1283.         0.      207.        97.  2066.20
      0.34       0.36       4.57       0.00       0.045      0.045      0.045      0.000  2056.60  3167.16
 0.004965       1415.      1520.      1515.          6          0          0       0.00   488.20  3825.94
```

*SECNO 7.350

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2290						####	
7.35	5.58	2070.78	2070.78	2070.32	2071.71	0.93	7.58	0.18	2069.60
5860.	1016.	4803.	41.	215.	581.	20.	232.	108.	2069.90
0.37	4.74	8.26	2.09	0.045	0.038	0.045	0.000	2065.20	2053.63
0.011866	1040.	1035.	1040.	4	10	0	0.00	407.23	2460.87

0
CCHV= 0.10 CEHV= 0.300
*SECNO 7.38
3280 CROSS SECTION 7.38 EXTENDED 0.58 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
##########################################################################
####                        KOVAL LANE                                ####
####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW         ####
####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS           ####
####  BEEN MODELED AS A REGULAR GROUND SECTION.                       ####
####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW 6500        ####
####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN            ####\
####  THRU CAESARS/IMPERIAL AREA - LV&FWBCL                           ####
##########################################################################
```

7.38	1.98	2075.68	2075.68	2075.42	2076.12	0.45	1.65	0.05	2073.70
5860.	2338.	1497.	2024.	852.	158.	707.	236.	112.	2073.70
0.38	2.74	9.46	2.86	0.060	0.025	0.060	0.000	2073.70	1650.00
0.010189	150.	150.	150.	20	22	0	0.00	1876.41	3526.41

0
FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2075.68

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3526.
PER Q=	5.6	3.8	4.5	10.3	15.8	25.6	16.1	8.1	10.3	0.1	
AREA=	155.8	109.4	135.8	204.6	246.9	158.3	243.0	140.5	312.3	10.9	
VEL=	2.1	2.0	1.9	2.9	3.7	9.5	3.9	3.4	1.9	0.3	

1


```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1582
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
```

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 3 (ALGONQUIN DR. TO KOVAL LANE)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.000000	0.00	0.0	0.	1970.700	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570
3720 CRITICAL DEPTH ASSUMED
STARTING WATER LEVELS AT 5.57 BASED ON REACH 4 ANALYSIS
CENTERLINE = 2030
NEAR ALGONQUIN DRIVE ALIGNMENT

5.57	19.14	1970.86	1970.86	1970.70	1973.72	2.87	0.00	0.00	1961.00
22500.	2143.	16443.	3909.	1904.	1035.	4160.	0.	0.	1961.00
0.00	1.13	15.89	0.94	0.140	0.025	0.180	0.000	1951.72	1374.41
0.001860	1320.	1320.	1320.	3	4	0	0.00	1698.41	3072.82

0
CCHV= 0.100 CEHV= 0.300
*SECNO 5.820

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CENTERLINE = 2450

5.82	15.47	1983.37	1983.37	0.00	1989.00	5.62	3.47	0.83	1982.20
22500.	33.	22443.	24.	69.	1178.	25.	126.	29.	1977.20
0.02	0.47	19.05	0.96	0.140	0.025	0.180	0.000	1967.90	2271.87
0.004072	1310.	1310.	1310.	20	16	0	0.00	224.38	2496.23

0
CCHV= 0.300 CEHV= 0.500
*SECNO 5.850

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
MARYLAND PARKWAY
SPECIAL BRIDGE ROUTINE
CENTERLINE = 10000

5.85	16.86	1993.36	1993.36	0.00	1996.14	2.78	0.52	0.85	1976.50
22500.	9596.	11165.	1739.	5389.	590.	1173.	142.	32.	1976.50
0.02	1.78	18.92	1.48	0.140	0.025	0.180	0.000	1976.50	8872.10
0.002344	170.	170.	170.	20	8	0	0.00	1425.61	10297.71

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1992.14 ,NOT 1993.36 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	34.50	9.50	250.00	0.00	1977.00	1976.50

*SECNO 5.870
6870 D.S. ENERGY OF 1996.14 HIGHER THAN COMPUTED ENERGY OF 1994.04
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2189.57	2024.28	0.00	21192.	1326.	250.	250.	1987.00	1988.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

								####	
#### REPEAT OF X-5.85								-0.20	1977.00
5.87	16.89	1993.89	1993.87	0.00	1996.64	2.75	0.20	35.	1977.00
22500.	9619.	11138.	1742.	5420.	591.	1181.	156.	1977.00	8870.70
0.03	1.77	18.85	1.48	0.140	0.025	0.180	0.000	1428.20	10298.90
0.002320	85.	85.	85.	20	5	0	0.00		

*SECNO 5.930

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

#### CENTERLINE = 2465									
5.93	14.95	1994.95	1994.95	0.00	1999.76	4.81	1.00	1.03	1995.00
22500.	0.	22146.	354.	0.	1249.	430.	190.	42.	1992.00
0.03	0.00	17.73	0.82	0.140	0.025	0.180	0.000	1980.00	2400.14
0.004097	330.	330.	330.	20	11	0	0.00	361.55	2761.69

CCHV= 0.100 CEHV= 0.300
*SECNO 6.080

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLCSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

#### CENTERLINE = 2500									
6.08	16.66	2002.56	2002.56	0.00	2007.99	5.43	3.34	0.19	2002.80
22500.	0.	22495.	5.	0.	1203.	20.	216.	47.	2002.50
0.04	0.00	18.70	0.24	0.140	0.025	0.180	0.000	1985.90	2244.49
0.004484	780.	780.	780.	20	8	0	0.00	178.96	2423.45

CCHV= 0.300 CEHV= 0.500
*SECNO 6.100

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3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED ,SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##################################################################
          ####                  CAMBRIDGE STREET                        ####
          ####               SPECIAL BRIDGE ROUTINE                     ####
          ##################################################################
          ####  CENTERLINE = 2165                                        ####
     6.10      17.76   2006.26   2006.26      0.00   2012.62      6.35      0.40      0.46   1988.50
   22500.       3781.     15954.     2764.     1201.      666.     1183.      222.       47.   1988.50
     0.04       3.15      23.95      2.34     0.140     0.025     0.180     0.000   1988.50   2010.22
0.0003503        5.0      100.0      210.        20         5         0      0.00    307.40   2317.62
0
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2004.75 ,NOT 2006.26 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	33.50	9.75	168.00	0.00	1989.50	1989.00

*SECNO 6.110
6871 D.S. ENERGY OF 2012.62 HIGHER THAN COMPUTED ENERGY OF 2005.82
3280 CROSS SECTION 5.11 EXTENDED 1.99 FEET

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	AROB	VCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	ICPWIC	ENDST

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZOID AREA	ELLC	ELTRD
2440.76	2042.26	0.00	20661.	2036.	168.	166.	1996.50	1999.50

```
          ####  REPEAT OF X-6.10                                          ####
     6.11      23.00   2012.00      0.00      0.00   2012.62      0.61      0.00      0.00   1989.00
   22500.       4195.      8338.     9968.     3850.      862.     3092.      231.       49.   1989.00
     0.05       1.09       9.67      3.22     0.167     0.035     0.060     0.000   1989.00   1400.00
0.0000793         75.        75.       75.         3         0         6      0.00   1259.84   2659.84
0
```

*SECNO 6.180

3301 HV CHANGED MORE THAN HVINS

```
          ####           CENTERLINE =  2670                              ####
          ####  CONFLUENCE WITH TROPICANA WASH.  L/S BREAKOUT FLOWS RETURN.####
     6.18      17.23   2012.13      0.00      0.00   2013.32      1.19      0.42      0.29   2009.70
   22500.       252.     22158.       91.      514.     2512.       64.      275.       57.   2008.30
     0.06       0.49       8.82      1.43     0.160     0.038     0.060     0.000   1994.90   2026.04
0.0002047        400.       365.      270.         2         0         0      0.00    795.53   2821.97
0
```

CCHV= 0.100 CEHV= 0.300
*SECNO 6.310

```
3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2300                                  ####
      6.31      13.93  2024.73  2024.73      0.00   2027.04      2.31      2.00      0.34  2017.40
    16200.     1519.    12490.    2191.     1413.      914.      363.      323.       72.   2017.40
      0.08       1.07     13.67     6.04     0.160     0.038     0.045     0.000  2010.80  1509.34
 0.004854        745.      710.      685.        20        15         0      0.00   949.91  2459.26
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     ICPWID       ENDST


CCH\=   0.300 CEHV=    0.500
*SECNO 6.350
3280 CROSS SECTION       6.35 EXTENDED       0.96 FEET

3301 HV CHANGED MORE THAN HVINS

          ##########################################################################
          ####                    SWENSON STREET                                ####
          ####                SPECIAL BRIDGE ROUTINE                            ####
          ##########################################################################
          ####  CENTERLINE = 2300                                          ####
      6.35      16.16  2026.46  2026.03      0.00   2028.00      1.53      0.72      0.23  2010.30
    16200.     6090.     7161.    2948.     3468.      485.     1180.      332.       74.   2010.30
      0.08       1.76     14.78     2.50     0.160     0.045     0.160     0.000  2010.30  1200.00
 0.004901         50.      170.      210.         7         8         0      0.00  1270.79  2470.79
0
SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   2023.93 ,NOT   2026.46 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFG       RDLEN      BWC        EWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      29.50       9.00     103.10       0.00    2010.80    2010.30

*SECNO 6.360
6870 D.S. ENERGY OF 2028.00 HIGHER THAN COMPUTED ENERGY OF 2027.02
3280 CROSS SECTION       6.36 EXTENDED       0.71 FEET

PRESSURE AND WEIR FLOW

 EGFRS       EGLWC        H3         QWEIR      QPR        EAREA    TRAPEZOID      ELLC       ELTRD
                                                                       AREA
  2624.53    2053.72       0.00      15704.      494.       103.       103.     2015.80    2020.30

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
          ####  REPEAT OF X-6.35                                             ####
      6.36      15.91  2026.71      0.00      0.00   2028.45      1.75      0.00      0.00  2010.80
    16200.     5842.     7403.    2955.     3206.      477.     1135.      338.       75.   2010.80
      0.08       1.82     15.51     2.60     0.160     0.045     0.160     0.000  2010.80  1200.00
 0.005514         55.       55.       55.        20         0         8      0.00  1270.71  2470.71
0
1
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.500
7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2380						####	
6.50	12.57	2034.07	2034.07	0.00	2035.51	1.44	3.67	0.09	2032.60
16200.	4534.	10664.	1002.	3757.	902.	992.	430.	106.	2030.70
0.11	1.21	11.82	1.01	0.160	0.035	0.160	0.000	2021.50	688.37
0.004301	780.	755.	700.	5	14	0	0.00	2234.68	2923.25

0
CCHV= 0.100 CEHV= 0.300
*SECNO 6.600
7165 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##									
####		PALOS VERDE STREET							####
####	THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW								####
####	DEBRIS IS ASSUMED TO BLOCK DRAINS. THIS CROSSING HAS								####
####	BEEN MODELED AS A REGULAR GROUND SECTION.								####
##									
6.60	3.87	2039.37	2039.37	0.00	2040.51	1.14	3.81	0.03	2035.50
16200.	6573.	9207.	419.	3514.	818.	217.	489.	133.	2037.60
0.13	1.37	11.26	1.93	0.160	0.035	0.120	0.000	2025.50	8039.63
0.016058	510.	510.	510.	16	17	0	0.00	2361.92	10401.55

0
1490 NH CARD USED
*SECNO 6.750

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE = 2700						####	
6.75	6.07	2046.17	0.00	0.00	2046.37	0.20	5.77	0.09	2044.30
16200.	12447.	3635.	117.	4484.	646.	131.	574.	174.	2044.70
0.19	2.78	5.63	3.90	0.068	0.035	0.060	0.000	2040.10	808.16
0.004278	740.	825.	800.	5	0	0	0.00	2370.15	3345.59

0
*SECNO 6.830
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3686 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
##

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THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW
DEBRIS IS ASSUMED TO BLOCK DRAINS. THIS CROSSING HAS
BEEN MODELED AS A REGULAR GROUND SECTION. Q500 REDUCED
DUE TO BREAKOUT OVER FLAMINGO RI (SEPARATE SPLIT FLOW RUN)

6.83	5.45	2050.55	2050.55	0.00	2051.41	0.86	2.53	0.20	2049.70
16200.	1248.	11250.	3702.	983.	1284.	1201.	620.	199.	2048.30
0.21	1.38	8.76	3.08	0.080	0.035	0.060	0.000	2045.10	8336.75
0.006115	500.	410.	350.	20	15	0	0.00	2358.83	10932.24

*SECNO 6.870

3265 DIVIDED FLOW

3280 CROSS SECTION 6.87 EXTENDED 0.73 FEET

CENTERLINE = 2280

6.67	9.04	2052.74	2052.72	0.00	2053.41	0.67	1.98	0.02	2052.60
17500.	2889.	5953.	8658.	846.	653.	1674.	635.	209.	2050.20
0.22	3.41	9.12	5.17	0.045	0.045	0.045	0.000	2043.70	1060.76
0.010735	160.	205.	240.	4	18	0	0.00	2257.44	3540.00

FLOW DISTRIBUTION FOR SECNO= 6.87 CWSEL= 2052.74

STA=	1061.	1390.	1720.	2160.	2308.	2435.	2627.	2747.	3030.	3540.
PER Q=	6.1	7.4	3.0	34.0	17.2	17.1	5.9	3.3	6.0	
AREA=	318.1	357.9	170.1	653.1	406.1	477.0	208.2	207.9	374.7	
VEL=	3.4	3.6	3.1	9.1	7.4	6.3	4.9	2.8	2.8	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	IWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCRAR	TCPWID	ENDST

CCHV= 0.100 CEHV= 0.300

*SECNO 7.160

3470 ENCROACHMENT STATIONS= 3126.0 4440.0 TYPE= 1 TARGET= -3126.000

CENTERLINE = 3550
500-YEAR OVERFLOWS TO THE SOUTH RETURN AT THIS SECTION.

7.16	8.80	2065.40	0.00	0.00	2066.15	0.76	12.72	0.02	2064.90
17500.	795.	16735.	0.	216.	2355.	0.	734.	260.	2066.20
0.28	3.69	7.09	0.00	0.045	0.045	0.045	0.000	2056.60	3153.56
0.006801	1415.	1520.	1515.	5	0	0	0.00	764.97	3858.54

*SECNO 7.350

3280 CROSS SECTION 7.35 EXTENDED 0.79 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2290

7.35	8.19	2073.39	2073.39	0.00	2074.31	0.91	6.66	0.05	2069.60
17500.	5359.	10606.	1535.	1246.	1142.	469.	799.	288.	2069.90
0.32	4.30	9.28	3.27	0.045	0.038	0.045	0.000	2065.20	1300.00
0.006091	1040.	1035.	1040.	4	10	0	0.00	1648.11	2948.11

CCHV= 0.100 CEHV= 0.300

*SECNO 7.380

3280 CROSS SECTION 7.38 EXTENDED 1.56 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

```
            ##########################################################################
            ####                        KOVAL LANE                                ####
            ####  THIS IS A SWALE CROSSING WITH MINOR DRAINS FOR LOW FLOW          ####
            ####  DEBRIS IS ASSUMED TO BLOCK DRAINS.  THIS CROSSING HAS            ####
            ####  BEEN MODELED AS A REGULAR GROUND SECTION.                        ####
            ####  FLOW RIGHT OF STA 3600 RUNS TO TROP WASH; REDUCE FW @500         ####
            ####  THIS RUN CONNECTS TO COE HEC-2 RUN FOR FLAMINGO MAIN             ####
            ####  THRU CAESARS/IMPERIAL AREA - LVL&BCL                             ####
            ##########################################################################
      7.38      2.96   2076.66   2076.66      0.00   2077.27      0.61      1.23      0.03   2073.70
     19500.    7182.     3890.     9228.    1685.      237.    2738.      812.       296.   2073.70
      0.33      4.26     13.03     3.37     0.060     0.025    0.060     0.000   2073.70   1650.00
  0.011285      150.      150.      150.       20        15        0      0.00   3200.00   4850.00
```

0
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 7.38 CWSEL= 2076.66

STA=	1650.	1850.	2000.	2200.	2360.	2495.	2575.	2701.	2790.	3250.	3600.	4050.	4850.
PER Q=	6.9	5.0	6.3	8.4	10.2	15.8	10.1	5.8	14.5	4.8	5.2	6.9	
AREA=	352.8	257.1	332.8	362.2	379.9	237.1	367.2	228.2	765.5	354.9	411.3	611.1	
VEL=	3.8	3.8	3.7	4.5	5.2	13.0	5.4	4.9	3.7	2.7	2.5	2.2	

1


```
**********************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	5.570	0.00	0.00	0.00	1951.72	6000.00	1959.59	1959.59	1963.19	57.66	15.23	393.98	788.82
	5.570	0.00	0.00	0.00	1951.72	7300.00	1960.70	1960.63	1964.68	55.45	16.00	456.24	980.32
*	5.570	0.00	0.00	0.00	1951.72	8860.00	1961.77	1961.77	1966.33	54.60	17.14	517.52	1199.01
*	5.570	0.00	0.00	0.00	1951.72	22500.00	1970.86	1970.86	1973.72	18.60	15.89	7095.75	5217.39
*	5.820	1310.00	0.00	0.00	1961.90	6000.00	1975.72	1975.72	1978.42	56.11	13.19	454.91	801.01
*	5.820	1310.00	0.00	0.00	1961.90	7300.00	1976.55	1976.55	1979.53	53.33	13.84	527.62	999.61
*	5.820	1310.00	0.00	0.00	1961.90	8860.00	1977.38	1977.38	1980.74	52.73	14.71	602.44	1220.17
*	5.820	1310.00	0.00	0.00	1961.90	22500.00	1983.37	1983.37	1989.00	40.72	19.05	1271.99	3525.84
*	5.850	170.00	0.00	0.00	1976.50	6000.00	1986.08	1986.08	1991.05	44.45	17.89	335.41	899.53
*	5.850	170.00	0.00	0.00	1976.50	7300.00	1987.21	1987.21	1989.60	24.86	14.40	1474.52	1464.02
*	5.850	170.00	0.00	0.00	1976.50	8860.00	1987.03	1987.03	1990.73	39.15	17.87	1428.46	1416.84

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*	5.850	170.00	0.00	0.00	1976.50	22500.00	1993.36	1993.36	1996.14	23.44	18.92	7151.81	4647.03
*	5.870	85.00	1988.20	1987.00	1974.00	6000.00	1990.30	0.00	1991.05	6.51	8.52	2791.39	2351.59
*	5.870	85.00	1988.20	1987.00	1974.00	7300.00	1989.01	0.00	1990.66	15.42	12.24	2018.88	1855.05
*	5.870	85.00	1988.20	1987.00	1974.00	8860.00	1988.42	1988.22	1991.32	28.26	16.03	1730.63	1666.60
*	5.870	85.00	1988.20	1987.00	1974.00	22500.00	1993.89	1993.87	1996.64	23.20	18.85	7191.88	4671.15
	5.930	330.00	0.00	0.00	1980.00	6000.00	1990.47	0.00	1991.49	13.79	8.07	743.73	1615.73
	5.930	330.00	0.00	0.00	1980.00	7300.00	1989.54	0.00	1991.50	29.88	11.25	649.18	1335.39
	5.930	330.00	0.00	0.00	1980.00	8860.00	1989.82	0.00	1992.48	39.22	13.10	676.34	1414.69
*	5.930	330.00	0.00	0.00	1980.00	22500.00	1994.95	1994.95	1999.76	40.97	17.73	1678.99	3515.34
*	6.080	780.00	0.00	0.00	1985.90	6000.00	1994.56	1994.56	1997.41	55.81	13.55	442.72	803.14
*	6.080	780.00	0.00	0.00	1985.90	7300.00	1995.42	1995.42	1998.57	53.85	14.25	512.44	994.83
*	6.080	780.00	0.00	0.00	1985.90	8860.00	1996.35	1996.35	1999.84	52.45	14.99	590.90	1223.39
*	6.080	780.00	0.00	0.00	1985.90	22500.00	2002.56	2002.56	2007.99	44.84	18.70	1222.79	3360.16
*	6.100	100.00	0.00	0.00	1988.50	6000.00	1996.82	1996.82	2000.28	44.28	16.24	849.41	901.76
*	6.100	100.00	0.00	0.00	1988.50	7300.00	1997.81	1997.81	2001.71	43.65	17.38	1016.37	1104.91
*	6.100	100.00	0.00	0.00	1988.50	8860.00	1998.89	1998.89	2003.28	43.08	18.58	1214.87	1349.95
*	6.100	100.00	0.00	0.00	1988.50	22500.00	2006.26	2006.26	2012.62	35.03	23.95	3049.98	3801.57

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CRSEL	CRIRS	EG	10K*S	VCH	AREA	.01K
*	6.110	75.00	1999.50	1996.50	1985.00	6000.00	2002.54	0.00	2002.98	7.77	6.73	1894.73	2152.03
*	6.110	75.00	1999.50	1996.50	1985.00	7300.00	2003.18	0.00	2003.74	9.42	7.64	2052.07	2378.84
*	6.110	75.00	1999.50	1996.50	1985.00	8860.00	2003.87	0.00	2004.56	11.30	8.63	2227.62	2635.54
*	6.110	75.00	1999.50	1996.50	1985.00	22500.00	2012.00	0.00	2012.62	7.93	9.67	7804.33	7989.46
	6.180	365.00	0.00	0.00	1994.90	6000.00	2002.69	0.00	2004.25	127.06	10.02	598.55	532.30
	6.180	365.00	0.00	0.00	1994.90	7300.00	2003.47	0.00	2005.00	99.63	9.94	734.10	731.37
	6.180	365.00	0.00	0.00	1994.90	8860.00	2004.28	0.00	2005.85	84.11	10.08	875.35	966.05
	6.180	365.00	0.00	0.00	1994.90	22500.00	2012.13	0.00	2013.32	20.47	8.82	3088.74	4972.68
*	6.310	710.00	0.00	0.00	2010.80	4100.00	2017.61	2017.61	2019.81	135.46	11.91	344.58	352.28
*	6.310	710.00	0.00	0.00	2010.80	5300.00	2018.50	2018.50	2021.00	115.87	12.70	425.03	484.07
*	6.310	710.00	0.00	0.00	2010.80	5860.00	2018.88	2018.88	2021.50	114.63	13.03	463.58	547.32
*	6.310	710.00	0.00	0.00	2010.80	16200.00	2024.73	2024.73	2027.04	48.54	13.67	2689.50	2325.34
	6.350	170.00	0.00	0.00	2010.30	4100.00	2019.85	0.00	2021.39	56.86	11.21	748.61	543.73
	6.350	170.00	0.00	0.00	2010.30	5300.00	2020.57	0.00	2022.62	79.50	13.10	863.00	631.23
	6.350	170.00	0.00	0.00	2010.30	5860.00	2020.84	2019.58	2023.14	77.26	13.96	911.64	666.66
	6.350	170.00	0.00	0.00	2010.30	16200.00	2026.46	2026.03	2028.00	49.01	14.78	5133.01	2314.04
*	6.360	55.00	2020.30	2015.80	2010.80	4100.00	2022.96	0.00	2023.63	20.07	7.83	1375.84	915.29
*	6.360	55.00	2020.30	2015.80	2010.80	5300.00	2022.93	0.00	2024.07	34.06	10.18	1356.00	908.15
*	6.360	55.00	2020.30	2015.80	2010.80	5860.00	2022.75	0.00	2024.23	44.67	11.54	1270.05	876.88
*	6.360	55.00	2020.30	2015.80	2010.80	16200.00	2026.71	0.00	2028.45	55.14	15.51	4818.43	2181.64
*	6.500	755.00	0.00	0.00	2021.50	4100.00	2028.09	2028.09	2030.32	114.20	11.99	342.05	383.66
*	6.500	755.00	0.00	0.00	2021.50	5300.00	2028.98	2028.98	2031.53	112.16	12.80	413.95	500.45
*	6.500	755.00	0.00	0.00	2021.50	5860.00	2029.54	2029.54	2032.02	100.97	12.67	487.56	583.12
*	6.500	755.00	0.00	0.00	2021.50	16200.00	2034.07	2034.07	2035.51	43.01	11.82	5650.80	2470.07
	6.600	510.00	0.00	0.00	2035.50	4100.00	2037.65	2037.58	2038.19	208.79	7.34	1379.53	283.75
	6.600	510.00	0.00	0.00	2035.50	5300.00	2037.98	2037.81	2038.54	161.87	7.51	1850.94	416.57
	6.600	510.00	0.00	0.00	2035.50	5860.00	2038.07	2037.92	2038.68	164.08	7.83	1993.45	457.48
*	6.600	510.00	0.00	0.00	2035.50	16200.00	2039.37	2039.37	2040.51	160.58	11.26	4547.98	1278.39
	6.750	825.00	0.00	0.00	2040.10	4100.00	2044.53	0.00	2044.62	43.58	3.61	2041.64	621.04
	6.750	825.00	0.00	0.00	2040.10	5300.00	2044.73	0.00	2044.82	47.88	3.76	2382.68	765.92
	6.750	825.00	0.00	0.00	2040.10	5860.00	2044.83	0.00	2044.93	47.10	3.90	2559.36	853.85
	6.750	825.00	0.00	0.00	2040.10	16200.00	2046.17	0.00	2046.37	42.78	5.63	5260.11	2476.82

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*	6.830	410.00	0.00	0.00	2045.10	4100.00	2048.49	2048.49	2049.34	144.15	7.39	563.97	341.49
*	6.830	410.00	0.00	0.00	2045.10	5300.00	2048.93	2048.93	2049.76	114.86	7.40	807.75	494.52
*	6.830	410.00	0.00	0.00	2045.10	5860.00	2049.21	2049.21	2049.91	89.56	6.95	1058.53	619.24
*	6.830	410.00	0.00	0.00	2045.10	16200.00	2050.55	2050.55	2051.41	81.15	8.76	3387.85	1798.29
	6.870	205.00	0.00	0.00	2043.70	4100.00	2051.12	0.00	2051.85	101.56	7.44	633.96	406.83
	6.870	205.00	0.00	0.00	2043.70	5300.00	2051.37	2051.32	2052.35	128.51	8.61	729.96	467.53
*	6.870	205.00	0.00	0.00	2043.70	5860.00	2051.61	2051.61	2052.53	117.22	8.46	863.42	541.24
	6.870	205.00	0.00	0.00	2043.70	17500.00	2052.74	2052.72	2053.41	107.35	9.12	3172.99	1689.01

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRITS	EG	10K*S	VCH	AREA	.01K
	7.160	1520.00	0.00	0.00	2056.60	4100.00	2062.66	0.00	2062.93	54.46	4.18	981.04	555.57
	7.160	1520.00	0.00	0.00	2056.60	5300.00	2063.20	0.00	2063.49	46.90	4.33	1223.01	773.95
	7.160	1520.00	0.00	0.00	2056.60	5860.00	2063.33	0.00	2063.65	49.65	4.57	1284.58	831.65
	7.160	1520.00	0.00	0.00	2056.60	17500.00	2065.40	0.00	2066.15	68.01	7.09	2570.75	2121.96
	7.350	1035.00	0.00	0.00	2065.20	4100.00	2070.32	0.00	2071.06	117.64	7.26	636.27	378.01
*	7.350	1035.00	0.00	0.00	2065.20	5300.00	2070.58	2070.58	2071.51	129.94	8.21	735.71	464.94
*	7.350	1035.00	0.00	0.00	2065.20	5860.00	2070.78	2070.78	2071.71	118.66	8.26	815.81	537.96
*	7.350	1035.00	0.00	0.00	2065.20	17500.00	2073.39	2073.39	2074.31	60.91	9.28	2856.94	2242.24
*	7.380	150.00	0.00	0.00	2073.70	4100.00	2075.42	2075.42	2075.82	101.00	8.58	1298.38	407.97
*	7.380	150.00	0.00	0.00	2073.70	5300.00	2075.59	2075.59	2076.04	104.29	9.29	1571.41	518.96
*	7.380	150.00	0.00	0.00	2073.70	5860.00	2075.68	2075.68	2076.12	101.89	9.46	1717.48	580.53
*	7.380	150.00	0.00	0.00	2073.70	19500.00	2076.66	2076.66	2077.27	112.85	13.03	4660.12	1835.61

FLAMINGO WASH REACH 3

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.570	6000.00	1959.59	0.00	0.00	0.01	55.17	0.00
	5.570	7300.00	1960.70	1.11	0.00	0.00	56.61	0.00
*	5.570	8860.00	1961.77	1.07	0.00	0.07	58.28	0.00
*	5.570	22500.00	1970.86	9.09	0.00	0.16	1698.41	0.00
*	5.820	6000.00	1975.72	0.00	16.14	0.00	85.86	1310.00
*	5.820	7300.00	1976.55	0.83	15.85	0.00	88.93	1310.00
*	5.820	8860.00	1977.38	0.83	15.61	0.00	91.83	1310.00
*	5.820	22500.00	1983.37	5.99	12.52	0.00	224.36	1310.00
*	5.850	6000.00	1986.08	0.00	10.36	0.00	35.00	170.00
*	5.850	7300.00	1987.21	1.12	10.65	0.00	276.12	170.00
*	5.850	8860.00	1987.03	-0.18	9.64	0.00	234.23	170.00
*	5.850	22500.00	1993.36	6.33	9.98	0.00	1425.61	170.00
*	5.870	6000.00	1990.30	0.00	4.22	0.00	676.49	85.00
*	5.870	7300.00	1989.01	-1.30	1.80	0.00	521.76	85.00
*	5.870	8860.00	1988.42	-0.58	1.39	0.00	441.68	85.00
*	5.870	22500.00	1993.39	5.46	0.53	0.00	1428.20	85.00
	5.930	6000.00	1990.47	0.00	0.17	0.00	103.23	330.00
	5.930	7300.00	1989.54	-0.94	0.53	0.00	97.92	330.00
	5.930	8860.00	1989.82	0.28	1.40	0.00	99.48	330.00
*	5.930	22500.00	1994.95	5.13	1.06	0.00	361.55	330.00
*	6.080	6000.00	1994.56	0.00	4.09	0.00	79.31	784.00

*	6.080	7300.00	1995.42	0.86	5.88	0.00	82.68	780.00
*	6.080	8860.00	1996.35	0.93	6.53	0.00	86.31	780.00
*	6.080	22500.00	2002.56	6.21	7.62	0.00	178.96	780.00
*	6.100	6300.00	1996.82	0.00	2.26	0.00	161.69	100.00
*	6.100	7300.00	1997.81	0.99	2.39	0.00	175.82	100.00
*	6.100	8860.00	1998.89	1.08	2.54	0.00	191.27	100.00
*	6.100	22500.00	2006.26	7.37	3.70	0.00	307.40	100.00
*	6.110	6300.00	2002.54	0.00	5.72	0.00	240.42	75.00
*	6.110	7300.00	2003.18	0.64	5.37	0.00	250.59	75.00
*	6.110	8860.00	2003.87	0.68	4.98	0.00	261.48	75.00
*	6.110	22500.00	2012.00	8.14	5.74	0.00	1259.84	75.00
	6.180	6300.00	2002.69	0.00	0.14	0.00	171.01	365.00
	6.180	7300.00	2003.47	0.78	0.29	0.00	176.73	365.00
	6.180	8860.00	2004.28	0.81	0.41	0.00	182.67	365.00
	6.180	22500.00	2012.13	7.85	0.13	0.00	795.93	365.00

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	SECNO	Q	CMSEL	DIFMSF	DIFMSX	DIFKMS	TOPWID	XLCH
*	6.310	4100.00	2017.61	0.00	14.92	0.00	83.18	710.00
*	6.310	5300.00	2018.50	0.89	15.83	0.00	97.01	710.00
*	6.310	5860.00	2018.88	0.39	14.61	0.00	102.99	710.00
*	6.310	16200.00	2024.73	5.84	12.59	0.00	949.91	710.00
	6.350	4100.00	2019.85	0.00	2.24	0.00	147.40	170.00
	6.350	5300.00	2020.57	0.72	2.07	0.00	174.25	170.00
	6.350	5860.00	2020.84	0.26	1.95	0.00	185.73	170.00
	6.350	16200.00	2026.46	5.63	1.74	0.00	1270.79	170.00
*	6.360	4100.00	2022.36	0.00	3.12	0.00	522.00	55.00
*	6.360	5300.00	2022.93	-0.03	2.36	0.00	513.28	55.00
*	6.360	5860.00	2022.75	-0.18	1.92	0.00	473.65	55.00
*	6.360	16200.00	2026.71	3.96	0.25	0.00	1270.71	55.00
*	6.500	4100.00	2028.09	0.00	5.13	0.00	77.77	755.00
*	6.500	5300.00	2028.98	0.89	6.05	0.00	83.97	755.00
*	6.500	5860.00	2029.54	0.56	6.78	0.00	184.32	755.00
*	6.500	16200.00	2034.07	4.54	3.36	0.00	2234.88	755.00
	6.600	4100.00	2037.65	0.00	9.56	0.00	1294.45	510.00
	6.600	5300.00	2037.98	0.33	9.00	0.00	1552.77	510.00
	6.600	5860.00	2038.07	0.10	8.54	0.00	1607.47	510.00
*	6.600	16200.00	2039.37	1.29	5.29	0.00	2361.52	510.00
	6.750	4100.00	2044.53	0.00	6.89	0.00	1756.98	825.00
	6.750	5300.00	2044.73	0.19	6.75	0.00	1812.44	825.00
	6.750	5860.00	2044.83	0.10	6.76	0.00	1828.80	825.00
	6.750	16200.00	2046.17	1.34	6.80	0.00	2370.15	825.00
*	6.830	4100.00	2048.49	0.00	3.96	0.00	422.36	410.00
*	6.830	5300.00	2048.93	0.44	4.20	0.00	700.33	410.00
*	6.830	5860.00	2049.21	0.28	4.38	0.00	1147.74	410.00
*	6.830	16200.00	2050.55	1.34	4.38	0.00	2358.83	410.00
	6.870	4100.00	2051.12	0.00	2.63	0.00	320.98	205.00
	6.870	5300.00	2051.37	0.25	2.44	0.25	466.97	205.00
*	6.870	5860.00	2051.61	0.24	2.40	0.49	614.85	205.00
	6.870	17500.00	2052.74	1.13	2.19	0.00	2257.44	205.00
	7.160	4100.00	2062.66	0.00	11.55	0.00	436.15	1520.00
	7.160	5300.00	2063.20	0.54	11.83	0.54	460.32	1520.00
	7.160	5860.00	2063.33	0.13	11.72	0.67	488.20	1520.00

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	7.160	17500.00	2065.40	2.07	12.66	0.00	704.97	1520.00
	7.350	4100.00	2070.32	0.00	7.66	0.00	370.15	1035.00
*	7.350	5300.00	2070.58	0.26	7.39	0.26	391.12	1035.00
*	7.350	5860.00	2070.78	0.20	7.46	0.46	407.23	1035.00
*	7.350	17500.00	2073.39	2.61	7.99	0.00	1648.11	1035.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	7.380	4100.00	2075.42	0.00	5.09	0.00	1530.54	150.00
*	7.380	5300.00	2075.59	0.17	5.01	0.17	1597.85	150.00
*	7.380	5860.00	2075.68	0.08	4.89	0.26	1876.41	150.00
*	7.380	19500.00	2076.66	0.99	3.27	0.00	3200.00	150.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 5.570 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.570 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 5.820 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.820 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.820 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.820 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.850 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.850 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.850 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.850 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.870 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.870 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.870 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.870 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.870 PROFILE= 4 HYDRAULIC JUMP D.S.

CAUTION SECNO= 5.930 PROFILE= 4 CRITICAL DEPTH ASSUMED

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CAUTION  SECNO=     5.930   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     5.930   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION  SECNO=     6.080   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.080   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.080   PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.080   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.080   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.080   PROFILE= 3  CRITICAL DEPTH ASSUMED
1
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CAUTION  SECNO=     6.080   PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.080   PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.080   PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.080   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.080   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=     6.100   PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.100   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.100   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.100   PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.100   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.100   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.100   PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.100   PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.100   PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.100   PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.100   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.100   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=     6.110   PROFILE= 1  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.110   PROFILE= 2  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.110   PROFILE= 3  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.110   PROFILE= 4  HYDRAULIC JUMP D.S.

CAUTION  SECNO=     6.310   PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.310   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.310   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.310   PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.310   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.310   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.310   PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.310   PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.310   PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.310   PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.310   PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.310   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=     6.360   PROFILE= 1  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.360   PROFILE= 2  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.360   PROFILE= 3  HYDRAULIC JUMP D.S.
CAUTION  SECNO=     6.360   PROFILE= 4  WSEL ASSUMED BASED ON MIN DIFF
CAUTION  SECNO=     6.360   PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.360   PROFILE= 4  HYDRAULIC JUMP D.S.

CAUTION  SECNO=     6.500   PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.500   PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.500   PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.500   PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.500   PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.500   PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     6.500   PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.500   PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     6.500   PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     6.500   PROFILE= 4  MINIMUM SPECIFIC ENERGY
```

```
 CAUTION  SECNO=    6.600  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.600  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    6.830  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    6.830  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.830  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    6.830  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=    6.870  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    6.870  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.350  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 3  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.350  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.350  PROFILE= 4  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=    7.380  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=    7.380  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=    7.380  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=    7.380  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```



```
 **************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 **************************************************

 EOF..
```

Continuous Interfolded ® Moore Business Forms, Inc.

```
1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  29-APR-88 TIME   00:57:48          *
*************************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


See 3.04 025

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1
29-APR-88 00:57:49 PAGE 1

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************
```

```
T1        CORFCD/COE OVERFLOW STUDY
T2        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3        FLAMINGO WASH - 25-YEAR
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.014000	0.00	0.0	0.	0.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
J3	VARIABLE CODES FOR SUMMARY PRINTOUT									
	150.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.050	0.050	0.035	0.100	0.300	0.000	0.000	0.000	0.000	0.000
NT	4.000	3250.000	4160.000	5690.000	8070.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.045	9918.000	0.050	10138.000	0.045	10362.000	0.130	12103.000	0.040
NH	13578.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	7.100	7.100	7.100	7.100	0.000	9798.000	10173.000	0.000	0.000
X1	3.040	36.000	9918.000	10138.000	0.000	0.000	0.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000
GR	1716.000	5153.000	1712.000	5553.000	1708.000	6393.000	1704.000	7208.000	1704.000	7323.000
GR	1704.000	7453.000	1708.000	7573.000	1708.000	9473.000	1712.000	9713.000	1714.100	9798.000
GR	1713.500	9885.000	1709.300	9918.000	1708.300	9954.000	1704.600	9969.000	1697.000	9987.000
GR	1697.100	9993.000	1697.000	10012.000	1699.100	10033.000	1695.800	10057.000	1696.000	10067.000
GR	1698.500	10069.000	1698.000	10076.000	1696.800	10079.000	1696.800	10093.000	1702.800	10108.000
GR	1709.500	10138.000	1709.700	10173.000	1708.400	10188.000	1708.400	10253.000	1708.400	10268.000

```
GR   1712.000   10309.000   1711.900   10335.000   1711.100   10362.000   1709.300   10860.000   1712.000   12103.000
GR   1716.000   13578.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
EJ      0.000       0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
```


SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK	ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	

```
*PROF 1

CCHV=   0.100  CEHV=   0.300
1490 NH CARD USED
*SECNO 3.040
2096 WSEL NOT GIVEN,AVG OF MAX,MIN USED

3470 ENCROACHMENT STATIONS=    9793.0   10173.0  TYPE=     1  TARGET=     375.000
     3.04      5.08  1700.88      0.00      0.00  1701.81      0.93      0.00      0.00   1709.30
  3250.         0.     3250.         0.        0.    420.         0.        0.        0.    1709.50
     0.00      0.00      7.74      0.00     0.045    0.050     0.045     0.000  1695.80   9977.82
 0.013993        0.        0.        0.        0         0        21      0.00   125.38  10103.19

FLOW DISTRIBUTION FOR SECNO=      3.04          CWSEL=   1700.88

STA=    9978.    10138.
  PER Q=    100.0
   AREA=    420.1
    VEL=      7.7
```



```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1        CORFCD/COE OVERFLOW STUDY
T2        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3        FLAMINGO WASH - 50-YEAR
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.014000	0.00	0.0	0.	0.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK	ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	

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*PROF 2

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.040
2096 WSEL NOT GIVEN,AVG OF MAX,MIN USED

3470 ENCROACHMENT STATIONS=	9793.0	10173.0	TYPE=	1	TARGET=	375.000				
3.04	5.65	1701.45	0.00	1700.88	1702.56	1.10	0.00	0.00	1709.30	
4160.	0.	4160.	0.	0.	493.	0.	0.	0.	1709.50	
0.00	0.00	8.43	0.00	0.045	0.050	0.045	0.000	1695.80	9976.45	
0.013853	0.	0.	0.	0	0	20	0.00	128.19	10104.64	

FLOW DISTRIBUTION FOR SECNO= 3.04 CWSEL= 1701.45

STA= 9976. 10138.
PER Q= 100.0
AREA= 493.3
VEL= 8.4

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 CCRFCD/COE OVERFLOW STUDY
T2 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3 FLAMINGO WASH - 100-YEAR

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.014000	0.00	0.0	0.	0.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	WLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.040
2096 WSEL NOT GIVEN,AVG OF MAX,MIN USED

3470 ENCROACHMENT STATIONS=	9793.0	10173.0	TYPE=	1	TARGET=	375.000				
3.04	6.49	1702.29	0.00	1700.88	1703.68	1.39	0.00	0.00	1709.30	
5690.	0.	5690.	0.	0.	502.	0.	0.	0.	1709.50	
0.00	0.00	9.46	0.00	0.045	0.050	0.045	0.000	1695.80	9974.48	
0.013961	0.	0.	0.	0	0	20	0.00	132.24	10106.72	

FLOW DISTRIBUTION FOR SECNO= 3.04 CWSEL= 1702.25

STA= 9974. 10138.
PER Q= 100.0
AREA= 601.7
VEL= 9.5

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

TI CORECD/COE OVERFLOW STUDY
T2 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3 FLAMINGO WASH - 500-YEAR

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.014000	0.00	0.0	0.	0.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.040
2096 WSEL NOT GIVEN,AVG OF MAX,MIN USED

3470 ENCROACHMENT STATIONS= 9793.0 10173.0 TYPE= 1 TARGET= 375.000

3.04	7.67	1703.47	0.00	1700.88	1705.21	1.74	0.00	0.00	1709.30
8070.	0.	8070.	0.	0.	762.	1.	0.	0.	1709.50
0.00	0.00	10.59	0.00	0.045	0.050	0.045	0.000	1695.80	9971.68
0.013731	0.	0.	0.	0	0	19	0.00	139.32	10111.00

FLOW DISTRIBUTION FOR SECNO= 3.04 CWSEL= 1703.47

STA= 9972. 10138.
PER Q= 100.0
AREA= 761.9
VEL= 10.6

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH - 25-YEA

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
3.040	0.00	0.00	0.00	1695.80	3250.00	1700.88	0.00	1701.81	139.93	7.74	420.14	274.74
3.040	0.00	0.00	0.00	1695.80	4160.00	1701.45	0.00	1702.56	138.53	8.43	493.26	353.45
3.040	0.00	0.00	0.00	1695.80	5690.00	1702.29	0.00	1703.68	139.61	9.46	601.67	481.56
3.040	0.00	0.00	0.00	1695.80	8070.00	1703.47	0.00	1705.21	137.31	10.59	761.87	688.69

FLAMINGO WASH - 25-YEA

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
3.040	3250.00	1700.88	0.00	0.00	0.00	125.38	0.00
3.040	4160.00	1701.45	0.58	0.00	0.58	128.19	0.00
3.040	5690.00	1702.29	0.83	0.00	1.41	132.24	0.00
3.040	8070.00	1703.47	1.18	0.00	2.59	139.32	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

END OF..

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```
T1          CCRFCD/COE OVERFLOW STUDY
T2          JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH - 25-YEAR
J1                2                    0.014
J2      1               -1
J3    150
NC 0.050   0.050    0.035      0.1       0.3
ST        4   3250     4160     5690      8070
NH        5   0.045    9918   0.050     10138   0.045    10362   0.130    12103    0.04
NH 13578
ET            7.1      7.1      7.1       7.1              9798   10173
X1   3.04      36     9918    10138
X2                                                                          15
GR1716.0     5153   1712.0     5553    1708.0     6393   1704.0     7208   1704.0     7323
GR1704.0     7453   1708.0     7573    1708.0     9473   1712.0     9713   1714.1     9798
GR1713.5     9885   1709.3     9918    1708.3     9954   1704.6     9969   1697.0     9987
GR1697.0     9993   1697.0    10012    1699.1    10033   1695.8    10057   1696.0    10067
GR1698.5    10069   1698.0    10076    1696.8    10079   1696.8    10093   1702.8    10108
GR1709.5    10138   1709.7    10173    1708.4    10188   1708.4    10253   1708.4    10268
GR1712.0    10309   1711.9    10335    1711.1    10362   1709.3    10860   1712.0    12103
GR1716.0    13578
EJ
T1          CCRFCD/COE OVERFLOW STUDY
T2          JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH - 50-YEAR
J1                3                    0.014
J2      2               -1
T1          CCRFCD/COE OVERFLOW STUDY
T2          JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH - 100-YEAR
J1                4                    0.014
J2      3               -1
T1          CCRFCD/COE OVERFLOW STUDY
T2          JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T3          FLAMINGO WASH - 500-YEAR
J1                5                    0.014
J2     15               -1


ER
EOF..
```

Continuous Interfolded ® Mogul Business Forms, Inc.

```
  66
2.65 ####  Flows less than specified for CP35 due to lost breakout
2.65 ####  at Spring Mountain Rd
2.65 ####           Centerline =  2290                                  ####
2.65 ####  Starting Water Levels taken from Reach 5 Analysis of 2.65    ####
2.68 ##########################################################################
2.68 ####           BOULDER HIGHWAY - Northbound Crossing               ####
2.68 ####              Special Bridge Routine                           ####
2.68 ##########################################################################
2.70 ##########################################################################
2.70 ####           BOULDER HIGHWAY - Southbound Crossing               ####
2.70 ####              Special Bridge Routine                           ####
2.70 ##########################################################################
2.79 ####           Centerline =  2320                                  ####
2.98 ####           Centerline =  2340                                  ####
3.18 ####           Centerline =  2300                                  ####
3.37 ####           Centerline =  2350                                  ####
3.53 ####           Centerline =  2390                                  ####
3.55 ##########################################################################
3.55 ####                 MOJAVE ROAD                                   ####
3.55 ####              Special Bridge Routine                           ####
3.55 ##########################################################################
3.71 ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
3.77 ##########################################################################
3.77 ####                 DESERT INN ROAD                               ####
3.77 ####              Special Bridge Routine                           ####
3.77 ####  BT points follow off road, high ground to north & south.     ####
3.77 ####                Centerline = 2720
3.77 ##########################################################################
3.83 ####           Centerline =  2240                                  ####
3.83 ####  This Section crosses Desert Inn to avoid skew.  Note         ####
3.83 ####  however, that the Sect. doesn't cross wier define by BT pts ####
4.00 ####           Centerline =  2250                                  ####
4.05 ##########################################################################
4.05 ####              PECOS-McLEOD DRIVE                               ####
4.05 ####              Special Bridge Routine                           ####
4.05 ##########################################################################
4.21 ####           Centerline =  2500                                  ####
4.41 ####           Centerline =  2530                                  ####
4.63 ####           Centerline =  2460                                  ####
4.69 ##########################################################################
4.69 ####                 EASTERN AVENUE                                ####
4.69 ####              Special Bridge Routine                           ####
4.69 ##########################################################################
4.75 ####           Centerline =  2300                                  ####
4.75 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
4.82 ##########################################################################
4.82 ####                 TIOGA WAY                                     ####
4.82 ####              Special Bridge Routine                           ####
4.82 ##########################################################################
4.87 ####           Centerline =  2400                                  ####
4.87 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
5.04 ####           Centerline =  2390                                  ####
5.21 ####           Centerline =  2380                                  ####
5.21 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
5.21 ####  Some of breakout returns from north; modeled flows do
5.21 ####  not change because flows from Tropicana Wash confluence
5.21 ####  still control.
5.26 ####     Centerline - 2410
5.28 ##########################################################################
5.28 ####                 SPENCER STREET                                ####
5.28 ####              Special Bridge Routine                           ####
5.28 ####        Centerline = 2450
```

Reach 4
Sec 2.65 to 5.57

```
C  5.28 ##########################################################################
C  5.32 ####            Centerline =  2390                                  ####
C  5.57 ####            Centerline =  2030                                  ####
C  5.57 ####  Near Algonquin Drive Alignment                                ####
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1           2                                   1          1798.51
J2       1          -1
NC   .12      .06      .045      .1        .3
QT       4     6400     8400    11920     35420
X1  2.65       17     2242     2325       815       745       760
GR  1812     1830     1812     1880      1812      1880      1812      1880      1808      1950
GR1805.8     2000   1804.6     2171    1804.7     2242    1790.2     2264    1790.2     2280
GR1789.5     2306   1802.9     2325    1803.8     2415    1804.7     2596      1808     2810
GR1810.5     2990     1812     3210
NC                      .3        .5
X1  2.68       15     9980    10025       200       140       170
X3     10                                                1800.1    1800.1
GR1816.0     9410   1812.0     9600    1808.0     9790    1804.0     9950    1791.8     9980
GR1791.8    10025     1800    10040      1803    10050      1804    10100      1805    10220
GR  1805    10310     1808    10520    1809.5    10700    1812.0    11000    1813.0    11100
SB  1.25    1.560     2.80             40.5       8.7       229              1792.9   1791.8
X1  2.69                          50        50        50                     1.1
X2                     1   1800.1    1805.4
X3     10                                                1805.4    1805.4
BT      8     2000     1814                2235    1809.6                2490    1806.2     1801
BT   2538   1805.4     1801     2880    1805.7                3230    1810.5                3450
BT   1812             3640     1813
NC                     .05
X1  2.70                                  55.0      55.0      55.0                   1.5
X3     10                                                1802.9    1802.9
ET              6.1      6.1      6.1       6.1      8920     10730
SB  1.25    1.560     2.80             33.6      10.5       162              1795.9  1794.30
X1  2.71       13     9980    10020        50        50        50                     1.6
X2                     1   1802.9    1804.4
X3     10                                                1804.4    1804.4
BT      9     1730   1817.3                2000    1813.5                2200      1809
BT   2450   1804.4                2517    1804.6                2850    1806.2                3170
BT1811.5                3600   1812.5                4260    1815.2
GR  1820     8920     1816     9400      1812      9580      1808      9730      1806      9950
GR  1796     9980     1796    10020      1806     10060      1808     10420      1812     10730
GR  1813    10900     1813    11200      1816     11400
QT       4     6000     8000    11420     34420
NC   .05      .16      .035
X1  2.79       17     2272     2359       380       460       420
GR  1820     1570     1816     1840      1812      1940      1812      1940      1812      1940
GR1809.3     2000   1808.6     2200    1808.9     2231    1807.1     2272    1799.4     2302
GR1799.4     2335   1808.4     2359    1807.5     2439    1808.6     2598      1812     2850
GR  1816     2890     1820     2940
NC   .16      .16      .04       .1        .3
X1  2.98       15     2321     2389      1070       990      1010
GR  1828     1900     1828     1900      1828      1900      1828      1900      1828      1900
GR1824.9     2000   1818.0     2251    1817.4     2321    1807.7     2338    1807.4     2363
GR1817.6     2389   1817.2     2512    1817.6     2764      1820     2960      1828     2980
ET                      6.1               2223      2960
NC   .14      .18
X1  3.18       18     2265     2392      1060      1020      1030
GR  1840     1730     1840     1730      1840      1730      1840      1730      1836      1870
GR1832.7     2000   1829.8     2107    1832.5     2223    1831.1     2265    1822.7     2284
GR1820.7     2296   1820.7     2312    1822.9     2332    1824.3     2369    1832.1     2392
GR1834.6     2481   1838.3     2622    1838.3     2960
NC   .14      .14      .035
X1  3.37       24     2280     2376       805      1020       990
X4     1  1833.2     2000
GR  1844     1560     1844     1560      1844      1560      1844      1560      1840      1850
GR  1836     1970   1832.2     2125    1834.3     2168    1833.8     2259    1832.9     2280
GR1827.0     2295   1824.5     2344    1824.5     2366    1833.3     2376    1834.7     2386
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GR1842.1	2690	1840.9	2757	1841.1	2788	1844.0	2840		
NC .12	.14								
X1 3.53	24	2319	2481	825	885	870			
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2380	1832.1	2402	1836.7	2418	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
NC			.3	.5					
X1 3.55	24	2370	2420	90	130	100			
X3 10							1843	1843	
GR 1856	1590	1855	1610	1855	1510	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2370	1832.1	2420	1836.7	2428	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
SB 1.25	1.560	2.63		48.7	18.7	240		1835	1834.5
X1 3.56				50	50	50		.5	
X2		1	1843	1847.1					
X3 10							1847.1	1847.1	
BT 7	1900	1856		1920	1852		2000	1849.6	
BT 2190	1847.1		2242.7	1848.4		2550	1854.1		2890
BT1857.1									
NC .045	.140	.025							
X1 3.58				110	110	110			
NC		.1		.3					
X1 3.71	15	9950	10040	680	640	660			
X4 3	1861	8900	1860	9220	1864	9480			
GR 1868	8720	1864	8750	1868	9560	1868	9740	1864	9800
GR 1860	9950	1852	9580	1850	10000	1852	10020	1858	10040
GR 1855	10100	1860	10370	1864	10600	1868	10640	1869.3	10980
BT 4	6000	7610	9680	25760					
NC		.025	.3	.5					
X1 3.77	13	2700	2750	340	250	330			
X3 10							1862.3	1862.3	
GR 1875	2310	1872	2390	1872	2430	1876	2480	1872	2530
GR 1869	2650	1853.8	2700	1853.8	2750	1864	2800	1865	2850
GR 1864	2920	1864	3100	1868	3120	1868	3230	1872	3470
SB 1.25	1.560	3.00		48.7	18.7	240		1854.3	1853.8
X1 3.78				75	75	75		0.5	
X2		1	1862.3	1865.5					
X3 10							1865.5	1865.5	
BT 8	0	1876		150	1872		260	1866.2	
BT 380	1868		520	1868		540	1864		720
BT 1864		760	1872						
NC .045	.14	.035	.1	.3					
X1 3.83	12	9900	10035	130	300	230			
GR1880.0	9060	1876.8	9170	1876	9510	1876	9730	1872	9900
GR 1860	9950	1860	10020	1868	10035	1872	10150	1872	10220
GR 1876	10450	1880	10750						
NC .045	.06		.3	.5					
X1 4.00	15	2238	2351	900	900	900			
X3 10									
GR1886.7	2000	1881.7	2079	1873.9	2110	1872.8	2130	1873.2	2152
GR1876.3	2177	1874.7	2238	1865.7	2274	1865.2	2316	1875.6	2344
GR1880.0	2351	1879.6	2404	1883.6	2463	1888.5	2628	1908	2810
X1 4.05	8	9440	10090	100	400	295			
X3 10							1890.1	1890.9	
GR 1888	9440	1884	9590	1884	9780	1880	9950	1868.4	9980
GR1868.4	10055	1888	10090	1892	10210				
SB 1.25	1.560	2.63		72	0	1488	1.31	1868.9	1868.4
X1 4.07				100	100	100		.5	
X2		1	1884.9	1885.5					
X3 10							1890.1	1890.9	
BT 2	2475	1890.1	1884.9	2568	1890.9	1884.9			
NH 4	.12	2000	.06	2482	.035	2689	.05	3071	
X1 4.21	26	2482	2556	720	720	720			

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GR 1900	1895		1200	1892	1340	1894	1890	1894	1890
GR1888.5	2000	1890.4	2229	1886.3	2332	1886.1	2413	1882.4	2454
GR1882.1	2482	1876.8	2455	1876.8	2547	1884.8	2556	1884.8	2620
GR1890.8	2650	1893.9	2689	1893.9	2722	1890.4	2769	1889.4	2789
GR1890.7	2828	1892.7	2881	1900.2	2966	1902.2	3005	1904.8	3043
GR1910.3	3071								
NC .06	.05	.033	.1	.3					
NH 4	.12	2000	.06	2480	.035	2599	.05	3520	
X1 4.41	25	2480	2599	1140	1080	1085			
GR 1912	960	1908	1130	1908	1130	1908	1130	1906.5	1330
GR1904.4	2000	1905.3	2250	1899.1	2300	1897.4	2347	1898.6	2480
GR1887.0	2511	1886.3	2527	1885.9	2562	1900.7	2570	1900.3	2593
GR1905.4	2599	1905.1	2649	1898.8	2704	1894.7	2734	1898.9	2889
GR1902.6	2918	1902.0	3013	1904.2	3198	1912	3300	1914	3520
NC .12	.06	.035							
X1 4.63	20	2376	2498	930	1185	1165			
GR 1920	1030	1915.3	1150	1916.3	1500	1916	1580	1912	1510
GR1907.6	2000	1911.4	2235	1908.6	2329	1907.8	2376	1896.7	2408
GR1899.4	2426	1897.4	2448	1897.4	2478	1909.5	2498	1909.5	2551
GR1909.0	2731	1920	2990	1916	3250	1911.8	3320	1920	3390
NC			.3	.5					
X1 4.69	12	9980	10020	330	220	280			
X3 10							1911.8	1911.8	
GR 1920	9000	1918	9400	1916	9710	1912	9960	1903.3	9980
GR1903.3	10020	1908	10050	1912	10090	1913.5	10150	1913.5	10400
GR 1916	10450	1920	10500						
SB 1.25	1.550	2.63		32	10	176		1903.8	1903.3
X1 4.70				56	56	56		.5	
X2			1	1911.8	1914.1				
X3 10							1914.1	1914.1	
BT 11	1740	1922.8		2000	1920.3		2440	1917.4	
BT 2790	1914.6		2790	1961.1		2860	1915.6		2860
BT1914.1		3190	1916.6		3550	1918.6		3910	1921.4
BT	4230	1924							
NH 4	.045	2180	.035	2472	.045	2795	.14	3910	
X1 4.75	19	2174	2472	350	150	260			
GR 1928	1850	1928	1850	1928	1850	1928	1850	1928	1850
GR1922.4	2000	1920.7	2080	1912.4	2174	1909.7	2272	1908.1	2286
GR1907.1	2313	1908.0	2329	1908.5	2363	1912.7	2472	1915.9	2575
GR1920.0	2795	1922	3360	1924	3770	1928	3910		
X1 4.82	14	9970	10020	400	400	400.			
X3 10							1916.1	1916.1	
GR 1928	9300	1924	9690	1920	9780	1916	9840	1916	9940
GR 1910	9970	1910	10020	1916	10060	1920	10160	1921	10320
GR1923.5	10560	1923.5	10900	1924	11120	1928	11220		
SB 1.25	1.500	2.63		42	12	165		1910.6	1910.0
X1 4.83				60	60	60		.6	
X2			1	1916.1	1918.5				
X3 10							1918.5	1918.5	
BT 8	1760	1928.7		2000	1925.2		2380	1923.3	
BT 2660	1918.5		2708	1918.7		2820	1922.7		3220
BT 1924		3260	1928						
NH 5	.120	2000	.045	2225	.035	2685	.045	2735	.12
NH 3650									
X1 4.87	26	2345	2482	240	130	170			
GR 1932	1420	1928	1530	1928	1530	1928	1530	1924	1850
GR1922.5	2000	1921.6	2106	1924.3	2132	1925.7	2225	1922.6	2262
GR1917.8	2290	1916.1	2345	1915.8	2381	1912.7	2416	1911.5	2430
GR1911.5	2445	1915.4	2449	1917.3	2482	1920.2	2530	1923.8	2571
GR1926.5	2642	1928.2	2685	1924.2	2735	1923.5	3050	1927	3450
GR 1932	3650								
ET	6.1	6.1	6.1	6.1	2129	3070			
NC			.1	.3					
NH 5	.120	2129	.045	2294	.035	2590	.045	2590	.12
NH 3870									
X1 5.04	22	2294	2590	765	1040	890			
GR1936.0	1460	1932	1560	1932	1560	1932	1560	1928.4	1670
GR1930.6	2000	1932.3	2129	1931.1	2155	1928.4	2218	1926.4	2294

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GR1922.8     2520     1921.6     2572     1918.3     2576     1918.3     2580     1920.1     2415
GR1923.2     2436     1923.8     2519     1925.8     2590     1931.4     2628     1932.8     2724
GR1932.6     2781     1936       3070
QT      4    6000     7300       8860     22500
NH      4     .12     2000        .045     2335      .035     2417      .045     2676
X1   5.21       22     2336       2417      920       920       920
GR   1948     1030     1942.5     1260     1942.5     1260     1942.5     1260     1945     1630
GR1944.2     2000     1940.7     2034     1937.2     2078     1934.8     2159     1932.8     2268
GR1931.6     2336     1925.9     2351     1925.4     2369     1924.6     2396     1924.2     2408
GR1933.7     2417     1934.5     2436     1936.4     2460     1938.2     2493     1941.1     2584
GR1944.4     2638     1949.4     2676
NC    .12     .12      .035
X1   5.26       13     2355       2470      200       300       270
GR   1948     1030     1942.5     1260     1945.5     1630     1944     2000     1940     2320
GR   1936     2355     1928       2400     1928       2450     1936     2470     1940     2500
GR   1944     2530     1944       2820     1948       2950
NC    .12     .12      .035        .3       .5
X1   5.28        7     2430       2485       30        100       70
X3      10                                                    1941.2   1941.2
GR1944.2     2000     1940.0     2350     1935.7     2430     1935.7     2485     1940     2510
GR   1944     2610     1948       2850
SB   1.25   1.560      2.63                  50.25     14.25      180                1936.2   1935.7
X1   5.29                                      65        65       65                  .5
X2                         1     1941.2     1942.2
X3      10                                                    1942.2   1942.2
BT       8     1820     1948                 2000     1945.2                2260     1944.1
BT    2590   1942.2                2790     1943.7                2862     1943.8                3180
BT1946.3                3340     1947.6
NC    .06      .08      .028
X1   5.32       14     2310       2477       260       150       170
X4      4   1945.3     2000       1946      2310      1948      1800     1952     1640
GR1956.0     1420     1941.5     2140     1946.0     2150     1946.0     2300     1941.4     2341
GR1936.1     2366     1936.1     2405     1936.1     2432     1942.7     2462     1944.4     2477
GR1945.2     2532     1945.6     2606       1952     2696       1952     3300
NC    .14     .18      .025        .1        .3
X1   5.57       16     2002       2059      1320      1320      1320
GR   1976      970     1972       1240      1972      1240      1972     1240     1968     1710
GR   1964     2000     1961       2002     1951.72    2008     1951.72    2053     1961     2059
GR   1964     2062     1967.5     2250     1965.8     2870      1968     2580     1972     3110
GR   1976     3350
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             3                                                1                1799.4
J2     2              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             4                                                1                1801.7
J2     3              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             5                                                1                1809.3
J2    15              -1


ER
EOF..
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```
 119
2.65 ####  Flows less than specified for CP35 due to lost breakout
2.65 ####  at Spring Mountain Rd
2.65 ####           Centerline =  2290                                  ####
2.65 ####  Starting Water Levels taken from Reach 5 Analysis of 2.65   ####
2.68 ##########################################################################
2.68 ####          BOULDER HIGHWAY - Northbound Crossing                ####
2.68 ####              Special Bridge Routine                           ####
2.68 ##########################################################################
2.68          1798.4
2.69          1798.4
2.70 ##########################################################################
2.70 ####          BOULDER HIGHWAY - Southbound Crossing                ####
2.70 ####              Special Bridge Routine                           ####
2.70 ##########################################################################
2.70          1800.5
2.71          1800.5
2.79 ####     1808.0 erline =  2320                                     ####
2.98 ####     1817.4 erline =  2340                                     ####
3.18 ####     1831.1 erline =  2300                                     ####
3.37 ####     1832.9 erline =  2350                                     ####
3.53 ####     1847.6 erline =  2390                                     ####
3.55 ##########################################################################
3.56 ####                  MOJAVE ROAD                                 ####
3.55 ####              Special Bridge Routine                          ####
3.55 ##########################################################################
3.55          1840.5
3.56          1840.5
3.58SECTIONS 3.58 THRU 3.74 WERE ADDED TO APPROX. A NEW CONCRETE
3.58CHANNEL. DATA BASED ON INCOMPLETE PLANS. THE TOTAL REACH LENGTH
3.58BETW MAJAVE & DESERT INN ROADS MEASURED 1250 FT, MONTGOMERYS
3.58MODEL INDICATES 950 FT.
3.58          1844.6
3.65          1849.5
3.71          1854.5
3.74          1859.4
3.77 ##########################################################################
3.77 ####                  DESERT INN ROAD                             ####
3.77 ####              Special Bridge Routine                          ####
3.77 ####  BT points follow off road, high ground to north & south.    ####
3.77 ####             Centerline = 2720
3.77 ##########################################################################
3.77          1859.8
3.78          1859.8
3.83 ####        Centerline =  2240                                    ####
3.83 ####  This Section crosses Desert Inn to avoid skew.  Note        ####
3.83 ####  however, that the Sect. doesn't cross wier define by BT pts ####
3.83          1868.0
4.00 ####     1874.7 erline =  2250                                     ####
4.05 ##########################################################################
4.05 ####                  PECOS-McLEOD DRIVE                          ####
4.05 ####              Special Bridge Routine                          ####
4.05 ##########################################################################
4.05          1882.4
4.07          1882.4
4.21 ####     1886.1 erline =  2500                                     ####
4.41 ####     1898.6 erline =  2530                                     ####
4.63 ####     1907.8 erline =  2460                                     ####
4.69 ##########################################################################
4.69 ####                  EASTERN AVENUE                              ####
4.69 ####              Special Bridge Routine                          ####
4.69 ##########################################################################
4.69          1909.3
```

Reach 4
sec 265 to 557

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```
4.70                1909.5
4.75 ####           1912.4 erline =  2300                                    ####
4.75 ####   Small Golf Course Bridge not modeled - assumed to fail           ####
4.82 ##########################################################################
4.82 ####                        TIOGA WAY                                   ####
4.82 ####                    Special Bridge Routine                          ####
4.82 ##########################################################################
4.82                1915.1
4.83                1915.1
4.87 ####           1916.1 erline =  2400                                    ####
4.87 ####   Small Golf Course Bridge not modeled - assumed to fail           ####
5.04 ####           1925.8 erline =  2390                                    ####
5.21 ####           1931.6 erline =  2380                                    ####
5.21 ####   Small Golf Course Bridge not modeled - assumed to fail           ####
5.21 ####   Some of breakout returns from north; modeled flows do
5.21 ####   not change because flows from Tropicana Wash confluence
5.21 ####   still control.
5.26 ####   1936.0 erline - 2410
5.28 ##########################################################################
5.28 ####                        SPENCER STREET                              ####
5.28 ####                    Special Bridge Routine                          ####
5.28 ####          Centerline = 2460
5.28 ##########################################################################
5.28                1938.7
5.29                1938.7
5.32SECTIONS 5.32, 5.38, & 5.44 ARE BASED ON PLANS OF THE CUESTA (LEFT
5.32BANK) & SOUTHERN COVE PARTNERSHIP (RIGHT BANK)
5.32                1943.8
5.38                1946.6
5.44                1949.4
5.46SECTIONS 5.46, 5.49, 5.50, 5.52, 5.53, 5.54, 5.56, 5.57, & 5.59 ARE
5.46BASED ON PLANS FOR THE VIKING DEVELOPMENT. THIS REACH IS A CONCRETE
5.46CHANNEL WITH TWO DROP STRUCTURES.
5.46                1950.5
5.49                1954.2
5.50                1954.7
5.52##########################################################################
5.52##########################################################################
5.52##################  A 2.2 FOOT DROP STRUCTURE  ###########################
5.52##################  OCCURS AT 5.52. SECTION    ###########################
5.52##################  5.53 DESCRIBES THE CREST   ###########################
5.52##########################################################################
5.52##########################################################################
5.52                1957.7
5.53A TENNIS COURT COVERS THE CHANNEL BETW. 5.53 & 5.54
5.53                1956.7
5.54                1957.3
5.56##########################################################################
5.56##########################################################################
5.56##################  A 2.5 FOOT DROP STRUCTURE  ###########################
5.56##################  OCCURS AT 5.67. SECTION    ###########################
5.56##################  5.53 DESCRIBES THE CREST   ###########################
5.56##########################################################################
5.56##########################################################################
5.56                1961.2
5.57                1961.2
5.59                1962.1
T1       MODIFICATION OF MONTGOMERY'S FINAL RUN BY TONY NEFAS (X6977), HYDRAULICS
T2       CHANNEL AND BRIDGE CAPACITY STUDY BY COE, 1/25/89
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1            2                                                    1793.66
J2     1      1      -1       5     12.5
J3    38     43      14       8        1        4       26       39       23       24
J3    49     42      51
NC   .12    .06    .045      .1       .3
QT    15   1000    2000     3000     4000     5000     6000     7000     8000     9000
QT 10000  11000   12000    13000    14000    15000
K1  2.65     17    2242     2325      815      745      760
```

X3 10							1865	1865	
GR 1812	1880	1812	1880	1812	1880	1812	1880	1808	1950
GR1805.8	2000	1804.6	2171	1804.7	2242	1790.2	2264	1790.2	2280
GR1789.5	2306	1802.0	2325	1803.8	2415	1804.7	2596	1808	2810
GR1810.5	2990	1812	3210						
NC			.3	.5					
X1 2.68	15	9980	10025	200	140	170			
X3 10							1870.1	1870.1	
GR1816.0	9410	1812.0	9600	1808.0	9790	1804.0	9950	1791.8	9980
GR1791.8	10025	1800	10040	1803	10050	1804	10100	1805	10220
GR 1805	10310	1808	10520	1809.5	10700	1812.0	11000	1813.0	11100
SB 1.25	1.560	2.80		40.7	8.7	229		1792.9	1791.8
X1 2.69				50	50	50		1.1	
X2		1	1800.1	1805.4					
X3 10							1870.4	1870.4	
BT 8	2000	1814		2235	1809.6		2490	1806.2	1801
BT 2538	1805.4	1801	2880	1805.7		3230	1810.5		3450
BT 1812		3640	1813						
NC		.05							
X1 2.70				55.0	55.0	55.0		1.5	
X3 10							1870.9	1870.9	
SB 1.25	1.560	2.80		38.5	10.5	162		1795.9	1794.30
X1 2.71	13	9980	10020	50	50	50		1.6	
X2		1	1802.9	1804.4					
X3 10							1870.4	1870.4	
BT 9	1730	1817.3		2000	1813.5		2200	1809	
BT 2450	1804.4		2517	1804.6		2850	1806.2		3170
BT1811.5		3600	1812.5		4260	1815.2			
GR 1820	8920	1816	9400	1812	9580	1808	9730	1806	9950
GR 1796	9980	1796	10020	1806	10060	1808	10420	1812	10730
GR 1813	10900	1813	11200	1816	11400				
NC .05	.16	.035							
X1 2.79	17	2272	2359	380	460	420			
X3 10							1870	1870	
GR 1820	1570	1816	1840	1812	1940	1812	1940	1812	1940
GR1809.3	2000	1808.6	2200	1808.9	2231	1807.1	2272	1799.4	2302
GR1799.4	2335	1808.4	2359	1807.5	2439	1808.6	2598	1812	2850
GR 1816	2890	1820	2940						
NC .16	.16	.04	.1	.3					
X1 2.98	15	2321	2389	1070	990	1010			
X3 10							1880	1880	
GR 1828	1900	1828	1900	1828	1900	1828	1900	1828	1900
GR1824.9	2000	1818.0	2251	1817.4	2321	1807.7	2338	1807.4	2363
GR1817.6	2389	1817.2	2512	1817.6	2764	1820	2960	1828	2980
NC .14	.18								
X1 3.18	18	2265	2392	1060	1020	1030			
X3 10							1890	1890	
GR 1840	1730	1840	1730	1840	1730	1840	1730	1836	1870
GR1832.7	2000	1829.8	2107	1832.5	2223	1831.1	2265	1822.7	2284
GR1820.7	2296	1820.7	2312	1822.9	2332	1824.3	2369	1832.1	2392
GR1834.6	2481	1838.3	2622	1838.3	2960				
NC .14	.14	.035							
X1 3.37	24	2280	2376	805	1020	990			
X3 10							1890	1850	
X4 1	1333.2	2000							
GR 1844	1560	1844	1560	1844	1560	1844	1560	1840	1850
GR 1836	1970	1832.2	2125	1834.3	2168	1833.8	2259	1832.9	2280
GR1827.0	2295	1824.5	2344	1824.5	2366	1833.3	2376	1834.7	2386
GR1837.0	2409	1834.7	2491	1835.7	2531	1837.3	2564	1839.5	2649
GR1842.1	2690	1840.9	2757	1841.1	2788	1844.0	2940		
NC .12	.14								
X1 3.53	24	2319	2481	825	885	870			
X3 10							1900	1900	
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2380	1832.1	2402	1836.7	2418	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		

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NC			.014	.3	.5					
X1	3.55	24	2370	2420	90	130	100			
X3	10							1900	1900	
GR	1856	1590	1855	1610	1855	1610.1	1855	1610.2	1856.5	1800
GR1853.1		2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5		2342	1832.1	2370	1832.1	2420	1836.7	2428	1842.4	2440
GR1845.4		2458	1847.8	2481	1848.3	2536	1846.3	2557	1846.8	2591
GR1846.8		2620	1849.2	2813	1852	2930	1856	3190		
SB	1.25	1.560	2.63		52.7	18.7	240		1835	1834.5
X1	3.56				50	50	50		.5	
X2			1	1843	1847.1					
X3	10							1900.1	1900.1	
BT	7	1900	1856		1920	1852		2000	1849.6	
BT	2190	1847.1		2242.7	1848.4		2550	1854.1		2890
BT1857.1										
X1	3.58	7	125.5	176.5	100	100	100			
X3	10							1880	1880	
GR1849.1		100	1844.6	113.5	1844.6	125.5	1837.6	136	1837.6	166
GR1844.6		176.5	1846.3	181.5						
X1	3.65				350	350	350		4.9	
X3	10							1880	1880	
X1	3.71				350	350	350		5.0	
X3	10							1890	1890	
X1	3.74				350	350	350		4.9	
X3	10							1895	1895	
NC			.025	.3	.5					
X1	3.77	15	2700	2750	340	250	330			
X3	10							1910.3	1910.3	
GR	1875	2310	1872	2390	1872	2430	1876	2430	1872	2530
GR	1869	2650	1853.8	2700	1853.8	2750	1864	2800	1865	2850
GR	1864	2920	1864	3100	1868	3120	1868	3280	1872	3470
SB	1.25	1.560	3.00		52.7	18.7	240		1854.3	1853.8
X1	3.78				75	75	75		0.5	
X2			1	1862.3	1865.5					
X3	10							1910.5	1910.5	
BT	8	0	1876		150	1872		260	1868.2	
BT	380	1868		520	1868		540	1864		720
BT	1864		760	1872						
NC	.045	.14	.035	.1	.3					
X1	3.83	12	9900	10035	130	300	230			
X3	10							1930	1930	
GR1880.0		9060	1876.0	9170	1876	9510	1876	9730	1872	9900
GR	1860	9950	1860	10020	1868	10035	1872	10150	1872	10220
GR	1876	10450	1880	10750						
NC	.045	.06		.3	.5					
X1	4.00	15	2238	2351	900	900	900			
X3	10							1930	1930	
GR1886.7		2000	1881.7	2079	1873.9	2110	1872.8	2130	1873.2	2152
GR1876.3		2177	1874.7	2238	1865.7	2274	1865.2	2316	1875.6	2344
GR1880.0		2351	1879.6	2404	1883.6	2463	1888.5	2628	1908	2810
X1	4.05	8	9976	10090	100	400	295			
X3	10							1940.1	1940.9	
GR	1888	9440	1884	9590	1884	9780	1880	9930	1868.4	9576
GR1868.4		10055	1888	10090	1892	10210				
SB	1.25	1.560	2.63	300	114	0	1488	1.31	1868.9	1868.4
X1	4.07				100	100	100		.5	
X2				1	1884.9	1885.5				
X3	10							1940.1	1940.9	
NH	4	.12	2000	.06	2482	.035	2689	.05	3071	
X1	4.21	26	2482	2556	720	720	720			
X3	10							1950	1950	
GR	1900	1090	1896	1260	1892	1340	1894	1690	1894	1690
GR1888.5		2000	1890.4	2229	1886.3	2332	1886.1	2413	1882.4	2454
GR1882.1		2482	1876.8	2495	1876.8	2547	1884.8	2556	1884.8	2620
GR1890.8		2660	1893.9	2689	1893.9	2722	1890.4	2769	1889.4	2789
GR1890.7		2828	1892.7	2881	1900.2	2966	1902.2	3005	1904.8	3043
GR1910.3		3071								
NC	.06	.05	.033	.1	.3					

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NH 4	.12	2000	.05	2480	.035	2599	.05	3520	
X1 4.41	25	2480	2599	1140	1080	1085			
X3 10							1960	1960	
GR 1912	960	1908	1130	1908	1130	1908	1130	1906.5	1330
GR1904.4	2000	1905.3	2250	1899.1	2300	1897.4	2347	1898.6	2480
GR1887.0	2511	1886.3	2527	1885.9	2562	1900.7	2570	1900.3	2593
GR1905.4	2599	1905.1	2649	1898.8	2704	1894.7	2734	1898.9	2889
GR1902.6	2918	1902.0	3013	1904.2	3198	1912	3310	1914	3520
NC .12	.06	.035							
X1 4.63	20	2376	2498	930	1185	1165			
X3 10							1970	1970	
GR 1920	1030	1915.3	1150	1916.3	1500	1916	1580	1912	1910
GR1907.6	2000	1911.4	2235	1908.6	2329	1907.8	2376	1896.7	2408
GR1899.4	2426	1897.4	2448	1897.4	2478	1909.5	2498	1909.5	2551
GR1909.0	2731	1920	2990	1915	3250	1911.8	3320	1920	3390
NC			.3		.5				
X1 4.69	12	9980	10020	330	220	280			
X3 10							1960.8	1960.8	
GR 1920	9000	1918	9400	1916	9710	1912	9960	1903.3	9980
GR1903.3	10020	1908	10050	1912	10090	1913.5	10150	1913.5	10400
GR 1916	10450	1920	10500						
SB 1.25	1.560	2.63		32	10	176		1903.8	1903.3
X1 4.70				56	56	56		.5	
X2			1	1911.8	1914.1				
X3 10							1960.1	1960.1	
BT 11	1740	1922.8		2000	1920.3		2440	1917.4	
BT 2790	1914.6		2790	1961.1		2860	1915.6		2860
BT1914.1		3190	1916.6		3550	1918.6		3910	1921.4
BT	4230	1924							
NH 4	.045	2174	.035	2472	.045	2795	.14	3910	
X1 4.75	19	2174	2472	350	150	260			
GR 1928	1850	1928	1850	1928	1850	1928	1850	1928	1850
GR1922.4	2000	1920.7	2080	1912.4	2174	1909.7	2272	1908.1	2286
GR1907.1	2313	1908.0	2329	1908.5	2363	1912.7	2472	1915.9	2575
GR1920.0	2795	1922	3360	1924	3770	1928	3910		
NC .045	.045	.035							
X1 4.82	14	9970	10020	400	400	400.			
X3 10							1970.1	1970.1	
GR 1928	9300	1924	9690	1920	9780	1916	9840	1916	9940
GR 1910	9970	1910	10020	1915	10060	1920	10160	1921	10320
GR1923.5	10560	1923.5	10500	1924	11120	1928	11220		
SB 1.25	1.500	2.63		46	12	165		1910.6	1910.0
X1 4.83				60	60	60		.6	
X2			1	1916.1	1918.5				
X3 10							1970.5	1970.5	
BT 8	1760	1928.7		2000	1925.2		2380	1923.3	
BT 2660	1918.5		2708	1918.7		2820	1922.7		3220
BT 1924		3260	1928						
NH 5	.120	2000	.045	2225	.035	2685	.045	2735	.12
NH 3650									
X1 4.87	26	2345	2482	240	130	170			
X3 10							1980	1980	
GR 1932	1420	1928	1530	1928	1530	1928	1530	1924	1850
GR1922.5	2000	1921.6	2106	1924.3	2132	1925.7	2225	1922.6	2262
GR1917.8	2290	1916.1	2345	1915.8	2381	1912.7	2406	1911.5	2430
GR1911.5	2445	1915.4	2449	1917.3	2482	1920.2	2530	1923.8	2571
GR1926.5	2642	1928.2	2685	1924.2	2735	1923.5	3050	1927	3450
GR 1932	3650								
NC			.1	.3					
NH 5	.120	2129	.045	2294	.035	2590	.045	2590	.12
NH 3070									
X1 5.04	22	2294	2590	765	1040	890			
X3 10							1990	1990	
GR1936.0	1460	1932	1560	1932	1560	1932	1550	1928.4	1670
GR1930.6	2000	1932.3	2129	1931.1	2155	1928.4	2218	1926.4	2294
GR1922.8	2320	1921.0	2372	1918.3	2376	1918.3	2390	1920.1	2415
GR1923.2	2436	1923.8	2519	1925.8	2590	1931.4	2628	1932.8	2724
GR1932.6	2781	1936	3070						

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VH     4        .12       2000       .045       2356       .035       2417       .045       2676
X1  5.21        22        2336       2417        920        920        920
X3    10                                                              2000       2000
GR  1948      1030      1942.5       1260     1942.5       1260     1942.5       1250       1945       1630
GR1944.2      2000      1940.7       2034     1937.2       2078     1934.8       2159     1932.8       2268
GR1931.6      2336      1925.9       2351     1925.4       2369     1924.6       2396     1924.2       2408
GR1933.7      2417      1934.5       2436     1936.4       2460     1938.2       2493     1941.1       2584
GR1944.4      2608      1949.4       2676
NC   .12       .12        .035
X1  5.26        13        2355       2470        200        300        270
X3    10                                                              2000       2000
GR  1948      1030      1942.5       1260     1945.5       1630       1944       2000       1940       2320
GR  1936      2355        1928       2400       1928       2450       1936       2470       1940       2500
GR  1944      2530        1944       2820       1948       2950
NC   .12       .12        .035         .3         .5
X1  5.28         7        2430       2485         30        100         70
X3    10                                                         2000.2     2000.2
GR1944.2      2000      1940.0       2350     1935.7       2430     1935.7       2485       1940       2510
GR  1944      2610        1948       2850
SB  1.25     1.550        2.63                  50.25      14.25        180                  1936.2     1935.7
X1  5.29                                           65         65         65                      .5
X2                             1     1941.2     1942.2
X3    10                                                         2000.2     2000.2
BT     8      1820        1948                    2000     1945.2                  2260     1944.1
BT  2590    1942.2                     2790     1943.7                  2862     1943.8                  3180
BT1946.3                   3340     1947.6
NC   .06        .08        .020
X1  5.32         6         110        200        195        195        195
X3    10                                                              1980       1980
GR1943.8       100      1943.8        110     1937.8        122     1937.8        188     1943.8        200
GR1943.8       210
X1  5.38                                           305        305        305                     2.8
X3    10                                                              1980       1980
X1  5.44                                           300        300        300                     2.8
X3    10                                                              1985       1985
NC                        .014
X1  5.46         6         110      164.4         80         80         80
X3    10                                                              1990       1990
GR1950.5       100      1950.5        110     1943.8      113.9     1943.8      158.9     1953.3      164.4
GR1953.3       175
X1  5.49         6         110        166        160        160        160
X3    10                                                              1990       1990
GR1954.2       100      1954.2        110     1944.7      115.5     1944.7      160.5     1954.2        166
GR1954.2       176
X1  5.50                                           80         80         80                      .5
X3    10                                                              1995       1995
X1  5.52         6         110        169        100        100        100
X3    10                                                              2000       2000
GR1957.7       100      1957.7        110     1945.7        117     1945.7        152     1957.7        169
GR1957.7       175
X1  5.53         6         110        166         .5         .5         .5
X3    10                                                              2000       2000
GR1957.7       100      1957.7        110     1948.2      115.5     1948.2      160.5     1957.7        166
GR1957.7       176
X1  5.54                                           120        120        120                     .6
X3    10                                                              2000       2000
X1  5.56         6         110        169         80         80         80
X3    10                                                              2000       2000
GR1961.2       100      1961.2        110     1949.2        117     1949.2        152     1961.2        169
GR1961.2       175
X1  5.57         6         110        166         .5         .5         .5
X3    10                                                              2000       2000
GR1961.2       100      1961.2        110     1951.7      115.5     1951.7      160.5     1961.2        166
GR1961.2       176
X1  5.59                                           180        180        180                     .9
EJ
T1        2000
T2        2000
```

T3	2000			
J1		3		1795.83
J2	2		-1	
T1	3000			
T2	3000			
T3	3000			
J1		4		1797.28
J2	3		-1	
T1	4000			
T2	4000			
T3	4000			
J1		5		1798.45
J2	4		-1	
T1	5000			
T2	5000			
T3	5000			
J1		6		1799.45
J2	5		-1	
T1	6000			
T2	6000			
T3	6000			
J1		7		1800.37
J2	6		-1	
T1	7000			
T2	7000			
T3	7000			
J1		8		1801.23
J2	7		-1	
T1	8000			
T2	8000			
T3	8000			
J1		9		1802.02
J2	8		-1	
T1	9000			
T2	9000			
T3	9000			
J1		10		1802.74
J2	9		-1	
T1	10000			
T2	10000			
T3	10000			
J1		11		1803.41
J2	10		-1	
T1	11000			
T2	11000			
T3	11000			
J1		12		1804.06
J2	11		-1	
T1	12000			
T2	12000			
T3	12000			
J1		13		1804.67
J2	12		-1	
T1	13000			
T2	13000			
T3	13000			
J1		14		1805.25
J2	13		-1	
T1	14000			
T2	14000			
T3	14000			
J1		15		1805.8
J2	14		-1	
T1	15000			
T2	15000			
T3	15000			
J1		16		1806.32
J2	15		-1	

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ER
EOF..

Reach 4

```
  66
2.65 ####  Flows less than specified for CP35 due to lost breakout
2.65 ####  at Spring Mountain Rd
2.65 ####          Centerline =  2290                                  ####
2.65 ####  Starting Water Levels taken from Reach 5 Analysis of 2.65   ####
2.68 ##########################################################################
2.68 ####          BOULDER HIGHWAY - Northbound Crossing               ####
2.68 ####              Special Bridge Routine                          ####
2.68 ##########################################################################
2.70 ##########################################################################
2.70 ####          BOULDER HIGHWAY - Southbound Crossing               ####
2.70 ####              Special Bridge Routine                          ####
2.70 ##########################################################################
2.79 ####          Centerline =  2320                                  ####
2.98 ####          Centerline =  2340                                  ####
3.18 ####          Centerline =  2300                                  ####
3.37 ####          Centerline =  2350                                  ####
3.53 ####          Centerline =  2390                                  ####
3.55 ##########################################################################
3.55 ####                MOJAVE ROAD                                   ####
3.55 ####              Special Bridge Routine                          ####
3.55 ##########################################################################
3.71 ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
3.77 ##########################################################################
3.77 ####                DESERT INN ROAD                               ####
3.77 ####              Special Bridge Routine                          ####
3.77 ####  BT points follow off road, high ground to north & south.    ####
3.77 ####            Centerline = 2720
3.77 ##########################################################################
3.83 ####          Centerline =  2240                                  ####
3.83 ####  This Section crosses Desert Inn to avoid skew.  Note        ####
3.83 ####  however, that the Sect. doesn't cross wier define by BT pts ####
4.00 ####          Centerline =  2250                                  ####
4.05 ##########################################################################
4.05 ####                PECOS-McLEOD DRIVE                            ####
4.05 ####              Special Bridge Routine                          ####
4.05 ##########################################################################
4.21 ####          Centerline =  2500                                  ####
4.41 ####          Centerline =  2530                                  ####
4.63 ####          Centerline =  2460                                  ####
4.69 ##########################################################################
4.69 ####                EASTERN AVENUE                                ####
4.69 ####              Special Bridge Routine                          ####
4.69 ##########################################################################
4.75 ####          Centerline =  2300                                  ####
4.75 ####  Small Golf Course Bridge not modeled - assumed to fail      ####
4.82 ##########################################################################
4.82 ####                TIOGA WAY                                     ####
4.82 ####              Special Bridge Routine                          ####
4.82 ##########################################################################
4.87 ####          Centerline =  2400                                  ####
4.87 ####  Small Golf Course Bridge not modeled - assumed to fail      ####
5.04 ####          Centerline =  2390                                  ####
5.21 ####          Centerline =  2380                                  ####
5.21 ####  Small Golf Course Bridge not modeled - assumed to fail      ####
5.21 ####  Some of breakout returns from north; modeled flows do
5.21 ####  not change because flows from Tropicana Wash confluence
5.21 ####  still control.
5.26 ####     Centerline - 2410
5.28 ##########################################################################
5.28 ####                SPENCER STREET                                ####
5.28 ####              Special Bridge Routine                          ####
5.28 ####        Centerline = 2450
```

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```
C    5.28 ##########################################################################
C    5.32 ####          Centerline =  2390                                      ####
C    5.57 ####          Centerline =  2030                                      ####
C    5.57 ####  Near Algoncuin Drive Alignment                                  ####
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1           2                                        1       1798.51
J2       1          -1
NC    .12      .06      .045      .1       .3
QT       4      6400      8400   11920    35420
X1    2.65        17      2242    2325      815       745       760
GR   1812      1880      1812    1880     1812      1812      1880      1808      1950
GR1805.8      2000    1804.6    2171   1804.7      2242    1790.2      2264    1790.2      2280
GR1789.5      2306    1802.0    2325   1803.8      2415    1804.7      2596      1808      2810
GR1810.5      2990      1812    3210
NC                       .3                .5
X1    2.68        15      9980   10025      200       140       170
X3      10                                                1800.1    1800.1
GR1816.0      9410    1812.0    9600   1808.0      9790    1804.0      9950    1791.8      9980
GR1791.8     10025      1800   10040     1803     10050      1804     10100      1805     10220
GR   1805     10310      1808   10520   1809.5     10700   1812.0     11000    1813.0     11100
SB   1.25     1.560      2.80            40.5       8.7       229              1792.9    1791.8
X1    2.69                          1      50        50        50                1.1
X2                          1   1800.1   1805.4
X3      10                                                1805.4    1805.4
BT       8      2000      1814            2235   1809.6                2490    1806.2      1801
BT    2538    1805.4      1801    2880   1805.7                3230   1810.5                3450
BT    1812                3640    1813
NC                        .05
X1    2.70                                55.0      55.0      55.0                1.5
X3      10                                                1802.9    1802.9
ET                6.1       6.1       6.1       6.1      8920     10730
SB   1.25     1.560      2.80            33.6      10.5       162              1795.9  1794.30
X1    2.71        13      9980   10020      50        50        50                1.6
X2                            1   1802.9   1804.4
X3      10                                                1804.4    1804.4
BT       9      1730    1817.3            2000   1813.5                2200      1809
BT    2450    1804.4                2517   1804.6                2850   1806.2                3170
BT1811.5                  3600   1812.5                4260   1815.2
GR   1820      8920      1816      9400     1812      9580      1808      9730      1806      9950
GR   1796      9980      1796     10020     1806     10060      1808     10420      1812     10730
GR   1813     10900      1813     11200     1816     11400
QT       4      6000      8000     11420    34420
NC    .05       .16       .035
X1    2.79        17      2272      2359      380       460       420
GR   1820      1570      1816      1840     1812      1940      1812      1940      1812      1940
GR1809.3      2000    1808.6      2200   1808.9      2231    1807.1      2272    1799.4      2302
GR1799.4      2335    1808.4      2359   1807.5      2439    1808.6      2598      1812      2850
GR   1816      2890      1820      2940
NC    .16       .16       .04        .1       .3
X1    2.98        15      2321      2389     1070       990      1010
GR   1828      1900      1828      1900     1828      1900      1828      1900      1828      1900
GR1824.9      2000    1818.0      2291   1817.4      2321    1807.7      2338    1807.4      2363
GR1817.6      2389    1817.2      2512   1817.6      2764      1820      2960      1828      2980
ET                        6.1               2223      2960
NC    .14       .18
X1    3.18        18      2265      2352     1060      1020      1030
GR   1840      1730      1840      1730     1840      1730      1840      1730      1836      1870
GR1832.7      2000    1829.8      2107   1832.5      2223    1831.1      2265    1822.7      2284
GR1820.7      2296    1820.7      2312   1822.9      2332    1824.3      2369    1832.1      2392
GR1834.6      2481    1838.3      2622   1838.3      2960
NC    .14       .14       .035
X1    3.37        24      2280      2376      805      1020       990
X4       1  1833.2      2000
GR   1844      1560      1844      1560     1844      1560      1844      1560      1840      1850
GR   1836      1970    1832.2      2125   1834.3      2168    1833.8      2259    1832.9      2280
GR1827.0      2295    1824.5      2344   1824.5      2366    1833.3      2376    1834.7      2386
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GR1837.0	2459	1834.7	2491	1835.7	2531	1837.3	2564	1839.5	2648
GR1842.1	2690	1840.9	2757	1841.1	2788	1844.0	2840		
NC .12	.14								
X1 3.53	24	2319	2481	825	985	870			
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2380	1832.1	2402	1836.7	2418	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
NC			.3	.5					
X1 3.55	24	2370	2420	90	130	100			
X3 10							1843	1843	
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2370	1832.1	2420	1836.7	2428	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
SB 1.25	1.560	2.63		48.7	18.7	240		1835	1834.5
X1 3.56				50	50	50		.5	
X2			1	1843	1847.1				
X3 10							1847.1	1847.1	
BT 7	1900	1856		1920	1852		2000	1849.6	
BT 2190	1847.1		2242.7	1848.4		2550	1854.1		2890
BT1857.1									
NC .045	.140	.025							
X1 3.58				110	110	110			
NC			.1	.3					
X1 3.71	15	9950	10040	680	640	660			
X4 3	1861	9900	1860	9220	1864	9480			
GR 1868	8720	1864	8750	1868	9560	1868	9740	1864	9800
GR 1860	9950	1852	9980	1850	10000	1852	10020	1858	10040
GR 1855	10100	1860	10370	1864	10600	1868	10640	1869.3	10980
BT 4	6000	7610	9680	25760					
NC		.025	.3	.5					
X1 3.77	13	2700	2750	340	250	330			
X3 10							1862.3	1862.3	
GR 1875	2310	1872	2390	1872	2430	1876	2480	1872	2530
GR 1869	2650	1853.8	2700	1853.8	2750	1864	2800	1865	2850
GR 1864	2920	1864	3100	1868	3120	1868	3280	1872	3470
SB 1.25	1.560	3.00		48.7	18.7	240		1854.3	1853.8
X1 3.78				75	75	75		0.5	
X2			1	1862.3	1855.5				
X3 10							1865.5	1865.5	
BT 8	0	1876		150	1872		260	1868.2	
BT 380	1868		520	1868		540	1864		720
BT 1864		760	1872						
NC .045	.14	.035	.1	.3					
X1 3.83	12	9900	10035	130	300	230			
SR1880.0	9960	1876.0	9170	1876	9510	1876	9730	1872	9900
GR 1860	9950	1860	10020	1868	10035	1872	10150	1872	10220
GR 1876	10450	1880	10750						
NC .045	.05		.3	.5					
X1 4.00	15	2238	2351	900	900	900			
X3 10									
GR1886.7	2000	1881.7	2079	1873.9	2110	1872.8	2130	1873.2	2152
GR1876.3	2177	1874.7	2238	1855.7	2274	1865.2	2316	1875.6	2344
SR1880.0	2351	1879.6	2404	1883.6	2463	1888.5	2628	1908	2810
X1 4.05	8	9440	10090	100	400	295			
X3 10							1890.1	1890.9	
GR 1888	9440	1884	9590	1884	9780	1880	9930	1868.4	9980
GR1868.4	10055	1888	10090	1892	10210				
SB 1.25	1.560	2.63		72	0	1488	1.31	1868.9	1868.4
X1 4.07				100	100	100		.5	
X2			1	1884.9	1885.5				
X3 10							1890.1	1890.9	
BT 2	2475	1890.1	1884.9	2568	1890.9	1884.9			
NH 4	.12	2000	.06	2482	.035	2689	.05	3071	
X1 4.21	26	2482	2556	720	720	720			

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GR 1900	1890	1878	1220	1892	1040	1894	1896	1894	1890
GR1888.5	2000	1890.4	2229	1886.3	2332	1886.1	2413	1882.4	2454
GR1882.1	2482	1876.8	2455	1876.8	2547	1884.8	2556	1884.8	2620
GR1890.8	2660	1893.9	2689	1893.9	2722	1890.4	2769	1885.4	2789
GR1890.7	2828	1892.7	2881	1900.2	2966	1902.2	3005	1904.8	3043
GR1910.3	3071								
NC .06	.05	.033	.1	.3					
NH 4	.12	2000	.06	2480	.035	2599	.05	3520	
X1 4.41	25	2480	2599	1140	1080	1085			
GR 1912	960	1908	1130	1908	1130	1908	1130	1906.5	1330
GR1904.4	2000	1905.3	2250	1899.1	2300	1897.4	2347	1898.6	2480
GR1887.0	2511	1886.3	2527	1885.9	2562	1900.7	2570	1900.3	2593
GR1905.4	2599	1905.1	2649	1898.8	2704	1894.7	2734	1898.9	2889
GR1902.6	2918	1902.0	3013	1904.2	3198	1912	3300	1914	3520
NC .12	.06	.035							
X1 4.63	20	2376	2498	930	1185	1165			
GR 1920	1030	1915.3	1150	1916.3	1500	1916	1580	1912	1510
GR1907.6	2000	1911.4	2235	1918.6	2329	1907.8	2376	1896.7	2408
GR1899.4	2426	1897.4	2448	1897.4	2478	1909.5	2498	1909.5	2551
GR1909.0	2731	1920	2990	1916	3250	1911.8	3320	1920	3390
NC			.3	.5					
X1 4.69	12	9980	10020	330	220	280			
X3 10							1911.8	1911.8	
GR 1920	9000	1918	9400	1916	9710	1912	9960	1903.3	9980
GR1903.3	10020	1908	10050	1912	10090	1913.5	10150	1913.5	10400
GR 1916	10450	1920	10500						
SB 1.25	1.550	2.63		32	10	176		1903.8	1903.3
X1 4.70				56	56	56		.5	
X2		1	1911.8	1914.1					
X3 10							1914.1	1914.1	
BT 11	1740	1922.8		2000	1920.3		2440	1917.4	
BT 2790	1914.6		2790	1961.1		2860	1915.6		2860
BT1914.1		3190	1916.6		3550	1918.6		3910	1921.4
BT	4230	1924							
NH 4	.045	2180	.035	2472	.045	2795	.14	3910	
X1 4.75	19	2174	2472	350	150	260			
GR 1928	1850	1928	1950	1928	1850	1928	1850	1928	1650
GR1922.4	2000	1920.7	2080	1912.4	2174	1909.7	2272	1908.1	2286
GR1907.1	2313	1908.0	2329	1908.5	2363	1912.7	2472	1915.9	2575
GR1920.0	2795	1922	3360	1924	3770	1928	3910		
X1 4.82	14	9970	10020	400	400	400.			
X3 10							1916.1	1916.1	
GR 1928	9300	1924	9690	1920	9780	1916	9840	1916	9940
GR 1910	9970	1910	10020	1916	10060	1920	10160	1921	10320
GR1923.5	10560	1923.5	10900	1924	11120	1928	11220		
SB 1.25	1.500	2.63		42	12	165		1910.6	1910.0
X1 4.83				60	60	60		.6	
X2		1	1916.1	1918.5					
X3 10							1918.5	1918.5	
BT 8	1760	1928.7		2000	1925.2		2380	1923.3	
BT 2660	1918.5		2708	1918.7		2820	1922.7		3220
BT 1924		3260	1928						
NH 5	.120	2000	.045	2225	.035	2685	.045	2735	.12
NH 3650									
X1 4.87	26	2345	2482	240	130	170			
GR 1932	1420	1928	1530	1928	1530	1928	1530	1924	1850
GR1922.5	2000	1921.6	2106	1924.3	2132	1925.7	2225	1922.6	2262
GR1917.8	2290	1916.1	2345	1915.8	2381	1912.7	2406	1911.5	2430
GR1911.5	2445	1915.4	2449	1917.3	2482	1920.2	2530	1923.8	2571
GR1926.5	2642	1928.2	2685	1924.2	2735	1923.5	3050	1927	3450
GR 1932	3650								
ET	6.1	6.1	6.1	6.1	2129	3070			
NC			.1	.3					
NH 5	.120	2129	.045	2294	.035	2590	.045	2590	.12
NH 3070									
X1 5.04	22	2294	2590	765	1040	890			
GR1936.0	1460	1932	1560	1932	1560	1932	1560	1928.4	1670
GR1930.6	2000	1932.3	2129	1931.1	2155	1928.4	2218	1926.4	2294

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GR1922.8     2520     1921.0     2572     1918.3     2578     1918.3     2590     1920.1     2615
GR1923.2     2436     1923.8     2519     1925.8     2590     1931.4     2628     1932.8     2724
GR1932.6     2731     1936       3070
QT      4    6000     7300       8860     22500
NH      4     .12     2000       .045     2335       .035     2417       .045     2676
X1   5.21      22     2336       2417      920        920      920
GR   1948     1030     1942.5     1260     1942.5     1260     1942.5     1260     1945     1630
GR1944.2     2000     1940.7     2034     1937.2     2078     1934.8     2159     1932.8     2268
GR1931.6     2336     1925.9     2351     1925.4     2369     1924.6     2396     1924.2     2408
GR1933.7     2417     1934.5     2436     1936.4     2460     1938.2     2493     1941.1     2584
GR1944.4     2608     1949.4     2676
NC    .12     .12      .035
X1   5.26      13     2355       2470      200        300        270
GR   1948     1030     1942.5     1260     1945.5     1630     1944       2030     1940     2320
GR   1936     2355     1928       2400     1928       2450     1936       2470     1940     2500
GR   1944     2530     1944       2820     1948       2950
NC    .12     .12      .035       .3        .5
X1   5.28       7      2430       2485      30         100        70
X3     10                                                                1941.2   1941.2
GR1944.2     2000     1940.0     2350     1935.7     2430     1935.7     2435     1940     2510
GR   1944     2610     1948       2850
SB   1.25   1.560      2.63                50.25      14.25      180                1936.2   1935.7
X1   5.29                                    65         65         65                  .5
X2                         1     1941.2     1942.2
X3     10                                                                1942.2   1942.2
BT      8     1820     1948                 2000     1945.2                2260     1944.1
BT   2590   1942.2                2790     1943.7                2862     1943.8                3180
BT1946.3                3340     1947.6
NC    .06     .08      .028
X1   5.32      14     2310       2477      260        150        170
X4      4   1945.3     2000       1946      2310       1948       1800       1952     1640
GR1956.0     1420     1941.5     2140     1946.0     2150     1946.0     2300     1941.4     2341
GR1936.1     2366     1936.1     2405     1936.1     2432     1942.7     2462     1944.4     2477
GR1945.2     2532     1945.6     2606     1952       2696     1952       3300
NC    .14     .18      .025       .1        .3
X1   5.57      16     2002       2059     1320       1320       1320
GR   1976      970     1972       1240     1972       1240     1972       1240     1968     1710
GR   1964     2000     1961       2002     1951.72    2008     1951.72    2053     1961     2059
GR   1964     2062     1967.5     2250     1965.8     2870     1968       2980     1972     3110
GR   1976     3350
EJ
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1                3                                                  1          1799.4
J2      2                -1
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1                4                                                  1          1801.7
J2      3                -1
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1                5                                                  1          1809.3
J2     15                -1


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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED AUGUST 1983                              *
 *                                                   *
 *  RUN DATE  27-APR-88 TIME   00:07:33              *
 *****************************************************
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 ***************************************
 *  U.S. ARMY CORPS OF ENGINEERS
 *  THE HYDROLOGIC ENGINEERING CENTER
 *  609 SECOND STREET, SUITE D
 *  DAVIS, CALIFORNIA 95616
 *  (916) 440-2105 (FTS) 448-2105
 ***************************************
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X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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 ***************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 ***************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                              DMH 10/5/87
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.       2.        0.        0.  0.000000      0.00      1.0        0.  1798.510     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.060     0.045     0.100     0.300     0.000     0.000     0.000     0.000     0.000
QT      4.100  6400.000  8400.000 11920.000 35420.000     0.000     0.000     0.000     0.000     0.000
         ####  Flows less than specified for CP35 due to lost breakout
         ####  at Spring Mountain Rd
         ####            Centerline =  2290                                  ####
         ####  Starting Water Levels taken from Reach 5 Analysis of 2.65     ####
X1      2.550    17.000  2242.000  2325.000   815.000   745.000   760.000     0.000     0.000     0.000
GR   1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1808.000  1950.000
GR   1805.300  2000.000  1804.600  2171.000  1804.700  2242.000  1790.200  2264.000  1790.200  2280.000
GR   1789.500  2306.000  1802.000  2325.000  1803.800  2415.000  1804.700  2596.000  1808.000  2810.000
GR   1810.500  2990.000  1812.000  3210.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.300     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
         ##########################################################################
         ####            BOULDER HIGHWAY - Northbound Crossing                 ####
         ####                  Special Bridge Routine                          ####
```

X1	2.580	15.000	9980.000	10025.000	200.000	140.000	170.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1800.100	1800.100	0.000
GR	1816.300	9410.000	1812.000	9600.000	1808.000	9790.000	1804.000	9950.000	1791.800	9980.000
GR	1791.800	10025.000	1800.000	10040.000	1803.000	10050.000	1804.000	10100.000	1805.000	10220.000
GR	1805.300	10310.000	1808.300	10520.000	1809.500	10700.000	1812.000	11000.000	1813.000	11100.000
SB	1.250	1.560	2.800	0.000	40.500	8.700	229.000	0.000	1792.900	1791.800
X1	2.590	0.000	0.000	0.000	50.000	50.000	50.000	0.000	1.100	0.000
X2	0.300	0.000	1.000	1800.100	1805.400	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1805.400	1805.400	0.000
BT	8.000	2000.000	1814.000	0.000	2235.000	1809.600	0.000	2490.000	1806.200	1801.000
BT	2538.000	1805.400	1801.000	2880.000	1805.700	0.000	3230.000	1810.500	0.000	3450.000
BT	1812.300	0.000	3640.000	1813.000	0.000	0.000	0.000	0.000	0.000	0.000

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NC	0.300	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

X1	2.700	0.000	0.000	0.000	55.000	55.000	55.000	0.000	1.500	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1802.900	1802.900	0.000
ET	0.000	6.100	6.100	6.100	6.100	8920.000	10730.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	33.600	10.500	162.000	0.000	1795.900	1794.300
X1	2.710	13.000	9980.000	10020.000	50.000	50.000	50.000	0.000	1.600	0.000
X2	0.300	0.000	1.000	1802.900	1804.400	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1804.400	1804.400	0.000
BT	9.300	1730.000	1817.300	0.000	2000.000	1813.500	0.000	2200.000	1809.000	0.000
BT	2450.300	1804.400	0.000	2517.000	1804.600	0.000	2850.000	1806.200	0.000	3170.000
BT	1811.500	0.000	3600.000	1812.500	0.000	4260.000	1815.200	0.000	0.000	0.000
GR	1820.300	8920.000	1816.000	9400.000	1812.000	9580.000	1808.000	9730.000	1806.000	9950.000
GR	1796.300	9980.000	1796.000	10020.000	1806.000	10060.000	1808.000	10420.000	1812.000	10730.000
GR	1813.300	10900.000	1813.000	11200.000	1815.000	11400.000	0.000	0.000	0.000	0.000
QT	4.300	6000.000	8000.000	11420.000	34420.000	0.000	0.000	0.000	0.000	0.000
NC	0.050	0.169	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2320

X1	2.790	17.000	2272.000	2359.000	380.000	460.000	420.000	0.000	0.000	0.000
GR	1820.000	1570.000	1816.000	1840.000	1812.000	1940.000	1812.000	1940.000	1812.000	1940.000
GR	1809.300	2000.000	1808.600	2200.000	1808.900	2231.000	1807.100	2272.600	1799.400	2302.000
GR	1799.400	2335.000	1808.400	2359.000	1807.500	2439.000	1808.600	2598.000	1812.000	2850.000
GR	1816.300	2890.000	1820.000	2940.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000

Centerline = 2340

X1	2.980	15.000	2321.000	2389.000	1070.000	990.000	1010.000	0.000	0.000	0.000
GR	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000
GR	1824.300	2000.000	1818.000	2291.000	1817.400	2321.000	1807.700	2338.000	1807.400	2363.000
GR	1817.600	2389.000	1817.200	2512.000	1817.600	2764.000	1820.000	2960.000	1828.000	2980.000
ET	0.300	0.000	0.000	6.100	0.000	2223.000	2960.000	0.000	0.000	0.000
NC	0.140	0.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2300

X1	3.180	18.000	2265.000	2392.000	1060.000	1020.000	1030.000	0.000	0.000	0.000
GR	1840.000	1730.000	1840.000	1730.000	1840.000	1730.000	1840.000	1730.000	1836.000	1870.000
GR	1832.700	2000.000	1829.800	2107.000	1832.500	2223.000	1831.100	2265.000	1822.700	2284.000
GR	1820.700	2296.000	1820.700	2312.000	1822.900	2332.000	1824.300	2369.000	1832.100	2392.000
GR	1834.600	2481.000	1838.300	2622.000	1838.300	2960.000	0.000	0.000	0.000	0.000
NC	0.140	0.140	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2350

X1	3.370	24.000	2280.000	2376.000	805.000	1020.000	990.000	0.000	0.000	0.000
X4	1.300	1833.200	2000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
GR  1836.000  1970.000  1832.200  2125.000  1834.300  2168.000  1833.800  2259.000  1832.900  2280.000
GR  1827.000  2295.000  1824.500  2344.000  1824.500  2366.000  1833.300  2376.000  1834.700  2386.000
GR  1837.300  2409.000  1834.700  2491.000  1835.700  2531.000  1837.300  2564.000  1839.500  2648.000
```



```
GR  1842.100  2690.000  1840.900  2757.000  1841.100  2788.000  1844.000  2840.000  0.000  0.000

NC     0.120     0.140     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
          ####          Centerline =  2390                          ####
X1     3.530    24.000  2319.000  2481.000   925.000   885.000   870.000     0.000     0.000     0.000
GR  1856.300  1590.000  1855.000  1610.000  1855.000  1610.000  1855.000  1610.000  1856.500  1800.000
GR  1853.100  2000.000  1847.100  2185.000  1848.000  2233.000  1847.600  2319.000  1841.100  2335.000
GR  1833.500  2342.000  1832.100  2380.000  1832.100  2402.000  1836.700  2418.000  1842.400  2440.000
GR  1845.400  2458.000  1847.800  2481.000  1848.800  2536.000  1846.300  2567.000  1846.800  2591.000
GR  1846.300  2620.000  1849.200  2813.000  1852.000  2930.000  1856.000  3190.000     0.000     0.000

NC     0.000     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
       ##########################################################################
          ####                    MOJAVE ROAD                          ####
          ####              Special Bridge Routine                     ####
       ##########################################################################
X1     3.550    24.000  2370.000  2420.000    90.000   130.000   100.000     0.000     0.000     0.000
X3    10.300     0.000     0.000     0.000     0.000     0.000     0.000  1843.000  1843.000     0.000
GR  1856.000  1590.000  1855.000  1610.000  1855.000  1610.000  1855.000  1610.000  1856.500  1800.000
GR  1853.100  2000.000  1847.100  2185.000  1848.000  2233.000  1847.600  2319.000  1841.100  2335.000
GR  1833.500  2342.000  1832.100  2370.000  1832.100  2420.000  1836.700  2428.000  1842.400  2440.000
GR  1845.400  2458.000  1847.800  2481.000  1848.800  2536.000  1846.300  2567.000  1846.800  2591.000
GR  1846.800  2620.000  1849.200  2813.000  1852.000  2930.000  1856.000  3190.000     0.000     0.000

SB     1.250     1.560     2.630     0.000    48.700    18.700   240.000     0.000  1835.000  1834.500
X1     3.560     0.000     0.000     0.000    50.000    50.000    50.000     0.000     0.500     0.000
X2     0.000     0.000     1.000  1843.000  1847.100     0.000     0.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000  1847.100  1847.100     0.000
BT     7.000  1900.000  1856.000     0.000  1920.000  1852.000     0.000  2000.000  1849.600     0.000
BT  2190.100  1847.100     0.000  2242.700  1848.400     0.000  2550.000  1854.100     0.000  2890.000
BT  1857.100     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC     0.045     0.140     0.025     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1     3.580     0.000     0.000     0.000   110.000   110.000   110.000     0.000     0.000     0.000

NC     0.300     0.000     0.000     0.100     0.300     0.000     0.000     0.000     0.000     0.000
          ####  Overflows, paralleling Desert Inn, Confluc at this Section ####
X1     3.710    15.000  9950.000 10040.000   680.000   640.000   660.000     0.000     0.000     0.000
X4     3.000  1861.000  8900.000  1860.000  9220.000  1864.000  9480.000     0.000     0.000     0.000
GR  1868.000  8720.000  1864.000  8750.000  1868.000  9560.000  1868.000  9740.000  1864.000  9800.000
GR  1860.000  9950.000  1852.000  9980.000  1850.000 10000.000  1852.000 10020.000  1858.000 10040.000
GR  1855.300 10100.000  1860.000 10370.000  1864.000 10600.000  1868.000 10640.000  1869.300 10980.000

QT     4.000  6000.000  7610.000  9680.000 25760.000     0.000     0.000     0.000     0.000     0.000
NC     0.000     0.000     0.025     0.300     0.500     0.000     0.000     0.000     0.000     0.000
       ##########################################################################
          ####                   DESERT INN ROAD                       ####
          ####              Special Bridge Routine                     ####
          ####  BT points follow off road, high ground to north & south.  ####
```



```
          ####              Centerline = 2720
       ##########################################################################
X1     3.770    13.000  2700.000  2750.000   340.000   250.000   330.000     0.000     0.000     0.000
X3    10.300     0.000     0.000     0.000     0.000     0.000     0.000  1862.300  1862.300     0.000
GR  1875.000  2310.000  1872.000  2390.000  1872.000  2430.000  1876.000  2480.000  1872.000  2530.000
GR  1869.000  2650.000  1853.800  2700.000  1853.800  2750.000  1864.000  2800.000  1865.000  2850.000
GR  1864.000  2920.000  1864.000  3100.000  1868.000  3120.000  1868.000  3280.000  1872.000  3470.000
```


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SB      1.250       1.560       3.000       0.000      48.700      18.700     240.000       0.000    1854.300    1853.800
X1      3.780       0.000       0.000       0.000      75.000      75.000      75.000       0.000       0.500       0.000
X2      0.000       0.000       1.000    1862.300    1865.500       0.000       0.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1865.500    1865.500       0.000
BT      8.000       0.000    1876.000       0.000     150.000    1872.000       0.000     260.000    1868.200       0.000
BT    380.000    1868.000       0.000     520.000    1868.000       0.000     540.000    1864.000       0.000     720.000
BT   1864.000       0.000     760.000    1872.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.045       0.140       0.035       0.100       0.300       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =  2240                          ####
        ####  This Section crosses Desert Inn to avoid skew.  Note    ####
        ####  however, that the Sect. doesn't cross wier define by BI pts ####
X1      3.330      12.000    9900.000   10035.000     130.000     300.000     230.000       0.000       0.000       0.000
GR   1880.100    9060.000    1876.000    9170.000    1876.000    9510.000    1876.000    9730.000    1872.000    9900.000
GR   1860.000    9950.000    1860.000   10020.000    1868.000   10035.000    1872.000   10150.000    1872.000   10220.000
GR   1876.000   10450.000    1880.000   10750.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.045       0.060       0.000       0.300       0.500       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =  2250                          ####
X1      4.000      15.000    2238.000    2351.000     900.000     900.000     900.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR   1886.700    2000.000    1881.700    2079.000    1873.900    2110.000    1872.800    2130.000    1873.200    2152.000
GR   1876.300    2177.000    1874.700    2238.000    1865.700    2274.000    1865.200    2316.000    1875.600    2344.000
GR   1880.000    2351.000    1879.600    2404.000    1883.600    2463.000    1888.500    2628.000    1908.000    2810.000

        ##########################################################################
        ####                    PECOS-McLEOD DRIVE                            ####
        ####                 Special Bridge Routine                           ####
        ##########################################################################
X1      4.350       8.000    9440.000   10090.000     100.000     400.000     295.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1890.100    1890.900       0.000
GR   1888.300    9440.000    1884.000    9590.000    1884.000    9780.000    1880.000    9930.000    1868.400    9980.000
GR   1868.400   10055.000    1888.000   10090.000    1892.000   10210.000       0.000       0.000       0.000       0.000

SB      1.250       1.560       2.630       0.000      72.000       0.000    1488.000       1.310    1868.900    1868.400
X1      4.370       0.000       0.000       0.000     100.000     100.000     100.000       0.000       0.500       0.000
X2      0.000       0.000       1.000    1884.900    1885.500       0.000       0.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1890.100    1890.900       0.000
BT      2.000    2475.000    1890.100    1884.900    2568.000    1890.900    1884.900       0.000       0.000       0.000

NH      4.000       0.120    2000.000       0.060    2482.000       0.035    2689.000       0.050    3071.000       0.000
```



```
        ####              Centerline =  2500                          ####
X1      4.210      26.000    2482.000    2556.000     720.000     720.000     720.000       0.000       0.000       0.000
GR   1900.000    1090.000    1896.600    1260.000    1892.000    1340.000    1894.000    1690.000    1894.000    1690.000
GR   1888.500    2000.000    1890.400    2229.000    1886.300    2332.000    1886.100    2413.000    1882.400    2454.000
GR   1882.100    2482.000    1876.800    2495.000    1876.800    2547.000    1884.800    2556.000    1884.800    2620.000
GR   1890.300    2660.000    1893.900    2689.000    1893.900    2722.000    1890.400    2769.000    1889.400    2789.000
GR   1898.700    2828.000    1892.700    2881.000    1900.200    2966.000    1902.200    3005.000    1904.800    3043.000
GR   1910.300    3071.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.060       0.050       0.033       0.100       0.300       0.000       0.000       0.000       0.000       0.000
NH      4.000       0.120    2000.000       0.060    2480.000       0.035    2599.000       0.050    3520.000       0.000
        ####              Centerline =  2530                          ####
X1      4.410      25.000    2480.000    2599.000    1140.000    1080.000    1085.000       0.000       0.000       0.000
GR   1912.000     960.000    1908.000    1130.000    1908.000    1130.000    1906.000    1130.000    1906.500    1330.000
GR   1904.400    2080.000    1905.300    2250.000    1899.100    2300.000    1897.400    2347.000    1898.600    2480.000
GR   1887.000    2511.000    1886.300    2527.000    1885.900    2562.000    1900.700    2570.000    1900.300    2593.000
GR   1905.400    2599.000    1905.100    2649.000    1898.800    2704.000    1894.700    2734.000    1899.900    2889.000
GR   1902.600    2918.000    1902.000    3013.000    1904.200    3198.000    1912.000    3300.000    1914.000    3520.000

NC      0.120       0.060       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =  2460                          ####
X1      4.530      20.000    2376.000    2498.000     930.000    1185.000    1165.000       0.000       0.000       0.000
```

GR	1920.300	1030.000	1915.300	1150.000	1916.300	1500.000	1916.000	1580.000	1912.000	1910.000
GR	1907.600	2000.000	1911.400	2235.000	1908.600	2329.000	1907.800	2376.000	1896.700	2408.000
GR	1899.400	2426.000	1897.400	2448.000	1897.400	2478.000	1909.500	2498.000	1909.500	2551.000
GR	1909.000	2731.000	1920.000	2990.000	1916.000	3250.000	1911.800	3320.000	1920.000	3390.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

##

EASTERN AVENUE

Special Bridge Routine

##

X1	4.590	12.000	9980.000	10020.000	330.000	220.000	280.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1911.800	1911.800	0.000
GR	1920.000	9800.000	1918.000	9400.000	1916.000	9710.000	1912.000	9960.000	1903.300	9980.000
GR	1903.300	10020.000	1908.000	10050.000	1912.000	10090.000	1913.500	10150.000	1913.500	10400.000
GR	1916.000	10450.000	1920.000	10500.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.630	0.000	32.000	10.000	176.000	0.000	1903.800	1903.300
X1	4.700	0.000	0.000	0.000	56.000	56.000	56.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	1911.800	1914.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1914.100	1914.100	0.000
BT	11.000	1740.000	1922.800	0.000	2000.000	1920.300	0.000	2440.000	1917.400	0.000
BT	2790.300	1914.600	0.000	2790.000	1961.100	0.000	2860.000	1915.600	0.000	2860.000
BT	1914.100	0.000	3190.000	1916.600	0.000	3550.000	1518.600	0.000	3910.000	1921.400
BT	0.000	4230.000	1924.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	4.300	0.045	2180.000	0.000	0.035	2472.000	0.045	2795.000	0.140	3910.000

Centerline = 2300

Small Golf Course Bridge not modeled - assumed to fail

X1	4.750	19.000	2174.000	2472.000	350.000	150.000	260.000	0.000	0.000	0.000
GR	1928.300	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000
GR	1922.400	2000.000	1920.700	2080.000	1912.400	2174.000	1909.700	2272.000	1908.100	2286.000
GR	1907.100	2313.000	1908.000	2329.000	1908.500	2363.000	1912.700	2472.000	1915.900	2575.000
GR	1920.100	2795.000	1922.000	3360.000	1924.000	3770.000	1928.000	3910.000	0.000	0.000

##

TIOGA WAY

Special Bridge Routine

##

X1	4.820	14.000	9970.000	10020.000	400.000	400.000	400.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1916.100	1916.100	0.000
GR	1928.300	9300.000	1924.000	9690.000	1920.000	9780.000	1916.000	9840.000	1916.000	9940.000
GR	1910.000	9970.000	1910.000	10020.000	1916.000	10060.000	1920.000	10160.000	1921.000	10320.000
GR	1923.500	10560.000	1923.500	10900.000	1924.000	11120.000	1928.000	11220.000	0.000	0.000
SB	1.250	1.500	2.630	0.000	42.000	12.000	165.000	0.000	1910.600	1910.000
X1	4.830	0.000	0.000	0.000	60.000	60.000	60.000	0.000	0.600	0.000
X2	0.000	0.000	1.000	1916.100	1918.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1918.500	1918.500	0.000
BT	8.000	1760.000	1928.700	0.000	2000.000	1925.200	0.000	2380.000	1923.300	0.000
BT	2660.000	1918.500	0.000	2708.000	1918.700	0.000	2820.000	1922.700	0.000	3220.000
BT	1924.300	0.000	3260.000	1928.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.120	2000.000	0.045	2225.000	0.035	2685.000	0.045	2735.000	0.120
NH	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2400

Small Golf Course Bridge not modeled - assumed to fail

X1	4.870	26.000	2345.000	2482.000	240.000	130.000	170.000	0.000	0.000	0.000
GR	1932.000	1420.000	1928.000	1530.000	1928.000	1530.000	1928.000	1530.000	1924.000	1850.000
GR	1922.500	2000.000	1921.600	2106.000	1924.300	2132.000	1925.700	2225.000	1922.600	2262.000
GR	1917.300	2290.000	1916.100	2345.000	1915.800	2381.000	1912.700	2406.000	1911.500	2430.000
GR	1911.500	2445.000	1915.400	2449.000	1917.300	2482.000	1920.200	2530.000	1923.800	2571.000
GR	1926.500	2642.000	1928.200	2685.000	1924.200	2735.000	1923.500	3050.000	1927.000	3450.000
GR	1932.000	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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ET        0.300        5.100        6.100        6.100        6.100     2129.000     3070.000        0.000        0.000        0.000
NC        0.300        0.000        0.000        0.100        0.300        0.000        0.000        0.000        0.000        0.000
NH        5.000        0.120     2129.000        0.045     2294.000        0.035     2590.000        0.045     2590.000        0.120
NH     3070.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ####                  Centerline =  2390                          ####
X1        5.340       22.000     2294.000     2590.000      765.000     1040.000      890.000        0.000        0.000        0.000
GR     1936.000     1460.000     1932.000     1560.000     1932.000     1560.000     1932.000     1560.000     1928.400     1670.000
GR     1930.600     2000.000     1932.300     2129.000     1931.100     2155.000     1928.400     2218.000     1926.400     2294.000
GR     1922.300     2320.000     1921.000     2372.000     1918.300     2376.000     1918.300     2390.000     1920.100     2415.000
GR     1923.200     2436.000     1923.800     2519.000     1925.800     2590.000     1931.400     2628.000     1932.800     2724.000
GR     1932.600     2781.000     1936.000     3070.000        0.000        0.000        0.000        0.000        0.000        0.000
```



```
QT        4.300     6000.000     7300.000     8860.000    22500.000        0.000        0.000        0.000        0.000        0.000
NH        4.300        0.120     2000.000        0.045     2336.000        0.035     2417.000        0.045     2676.000        0.000
          ####                  Centerline =  2380                          ####
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
          ####  Some of breakout returns from north; modeled flows do
          ####  not change because flows from Tropicana Wash confluence
          ####  still control.
X1        5.210       22.000     2336.000     2417.000      920.000      920.000      920.000        0.000        0.000        0.000
GR     1948.000     1030.000     1942.500     1260.000     1942.500     1260.000     1942.500     1260.000     1945.000     1630.000
GR     1944.200     2000.000     1940.700     2034.000     1937.200     2078.000     1934.800     2159.000     1932.800     2268.000
GR     1931.600     2336.000     1925.900     2351.000     1925.400     2369.000     1924.600     2396.000     1924.200     2408.000
GR     1933.700     2417.000     1934.500     2436.000     1936.400     2460.000     1938.200     2493.000     1941.100     2584.000
GR     1944.400     2608.000     1949.400     2676.000        0.000        0.000        0.000        0.000        0.000        0.000

NC        0.120        0.120        0.035        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ####     Centerline - 2410
X1        5.260       13.000     2355.000     2470.000      200.000      300.000      270.000        0.000        0.000        0.000
GR     1948.000     1030.000     1942.500     1260.000     1945.500     1630.000     1944.000     2000.000     1940.000     2320.000
GR     1936.000     2355.000     1928.000     2400.000     1928.000     2450.000     1936.000     2470.000     1940.000     2500.000
GR     1944.000     2530.000     1944.000     2820.000     1948.000     2950.000        0.000        0.000        0.000        0.000

NC        0.120        0.120        0.035        0.300        0.500        0.000        0.000        0.000        0.000        0.000
          ##########################################################################
          ####                      SPENCER STREET                              ####
          ####                  Special Bridge Routine                          ####
          ####          Centerline = 2460                                       ####
          ##########################################################################
X1        5.280        7.000     2430.000     2485.000       30.000      100.000       70.000        0.000        0.000        0.000
X3       10.000        0.000        0.000        0.000        0.000        0.000        0.000     1941.200     1941.200        0.000
GR     1944.200     2000.000     1940.000     2350.000     1935.700     2430.000     1935.700     2485.000     1940.000     2510.000
GR     1944.000     2610.000     1948.000     2950.000        0.000        0.000        0.000        0.000        0.000        0.000

SB        1.250        1.560        2.630        0.000       50.250       14.250      180.000        0.000     1936.200     1935.700
X1        5.290        0.000        0.000        0.000       65.000       65.000        0.000        0.000        0.500        0.000
X2        0.000        0.000        1.000     1941.200     1942.200        0.000        0.000        0.000        0.000        0.000
X3       10.000        0.000        0.000        0.000        0.000        0.000        0.000     1942.200     1942.200        0.000
BT        8.000     1820.000     1948.000        0.000     2000.000     1945.200        0.000     2260.000     1944.100        0.000
BT     2590.000     1942.200        0.000     2790.000     1943.700        0.000     2862.000     1943.800        0.000     3180.000
BT     1946.300        0.000     3340.000     1947.600        0.000        0.000        0.000        0.000        0.000        0.000

NC        0.060        0.080        0.028        0.000        0.000        0.000        0.000        0.000        0.000        0.000
          ####                  Centerline =  2390                          ####
X1        5.320       14.000     2310.000     2477.000      260.000      150.000      170.000        0.000        0.000        0.000
X4        4.000     1945.300     2000.000     1946.000     2310.000     1948.000     1800.000     1952.000     1640.000        0.000
GR     1956.000     1420.000     1941.500     2140.000     1946.000     2150.000     1946.000     2300.000     1941.400     2341.000
GR     1936.100     2366.000     1936.100     2405.000     1936.100     2432.000     1942.700     2462.000     1944.400     2477.000
GR     1945.200     2532.000     1945.600     2606.000     1952.000     2696.000     1952.000     3300.000        0.000        0.000
```


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NC        0.140        0.180        0.025        0.100        0.300        0.000        0.000        0.000        0.000        0.000
          ####                  Centerline =  2130                                      ####
          ####  Near Algonquin Drive Alignment                                          ####
X1        5.570       16.000     2002.000     2059.000     1320.000     1320.000     1320.000        0.000        0.000        0.000
GR     1976.000      970.000     1972.000     1240.000     1972.000     1240.000     1972.000     1240.000     1968.000     1710.000
GR     1964.000     2000.000     1961.000     2002.000     1951.720     2008.000     1951.720     2053.000     1961.000     2059.000
GR     1964.000     2062.000     1967.500     2250.000     1965.800     2870.000     1968.000     2980.000     1972.000     3110.000
GR     1976.000     3350.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000
EJ        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000        0.000
1
  27-APR-88     00:07:33                                                                                              PAGE     9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


  *PROF 1

  CCHV=   0.100  CEHV=   0.300
  *SECNO 2.650
            ####  Flows less than specified for CP35 due to lost breakout
            ####  at Spring Mountain Rd
            ####                Centerline =  2290                                    ####
            ####  Starting Water Levels taken from Reach 5 Analysis of 2.65           ####
      2.65        9.01   1798.51        0.00   1798.51   1801.36      2.85      0.00        0.00   1804.70
     6400.          0.      6400.          0.        0.       472.        0.        0.        0.   1802.00
      0.00        0.00     13.55        0.00      0.120     0.045     0.060     0.000  1789.50   2251.39
 0.014103         815.      760.         745.         0         0         0      0.00    68.30   2319.70
3
  CCHV=   0.300  CEHV=   0.500
  *SECNO 2.680
            ##################################################################################
            ####                BOULDER HIGHWAY - Northbound Crossing                     ####
            ####                     Special Bridge Routine                               ####
            ##################################################################################
      2.68        8.75   1800.55        0.30      0.00   1803.42      2.37      2.05        0.01   1791.80
     6400.         303.      5645.        452.        94.       394.        70.         2.        0.   1791.80
      0.00        3.22     14.34        6.43      0.120     0.045     0.060     0.000  1791.80   9958.48
 0.010452         200.      170.         140.         4         0         0      0.00    83.35  10041.83
3

  SPECIAL BRIDGE

  5227 DOWNSTREAM ELEV IS   1798.20 ,NOT   1800.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

  SB   XK         XKOR       COEG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.80       0.00      40.50       8.70     229.00       0.00    1792.90    1791.80

  *SECNO 2.690

  3301 HV CHANGED MORE THAN HVINS

  PRESSURE AND WEIR FLOW

1
  27-APR-88     00:07:33                                                                                              PAGE    10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1819.47	1811.64	0.00	2615.	3804.	229.	229.	1800.10	1805.40

2.69	13.51	1806.41	0.00	0.00	1807.23	0.83	3.82	0.00	1792.90
6400.	448.	4979.	972.	256.	608.	397.	3.	1.	1792.90
0.01	1.75	8.19	2.45	0.120	0.045	0.060	0.000	1792.90	9897.75
0.001913	50.	50.	50.	3	0	6	0.00	433.69	10331.44

*SECNO 2.700

##
BCULDER HIGHWAY - Southbound Crossing
Special Bridge Routine
##

2.70	11.94	1806.34	0.00	0.00	1807.60	1.26	0.15	0.21	1794.40
6400.	426.	5243.	731.	175.	537.	154.	4.	1.	1794.40
0.01	2.43	9.76	4.75	0.120	0.050	0.060	0.000	1794.40	9950.65
0.003952	55.	55.	55.	3	0	0	0.00	136.21	10086.86

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1800.98 ,NOT 1806.34 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1844.14	1817.80	0.00	5219.	1188.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8920.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	9.19	1806.79	0.00	0.00	1808.96	2.17	0.00	0.00	1797.60
6400.	422.	4835.	1143.	127.	368.	169.	5.	1.	1797.60
0.01	3.33	13.16	6.77	0.120	0.050	0.060	0.000	1797.60	9952.44
0.010181	50.	50.	50.	20	0	8	0.00	104.32	10056.75

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.730

3301 HV CHANGED MORE THAN HVINS

Centerline = 2320

2.79	10.85	1810.25	0.00	0.00	1810.87	0.62	1.45	0.46	1807.10
6000.	645.	4578.	377.	409.	720.	635.	17.	5.	1808.40
0.03	1.58	6.91	0.59	0.050	0.035	0.160	0.000	1799.40	1978.88
0.001644	380.	420.	463.	3	0	0	0.00	741.44	2720.32

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ####                Centerline =  2340                          ####
      2.98     10.51   1817.51   1817.91      0.00   1820.11      2.20      3.17      0.47   1817.40
      6000.        2.      5894.      104.       7.       491.      195.       46.       20.   1817.60
         0.05     0.34      12.01      0.53     0.160     0.040     0.160     0.000   1807.40   2295.44
  0.008156     1070.      1010.       990.        20         8         0      0.00    493.98   2789.42
)
 *SECNO 3.180
      ####                Centerline =  2300                          ####
      3.18      7.29   1827.99      0.00      0.00   1829.98      1.99      9.85      0.02   1831.10
      6000.        0.      6000.        0.        0.       530.        0.       60.       27.   1832.10
         0.08     0.00      11.31      0.00     0.140     0.040     0.180     0.000   1820.70   2272.03
  0.011367     1060.      1030.      1020.         4         0         0      0.00    107.86   2379.89
)
 *SECNO 3.370

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

      ####                Centerline =  2350                          ####
      3.37      9.41   1833.91      0.00      0.00   1834.94      1.03      4.87      0.10   1832.90
      6000.      115.      5885.        0.      196.       716.        1.       76.       31.   1833.30
         0.11     0.59      8.22      0.25     0.140     0.035     0.140     0.000   1824.50   1992.45
  0.002735      805.       990.      1020.         3         0         0      0.00    307.84   2380.32
)
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 3.530

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ####                Centerline =  2390                          ####
      3.53      6.63   1838.73   1838.73      0.00   1841.36      2.63      4.23      0.48   1847.60
      6000.        0.      6000.        0.        0.       461.        0.       90.       35.   1847.80
         0.13     0.00      13.03      0.00     0.120     0.035     0.140     0.000   1832.10   2337.19
  0.010964      825.       870.       885.        20        19         0      0.00     88.63   2425.82
)
 CCHV=   0.300 CEHV=   0.500
 *SECNO 3.550

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1843.00 ELREA=     1843.00

      ##########################################################################
      ####                    MOJAVE ROAD                                   ####
      ####                Special Bridge Routine                            ####
```

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```
 3.55      7.64   1839.74   1839.74      0.00   1843.57      3.83      1.00      0.60   1832.10
 6000.        0.      6000.        3.        0.       382.        0.       91.       35.    1832.10
  0.13      0.00     15.70      0.30     0.120     0.035     0.140     0.000   1832.10   2370.00
0.009088     90.       100.       130.         2         8         0      0.00     50.00   2420.00
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1839.22 ,NOT 1839.74 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.560

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESS FLOW BECAUSE EGLWC OF 1855.90 EXCEEDS 1.5 DEPTH

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1854.88	1855.90	0.00	1167.	4849.	240.	240.	1843.00	1847.10

```
 3.56     16.63   1849.23      0.00      0.00   1849.63      0.40      6.06      0.00   1832.60
 6000.      888.      4726.      386.      774.       832.      680.       92.       35.    1832.60
  0.13      1.15      5.68      0.57     0.120     0.035     0.140     0.000   1832.60   2134.64
0.000422     50.       50.       50.         2         0         4      0.00    636.33   2775.47
```

*SECNO 3.580

```
 3.58     16.80   1849.40      0.00      0.00   1849.69      0.29      0.03      0.03   1832.60
 6000.     1532.      4208.      260.      815.       840.      742.       98.       37.    1832.60
  0.14      1.48      5.01      0.35     0.045     0.025     0.140     0.000   1832.66   2129.35
0.000165     110.      110.      110.         2         0         0      0.00    659.92   2789.27
```

CCHV= 0.100 CEHV= 0.300

*SECNO 3.710

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Overflows, paralleling Desert Inn, Conflue at this Section

```
 3.71      8.61   1858.61   1858.61      0.00   1860.64      2.03      0.31      0.52   1860.00
 6000.        0.      5485.      515.        0.       459.      480.      123.       44.    1858.00
  0.16      0.00     11.95      1.07     0.045     0.025     0.140     0.000   1850.00   9955.20
0.004387     680.      660.      640.        20         8         0      0.00    339.99  10295.19
```

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                      DESERT INN ROAD                             ####
          ####                  Special Bridge Routine                          ####
          ####  BT points follow off road, high ground to north & south.        ####
          ####                  Centerline = 2720                               ####
          ##########################################################################
```

3.77	8.55	1862.35	1862.35	0.00	1864.43	2.08	1.04	0.03	1853.80
6000.	502.	5254.	244.	120.	427.	179.	129.	46.	1853.80
0.17	4.18	12.30	1.36	0.045	0.025	0.140	0.000	1853.80	2671.89
0.002450	340.	330.	250.	20	8	0	0.00	120.00	2791.89

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1858.52 ,NOT 1862.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1877.48	1873.45	0.00	2755.	3276.	240.	240.	1862.30	1865.50

3.78	11.64	1865.94	0.00	0.00	1866.86	0.91	2.43	0.00	1854.30
6080.	638.	4901.	461.	223.	582.	706.	131.	46.	1854.30
0.17	2.86	8.42	0.65	0.045	0.025	0.140	0.000	1854.30	2661.69
0.000760	75.	75.	75.	3	0	5	0.00	445.53	3107.22

CCHV= 0.100 CEHV= 0.300

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####                  Centerline =  2240                              ####
          ####  This Section crosses Desert Inn to avoid skew.  Note            ####
```

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however, that the Sect. doesn't cross WSEL define by 81 pts

	3.83	5.61	1865.61	1865.61	0.00	1867.96	2.35	0.43	0.43	1872.00
	6000.	0.	6000.	0.	0.	488.	0.	137.	48.	1868.00
	0.18	0.00	12.31	0.00	0.045	0.035	0.140	0.000	1860.00	9926.63
0.010976		130.	230.	300.	20	11	0	0.00	103.88	10030.51

CCHV= 0.300 CEHV= 0.500

*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

	4.90	8.43	1873.63	0.00	0.00	1875.38	1.76	7.25	0.18	1874.70
	6000.	0.	6000.	0.	0.	564.	14.	147.	50.	1880.00
	0.20	0.00	10.64	0.00	0.045	0.035	0.060	0.000	1865.20	2242.32
0.006157		900.	900.	900.	2	0	0	0.00	96.35	2338.67

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

##
PECOS-McLEOD DRIVE
Special Bridge Routine
##

	4.05	7.49	1875.89	0.00	0.00	1876.93	1.04	1.33	0.22	1888.00
	6000.	0.	6000.	0.	0.	733.	0.	152.	51.	1888.00
	0.21	0.00	8.19	0.00	0.045	0.035	0.060	0.000	1868.40	9947.71
0.003458		100.	295.	400.	3	0	0	0.00	120.67	10068.38

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1877.432 ELLC= 1884.900 PCWSE= 1875.892 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

	4.07	7.32	1876.22	0.00	0.00	1877.32	1.10	0.36	0.03	1888.50
	6000.	0.	6000.	0.	0.	713.	0.	153.	51.	1888.50
	0.21	0.00	8.42	0.00	0.045	0.035	0.060	0.000	1868.90	9948.44
0.003754		100.	100.	100.	2	0	0	0.00	119.64	10068.08

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1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####              Centerline =  2500                                  ####
      4.21        7.04  1883.84  1883.84      0.00  1886.38      2.54      3.95      0.72  1882.10
     6000.         161.     5839.        0.        56.      451.        0.       164.        53.   1884.80
      0.23        2.89     12.95      0.00     0.060     0.035     0.035     0.000  1876.80  2438.09
 0.008768         720.      720.       720.        20         8         0      0.00   116.82  2554.92
```

CCHV=   0.100 CEHV=   0.300
1490 NH CARD USED
*SECNO 4.410

```
          ####              Centerline =  2530                                  ####
      4.41        7.74  1893.64     0.00      0.00  1896.39      2.75      9.95      0.06  1898.60
     6000.          0.     6000.        0.        0.      451.        0.       176.        56.   1905.40
      0.25        0.00     13.31      0.00     0.060     0.035     0.035     0.000  1885.90  2493.25
 0.009593        1140.     1085.      1080.         3         0         0      0.00    72.93  2566.18
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XAL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COPAR     TOPWID     ENDST
```

*SECNO 4.630

3301 HV CHANGED MORE THAN HVINS

```
          ####              Centerline =  2460                                  ####
      4.63        7.47  1904.17     0.00      0.00  1905.95      1.79      9.47      0.10  1907.80
     6000.          0.     6000.        0.        0.      559.        0.       189.        58.   1909.50
      0.28        0.00     10.73      0.00     0.120     0.035     0.050     0.000  1896.70  2386.45
 0.006972         930.     1165.      1185.         2         0         0      0.00   102.75  2489.20
```

CCHV=   0.300 CEHV=   0.500
*SECNO 4.690
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                      EASTERN AVENUE                                ####
          ####                 Special Bridge Routine                             ####
          ##########################################################################
      4.69        8.51  1911.81  1911.81      0.00  1913.91      2.09      1.69      0.15  1903.30
     6000.         190.     4472.     1338.        83.      341.      258.      193.        59.   1903.30
      0.29        2.28     13.13     5.19     0.120     0.035     0.060     0.000  1903.30  9960.43
 0.005501         330.      280.      220.        20        10         0      0.00   127.72 10088.15
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1909.91 ,NOT   1911.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

```
SB  XK          XKOR       COFQ       ROLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25        1.56       2.63       0.00      32.00      10.00     176.00       0.00    1903.80    1903.30
```

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.97	1926.32	0.00	3387.	2615.	176.	176.	1911.80	1914.10

4.70	13.13	1916.93	0.00	0.00	1917.16	0.24	3.26	0.00	1903.80
6000.	516.	2862.	2623.	796.	525.	1617.	195.	59.	1903.80
0.29	0.65	5.45	1.62	0.120	0.035	0.060	0.000	1903.80	9643.91
0.000532	56.	56.	56.	2	0	8	0.00	811.42	10455.33

1490 NH CARD USED
*SECNO 4.750
Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.10	1917.20	0.00	0.00	1917.29	0.10	0.09	0.04	1912.40
6000.	124.	5534.	342.	130.	2155.	343.	210.	63.	1912.70
0.32	0.95	2.57	1.00	0.045	0.035	0.045	0.000	1907.10	2119.67
0.000262	350.	260.	150.	3	0	0	0.00	524.91	2644.58

*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	6.98	1916.98	0.00	0.00	1918.26	1.28	0.37	0.59	1910.00
6000.	1148.	3684.	1168.	225.	349.	171.	226.	66.	1910.00
0.33	5.11	10.56	6.83	0.140	0.140	0.140	0.000	1910.00	9825.30
0.074127	488.	488.	488.	4	0	0	0.00	259.20	10084.50

SPECIAL BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

5227 DOWNSTREAM ELEV IS 1915.64 ,NOT 1916.98 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

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PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1947.78	1928.28	0.00	3506.	2548.	165.	165.	1916.10	1918.50

4.83	11.84	1922.44	3.10	0.00	1922.53	0.10	4.26	0.00	1910.60
6000.	2304.	1961.	1735.	1117.	592.	985.	228.	67.	1910.60
0.34	2.06	3.31	1.76	0.140	0.140	0.140	0.000	1910.60	9738.64
0.003612	60.	60.	60.	2	0	7	0.00	661.83	10400.47

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	11.09	1922.59	0.00	0.00	1922.79	0.20	0.21	0.05	1916.10
6000.	1124.	4392.	484.	439.	1108.	217.	238.	69.	1917.30
0.35	2.56	3.96	2.23	0.035	0.035	0.035	0.000	1911.50	1991.05
0.000546	240.	170.	130.	2	0	0	0.00	419.63	2557.21

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

Centerline = 2390
####

5.04	6.65	1924.95	1924.95	0.00	1926.29	1.34	1.35	0.34	1926.40
6000.	0.	6000.	0.	0.	646.	0.	262.	76.	1925.80
0.38	0.00	9.29	0.00	0.045	0.035	0.120	0.000	1918.30	2304.49
0.013973	765.	890.	1040.	20	14	0	0.00	255.27	2559.76

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

Centerline = 2330
Small Golf Course Bridge not modeled - assumed to fail
Some of breakout returns from north; modeled flows do
not change because flows from Tropicana Wash confluence
still control.
####

5.21	8.50	1932.70	1931.64	0.00	1934.65	1.95	8.18	0.18	1931.60
6000.	59.	5941.	0.	34.	527.	0.	275.	80.	1933.70
0.40	1.73	11.27	0.00	0.045	0.035	0.045	0.000	1924.20	2274.05
0.006155	920.	920.	920.	7	8	0	0.00	141.99	2416.05

*SECNO 5.250

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```
      ####          Centerline = 2410
      5.26       6.59   1934.59      0.00       0.00   1936.77       2.18       2.05       0.07   1936.00
     6000.          0.      6000.        0.         0.       506.         0.       278.       81.    1936.00
      0.41       0.00      11.86      0.00      0.120      0.035      0.120      0.000   1928.00   2362.93
 0.009632       200.       270.       300.          4          0          0       0.00    103.55   2466.48
3
 CCHV=   0.300  CEHV=   0.500
 *SECNO 5.280
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##################################################################
      ####                    SPENCER STREET                        ####
      ####                Special Bridge Routine                    ####
      ####          Centerline = 2460                               ####
      ##################################################################
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       GLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB       ACH       AROB      VOL      TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL        XNCH      XNR       WTN      ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR    TOPWID      ENDST

      5.28       6.39   1942.09   1942.09       0.00   1943.99       1.90       0.57       0.08   1935.70
     6000.       1162.     4481.      358.       522.       352.       161.       279.       81.    1935.70
      0.41       2.23      12.75      2.23      0.120      0.035      0.120      0.000   1935.70   2175.70
 0.007597         30.       70.       100.         20          8          0       0.00    386.59   2562.29
3
 SPECIAL BRIDGE
 5227 DOWNSTREAM ELEV IS   1940.71 ,NOT   1942.09 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
 SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.63       0.00      50.25      14.25     180.00      0.00    1936.20    1935.70
 *SECNO 5.290
 3301 HV CHANGED MORE THAN HVINS
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC       H3        QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                     AREA
  1969.01    1952.63      0.00      4058.      1948.      180.      180.      1941.20    1942.20

      5.29       7.80   1944.00       0.00       0.00   1944.93       0.93       0.93       0.00   1936.20
     6000.       1513.     4024.      464.       964.       429.       295.       281.       82.    1936.20
      0.41       1.57      9.38       1.57      0.120      0.035      0.120      0.000   1936.20   2058.09
 0.003150         65.       65.        65.          3          0          7       0.00    539.49   2597.57
3
 *SECNO 5.320
 3265 DIVIDED FLOW
      ####          Centerline =  2390                              ####
      5.32       8.74   1944.84       0.00       0.00   1945.38       0.54       0.34       0.12   1946.00
     6000.       262.      5736.        2.       217.       951.         7.       288.       84.    1944.40
      0.42       1.21      6.03       0.23      0.060      0.028      0.080      0.000   1936.10   2017.09
 0.001208        260.       170.       150.          3          0          6       0.00    315.48   2507.00
3
 CCHV=   0.100  CEHV=   0.300
1
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.570

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2030						####	
####	Near Algonquin Drive Alignment							####	
5.57	7.86	1959.58	1959.58	0.00	1963.19	3.61	3.01	0.92	1961.00
6000.	0.	6000.	0.	0.	394.	0.	312.	90.	1961.00
0.45	0.00	15.25	0.00	0.140	0.025	0.130	0.000	1951.72	2002.92
0.005806	1320.	1320.	1320.	20	11	0	0.00	55.16	2058.08

3
1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.000000	0.00	1.0	0.	1799.400	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CEHV= 0.100 CEHV= 0.300
*SECNO 2.650
3720 CRITICAL DEPTH ASSUMED

####	Flows less than specified for CP35 due to lost breakout								
####	at Spring Mountain Rd								
####		Centerline = 2290						####	
####	Starting Water Levels taken from Reach 5 Analysis of 2.65							####	
2.65	9.93	1799.43	1799.43	1799.40	1803.24	3.81	0.00	0.00	1804.70

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8400.	0.	8400.	0.	0.	537.	0.	0.	0.	1802.00
0.00	0.00	15.66	0.33	0.120	0.045	0.060	0.000	1789.50	2249.99
0.016844	815.	760.	745.	0	4	0	0.00	71.11	2321.10

3

CCHV= 0.300 CEHV= 0.500

*SECNO 2.680

BOULDER HIGHWAY - Northbound Crossing
Special Bridge Routine

2.68	10.58	1802.38	0.00	0.00	1805.49	3.11	2.04	0.21	1791.80
8400.	466.	7184.	750.	137.	476.	106.	2.	0.	1791.80
0.00	3.39	15.10	7.05	0.120	0.045	0.060	0.000	1791.80	9954.01
0.009018	200.	170.	140.	3	0	0	0.00	93.89	10047.90

0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1799.47 ,NOT 1802.38 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	40.50	8.70	229.00	0.00	1792.90	1791.80

*SECNO 2.690

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	FB	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
1834.97	1815.03	0.00	4933.	3482.	229.	229.	1800.10	1805.40

2.69	13.83	1806.73	0.00	0.00	1807.98	1.25	2.49	0.00	1792.90
8400.	604.	6351.	1445.	286.	623.	502.	4.	1.	1792.90
0.01	2.11	10.20	2.88	0.120	0.045	0.060	0.000	1792.90	9884.51
0.002871	50.	50.	50.	3	0	7	0.00	470.11	10354.61

3

*SECNO 2.700

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

2.70	12.15	1806.55	0.00	0.00	1808.61	2.05	0.23	0.40	1794.40
8400.	567.	6843.	990.	182.	547.	168.	5.	1.	1794.40
0.01	3.12	12.51	5.89	0.120	0.050	0.060	0.000	1794.40	9950.12
0.006345	55.	55.	55.	3	0	0	0.00	147.50	10097.61

0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1802.30 ,NOT 1806.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

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*SECNO 2.710
6870 D.S. ENERGY OF 1803.61 HIGHER THAN COMPUTED ENERGY OF 1808.14

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1871.68	1822.70	0.00	7169.	1313.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=		8921.0	10730.0	TYPE=	1	TARGET=	1810.000		
2.71	19.39	1807.99	1807.99	1806.79	1810.60	2.61	0.41	-0.41	1797.60
8400.	620.	6101.	1679.	170.	415.	229.	6.	1.	1797.60
0.01	3.55	14.69	7.34	0.120	0.050	0.050	0.000	1797.60	9907.54
0.010774	50.	50.	50.	20	11	0	0.00	221.94	10129.48

*SECNO 2.790

3301 HV CHANGED MORE THAN HVINS

####		Centerline =	2320					####	
2.79	12.49	1811.89	0.00	1810.25	1812.30	0.41	1.04	0.66	1807.10
8000.	1815.	5335.	849.	920.	863.	1328.	25.	7.	1808.40
0.03	1.97	6.18	0.54	0.050	0.035	0.160	0.000	1799.40	1942.41
0.001034	380.	420.	463.	3	0	0	0.00	899.55	2841.96

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline =	2340					####	
2.98	11.92	1819.32	1819.32	1817.91	1821.28	1.95	2.13	0.46	1817.40
8000.	71.	7021.	908.	86.	587.	842.	79.	25.	1817.60
0.06	0.83	11.96	1.38	0.160	0.040	0.160	0.000	1807.40	2235.24
0.006383	1070.	1010.	993.	20	8	0	0.00	669.42	2904.65

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline =	2300					####	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.18	7.95	1828.65	1828.65	1827.99	1831.39	2.74	9.32	0.24	1831.10
8000.	0.	8000.	0.	0.	602.	0.	104.	34.	1832.10
0.08	0.00	13.28	0.00	0.140	0.040	0.180	0.000	1820.70	2270.54
0.013825	1060.	1030.	1020.	2	14	0	0.00	111.28	2381.82

*SECNO 3.370

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

Centerline = 2350

3.37	10.78	1835.28	0.00	1833.91	1836.41	1.13	4.86	0.16	1832.90
8000.	512.	7477.	11.	586.	848.	27.	126.	40.	1833.30
0.11	0.87	8.82	0.42	0.140	0.035	0.140	0.000	1824.50	1977.71
0.002511	805.	990.	1020.	4	0	0	0.00	458.04	2514.23

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2390

3.53	7.82	1839.92	1839.92	1838.73	1842.98	3.06	3.93	0.58	1847.60
8000.	0.	8000.	0.	0.	570.	0.	146.	45.	1847.80
0.13	0.00	14.04	0.00	0.120	0.035	0.140	0.000	1832.10	2336.09
0.010501	825.	870.	885.	20	19	0	0.00	94.33	2430.42

CCHV= 0.300 CEHV= 0.500
*SECNO 3.550

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1843.00 ELREA= 1843.00

MOJAVE ROAD
Special Bridge Routine

3.55	9.27	1841.37	1841.37	1839.74	1846.00	4.63	0.94	0.78	1832.10
8000.	0.	8000.	0.	0.	463.	0.	147.	46.	1832.10
0.13	0.00	17.27	0.00	0.120	0.035	0.140	0.000	1832.10	2370.00
0.008495	90.	100.	130.	20	8	0	0.00	50.00	2420.00

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1840.22 ,VOT 1841.37 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.560

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	P3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1868.28	1860.31	0.00	3263.	4749.	240.	240.	1843.00	1847.10

	3.56	17.71	1850.31	0.00	1849.23	1850.85	0.54	4.86	0.00	1832.60
	8000.	1274.	6014.	712.	1046.	586.	1103.	149.	46.	1832.60
	0.14	1.22	6.79	0.55	0.120	0.035	0.140	0.000	1832.60	2101.36
0.000554		50.	50.	50.	2	0	6	0.00	737.24	2838.60

*SECNO 3.580

	3.58	17.96	1850.56	0.00	1849.40	1850.94	0.38	0.04	0.05	1832.60
	8000.	2207.	5305.	488.	1115.	898.	1209.	157.	48.	1832.60
	0.14	1.98	5.91	0.40	0.045	0.025	0.140	0.000	1832.60	2093.66
0.000210		110.	110.	110.	2	0	0	0.00	755.38	2849.04

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 3.710

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Overflows, paralleling Desert Inn, Conflue at this Section

3.71	9.57	1859.57	1859.57	1858.61	1861.88	2.31	0.37	0.58	1860.00
8000.	0.	7039.	961.	0.	541.	747.	191.	57.	1858.00
0.16	0.00	13.00	1.29	0.045	0.025	0.140	0.000	1850.00	9551.63
0.004404	680.	660.	640.	20	12	0	0.00	394.95	10346.58

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
#########################################################
####                  DESERT INN ROAD                ####
####                Special Bridge Routine           ####
####  BT points follow off road, high ground to north & south.  ####
####                Centerline = 2720                ####
#########################################################
```

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3.77	8.81	1882.41	1882.41	1883.78	3.28	1.36	0.48	1853.80	
7610.	641.	6657.	312.	122.	431.	182.	198.	58.	1853.80
0.16	5.25	15.46	1.72	0.045	0.025	0.140	0.000	1853.80	2671.66
0.003829	340.	330.	251.	20	15	0	0.00	120.56	2792.23

3

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1859.33 ,NOT 1862.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SB	XK	XKOR	COFQ	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	3.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1886.77	1877.59	0.00	4111.	3543.	240.	240.	1862.30	1865.50

3.78	12.11	1866.41	0.00	1865.94	1867.69	1.28	2.00	0.00	1854.30
7610.	826.	6095.	689.	241.	606.	875.	200.	59.	1854.30
0.17	3.42	10.06	0.79	0.045	0.025	0.140	0.000	1854.30	2660.14
0.001029	75.	75.	75.	3	0	6	0.00	449.45	3109.59

3

CCHV= 0.100 CEHV= 0.300

*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	6.46	1866.46	1866.45	1865.61	1869.15	2.69	0.55	0.42	1872.00
7610.	0.	7610.	3.	0.	579.	0.	287.	60.	1868.00
0.17	0.00	13.15	0.30	0.045	0.035	0.140	0.000	1860.00	9523.07
0.010667	130.	230.	300.	20	11	0	0.00	109.05	10032.12

3

CCHV= 0.300 CEHV= 0.500

*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICCNT CORAR TOPWID ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	9.39	1874.59	0.00	1873.63	1876.65	2.06	7.31	0.19	1874.70
7610.	0.	7610.	0.	0.	660.	0.	220.	63.	1880.00
0.19	0.00	11.52	0.00	0.045	0.035	0.050	0.000	1865.20	2238.45
0.006395	900.	900.	900.	4	0	0	0.00	102.82	2341.27

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

##
PECOS-McLEOD DRIVE
Special Bridge Routine
##

4.05	8.67	1877.07	0.00	1875.89	1878.23	1.16	1.31	0.27	1888.00
7610.	0.	7610.	0.	0.	851.	0.	225.	63.	1888.00
0.20	0.00	8.64	0.00	0.045	0.035	0.050	0.000	1868.40	9942.58
0.003268	100.	295.	400.	2	0	0	0.00	127.92	10070.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	1.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1878.735 ELLC= 1884.900 PCWSE= 1877.073 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	8.48	1877.38	0.00	1876.22	1878.61	1.23	0.34	0.04	1888.50
7610.	0.	7610.	0.	0.	855.	0.	227.	64.	1888.50
0.21	0.00	8.90	0.00	0.045	0.035	0.060	0.000	1868.90	9943.46
0.003561	100.	100.	100.	2	0	0	0.00	126.69	10070.14

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICCNT	CORAR	TOPWID	ENDST

1498 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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```
          ####                Centerline =  2500                                  ####
      4.21       8.46  1885.26  1885.26  1883.84  1887.62      2.36      3.40      0.56  1882.10
    7610.       469.    7079.       62.      130.      556.      30.       240.      66.    1884.80
       0.22      3.61     12.74     2.04     0.060     0.035     0.035     0.000  1876.80  2422.27
 0.006570       720.      720.      720.        20         5         0      0.00   200.82  2623.09
 CCHV=   0.100  CEHV=   0.300
 1490 NH CARD USED
 *SECNO 4.410

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2530                                  ####
      4.41       8.58  1894.48  1894.48  1893.64  1897.89      3.41      8.94      0.32  1898.60
    7610.         0.    7610.       0.        0.      513.      0.        255.      70.    1905.40
       0.24      0.00     14.83     0.00     0.060     0.035     0.050     0.000  1885.90  2491.01
 0.010592      1140.    1085.     1080.         1         5         0      0.00    75.63  2566.64
 *SECNO 4.630

 3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =  2460                                  ####
      4.63       8.66  1905.36     0.00  1904.17  1907.28      1.92      3.24      0.15  1907.60
    7610.         0.    7610.       0.        0.      684.      0.        271.      72.    1909.50
       0.27      0.00     11.13     0.00     0.120     0.035     0.050     0.000  1896.70  2383.63
 0.006159       930.    1165.     1185.         2         0         0      0.00   108.12  2491.16
 CCHV=   0.300  CEHV=   0.500
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *SECNO 4.690

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    EASTERN AVENUE                                ####
          ####                Special Bridge Routine                            ####
          ##########################################################################
      4.69       8.94  1912.24  1912.24  1911.81  1915.15      2.91      1.83      0.49  1903.30
    7610.       253.    5578.     1779.       94.      358.      288.      276.      73.    1903.30
       0.28      2.71     15.60     6.17     0.120     0.035     0.060     0.000  1903.30  9945.11
 0.007278       330.     280.      220.        20         8         0      0.00   154.42 10099.53

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1911.04 ,NOT   1912.24 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.63       0.00      32.00      10.00      176.00      0.00    1903.80    1903.30

 *SECNO 4.700

 3301 HV CHANGED MORE THAN HVINS
```

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1957.53	1930.65	0.00	5003.	2620.	176.	176.	1911.80	1914.10

4.70	13.49	1917.29	0.00	1916.93	1917.61	0.32	2.46	0.00	1903.80
7610.	713.	3452.	3444.	931.	540.	1779.	278.	74.	1903.80
0.28	0.77	6.40	1.94	0.120	0.035	0.060	0.000	1903.80	9586.77
0.000706	56.	56.	56.	2	0	8	0.00	873.17	10459.94

1490 NH CARD USED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.750

Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.54	1917.64	0.00	1917.20	1917.77	0.13	0.11	0.06	1912.40
7610.	179.	6521.	510.	156.	2288.	426.	295.	78.	1912.70
0.30	1.15	3.02	1.20	0.045	0.035	0.045	0.000	1907.10	2114.62
0.000335	350.	260.	150.	3	0	0	0.00	553.93	2668.54

*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	7.40	1917.40	1917.36	1916.98	1918.96	1.56	0.48	0.71	1910.00
7610.	1685.	4394.	1531.	288.	370.	201.	312.	81.	1910.00
0.32	5.85	11.86	7.61	0.140	0.140	0.140	0.000	1910.00	9818.86
0.086444	400.	400.	400.	8	19	0	0.00	276.37	10995.23

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1916.60 ,NOT 1917.40 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1966.95	1931.38	0.00	5027.	2600.	165.	165.	1916.10	1918.50

4.83	12.48	1923.08	0.00	1922.44	1923.19	0.11	4.22	0.00	1910.60
7610.	2944.	2250.	2377.	1269.	624.	1247.	315.	82.	1910.60

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0.32	2.52	5.67	1.91	0.140	0.140	0.140	0.000	1910.60	9724.29
0.004132	60.	60.	60.	2	0	8	0.00	737.40	10461.69

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	11.74	1923.24	0.00	1922.59	1923.49	0.25	0.24	0.07	1916.10
7610.	1571.	5343.	696.	601.	1198.	268.	326.	85.	1917.30
0.34	2.52	4.46	2.59	0.036	0.035	0.035	0.000	1911.50	1925.74
0.008624	240.	170.	130.	2	0	0	0.00	506.39	2564.65

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

Centerline = 2390

5.04	7.16	1925.46	1925.46	1924.95	1926.93	1.47	1.49	0.37	1926.40
7610.	0.	7610.	0.	0.	783.	0.	354.	93.	1925.80
0.36	0.00	9.72	0.00	0.045	0.035	0.120	0.000	1918.30	2300.76
0.013202	765.	890.	1040.	20	14	0	0.00	277.29	2578.05

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

Centerline = 2380
Small Golf Course Bridge not modeled - assumed to fail
Some of breakcut returns from north; modeled flows do
not change because flows from Tropicana Wash confluence
still control.

5.21	9.09	1933.29	1933.05	1932.70	1935.57	2.28	0.40	0.24	1931.60
7300.	220.	7080.	0.	81.	576.	0.	369.	97.	1933.70
0.38	2.71	12.30	0.00	0.045	0.035	0.045	0.000	1924.20	2240.94
0.006605	920.	920.	920.	6	11	0	0.00	175.67	2416.62

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260

```
          ####      Centerline = 2410
      5.26      7.30   1935.30      0.00   1934.59   1937.75      2.44      2.13      0.05   1936.00
    7300.         0.      7300.         0.         0.       582.         0.       373.       98.    1936.00
       0.39      0.00     12.55      0.00      0.120     0.035     0.120     0.000  1928.00   2358.92
  0.009636       200.       270.       300.          4         0         0      0.00   109.34   2468.26
3
 CCHV=   0.300  CEHV=   0.500
 *SECNO 5.280
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3725 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    SPENCER STREET                        ####
          ####                Special Bridge Routine                    ####
          ####          Centerline = 2460                               ####
          ##################################################################
      5.28      7.08   1942.78   1942.78   1942.09   1944.75      1.97      0.55      0.14   1935.70
    7300.      1623.      5178.       499.       717.       389.       220.       375.       98.    1935.70
       0.39      2.26     13.30      2.27      0.120     0.035     0.120     0.000  1935.70   2118.25
  0.007212        30.        70.       100.         20         8         0      0.00   461.28   2579.53
3

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1941.41 ,NOT   1942.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK         XKOR       CQFG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.63       0.00      50.25      14.25     180.00      0.00   1936.20   1935.70

 *SECNO 5.290
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                       AREA
   1982.62   1954.72      0.00       5498.      1822.       180.       180.      1941.20   1942.20

      5.29      7.31   1943.51      0.00   1944.00   1945.26      1.75      0.51      0.00   1936.20
    7300.      1695.      5084.       520.       793.       403.       243.       377.       99.    1936.20
       0.39      2.14     12.63      2.14      0.120     0.035     0.120     0.000  1936.20   2098.43
  0.006228        65.        65.        65.          5         0         0      0.00   487.04   2585.47
3
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 5.320

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

          ####      Centerline =  2390                              ####
      5.32      9.31   1945.41      0.00   1944.84   1946.05      0.63      0.45      0.33   1946.00
    7300.       424.      6899.        17.       299.      1044.        38.       383.      101.    1944.40
       0.40      1.42      6.57      0.45      0.060     0.028     0.080     0.000  1936.10   1991.72
  0.001308       260.       170.       150.          4         0         0      0.00   414.21   2571.20
3
 CCHV=   0.100  CEHV=   0.300
 *SECNO 5.570
```

```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2030                              ####
          ####  Near Algonquin Drive Alignment                                ####
      5.57      8.94  1960.66  1960.65  1959.58  1964.68      4.02      3.14      1.02  1961.00
    7300.        0.    7300.       0.       0.      454.       0.       411.      109.   1961.00
      0.42      0.00    16.09     0.00     0.140    0.025     0.180     0.000  1951.72  2002.22
 0.005632    1320.    1320.    1320.       20        8         0      0.00     56.56  2058.78
3
1
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 ************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 ************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

 J1   ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
         0.        4.         0.         0.   0.300000       0.00       1.0        0.    1801.700     0.000

 J2   NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
        3.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    RANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *PROF 3

 CCHV=   0.100  CEHV=   0.300
 *SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####                Centerline =  2290                              ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65     ####
     2.65     12.20  1801.70  1801.45  1801.70  1806.13      4.43      0.00      0.00  1804.70
 11920.        0.   11920.       0.       0.      706.       0.        0.        0.    1802.00
    0.00      0.00    16.89     0.00     0.120    0.045     0.050     0.000  1789.50  2246.55
0.015598     815.     760.      745.        0        4         0      0.00     77.59  2324.54
0
 CCHV=   0.300  CEHV=   0.500
 *SECNO 2.680

 1645 INT SEC ADDED BY RAISING SEC      2.68,   -1.725FT AND MULTIPLYING BY   1.214


 3301 HV CHANGED MORE THAN HVINS
```

```
      1.01     17.00   1807.07      0.00      0.00   1807.45      0.38      0.10      1.22   1790.08
     11920.     1114.      6138.     4668.      958.       928.     2317.       2.        1.    1790.08
         0.00      1.16      6.61      2.32     0.120     0.045     0.060     0.000  1790.08   9825.38
  0.000917       50.       43.       35.         5         0         0      0.00  1047.92  10873.30
```

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.575FT AND MULTIPLYING BY 0.941

```
      1.02     16.36   1807.01      0.00      0.00   1807.60      0.58      0.05      0.10   1790.65
     11920.     1047.      6694.     4180.      749.       842.     1785.       6.        1.    1790.65
         0.00      1.40      7.95      2.34     0.120     0.045     0.060     0.000  1790.65   9834.98
  0.001395       50.       43.       35.         2         0         0      0.00   866.51  10701.49
```

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.575FT AND MULTIPLYING BY 0.938

```
      1.03     15.69   1806.91      0.00      0.00   1807.84      0.93      0.07      0.17   1791.23
     11920.      988.      7303.     3629.      570.       757.     1324.       9.        2.    1791.23
         0.01      1.73      9.65      2.74     0.120     0.045     0.060     0.000  1791.23   9838.69
  0.002173       50.       43.       35.         2         0         0      0.00   722.63  10561.32
```



```
    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       OLOSS    BANK ELEV
    Q          QLOB      QCH       QROB      ALOB       ACH       AROB      VOL      TWA    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL        XNCH      XNR       WTN      ELMIN      SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR    TOPWID     ENDST
```

1645 INT SEC ADDED BY RAISING SEC 1.03, 0.575FT AND MULTIPLYING BY 0.933

```
##################################################################
####          BOULDER HIGHWAY - Northbound Crossing           ####
####              Special Bridge Routine                      ####
##################################################################
      2.68     14.91   1806.71      0.00      0.00   1808.26      1.55      0.11      0.31   1791.80
     11920.      928.      8036.     2955.      412.       671.      898.      11.       3.    1791.80
         0.01      2.25     11.97      3.29     0.120     0.045     0.060     0.000  1791.80   9841.46
  0.003581       50.       43.       35.         3         0         0      0.00   588.50  10429.96
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1801.49 ,NOT 1806.71 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

```
  SB   XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25         1.56        2.80         0.00      40.50        8.70      229.00        0.00      1792.90     1791.80
```

*SECNO 2.690
PRESSURE AND WEIR FLOW

```
  EGPRS       EGLWC       P3          QWEIR       QPR         BAREA     TRAPEZOID AREA     ELLC        ELTRD
  1872.35     1818.47       0.00       9558.      2267.       229.       229.       1800.10     1805.40
```

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

```
      2.69     14.05   1806.95   1806.93      0.00   1809.25      2.30      0.22     -0.22   1792.90
     11920.      870.      8830.     2220.      307.       632.      574.      13.       3.    1792.90
         0.01      2.84     13.97      3.37     0.120     0.045     0.060     0.000  1792.90   9876.00
  0.005275       50.       50.       50.        20         8         0      0.00   493.50  10369.50
```

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*SECNO 2.700

1645 INT SEC ADDED BY RAISING SEC 2.70, -1.000FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	13.95	1807.35	1807.35	0.00	1809.57	2.23	0.11	0.02	1793.40
11920.	934.	8678.	2309.	296.	628.	538.	13.	4.	1793.40
0.01	3.15	13.83	4.29	0.120	0.050	0.050	0.000	1793.40	9880.18
0.006448	18.	18.	18.	5	5	0	0.00	482.02	10362.19

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	13.95	1807.85	1807.85	0.00	1810.07	2.22	0.12	0.00	1793.90
11920.	934.	8674.	2313.	297.	628.	540.	14.	4.	1793.90
0.01	3.15	13.82	4.28	0.120	0.050	0.060	0.000	1793.90	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

2.70	13.95	1808.35	1808.35	0.00	1810.57	2.22	0.12	0.00	1794.40
11920.	934.	8674.	2313.	297.	628.	540.	15.	4.	1794.40
0.01	3.15	13.82	4.28	0.120	0.050	0.050	0.000	1794.40	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1804.40 ,YOT 1808.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
6870 D.S. ENERGY OF 1810.57 HIGHER THAN COMPUTED ENERGY OF 1809.18
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.50	1829.38	0.00	11000.	949.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8920.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	13.15	1810.75	0.00	1806.79	1811.85	1.10	0.00	0.00	1797.60
11920.	1497.	5970.	4453.	744.	526.	1153.	17.	5.	1797.60
0.01	2.01	11.35	3.36	0.120	0.050	0.060	0.000	1797.60	9686.71
0.004693	50.	50.	50.	20	0	10	0.00	822.74	10509.46

*SECNO 2.790

Centerline = 2320

2.79	13.03	1812.43	0.00	1810.25	1813.06	0.62	1.06	0.14	1807.10
11420.	2943.	7116.	1361.	1103.	911.	1595.	46.	13.	1808.40
0.03	2.67	7.82	0.35	0.050	0.035	0.150	0.000	1799.40	1929.12
0.001539	380.	420.	460.	2	0	0	0.00	925.23	2854.35

CCHV= 0.100 CEHV= 0.300

*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2340

2.98	13.25	1820.65	1820.65	1817.91	1822.68	2.03	2.79	0.42	1817.40
11420.	264.	8800.	2357.	236.	677.	1580.	117.	33.	1817.60
0.06	1.12	13.00	1.49	0.160	0.040	0.160	0.000	1807.40	2179.36
0.006228	1070.	1010.	990.	20	5	0	0.00	782.26	2961.62

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2223.0 2960.0 TYPE= 1 TARGET= 737.000

Centerline = 2300

3.18	9.49	1830.19	1830.19	1827.99	1833.52	3.33	8.99	0.39	1831.10
11420.	0.	11420.	0.	0.	780.	0.	156.	44.	1832.10
0.08	0.00	14.65	0.00	0.140	0.040	0.180	0.000	1820.70	2267.06
0.013125	1060.	1030.	1020.	3	19	0	0.00	119.30	2386.36

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.370

3301 HV CHANGED MORE THAN HVINS

Centerline = 2350

3.37	12.54	1837.04	0.00	1833.91	1838.30	1.25	4.57	0.21	1832.90
11420.	1413.	9838.	170.	1145.	1017.	248.	150.	52.	1833.30
0.11	1.23	9.67	0.69	0.140	0.035	0.140	0.000	1824.50	1938.78
0.002372	805.	990.	1020.	3	0	0	0.00	619.87	2558.65

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*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####                Centerline =  2390                          ####
      3.53        9.60   1841.70   1841.70   1838.73   1845.34      3.64      3.72      0.72   1847.60
  11420.           0.    11420.        0.         0.       746.         3.       221.       59.    1847.80
     0.13        0.00      15.32      0.00      0.120     0.035     0.140     0.000   1832.10   2333.53
 0.009966         825.       870.       885.        20        15         0      0.00    103.77   2437.29
```

CCHV= 0.300 CEHV= 0.500

*SECNO 3.550

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                      MOJAVE ROAD                                 ####
          ####                Special Bridge Routine                            ####
          ##########################################################################
      3.55       11.18   1843.28   1843.28   1839.74   1847.15      3.37      0.80      0.11   1832.10
  11420.         1516.      9580.       325.       341.       559.      118.       223.       59.    1832.10
     0.13          4.44      17.14      2.75      0.120     0.035     0.140     0.000   1832.10   2329.64
 0.006521          90.       100.       130.        20        10         0      0.00    115.63   2445.27
```

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1841.75 ,NOT 1843.28 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	RWC	RWP	RAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.09	1834.50

*SECNO 3.560

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	RAREA	TRAPEZOID AREA	ELLC	ELTRD
1898.12	1865.09	0.00	5826.	4605.	240.	240.	1843.00	1847.10

```
      3.56       18.76   1851.36      0.00   1849.23   1852.20      0.84      5.05      0.00   1832.60
  11420.         1961.      8125.      1335.      1345.       938.      1566.       225.       59.    1832.60
     0.13          1.46      8.66      0.35      0.120     0.035     0.140     0.000   1832.60   2069.02
 0.000835          50.        50.        50.         3         0         7      0.00    813.41   2882.43
```

*SECNO 3.580

```
      3.58       19.19   1851.79      0.00   1849.40   1852.34      0.55      0.05      0.09   1832.60
  11420.         3427.      7060.       933.      1478.       960.      1769.       236.       61.    1832.60
     0.14          2.32      7.36      0.53      0.045     0.025     0.140     0.000   1832.60   2055.70
 0.000298          110.       110.       110.         2         0         0      0.00    844.78   2900.48
```

CCHV= 0.100 CEHV= 0.300
*SECNO 3.710

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Overflows, paralleling Desert Inn, Conflue at this Section

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROP	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.71	11.63	1861.63	1861.63	1858.61	1863.24	1.61	0.44	0.32	1860.00
11420.	946.	8537.	2038.	506.	726.	1498.	288.	76.	1858.00
0.16	1.67	11.75	1.36	0.045	0.025	0.140	0.000	1850.00	8868.66
0.002490	680.	660.	640.	20	14	0	0.00	1031.63	10463.54

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
DESERT INN ROAD
Special Bridge Routine
BT points follow off road, high ground to north & south.
Centerline = 2720

3.77	9.61	1863.41	1863.41	1862.35	1867.50	4.10	1.00	1.24	1853.80
9680.	896.	8347.	436.	152.	480.	226.	300.	80.	1853.80
0.16	5.91	17.38	1.93	0.045	0.025	0.140	0.000	1853.80	2668.40
0.004184	340.	330.	250.	20	12	0	0.00	128.70	2797.09

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1860.30 ,NOT 1863.41 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROP	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

EGPRS	EGLWC	FB	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1902.81	1881.88	0.00	5231.	3524.	240.	240.	1862.30	1865.50

3.78	12.45	1866.75	0.00	1865.94	1868.63	1.88	1.13	0.00	1854.30
9680.	1064.	7643.	974.	255.	623.	995.	302.	80.	1854.30
0.16	4.17	12.28	0.98	0.045	0.025	0.140	0.000	1854.30	2659.04
0.001478	75.	75.	75.	4	9	6	0.00	452.21	3111.26

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	7.47	1867.47	1867.47	1865.61	1870.51	3.04	0.71	0.35	1872.00
9680.	0.	9680.	0.	0.	692.	0.	310.	82.	1868.00
0.17	0.00	14.00	0.00	0.045	0.035	0.140	0.000	1860.00	9918.87
0.010269	130.	230.	300.	20	14	0	0.00	115.14	10034.01

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	10.37	1875.57	1874.98	1873.63	1877.67	2.10	6.88	0.28	1874.70
9680.	558.	9122.	0.	143.	763.	3.	326.	85.	1880.00
0.19	3.89	11.95	0.03	0.045	0.035	0.050	0.000	1865.20	2103.37
0.005912	900.	900.	900.	5	18	0	0.00	206.80	2343.92

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

PECOS-McLEOD DRIVE
Special Bridge Routine

```
     4.05      9.27   1877.67      0.00   1875.89   1879.25      1.59      1.43      0.15   1888.00
     9680.        0.      9680.        0.        0.       957.        0.       332.       86.   1888.00
      0.20      0.00     10.12      0.00     0.045     0.035     0.050     0.000   1868.40   9940.06
 0.004170       100.       295.       400.         3         0         0      0.00    131.49  10071.55
```

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1879.755 ELLC= 1884.900 PCWSE= 1877.665 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

```
     4.07      9.17   1878.07      0.00   1876.22   1879.70      1.63      0.43      0.02   1888.50
     9680.        0.      9680.        0.        0.       944.        0.       334.       86.   1888.50
      0.20      0.00     10.26      0.00     0.045     0.035     0.060     0.000   1868.90   9940.48
 0.004335       100.       100.       100.         2         0         0      0.00    130.89  10071.37
```

1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS


```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST
```

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
      ####              Centerline =  2500                                  ####
     4.21      9.75   1886.55   1886.55   1883.84   1888.72      2.16      3.43      0.27   1882.10
     9680.      894.      8255.      531.       244.      651.      122.      351.       90.   1884.80
      0.22      3.66     12.68      4.34     0.060     0.035     0.035     0.000   1876.80   2325.67
 0.005271       720.       720.       720.        20         8         0      0.00    306.01   2631.68
```

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
      ####              Centerline =  2530                                  ####
     4.41     10.39   1896.29   1896.29   1893.64   1899.54      3.25      7.08      0.33   1898.60
     9680.        0.      9550.      130.        0.       655.       56.      372.       96.   1905.40
      0.24      0.00     14.57      2.32     0.060     0.035     0.050     0.000   1885.90   2486.17
 0.008260      1140.      1085.      1080.         4         8         0      0.00    151.81   2792.72
```

*SECNO 4.650

3301 HV CHANGED MORE THAN HVINS

```
        ####              Centerline =  2460                                  ####
      4.63      9.39  1906.09      0.00  1904.17  1908.58      2.49      8.96      0.08  1907.80
     9680.        0.    9680.        0.       0.      765.       0.       352.      99.  1909.50
      0.27      0.00    12.65      0.33     0.120    0.035    0.050    0.000  1896.70  2380.92
 0.007174      930.    1165.    1185.         2        0        0     0.00    111.45  2492.37
```

CCHV= 0.300 CEHV= 0.500

*SECNO 4.690

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
        ##########################################################################
        ####                        EASTERN AVENUE                            ####
        ####                   Special Bridge Routine                         ####
        ##########################################################################
      4.69     11.18  1914.48  1914.48  1911.81  1916.29      1.82      1.42      0.20  1903.30
     9680.       537.    6004.    3139.     329.     447.      802.      399.      102.  1903.30
      0.27      1.63    13.43     3.91     0.120    0.035    0.050    0.000  1903.30  9805.09
 0.004001       330.     280.     220.        20        8        0     0.00    614.48 10419.57
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1912.39 ,NOT 1914.48 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CQFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	32.00	10.00	176.00	0.00	1903.80	1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1987.75	1933.72	0.00	7585.	2169.	176.	176.	1911.80	1914.10

```
      4.70     13.95  1917.75      0.00  1916.93  1918.16      0.40      1.86      0.00  1903.80
     9680.      1005.    4131.    4544.     1130.     558.     1984.      402.      103.  1903.80
      0.28      0.89     7.40     2.29     0.120    0.035    0.060    0.000  1903.80  9514.93
 0.000903        56.      56.      55.         2        0        8     0.00    950.81 10465.73
```

1490 NH CARD USED

*SECNO 4.750

```
        ####              Centerline =  2300                                  ####
```

1

```
      ####  Small Golf Course Bridge not modeled - assumed to fail      ####
  4.75    11.09  1918.19    0.00  1917.20  1918.36     0.18     0.14     0.07  1912.40
 9680.     259.    8650.     771.     190.    2450.     541.     421.     107.  1912.70
  0.30     1.37    3.53     1.43    0.045    0.035    0.045    0.000  1907.10  2108.46
0.000417    350.    260.     150.        3        0        0     0.00   589.27  2697.73
 3
 *SECNO 4.820

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##########################################################################
      ####                                                                  ####
      ####                    TIOGA WAY                                     ####
      ####              Special Bridge Routine                              ####
      ##########################################################################
  4.82     8.05  1918.05  1918.05  1916.98  1919.75     1.70     0.58     0.76  1910.00
 9680.    2538.    5109.     388.     403.     255.     441.     111.  1910.00
  0.31     6.54   12.69     7.99    0.140    0.140    0.140    0.000  1910.00  9809.24
0.088601    400.    400.     400.        4       16        0     0.00   302.02 10111.26
 3
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1917.75 ,NOT   1918.05 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      COFS      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.50      2.63      0.00     42.00     12.00    165.00     0.00   1910.60   1910.00

 *SECNO 4.830

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS     ESLWC      H3       QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                              AREA
 1998.22   1934.87     0.00     7120.    2591.      165.      165.     1916.10   1918.50

  4.83    13.06  1923.66    0.00  1922.44  1923.80     0.14     4.04     0.00  1910.60
 9680.    3747.    2705.    3223.    1416.     653.    1520.     444.     112.  1910.60
  0.31     2.65    4.14     2.12    0.140    0.140    0.140    0.000  1910.60  9711.24
0.004956     60.     60.     60.        2        0        8     0.00   806.14 10517.38
 3
 1490 NH CARD USED
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *SECNO 4.870

 3265 DIVIDED FLOW
      ####                Centerline =  2400                                ####
      ####  Small Golf Course Bridge not modeled - assumed to fail          ####
  4.87    12.35  1923.85    0.00  1922.59  1924.16     0.31     0.28     0.08  1916.10
 9680.    2181.    6523.     975.     799.    1281.     356.     456.     115.  1917.30
  0.33     2.73    5.09     2.74    0.037    0.035    0.035    0.000  1911.50  1864.61
0.000743    240.    170.     130.        2        0        0     0.00   788.17  3090.44
```

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CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

####		Centerline = 2390						####	
5.04	7.68	1925.98	1925.98	1924.95	1927.66	1.68	1.71	0.41	1926.40
9680.	0.	9680.	0.	0.	931.	0.	450.	126.	1925.80
0.35	0.00	10.39	0.28	0.045	0.035	0.120	0.000	1918.30	2297.04
0.012903	765.	890.	1040.	20	14	0	0.00	294.18	2591.22

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2380						####	
####	Small Golf Course Bridge not modeled - assumed to fail							####	
####	Some of breakout returns from north; modeled flows do								
####	not change because flows from Tropicana Wash confluence								
####	still control.								
5.21	9.89	1934.09	1934.09	1932.70	1936.51	2.42	8.20	0.22	1931.60
8860.	607.	8251.	2.	174.	640.	2.	509.	132.	1933.70
0.37	3.49	12.89	0.89	0.045	0.035	0.045	0.000	1924.20	2197.65
0.006359	920.	920.	920.	3	11	0	0.00	228.64	2426.29

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline - 2410							
5.26	7.91	1935.91	1935.91	1934.59	1938.80	2.89	2.15	0.14	1936.00
8860.	0.	8860.	0.	0.	650.	0.	513.	133.	1936.00
0.38	0.00	13.64	0.00	0.120	0.035	0.120	0.000	1928.00	2355.50
0.010425	280.	270.	300.	3	15	0	0.00	114.28	2469.78

CCHV= 0.300 CEHV= 0.500
*SECNO 5.280

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##########									
####		SPENCER STREET						####	
####		Special Bridge Routine						####	
####	Centerline = 2460								
##########									
5.28	7.80	1943.50	1943.50	1942.09	1945.53	2.03	0.55	0.26	1935.70

```
    8860.     2255.     5943.      684.      962.      429.      294.      515.      133.   1935.70
      0.38      2.32     13.85      2.32     0.120     0.035     0.120     0.000  1935.70  2058.38
 0.006884       30.       70.       100.        20         6         0      0.00   539.10  2597.48
)
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1942.20 ,NOT   1943.50 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

  SB  XK          XKOR        COEG        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.63        0.00       50.25       14.25      180.00       0.00     1936.20     1935.70

  *SECNO 5.290
  PRESSURE AND WEIR FLOW

1
  27-APR-88     00:07:33                                                                                    PAGE    53

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XAL        XNCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IOC        ICONT      CORAR      TOPWID       ENDST

    EGPRS       EGLWC       FB        QWEIR       QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                          AREA
    2002.19    1957.06      0.00       7246.      1678.       180.       180.     1941.20    1942.20

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3710 WSEL ASSUMED BASED ON MIN DIFF
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
       5.29       7.76   1943.96   1943.91   1944.00   1946.03      2.06      0.45     -0.45   1936.20
       8860.      2219.     5961.      680.      948.      427.      29..      517.      134.    1936.20
        0.38       2.34     13.96      2.34     0.120     0.035     0.120     0.000  1936.20  2061.47
  0.007035         65.       65.       65.        20         5         0      0.00   535.08  2596.56
)
  *SECNO 5.320

  3301 HV CHANGED MORE THAN HVINS

            ####              Centerline =  2390                                    ####
       5.32      10.15   1946.25      0.00   1944.84   1946.90      0.64      0.45      0.43   1946.00
       8860.      759.     7998.      103.      497.     1182.      145.      525.      137.    1944.40
        0.39       1.53     6.77      0.71     0.060     0.028     0.080     0.000  1936.10  1929.76
  0.001212        260.      170.      150.         4         0         0      0.00   685.36  2615.12
)
  CCHV=   0.100  CEHV=   0.300
  *SECNO 5.570

  3301 HV CHANGED MORE THAN HVINS

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
            ####              Centerline =  2030                                    ####
            ####  Near Algonquin Drive Alignment                                  ####
       5.57      10.00   1961.72   1961.72   1959.58   1966.33      4.60      2.97      1.19   1961.00
       8860.        3.     8860.        0.        0.       515.        0.       561.      148.    1961.00
        0.41       0.27     17.22      0.25     0.140     0.025     0.180     0.000  1951.72  2001.52
  0.005547       1320.     1320.     1320.        20         5         0      0.00    58.21  2059.72
)
1
  27-APR-88     00:07:33                                                                                    PAGE    54
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.       5.         0.         0.   0.000000       0.00       1.0         0.   1809.300      0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
      15.000     0.000     -1.000     0.000      0.000      0.000      0.000      0.000      0.000      0.000

1
  27-APR-88     00:07:33                                                                          PAGE   55

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          OLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


*PROF  4

CCHV=   0.100  CEHV=   0.300
*SECNO 2.650
          ####  Flows less than specified for CP35 due to tost breakout
          ####  at Spring Mountain Rd
          ####          Centerline =  2290                                    ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65     ####
      2.65     19.80   1809.30   1809.23   1809.30   1811.67      2.37      0.00      0.00   1804.70
    3542 0.    2882.    20742.    11795.     1166.     1329.     2182.        0.        0.   1802.00
      0.00      2.47     15.60      5.41     0.120     0.045     0.060     0.000   1789.50   1927.25
 0.006259       815.      760.      745.         0         4         0      0.00    976.35   2903.60
3
CCHV=   0.300  CEHV=   0.500
*SECNO 2.680
          ##########################################################################
          ####                  BOULDER HIGHWAY - Northbound Crossing               ####
          ####                        Special Bridge Routine                        ####
          ##########################################################################
      2.68     19.36   1811.16      0.00      0.00   1812.72      1.56      0.80      0.24   1791.80
    3542 0.    3882.    13246.    18292.     1462.      871.     3644.       20.        4.   1791.80
      0.01      2.65     15.20      5.02     0.120     0.045     0.060     0.000   1791.80   9639.65
 0.004074       200.      170.      140.         3         0         0      0.00   1260.18  10899.83
3

SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.80       3.00      40.50       8.70     229.00       0.00    1792.90    1791.80

*SECNO 2.690
6870 D.S. ENERGY OF 1812.72 HIGHER THAN COMPUTED ENERGY OF 1812.55
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
```

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						AREA			
2390.68	1814.11	1.40	33692.	1733.	229.	229.	1800.10	1805.40	

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

2.69	19.05	1811.95	0.00	0.00	1813.75	1.80	0.00	0.00	1792.90
35420.	3815.	13815.	17790.	1357.	857.	3374.	26.	6.	1792.90
0.01	2.81	16.12	5.27	0.120	0.045	0.060	0.000	1792.90	9654.66
0.004681	50.	50.	50.	20	0	8	0.00	1207.27	10861.92

1
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.700
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

BCULDEF HIGHWAY - Southbound Crossing
Special Bridge Routine

2.70	18.65	1813.05	1813.05	0.00	1814.93	1.38	0.29	0.04	1794.40
35420.	3884.	13695.	17841.	1230.	839.	3046.	33.	7.	1794.40
0.01	3.16	16.32	5.36	0.120	0.050	0.060	0.000	1794.40	9673.84
0.006099	55.	55.	55.	20	6	0	0.00	1139.63	10813.47

1

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
6870 D.S. ENERGY OF 1814.93 HIGHER THAN COMPUTED ENERGY OF 1813.70
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2971.04	1818.48	3.55	34574.	840.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8920.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	15.87	1813.47	0.00	1806.79	1815.35	1.87	0.00	0.00	1797.60
35420.	5830.	11084.	18506.	1679.	635.	2769.	39.	8.	1797.60
0.01	3.47	17.46	6.68	0.120	0.050	0.060	0.000	1797.60	9584.82
0.008650	50.	50.	50.	20	0	8	0.00	1135.23	10720.05

1
*SECNO 2.790

3301 HV CHANGED MORE THAN HVINS

Centerline = 2320

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
2.79	16.77	1816.17	0.00	1810.25	1817.35	1.18	1.80	0.21	1807.10
34420.	13394.	15065.	5961.	2558.	1235.	3514.	100.	19.	1808.40
0.03	5.24	12.19	1.73	0.050	0.035	0.150	0.000	1799.40	1828.58
0.002495	380.	420.	460.	3	0	0	0.00	1063.54	2892.11

CCHV= 0.100 CEHV= 0.300

*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2340						####	
2.98	17.62	1825.02	1825.02	1817.91	1828.20	3.18	4.25	0.60	1817.40
34420.	2763.	18710.	12947.	1258.	974.	4108.	259.	43.	1817.60
0.05	2.20	19.21	3.15	0.160	0.040	0.160	0.000	1807.40	1996.15
0.008365	1070.	1010.	990.	20	8	0	0.00	976.40	2972.55

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
3.18	16.34	1837.04	1837.04	1827.99	1840.98	3.94	8.16	0.23	1831.10
34420.	5125.	28643.	653.	1891.	1643.	442.	381.	63.	1832.10
0.07	2.71	17.43	1.48	0.140	0.040	0.180	0.000	1620.70	1833.66
0.007502	1060.	1030.	1020.	4	11	0	0.00	740.25	2573.91

*SECNO 3.370

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2350						####	
3.37	18.72	1843.22	0.00	1833.91	1845.07	1.85	3.88	0.21	1832.90
34420.	8760.	21885.	3775.	4043.	1610.	2137.	503.	84.	1833.30
0.10	2.17	13.60	1.77	0.140	0.035	0.140	0.000	1824.50	1616.89
0.002540	805.	990.	1020.	3	0	0	0.00	1209.04	2825.93

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2390						####	
3.53	18.40	1850.50	1850.50	1838.73	1854.32	3.82	3.11	0.59	1847.60
34420.	914.	32087.	1418.	553.	1976.	933.	614.	103.	1847.80
0.11	1.65	16.24	1.52	0.120	0.035	0.140	0.000	1832.10	2080.09

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 0.005488      825.      870.      885.       20          8          0      0.00    787.32  2867.42
1
 CCHV=   0.300  CEHV=   0.500
 *SECNO 3.550
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                                                          ####
          ####                    MOJAVE ROAD                           ####
          ####                Special Bridge Routine                    ####
          ####                                                          ####
          ##################################################################
      3.55     21.50   1853.60   1853.60   1839.74   1857.19      3.59      0.44      0.07  1832.10
     34420.     7067.    20868.     6485.     2287.     1075.     3016.      626.      186.   1832.10
       0.11      3.09     19.41      2.15     0.120     0.035     0.140     0.000   1832.10  1970.79
  0.003498       90.      100.      130.        20         8         0      0.00   1062.99  3033.78
0
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1849.63 .NOT   1853.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.56        2.63         0.00       48.70       18.70      240.00       0.00     1835.00     1834.50

 *SECNO 3.560
 6870 D.S. ENERGY OF 1857.19 HIGHER THAN COMPUTED ENERGY OF 1857.01
 PRESSURE AND WEIR FLOW

1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
     Q          GLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


   EGPRS       EGLWC         H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                          AREA
    2351.84    1893.30       0.00      31730.      2850.       240.       240.      1843.00    1847.10

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
      3.56     21.57   1854.17   1853.95   1849.23   1857.69      3.52      0.17     -0.17  1832.60
     34420.     7101.    20771.     6547.     2317.     1079.     3062.      633.      187.   1832.60
       0.12      3.06     19.26      2.14     0.120     0.035     0.140     0.000   1832.60  1966.41
  0.003426       50.      60.       50.         20         5         0      0.00   1072.21  3038.62
3
 *SECNO 3.580
 3280 CROSS SECTION       3.58 EXTENDED       1.16 FEET

 3301 HV CHANGED MORE THAN HVINS

      3.58     25.05   1857.65      0.00   1849.40   1858.58      0.94      0.12      0.78  1832.60
     34420.    14376.    14422.     5622.     4368.     1253.     5569.      656.      110.   1832.60
       0.12      3.29     11.51      1.31     0.045     0.025     0.140     0.000   1832.60  1590.00
  0.000511       110.      110.      110.         5         0         0      0.00   1600.00  3190.00
3
 CCHV=   0.100  CEHV=   0.300
 *SECNO 3.710

 3265 DIVIDED FLOW
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 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
       3.71    14.98   1864.98   1864.98   1858.61   1866.80      1.82      0.66      0.27   1660.00
      34420.   12267.   15919.    6234.     3049.     1028.      3219.      795.      134.    1858.00
       0.14     4.02     15.48     1.94     0.045     0.025     0.140     0.000   1850.00    8742.64
  0.002719     680.      660.      640.       20        15         0       0.00   1581.51   10609.81
2
1
  27-APR-88     00:07:33                                                                      PAGE    60

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=   0.300 CEHV=   0.500
 *SECNO 3.770
 3280 CROSS SECTION       3.77 EXTENDED       2.68 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    DESERT INN ROAD                       ####
          ####                 Special Bricge Routine                   ####
          ####  BT points follow off road, high ground to north & south.  ####
          ####                 Centerline = 2720                         ####
          ##################################################################
       3.77    15.88   1870.68   1870.68   1862.35   1874.86      4.18      0.85      1.18   1853.80
      25760.   3445.    16882.    5433.      521.      844.      2627.      833.      142.    1853.80
       0.15     6.62     20.00     2.07     0.045     0.025     0.140     0.000   1853.80    2582.76
  0.002614     340.      330.      250.       20         8         0       0.00    537.24    3120.00
3
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1866.27 ,NOT   1870.68 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      3.00      0.00      48.70     18.70     240.00    0.00      1854.30   1853.80

 *SECNO 3.780
 6870 D.S. ENERGY OF 1874.86 HIGHER THAN COMPUTED ENERGY OF 1872.72
 3280 CROSS SECTION       3.78 EXTENDED       2.68 FEET

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD
  2149.75    1903.57    0.00      23565.    2203.     240.      240.               1862.30   1865.50

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
1
  27-APR-88     00:07:33                                                                      PAGE    61
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.78	16.88	1871.18	1871.13	1865.94	1875.36	4.18	0.20	-0.20	1854.30
25760.	3444.	16884.	5432.	520.	844.	2626.	840.	143.	1854.30
0.15	6.62	20.01	2.37	0.045	0.025	0.140	0.000	1854.30	2582.90
0.002617	75.	75.	75.	20	5	0	0.00	537.10	3120.00

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	13.85	1873.85	1873.85	1865.61	1877.72	3.87	0.88	0.03	1872.00
25760.	177.	24451.	1132.	73.	1510.	670.	859.	146.	1868.00
0.15	2.43	16.20	1.69	0.045	0.035	0.140	0.000	1860.00	9821.42
0.006017	130.	230.	300.	20	15	0	0.00	504.89	10326.31

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

Centerline = 2250

4.00	14.89	1880.09	1879.64	1873.63	1883.24	3.14	5.30	0.22	1874.70
25760.	6005.	19741.	14.	781.	1259.	17.	903.	154.	1880.00
0.17	7.69	15.69	0.32	0.045	0.035	0.060	0.000	1865.20	2085.39
0.005764	900.	900.	900.	7	8	0	0.00	325.87	2411.26

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.50

PECOS-McLEOD DRIVE

Special Bridge Routine

4.05	13.70	1882.10	1882.10	1875.89	1885.78	3.58	1.98	0.27	1888.00
25760.	0.	25760.	0.	0.	1673.	0.	914.	156.	1888.00
0.18	0.00	15.40	0.00	0.045	0.035	0.050	0.000	1868.40	9851.26
0.009507	100.	295.	400.	5	12	0	0.00	228.20	10079.46

SPECIAL BRIDGE

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070
ERROR ELTRD.LT.MIN ROAD ELEV, ELTRD SET EQUAL TO MIN ROAD ELEV
3280 CROSS SECTION 4.07 EXTENDED 0.40 FEET

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3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	F3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1889.36	1886.28	0.00	0.	25760.	1488.	1487.	1884.90	1890.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	20.00	1888.90	0.00	1876.22	1889.36	0.46	3.58	0.00	1888.50
25760.	0.	25760.	0.	0.	4723.	0.	921.	157.	1888.50
0.18	0.00	5.45	0.00	0.045	0.035	0.060	0.000	1868.90	9440.00
0.001188	100.	100.	100.	2	0	0	0.00	650.00	10090.00

1490 NH CARD USED
*SECNO 4.210

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2500						####	
4.21	14.31	1891.11	1891.11	1883.84	1893.13	2.82	1.42	0.78	1882.10
25760.	6881.	14294.	4585.	1784.	989.	608.	988.	169.	1884.80
0.20	3.86	14.46	7.54	0.062	0.035	0.035	0.000	1876.80	1852.84
0.003930	720.	720.	720.	20	14	0	0.00	869.51	2838.59

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2530						####	
4.41	15.61	1901.51	1901.51	1893.64	1903.93	2.42	5.43	0.12	1898.60
25760.	2873.	16852.	6035.	644.	1137.	932.	1066.	188.	1905.40
0.23	4.46	14.82	6.48	0.060	0.035	0.050	0.000	1885.90	2280.56
0.006474	1140.	1085.	1080.	20	8	0	0.00	542.99	2909.46

*SECNO 4.630

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
                ####                Centerline =  2300                ####
      4.63    15.53  1912.23  1912.23  1904.17  1914.83     2.59     5.88     0.05  1907.80
  25760.     1993.    21261.    2506.    1264.    1500.     808.     1145.     206.    1909.50
     0.25      1.58     14.17     3.10     0.120    0.035    0.060    0.000  1896.70  1890.62
 0.004167     930.     1165.     1185.        4        5        0     0.00   927.50  3323.71
3
 CCHV=   0.300  CEHV=   0.500
 *SECNO 4.690

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##################################################################
      ####                    EASTERN AVENUE                        ####
      ####                Special Bridge Routine                    ####
      ##################################################################
      4.69    14.73  1918.03  1918.03  1911.81  1919.98     1.96     1.14     0.19  1903.30
  25760.     3128.     9975.    12657.    1534.     589.    2331.     1170.     212.    1903.30
     0.26      2.04     16.93     5.43     0.120    0.035    0.060    0.000  1903.30  9394.34
 0.004404     330.      280.      220.        20       10        0     0.00  1081.02 10475.35
3
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 SPECIAL BRIDGE

 SB   XK        XKOR      COFQ      ROLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      2.63      0.00     32.00     10.00    176.00     0.00   1903.80   1903.30

 *SECNO 4.700
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3       QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                              AREA
  2436.95   1924.39     4.41    24060.    1709.      176.      176.     1911.80   1914.10


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
      4.70    14.60  1918.40  1918.23  1916.93  1920.48     2.08     0.25    -0.25  1903.80
  25760.     3052.    10129.    12573.    1462.     584.    2275.     1176.     214.    1903.80
     0.26      2.09     17.34     5.53     0.120    0.035    0.060    0.000  1903.80  9414.83
 0.004671      56.      56.       56.        20        5        0     0.00  1058.97 10473.80
3
 1490 NH CARD USED
 *SECNO 4.750

 3301 HV CHANGED MORE THAN HVINS

      ####                Centerline =  2300                ####
      ####  Small Golf Course Bridge not modeled - assumed to fail  ####
      4.75    13.71  1920.81     0.00  1917.20  1921.36     0.55     0.42     0.46  1912.40
  25760.     1083.    20542.    3735.     402.    3235.    1398.     1201.     219.    1912.70
     0.27      2.70     6.47     2.67     0.045    0.035    0.045    0.000  1907.10  2074.36
 0.000968     350.      260.      150.         2        0        0     0.00   952.24  3026.60
3
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*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Special Bridge Routine
##

4.82	11.52	1921.52	1921.52	1916.98	1923.57	2.15	1.26	0.75	1910.00
25760.	9820.	8780.	7160.	1045.	576.	869.	1236.	226.	1910.00
0.28	9.40	15.24	8.24	0.140	0.140	0.140	0.000	1910.00	9745.79
0.079245	400.	400.	403.	4	16	0	0.00	624.15	10369.95

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2489.23	1928.35	4.78	23465.	2343.	165.	165.	1916.10	1918.50

4.83	15.31	1925.91	0.00	1922.44	1926.22	0.31	2.65	0.00	1910.60
25760.	9190.	5140.	11430.	2121.	766.	3710.	1242.	228.	1910.60
0.29	4.33	6.71	3.98	0.140	0.140	0.140	0.000	1910.60	9562.08
0.010520	50.	60.	60.	2	0	8	0.00	1590.72	11152.80

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	14.80	1926.30	0.00	1922.59	1927.00	0.69	0.59	0.19	1916.10
25760.	7565.	13918.	4275.	2095.	1617.	1872.	1266.	234.	1917.30
0.30	3.61	8.61	2.28	0.044	0.035	0.054	0.000	1911.50	1665.66
0.001557	240.	170.	130.	2	0	0	0.00	1632.97	3370.48

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     2129.0     3070.0  TYPE=      1  TARGET=      941.000
          ####                 Centerline =  2390                              ####
       5.04     10.30   1929.10   1929.10   1924.95   1931.88      2.79      2.73      0.63   1926.40
   25760.       580.    25121.      60.       135.      1853.       37.      1344.       255.    1925.80
       0.31       4.31     13.55     1.52      0.045     0.035     0.120     0.000  1918.30   2201.74
  0.008865       765.      890.     1040.         20        19         0      0.00   410.63   2612.37
1
 1490 NH CARD USED
 *SECNO 5.210
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                 Centerline =  2380                              ####
          ####  Small Golf Course Bridge not modeled - assumed to fail         ####
          ####  Some of breakout returns from north; modeled flows do
          ####  not change because flows from Tropicana Wash confluence
          ####  still control.
       5.21     13.98   1938.18   1938.18   1932.70   1940.76      2.58      6.18      0.02   1931.60
   22500.      6875.    14795.      830.      1067.      971.      172.      1389.       264.    1933.70
       0.33       6.45     15.23     4.83      0.045     0.035     0.045     0.000  1924.20   2065.68
  0.005092       920.      920.      920.          5        11         0      0.00   426.94   2492.63
1
 *SECNO 5.260

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####          Centerline - 2410
       5.26     13.21   1941.21   1941.21   1934.59   1945.83      4.62      1.55      0.61   1936.00
   22500.       299.    21979.      222.      171.      1259.      102.      1400.       266.    1936.00
       0.34       1.75     17.45     2.13      0.120     0.035     0.120     0.000  1928.00   2223.02
  0.007128       200.      270.      300.         20        11         0      0.00   286.07   2509.09
1
 CCHV=   0.300  CEHV=   0.500
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


 *SECNO 5.280
 3280 CROSS SECTION      5.28 EXTENDED      2.73 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    SPENCER STREET                              ####
          ####                Special Bridge Routine                          ####
          ####          Centerline = 2460                                     ####
          ##########################################################################
       5.28     11.23   1946.93   1946.93   1942.09   1949.56      2.53      0.46      0.60   1935.70
   22500.      8404.    11207.      2889.      2417.      618.      977.      1403.       267.    1935.70
       0.34       3.48     18.14     2.95      0.120     0.035     0.120     0.000  1935.70   2000.00
```

0.007252	30.	70.	100.	20	15	0	0.00	785.79	2785.79

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	50.25	14.25	180.00	0.00	1936.20	1935.70

*SECNO 5.290
6870 D.S. ENERGY OF 1949.56 HIGHER THAN COMPUTED ENERGY OF 1947.83
3280 CROSS SECTION 5.29 EXTENDED 2.87 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2325.42	1957.07	7.51	21418.	1100.	180.	180.	1941.20	1942.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

5.29	11.37	1947.57	1947.43	1944.00	1950.06	2.49	0.46	-0.46	1936.20
22500.	8470.	11087.	2943.	2479.	626.	1021.	1409.	268.	1936.20
0.34	3.42	17.72	2.88	0.120	0.035	0.120	0.000	1936.20	2000.00
0.006812	65.	65.	65.	20	5	0	0.00	794.42	2794.42

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.320

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2390						####	
5.32	14.12	1950.22	0.00	1944.84	1951.00	0.77	0.42	0.51	1946.00
22500.	5711.	15477.	1312.	2512.	1847.	806.	1432.	272.	1944.40
0.35	2.27	8.38	1.63	0.060	0.028	0.080	0.000	1936.10	1710.90
0.001026	260.	170.	150.	5	0	0	0.00	960.17	2671.07

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2030						####	
####	Near Algonquin Drive Alignment							####	
5.57	19.01	1970.73	1970.73	1959.58	1973.73	3.00	1.82	0.67	1961.00
22500.	2083.	16613.	3804.	1827.	1028.	4034.	1615.	312.	1961.00
0.38	1.14	16.16	0.94	0.140	0.025	0.180	0.000	1951.72	1389.08
0.001943	1320.	1320.	1320.	28	18	0	0.00	1679.68	3068.76

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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2.650	0.00	0.00	0.00	1789.50	6400.00	1798.51	0.00	1801.36	141.03	13.55	472.21	538.91
*	2.650	0.00	0.00	0.00	1789.50	8400.00	1799.43	1799.43	1803.24	168.44	15.66	536.56	647.23
	2.650	0.00	0.00	0.00	1789.50	11920.00	1801.70	1801.45	1806.13	155.98	16.89	705.54	954.43
	2.650	0.00	0.00	0.00	1789.50	35420.00	1809.30	1809.23	1811.67	62.59	15.60	4677.72	4477.24
	2.680	170.00	0.00	0.00	1791.80	6400.00	1800.55	0.00	1803.42	104.52	14.34	558.17	626.00
	2.680	170.00	0.00	0.00	1791.80	8400.00	1802.38	0.00	1805.49	90.18	15.10	719.39	884.57
*	2.680	170.00	0.00	0.00	1791.80	11920.00	1806.71	0.00	1808.26	35.81	11.97	1960.45	1991.81
	2.680	170.00	0.00	0.00	1791.80	35420.00	1811.16	0.00	1812.72	40.74	15.20	5978.25	5549.48
*	2.690	50.00	1805.40	1800.10	1792.90	6400.00	1806.41	0.00	1807.23	19.13	8.19	1261.16	1463.21
*	2.690	50.00	1805.40	1800.10	1792.90	8400.00	1806.73	0.00	1807.98	28.71	10.20	1410.76	1567.67
*	2.690	50.00	1805.40	1800.10	1792.90	11920.00	1806.95	1806.93	1809.25	52.75	13.97	1513.21	1641.21
*	2.690	50.00	1805.40	1800.10	1792.90	35420.00	1811.95	0.00	1813.75	46.81	16.12	5588.49	5176.97
	2.700	55.00	0.00	0.00	1794.40	6400.00	1806.34	0.00	1807.60	39.52	9.76	865.88	1018.00
	2.700	55.00	0.00	0.00	1794.40	8400.00	1806.55	0.00	1808.61	63.45	12.51	896.39	1054.58
*	2.700	55.00	0.00	0.00	1794.40	11920.00	1808.35	1808.35	1810.57	64.35	13.82	1464.60	1486.00
*	2.700	55.00	0.00	0.00	1794.40	35420.00	1813.05	1813.05	1814.93	60.99	16.32	5114.64	4535.53
*	2.710	50.00	1804.40	1802.90	1797.60	6400.00	1806.79	0.00	1808.96	101.81	13.16	663.00	634.30
*	2.710	50.00	1804.40	1802.90	1797.60	8400.00	1807.99	1807.99	1810.60	107.74	14.69	814.06	809.28
*	2.710	50.00	1804.40	1802.90	1797.60	11920.00	1810.75	0.00	1811.85	46.93	11.35	2423.08	1740.03
*	2.710	50.00	1804.40	1802.90	1797.60	35420.00	1813.47	0.00	1815.35	86.50	17.46	5083.27	3808.28
	2.790	420.00	0.00	0.00	1799.40	6000.00	1810.25	0.00	1810.87	16.44	6.91	1764.16	1479.88
	2.790	420.00	0.00	0.00	1799.40	8000.00	1811.89	0.00	1812.30	10.34	6.18	3110.68	2488.37
	2.790	420.00	0.00	0.00	1799.40	11420.00	1812.43	0.00	1813.06	15.39	7.82	3608.07	2910.88
	2.790	420.00	0.00	0.00	1799.40	34420.00	1816.17	0.00	1817.35	24.95	12.19	7307.65	6891.38
*	2.980	1010.00	0.00	0.00	1807.40	6000.00	1817.91	1817.91	1820.11	81.56	12.01	693.07	664.38
*	2.980	1010.00	0.00	0.00	1807.40	8000.00	1819.32	1819.32	1821.28	63.83	11.96	1514.30	1001.37
*	2.980	1010.00	0.00	0.00	1807.40	11420.00	1820.65	1820.65	1822.68	62.28	13.00	2493.26	1447.08
*	2.980	1010.00	0.00	0.00	1807.40	34420.00	1825.02	1825.02	1828.20	83.65	19.21	6340.34	3763.43

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	3.180	1030.00	0.00	0.00	1820.70	6000.00	1827.99	0.00	1829.98	113.67	11.31	530.41	562.77
*	3.180	1030.00	0.00	0.00	1820.70	8000.00	1828.65	1828.65	1831.39	138.25	13.28	602.22	680.38
*	3.180	1030.00	0.00	0.00	1820.70	11420.00	1830.19	1830.19	1833.52	131.25	14.65	779.76	996.82
*	3.180	1030.00	0.00	0.00	1820.70	34420.00	1837.04	1837.04	1840.98	75.02	17.43	3975.57	3973.89
	3.370	990.00	0.00	0.00	1824.50	6000.00	1833.91	0.00	1834.94	27.35	8.22	912.83	1147.21
	3.370	990.00	0.00	0.00	1824.50	8000.00	1835.28	0.00	1836.41	25.11	8.82	1460.86	1596.54
	3.370	990.00	0.00	0.00	1824.50	11420.00	1837.04	0.00	1838.30	23.72	9.67	2409.18	2344.80
	3.370	990.00	0.00	0.00	1824.50	34420.00	1843.22	0.00	1845.07	25.48	13.60	7790.26	6830.20

*	3.530	870.00	0.00	0.00	1832.10	8000.00	1839.92	1839.92	1842.98	105.61	14.04	569.63	780.69
*	3.530	870.00	0.00	0.00	1832.10	11420.00	1841.70	1841.70	1845.34	59.66	15.32	745.53	1143.93
*	3.530	870.00	0.00	0.00	1832.10	34420.00	1850.50	1850.50	1854.32	54.88	16.24	3461.38	4646.21
*	3.550	100.00	0.00	0.00	1832.10	6000.00	1839.74	1839.74	1843.57	98.68	15.70	382.08	629.40
*	3.550	100.00	0.00	0.00	1832.10	8000.00	1841.37	1841.37	1846.00	84.95	17.27	463.34	867.97
*	3.550	100.00	0.00	0.00	1832.10	11420.00	1843.28	1843.28	1847.15	65.21	17.14	1017.99	1414.23
*	3.550	100.00	0.00	0.00	1832.10	34420.00	1853.60	1853.60	1857.19	34.98	19.41	6378.13	5819.93
*	3.560	50.00	1847.10	1843.00	1832.60	6000.00	1849.23	0.00	1849.63	4.22	5.68	2266.45	2921.45
*	3.560	50.00	1847.10	1843.00	1832.60	8000.00	1850.31	0.00	1850.89	5.54	6.79	3035.54	3399.36
*	3.560	50.00	1847.10	1843.00	1832.60	11420.00	1851.36	0.00	1852.20	8.35	8.66	3848.82	3953.18
*	3.560	50.00	1847.10	1843.00	1832.60	34420.00	1854.17	1853.95	1857.69	34.26	19.26	6457.62	5880.74
	3.580	110.00	0.00	0.00	1832.60	6000.00	1849.40	0.00	1849.69	1.65	5.01	2397.93	4672.57
	3.580	110.00	0.00	0.00	1832.60	8000.00	1850.56	0.00	1850.94	2.10	5.91	3221.94	5522.08
	3.580	110.00	0.00	0.00	1832.60	11420.00	1851.79	0.00	1852.34	2.98	7.36	4207.00	6614.81
	3.580	110.00	0.00	0.00	1832.60	34420.00	1857.65	0.00	1858.58	5.11	11.51	11190.34	15219.25
*	3.710	660.00	0.00	0.00	1850.00	6000.00	1859.61	1858.61	1860.64	43.87	11.95	938.55	905.92
*	3.710	660.00	0.00	0.00	1850.00	8000.00	1859.57	1859.57	1861.88	44.04	13.00	1288.26	1205.50
*	3.710	660.00	0.00	0.00	1850.00	11420.00	1861.63	1861.63	1863.24	24.90	11.75	2730.39	2288.38
*	3.710	660.00	0.00	0.00	1850.00	34420.00	1864.98	1864.98	1866.80	27.19	15.48	7296.51	6601.14
*	3.770	330.00	0.00	0.00	1853.80	6000.00	1862.35	1862.35	1864.43	24.50	12.30	726.31	1212.28
*	3.770	330.00	0.00	0.00	1853.80	7610.00	1862.41	1862.41	1865.70	38.29	15.46	734.61	1229.87
*	3.770	330.00	0.00	0.00	1853.80	9680.00	1863.41	1863.41	1867.50	41.84	17.38	858.37	1496.43
*	3.770	330.00	0.00	0.00	1853.80	25760.00	1870.68	1870.68	1874.86	26.14	20.00	3991.59	5038.21
*	3.780	75.00	1865.50	1862.30	1854.30	6000.00	1865.94	0.00	1866.86	7.60	8.42	1511.22	2176.86
*	3.780	75.00	1865.50	1862.30	1854.30	7610.00	1866.41	0.00	1867.69	10.29	10.06	1722.62	2372.31
*	3.780	75.00	1865.50	1862.30	1854.30	9680.00	1866.75	0.00	1868.63	14.78	12.28	1873.14	2518.03
*	3.780	75.00	1865.50	1862.30	1854.30	25760.00	1871.18	1871.13	1875.36	26.17	20.01	3969.70	5035.71
*	3.830	230.00	0.00	0.00	1860.00	6000.00	1865.61	1865.61	1867.96	109.76	12.31	487.53	572.69
*	3.830	230.00	0.00	0.00	1860.00	7610.00	1866.46	1866.46	1869.15	106.67	13.15	578.69	736.83
*	3.830	230.00	0.00	0.00	1860.00	9680.00	1867.47	1867.47	1870.51	102.69	14.00	691.64	955.26
*	3.830	230.00	0.00	0.00	1860.00	25760.00	1873.85	1873.85	1877.72	60.17	16.20	2252.56	3320.95

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	4.030	900.00	0.00	0.00	1865.20	6000.00	1873.63	0.00	1875.38	61.57	10.64	563.98	764.57
	4.030	900.00	0.00	0.00	1865.20	7610.00	1874.59	0.00	1876.65	63.95	11.52	660.32	951.59
	4.030	900.00	0.00	0.00	1865.20	9680.00	1875.57	1874.98	1877.67	59.12	11.95	906.55	1259.00
	4.030	900.00	0.00	0.00	1865.20	25760.00	1880.09	1879.64	1883.24	57.64	15.69	2056.48	3392.95
	4.050	295.00	0.00	0.00	1868.40	6000.00	1875.89	0.00	1876.93	34.58	8.19	733.01	1020.35
	4.050	295.00	0.00	0.00	1868.40	7610.00	1877.07	0.00	1878.23	32.68	8.64	880.88	1331.24
	4.050	295.00	0.00	0.00	1868.40	9680.00	1877.67	0.00	1879.25	41.70	10.12	956.76	1499.09
*	4.050	295.00	0.00	0.00	1868.40	25760.00	1882.10	1882.10	1885.78	95.07	15.40	1672.67	2642.00
	4.070	100.00	1895.50	1884.90	1868.90	6000.00	1876.22	0.00	1877.32	37.54	8.42	712.61	979.27
	4.070	100.00	1895.50	1884.90	1868.90	7610.00	1877.38	0.00	1878.61	35.61	8.90	855.00	1275.21
	4.070	100.00	1885.50	1884.90	1868.90	9680.00	1878.07	0.00	1879.70	43.35	10.26	943.89	1470.23
	4.070	100.00	1890.10	1884.90	1868.90	25760.00	1888.90	0.00	1889.36	11.88	5.45	4723.01	7473.07
*	4.210	720.00	0.00	0.00	1876.80	6000.00	1883.84	1883.84	1886.38	87.68	12.95	506.52	640.75
*	4.210	720.00	0.00	0.00	1876.80	7610.00	1885.26	1885.26	1887.62	65.70	12.74	716.01	938.88
*	4.210	720.00	0.00	0.00	1876.80	9680.00	1886.55	1886.55	1888.72	52.71	12.68	1017.65	1333.33
*	4.210	720.00	0.00	0.00	1876.80	25760.00	1891.11	1891.11	1893.13	39.30	14.46	3380.58	4109.27
	4.410	1085.00	0.00	0.00	1885.90	6000.00	1893.64	0.00	1896.39	95.93	13.31	450.87	612.60
*	4.410	1085.00	0.00	0.00	1885.90	7610.00	1894.48	1894.48	1897.89	105.92	14.83	513.24	739.43

*	4.410	1085.00	0.00	0.00	1885.90	9680.00	1896.29	1896.29	1899.54	82.60	14.57	711.45	1065.11
*	4.410	1085.00	0.00	0.00	1885.90	25760.00	1901.51	1901.51	1903.93	64.74	14.82	2712.29	3201.63
	4.630	1165.00	0.00	0.00	1896.70	6000.00	1904.17	0.00	1905.95	69.72	10.73	559.17	718.57
	4.630	1165.00	0.00	0.00	1896.70	7610.00	1905.36	0.00	1907.28	61.59	11.13	683.95	969.68
	4.630	1165.00	0.00	0.00	1896.70	9680.00	1906.09	0.00	1908.58	71.74	12.66	764.57	1142.85
*	4.630	1165.00	0.00	0.00	1896.70	25760.00	1912.23	1912.23	1914.83	41.67	14.17	3571.56	3990.78
*	4.690	280.00	0.00	0.00	1903.30	6000.00	1911.81	1911.81	1913.91	55.01	13.13	681.62	808.98
*	4.690	280.00	0.00	0.00	1903.30	7610.00	1912.24	1912.24	1915.15	72.78	15.60	739.38	892.04
*	4.690	280.00	0.00	0.00	1903.30	9680.00	1914.46	1914.48	1916.29	40.01	13.43	1577.59	1530.35
*	4.690	280.00	0.00	0.00	1903.30	25760.00	1918.03	1918.03	1919.98	44.04	16.93	4453.53	3881.63
*	4.700	56.00	1914.10	1911.80	1903.80	6000.00	1916.93	0.00	1917.16	5.32	5.45	2938.75	2601.19
*	4.700	56.00	1914.10	1911.80	1903.80	7610.00	1917.29	0.00	1917.61	7.06	6.40	3249.26	2863.88
*	4.700	56.00	1914.10	1911.80	1903.80	9680.00	1917.75	0.00	1918.16	9.03	7.40	3671.97	3220.68
*	4.700	56.00	1914.10	1911.80	1903.80	25760.00	1919.40	1918.23	1920.48	46.71	17.34	4320.88	3768.95
	4.750	260.00	0.00	0.00	1907.10	6000.00	1917.20	0.00	1917.29	2.62	2.57	2629.00	3708.61
	4.750	260.00	0.00	0.00	1907.10	7610.00	1917.64	0.00	1917.77	3.35	3.02	2869.87	4155.81
	4.750	260.00	0.00	0.00	1907.10	9680.00	1918.19	0.00	1918.36	4.17	3.53	3180.78	4740.56
	4.750	260.00	0.00	0.00	1907.10	25760.00	1920.81	0.00	1921.36	9.68	6.47	5034.42	8278.42
	4.820	400.00	0.00	0.00	1910.00	6000.00	1916.98	0.00	1918.26	741.27	10.56	744.80	220.38
	4.820	400.00	0.00	0.00	1910.00	7610.00	1917.40	1917.36	1918.96	864.44	11.86	859.77	258.83
*	4.820	400.00	0.00	0.00	1910.00	9680.00	1918.05	1918.05	1919.75	886.01	12.69	1045.17	325.20
*	4.820	400.00	0.00	0.00	1910.00	25760.00	1921.52	1921.52	1923.57	792.45	15.24	2489.94	915.08

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	4.830	60.00	1918.50	1916.10	1910.60	6000.00	1922.44	0.00	1922.53	36.12	3.31	2694.40	998.37
*	4.830	60.00	1918.50	1916.10	1910.60	7610.00	1923.08	0.00	1923.19	41.32	3.67	3140.53	1183.86
*	4.830	60.00	1918.50	1916.10	1910.60	9680.00	1923.66	0.00	1923.80	49.56	4.14	3588.22	1375.08
	4.830	60.00	1918.50	1916.10	1910.60	25760.00	1925.91	0.00	1926.22	105.20	6.71	6596.61	2511.53
	4.870	170.00	0.00	0.00	1911.50	6000.00	1922.55	0.00	1922.79	5.46	3.96	1764.22	2566.78
	4.870	170.00	0.00	0.00	1911.50	7610.00	1923.24	0.00	1923.49	6.24	4.46	2066.58	3045.63
	4.870	170.00	0.00	0.00	1911.50	9680.00	1923.85	0.00	1924.16	7.43	5.09	2436.34	3551.58
	4.870	170.00	0.00	0.00	1911.50	25760.00	1926.30	0.00	1927.00	15.57	8.61	5583.63	6528.22
*	5.040	890.00	0.00	0.00	1918.30	6000.00	1924.95	1924.95	1926.29	139.73	9.29	645.98	507.58
*	5.040	890.00	0.00	0.00	1918.30	7610.00	1925.46	1925.46	1926.93	132.02	9.72	783.21	662.31
*	5.040	890.00	0.00	0.00	1918.30	9680.00	1925.98	1925.98	1927.66	129.03	10.39	931.41	852.19
*	5.040	890.00	0.00	0.00	1918.30	25760.00	1929.10	1929.10	1931.88	88.85	13.55	2024.94	2732.79
	5.210	920.00	0.00	0.00	1924.20	6000.00	1932.70	1931.64	1934.65	61.55	11.27	561.19	764.80
	5.210	920.00	0.00	0.00	1924.20	7300.00	1933.29	1933.05	1935.57	66.05	12.30	657.07	898.21
*	5.210	920.00	0.00	0.00	1924.20	8860.00	1934.09	1934.09	1936.51	63.59	12.89	815.87	1111.04
*	5.210	920.00	0.00	0.00	1924.20	22500.00	1938.18	1938.18	1940.76	50.92	15.23	2209.84	3153.14
	5.260	270.00	0.00	0.00	1928.00	6000.00	1934.59	0.00	1936.77	96.32	11.86	505.96	611.34
	5.260	270.00	0.00	0.00	1928.00	7300.00	1935.30	0.00	1937.75	96.36	12.55	581.80	743.66
*	5.260	270.00	0.00	0.00	1928.00	8860.00	1935.91	1935.91	1938.80	104.25	13.64	649.79	867.74
*	5.260	270.00	0.00	0.00	1928.00	22500.00	1941.21	1941.21	1945.83	71.28	17.45	1532.50	2665.06
*	5.280	70.00	0.00	0.00	1935.70	6000.00	1942.09	1942.09	1943.99	75.97	12.75	1033.86	688.38
*	5.280	70.00	0.00	0.00	1935.70	7300.00	1942.78	1942.78	1944.75	72.12	13.30	1326.14	859.59
*	5.280	70.00	0.00	0.00	1935.70	8860.00	1943.50	1943.50	1945.53	68.84	13.85	1685.45	1067.89
*	5.280	70.00	0.00	0.00	1935.70	22500.00	1946.93	1946.93	1949.56	72.62	18.14	4011.95	2640.36
*	5.290	65.00	1942.20	1941.20	1936.20	6000.00	1944.00	0.00	1944.93	31.50	9.38	1687.38	1069.01
*	5.290	65.00	1942.20	1941.20	1936.20	7300.00	1943.51	0.00	1945.26	62.28	12.63	1438.90	925.03
*	5.290	65.00	1942.20	1941.20	1936.20	8860.00	1943.96	1943.91	1946.03	70.35	13.96	1665.52	1056.34
*	5.290	65.00	1942.20	1941.20	1936.20	22500.00	1947.57	1947.48	1950.06	68.12	17.72	4125.57	2726.08

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	5.320	170.00	0.00	0.00	1936.10	6000.00	1944.84	0.00	1945.38	12.08	6.03	1174.87	1726.50
	5.320	170.00	0.00	0.00	1936.10	7300.00	1945.41	0.00	1946.05	13.08	6.57	1380.57	2018.78
	5.320	170.00	0.00	0.00	1936.10	8860.00	1946.25	0.00	1946.90	12.12	6.77	1824.31	2545.18
	5.320	170.00	0.00	0.00	1936.10	22500.00	1950.22	0.00	1951.00	10.26	8.38	5164.67	7024.67
*	5.570	1320.00	0.00	0.00	1951.72	6000.00	1959.58	1959.58	1963.19	58.06	15.25	353.52	787.46
*	5.570	1320.00	0.00	0.00	1951.72	7300.00	1960.66	1960.66	1964.68	56.32	16.09	453.83	972.70
*	5.570	1320.00	0.00	0.00	1951.72	8860.00	1961.72	1961.72	1966.33	55.47	17.22	515.03	1189.59
*	5.570	1320.00	0.00	0.00	1951.72	22500.00	1970.73	1970.73	1973.73	19.43	16.16	6888.85	5104.82

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CVSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	2.650	6400.00	1798.51	0.00	0.00	0.00	68.30	0.00
*	2.650	8400.00	1799.43	0.92	0.00	0.03	71.11	0.00
	2.650	11920.00	1801.70	2.27	0.00	0.00	77.99	0.00
	2.650	35420.00	1809.30	7.60	0.00	0.00	976.35	0.00
	2.680	6400.00	1800.55	0.00	2.04	0.00	83.35	170.00
	2.680	8400.00	1802.38	1.83	2.95	0.00	93.89	170.00
*	2.680	11920.00	1806.71	4.33	-0.20	0.00	588.50	170.00
	2.680	35420.00	1811.16	4.45	1.86	0.00	1260.18	170.00
*	2.690	6400.00	1806.41	0.00	5.86	0.00	433.69	50.00
*	2.690	8400.00	1806.73	0.32	4.35	0.00	470.11	50.00
*	2.690	11920.00	1806.95	0.22	0.24	0.00	493.50	50.00
*	2.690	35420.00	1811.95	5.00	0.79	0.00	1207.27	50.00
	2.700	6400.00	1806.34	0.00	-0.07	0.00	136.21	55.00
	2.700	8400.00	1806.55	0.21	-0.18	0.03	147.59	55.00
*	2.700	11920.00	1808.35	1.80	0.50	0.00	482.54	55.00
*	2.700	35420.00	1813.05	4.69	1.10	0.00	1139.63	55.00
*	2.710	6400.00	1806.79	0.00	0.45	0.00	104.32	50.00
*	2.710	8400.00	1807.99	1.20	1.43	1.20	221.94	50.00
*	2.710	11920.00	1810.75	2.77	2.40	3.97	822.74	50.00
*	2.710	35420.00	1813.47	2.72	0.43	6.63	1135.23	50.00
	2.790	6000.00	1810.25	0.00	3.46	0.00	741.44	420.00
	2.790	8000.00	1811.89	1.64	3.91	1.64	899.55	420.00
	2.790	11420.00	1812.43	0.54	1.68	2.18	925.23	420.00
	2.790	34420.00	1816.17	3.74	2.70	5.92	1063.54	420.00
*	2.980	6000.00	1817.91	0.00	7.66	0.00	493.98	1010.00
*	2.980	8000.00	1819.32	1.41	7.43	1.41	669.42	1010.00
*	2.980	11420.00	1820.65	1.32	8.21	2.74	782.26	1010.00
*	2.980	34420.00	1825.02	4.37	8.85	7.11	976.40	1010.00
	3.180	6000.00	1827.99	0.00	10.08	0.00	107.86	1030.00
*	3.180	8000.00	1828.65	0.66	9.33	0.65	111.28	1030.00
*	3.180	11420.00	1830.19	1.54	9.54	2.20	119.30	1030.00
*	3.180	34420.00	1837.04	6.85	12.82	9.04	740.25	1030.00
	3.370	6000.00	1833.91	0.00	5.92	0.00	307.84	990.00
	3.370	8000.00	1835.28	1.37	6.63	1.37	458.04	990.00
	3.370	11420.00	1837.04	1.76	6.86	3.13	619.97	990.00
	3.370	34420.00	1843.22	6.17	6.18	9.30	1209.04	990.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	3.530	6000.00	1838.73	0.00	4.81	0.00	88.63	870.00
*	3.530	8000.00	1839.92	1.19	4.64	1.19	94.33	870.00
*	3.530	11420.00	1841.70	1.78	4.65	2.97	103.77	870.00
*	3.530	34420.00	1850.50	8.80	7.29	11.78	787.32	870.00
*	3.550	6000.00	1839.74	0.00	1.02	0.00	50.00	100.00
*	3.550	8000.00	1841.37	1.63	1.45	1.63	50.00	100.00
*	3.550	11420.00	1843.28	1.91	1.58	3.54	115.63	100.00
*	3.550	34420.00	1853.60	10.32	3.09	13.85	1062.99	100.00
*	3.560	6000.00	1849.23	0.00	9.49	0.00	636.33	50.00
*	3.560	8000.00	1850.31	1.08	8.94	1.08	737.24	50.00
*	3.560	11420.00	1851.36	1.05	8.08	2.13	813.41	50.00
*	3.560	34420.00	1854.17	2.81	0.57	4.94	1072.21	50.00
	3.580	6000.00	1849.40	0.00	0.17	0.00	659.92	110.00
	3.580	8000.00	1850.56	1.16	0.25	1.16	755.38	110.00
	3.580	11420.00	1851.79	1.23	0.43	2.39	844.78	110.00
	3.580	34420.00	1857.65	5.86	3.48	8.24	1600.00	110.00
*	3.710	6000.00	1858.61	0.00	9.21	0.00	339.99	660.00
*	3.710	8000.00	1859.57	0.95	9.00	0.95	394.95	660.00
*	3.710	11420.00	1861.63	2.06	9.84	3.01	1031.63	660.00
*	3.710	34420.00	1864.98	3.35	7.33	6.37	1581.51	660.00
*	3.770	6000.00	1862.35	0.00	3.73	0.00	120.00	330.00
*	3.770	7610.00	1862.41	0.07	2.85	0.07	120.56	330.00
*	3.770	9680.00	1863.41	0.99	1.78	1.06	128.70	330.00
*	3.770	25760.00	1870.68	7.27	5.70	8.34	537.24	330.00
*	3.780	6000.00	1865.94	0.00	3.60	0.00	445.53	75.00
*	3.780	7610.00	1866.41	0.47	4.00	0.47	449.45	75.00
*	3.780	9680.00	1866.75	0.34	3.34	0.81	452.21	75.00
*	3.780	25760.00	1871.18	4.43	0.50	5.23	537.10	75.00
*	3.830	6000.00	1865.61	0.00	-0.34	0.00	103.88	230.00
*	3.830	7610.00	1866.46	0.86	0.05	0.85	109.05	230.00
*	3.830	9680.00	1867.47	1.01	0.72	1.86	115.14	230.00
*	3.830	25760.00	1873.85	6.38	2.67	8.24	504.89	230.00
	4.000	6000.00	1873.63	0.00	8.02	0.00	96.35	900.00
	4.000	7610.00	1874.59	0.96	8.12	0.96	102.82	900.00
	4.000	9680.00	1875.57	0.98	8.10	1.94	206.80	900.00
	4.000	25760.00	1880.09	4.52	6.25	6.47	325.87	900.00
	4.050	6000.00	1875.89	0.00	2.27	0.00	120.67	295.00
	4.050	7610.00	1877.07	1.18	2.49	1.18	127.92	295.00
	4.050	9680.00	1877.67	0.59	2.10	1.77	131.49	295.00
*	4.050	25760.00	1882.10	4.43	2.01	6.21	228.20	295.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.070	6000.00	1876.22	0.00	0.33	0.00	119.64	100.00
	4.070	7610.00	1877.38	1.16	0.31	1.16	126.69	100.00
	4.070	9680.00	1878.07	0.69	0.40	1.85	130.89	100.00
	4.070	25760.00	1886.90	10.83	6.80	12.68	650.00	100.00
*	4.210	6000.00	1883.94	0.00	7.61	0.00	116.82	720.00
*	4.210	7610.00	1885.26	1.43	7.89	1.43	200.82	720.00

*	4.210	9680.00	1888.55	1.29	5.48	2.72	386.01	720.00
*	4.210	25760.00	1891.11	4.56	2.21	7.23	889.51	720.00
	4.410	6000.00	1893.64	0.00	9.81	0.00	72.93	1085.00
*	4.410	7610.00	1894.48	0.84	9.22	0.84	75.63	1085.00
*	4.410	9680.00	1896.29	1.81	9.74	2.65	151.81	1085.00
*	4.410	25760.00	1901.51	5.22	10.40	7.87	542.99	1085.00
	4.630	6000.00	1904.17	0.00	10.53	0.00	102.75	1165.00
	4.630	7610.00	1905.36	1.19	10.88	1.19	108.12	1165.00
	4.630	9680.00	1906.09	0.73	9.80	1.92	111.45	1165.00
*	4.630	25760.00	1912.23	6.15	10.72	8.07	927.50	1165.00
*	4.690	6000.00	1911.81	0.00	7.65	0.00	127.72	280.00
*	4.690	7610.00	1912.24	0.42	6.88	0.42	154.42	280.00
*	4.690	9680.00	1914.48	2.24	8.39	2.66	614.48	280.00
*	4.690	25760.00	1918.03	3.55	5.79	6.21	1081.02	280.00
*	4.700	6000.00	1916.93	0.00	5.11	0.00	811.42	56.00
*	4.700	7610.00	1917.29	0.37	5.05	0.37	873.17	56.00
*	4.700	9680.00	1917.75	0.46	3.28	0.83	950.81	56.00
*	4.700	25760.00	1918.40	0.65	0.38	1.48	1058.97	56.00
	4.750	6000.00	1917.28	0.00	0.27	0.00	524.91	260.00
	4.750	7610.00	1917.64	0.45	0.35	0.45	553.93	260.00
	4.750	9680.00	1918.19	0.54	0.43	0.99	589.27	260.00
	4.750	25760.00	1920.81	2.63	2.41	3.62	952.24	260.00
	4.820	6000.00	1916.98	0.00	-0.22	0.00	259.20	400.00
	4.820	7610.00	1917.40	0.43	-0.24	0.43	276.37	400.00
*	4.820	9680.00	1918.05	0.65	-0.14	1.07	302.02	400.00
*	4.820	25760.00	1921.52	3.47	0.71	4.54	624.15	400.00
*	4.830	6000.00	1922.44	0.00	5.46	0.00	661.83	60.00
*	4.830	7610.00	1923.08	0.64	5.67	0.64	737.40	60.00
*	4.830	9680.00	1923.66	0.58	5.61	1.22	806.14	60.00
	4.830	25760.00	1925.91	2.25	4.39	3.47	1590.72	60.00
	4.870	6000.00	1922.59	0.00	0.15	0.00	419.63	170.00
	4.870	7610.00	1923.24	0.65	0.17	0.65	506.39	170.00
	4.870	9680.00	1923.85	0.61	0.20	1.25	788.17	170.00
	4.870	25760.00	1926.30	2.45	0.39	3.71	1632.97	170.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.040	6000.00	1924.95	0.00	2.36	0.00	255.27	890.00
*	5.040	7610.00	1925.46	0.52	2.22	0.52	277.29	890.00
*	5.040	9680.00	1925.98	0.52	2.13	1.03	294.18	890.00
*	5.040	25760.00	1929.10	3.12	2.79	4.15	410.63	890.00
	5.210	6000.00	1932.70	0.00	7.75	0.00	141.99	920.00
	5.210	7300.00	1933.29	0.59	7.83	0.59	175.67	920.00
*	5.210	8860.00	1934.09	0.80	8.11	1.39	228.64	920.00
*	5.210	22500.00	1938.18	4.09	9.08	5.48	426.94	920.00
	5.250	6000.00	1934.59	0.00	1.89	0.00	103.55	270.00
	5.250	7300.00	1935.30	0.71	2.01	0.71	109.34	270.00
*	5.260	8860.00	1935.91	0.61	1.82	1.32	114.28	270.00
*	5.260	22500.00	1941.21	5.30	3.03	6.62	286.07	270.00
*	5.280	6000.00	1942.09	0.00	7.58	0.00	386.59	70.00
*	5.280	7300.00	1942.78	0.69	7.48	0.69	461.28	70.00
*	5.280	8860.00	1943.50	0.72	7.59	1.41	539.10	70.00
*	5.280	22500.00	1946.93	3.43	5.72	4.84	785.79	70.00

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*	5.290	6000.00	1944.00	0.00	1.91	0.00	539.49	65.00
*	5.290	7300.00	1943.51	-0.48	0.73	-0.48	487.04	65.00
*	5.290	8860.00	1943.96	0.45	0.46	-0.04	535.08	65.00
*	5.290	22500.00	1947.57	3.61	0.64	3.57	794.42	65.00
	5.320	6000.00	1944.84	0.00	0.84	0.00	319.48	170.00
	5.320	7300.00	1945.41	0.57	1.90	0.57	414.21	170.00
	5.320	8860.00	1946.25	0.84	2.29	1.41	685.36	170.00
	5.320	22500.00	1950.22	3.97	2.65	5.38	960.17	170.00
*	5.570	6000.00	1959.58	0.00	14.74	0.00	55.16	1320.00
*	5.570	7300.00	1960.66	1.08	15.24	1.08	56.56	1320.00
*	5.570	8860.00	1961.72	1.07	15.47	2.15	58.21	1320.00
*	5.570	22500.00	1970.73	9.01	20.51	11.15	1679.68	1320.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2.650 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 2.680 PROFILE= 3 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 2.690 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.690 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.700 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 2.700 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.700 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.700 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 4.830 PROFILE= 3 HYDRAULIC JUMP D.S.

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CAUTION SECNO= 5.280 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.280 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.280 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.280 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.290 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.290 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.290 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.290 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.290 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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 CAUTION  SECNO=     5.570  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

1
  27-APR-88     00:08:48                                                    PAGE    1


 **********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -   01,02,03,04,05
   MODIFICATION -   50,51,52,53,54,55
 **********************************************


 EOF..
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Continuous Interfolded ® Moore Business Forms, Inc.

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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   00:07:33          *
*************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X             X     X
X     X  X        X                   X     X
XXXXXXX  XXXX     X           XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                    DMH 1075787
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       2.        0.        0.  0.000000      0.00      1.0       0.  1798.510     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.060     0.045     0.100     0.300     0.000     0.000     0.000     0.000     0.000
OT   4.000  6400.000  8400.000 11920.000 35420.000     0.000     0.000     0.000     0.000     0.000
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####            Centerline =  2290                              ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65  ####
X1      2.650    17.000  2242.000  2325.000   815.000   745.000   760.000     0.000     0.000     0.000
GR   1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1808.000  1950.000
GR   1805.800  2000.000  1804.600  2171.000  1804.700  2242.000  1790.200  2264.000  1790.200  2280.000
GR   1789.500  2306.000  1802.000  2325.000  1803.800  2415.000  1804.700  2596.000  1808.000  2810.000
GR   1810.500  2990.000  1812.000  3210.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.300     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
          ##########################################################################
          ####            BOULDER HIGHWAY - Northbound Crossing                ####
          ####                Special Bridge Routine                           ####
```

X1	2.680	15.000	9980.000	10025.000	200.000	140.000	170.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1800.100	1800.100	0.000
GR	1816.000	9410.000	1812.000	9600.000	1806.000	9799.000	1804.000	9950.000	1791.800	9980.000
GR	1791.300	10025.000	1800.000	10040.000	1803.000	10050.000	1804.000	10100.000	1805.000	10220.000
GR	1805.300	10310.000	1808.000	10520.000	1809.500	10700.000	1812.000	11000.000	1813.000	11100.000
SB	1.250	1.560	2.800	0.000	40.500	8.700	225.000	0.000	1792.900	1791.800
X1	2.590	0.000	0.000	0.000	50.000	50.000	50.000	0.000	1.100	0.000
X2	0.000	0.000	1.000	1800.100	1805.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1805.400	1805.400	0.000
BT	8.000	2008.000	1814.000	0.000	2235.000	1809.600	0.000	2490.000	1806.200	1801.000
BT	2538.000	1805.400	1801.000	2880.000	1805.700	0.000	3230.000	1810.500	0.000	3450.000
BT	1812.000	0.000	3640.000	1813.000	0.000	0.000	0.000	0.000	0.000	0.000

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NC	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

X1	2.700	0.000	0.000	0.000	55.000	55.000	55.000	0.000	1.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1802.900	1802.900	0.000
ET	0.000	6.100	6.100	6.100	6.100	8920.000	10730.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	33.600	10.500	162.000	0.000	1795.900	1794.300
X1	2.710	13.000	9980.000	10020.000	50.000	50.000	50.000	0.000	1.600	0.000
X2	0.000	0.000	1.000	1802.900	1804.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1804.400	1804.400	0.000
BT	9.000	1730.000	1817.300	0.000	2000.000	1813.500	0.000	2200.000	1809.000	0.000
BT	2450.000	1804.400	0.000	2517.000	1804.600	0.000	2850.000	1806.200	0.000	3170.000
BT	1811.500	0.000	3600.000	1812.500	0.000	4260.000	1815.200	0.000	0.000	0.000
GR	1820.000	8920.000	1816.000	9400.000	1812.000	9580.000	1808.000	9730.000	1806.000	9950.000
GR	1796.000	9980.000	1796.000	10020.000	1806.000	10060.000	1808.000	10420.000	1812.000	10730.000
GR	1813.000	10900.000	1813.000	11200.000	1816.000	11400.000	0.000	0.000	0.000	0.000
QT	4.000	6000.000	8000.000	11420.000	34420.000	0.000	0.000	0.000	0.000	0.000
NC	0.050	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2320			####			
X1	2.790	17.000	2272.000	2359.000	380.000	460.000	420.000	0.000	0.000	0.000
GR	1820.000	1570.000	1816.000	1840.000	1812.000	1940.000	1812.000	1940.000	1812.000	1940.000
GR	1809.300	2000.000	1808.600	2200.000	1808.900	2231.000	1807.100	2272.000	1799.400	2302.000
GR	1799.400	2335.000	1808.400	2359.000	1807.500	2439.000	1808.600	2598.000	1812.000	2850.000
GR	1816.000	2890.000	1820.000	2940.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2340			####			
X1	2.980	15.000	2321.000	2389.000	1070.000	990.000	1010.000	0.000	0.000	0.000
GR	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000
GR	1824.700	2000.000	1818.000	2291.000	1817.400	2321.000	1807.700	2338.000	1807.400	2363.000
GR	1817.600	2389.000	1817.200	2512.000	1817.600	2764.000	1820.000	2960.000	1828.000	2980.000
ET	0.000	0.000	0.000	6.100	0.000	2223.000	2960.000	0.000	0.000	0.000
NC	0.140	0.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2300			####			
X1	3.180	18.000	2265.000	2392.000	1060.000	1020.000	1030.000	0.000	0.000	0.000
GR	1840.300	1730.000	1840.000	1730.000	1840.000	1730.000	1840.000	1730.000	1836.000	1870.000
GR	1832.700	2000.000	1829.800	2107.000	1832.500	2223.000	1831.100	2265.000	1822.700	2284.000
GR	1820.700	2296.000	1820.700	2312.000	1822.900	2332.000	1824.300	2369.000	1832.100	2392.000
GR	1834.500	2481.000	1838.300	2622.000	1838.300	2960.000	0.000	0.000	0.000	0.000
NC	0.140	0.140	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		Centerline =	2350			####			
X1	3.370	24.000	2280.000	2376.000	805.000	1020.000	990.000	0.000	0.000	0.000
X4	1.000	1833.200	2000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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GR  1836.300  1970.000  1832.200  2125.000  1834.300  2168.000  1833.800  2259.000  1832.900  2280.000
GR  1827.000  2295.000  1824.500  2344.000  1824.500  2366.000  1833.300  2376.000  1834.700  2386.000
GR  1837.000  2409.000  1834.700  2491.000  1835.700  2531.000  1837.300  2564.000  1839.500  2648.000
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GR  1842.100  2690.000  1840.900  2757.000  1841.100  2788.000  1844.000  2849.000     0.000     0.000

NC     0.120     0.140     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
          ####              Centerline =  2390                          ####
X1     3.530    24.000  2319.000  2481.000   825.000   885.000   870.000     0.000     0.000     0.000
GR  1856.000  1590.000  1855.000  1610.000  1855.000  1610.000  1855.000  1610.000  1856.500  1800.000
GR  1853.100  2000.000  1847.100  2185.000  1848.000  2233.000  1847.600  2319.000  1841.100  2335.000
GR  1833.500  2342.000  1832.100  2380.000  1832.100  2402.000  1836.700  2418.000  1842.400  2440.000
GR  1845.400  2458.000  1847.800  2481.000  1848.800  2536.000  1846.300  2567.000  1846.800  2591.000
GR  1846.300  2620.000  1849.200  2813.000  1852.000  2930.000  1856.000  3190.000     0.000     0.000

NC     0.300     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
          ##########################################################################
          ####                    MOJAVE ROAD                                  ####
          ####              Special Bridge Routine                             ####
          ##########################################################################
X1     3.550    24.000  2370.000  2420.000    90.000   130.000   100.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000  1843.000  1843.000     0.000
GR  1856.000  1590.000  1855.000  1610.000  1855.000  1610.000  1855.000  1610.000  1856.500  1800.000
GR  1853.100  2000.000  1847.100  2185.000  1848.000  2233.000  1847.600  2319.000  1841.100  2335.000
GR  1833.500  2342.000  1832.100  2370.000  1832.100  2420.000  1836.700  2428.000  1842.400  2440.000
GR  1845.400  2458.000  1847.800  2481.000  1848.800  2536.000  1846.300  2567.000  1846.800  2591.000
GR  1846.300  2620.000  1849.200  2813.000  1852.000  2930.000  1856.000  3190.000     0.000     0.000

SB     1.250     1.560     2.630     0.000    48.700    18.700   240.000     0.000  1835.000  1834.500
X1     3.560     0.000     0.000     0.000    50.000    50.000    50.000     0.000     0.500     0.000
X2     0.000     0.000     1.000  1843.000  1847.100     0.000     0.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000  1847.100  1847.100     0.000
BT     7.000  1900.000  1856.000     0.000  1920.000  1852.000     0.000  2000.000  1849.600     0.000
BT  2190.000  1847.100     0.000  2242.700  1848.400     0.000  2550.000  1854.100     0.000  2890.000
BT  1857.100     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC     0.045     0.140     0.025     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1     3.580     0.000     0.000     0.000   110.000   110.000   110.000     0.000     0.000     0.000

NC     0.300     0.000     0.000     0.100     0.300     0.000     0.000     0.000     0.000     0.000
          ####  Overflows, paralleling Desert Inn, Confluc at this Section ####
X1     3.710    15.000  9950.000 10040.000   680.000   640.000   660.000     0.000     0.000     0.000
X4     3.000  1861.000  8900.000  1860.000  9220.000  1864.000  9480.000     0.000     0.000     0.000
GR  1868.300  8720.000  1864.000  8750.000  1868.000  9560.000  1868.000  9740.000  1864.000  9800.000
GR  1860.300  9950.000  1852.000  9980.000  1850.000 10000.000  1852.000 10020.000  1858.000 10040.000
GR  1855.000 10100.000  1860.000 10370.000  1864.000 10600.000  1868.000 10640.000  1869.300 10980.000

QT     4.300  6000.000  7610.000  9680.000 25760.000     0.000     0.000     0.000     0.000     0.000
NC     0.000     0.000     0.025     0.300     0.500     0.000     0.000     0.000     0.000     0.000
          ##########################################################################
          ####                    DESERT INN ROAD                              ####
          ####              Special Bridge Routine                             ####
          ####  BT points follow off road, high ground to north & south.       ####
```



```
          ####              Centerline = 2720
          ##########################################################################
X1     3.770    13.000  2700.000  2750.000   340.000   250.000   330.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000  1862.300  1862.300     0.000
GR  1875.300  2310.000  1872.000  2390.000  1872.000  2430.000  1876.000  2480.000  1872.000  2530.000
GR  1869.300  2650.000  1853.800  2700.000  1853.800  2750.000  1864.000  2800.000  1865.000  2850.000
GR  1864.300  2920.000  1864.000  3100.000  1868.000  3120.000  1868.000  3280.000  1872.000  3470.000
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SB      1.250       1.560       3.000       0.000      48.700      18.700     240.000       0.000    1854.300    1853.800
X1      3.780       0.000       0.000       0.000      75.000      75.000      75.000       0.000       0.500       0.000
X2      0.000       0.000       1.000    1862.300    1865.500       0.000       0.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1865.500    1865.500       0.000
BT      8.000       0.000    1876.000       0.000     150.000    1872.000       0.000     260.000    1868.200       0.000
BT    380.000    1868.000       0.000     520.000    1868.000       0.000     540.000    1864.000       0.000     720.000
BT   1864.000       0.000     760.000    1872.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.045       0.140       0.035       0.100       0.300       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =   2240                          ####
        ####  This Section crosses Desert Inn to avoid skew.  Note      ####
        ####  however, that the Sect. doesn't cross wier define by RT pts ####
X1      3.330      12.000    9900.000   10035.000     130.000     300.000     230.000       0.000       0.000       0.000
GR   1880.300    9960.000    1876.000    9170.000    1876.000    9510.000    1876.000    9730.000    1872.000    9900.000
GR   1860.300    9950.000    1860.000   10020.000    1868.000   10035.000    1872.000   10150.000    1872.000   10220.000
GR   1876.300   10450.000    1880.000   10750.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.045       0.060       0.000       0.300       0.500       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =   2250                          ####
X1      4.300      15.000    2238.000    2351.000     900.000     900.000     900.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR   1886.700    2000.000    1881.700    2079.000    1873.900    2110.000    1872.800    2130.000    1873.200    2152.000
GR   1876.300    2177.000    1874.700    2238.000    1865.700    2274.000    1865.200    2316.000    1875.600    2344.000
GR   1880.300    2351.000    1879.600    2404.000    1883.600    2463.000    1888.500    2628.000    1908.000    2810.000

        ##########################################################################
        ####                        PECOS-McLEOD DRIVE                        ####
        ####                     Special Bridge Routine                       ####
        ##########################################################################
X1      4.050       8.000    9440.000   10090.000     100.000     400.000     295.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1890.100    1890.900       0.000
GR   1888.000    9440.000    1884.000    9590.000    1884.000    9780.000    1880.000    9930.000    1868.400    9980.000
GR   1868.400   10055.000    1888.000   10090.000    1892.000   10210.000       0.000       0.000       0.000       0.000

SB      1.250       1.560       2.630       0.000      72.000       0.000    1488.000       1.310    1868.900    1868.400
X1      4.370       0.000       0.000       0.000     100.000     100.000     100.000       0.000       0.500       0.000
X2      0.000       0.000       1.000    1884.900    1885.500       0.000       0.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000    1890.100    1890.900       0.000
BT      2.000    2475.000    1890.100    1884.900    2568.000    1890.900    1884.900       0.000       0.000       0.000

NH      4.000       0.120    2000.000       0.060    2482.000       0.035    2689.000       0.050    3071.000       0.000
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        ####              Centerline =   2500                          ####
X1      4.210      26.000    2482.000    2556.000     720.000     720.000     720.000       0.000       0.000       0.000
GR   1900.000    1090.000    1896.000    1260.000    1892.000    1340.000    1894.000    1690.000    1894.000    1690.000
GR   1888.500    2000.000    1890.400    2229.000    1886.300    2332.000    1886.100    2413.000    1882.400    2454.000
GR   1882.100    2482.000    1876.800    2495.000    1876.800    2547.000    1884.800    2556.000    1884.800    2620.000
GR   1890.800    2660.000    1893.900    2689.000    1893.900    2722.000    1890.400    2769.000    1889.400    2789.000
GR   1890.700    2828.000    1892.700    2881.000    1900.200    2966.000    1902.200    3005.000    1904.800    3043.000
GR   1910.300    3071.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

NC      0.060       0.050       0.033       0.100       0.300       0.000       0.000       0.000       0.000       0.000
NH      4.000       0.120    2000.000       0.060    2480.000       0.035    2599.000       0.050    3520.000       0.000
        ####              Centerline =   2530                          ####
X1      4.410      25.000    2480.000    2599.000    1140.000    1080.000    1085.000       0.000       0.000       0.000
GR   1912.000     960.000    1908.000    1130.000    1908.000    1130.000    1908.000    1130.000    1906.500    1330.000
GR   1904.400    2000.000    1905.300    2250.000    1899.100    2300.000    1897.400    2347.000    1898.600    2480.000
GR   1887.000    2511.000    1886.300    2527.000    1885.900    2562.000    1900.700    2570.000    1900.300    2593.000
GR   1905.400    2599.000    1905.100    2649.000    1898.800    2704.000    1894.700    2734.000    1898.900    2889.000
GR   1902.600    2918.000    1902.000    3013.000    1904.200    3198.000    1912.000    3300.000    1914.000    3520.000

NC      0.120       0.060       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
        ####              Centerline =   2460                          ####
X1      4.630      20.000    2376.000    2498.000     930.000    1185.000    1165.000       0.000       0.000       0.000
```

GR	1920.300	1830.000	1915.300	1150.000	1916.300	1580.000	1916.000	1580.000	1912.000	1910.000
GR	1907.600	2000.000	1911.400	2235.000	1908.600	2329.000	1907.800	2376.000	1896.700	2408.000
GR	1899.400	2426.000	1897.400	2448.000	1897.400	2478.000	1909.500	2498.000	1909.500	2551.000
GR	1909.300	2731.000	1920.000	2990.000	1916.000	3250.000	1911.800	3320.000	1920.000	3390.000
NC	0.300	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

EASTERN AVENUE
Special Bridge Routine

X1	4.690	12.000	9980.000	10020.000	330.000	220.000	280.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1911.800	1911.800	0.000
GR	1920.000	9000.000	1918.000	9400.000	1916.000	9710.000	1912.000	9960.000	1903.300	9980.000
GR	1903.300	10020.000	1908.000	10050.000	1912.000	10090.000	1913.500	10150.000	1913.500	10400.000
GR	1916.300	10450.000	1920.000	10500.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.630	0.000	32.000	10.000	176.000	0.000	1903.800	1903.300
X1	4.700	0.000	0.000	0.000	56.000	56.000	56.000	0.000	0.500	0.000
X2	0.000	0.000	1.000	1911.800	1914.100	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1914.100	1914.100	0.000
BT	11.300	1740.000	1922.800	0.000	2000.000	1920.300	0.000	2440.000	1917.400	0.000
BT	2790.000	1914.600	0.000	2790.000	1961.100	0.000	2860.000	1915.600	0.000	2860.000
BT	1914.100	0.000	3190.000	1916.600	0.000	3550.000	1918.600	0.000	3910.000	1921.400
BT	0.300	4230.000	1924.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	4.800	0.045	2190.000		0.035	2472.000	0.045	2795.000	0.140	3910.000

Centerline = 2300

1

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Small Golf Course Bridge not modeled - assumed to fail

X1	4.750	19.000	2174.000	2472.000	350.000	150.000	260.000	0.000	0.000	0.000
GR	1928.300	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000
GR	1922.400	2000.000	1920.700	2080.000	1912.400	2174.000	1909.700	2272.000	1908.100	2286.000
GR	1907.100	2313.000	1908.000	2329.000	1908.500	2363.000	1912.700	2472.000	1915.900	2575.000
GR	1928.000	2795.000	1922.000	3360.000	1924.000	3770.000	1928.000	3910.000	0.000	0.000

TIOGA WAY
Special Bridge Routine

X1	4.820	14.000	9970.000	10020.000	400.000	400.000	400.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1916.100	1916.100	0.000
GR	1928.000	9300.000	1924.000	9690.000	1920.000	9780.000	1916.000	9840.000	1916.000	9940.000
GR	1910.000	9970.000	1910.000	10020.000	1916.000	10060.000	1920.000	10160.000	1921.000	10320.000
GR	1923.500	10560.000	1923.500	10900.000	1924.000	11120.000	1928.000	11220.000	0.000	0.000
SB	1.250	1.500	2.630	0.000	42.000	12.000	165.000	0.000	1910.600	1910.000
X1	4.830	0.000	0.000	0.000	60.000	60.000	60.000	0.000	0.600	0.000
X2	0.300	0.000	1.000	1916.100	1918.500	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1918.500	1918.500	0.000
BT	8.000	1760.000	1928.700	0.000	2000.000	1925.200	0.000	2380.000	1923.300	0.000
BT	2660.300	1918.500	0.000	2708.000	1918.700	0.000	2820.000	1922.700	0.000	3220.000
BT	1924.000	0.000	3260.000	1928.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.120	2000.000	0.045	2225.000	0.035	2685.000	0.045	2735.000	0.120
NH	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2400

Small Golf Course Bridge not modeled - assumed to fail

X1	4.870	26.000	2345.000	2482.000	240.000	130.000	170.000	0.000	0.000	0.000
GR	1932.000	1420.000	1928.000	1530.000	1928.000	1530.000	1928.000	1530.000	1924.000	1850.000
GR	1922.500	2000.000	1921.600	2106.000	1924.300	2132.000	1925.700	2225.000	1922.600	2262.000
GR	1917.300	2290.000	1916.100	2345.000	1915.800	2381.000	1912.700	2406.000	1911.500	2430.000
GR	1911.500	2445.000	1915.400	2449.000	1917.300	2482.000	1920.200	2530.000	1923.800	2571.000
GR	1926.500	2642.000	1928.200	2685.000	1924.200	2735.000	1923.500	3050.000	1927.000	3450.000
GR	1932.300	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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ET          0.000     0.100     0.100     0.100     0.100     0.000     0.000     0.000     0.000     0.000
NC          0.000     0.000     0.000     0.100     0.300     0.000     0.000     0.000     0.000     0.000
NH          5.100     0.120  2129.000     0.045  2294.000     0.035  2590.000     0.045  2590.000     0.120
NH       3070.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
            ####          Centerline =  2390                      ####
X1          5.040    22.000  2294.000  2590.000   765.000  1040.000   890.000     0.000     0.000     0.000
GR       1936.300  1460.000  1932.000  1560.000  1932.000  1560.000  1932.000  1560.000  1928.400  1670.000
GR       1930.600  2000.000  1932.300  2129.000  1931.100  2155.000  1928.400  2218.000  1926.400  2294.000
GR       1922.300  2320.000  1921.000  2372.000  1918.300  2376.000  1918.300  2390.000  1920.100  2415.000
GR       1923.200  2436.000  1923.800  2519.000  1925.800  2590.000  1931.400  2628.000  1932.800  2724.000
GR       1932.600  2781.000  1936.000  3070.000     0.000     0.000     0.000     0.000     0.000     0.000
1
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QT          4.000  6000.000  7300.000  8860.000 22500.000     0.000     0.000     0.000     0.000     0.000
NH          4.000     0.120  2000.000     0.045  2336.000     0.035  2417.000     0.045  2676.000     0.000
            ####          Centerline =  2380                      ####
            ####  Small Golf Course Bridge not modeled - assumed to fail      ####
            ####  Some of breakout returns from north; modeled flows do
            ####  not change because flows from Tropicana Wash confluence
            ####  still control.
X1          5.210    22.000  2336.000  2417.000   920.000   920.000   920.000     0.000     0.000     0.000
GR       1948.000  1030.000  1942.500  1260.000  1942.500  1260.000  1942.500  1260.000  1945.000  1630.000
GR       1944.200  2000.000  1940.700  2034.000  1937.200  2078.000  1934.800  2159.000  1932.800  2268.000
GR       1931.500  2336.000  1925.900  2351.000  1925.400  2369.000  1924.600  2396.000  1924.200  2408.000
GR       1933.700  2417.000  1934.500  2436.000  1936.400  2460.000  1938.200  2493.000  1941.100  2584.000
GR       1944.400  2608.000  1949.400  2676.000     0.000     0.000     0.000     0.000     0.000     0.000

NC          0.120     0.120     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
            ####       Centerline - 2410
X1          5.260    13.000  2355.000  2470.000   200.000   300.000   270.000     0.000     0.000     0.000
GR       1948.100  1030.000  1942.500  1260.000  1945.500  1630.000  1944.000  2000.000  1940.000  2320.000
GR       1936.100  2355.000  1928.000  2400.000  1928.000  2450.000  1936.000  2470.000  1940.000  2500.000
GR       1944.000  2530.000  1944.000  2820.000  1948.000  2950.000     0.000     0.000     0.000     0.000

NC          0.120     0.120     0.035     0.300     0.500     0.000     0.000     0.000     0.000     0.000
            ##########################################################################################
            ####                        SPENCER STREET                                        ####
            ####                    Special Bridge Routine                                    ####
            ####          Centerline = 2460                                                   ####
            ##########################################################################################
X1          5.280     7.000  2430.000  2485.000    30.000   100.000    70.000     0.000     0.000     0.000
X3         10.000     0.000     0.000     0.000     0.000     0.000     0.000  1941.200  1941.200     0.000
GR       1944.200  2000.000  1940.000  2350.000  1935.700  2430.000  1935.700  2485.000  1940.000  2510.000
GR       1944.100  2610.000  1948.000  2850.000     0.000     0.000     0.000     0.000     0.000     0.000

SB          1.250     1.560     2.630     0.000    50.250    14.250   180.000     0.000  1936.200  1935.700
X1          5.290     0.000     0.000     0.000    65.000    65.000    65.000     0.000     0.500     0.000
X2          0.100     0.000     1.000  1941.200  1942.200     0.000     0.000     0.000     0.000     0.000
X3         10.000     0.000     0.000     0.000     0.000     0.000     0.000  1942.200  1942.200     0.000
BT          8.000  1820.000  1948.000     0.000  2000.000  1945.200     0.000  2260.000  1944.100     0.000
BT       2590.100  1942.200     0.000  2798.000  1943.700     0.000  2862.000  1943.800     0.000  3180.000
BT       1946.300     0.000  3340.000  1947.600     0.000     0.000     0.000     0.000     0.000     0.000

NC          0.060     0.080     0.028     0.000     0.000     0.000     0.000     0.000     0.000     0.000
            ####          Centerline =  2390                      ####
X1          5.320    14.000  2310.000  2477.000   260.000   150.000   170.000     0.000     0.000     0.000
X4          4.000  1945.300  2000.000  1946.000  2310.000  1948.000  1800.000  1952.000  1640.000     0.000
GR       1956.100  1420.000  1941.500  2140.000  1946.000  2150.000  1946.000  2300.000  1941.400  2341.000
GR       1936.100  2366.000  1936.100  2405.000  1936.100  2432.000  1942.700  2462.000  1944.400  2477.000
GR       1945.200  2532.000  1945.600  2606.000  1952.000  2696.000  1952.000  3300.000     0.000     0.000
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NC          0.140          0.023          0.100          0.300          0.000          0.000          0.000          0.000
          ####                    Centerline =  2030                                        ####
          ####  Near Algonquin Drive Alignment                                              ####
X1        5.570         16.000       2002.000       2059.000       1320.000       1320.000       1320.000          0.000          0.000          0.000
GR     1975.000        970.000       1972.000       1240.000       1972.000       1240.000       1972.000       1240.000       1968.000       1710.000
GR     1964.300       2000.000       1961.000       2002.000       1951.720       2008.000       1951.720       2953.000       1961.000       2059.000
GR     1964.000       2062.000       1967.500       2250.000       1965.800       2870.000       1968.000       2980.000       1972.000       3110.000
GR     1976.300       3350.000          0.000          0.000          0.000          0.000          0.000          0.000          0.000          0.000
EJ        0.000          0.000          0.000          0.000          0.000          0.000          0.000          0.000          0.000          0.000
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


 *PROF 1

 CCHV=   0.100  CEHV=   0.300
 *SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####                Centerline =  2290                                          ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65                 ####
     2.65          9.01   1798.51          0.00   1798.51   1801.36          2.85          0.00          0.00   1804.70
     6400.            0.     6400.            0.        0.       472.            0.            0.            0.   1802.00
     0.00          0.00     13.55          0.00      0.120     0.045     0.060          0.000   1789.50   2251.39
 0.014103          815.      760.          745.          0         0         0          0.00     68.30   2319.70
 )
 CCHV=   0.300  CEHV=   0.500
 *SECNO 2.680
          ##################################################################################
          ####                BOULDER HIGHWAY - Northbound Crossing                     ####
          ####                Special Bridge Routine                                    ####
          ##################################################################################
     2.68          8.75   1800.55          0.00      0.00   1803.42          2.87          2.85          0.01   1791.80
     6400.          303.     5645.          452.        94.      394.          70.            2.            0.   1791.80
     0.00          3.22     14.34          6.43      0.120     0.045     0.060          0.000   1791.80   9958.48
 0.010452          200.      170.          140.          4         0         0          0.00     83.35  10041.83
 )

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1798.20 ,NOT   1800.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR       COEG       ROLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25          1.56       2.80       0.00      40.50       8.70     229.00       0.00   1792.90    1791.80

 *SECNO 2.690

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST
```

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1819.47	1811.64	0.00	2515.	3804.	229.	229.	1800.10	1805.40

2.69	13.51	1806.41	0.00	0.00	1807.23	0.83	3.82	0.00	1792.90
6400.	448.	4979.	972.	256.	608.	397.	3.	1.	1792.90
0.01	1.75	8.19	2.45	0.120	0.045	0.060	0.000	1792.90	9897.75
0.001913	50.	50.	50.	3	0	6	0.00	433.69	10331.44

*SECNO 2.700

##
BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine
##

2.70	11.94	1806.34	0.00	0.00	1807.60	1.26	0.15	0.21	1794.40
6400.	426.	5243.	731.	175.	537.	154.	4.	1.	1794.40
0.01	2.43	9.76	4.76	0.120	0.050	0.060	0.000	1794.40	9950.65
0.003952	55.	55.	55.	3	0	0	0.00	136.21	10086.86

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1800.98 ,NOT 1806.34 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFO	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1844.14	1817.80	0.00	5219.	1188.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8920.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	9.19	1806.79	0.00	0.00	1808.96	2.17	0.00	0.00	1797.60
6400.	422.	4835.	1143.	127.	368.	169.	5.	1.	1797.60
0.01	3.33	13.16	6.77	0.120	0.050	0.060	0.000	1797.60	9952.44
0.010181	50.	50.	50.	20	0	8	0.00	104.32	10056.75

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.720

3301 HV CHANGED MORE THAN HVINS

Centerline = 2320

2.79	10.85	1810.25	0.00	0.00	1810.87	0.62	1.45	0.46	1807.10
6000.	645.	4978.	377.	409.	720.	635.	17.	5.	1808.40
0.03	1.58	6.91	0.59	0.050	0.035	0.150	0.000	1799.40	1978.88
0.001644	380.	420.	460.	3	0	0	0.00	741.44	2720.32

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

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 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####                Centerline =  2340                          ####
      2.98     10.51  1817.91  1817.91     0.00  1820.11     2.20     3.17     0.47  1817.40
     60.00.       2.     584.      104.      7.      491.     196.      45.      20.   1817.60
      0.05      0.34    12.01     0.53    0.160    0.040    0.160    0.000  1807.48  2295.44
  0.008156     1070.    1010.     990.       20        8        0     0.00   493.98  2789.42
 )
 *SECNO 3.180
        ####                Centerline =  2300                          ####
      3.18      7.29  1827.99     0.00     0.00  1829.98     1.99     9.85     0.02  1831.10
     60.00.       0.    600.       0.       0.      530.      0.      60.      27.   1832.10
      0.08      0.00    11.31     0.00    0.140    0.040    0.130    0.000  1820.70  2272.03
  0.011367     1060.    1030.    1020.        4        0        0     0.00   107.86  2379.89
 )
 *SECNO 3.370

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

        ####                Centerline =  2350                          ####
      3.37      9.41  1833.91     0.00     0.00  1834.94     1.03     4.87     0.10  1832.90
     60.00.     115.     588.       0.      196.      716.     1.      76.      31.   1833.30
      0.11      0.59     8.22     0.25    0.140    0.035    0.140    0.000  1824.50  1992.45
  0.002735      805.     990.    1020.        3        0        0     0.00   307.84  2380.32
 )
 1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 3.530

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####                Centerline =  2390                          ####
      3.53      6.63  1838.73  1838.73     0.00  1841.36     2.63     4.23     0.48  1847.60
     60.00.       0.    600.       0.       0.      461.      0.      90.      35.   1847.80
      0.13      0.00    13.03     0.00    0.120    0.035    0.140    0.000  1832.10  2337.19
  0.010964      825.     870.     885.       20       19        0     0.00    88.63  2425.82
 )
 CCHV=   0.300 CEHV=   0.500
 *SECNO 3.550

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1843.00 ELREA=     1843.00

 ##########################################################################
 ####                      MOJAVE ROAD                                 ####
 ####                 Special Bridge Routine                           ####
```

Continuous Interfolded @ Mogul Business Forms, Inc.

```
                ##########################################################################
      3.55       7.64   1839.74   1839.74      0.00   1843.57      3.83      1.00      0.60   1832.10
     6000.         0.      6000.        0.         0.       382.         1.        91.        35.   1832.10
      0.13       0.00     15.70      0.00      0.120     0.035     0.140     0.000   1832.10   2370.00
 0.009088         90.       100.       130.         2         8         0      0.00     50.00   2420.00
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1839.22 ,NOT 1839.74 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SR	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.560

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

PRESS FLOW BECAUSE EGLWC OF 1855.90 EXCEEDS 1.5 DEPTH

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1854.88	1855.90	0.00	1167.	4849.	240.	240.	1843.00	1847.10

```
      3.56      16.63   1849.23      0.00      0.00   1849.63      0.40      6.06      0.00   1832.60
     6000.        888.      4726.      386.      774.       832.      680.        92.        35.   1832.60
      0.13       1.15      5.68      0.57      0.120     0.035     0.140     0.000   1832.60   2134.64
 0.000422         50.       50.       50.         2         0         4      0.00    636.33   2775.47
 *SECNO 3.580
      3.58      16.80   1849.40      0.00      0.00   1849.69      0.29      0.03      0.03   1832.60
     6000.       1532.      4208.      260.      815.       840.      742.        98.        37.   1832.60
      0.14       1.88      5.01      0.35      0.045     0.025     0.140     0.000   1832.60   2129.35
 0.000165        110.       110.       110.         2         0         0      0.00    659.92   2789.27
 CCHV=   0.100  CEHV=   0.300
 *SECNO 3.710
```

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
      3.71       8.61   1858.61   1858.61      0.00   1860.64      2.13      0.31      0.52   1860.00
     6000.         0.      5485.      515.         0.       459.      480.       123.        44.   1858.00
      0.16       0.00     11.95      1.37      0.045     0.025     0.140     0.000   1850.00   9955.20
 0.004387        680.       660.       640.        20         8         0      0.00    339.99  10295.19
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
#####################################################################
####                    DESERT INN ROAD                          ####
####                 Special Bridge Routine                      ####
####  BT points follow off road, high ground to north & south.    ####
####                 Centerline = 2720                           ####
#####################################################################
```

3.77	8.55	1862.35	1862.35	0.00	1864.43	2.08	1.04	0.03	1853.80
6000.	502.	5254.	244.	120.	427.	179.	129.	46.	1853.80
0.17	4.18	12.30	1.35	0.045	0.025	0.140	0.000	1853.80	2671.89
0.002450	340.	330.	250.	20	8	0	0.00	120.00	2791.89

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1858.52 ,NOT 1862.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	XKOR	CDFO	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1877.48	1873.45	0.00	2755.	3276.	240.	240.	1862.30	1865.50

3.78	11.64	1865.94	0.00	0.00	1866.86	0.91	2.43	0.00	1854.30
6000.	638.	4901.	461.	223.	582.	706.	131.	46.	1854.30
0.17	2.86	8.42	0.55	0.045	0.025	0.140	0.000	1854.30	2661.69
0.000760	75.	75.	75.	3	0	5	0.00	445.53	3107.22

)
CCHV= 0.100 CEHV= 0.300
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
####                 Centerline =  2240                          ####
####  This Section crosses Desert Inn to avoid skew.  Note       ####
```

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However, that the state doesn't cross #.el define by 01 pts

3.83	5.61	1865.61	1865.61	0.00	1867.96	2.35	0.43	0.43	1872.00
6000.	0.	6000.	0.	0.	488.	0.	137.	48.	1868.00
0.18	0.00	12.31	0.00	0.045	0.035	0.140	0.000	1860.00	9526.63
0.010976	130.	230.	300.	20	11	0	0.00	103.88	10030.51

CCHV= 0.300 CEHV= 0.500

*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	8.43	1873.63	0.00	0.00	1875.38	1.76	7.25	0.18	1874.70
6000.	0.	6000.	0.	0.	564.	1.	147.	50.	1880.00
0.28	0.00	10.64	0.00	0.045	0.035	0.050	0.000	1865.20	2242.32
0.006157	900.	900.	900.	2	0	0	0.00	96.35	2338.67

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

##
PECOS-McLEOD DRIVE
Special Bridge Routine
##

4.05	7.49	1875.89	0.00	0.00	1876.93	1.04	1.33	0.22	1888.00
6000.	0.	6000.	0.	0.	733.	0.	152.	51.	1888.00
0.21	0.00	8.19	0.00	0.045	0.035	0.060	0.000	1868.40	9947.71
0.003458	100.	295.	400.	3	0	0	0.00	120.67	10069.38

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1877.432 ELLC= 1884.900 PCWSE= 1875.892 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	7.32	1876.22	0.00	0.00	1877.32	1.10	0.36	0.03	1888.50
6000.	0.	6000.	0.	0.	713.	0.	153.	51.	1888.50
0.21	0.00	8.42	0.00	0.045	0.035	0.060	0.000	1868.90	9948.44
0.003754	100.	100.	100.	2	0	0	0.00	119.64	10068.08

```
1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2500                          ####
      4.21        7.04   1883.84   1883.84      0.00   1886.38      2.54      3.95      0.72   1882.10
     6000.         161.      5839.         0.        56.       451.         1.       164.        53.   1884.80
      0.23        2.89     12.95      0.00     0.060     0.035     0.035     0.000   1876.80   2438.09
 0.008768         720.       720.       720.        20         8         0      0.00    116.82   2554.92
)
CCHV=   0.100  CEHV=   0.300
1490 NH CARD USED
*SECNO 4.410
          ####                Centerline =  2530                          ####
      4.41        7.74   1893.64      0.00      0.00   1896.39      2.75      9.95      0.06   1898.60
     6000.           0.      6000.         0.        0.       451.         0.       176.        56.   1905.40
      0.25        0.00     13.31      0.00     0.060     0.035     0.035     0.000   1885.90   2493.25
 0.009593        1140.      1085.      1080.         3         0         0      0.00     72.93   2566.18
)
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


*SECNO 4.630

3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =  2460                          ####
      4.63        7.47   1904.17      0.00      0.00   1905.95      1.79      9.47      0.10   1907.80
     6000.           0.      6000.         0.        0.       559.         1.       189.        58.   1909.50
      0.28        0.00     10.73      0.00     0.120     0.035     0.060     0.000   1896.70   2386.45
 0.006972         930.      1165.      1165.         2         0         0      0.00    102.75   2489.20
)
CCHV=   0.300  CEHV=   0.500
*SECNO 4.690
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    EASTERN AVENUE                        ####
          ####                Special Bridge Routine                    ####
          ##################################################################
      4.69        8.51   1911.81   1911.81      0.00   1913.91      2.09      1.69      0.15   1903.30
     6000.         190.      4472.      1338.        83.       341.       258.       153.        59.   1903.30
      0.29        2.28     13.13      5.19     0.120     0.035     0.060     0.000   1903.30   9960.43
 0.005501         330.       280.       223.        20        10         0      0.00    127.72  10088.15
)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1909.91 ,NOT   1911.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK          XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25        1.56       2.63        3.00      32.00      10.00     176.00       0.00    1903.80    1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.97	1926.32	0.00	3387.	2615.	176.	176.	1911.80	1914.10

4.70	13.13	1916.93	0.00	0.00	1917.16	0.24	3.26	0.00	1903.80
6000.	516.	2862.	2623.	796.	525.	1617.	195.	59.	1903.80
0.29	0.65	5.45	1.52	0.120	0.035	0.060	0.000	1903.80	9643.91
0.000532	56.	56.	56.	2	0	8	0.00	811.42	10455.33

1490 NH CARD USED
*SECNO 4.750

Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.10	1917.20	0.00	0.00	1917.29	0.10	0.09	0.04	1912.40
6000.	124.	5534.	342.	130.	2155.	343.	210.	63.	1912.70
0.32	0.95	2.57	1.00	0.045	0.035	0.045	0.000	1907.10	2119.67
0.000262	350.	260.	150.	3	0	0	0.00	524.91	2644.58

*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	6.98	1916.98	0.00	0.00	1918.26	1.28	0.37	0.59	1910.00
6000.	1148.	3684.	1168.	225.	349.	171.	226.	66.	1910.00
0.33	5.11	10.56	6.83	0.140	0.140	0.140	0.000	1910.00	9825.30
0.074127	400.	400.	400.	4	0	0	0.00	259.20	10084.50

SPECIAL BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

5227 DOWNSTREAM ELEV IS 1915.64 ,NOT 1916.98 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

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PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1947.78	1928.28	0.00	3506.	2548.	165.	165.	1916.10	1918.50

4.83	11.84	1922.44	0.00	0.00	1922.53	0.10	4.28	0.00	1910.60
6000.	2304.	1961.	1735.	1117.	592.	985.	228.	67.	1910.60
0.34	2.06	3.31	1.76	0.140	0.140	0.140	0.000	1910.60	9738.64
0.003612	60.	60.	60.	2	0	7	0.00	661.83	10400.47

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	11.09	1922.59	0.00	0.00	1922.79	0.20	0.21	0.05	1916.10
6000.	1124.	4392.	484.	439.	1108.	217.	238.	69.	1917.30
0.35	2.56	3.96	2.23	0.035	0.035	0.035	0.000	1911.50	1991.05
0.000546	240.	170.	130.	2	0	0	0.00	419.63	2557.21

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

Centerline = 2390

5.04	6.65	1924.95	1924.95	0.00	1926.29	1.34	1.35	0.34	1926.40
6000.	0.	6000.	3.	0.	646.	0.	262.	76.	1925.80
0.38	0.00	9.29	0.33	0.045	0.035	0.120	0.000	1918.30	2304.49
0.013973	765.	890.	1040.	20	14	0	0.00	255.27	2559.76

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

Centerline = 2380
Small Golf Course Bridge not modeled - assumed to fail
Some of breakout returns from north; modeled flows do
not change because flows from Tropicana Wash confluence
still control.

5.21	8.50	1932.70	1931.64	0.00	1934.65	1.95	8.18	0.18	1931.60
6000.	59.	5941.	0.	34.	527.	0.	275.	80.	1933.70
0.40	1.73	11.27	0.33	0.045	0.035	0.045	0.000	1924.20	2274.05
0.006155	920.	920.	920.	7	8	0	0.00	141.99	2416.05

*SECNO 5.260

```
                ####          Centerline = 2415
      5.26       6.59   1934.59       0.00       0.00   1936.77       2.18       2.05       0.07   1936.00
     6000.         0.      6000.         0.         0.      506.         0.       278.       81.    1936.00
      0.41       0.00      11.86       0.00      0.120     0.035      0.120      0.000   1928.00    2362.93
 0.009632        200.       270.       300.          4          0          0       0.00    103.55    2466.48
 )
 CCHV=   0.300  CEHV=   0.500
 *SECNO 5.280
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##############################################################
          ####                    SPENCER STREET                    ####
          ####                Special Bridge Routine                ####
          ####          Centerline = 2460                           ####
          ##############################################################
 1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK       EG         HV         HL        QLOSS    BANK ELEV
     Q          QLOB       QCH        QROB       ALOB        ACH        AROB       VOL       TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL         XNCH       XNR        WTN       ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL      IDC        ICONT      CORAR     TOPWID      ENDST

       5.28       6.39   1942.09    1942.09       0.00    1943.99       1.90       0.57       0.08   1935.70
      6000.       1162.     4481.       353.       522.       352.       161.       279.       81.    1935.70
       0.41       2.23      12.75       2.23      0.120     0.035      0.120      0.000   1935.70    2175.70
  0.007597         30.       70.        100.         20          8          0       0.00    386.59    2562.29
 )
   SPECIAL BRIDGE
   5227 DOWNSTREAM ELEV IS   1940.71 ,NOT   1942.09 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
   SB   XK          XKOR       COFG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
        1.25       1.56       2.63       0.00       50.25      14.25      180.00     0.00    1936.20    1935.70
   *SECNO 5.290
   3301 HV CHANGED MORE THAN HVINS
   PRESSURE AND WEIR FLOW
    EGPRS       EGLWC       H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                        AREA
    1969.01    1952.63       0.00      4058.      1948.       180.       180.      1941.20    1942.20

       5.29       7.80   1944.00       0.00       0.00    1944.93       0.93       0.93       0.00   1936.20
      6000.       1513.     4024.       464.       964.       429.       295.       281.       82.    1936.20
       0.41       1.57       9.38       1.57      0.120     0.035      0.120      0.000   1936.20    2058.09
  0.003150         65.       65.         65.          3          0          7       0.00    539.49    2597.57
 )
   *SECNO 5.320
   3265 DIVIDED FLOW
          ####          Centerline =  2390                          ####
       5.32       8.74   1944.84       0.00       0.00    1945.38       0.54       0.34       0.12   1946.00
      6000.       262.      5736.         2.       217.       951.         7.       288.       84.    1944.40
       0.42       1.21       6.03       0.23      0.060     0.028      0.080      0.000   1936.10    2017.09
  0.001209        260.       170.       150.          3          0          0       0.00    319.48    2507.00
 )
  CCHV=   0.100  CEHV=   0.300
 1
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.570

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2030
Near Algonquin Drive Alignment

5.57	7.86	1959.58	1959.58	0.00	1963.19	3.61	3.01	0.92	1961.00
6000.	0.	6000.	3.	0.	394.	3.	312.	90.	1961.00
0.45	0.00	15.25	0.00	0.140	0.025	0.180	0.000	1951.72	2002.92
0.005806	1320.	1320.	1320.	20	11	0	0.00	55.16	2058.08

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1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 FLAMINGO WASH REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1 ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0.	3.	0.	0.	0.000000	0.00	1.0	0.	1799.400	0.000

J2 NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

t

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.100 CEHV= 0.300
*SECNO 2.650
3720 CRITICAL DEPTH ASSUMED
Flows less than specified for CP35 due to lost breakout
at Spring Mountain Rd
Centerline = 2290
Starting Water Levels taken from Reach 5 Analysis of 2.65

2.65	9.93	1799.43	1799.43	1799.40	1803.24	3.31	0.00	0.00	1804.70

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8400.	0.	8400.	0.	0.	5574.	0.	0.	0.	1802.00
0.00	0.00	15.66	0.00	0.120	0.045	0.060	0.000	1789.50	2249.99
0.016844	815.	760.	745.	0	4	0	0.00	71.11	2321.10

)

CCHV= 0.300 CEHV= 0.500

*SECNO 2.680

BOULDER HIGHWAY - Northbound Crossing
Special Bridge Routine

2.68	10.58	1802.38	0.00	0.00	1805.49	3.11	2.04	0.21	1791.80
8400.	466.	7184.	753.	137.	476.	106.	2.	0.	1791.80
0.00	3.39	15.10	7.35	0.120	0.045	0.060	0.000	1791.80	9954.81
0.009018	200.	170.	140.	3	0	0	0.00	93.89	10047.90

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1799.47 ,NOT 1802.38 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	40.50	8.70	229.00	0.00	1792.90	1791.80

*SECNO 2.690

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1834.97	1815.03	0.00	4933.	3482.	229.	229.	1800.10	1805.40

2.69	13.83	1806.73	0.00	0.00	1807.98	1.25	2.49	0.00	1792.90
8400.	604.	6351.	1445.	286.	623.	502.	4.	1.	1792.90
0.01	2.11	10.20	2.38	0.120	0.045	0.060	0.000	1792.90	9884.51
0.002871	50.	50.	50.	3	0	7	0.00	470.11	10354.61

)

*SECNO 2.700

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

2.70	12.15	1806.55	0.00	0.00	1808.61	2.05	0.23	0.40	1794.40
8400.	567.	6843.	990.	182.	547.	168.	5.	1.	1794.40
0.01	3.12	12.51	5.89	0.120	0.050	0.060	0.000	1794.40	9950.12
0.006345	55.	55.	55.	3	0	0	0.00	147.50	10097.61

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1802.30 ,NOT 1806.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
6870 D.S. ENERGY OF 1808.61 HIGHER THAN COMPUTED ENERGY OF 1808.14

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1871.68	1822.70	0.00	7169.	1313.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=		8920.0	10730.0	TYPE=	1	TARGET=	1810.000		
2.71	10.39	1807.99	1807.99	1806.79	1810.60	2.61	0.41	-0.41	1797.60
8400.	620.	6101.	1679.	170.	415.	229.	6.	1.	1797.60
0.01	3.65	14.69	7.34	0.120	0.050	0.060	0.000	1797.60	9907.54
0.010774	50.	50.	50.	20	11	0	0.00	221.94	10129.48

*SECNO 2.790

3301 HV CHANGED MORE THAN HVINS

####		Centerline =	2320					####	
2.79	12.49	1811.89	0.00	1810.25	1812.30	0.41	1.04	0.66	1807.10
8000.	1815.	5335.	849.	920.	863.	1328.	25.	7.	1808.40
0.03	1.97	6.18	0.54	0.050	0.035	0.160	0.000	1799.40	1942.41
0.001034	380.	420.	460.	3	0	0	0.00	899.55	2841.96

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline =	2340					####	
2.98	11.92	1819.32	1819.32	1817.91	1821.28	1.95	2.13	0.46	1817.40
8000.	71.	7021.	908.	86.	587.	842.	79.	25.	1817.60
0.06	0.83	11.96	1.08	0.160	0.040	0.160	0.000	1807.40	2235.24
0.006383	1070.	1010.	990.	20	8	0	0.00	669.42	2904.65

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline =	2300					####	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.18	7.95	1828.65	1828.65	1827.99	1831.39	2.74	9.32	0.24	1831.10
8000.	0.	8000.	0.	0.	602.	0.	104.	34.	1832.10
0.08	0.00	13.28	0.00	0.140	0.040	0.130	0.000	1820.70	2270.54
0.013825	1060.	1030.	1020.	2	14	0	0.00	111.28	2381.82

*SECNO 3.370

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

Centerline = 2350

3.37	10.78	1835.28	0.00	1833.91	1836.41	1.13	4.86	0.16	1832.90
8000.	512.	7477.	11.	586.	848.	27.	126.	40.	1833.30
0.11	0.87	8.82	0.42	0.140	0.035	0.140	0.000	1824.50	1977.71
0.002511	805.	990.	1020.	4	0	0	0.00	458.04	2514.23

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2390

3.53	7.82	1839.92	1839.92	1838.73	1842.98	3.06	3.93	0.58	1847.60
8000.	0.	8000.	0.	0.	570.	0.	146.	45.	1847.80
0.13	0.00	14.04	0.00	0.120	0.035	0.140	0.000	1832.10	2336.09
0.010501	825.	870.	885.	20	19	0	0.00	54.33	2430.42

CCHV= 0.300 CEHV= 0.500
*SECNO 3.550

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1843.00 ELREA= 1843.00

MOJAVE ROAD
Special Bridge Routine

3.55	9.27	1841.37	1841.37	1839.74	1846.00	4.53	8.94	0.78	1832.10
8000.	0.	8000.	0.	0.	463.	0.	147.	46.	1832.10
0.13	0.00	17.27	0.00	0.120	0.035	0.140	0.000	1832.10	2370.00
0.008495	90.	100.	130.	20	8	0	0.00	50.00	2420.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1840.22 ,NOT 1841.37 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.560

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

ESPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1868.28	1860.31	0.00	3263.	4749.	240.	240.	1843.00	1847.10

	3.56	17.71	1850.31	0.00	1849.23	1850.85	0.54	4.86	0.00	1832.60
	8000.	1274.	6014.	712.	1046.	886.	1103.	149.	46.	1832.60
	0.14	1.22	6.79	0.65	0.120	0.035	0.140	0.000	1832.60	2101.36
0.000	554	50.	50.	50.	2	0	6	0.00	737.24	2838.60

*SECNO 3.580

	3.58	17.96	1850.56	0.00	1849.40	1850.94	0.38	0.04	0.05	1832.60
	8000.	2207.	5305.	488.	1115.	898.	1209.	157.	48.	1832.60
	0.14	1.98	5.91	0.40	0.045	0.025	0.140	0.000	1832.60	2093.66
0.000	210	110.	110.	110.	2	0	0	0.00	755.38	2849.04

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
*SECNO 3.710

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Overflows, paralleling Desert Inn, Conflue at this Section

	3.71	9.57	1859.57	1859.57	1858.61	1861.89	2.31	0.37	0.58	1860.00
	8000.	0.	7039.	961.	0.	541.	747.	191.	57.	1858.00
	0.16	0.00	13.00	1.29	0.045	0.025	0.140	0.000	1850.00	9951.63
0.004	404	680.	660.	640.	20	12	0	0.00	394.95	10346.58

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
##################################################################
####                    DESERT INN ROAD                       ####
####                 Special Bridge Routine                   ####
####  BT points follow off road, high ground to north & south. ####
####                Centerline = 2720                          ####
##################################################################
```

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7610.	641.	6657.	312.	122.	431.	182.	198.	58.	1853.80
0.16	5.25	15.46	1.72	0.045	0.025	0.140	0.000	1853.80	2671.66
0.003829	340.	330.	250.	20	15	0	0.00	120.56	2792.23

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1859.33 ,NOT 1862.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1886.77	1877.59	0.00	4111.	3543.	240.	240.	1862.30	1865.50

3.78	12.11	1866.41	0.00	1865.94	1867.69	1.28	2.00	0.00	1854.30
7610.	826.	6095.	689.	241.	606.	875.	200.	59.	1854.30
0.17	3.42	10.06	0.79	0.045	0.025	0.140	0.000	1854.30	2660.14
0.001029	75.	75.	75.	3	0	6	0.00	449.45	3109.59

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	6.46	1866.46	1866.46	1865.61	1869.15	2.69	0.55	0.42	1872.00
7610.	0.	7610.	0.	0.	579.	0.	207.	60.	1868.00
0.17	0.00	13.15	0.00	0.045	0.035	0.140	0.000	1860.00	9523.07
0.010667	130.	230.	300.	20	11	0	0.00	109.05	10032.12

CCHV= 0.300 CEHV= 0.900
*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	9.39	1874.59	0.00	1873.63	1876.65	2.06	7.31	0.19	1874.70
7610.	0.	7610.	0.	0.	660.	0.	220.	63.	1880.00
0.19	0.00	11.52	0.00	0.045	0.035	0.050	0.000	1865.20	2238.45
0.006395	900.	900.	900.	4	0	0	0.00	102.82	2341.27

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

##
PECOS-McLEOD DRIVE
Special Bridge Routine
##

4.05	8.67	1877.07	0.00	1875.89	1878.23	1.16	1.31	0.27	1888.00
7610.	0.	7610.	0.	0.	881.	0.	225.	63.	1888.00
0.20	0.00	8.64	0.00	0.045	0.035	0.060	0.000	1868.40	9942.58
0.003268	100.	295.	400.	2	0	0	0.00	127.92	10070.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1878.735 ELLC= 1884.900 PCWSE= 1877.073 ELTRD= 1885.500

3370 NORMAL BRIDGE,NPO= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	8.48	1877.38	0.00	1876.22	1878.61	1.23	0.34	0.04	1888.50
7610.	0.	7610.	0.	0.	855.	0.	227.	64.	1888.50
0.21	0.00	8.90	0.00	0.045	0.035	0.050	0.000	1868.90	9943.46
0.003561	100.	100.	100.	2	0	0	0.00	126.69	10070.14

1

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SECNO DEPTH CWSEL CRIWS WSELK EG HV HL OLOSS BANK ELEV
Q QLOB QCH QROB ALOB ACH AROB VOL TWA LEFT/RIGHT
TIME VLOB VCH VROB XNL XNCH XNR WTN ELMIN SSTA
SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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```
          ####                 Centerline =  2500                                  ####
      4.21       8.46  1885.26  1885.25  1883.84  1887.62      2.36      3.40      0.56  1882.10
    7610.       469.    7079.      62.      130.      556.      30.       240.       66.   1884.80
      0.22       3.61    12.74     2.04     0.060     0.035    0.035     0.000  1876.80  2422.27
 0.006570       720.     720.      720.       20         5        0      0.00   200.82  2623.09

CCHV=   0.100  CEHV=   0.300
1490 NH CARD USED
*SECNO 4.410

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                 Centerline =  2530                                  ####
      4.41       8.58  1894.48  1894.48  1893.64  1897.89      3.41      8.94      0.32  1898.60
    7610.         0.    7610.       0.       0.      513.      0.       255.       70.   1905.40
      0.24       0.00    14.83     0.00     0.060     0.035    0.050     0.000  1885.90  2491.01
 0.010592      1140.    1085.     1080.        1         5        0      0.00    75.63  2566.64

*SECNO 4.630

3301 HV CHANGED MORE THAN HVINS

          ####                 Centerline =  2460                                  ####
      4.63       8.66  1905.36     0.00  1904.17  1907.28      1.92      8.24      0.15  1907.80
    7610.         0.    7610.       0.       0.      684.      0.       271.       72.   1909.50
      0.27       0.00    11.13     0.00     0.120     0.035    0.060     0.000  1896.70  2383.03
 0.006159       930.    1165.     1185.        2         0        0      0.00   108.12  2491.16

CCHV=   0.300  CEHV=   0.500
1
 27-APR-88     00:07:33                                                                  PAGE   33

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 4.690

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    EASTERN AVENUE                                ####
          ####                Special Bridge Routine                            ####
          ##########################################################################
      4.69       8.94  1912.24  1912.24  1911.81  1915.15      2.91      1.83      0.49  1903.30
    7610.       253.    5578.    1779.       94.      358.      288.      276.       73.   1903.30
      0.28       2.71    15.60     6.17     0.120     0.035    0.060     0.000  1903.30  9945.11
 0.007278       330.     280.      220.       20         8        0      0.00   154.42 10099.53

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1911.84 ,NOT   1912.24 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK          XKOR       COEG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.63       3.00      32.00      10.00     176.00       0.00    1903.80    1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS
```

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1957.53	1930.65	0.00	5103.	2620.	176.	176.	1911.80	1914.10

4.70	13.49	1917.29	0.00	1916.93	1917.61	0.32	2.46	0.00	1903.80
7610.	713.	3452.	3444.	931.	540.	1779.	278.	74.	1903.80
0.28	0.77	6.40	1.94	0.120	0.035	0.060	0.000	1903.80	9586.77
0.000706	56.	56.	56.	2	0	8	0.00	873.17	10459.94

1490 NH CARD USED

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.750

Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.54	1917.64	0.00	1917.20	1917.77	0.13	0.11	0.06	1912.40
7610.	179.	6921.	510.	156.	2288.	426.	295.	78.	1912.70
0.30	1.15	3.02	1.20	0.045	0.035	0.045	0.000	1907.10	2114.62
0.000335	350.	260.	150.	3	0	0	0.00	553.93	2668.54

*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	7.40	1917.40	1917.35	1916.98	1918.96	1.56	0.48	0.71	1910.00
7610.	1635.	4394.	1530.	288.	370.	201.	312.	81.	1910.00
0.32	5.85	11.86	7.61	0.140	0.140	0.140	0.000	1910.00	9818.86
0.086444	400.	400.	400.	8	19	0	0.00	276.37	10095.23

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1916.60 ,NOT 1917.40 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1966.95	1931.38	0.00	5027.	2600.	165.	165.	1916.10	1918.50

4.83	12.48	1923.08	0.00	1922.44	1923.19	0.11	4.22	0.00	1910.60
7610.	2944.	2290.	2377.	1269.	624.	1247.	315.	82.	1910.60

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

```
          ####          Centerline =  2400                                  ####
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
```

4.87	11.74	1923.24	0.00	1922.59	1923.49	0.25	0.24	0.07	1916.10
7610.	1571.	5343.	695.	601.	1198.	268.	326.	85.	1917.30
0.34	2.62	4.46	2.59	0.036	0.035	0.035	0.000	1911.50	1925.74
0.000624	240.	170.	130.	2	8	0	0.00	506.39	2564.65

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

```
          ####          Centerline =  2390                                  ####
```

5.04	7.16	1925.46	1925.46	1924.95	1926.93	1.47	1.49	0.37	1926.40
7610.	0.	7610.	0.	0.	783.	0.	354.	93.	1925.80
0.36	0.00	9.72	0.00	0.045	0.035	0.120	0.000	1918.30	2300.76
0.013202	765.	890.	1040.	20	14	0	0.00	277.29	2578.05

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

```
          ####          Centerline =  2380                                  ####
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
          ####  Some of breakout returns from north; modeled flows do
          ####  not change because flows from Tropicana Wash confluence
          ####  still control.
```

5.21	9.09	1933.29	1933.05	1932.70	1935.57	2.26	8.40	0.24	1931.60
7300.	220.	7080.	0.	81.	576.	0.	369.	97.	1933.70
0.38	2.71	12.30	0.00	0.045	0.035	0.045	0.000	1924.20	2240.94
0.006605	920.	920.	920.	6	11	0	0.00	175.67	2416.62

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260

```
          ####      Centerline - 2410
      5.26      7.30   1935.30      0.00   1934.59   1937.75      2.44      2.13      0.05   1936.00
    7300.         0.      7300.         0.         0.       582.         0.       373.       98.    1936.00
       0.39      0.00     12.55      0.00      0.120     0.035     0.120     0.000  1928.00   2358.92
 0.009636       200.       270.       300.          4         0         0      0.00   109.34   2468.26
)
 CCHV=   0.300  CEHV=   0.500
 *SECNO 5.280
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE  MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                      SPENCER STREET                      ####
          ####                  Special Bridge Routine                  ####
          ####          Centerline = 2460                               ####
          ##################################################################
      5.28      7.08   1942.78   1942.78   1942.09   1944.75      1.97      0.55      0.14   1935.70
    7300.      1623.      5178.       493.       717.       389.       220.       375.       98.    1935.70
       0.39      2.26     13.30      2.27      0.120     0.035     0.120     0.000  1935.70   2118.25
 0.007212        30.        70.       100.         20         8         0      0.00   461.28   2579.53
)

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1941.41 ,YOT   1942.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COFQ        ROLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.56        2.63        0.00       50.25       14.25      180.00       0.00     1936.20     1935.70

 *SECNO 5.290
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC        H3         QWEIR       QPR         BAREA     TRAPEZOID       ELLC        ELTRD
                                                                          AREA
   1982.62    1954.72       0.00       5498.      1822.        180.        180.      1941.20     1942.20

      5.29      7.31   1943.51      0.00   1944.00   1945.26      1.75      0.51      0.00   1936.20
    7300.      1695.      5084.       520.       793.       403.       243.       377.       99.    1936.20
       0.39      2.14     12.63      2.14      0.120     0.035     0.120     0.000  1936.20   2098.43
 0.006228        65.        65.        65.          5         0         0      0.00   487.04   2585.47
)
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 5.320

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

          ####          Centerline =  2390                              ####
      5.32      9.31   1945.41      0.00   1944.84   1946.05      0.63      0.45      0.33   1946.00
    7300.       424.      6859.        17.       299.      1044.        33.       383.      101.    1944.40
       0.40      1.42      6.57      0.45      0.060     0.028     0.030     0.000  1936.10   1991.72
 0.001308       260.       170.       150.          4         0         0      0.00   414.21   2571.20
)
 CCHV=   0.100  CEHV=   0.300
 *SECNO 5.570
```

```
3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2030                                  ####
          ####  Near Alconquin Drive Alignment                                    ####
      5.57      8.94   1960.66   1960.65   1959.58   1964.68      4.02      3.14      1.02   1961.00
    7300.        0.     7300.        0.        0.      454.        0.       411.      109.    1961.00
       0.42      0.00     16.89      0.00      0.140     0.025     0.180     0.000  1951.72   2002.22
 0.005632     1320.     1320.     1320.        20         8         0      0.00     56.56   2058.78
J
1
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 ************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -   01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ************************************************

T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1   ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FB
          0.        4.         3.         0.  0.000000       0.00       1.0         0.   1801.700      0.000

J2   NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
        3.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


*PROF 3

CCHV=   0.100  CEHV=   0.300
*SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####                Centerline =  2290                                  ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65         ####
      2.55     12.20   1801.70   1801.45   1801.70   1806.13      4.43      0.00      0.00   1804.70
    11920.        0.    11920.        0.        0.      706.        0.        0.        0.    1802.00
       0.00      0.00     16.89      0.00      0.120     0.045     0.050     0.000  1789.50   2246.55
 0.015598      815.      760.      745.         0         4         0      0.00     77.99   2324.54
J
CCHV=   0.300  CEHV=   0.500
*SECNO 2.680

1645 INT SEC ADDED BY RAISING SEC       2.68,  -1.725FT AND MULTIPLYING BY   1.214


3301 HV CHANGED MORE THAN HVINS
```

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```
      1.01     17.00   1807.07      0.00      0.00   1807.45      0.38      0.10      1.22   1790.08
  11920.     1114.     6138.     4668.      958.      928.     2317.        2.         1.   1790.08
      0.00      1.16      6.61      2.02     0.120     0.045     0.060     0.000   1790.08   9825.38
 0.000917       50.       43.       35.         6         0         0      0.00   1047.92  10873.30
 0
  1645 INT SEC ADDED BY RAISING SEC      1.01,   0.575FT AND MULTIPLYING BY   0.941

      1.02     16.36   1807.01      0.00      0.00   1807.60      0.58      0.05      0.10   1790.65
  11920.     1047.     6694.     4180.      749.      842.     1785.        6.         1.   1790.65
      0.00      1.40      7.95      2.34     0.120     0.045     0.060     0.000   1790.65   9834.98
 0.001395       50.       43.       35.         2         0         0      0.00    866.51  10701.49
 3
  1645 INT SEC ADDED BY RAISING SEC      1.02,   0.575FT AND MULTIPLYING BY   0.938

      1.03     15.69   1806.91      0.00      0.00   1807.84      0.93      0.07      0.17   1791.23
  11920.      988.     7303.     3629.      570.      757.     1324.        9.         2.   1791.23
      0.01      1.73      9.65      2.74     0.120     0.045     0.060     0.000   1791.23   9838.69
 0.002173       50.       43.       35.         2         0         0      0.00    722.63  10561.32
 3
 1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     0         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


  1645 INT SEC ADDED BY RAISING SEC      1.03,   0.575FT AND MULTIPLYING BY   0.933

          ##########################################################################
          ####          BOULDER HIGHWAY - Northbound Crossing                   ####
          ####                Special Bridge Routine                            ####
          ##########################################################################
      2.68     14.91   1806.71      0.00      0.00   1808.26      1.55      0.11      0.31   1791.80
  11920.      928.     8036.     2955.      412.      671.      898.        11.         3.   1791.80
      0.01      2.25     11.97      3.29     0.120     0.045     0.060     0.000   1791.80   9841.46
 0.003581       50.       43.       35.         3         0         0      0.00    588.50  10429.96
 3
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1801.49 ,NOT   1806.71 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

  SB   XK          XKOR        COFQ        RDLEN       BWC         BWP         AREA        SS          ELCHU       ELCHD
       1.25        1.56        2.80        0.00       40.50        8.70      229.00        0.00      1792.90     1791.80

  *SECNO 2.690
  PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       H3          QWEIR       QPR         AREA        TRAPEZOID AREA      ELLC        ELTRD
  1872.35     1818.47       0.00        9558.       2267.       229.        229.              1800.10     1805.40

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3710 WSEL ASSUMED BASED ON MIN DIFF
      2.69     14.05   1806.95   1806.93      0.00   1809.25      2.30      0.22     -0.22   1792.90
  11920.      870.     8838.     2220.      307.      632.      574.        13.         3.   1792.90
      0.01      2.84     13.97      3.37     0.120     0.045     0.060     0.000   1792.90   9876.00
 0.005275       50.       50.       50.        20         8         0      0.00    493.50  10369.50
 3
```

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*SECNO 2.700

1645 INT SEC ADDED BY RAISING SEC 2.70, -1.000FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	13.95	1807.35	1807.35	0.00	1809.57	2.23	0.11	0.02	1793.40
11920.	934.	8678.	2309.	296.	628.	538.	13.	4.	1793.40
0.01	3.15	13.83	4.29	0.120	0.050	0.060	0.000	1793.40	9880.18
0.006449	18.	18.	18.	5	5	0	0.00	482.02	10362.19

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	13.95	1807.85	1807.85	0.07	1810.07	2.22	0.12	0.00	1793.90
11920.	934.	8674.	2313.	297.	628.	540.	14.	4.	1793.90
0.01	3.15	13.82	4.29	0.120	0.050	0.060	0.000	1793.90	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

2.70	13.95	1808.35	1808.35	0.00	1810.57	2.22	0.12	0.00	1794.40
11920.	934.	8674.	2313.	297.	628.	540.	15.	4.	1794.40
0.01	3.15	13.82	4.28	0.120	0.050	0.050	0.000	1794.40	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1804.40 ,NOT 1808.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	CDFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.38

*SECNO 2.710
6870 D.S. ENERGY OF 1810.57 HIGHER THAN COMPUTED ENERGY OF 1809.18
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.59	1829.38	0.00	11000.	949.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8923.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	13.15	1810.75	0.00	1806.79	1811.85	1.10	0.00	0.00	1797.60
11920.	1497.	5970.	4453.	744.	526.	1153.	17.	5.	1797.60
0.01	2.01	11.35	3.86	0.120	0.050	0.050	0.000	1797.60	9686.71
0.004693	50.	50.	50.	20	0	10	0.00	822.74	10509.46

0
*SECNO 2.790

####		Centerline = 2320						####	
2.79	13.03	1812.43	0.00	1810.25	1813.06	0.62	1.06	0.14	1807.10
11420.	2943.	7116.	1361.	1103.	911.	1595.	46.	13.	1808.40
0.03	2.67	7.82	0.85	0.050	0.035	0.150	0.000	1799.40	1929.12
0.001539	380.	420.	460.	2	0	0	0.00	925.23	2854.35

3
CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2340						####	
2.98	13.25	1820.65	1820.65	1817.91	1822.68	2.03	2.79	0.42	1817.40
11420.	264.	8809.	2357.	236.	677.	1580.	117.	33.	1817.60
0.06	1.12	13.00	1.49	0.160	0.040	0.160	0.000	1807.40	2179.36
0.006228	1070.	1010.	990.	20	5	0	0.00	782.26	2961.62

3
*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2223.0 2960.0 TYPE= 1 TARGET= 737.000

####		Centerline = 2300						####	
3.18	9.49	1830.19	1830.19	1827.99	1833.52	3.33	8.99	0.39	1831.10
11420.	0.	11420.	0.	0.	780.	0.	156.	44.	1832.10
0.08	0.00	14.65	0.00	0.140	0.040	0.180	0.000	1820.70	2267.06
0.013125	1060.	1030.	1020.	3	19	0	0.00	119.30	2386.36

0
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.370

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2350						####	
3.37	12.54	1837.04	0.00	1833.91	1838.30	1.25	4.57	0.21	1832.90
11420.	1413.	9838.	170.	1145.	1017.	248.	190.	52.	1833.30
0.11	1.23	9.67	0.69	0.140	0.035	0.140	0.000	1824.50	1938.78
0.002372	805.	990.	1020.	3	0	0	0.00	619.87	2558.65

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2390					####		
3.53	9.60	1841.70	1841.70	1838.73	1845.34	3.64	3.72	0.72	1847.60
11420.	0.	11420.	0.	0.	746.	0.	221.	59.	1847.80
0.13	0.00	15.32	0.00	0.120	0.035	0.140	0.000	1832.10	2333.53
0.009965	825.	870.	885.	20	15	0	0.00	103.77	2437.29

CCHV= 0.300 CEHV= 0.500
*SECNO 3.550
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##########									
####	MOJAVE ROAD							####	
####	Special Bridge Routine							####	
##########									
3.55	11.18	1843.28	1843.28	1839.74	1847.15	3.87	0.80	0.11	1832.10
11420.	1516.	9580.	325.	341.	559.	118.	223.	59.	1832.10
0.13	4.44	17.14	2.75	0.120	0.035	0.140	0.000	1832.10	2329.64
0.006521	90.	100.	131.	20	10	0	0.00	115.63	2445.27

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1841.75 ,NOT 1843.28 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.550

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1898.12	1865.09	0.00	5326.	4605.	240.	240.	1843.00	1847.10

3.56	18.76	1851.36	0.00	1849.23	1852.20	0.84	5.05	0.00	1832.60
11420.	1961.	8125.	1335.	1345.	938.	1565.	225.	59.	1832.60
0.13	1.46	8.66	0.35	0.120	0.035	0.140	0.000	1832.60	2069.02
0.000835	50.	60.	50.	3	0	7	0.00	813.41	2882.43

*SECNO 3.580

3.58	19.19	1851.79	0.00	1849.40	1852.34	0.55	0.05	0.09	1832.60
11420.	3427.	7068.	933.	1478.	960.	1769.	236.	61.	1832.60
0.14	2.32	7.36	0.53	0.045	0.025	0.140	0.000	1832.60	2055.70
0.000298	110.	110.	110.	2	0	8	0.00	844.78	2900.48

CCHV= 0.100 CEHV= 0.300
*SECNO 3.710

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Overflows, paralleling Desert Inn, Conflue at this Section

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
	3.71	11.63	1861.63	1861.63	1858.61	1863.24	1.61	0.44	0.32	1860.00
	11420.	846.	8537.	2038.	506.	726.	1498.	288.	76.	1859.00
	0.16	1.67	11.75	1.36	0.045	0.025	0.140	0.000	1850.00	8868.66
	0.002490	680.	660.	641.	20	14	0	0.00	1031.63	10463.54

CCHV= 0.300 CEHV= 0.500
*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
DESERT INN ROAD
Special Bridge Routine
BT points follow off road, high ground to north & south.
Centerline = 2720

3.77	9.61	1863.41	1863.41	1862.35	1867.50	4.10	1.00	1.24	1853.80
9680.	896.	8347.	435.	152.	480.	226.	300.	80.	1853.80
0.16	5.91	17.38	1.93	0.045	0.025	0.140	0.000	1853.80	2668.40
0.004184	340.	330.	251.	20	12	0	0.00	128.70	2797.09

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1860.30 ,NOT 1863.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

EGPRS	ESLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1902.81	1881.88	0.00	5231.	3524.	240.	240.	1862.30	1865.50

3.78	12.45	1866.75	0.00	1865.94	1868.63	1.88	1.13	0.00	1854.30	
9680.	1064.	7643.	974.	255.	623.	996.	302.	80.	1854.30	
0.16	4.17	12.28	0.98	0.045	0.025	0.140	0.000	1854.30	2659.04	
0.001479	75.	75.	75.	4	0	6	0.00	452.21	3111.26	

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	7.47	1867.47	1867.47	1865.61	1870.51	3.04	0.71	0.35	1872.00
9680.	0.	9680.	0.	0.	692.	0.	310.	82.	1868.00
0.17	0.00	14.00	0.00	0.045	0.035	0.140	0.000	1860.00	9918.87
0.010269	130.	230.	300.	20	14	0	0.00	115.14	10034.01

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	10.37	1875.37	1874.98	1873.63	1877.67	2.10	6.88	0.28	1874.70
9680.	558.	9122.	0.	143.	763.	0.	326.	85.	1880.00
0.19	3.89	11.95	0.00	0.045	0.035	0.060	0.000	1865.20	2103.37
0.005912	900.	900.	900.	5	18	0	0.00	206.80	2343.92

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

PECOS-McLEOD DRIVE
Special Bridge Routine

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```
     4.05      9.27  1877.67      0.00  1875.89  1879.25      1.59      1.43      0.15  1888.00
     9680.        0.     9680.        0.       0.     957.        0.      332.      86.   1888.00
      0.20      0.00     10.12      0.00     0.045    0.035     0.050     0.000  1868.40  9940.06
 0.004170      100.      295.      400.         3        0         0      0.00   131.49 10071.55
```

SPECIAL BRIDGE

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1875.755 ELLC= 1884.900 PCWSE= 1877.665 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

```
     4.07      9.17  1878.07      0.00  1876.22  1879.70      1.63      0.43      0.02  1888.50
     9680.        0.     9680.        0.       0.     944.        0.      334.      86.   1888.50
      0.20      0.00     10.26      0.00     0.045    0.035     0.060     0.000  1868.90  9940.48
 0.004335      100.      100.      100.         2        0         0      0.00   130.89 10071.37
```

1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
     ####                Centerline =  2500                                  ####
     4.21      9.75  1886.55  1886.55  1883.84  1888.72      2.16      3.43      0.27  1882.10
     9680.      894.     8255.      531.      244.      651.      122.      351.      90.   1884.80
      0.22      3.66     12.68      4.34     0.060    0.035     0.035     0.000  1876.80  2325.67
 0.005271      720.      720.      720.        20        8         0      0.00   306.01  2631.68
```

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
     ####                Centerline =  2530                                  ####
     4.41     10.39  1896.29  1896.29  1893.64  1899.54      3.25      7.08      0.33  1898.60
     9680.        0.     9560.      130.        0.      655.       55.      372.      96.   1905.40
      0.24      0.00     14.57      2.32     0.060    0.035     0.050     0.000  1885.90  2486.17
 0.008260     1140.     1085.     1080.         4        8         0      0.00   151.81  2792.72
```

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*SECNO 4.650

3301 HV CHANGED MORE THAN HVINS

```
          ####          Centerline =  2460                                  ####
     4.63      9.39  1906.09      0.00  1904.17  1908.58      2.49      8.96      0.08  1907.80
  9680.        0.    9680.         0.       0.      765.       0.       392.       99.   1509.50
    0.27      0.00    12.66      0.00     0.120    0.035    0.060    0.000  1856.70  2380.92
0.007174      930.    1165.      1185.        2        0        0     0.00   111.45  2492.37
```

CCHV= 0.300 CEHV= 0.500

*SECNO 4.690

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##########################################################################
          ####                      EASTERN AVENUE                              ####
          ####                 Special Bridge Routine                           ####
          ##########################################################################
     4.69     11.18  1914.48  1914.48  1911.81  1916.29      1.32      1.42      0.20  1903.30
  9680.        537.    6004.    3139.      329.     447.      802.      399.      102.   1903.30
    0.27      1.63    13.43     3.91     0.120    0.035    0.060    0.000  1903.30  9805.09
0.004001      330.     280.      220.        20        8        0     0.00   614.48 10419.57
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1912.39 ,NOT 1914.48 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	AREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	32.00	10.00	176.00	0.00	1903.80	1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	AREA	TRAPEZOID AREA	ELLC	ELTRD
1987.75	1933.72	0.00	7585.	2169.	176.	176.	1911.80	1914.10

```
     4.70     13.95  1917.75      0.00  1916.93  1918.16      0.40      1.86      0.00  1903.80
  9680.       1005.    4131.    4544.     1130.     558.     1984.      402.      103.   1903.80
    0.28      0.89     7.40     2.29     0.120    0.035    0.060    0.000  1903.80  9514.93
0.000963       56.      56.      55.         2        0        8     0.00   950.81 10465.73
```

1490 NH CARD USED

*SECNO 4.750

```
          ####          Centerline =  2380                                  ####
```

```
      ####  Small Golf Course Bridge not modeled - assumed to fail      ####
  4.75    11.09  1918.19    0.00  1917.20  1918.36    0.18    0.14    0.07  1912.40
 9680.     259.    8650.     771.     190.    2450.     541.     421.     107.  1912.70
  0.30     1.37    3.53     1.43    0.045    0.035    0.045    0.000 1907.10  2108.46
0.000417    350.    260.     150.        3        0        0     0.00  589.27  2697.73
0
 *SECNO 4.820

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##########################################################################
      ####                                                                  ####
      ####                    TIOGA WAY                                     ####
      ####              Special Bridge Routine                              ####
      ##########################################################################
  4.82     8.05  1918.05  1918.35  1916.98  1919.75    1.70    0.58    0.76  1910.00
 9680.    2538.    5109.    2034.     388.     403.     255.     441.     111.  1910.00
  0.31     6.54    12.69     7.99    0.140    0.140    0.140    0.000 1910.00  9809.24
0.088501    400.     400.     400.        4       16        0     0.00  302.02 10111.26
3
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1917.75 ,NOT   1918.05 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      COEG      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.50      2.63      0.00     42.00     12.00    165.00     0.00   1910.60   1910.00

 *SECNO 4.830

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                   AREA
 1998.22   1934.87      0.00      7120.     2591.      165.      165.     1916.10   1918.50


  4.83    13.06  1923.66    0.00  1922.44  1923.80    0.14    4.04    0.00  1910.60
 9680.    3747.    2705.    3228.    1416.     653.    1520.     444.     112.  1910.60
  0.31     2.65    4.14     2.12    0.140    0.140    0.140    0.000 1910.60  9711.24
0.004956    60.     60.      60.        2        0        8     0.00  806.14 10517.38
3
 1490 NH CARD USED
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 4.870

 3265 DIVIDED FLOW

      ####              Centerline =  2400                                  ####
      ####  Small Golf Course Bridge not modeled - assumed to fail          ####
  4.87    12.35  1923.85    0.00  1922.59  1924.16    0.31    0.28    0.08  1916.10
 9680.    2181.    6523.     976.     799.    1281.     356.     456.     115.  1917.30
  0.33     2.73    5.09     2.74    0.037    0.035    0.035    0.000 1911.50  1864.61
0.000743    240.    170.     130.        2        0        0     0.00  788.17  3090.44
```

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CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

```
        ####              Centerline =  2390                          ####
        5.04      7.68  1925.98  1925.98  1924.95  1927.66    1.68     1.71     0.41  1926.40
      9680.         0.    9680.       0.       0.      931.      0.      490.     126.   1925.80
       0.35      0.00    10.39     0.28    0.045    0.035   0.120    0.000  1918.30  2297.04
   0.012903       765.     890.     1040.       20       14       0     0.00   294.18  2591.22
```

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
        ####              Centerline =  2380                          ####
        ####  Small Golf Course Bridge not modeled - assumed to fail  ####
        ####  Some of breakout returns from north; modeled flows do
        ####  not change because flows from Tropicana Wash confluence
        ####  still control.
        5.21      9.89  1934.09  1934.09  1932.70  1936.51    2.42     2.20     0.22  1931.60
      8860.        607.     8251.       2.      174.      640.      2.      509.     132.   1933.70
       0.37      3.49    12.89     0.89    0.045    0.035   0.045    0.000  1924.20  2197.65
   0.006359       920.     920.     920.        3       11       0     0.00   228.64  2426.29
```

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
        ####              Centerline = 2410                           ####
        5.26      7.91  1935.91  1935.91  1934.59  1938.80    2.89     2.15     0.14  1936.00
      8860.         0.    8860.       0.       0.      650.      0.      513.     133.   1936.00
       0.38      0.00    13.64     0.00    0.120    0.035   0.120    0.000  1928.00  2355.50
   0.010425       200.     270.      300.        3       15       0     0.00   114.28  2469.78
```

CCHV= 0.300 CEHV= 0.500
*SECNO 5.280

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
        ##########################################################################
        ####                    SPENCER STREET                                ####
        ####                 Special Bridge Routine                           ####
        ####          Centerline = 2460                                       ####
        ##########################################################################
        5.28      7.80  1943.50  1943.50  1942.09  1945.53    2.13     0.55     0.26  1935.70
```

```
    8860.     2233.     5945.      864.      962.      429.      294.      515.      133.  1935.70
     0.38      2.32     13.85      2.32     0.120     0.035     0.120     0.000  1935.70  2058.38
0.006834       30.       70.      100.        20         6         0      0.00   539.10  2597.48
```

```
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1942.20 .NOT   1943.50 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.63        3.00       50.25       14.25      180.00        0.00     1936.20     1935.70

 *SECNO 5.290
 PRESSURE AND WEIR FLOW
```



```
    SECNO       DEPTH       CWSEL       CRIWS       WSELK       EG          HV          HL          OLOSS       BANK ELEV
    0           QLOB        QCH         QROB        ALOB        ACH         AROB        VOL         TWA      LEFT/RIGHT
    TIME        VLOB        VCH         VROB        XNL         XNCH        XNR         WTN         ELMIN         SSTA
    SLOPE       XLOBL       XLCH        XLOBR       ITRIAL      IDC         ICONT       CORAR       TOPWID        ENDST

   EGPRS        EGLWC         H3         QWEIR        QPR         BAREA     TRAPEZOID       ELLC        ELTRD
                                                                              AREA
  2002.19     1957.06       0.00        7246.       1678.        180.        180.      1941.20     1942.20

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
      5.29        7.76    1943.96     1943.91     1944.00     1946.03        2.06        0.45       -0.45    1936.20
      8860.       2219.       5961.       680.        948.        427.        290.        517.        134.     1936.20
       0.38        2.34       13.96        2.34       0.120       0.035       0.120       0.000    1936.20  2061.47
 0.007035          65.         65.         65.          20           5           0        0.00     535.08  2596.56

 *SECNO 5.320

 3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =   2390                                        ####
      5.32       10.15    1946.25        0.00     1944.84     1946.90        0.64        0.45        0.43    1946.00
      8860.       759.       7998.       103.        497.       1182.        145.        525.        137.     1944.40
       0.39        1.53        6.77        0.71       0.060       0.028       0.080       0.000    1936.10  1929.76
 0.001212          260.        170.        153.           4           0           0        0.00     685.36  2615.12

 CCHV=   0.100  CEHV=   0.300
 *SECNO 5.570

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =   2030                                        ####
          ####  Near Algonquin Drive Alignment                                           ####
      5.57       10.00    1961.72     1961.72     1959.58     1966.33        4.60        2.97        1.19    1961.00
      8860.          0.       8860.          0.          0.       515.          0.       561.        148.     1961.00
       0.41        0.27       17.22        0.25       0.140       0.025       0.180       0.000    1951.72  2001.52
 0.005547       1320.       1320.       1320.          20           5           0        0.00      58.21  2059.72
```


Continuous Interfolded @ Mayes Business Forms, Inc.

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.        5.         0.         0.   0.000000       0.00        1.0         0.   1809.390      0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     15.000     0.000     -1.000     0.000      0.000      0.000      0.000      0.000      0.000      0.000

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


*PROF 4

CCHV=   0.100  CEHV=   0.300
*SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####          Centerline =  2290                                    ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65     ####
      2.65      19.80   1809.30   1809.23   1809.30   1811.67      2.37      0.00      0.00   1804.70
    35420.      2882.    20742.    11796.     1166.     1329.     2182.        0.        0.   1802.00
      0.00       2.47      15.6      5.41     0.120     0.045     0.060     0.000   1789.50   1927.25
 0.006259       815.       760.      745.         0         4         0      0.00    976.35   2903.60

CCHV=   0.300  CEHV=   0.500
*SECNO 2.690
          ##################################################################################
          ####                BOULDER HIGHWAY - Northbound Crossing                     ####
          ####                      Special Bridge Routine                              ####
          ##################################################################################
      2.68      19.36   1811.16      0.00      0.00   1812.72      1.56      0.80      0.24   1791.80
    35420.      3882.    13246.    18292.     1462.      871.     3644.       20.        4.   1791.80
      0.01       2.65      15.2      5.32     0.120     0.045     0.060     0.000   1791.80   9639.65
 0.004074       200.       170.      140.         3         0         0      0.00   1260.18  10899.83

SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.80       0.00      40.50       8.70     229.00       0.00    1792.90    1791.80

*SECNO 2.690
6870 D.S. ENERGY OF 1812.72 HIGHER THAN COMPUTED ENERGY OF 1812.55
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
```

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                                                                  AREA
  2390.68   1814.11      1.40     33592.     1733.      229.      229.     1800.10   1805.40

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
     2.69     19.05   1811.95      0.00      0.00   1813.75      1.80      0.00      0.00   1792.90
    35420.    3815.   13815.    17790.    1357.      857.     3374.       26.        6.    1792.90
     0.01      2.81    16.12      5.27     0.120     0.045     0.050     0.000   1792.90   9654.66
 0.004681      50.      50.       50.        20         0         8      0.00   1207.27  10861.92
)
1
  27-APR-88     00:07:33                                                                    PAGE    56

    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       OLOSS    BANK ELEV
    Q          QLOB      QCH       QROB      ALOB       ACH       AROB      VOL      TWA    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL        XNCH      XNR       WTN      ELMIN       SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR    TOPWID      ENDST

 *SECNO 2.700
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                                                          ####
          ####          BOULDER HIGHWAY - Southbound Crossing           ####
          ####                  Special Bridge Routine                  ####
          ####                                                          ####
          ##################################################################
     2.70     18.65   1813.05   1813.05      0.00   1814.93      1.88      0.29      0.04   1794.40
    35420.    3884.   13695.    17841.    1230.      839.     3045.       33.        7.    1794.40
     0.01      3.16    16.32      5.35     0.120     0.050     0.060     0.000   1794.40   9673.84
 0.006099      55.      55.       55.        20         6         0      0.00   1139.63  10913.47
)
 SPECIAL BRIDGE

 SB   XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.80         0.00      33.60       10.50      162.00       0.00     1795.90     1794.30

 *SECNO 2.710
 6870 D.S. ENERGY OF 1814.93 HIGHER THAN COMPUTED ENERGY OF 1813.70
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC        HS         QWEIR       QPR         BAREA     TRAPEZOID       ELLC        ELTRD
                                                                          AREA
  2971.04   1818.48       3.55      34574.       840.       162.       162.      1802.90     1804.40

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF

 3470 ENCROACHMENT STATIONS=     8923.0    10730.0  TYPE=      1  TARGET=     1810.000
     2.71     15.87   1813.47      0.00   1806.79   1815.35      1.87      0.00      0.00   1797.60
    35420.    5830.   11084.    18506.    1679.      635.     2769.       39.        8.    1797.60
     0.01      3.47    17.46      6.58     0.120     0.050     0.060     0.000   1797.60   9584.82
 0.009650      50.      50.       50.        20         0         8      0.00   1135.23  10720.05
)
 *SECNO 2.790

 3301 HV CHANGED MORE THAN HVINS
          ####           Centerline =  2320                              ####
1
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```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
2.79	16.77	1816.17	0.00	1810.25	1817.35	1.16	1.80	0.21	1807.10
34420.	13394.	15065.	5961.	2558.	1235.	3514.	100.	19.	1808.40
0.03	5.24	12.19	1.70	0.050	0.035	0.160	0.000	1799.40	1828.58
0.002495	380.	420.	460.	3	0	0	0.00	1063.54	2892.11

CCHV= 0.100 CEHV= 0.300

*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2340						####	
2.98	17.62	1825.02	1825.02	1817.91	1828.20	3.18	4.25	0.60	1817.40
34420.	2763.	18710.	12947.	1258.	974.	4109.	259.	43.	1817.60
0.05	2.20	19.21	3.15	0.160	0.040	0.160	0.000	1807.40	1996.15
0.008365	1070.	1010.	990.	20	8	0	0.00	976.40	2972.55

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
3.18	16.34	1837.04	1837.04	1827.99	1840.98	3.94	8.16	0.23	1831.10
34420.	5125.	28643.	653.	1891.	1643.	442.	381.	63.	1832.10
0.07	2.71	17.43	1.48	0.140	0.040	0.180	0.000	1820.70	1833.66
0.007582	1060.	1030.	1020.	4	11	0	0.00	740.25	2573.91

*SECNO 3.370

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2350						####	
3.37	18.72	1843.22	0.00	1833.91	1845.07	1.85	3.88	0.21	1832.90
34420.	9760.	21885.	3775.	4043.	1610.	2137.	503.	84.	1833.30
0.10	2.17	13.60	1.77	0.140	0.035	0.140	0.000	1824.50	1616.89
0.002540	805.	990.	1020.	3	0	0	0.00	1209.04	2825.93

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2390						####	
3.53	18.40	1850.50	1850.50	1838.73	1854.32	3.82	3.11	0.59	1847.60
34420.	914.	32087.	1418.	553.	1976.	933.	614.	103.	1847.80
0.11	1.65	16.24	1.52	0.120	0.035	0.140	0.000	1832.10	2080.09

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```
 0.005488      825.      870.      585.       20          8          0       0.00    787.32   2867.42
)
 CCHV=   0.300  CEHV=   0.500
 *SECNO 3.550
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##################################################################
      ####                                                          ####
      ####                    MOJAVE ROAD                           ####
      ####              Special Bridge Routine                      ####
      ####                                                          ####
      ##################################################################
    3.55     21.50  1853.60  1853.60  1839.74  1857.19     3.59     0.44     0.07  1832.10
   34420.     7067.    20868.     6485.     2287.     1075.     3016.      626.      106.    1832.10
    0.11     3.09     19.41     2.15     0.120     0.035     0.140     0.000  1832.10  1570.79
 0.003498       90.      100.      130.       20          8          0       0.00  1062.99  3033.78
)

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1849.63 ,NOT   1853.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.25       1.56       2.63       0.00      48.70      18.70     240.00      0.00    1835.00    1834.50

 *SECNO 3.560
 6870 D.S. ENERGY OF 1857.19 HIGHER THAN COMPUTED ENERGY OF 1857.01
 PRESSURE AND WEIR FLOW

1
  27-APR-88     00:07:33                                                                          PAGE   59

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      WLOB      VCH       VROR      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


   EGPRS       EGLWC       H3        QWEIR       QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                        AREA
    2351.84   1893.30       0.00     31730.     2850.      240.      240.     1843.00   1847.10


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
    3.56     21.57  1854.17  1853.95  1849.23  1857.69     3.52     0.17    -0.17  1832.60
   34420.     7101.    20771.     6547.     2317.     1079.     3062.      633.      107.    1832.60
    0.12     3.06     19.26     2.14     0.120     0.035     0.140     0.000  1832.60  1566.41
 0.003426       50.       50.       50.       20          5          0       0.00  1072.21  3038.62
)
 *SECNO 3.580
 3280 CROSS SECTION       3.58 EXTENDED       1.16 FEET

 3301 HV CHANGED MORE THAN HVINS

    3.58     25.05  1857.65     0.00  1849.40  1858.58     0.94     0.12     0.78  1832.60
   34420.    14376.    14422.     5622.     4368.     1253.     5569.      656.      110.    1832.60
    0.12     3.29     11.51     1.01     0.045     0.025     0.140     0.000  1832.60  1590.00
 0.000511      110.      110.      110.          5          0          0       0.00  1600.00  3190.00
)
 CCHV=   0.100  CEHV=   0.300
 *SECNO 3.710

 3265 DIVIDED FLOW
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.78	16.88	1871.18	1871.13	1865.94	1875.36	4.18	0.20	-0.20	1854.30
25760.	3444.	16884.	5432.	520.	844.	2626.	840.	143.	1854.30
0.15	6.62	20.01	2.17	0.045	0.025	0.140	0.000	1854.30	2582.90
0.002617	75.	75.	75.	20	5	0	0.00	537.10	3120.00

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note #### #### however, that the Sect. doesn't cross wier define by BT pts

3.83	13.85	1873.85	1873.85	1865.61	1877.72	3.87	0.88	0.03	1872.00
25760.	177.	24451.	1132.	73.	1510.	670.	859.	146.	1868.00
0.15	2.43	16.20	1.69	0.045	0.035	0.140	0.000	1860.00	9821.42
0.006017	130.	230.	300.	20	15	0	0.00	504.89	10326.31

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3301 HV CHANGED MORE THAN HVIAS

Centerline = 2250

4.00	14.89	1880.09	1879.64	1873.63	1883.24	3.14	5.30	0.22	1874.70
25760.	6005.	19741.	14.	781.	1259.	17.	903.	154.	1880.00
0.17	7.69	15.69	0.32	0.045	0.035	0.060	0.000	1865.20	2085.39
0.005764	900.	900.	900.	7	8	0	0.00	325.87	2411.26

*SECNO 4.050

3301 HV CHANGED MORE THAN HVIAS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

##
PECOS-McLEOD DRIVE

Special Bridge Routine
##

4.05	13.70	1882.10	1882.10	1875.89	1885.78	3.68	1.98	0.27	1888.00
25760.	0.	25760.	0.	0.	1673.	0.	914.	156.	1888.00
0.18	0.00	15.40	0.00	0.045	0.035	0.060	0.000	1868.40	9851.26
0.009507	100.	295.	400.	5	12	0	0.00	228.20	10079.46

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070
ERROR ELTRD.LT.MIN ROAD ELEV, ELTRD SET EQUAL TO MIN ROAD ELEV
3280 CROSS SECTION 4.07 EXTENDED 0.40 FEET

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	P3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1889.36	1886.28	0.00	0.	25760.	1488.	1487.	1884.90	1890.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.50

4.07	20.00	1888.93	0.00	1876.22	1889.36	0.46	3.58	0.00	1888.50
25760.	0.	25760.	0.	0.	4723.	0.	921.	157.	1888.50
0.18	0.00	5.45	0.00	0.045	0.035	0.060	0.000	1868.90	9440.00
0.001189	100.	100.	100.	2	0	0	0.00	650.00	10090.00

1490 NH CARD USED
*SECNO 4.210

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2500						####	
4.21	14.31	1891.11	1891.11	1883.84	1893.13	2.02	1.42	0.78	1882.10
25760.	6881.	14294.	4585.	1784.	989.	603.	988.	169.	1884.80
0.20	3.86	14.46	7.54	0.062	0.035	0.035	0.000	1876.80	1852.84
0.003930	720.	720.	720.	20	14	0	0.00	889.51	2838.89

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2530						####	
4.41	15.61	1901.51	1901.51	1893.64	1903.93	2.42	5.43	0.12	1898.60
25760.	2873.	16852.	6035.	644.	1137.	932.	1066.	188.	1905.40
0.23	4.46	14.82	6.48	0.060	0.035	0.050	0.000	1885.90	2280.56
0.006474	1140.	1085.	1080.	20	8	0	0.00	542.99	2909.46

*SECNO 4.630

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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```
                ####                Centerline =  2460                                  ####
      4.63     15.53   1912.23   1912.23   1904.17   1914.83      2.59      5.88       0.05   1907.80
  25760.      1993.     21261.     2505.     1264.     1500.      808.      1145.       206.    1909.50
      0.25       1.58      14.17      3.10     0.120     0.035     0.060     0.000   1896.70   1890.62
 0.004167       930.      1165.      1185.         4         5         0      0.00    927.50   3323.71
 0
 CCHV=   0.300  CEHV=   0.500
 *SECNO 4.690

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##################################################################
      ####                    EASTERN AVENUE                        ####
      ####                Special Bridge Routine                    ####
      ##################################################################
      4.69     14.73   1918.03   1918.03   1911.81   1919.98      1.36      1.14       0.19   1903.30
  25760.      3128.     9975.     12657.     1534.      589.     2331.      1170.       212.    1903.30
      0.26       2.04      16.93      5.43     0.120     0.035     0.050     0.000   1903.30   9354.34
 0.004404       330.       280.       220.        20        10         0      0.00   1081.02  10475.35
 )
 1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    0         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 SPECIAL BRIDGE

 SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      2.63      0.00      32.00     10.00     176.00    0.00      1903.80   1903.30

 *SECNO 4.700
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD
  2436.95    1924.39      4.41    24060.    1709.      176.      176.      1911.80   1914.10


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
      4.70     14.60   1918.40   1918.23   1916.93   1920.48      2.08      0.25      -0.25   1903.80
  25760.      3052.     10129.     12579.     1462.      584.     2275.      1176.       214.    1903.80
      0.26       2.09      17.34      5.53     0.120     0.035     0.060     0.000   1903.80   9414.83
 0.004671        56.       56.        56.        20         5         0      0.00   1058.97  10473.80
 )
 1490 NH CARD USED
 *SECNO 4.750

 3301 HV CHANGED MORE THAN HVINS

                ####                Centerline =  2300                                  ####
                ####  Small Golf Course Bridge not modeled - assumed to fail            ####
      4.75     13.71   1920.81      0.00   1917.20   1921.36      0.55      0.42       0.46   1912.40
  25760.      1083.     20942.     3735.      402.     3235.     1398.      1201.       219.    1912.70
      0.27       2.70       6.47      2.57     0.045     0.035     0.045     0.000   1907.10   2074.36
 0.000968       350.       260.       150.         2         0         0      0.00    952.24   3026.60
 )
```

```
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=    2129.0    3070.0  TYPE=     1  TARGET=     941.000
          ####          Centerline =  2390                                  ####
      5.04    10.80  1929.10  1929.10  1924.95  1931.88     2.79     2.73     0.63  1926.40
     25760.     580.    25121.      61.      135.     1853.      37.     1344.      255.   1925.80
      0.31     4.31     13.55     1.52    0.045    0.035    0.120    0.000  1918.30  2201.74
  0.008885     765.      890.     1040.       20       19        0     0.00   410.63  2612.37

1490 NH CARD USED
 *SECNO 5.210
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####          Centerline =  2380                                  ####
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
          ####  Some of breakout returns from north; modeled flows do
          ####  not change because flows from Tropicana Wash confluence
          ####  still control.
      5.21    13.98  1938.18  1938.18  1932.70  1940.76     2.58     6.18     0.02  1931.60
     22500.    5875.    14795.      83.     1067.      971.      172.     1389.      264.   1933.70
      0.33     6.45     15.23     4.83    0.045    0.035    0.045    0.000  1924.20  2065.68
  0.005092     920.      920.      920.        5       11        0     0.00   426.94  2492.63

 *SECNO 5.250

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####       Centerline - 2410
      5.26    13.21  1941.21  1941.21  1934.59  1945.83     4.62     1.55     0.61  1936.00
     22500.     299.    21979.     222.      171.     1259.      102.     1400.      266.   1936.00
      0.34     1.75     17.45     2.18    0.120    0.035    0.120    0.000  1928.00  2223.02
  0.007128     200.      270.      300.       20       11        0     0.00   286.07  2509.09

 CCHV=    0.300  CEHV=    0.500

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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST


 *SECNO 5.230
 3280 CROSS SECTION       5.28 EXTENDED       2.73 FEET


 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                    SPENCER STREET                                ####
          ####                Special Bridge Routine                            ####
          ####          Centerline = 2460                                       ####
          ##########################################################################
      5.28    11.23  1946.93  1946.93  1942.09  1949.56     2.63     0.46     0.60  1935.70
     22500.    8404.    11207.    2889.     2417.      618.      977.     1403.      267.   1935.70
      0.34     3.48     18.14     2.96    0.120    0.035    0.120    0.000  1935.70  2000.00
```

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*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Special Bridge Routine

4.82	11.52	1921.52	1921.52	1916.98	1923.57	2.05	1.26	0.75	1910.00
25760.	9820.	8780.	7160.	1045.	576.	869.	1236.	226.	1910.00
0.28	9.40	15.24	8.24	0.140	0.140	0.140	0.000	1910.00	9745.79
0.079245	400.	400.	400.	4	16	0	0.00	624.15	10369.95

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2489.23	1928.35	4.78	23465.	2343.	165.	165.	1916.10	1918.50

4.83	15.31	1925.91	0.00	1922.44	1926.22	0.31	2.65	0.00	1910.60
25760.	9190.	5140.	11430.	2121.	766.	3710.	1242.	228.	1910.60
0.29	4.33	6.71	3.08	0.140	0.140	0.140	0.000	1910.60	9562.08
0.010520	60.	60.	60.	2	0	8	0.00	1590.72	11152.80

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	14.80	1926.30	0.00	1922.59	1927.00	0.69	0.59	0.19	1916.10
25760.	7565.	13918.	4276.	2095.	1617.	1872.	1266.	234.	1917.30
0.30	3.61	8.61	2.28	0.044	0.035	0.054	0.000	1911.50	1665.66
0.001557	240.	170.	133.	2	0	0	0.00	1632.97	3370.48

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

0.007262 30. 70. 100. 20 15 0 0.00 785.79 2785.79

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	50.25	14.25	180.00	0.00	1936.20	1935.70

*SECNO 5.290
6870 D.S. ENERGY OF 1949.56 HIGHER THAN COMPUTED ENERGY OF 1947.83
3280 CROSS SECTION 5.29 EXTENDED 2.87 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2325.42	1957.07	7.51	21418.	1100.	180.	180.	1941.20	1942.20

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

5.29	11.37	1947.57	1947.48	1944.00	1950.06	2.49	0.46	-0.46	1936.20
22500.	8470.	11087.	2943.	2479.	626.	1021.	1409.	268.	1936.20
0.34	3.42	17.72	2.88	0.120	0.035	0.120	0.000	1936.20	2000.00
0.006812	65.	65.	65.	20	5	0	0.00	794.42	2794.42

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.320

3301 HV CHANGED MORE THAN HVINS

Centerline = 2390

5.32	14.12	1950.22	0.00	1944.84	1951.00	0.77	0.42	0.51	1946.00
22500.	5711.	15477.	1312.	2512.	1847.	806.	1432.	272.	1944.40
0.35	2.27	8.38	1.53	0.060	0.028	0.080	0.000	1936.10	1710.90
0.001026	260.	170.	150.	5	0	0	0.00	960.17	2671.07

CCHV= 0.100 CEHV= 0.300
*SECNO 5.570

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2030
Near Algonquin Drive Alignment

5.57	19.01	1970.73	1970.73	1959.58	1973.73	3.00	1.82	0.67	1961.00
22500.	2083.	16613.	3804.	1827.	1028.	4034.	1615.	312.	1961.00
0.38	1.14	16.16	0.94	0.140	0.025	0.180	0.000	1951.72	1389.08
0.001943	1320.	1320.	1320.	20	18	0	0.00	1679.68	3068.76

```
3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
      3.71     14.98   1864.98   1864.98   1858.61   1866.80      1.82      0.66      0.27   1860.00
     34420.    12267.    15919.     6234.     3049.     1028.     3219.      755.      134.   1858.00
      0.14      4.02      15.48      1.94     0.045     0.025     0.140     0.000   1850.00   8742.64
 0.002719       680.       660.       643.        20        15         0      0.00   1581.51  10609.31
1
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=   0.300 CEHV=   0.500
 *SECNO 3.770
 3280 CROSS SECTION       3.77 EXTENDED       2.68 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ##########################################################
        ####                  DESERT INN ROAD                 ####
        ####              Special Bridge Routine              ####
        ####  BT points follow off road, high ground to north & south.  ####
        ####              Centerline = 2720                   ####
        ##########################################################
      3.77     16.88   1870.68   1870.68   1862.35   1874.86      4.18      0.85      1.18   1853.80
     25760.     3445.    16882.     5433.      521.      844.     2627.      833.      142.   1853.80
      0.15      6.62      20.00      2.07     0.045     0.025     0.140     0.000   1853.80   2582.76
 0.002614       340.       330.       250.        20         8         0      0.00   537.24   3120.00
3

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1866.27 ,NOT   1870.68 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB   KK        XKOR      COFQ      RDLEN     RWC       BWP       BAREA     SS        ELCHU     ELCHD
       1.25      1.56      3.00      0.00     48.70     18.70    240.00      0.00   1854.39   1853.80

 *SECNO 3.730
 6870 D.S. ENERGY OF 1874.86 HIGHER THAN COMPUTED ENERGY OF 1872.72
 3280 CROSS SECTION       3.78 EXTENDED       2.68 FEET

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                 AREA
  2149.75   1903.57      0.00    23565.     2203.      240.      240.     1862.30   1865.50

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
1
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2.650	0.00	0.00	0.00	1783.50	6400.00	1798.51	0.00	1801.36	141.03	13.55	472.21	538.91
*	2.650	0.00	0.00	0.00	1789.50	8400.00	1799.43	1799.43	1803.24	168.44	15.66	536.56	647.23
	2.650	0.00	0.00	0.00	1789.50	11920.00	1801.70	1801.45	1806.13	155.98	16.89	705.54	954.43
	2.650	0.00	0.00	0.00	1789.50	35420.00	1809.30	1809.23	1811.67	62.59	15.60	4677.72	4477.24
	2.680	170.00	0.00	0.00	1791.80	6400.00	1800.55	0.00	1803.42	104.52	14.34	558.17	626.00
	2.680	170.00	0.00	0.00	1791.80	8400.00	1802.38	0.00	1805.49	90.18	15.10	719.39	884.57
*	2.680	170.00	0.00	0.00	1791.80	11920.00	1805.71	0.00	1808.26	35.81	11.97	1980.45	1991.81
	2.680	170.00	0.00	0.00	1791.80	35420.00	1811.16	0.00	1812.72	40.74	15.20	5978.25	5549.48
*	2.690	50.00	1805.40	1800.10	1792.90	6400.00	1806.41	0.00	1807.23	19.13	8.19	1261.16	1463.21
*	2.690	50.00	1805.40	1800.10	1792.90	8400.00	1806.73	0.00	1807.98	28.71	10.20	1410.76	1567.67
*	2.690	50.00	1805.40	1800.10	1792.90	11920.00	1806.95	1806.93	1809.25	52.75	13.97	1513.21	1641.21
*	2.690	50.00	1805.40	1800.10	1792.90	35420.00	1811.95	0.00	1813.75	46.81	16.12	5588.49	5176.97
	2.700	55.00	0.00	0.00	1794.40	6400.00	1806.34	0.00	1807.60	39.52	9.76	865.88	1018.00
	2.700	55.00	0.00	0.00	1794.40	8400.00	1806.55	0.00	1808.61	63.45	12.51	896.39	1054.58
*	2.700	55.00	0.00	0.00	1794.40	11920.00	1808.35	1808.35	1810.57	64.35	13.82	1464.60	1486.00
*	2.700	55.00	0.00	0.00	1794.40	35420.00	1813.05	1813.05	1814.93	60.99	16.32	5114.64	4535.53
*	2.710	50.00	1804.40	1802.90	1797.60	6400.00	1806.79	0.00	1808.96	101.81	13.16	663.00	634.30
*	2.710	50.00	1804.40	1802.90	1797.60	8400.00	1807.99	1807.99	1810.60	107.74	14.69	814.06	809.28
*	2.710	50.00	1804.40	1802.90	1797.60	11920.00	1810.75	0.00	1811.85	46.93	11.35	2423.08	1740.03
*	2.710	50.00	1804.40	1802.90	1797.60	35420.00	1813.47	0.00	1815.36	66.50	17.46	5083.27	3808.28
	2.790	420.00	0.00	0.00	1799.40	6000.00	1810.25	0.00	1810.87	16.44	6.91	1764.16	1479.88
	2.790	420.00	0.00	0.00	1799.40	8000.00	1811.89	0.00	1812.30	10.34	6.18	3110.68	2488.37
	2.790	420.00	0.00	0.00	1799.40	11420.00	1812.43	0.00	1813.06	15.39	7.82	3608.07	2910.88
	2.790	420.00	0.00	0.00	1799.40	34420.00	1816.17	0.00	1817.35	24.95	12.19	7307.65	6891.38
*	2.980	1010.00	0.00	0.00	1807.40	6000.00	1817.91	1817.91	1820.11	81.56	12.01	693.07	664.38
*	2.980	1010.00	0.00	0.00	1807.40	8000.00	1819.32	1819.32	1821.28	63.83	11.96	1514.30	1001.37
*	2.980	1010.00	0.00	0.00	1807.40	11420.00	1820.65	1820.65	1822.68	62.28	13.00	2493.26	1447.08
*	2.980	1010.00	0.00	0.00	1807.40	34420.00	1825.02	1825.02	1828.20	83.65	19.21	6340.34	3763.43

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	3.180	1030.00	0.00	0.00	1820.70	6000.00	1827.99	0.00	1829.98	113.67	11.31	530.41	562.77
*	3.180	1030.00	0.00	0.00	1820.70	8000.00	1828.65	1828.65	1831.39	138.25	13.28	602.22	680.38
*	3.180	1030.00	0.00	0.00	1820.70	11420.00	1830.19	1830.19	1833.52	131.25	14.65	779.76	996.82
*	3.180	1030.00	0.00	0.00	1820.70	34420.00	1837.04	1837.04	1840.98	75.02	17.43	3975.57	3973.89
	3.370	990.00	0.00	0.00	1824.50	6000.00	1833.91	0.00	1834.94	27.35	8.22	912.83	1147.21
	3.370	990.00	0.00	0.00	1824.50	8000.00	1835.28	0.00	1836.41	25.11	8.82	1460.86	1596.54
	3.370	990.00	0.00	0.00	1824.50	11420.00	1837.04	0.00	1838.30	23.72	9.67	2409.18	2344.80
	3.370	990.00	0.00	0.00	1824.50	34420.00	1843.22	0.00	1845.07	25.40	13.60	7790.26	6830.20

*	3.530	870.00	0.00	0.00	1832.10	6000.00	1838.73	1838.73	1841.36	109.64	13.03	460.64	573.02
*	3.530	870.00	0.00	0.00	1832.10	8000.00	1839.92	1839.92	1842.98	105.01	14.04	569.63	780.69
*	3.530	870.00	0.00	0.00	1832.10	11420.00	1841.70	1841.70	1845.34	99.66	15.32	745.53	1143.93
*	3.530	870.00	0.00	0.00	1832.10	34420.00	1850.50	1850.50	1854.32	54.88	16.24	3461.38	4646.21
*	3.550	100.00	0.00	0.00	1832.10	6000.00	1839.74	1839.74	1843.57	90.88	15.70	382.08	629.40
*	3.550	100.00	0.00	0.00	1832.10	8000.00	1841.37	1841.37	1846.00	84.95	17.27	463.34	867.97
*	3.550	100.00	0.00	0.00	1832.10	11420.00	1843.28	1843.28	1847.15	65.21	17.14	1017.99	1414.23
*	3.550	100.00	0.00	0.00	1832.10	34420.00	1853.60	1853.60	1857.19	34.98	19.41	6378.13	5819.93
*	3.560	50.00	1847.10	1843.00	1832.60	6000.00	1849.23	0.00	1849.63	4.22	5.68	2286.45	2921.45
*	3.560	50.00	1847.10	1843.00	1832.60	8000.00	1850.31	0.00	1850.85	5.54	6.79	3035.54	3359.36
*	3.560	50.00	1847.10	1843.00	1832.60	11420.00	1851.36	0.00	1852.20	8.35	8.66	3848.82	3953.18
*	3.560	50.00	1847.10	1843.00	1832.60	34420.00	1854.17	1853.55	1857.69	34.26	19.26	6457.62	5880.74
	3.580	110.00	0.00	0.00	1832.60	6000.00	1849.40	0.00	1849.69	1.65	5.01	2397.93	4672.57
	3.580	110.00	0.00	0.00	1832.60	8000.00	1850.56	0.00	1850.94	2.10	5.91	3221.94	5522.08
	3.580	110.00	0.00	0.00	1832.60	11420.00	1851.79	0.00	1852.34	2.98	7.36	4207.00	6614.81
	3.580	110.00	0.00	0.00	1832.60	34420.00	1857.65	0.00	1858.58	5.11	11.51	11190.34	15219.25
*	3.710	660.00	0.00	0.00	1850.00	6000.00	1858.61	1858.61	1860.64	43.87	11.95	938.55	905.92
*	3.710	660.00	0.00	0.00	1850.00	8000.00	1859.57	1859.57	1861.88	44.04	13.00	1288.26	1205.50
*	3.710	660.00	0.00	0.00	1850.00	11420.00	1861.63	1861.63	1863.24	24.90	11.75	2730.39	2288.38
*	3.710	660.00	0.00	0.00	1850.00	34420.00	1864.98	1864.98	1866.80	27.19	15.48	7296.51	6601.14
*	3.770	330.00	0.00	0.00	1853.80	6000.00	1862.35	1862.35	1864.43	24.50	12.30	726.31	1212.28
*	3.770	330.00	0.00	0.00	1853.80	7610.00	1862.41	1862.41	1865.70	38.29	15.46	734.61	1229.87
*	3.770	330.00	0.00	0.00	1853.80	9680.00	1863.41	1863.41	1867.50	41.84	17.38	858.37	1496.43
*	3.770	330.00	0.00	0.00	1853.80	25760.00	1870.68	1870.68	1874.86	26.14	20.00	3951.59	5038.21
*	3.780	75.00	1865.50	1862.30	1854.30	6000.00	1865.94	0.00	1866.86	7.60	8.42	1511.22	2176.86
*	3.780	75.00	1865.50	1862.30	1854.30	7610.00	1866.41	0.00	1867.69	10.29	10.06	1722.62	2372.31
*	3.780	75.00	1865.50	1862.30	1854.30	9680.00	1866.75	0.00	1868.63	14.78	12.28	1873.14	2518.03
*	3.780	75.00	1865.50	1862.30	1854.30	25760.00	1871.18	1871.13	1875.36	26.17	20.01	3989.70	5035.71
*	3.830	230.00	0.00	0.00	1860.00	6000.00	1865.61	1865.61	1867.96	109.76	12.31	487.53	572.69
*	3.830	230.00	0.00	0.00	1860.00	7610.00	1866.46	1866.46	1869.15	106.67	13.15	578.69	736.83
*	3.830	230.00	0.00	0.00	1860.00	9680.00	1867.47	1867.47	1870.51	102.69	14.00	691.64	955.26
*	3.830	230.00	0.00	0.00	1860.00	25760.00	1873.85	1873.85	1877.72	60.17	16.20	2252.56	3320.95

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	4.000	900.00	0.00	0.00	1865.20	6000.00	1873.63	0.00	1875.38	61.57	10.64	563.98	764.67
	4.000	900.00	0.00	0.00	1865.20	7610.00	1874.59	0.00	1876.65	63.95	11.52	660.32	951.59
	4.000	900.00	0.00	0.00	1865.20	9680.00	1875.57	1874.98	1877.67	59.12	11.95	906.55	1259.00
	4.000	900.00	0.00	0.00	1865.20	25760.00	1880.09	1879.64	1883.24	57.64	15.69	2056.48	3392.95
	4.050	295.00	0.00	0.00	1868.40	6000.00	1875.89	0.00	1876.93	34.58	8.19	733.01	1020.35
	4.050	295.00	0.00	0.00	1868.40	7610.00	1877.07	0.00	1878.23	32.68	8.64	880.88	1331.24
	4.050	295.00	0.00	0.00	1868.40	9680.00	1877.67	0.00	1879.25	41.70	10.12	956.76	1499.09
*	4.050	295.00	0.00	0.00	1868.40	25760.00	1882.10	1882.10	1885.78	95.07	15.40	1672.67	2642.00
	4.070	100.00	1885.50	1884.90	1868.90	6000.00	1876.22	0.00	1877.32	37.54	8.42	712.61	979.27
	4.070	100.00	1885.50	1884.90	1868.90	7610.00	1877.38	0.00	1878.61	35.61	8.90	855.00	1275.21
	4.070	100.00	1885.50	1884.90	1868.90	9680.00	1878.07	0.00	1879.70	43.35	10.26	943.89	1470.23
	4.070	100.00	1890.10	1884.90	1868.90	25760.00	1888.90	0.00	1889.36	11.88	5.45	4723.01	7473.07
*	4.210	720.00	0.00	0.00	1876.80	6000.00	1883.84	1883.84	1886.38	87.68	12.95	506.52	640.75
*	4.210	720.00	0.00	0.00	1876.80	7610.00	1885.26	1885.26	1887.62	65.70	12.74	716.01	938.88
*	4.210	720.00	0.00	0.00	1876.80	9680.00	1886.55	1886.55	1888.72	52.71	12.68	1017.65	1333.33
*	4.210	720.00	0.00	0.00	1876.80	25760.00	1891.11	1891.11	1893.13	39.30	14.46	3380.58	4109.27
	4.410	1085.00	0.00	0.00	1885.90	6000.00	1893.64	0.00	1896.39	95.93	13.31	450.87	612.60
*	4.410	1085.00	0.00	0.00	1885.90	7610.00	1894.48	1894.48	1897.89	105.92	14.83	513.24	739.43

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*	4.410	1085.00	0.00	0.00	1885.90	25760.00	1901.51	1901.51	1903.93	64.74	14.82	2712.29	3201.63
	4.630	1165.00	0.00	0.00	1896.70	6000.00	1904.17	0.00	1905.95	69.72	10.73	559.17	718.57
	4.630	1165.00	0.00	0.00	1896.70	7610.00	1905.36	0.00	1907.28	61.59	11.13	683.95	969.68
	4.630	1165.00	0.00	0.00	1896.70	9680.00	1906.09	0.00	1908.58	71.74	12.66	764.57	1142.85
*	4.630	1165.00	0.00	0.00	1896.70	25760.00	1912.23	1912.23	1914.83	41.67	14.17	3571.56	3990.78
*	4.690	280.00	0.00	0.00	1903.30	6000.00	1911.81	1911.81	1913.91	55.01	13.13	681.62	808.98
*	4.690	280.00	0.00	0.00	1903.30	7610.00	1912.24	1912.24	1915.15	72.78	15.60	739.38	892.04
*	4.690	280.00	0.00	0.00	1903.30	9680.00	1914.48	1914.48	1916.29	40.01	13.43	1577.59	1530.35
*	4.690	280.00	0.00	0.00	1903.30	25760.00	1918.03	1918.03	1919.98	44.04	16.93	4453.53	3881.63
*	4.700	56.00	1914.10	1911.80	1903.80	6000.00	1916.93	0.00	1917.16	5.32	5.45	2538.75	2601.19
*	4.700	56.00	1914.10	1911.80	1903.80	7610.00	1917.29	0.00	1917.61	7.06	6.40	3249.26	2863.88
*	4.700	56.00	1914.10	1911.80	1903.80	9680.00	1917.75	0.00	1918.16	9.03	7.40	3671.97	3220.68
*	4.700	56.00	1914.10	1911.80	1903.80	25760.00	1918.40	1918.23	1920.48	46.71	17.34	4320.88	3768.95
	4.750	260.00	0.00	0.00	1907.10	6000.00	1917.20	0.00	1917.29	2.62	2.57	2629.00	3708.61
	4.750	260.00	0.00	0.00	1907.10	7610.00	1917.64	0.00	1917.77	3.35	3.02	2869.87	4155.81
	4.750	260.00	0.00	0.00	1907.10	9680.00	1918.19	0.00	1918.36	4.17	3.53	3180.78	4740.56
	4.750	260.00	0.00	0.00	1907.10	25760.00	1920.81	0.00	1921.36	9.68	6.47	5034.42	8278.42
	4.820	400.00	0.00	0.00	1910.00	6000.00	1916.98	0.00	1918.26	741.27	10.56	744.80	220.38
	4.820	400.00	0.00	0.00	1910.00	7610.00	1917.40	1917.36	1918.96	864.44	11.86	859.77	258.83
*	4.820	400.00	0.00	0.00	1910.00	9680.00	1918.05	1918.05	1919.75	886.01	12.69	1045.17	325.20
*	4.820	400.00	0.00	0.00	1910.00	25760.00	1921.52	1921.52	1923.57	792.45	15.24	2489.94	915.08

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K-S	VCH	AREA	.01K
*	4.830	60.00	1918.50	1916.10	1910.60	6000.00	1922.44	0.00	1922.53	36.12	3.31	2694.40	998.37
*	4.830	60.00	1918.50	1916.10	1910.60	7610.00	1923.08	0.00	1923.19	41.32	3.67	3140.53	1183.86
*	4.830	60.00	1918.50	1916.10	1910.60	9680.00	1923.66	0.00	1923.80	49.56	4.14	3588.22	1375.08
	4.830	60.00	1918.50	1916.10	1910.60	25760.00	1925.91	0.00	1926.22	105.20	6.71	6596.61	2511.53
	4.870	170.00	0.00	0.00	1911.50	6000.00	1922.59	0.00	1922.79	5.46	3.96	1764.22	2566.78
	4.870	170.00	0.00	0.00	1911.50	7610.00	1923.24	0.00	1923.49	6.24	4.46	2066.58	3045.63
	4.870	170.00	0.00	0.00	1911.50	9680.00	1923.85	0.00	1924.16	7.43	5.09	2436.34	3551.58
	4.870	170.00	0.00	0.00	1911.50	25760.00	1926.30	0.00	1927.00	15.57	8.61	5583.63	6528.22
*	5.040	890.00	0.00	0.00	1918.30	6000.00	1924.95	1924.95	1926.29	139.73	9.29	645.98	507.58
*	5.040	890.00	0.00	0.00	1918.30	7610.00	1925.46	1925.46	1926.93	132.02	9.72	783.21	662.31
*	5.040	890.00	0.00	0.00	1918.30	9680.00	1925.98	1925.98	1927.66	129.03	10.39	931.41	852.19
*	5.040	890.00	0.00	0.00	1918.30	25760.00	1929.10	1929.10	1931.88	88.85	13.55	2024.94	2732.79
	5.210	920.00	0.00	0.00	1924.20	6000.00	1932.70	1931.64	1934.65	61.55	11.27	561.19	764.80
	5.210	920.00	0.00	0.00	1924.20	7300.00	1933.29	1933.05	1935.57	66.05	12.30	657.07	898.21
*	5.210	920.00	0.00	0.00	1924.20	8860.00	1934.09	1934.09	1936.51	63.59	12.89	815.87	1111.04
*	5.210	920.00	0.00	0.00	1924.20	22500.00	1938.18	1938.18	1940.76	50.92	15.23	2209.84	3153.14
	5.260	270.00	0.00	0.00	1928.00	6000.00	1934.59	0.00	1936.77	96.32	11.86	505.96	611.34
	5.260	270.00	0.00	0.00	1928.00	7300.00	1935.30	0.00	1937.75	96.36	12.55	581.80	743.66
*	5.260	270.00	0.00	0.00	1928.00	8860.00	1935.91	1935.91	1938.80	104.25	13.64	649.79	867.74
*	5.260	270.00	0.00	0.00	1928.00	22500.00	1941.21	1941.21	1945.83	71.28	17.45	1532.50	2665.06
*	5.280	70.00	0.00	0.00	1935.70	6000.00	1942.09	1942.09	1943.99	75.97	12.75	1033.86	688.33
*	5.280	70.00	0.00	0.00	1935.70	7300.00	1942.78	1942.78	1944.75	72.12	13.30	1326.14	859.59
*	5.280	70.00	0.00	0.00	1935.70	8860.00	1943.58	1943.50	1945.53	68.84	13.85	1685.45	1067.89
*	5.280	70.00	0.00	0.00	1935.70	22500.00	1946.93	1946.93	1949.56	72.62	18.14	4011.95	2640.36
*	5.290	65.00	1942.20	1941.20	1936.20	6000.00	1944.00	0.00	1944.93	31.50	9.38	1687.38	1069.01
*	5.290	65.00	1942.20	1941.20	1936.20	7300.00	1943.51	0.00	1945.26	62.28	12.63	1438.90	925.03
*	5.290	65.00	1942.20	1941.20	1936.20	8860.00	1943.96	1943.91	1946.03	70.35	13.96	1665.52	1056.34
*	5.290	65.00	1942.20	1941.20	1936.20	22500.00	1947.57	1947.48	1950.06	68.12	17.72	4125.57	2726.08

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5.320	170.00	0.00	0.00	1936.10	6000.00	1944.84	0.00	1945.38	12.06	6.03	1174.87	1726.50
5.320	170.00	0.00	0.00	1936.10	7300.00	1945.41	0.00	1946.05	13.08	6.57	1380.57	2018.78
5.320	170.00	0.00	0.00	1936.10	8860.00	1946.25	0.00	1946.90	12.12	6.77	1824.31	2545.18
5.320	170.00	0.00	0.00	1936.10	22500.00	1950.22	0.00	1951.00	10.26	8.38	5164.67	7024.67
* 5.570	1320.00	0.00	0.00	1951.72	6000.00	1959.58	1959.58	1963.19	58.06	15.25	393.52	787.46
* 5.570	1320.00	0.00	0.00	1951.72	7300.00	1960.66	1960.66	1964.68	56.32	16.09	453.83	972.70
* 5.570	1320.00	0.00	0.00	1951.72	8860.00	1961.72	1961.72	1966.33	55.47	17.22	515.03	1189.59
* 5.570	1320.00	0.00	0.00	1951.72	22500.01	1970.73	1970.73	1973.73	19.43	16.16	6888.85	5104.32

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	2.650	6400.00	1798.51	0.00	0.00	0.00	68.30	0.00
*	2.650	8400.00	1799.43	0.92	0.00	0.03	71.11	0.00
	2.650	11920.00	1801.70	2.27	0.00	0.00	77.99	0.00
	2.650	35420.00	1809.30	7.60	0.00	0.00	976.35	0.00
	2.680	6400.00	1800.55	0.00	2.04	0.00	83.35	170.00
	2.680	8400.00	1802.38	1.83	2.95	0.00	93.89	170.00
*	2.680	11920.00	1806.71	4.33	-0.20	0.00	588.50	170.00
	2.680	35420.00	1811.16	4.45	1.86	0.00	1260.18	170.00
*	2.690	6400.00	1806.41	0.00	5.86	0.00	433.69	50.00
*	2.690	8400.00	1806.73	0.32	4.35	0.00	470.11	50.00
*	2.690	11920.00	1806.95	0.22	0.24	0.00	493.50	50.00
*	2.690	35420.00	1811.95	5.00	0.79	0.00	1207.27	50.00
	2.700	6400.00	1806.34	0.00	-0.07	0.00	136.21	55.00
	2.700	8400.00	1806.55	0.21	-0.18	0.00	147.50	55.00
*	2.700	11920.00	1808.35	1.80	0.50	0.00	482.54	55.00
*	2.700	35420.00	1813.05	4.69	1.10	0.01	1139.63	55.00
*	2.710	6400.00	1806.79	0.00	0.45	0.00	104.32	50.00
*	2.710	8400.00	1807.99	1.20	1.43	1.20	221.94	50.00
*	2.710	11920.00	1810.75	2.77	2.40	3.97	822.74	50.00
*	2.710	35420.00	1813.47	2.72	0.43	6.68	1135.23	50.00
	2.790	6000.00	1810.25	0.00	3.46	0.00	741.44	420.00
	2.790	8000.00	1811.89	1.64	3.91	1.64	899.55	420.00
	2.790	11420.00	1812.43	0.54	1.68	2.18	925.23	420.00
	2.790	34420.00	1816.17	3.74	2.70	5.92	1063.54	420.00
*	2.980	6000.00	1817.91	0.00	7.66	0.00	493.98	1010.00
*	2.980	8000.00	1819.32	1.41	7.43	1.41	669.42	1010.00
*	2.980	11420.00	1820.65	1.32	8.21	2.74	782.26	1010.00
*	2.980	34420.00	1825.02	4.37	8.85	7.11	976.40	1010.00
	3.180	6000.00	1827.99	0.00	10.08	0.00	197.86	1030.00
*	3.180	8000.00	1828.65	0.66	9.33	0.66	111.28	1030.00
*	3.180	11420.00	1830.19	1.54	9.54	2.20	119.30	1030.00
*	3.180	34420.00	1837.04	6.85	12.02	9.04	740.25	1030.00
	3.370	6000.00	1833.91	0.00	5.92	0.00	307.84	990.00
	3.370	8000.00	1835.28	1.37	6.63	1.37	458.04	990.00
	3.370	11420.00	1837.04	1.76	6.86	3.13	619.87	990.00
	3.370	34420.00	1843.22	6.17	6.18	9.30	1209.04	990.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	3.530	6000.00	1838.73	0.00	4.81	0.00	88.63	870.00
*	3.530	8000.00	1839.92	1.19	4.64	1.19	94.33	870.00
*	3.530	11420.00	1841.70	1.78	4.65	2.97	103.77	870.00
*	3.530	34420.00	1850.50	8.80	7.29	11.78	787.32	870.00
*	3.550	6000.00	1839.74	0.00	1.02	0.00	50.00	100.00
*	3.550	8000.00	1841.37	1.63	1.45	1.63	50.00	100.00
*	3.550	11420.00	1843.28	1.91	1.58	3.54	115.63	100.00
*	3.550	34420.00	1853.60	10.32	3.09	13.85	1062.99	100.00
*	3.560	6000.00	1849.23	0.00	9.49	0.00	636.33	50.00
*	3.560	8000.00	1850.31	1.08	8.94	1.08	737.24	50.00
*	3.560	11420.00	1851.36	1.05	8.08	2.13	813.41	50.00
*	3.560	34420.00	1854.17	2.81	0.57	4.94	1072.21	50.00
	3.580	6000.00	1849.40	0.00	0.17	0.00	659.92	110.00
	3.580	8000.00	1850.56	1.16	0.25	1.16	755.38	110.00
	3.580	11420.00	1851.79	1.23	0.43	2.39	844.78	110.00
	3.580	34420.00	1857.65	5.86	3.48	8.24	1600.00	110.00
*	3.710	6000.00	1858.61	0.00	9.21	0.00	339.99	660.00
*	3.710	8000.00	1859.57	0.95	9.00	0.95	394.95	660.00
*	3.710	11420.00	1861.63	2.06	9.84	3.01	1031.63	660.00
*	3.710	34420.00	1864.98	3.35	7.33	6.37	1581.51	660.00
*	3.770	6000.00	1862.35	0.00	3.73	0.00	120.00	330.00
*	3.770	7610.00	1862.41	0.07	2.85	0.07	120.56	330.00
*	3.770	9680.00	1863.41	0.99	1.78	1.05	128.70	330.00
*	3.770	25760.00	1870.68	7.27	5.70	8.34	537.24	330.00
*	3.780	6000.00	1865.94	0.00	3.60	0.00	445.53	75.00
*	3.780	7610.00	1866.41	0.47	4.00	0.47	449.45	75.00
*	3.780	9680.00	1866.75	0.34	3.34	0.81	452.21	75.00
*	3.780	25760.00	1871.18	4.43	0.50	5.23	537.10	75.00
*	3.830	6000.00	1865.61	0.00	-0.34	0.00	103.88	230.00
*	3.830	7610.00	1866.46	0.86	0.05	0.86	109.05	230.00
*	3.830	9680.00	1867.47	1.01	0.72	1.86	115.14	230.00
*	3.830	25760.00	1873.85	6.38	2.67	8.24	504.89	230.00
	4.000	6000.00	1873.63	0.00	8.02	0.00	96.35	900.00
	4.000	7610.00	1874.59	0.96	8.12	0.96	102.82	900.00
	4.000	9680.00	1875.57	0.98	8.10	1.94	206.80	900.00
	4.000	25760.00	1880.09	4.52	6.25	6.47	325.87	900.00
	4.050	6000.00	1875.89	0.00	2.27	0.00	120.67	295.00
	4.050	7610.00	1877.07	1.18	2.49	1.13	127.92	295.00
	4.050	9680.00	1877.67	0.59	2.10	1.77	131.49	295.00
*	4.050	25760.00	1882.10	4.43	2.01	6.21	228.20	295.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.070	6000.00	1876.22	0.00	0.33	0.00	119.64	100.00
	4.070	7610.00	1877.38	1.16	0.31	1.16	126.69	100.00
	4.070	9680.00	1878.07	0.69	0.40	1.85	130.89	100.00
	4.070	25760.00	1888.90	10.83	6.80	12.68	650.00	100.00
*	4.210	6000.00	1883.84	0.00	7.61	0.00	116.82	720.00
*	4.210	7610.00	1885.26	1.43	7.89	1.43	200.82	720.00

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*	4.210	25760.00	1891.11	4.56	2.21	7.28	889.51	720.00
	4.410	6000.00	1893.64	0.00	9.81	0.00	72.93	1085.00
*	4.410	7610.00	1894.48	0.84	9.22	0.84	75.63	1085.00
*	4.410	9680.00	1896.29	1.81	9.74	2.65	151.81	1085.00
*	4.410	25760.00	1901.51	5.22	10.40	7.87	542.99	1085.00
	4.630	6000.00	1904.17	0.00	10.53	0.00	102.75	1165.00
	4.630	7610.00	1905.36	1.19	10.88	1.19	108.12	1165.00
	4.630	9680.00	1906.09	0.73	9.80	1.92	111.45	1165.00
*	4.630	25760.00	1912.23	6.15	10.72	8.07	927.50	1165.00
*	4.690	6000.00	1911.81	0.00	7.65	0.00	127.72	280.00
*	4.690	7610.00	1912.24	0.42	6.88	0.42	154.42	280.00
*	4.690	9680.00	1914.48	2.24	8.39	2.66	614.48	280.00
*	4.690	25760.00	1918.03	3.55	5.79	6.21	1081.02	280.00
*	4.700	6000.00	1916.93	0.00	5.11	0.00	811.42	56.00
*	4.700	7610.00	1917.29	0.37	5.05	0.37	873.17	56.00
*	4.700	9680.00	1917.75	0.46	3.28	0.83	950.81	56.00
*	4.700	25760.00	1918.40	0.65	0.38	1.48	1058.97	56.00
	4.750	6000.00	1917.20	0.00	0.27	0.00	524.91	260.00
	4.750	7610.00	1917.64	0.45	0.35	0.45	553.93	260.00
	4.750	9680.00	1918.19	0.54	0.43	0.99	589.27	260.00
	4.750	25760.00	1920.81	2.63	2.41	3.62	952.24	260.00
	4.820	6000.00	1916.98	0.00	-0.22	0.00	259.20	400.00
	4.820	7610.00	1917.40	0.43	-0.24	0.43	276.37	400.00
*	4.820	9680.00	1918.05	0.65	-0.14	1.07	302.02	400.00
*	4.820	25760.00	1921.52	3.47	0.71	4.54	624.15	400.00
*	4.830	6000.00	1922.44	0.00	5.46	0.00	661.83	60.00
*	4.830	7610.00	1923.08	0.64	5.67	0.64	737.40	60.00
*	4.830	9680.00	1923.66	0.58	5.61	1.22	806.14	60.00
	4.830	25760.00	1925.91	2.25	4.39	3.47	1590.72	60.00
	4.870	6000.00	1922.59	0.00	0.15	0.00	419.63	170.00
	4.870	7610.00	1923.24	0.65	0.17	0.65	506.39	170.00
	4.870	9680.00	1923.85	0.61	0.20	1.26	788.17	170.00
	4.870	25760.00	1926.30	2.45	0.39	3.71	1632.97	170.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.040	6000.00	1924.95	0.00	2.36	0.00	255.27	890.00
*	5.040	7610.00	1925.46	0.52	2.22	0.52	277.29	890.00
*	5.040	9680.00	1925.98	0.52	2.13	1.03	294.18	890.00
*	5.040	25760.00	1929.10	3.12	2.79	4.15	410.63	890.00
	5.210	6000.00	1932.70	0.00	7.75	0.00	141.99	920.00
	5.210	7300.00	1933.29	0.59	7.83	0.59	175.67	920.00
*	5.210	8360.00	1934.09	0.80	8.11	1.39	228.64	920.00
*	5.210	22500.00	1938.18	4.09	9.08	5.48	426.94	920.00
	5.260	6000.00	1934.59	0.00	1.89	0.00	103.55	270.00
	5.260	7380.00	1935.30	0.71	2.81	0.71	109.34	270.00
*	5.260	8860.00	1935.91	0.61	1.82	1.32	114.28	270.00
*	5.260	22500.00	1941.21	5.30	3.03	6.62	286.07	270.00
*	5.280	6000.00	1942.09	0.00	7.50	0.00	386.59	70.00
*	5.280	7300.00	1942.78	0.69	7.49	0.69	461.28	70.00
*	5.280	8860.00	1943.50	0.72	7.59	1.41	539.10	70.00
*	5.280	22500.00	1946.93	3.43	5.72	4.84	785.79	70.00

*	5.290	6000.00	1944.00	0.00	1.91	0.00	539.49	65.00
*	5.290	7300.00	1943.51	-0.48	0.73	-0.48	487.04	65.00
*	5.290	8860.00	1943.96	0.45	0.46	-0.04	535.08	65.00
*	5.290	22500.00	1947.57	3.61	0.64	3.57	794.42	65.00
	5.320	6000.00	1944.84	0.00	0.84	0.00	319.48	170.00
	5.320	7300.00	1945.41	0.57	1.90	0.57	414.21	170.00
	5.320	8860.00	1946.25	0.84	2.29	1.41	685.36	170.00
	5.320	22500.00	1950.22	3.97	2.65	5.38	960.17	170.00
*	5.570	6000.00	1959.58	0.00	14.74	0.00	55.16	1320.00
*	5.570	7300.00	1960.66	1.08	15.24	1.08	56.56	1320.00
*	5.570	8860.00	1961.72	1.07	15.47	2.15	58.21	1320.00
*	5.570	22500.00	1970.73	9.01	20.51	11.15	1679.68	1320.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2.650 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 2.680 PROFILE= 3 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 2.690 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.690 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.700 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 2.700 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.700 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.700 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.710 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.710 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.710 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.980 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 3.180 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.180 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.180 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 3.530 PROFILE= 1 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 3.530 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.530 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.530 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.530 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.530 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.530 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.530 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 3.550 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.550 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.550 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.550 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.550 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.550 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.550 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.550 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.550 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.550 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.550 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 3.560 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 3.560 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 3.560 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 3.560 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.560 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 3.560 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.560 PROFILE= 4 HYDRAULIC JUMP D.S.

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CAUTION SECNO= 3.710 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.710 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.710 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.710 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 3.710 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.710 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.710 PROFILE= 4 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 3.710 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 3.770 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO= 3.770 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.770 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.770 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.770 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.770 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL

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 CAUTION  SECNO=     3.770   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     3.770   PROFILE= 4   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     3.770   PROFILE= 4   20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=     3.780   PROFILE= 1   HYDRAULIC JUMP D.S.
 CAUTION  SECNO=     3.780   PROFILE= 2   HYDRAULIC JUMP D.S.
 CAUTION  SECNO=     3.780   PROFILE= 3   HYDRAULIC JUMP D.S.
 CAUTION  SECNO=     3.780   PROFILE= 4   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     3.780   PROFILE= 4   WSEL ASSUMED BASED ON MIN DIFF
 CAUTION  SECNO=     3.780   PROFILE= 4   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     3.780   PROFILE= 4   HYDRAULIC JUMP D.S.

 CAUTION  SECNO=     3.830   PROFILE= 1   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     3.830   PROFILE= 1   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     3.830   PROFILE= 1   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     3.830   PROFILE= 2   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     3.830   PROFILE= 2   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     3.830   PROFILE= 2   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     3.830   PROFILE= 3   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     3.830   PROFILE= 3   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     3.830   PROFILE= 3   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     3.830   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     3.830   PROFILE= 4   PROBABLE MINIMUM SPECIFIC ENERGY
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 CAUTION  SECNO=     4.050   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.050   PROFILE= 4   MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     4.210   PROFILE= 1   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.210   PROFILE= 1   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.210   PROFILE= 1   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.210   PROFILE= 2   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.210   PROFILE= 2   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.210   PROFILE= 2   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.210   PROFILE= 3   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.210   PROFILE= 3   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.210   PROFILE= 3   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.210   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.210   PROFILE= 4   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.210   PROFILE= 4   20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=     4.410   PROFILE= 2   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.410   PROFILE= 2   MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.410   PROFILE= 3   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.410   PROFILE= 3   MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.410   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.410   PROFILE= 4   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.410   PROFILE= 4   20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=     4.630   PROFILE= 4   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.630   PROFILE= 4   MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     4.690   PROFILE= 1   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.690   PROFILE= 1   PROBABLE MINIMUM SPECIFIC ENERGY
1
  27-APR-88     08:07:33                                                    PAGE    80

 CAUTION  SECNO=     4.690   PROFILE= 1   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.690   PROFILE= 2   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.690   PROFILE= 2   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.690   PROFILE= 2   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.690   PROFILE= 3   CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     4.690   PROFILE= 3   PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     4.690   PROFILE= 3   20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     4.690   PROFILE= 4   CRITICAL DEPTH ASSUMED
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Continuous Interfaced @ Mead Business Forms, Inc.

CAUTION SECNO= 4.690 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 4.690 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 4.700 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 4.700 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 4.700 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 4.700 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 4.700 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 4.700 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 4.820 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 4.820 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 4.820 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 4.820 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 4.830 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 4.830 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 4.830 PROFILE= 3 HYDRAULIC JUMP D.S.

CAUTION SECNO= 5.040 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.040 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.040 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.040 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.040 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.040 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.040 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.040 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.040 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.040 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.040 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.040 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 5.210 PROFILE= 3 MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 5.280 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.280 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.280 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.280 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.280 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.280 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.290 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.290 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.290 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5.290 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 5.290 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 5.290 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

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 CAUTION  SECNO=     5.570  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     5.570  PROFILE= 4  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     5.570  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     5.570  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

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  27-APR-88     00:08:48                                                    PAGE    1


 **************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **************************************************


 EOF..
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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   00:07:33          *
*************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X         X     X            X     X
X     X  X         X                  X     X
XXXXXXX  XXXX      X           XXXXX   XXXXX
X     X  X         X                  X
X     X  X         X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY                    DMH 1075787
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.      2.        0.        0.  0.000000      0.00      1.0       0.  1798.510   0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.060     0.045     0.100     0.300     0.000     0.000     0.000     0.000     0.000
QT      4.000  6400.000  8400.000 11920.000 35420.000     0.000     0.000     0.000     0.000     0.000
        ####  Flows less than specified for CP35 due to lost breakout
        ####  at Spring Mountain Rd
        ####            Centerline =  2290                                    ####
        ####  Starting Water Levels taken from Reach 5 Analysis of 2.65       ####
X1      2.550    17.000  2242.000  2325.000   815.000   745.000   760.000     0.000     0.000     0.000
GR   1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1812.000  1880.000  1808.000  1950.000
GR   1805.300  2000.000  1804.600  2171.000  1804.700  2242.000  1790.200  2264.000  1790.200  2280.000
GR   1789.500  2306.000  1802.000  2325.000  1803.800  2415.000  1804.700  2596.000  1808.000  2810.000
GR   1810.500  2990.000  1812.000  3210.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.000     0.000     0.000     0.300     0.500     0.000     0.000     0.000     0.000     0.000
        ##########################################################################################
        ####            BOULDER HIGHWAY - Northbound Crossing                                 ####
        ####            Special Bridge Routine                                                ####
        ##########################################################################################
```

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X1	2.680	15.000	9980.000	10025.000	200.000	140.000	170.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1800.100	1800.100	0.000
GR	1816.000	9410.000	1812.000	9600.000	1808.000	9790.000	1804.000	9950.000	1791.600	9580.000
GR	1791.300	10025.000	1800.000	10040.000	1803.000	10050.000	1804.000	10100.000	1805.000	10220.000
GR	1805.000	10310.000	1808.000	10520.000	1809.500	10700.000	1812.000	11000.000	1813.000	11100.000
SB	1.250	1.560	2.800	0.000	40.500	8.700	229.000	0.000	1792.500	1751.800
X1	2.590	0.000	0.000	0.000	50.000	50.000	0.000	0.000	1.100	0.000
X2	0.000	0.000	1.000	1800.100	1805.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1805.400	1805.400	0.000
BT	8.000	2000.000	1814.000	0.000	2235.000	1809.600	0.000	2490.000	1806.200	1801.000
BT	2538.000	1805.400	1801.000	2680.000	1805.700	0.000	3230.000	1810.500	0.000	3450.000
BT	1812.000	0.000	3640.000	1813.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000

BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine

X1	2.700	0.000	0.000	0.000	55.000	55.000	55.000	0.000	1.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1802.900	1802.900	0.000
ET	0.000	6.100	6.100	6.100	6.100	8920.000	10730.000	0.000	0.000	0.000
SB	1.250	1.560	2.800	0.000	33.600	18.500	162.000	0.000	1795.900	1794.300
X1	2.710	13.000	9980.000	10020.000	50.000	50.000	50.000	0.000	1.600	0.000
X2	0.000	0.000	1.000	1802.900	1804.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1804.400	1804.400	0.000
BT	9.000	1730.000	1817.300	0.000	2000.000	1813.500	0.000	2200.000	1809.000	0.000
BT	2450.000	1804.400	0.000	2517.000	1804.600	0.000	2850.000	1806.200	0.000	3170.000
BT	1811.500	0.000	3600.000	1812.500	0.000	4260.000	1815.200	0.000	0.000	0.000
GR	1820.000	8920.000	1816.000	9400.000	1812.000	9580.000	1808.000	9730.000	1806.000	9950.000
GR	1796.000	9980.000	1796.000	10020.000	1806.000	10060.000	1805.000	10420.000	1812.000	10730.000
GR	1813.000	10900.000	1813.000	11200.000	1816.000	11400.000	0.000	0.000	0.000	0.000
QT	4.000	6000.000	8000.000	11420.000	34420.000	0.000	0.000	0.000	0.000	0.000
NC	0.050	0.160	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2320

X1	2.790	17.000	2272.000	2359.000	380.000	460.000	420.000	0.000	0.000	0.000
GR	1820.000	1570.000	1816.000	1940.000	1812.000	1940.000	1812.000	1940.000	1812.000	1940.000
GR	1809.300	2000.000	1808.600	2200.000	1808.900	2231.000	1807.100	2272.000	1799.400	2302.000
GR	1799.400	2335.000	1808.400	2359.000	1807.500	2439.000	1808.600	2598.000	1812.000	2850.000
GR	1816.000	2890.000	1820.000	2940.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.160	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000

Centerline = 2340

X1	2.980	15.000	2321.000	2389.000	1070.000	990.000	1010.000	0.000	0.000	0.000
GR	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000	1828.000	1900.000
GR	1824.900	2000.000	1818.000	2291.000	1817.400	2321.000	1807.700	2338.000	1807.400	2363.000
GR	1817.600	2389.000	1817.200	2512.000	1817.600	2764.000	1820.000	2960.000	1828.000	2980.000
ET	0.000	0.000	0.000	6.100	0.000	2223.000	2960.000	0.000	0.000	0.000
NC	0.140	0.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2300

X1	3.180	18.000	2265.000	2392.000	1060.000	1020.000	1030.000	0.000	0.000	0.000
GR	1840.000	1730.000	1840.000	1730.000	1840.000	1730.000	1840.000	1730.000	1836.000	1870.000
GR	1832.700	2000.000	1829.800	2107.000	1832.500	2223.000	1831.100	2265.000	1822.700	2284.000
GR	1820.700	2296.000	1820.700	2312.000	1822.900	2332.000	1824.300	2369.000	1832.100	2392.000
GR	1834.600	2481.000	1838.300	2622.000	1838.300	2960.000	0.000	0.000	0.000	0.000
NC	0.140	0.140	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2350

X1	3.370	24.000	2280.000	2376.000	805.000	1020.000	990.000	0.000	0.000	0.000
X4	1.000	1833.200	2000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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GR	1844.100	1560.000	1844.000	1560.000	1844.000	1560.000	1844.000	1560.000	1840.000	1850.000
GR	1836.000	1970.000	1832.200	2125.000	1834.300	2168.000	1833.800	2259.000	1832.900	2280.000
GR	1827.000	2295.000	1824.500	2344.000	1824.500	2366.000	1833.300	2376.000	1834.700	2386.000
GR	1837.000	2409.000	1834.700	2491.000	1835.700	2531.000	1837.300	2564.000	1839.500	2648.000

GR	1842.100	2690.000	1840.900	2757.000	1841.100	2788.000	1844.000	2840.000	0.000	0.000
NC	0.120	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####		Centerline = 2390				####			
X1	3.530	24.000	2319.000	2481.000	825.000	885.000	870.000	0.000	0.000	0.000
GR	1856.300	1590.000	1855.000	1610.000	1855.000	1610.000	1855.000	1610.000	1856.500	1800.000
GR	1853.100	2000.000	1847.100	2185.000	1848.000	2233.000	1847.600	2319.000	1841.100	2335.000
GR	1833.500	2342.000	1832.100	2380.000	1832.100	2402.000	1836.700	2418.000	1842.400	2440.000
GR	1845.400	2458.000	1847.800	2481.000	1848.800	2536.000	1846.300	2567.000	1846.800	2591.000
GR	1846.300	2620.000	1849.200	2813.000	1852.000	2930.000	1856.000	3190.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	#####	##########	##########	##########	##########	##########	##########	##########	##########	##########
	####		MOJAVE ROAD				####			
	####		Special Bridge Routine				####			
	#####	##########	##########	##########	##########	##########	##########	##########	##########	##########
X1	3.550	24.000	2370.000	2420.000	90.000	130.000	100.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1843.000	1843.000	0.000
GR	1856.300	1590.000	1855.000	1610.000	1855.000	1610.000	1855.000	1610.000	1856.500	1800.000
GR	1853.100	2000.000	1847.100	2185.000	1848.000	2233.000	1847.600	2319.000	1841.100	2335.000
GR	1833.500	2342.000	1832.100	2370.000	1832.100	2420.000	1836.700	2428.000	1842.400	2440.000
GR	1845.400	2458.000	1847.800	2481.000	1848.800	2536.000	1846.300	2567.000	1846.800	2591.000
GR	1846.800	2620.000	1849.200	2813.000	1852.000	2930.000	1856.000	3190.000	0.000	0.000
SB	1.250	1.560	2.630	0.000	48.700	18.700	240.000	0.000	1835.000	1834.500
X1	3.560	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.500	0.000
X2	3.000	0.000	1.000	1843.000	1847.100	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1847.100	1847.100	0.000
BT	7.000	1900.000	1856.000	0.000	1920.000	1852.000	0.000	2000.000	1849.600	0.000
BT	2190.000	1847.100	0.000	2242.700	1848.400	0.000	2550.000	1854.100	0.000	2890.000
BT	1857.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.045	0.140	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	3.580	0.000	0.000	0.000	110.000	110.000	110.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####	Overflows, paralleling Desert Inn, Confluence at this Section ####								
X1	3.710	15.000	9950.000	10040.000	680.000	640.000	660.000	0.000	0.000	0.000
X4	3.000	1861.000	8900.000	1860.000	9220.000	1864.000	9480.000	0.000	0.000	0.000
GR	1868.000	8720.000	1864.000	8750.000	1868.000	9560.000	1868.000	9740.000	1864.000	9800.000
GR	1860.000	9950.000	1852.000	9980.000	1850.000	10000.000	1852.000	10020.000	1858.000	10040.000
GR	1855.000	10100.000	1860.000	10370.000	1864.000	10600.000	1868.000	10640.000	1869.300	10980.000
QT	4.000	6000.000	7610.000	9680.000	25760.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.025	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	#####	##########	##########	##########	##########	##########	##########	##########	##########	##########
	####		DESERT INN ROAD				####			
	####		Special Bridge Routine				####			
	####	BT points follow off road, high ground to north & south.					####			

	####		Centerline = 2720							
	#####	##########	##########	##########	##########	##########	##########	##########	##########	##########
X1	3.770	13.000	2700.000	2750.000	340.000	250.000	330.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1862.300	1862.300	0.000
GR	1875.000	2310.000	1872.000	2390.000	1872.000	2430.000	1876.000	2480.000	1872.000	2530.000
GR	1869.000	2650.000	1853.800	2700.000	1853.800	2750.000	1864.000	2800.000	1865.000	2850.000
GR	1864.000	2920.000	1864.000	3100.000	1868.000	3120.000	1868.000	3280.000	1872.000	3470.000

```
SB      1.250      1.560      3.000      0.000     48.700     18.700    240.000      0.000   1854.300   1853.800
X1      3.780      0.000      0.000      0.000     75.000     75.000     75.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   1862.300   1865.500      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1865.500   1865.500      0.000
BT      8.300      0.000   1876.000      0.000    150.000   1872.000      0.000    260.000   1868.200      0.000
BT    380.000   1868.000      0.000    520.000   1868.000      0.000    540.000   1864.000      0.000    720.000
BT   1864.000      0.000    760.000   1872.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.045      0.140      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####          Centerline =  2240                              ####
        ####  This Section crosses Desert Inn to avoid skew.  Note      ####
        ####  however, that the Sect. doesn't cross wier define by BT pts ####
X1      3.830     12.000   9900.000  10035.000    130.000    300.000    230.000      0.000      0.000      0.000
GR   1880.300   9060.000   1876.000   9170.000   1876.000   9510.000   1876.000   9730.000   1872.000   9900.000
GR   1860.300   9950.000   1860.000  10020.000   1868.000  10035.000   1872.000  10150.000   1872.000  10220.000
GR   1876.000  10450.000   1880.000  10750.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.045      0.060      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
        ####          Centerline =  2250                              ####
X1      4.000     15.000   2238.000   2351.000    900.000    900.000    900.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   1886.700   2000.000   1881.700   2079.000   1873.900   2110.000   1872.800   2130.000   1873.200   2152.000
GR   1876.300   2177.000   1874.700   2238.000   1865.700   2274.000   1865.200   2316.000   1875.600   2344.000
GR   1880.000   2351.000   1879.600   2404.000   1883.600   2463.000   1888.500   2628.000   1908.000   2810.000

        ##########################################################################
        ####                    PECOS-McLEOD DRIVE                            ####
        ####                 Special Bridge Routine                           ####
        ##########################################################################
X1      4.350      8.000   9440.000  10090.000    100.000    480.000    295.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1890.100   1890.500      0.000
GR   1888.000   9440.000   1884.000   9590.000   1884.000   9780.000   1880.000   9930.000   1868.400   9980.000
GR   1868.400  10055.000   1888.000  10090.000   1892.000  10210.000      0.000      0.000      0.000      0.000

SB      1.250      1.560      2.630      0.000     72.000      0.000   1488.000      1.310   1868.500   1868.400
X1      4.370      0.000      0.000      0.000    100.000    100.000    100.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   1884.900   1885.500      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1890.100   1890.500      0.000
BT      2.300   2475.000   1890.100   1884.900   2568.000   1890.900   1884.900      0.000      0.000      0.000

NH      4.300      0.120   2000.000      0.060   2482.000      0.035   2689.000      0.050   3071.000      0.000
1
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        ####          Centerline =  2500                              ####
X1      4.210     26.000   2482.000   2556.000    720.000    720.000    720.000      0.000      0.000      0.000
GR   1900.000   1090.000   1895.000   1260.000   1892.000   1340.000   1894.000   1690.000   1894.000   1690.000
GR   1888.500   2000.000   1890.400   2229.000   1886.300   2332.000   1886.100   2413.000   1882.400   2454.000
GR   1882.100   2482.000   1876.800   2495.000   1876.800   2547.000   1884.800   2556.000   1884.800   2620.000
GR   1890.300   2660.000   1893.900   2689.000   1893.900   2722.000   1890.400   2769.000   1889.400   2789.000
GR   1898.700   2828.000   1902.700   2881.000   1908.200   2966.000   1902.200   3005.000   1904.800   3043.000
GR   1910.300   3071.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.060      0.050      0.033      0.100      0.300      0.000      0.000      0.000      0.000      0.000
NH      4.000      0.120   2000.000      0.060   2480.000      0.035   2599.000      0.050   3520.000      0.000
        ####          Centerline =  2530                              ####
X1      4.410     25.000   2480.000   2599.000   1140.000   1080.000   1085.000      0.000      0.000      0.000
GR   1912.000    960.000   1908.000   1130.000   1908.000   1130.000   1908.000   1130.000   1906.500   1330.000
GR   1904.400   2000.000   1905.300   2250.000   1899.100   2300.000   1897.400   2347.000   1898.600   2480.000
GR   1887.000   2511.000   1886.300   2527.000   1885.900   2562.000   1900.700   2570.000   1900.300   2593.000
GR   1905.400   2599.000   1905.100   2649.000   1898.800   2704.000   1894.700   2734.000   1898.900   2889.000
GR   1902.600   2918.000   1902.000   3013.000   1904.200   3198.000   1912.000   3300.000   1914.000   3520.000

NC      0.120      0.060      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####          Centerline =  2460                              ####
X1      4.530     20.000   2376.000   2498.000    930.000   1185.000   1165.000      0.000      0.000      0.000
```

Continuous Interfolded @ Mead Business Forms, Inc.

GR	1907.600	2000.000	1911.400	2235.000	1908.600	2329.000	1907.800	2376.000	1896.700	2408.000
GR	1899.400	2426.000	1897.400	2448.000	1897.400	2478.000	1909.500	2498.000	1909.500	2551.000
GR	1909.000	2731.000	1920.000	2990.000	1916.000	3250.000	1911.800	3320.000	1920.000	3390.000
NC	0.300	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

EASTERN AVENUE
Special Bridge Routine

X1	4.690	12.000	9980.000	10020.000	330.000	220.000	280.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1911.800	1911.800	0.000
GR	1920.300	9980.000	1918.000	9400.000	1916.000	9710.000	1912.000	9960.000	1903.300	9980.000
GR	1903.300	10020.000	1908.000	10050.000	1912.000	10090.000	1913.500	10150.000	1913.500	10400.000
GR	1916.300	10450.000	1920.000	10500.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	2.630	0.000	32.000	10.000	176.000	0.000	1903.800	1903.300
X1	4.700	0.000	0.000	0.000	56.000	56.000	56.000	0.000	0.500	0.000
X2	0.300	0.000	1.000	1911.800	1914.100	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1914.100	1914.100	0.000
BT	11.000	1740.000	1922.800	0.000	2000.000	1920.300	0.000	2440.000	1917.400	0.000
BT	2790.000	1914.600	0.000	2790.000	1961.100	0.000	2860.000	1915.600	0.000	2860.000
BT	1914.100	0.000	3190.000	1916.600	0.000	3550.000	1918.600	0.000	3910.000	1921.400
BT	0.000	4230.000	1924.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	4.300	0.045	2180.000	0.035	2472.000	0.045	2795.000	0.140	3910.000	0.000

Centerline = 2300

Small Golf Course Bridge not modeled - assumed to fail

X1	4.750	19.000	2174.000	2472.000	350.000	150.000	260.000	0.000	0.000	0.000
GR	1928.300	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000	1928.000	1850.000
GR	1922.400	2000.000	1920.700	2080.000	1912.400	2174.000	1909.700	2272.000	1908.100	2286.000
GR	1907.100	2313.000	1908.000	2329.000	1908.500	2363.000	1912.700	2472.000	1915.900	2575.000
GR	1920.000	2795.000	1922.000	3360.000	1924.000	3770.000	1928.000	3910.000	0.000	0.000

TIOGA WAY
Special Bridge Routine

X1	4.820	14.000	9970.000	10020.000	400.000	400.000	400.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1916.100	1916.100	0.000
GR	1928.000	9300.000	1924.000	9690.000	1920.000	9780.000	1916.000	9840.000	1916.000	9940.000
GR	1910.000	9970.000	1910.000	10020.000	1916.000	10060.000	1920.000	10160.000	1921.000	10320.000
GR	1923.500	10560.000	1923.500	10900.000	1924.000	11120.000	1928.000	11220.000	0.000	0.000
SB	1.250	1.500	2.630	0.000	42.000	12.000	165.000	0.000	1910.600	1910.000
X1	4.830	0.000	0.000	0.000	60.000	60.000	60.000	0.000	0.600	0.000
X2	0.300	0.000	1.000	1916.100	1918.500	0.000	0.000	0.000	0.000	0.000
X3	10.300	0.000	0.000	0.000	0.000	0.000	0.000	1918.500	1918.500	0.000
BT	8.000	1760.000	1928.700	0.000	2000.000	1925.200	0.000	2380.000	1923.300	0.000
BT	2660.000	1918.500	0.000	2708.000	1918.700	0.000	2820.000	1922.700	0.000	3220.000
BT	1924.300	0.000	3260.000	1928.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.120	2000.000	0.045	2225.000	0.035	2685.000	0.045	2735.000	0.120
NH	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Centerline = 2400

Small Golf Course Bridge not modeled - assumed to fail

X1	4.870	26.000	2345.000	2482.000	240.000	130.000	170.000	0.000	0.000	0.000
GR	1932.000	1420.000	1928.000	1530.000	1928.000	1530.000	1928.000	1530.000	1924.000	1850.000
GR	1922.500	2000.000	1921.600	2106.000	1924.300	2132.000	1925.700	2225.000	1922.600	2262.000
GR	1917.300	2290.000	1916.100	2345.000	1915.800	2381.000	1912.700	2406.000	1911.500	2430.000
GR	1911.500	2445.000	1915.400	2449.000	1917.300	2482.000	1920.200	2530.000	1923.800	2571.000
GR	1926.500	2642.000	1928.200	2685.000	1924.200	2735.000	1923.500	3050.000	1927.000	3450.000
GR	1932.000	3650.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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ET          0.000       5.100       8.100       8.100     2129.000    3070.000       0.000       0.000       0.000
NC          0.000       0.000       0.000       0.100       0.300       0.000       0.000       0.000       0.000
NH          5.000       0.120    2129.000       0.045    2294.000       0.035    2590.000       0.045    2590.000       0.120
NH       3070.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
            ####                 Centerline =  2390                                  ####
X1          5.040      22.000    2254.000    2590.000     765.000    1040.000     890.000       0.000       0.000       0.000
GR       1936.300    1460.000    1932.000    1560.000    1932.000    1560.000    1932.000    1560.000    1928.400    1670.000
GR       1930.600    2090.000    1932.300    2129.000    1931.100    2155.000    1923.400    2218.000    1926.400    2294.000
GR       1922.800    2320.000    1921.000    2372.000    1918.300    2376.000    1918.300    2390.000    1920.100    2415.000
GR       1923.200    2436.000    1923.800    2519.000    1925.800    2590.000    1931.400    2628.000    1932.800    2724.000
GR       1932.600    2781.000    1936.000    3070.000       0.000       0.000       0.000       0.000       0.000       0.000
1
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QT          4.000    6000.000    7300.000    8860.000   22500.000       0.000       0.000       0.000       0.000       0.000
NH          4.000       0.120    2000.000       0.045    2336.000       0.035    2417.000       0.045    2676.000       0.000
            ####                 Centerline =  2380                                  ####
            ####  Small Golf Course Bridge not modeled - assumed to fail            ####
            ####  Some of breakout returns from north modeled flows do
            ####  not change because flows from Tropicana Wash confluence
            ####  still control.
X1          5.210      22.000    2336.000    2417.000     920.000     920.000     920.000       0.000       0.000       0.000
GR       1948.000    1030.000    1942.500    1260.000    1942.500    1260.000    1942.500    1260.000    1945.000    1630.000
GR       1944.200    2000.000    1940.700    2034.000    1937.200    2078.000    1934.800    2159.000    1932.800    2268.000
GR       1931.600    2336.000    1925.900    2351.000    1925.400    2369.000    1924.600    2396.000    1924.200    2408.000
GR       1933.700    2417.000    1934.500    2436.000    1936.400    2460.000    1938.200    2493.000    1941.100    2584.000
GR       1944.400    2608.000    1949.400    2676.000       0.000       0.000       0.000       0.000       0.000       0.000

NC          0.120       0.120       0.035       0.000       0.000       0.000       0.000       0.000       0.000       0.000
            ####          Centerline = 2410
X1          5.260      13.000    2355.000    2470.000     200.000     300.000     270.000       0.000       0.000       0.000
GR       1948.000    1030.000    1942.500    1260.000    1945.500    1630.000    1944.000    2000.000    1940.000    2320.000
GR       1936.000    2355.000    1928.000    2400.000    1928.000    2450.000    1936.000    2470.000    1940.000    2500.000
GR       1944.000    2530.000    1944.000    2820.000    1948.000    2950.000       0.000       0.000       0.000       0.000

NC          0.120       0.120       0.035       0.300       0.500       0.000       0.000       0.000       0.000       0.000
            ##########################################################################
            ####                    SPENCER STREET                                ####
            ####                Special Bridge Routine                            ####
            ####          Centerline = 2460                                       ####
            ##########################################################################
X1          5.280       7.000    2430.000    2485.000      30.000     100.000      70.000       0.000       0.000       0.000
X3         10.000       0.000       0.000       0.000       0.000       0.000       0.000    1941.200    1941.200       0.000
GR       1944.200    2000.000    1940.000    2350.000    1935.700    2430.000    1935.700    2485.000    1940.000    2510.000
GR       1944.000    2610.000    1948.000    2850.000       0.000       0.000       0.000       0.000       0.000       0.000

SB          1.250       1.560       2.630       0.000      50.250      14.250     180.000       0.000    1936.200    1935.700
X1          5.290       0.000       0.000       0.000      65.000      65.000      65.000       0.000       0.500       0.000
X2          0.100       0.000       1.000    1941.200    1942.200       0.000       0.000       0.000       0.000       0.000
X3         10.000       0.000       0.000       0.000       0.000       0.000       0.000    1942.200    1942.200       0.000
BT          8.000    1820.000    1948.000       0.000    2000.000    1945.200       0.000    2260.000    1944.100       0.000
BT       2590.000    1942.200       9.003    2790.000    1943.700       0.000    2862.000    1943.800       0.000    3180.000
BT       1946.300       0.000    3340.000    1947.600       0.000       0.000       0.000       0.000       0.000       0.000

NC          0.060       0.080       0.028       0.000       0.000       0.000       0.000       0.000       0.000       0.000
            ####                 Centerline =  2390                                  ####
X1          5.320      14.000    2310.000    2477.000     260.000     150.000     170.000       0.000       0.000       0.000
X4          4.000    1945.300    2000.000    1946.000    2310.000    1948.000    1800.000    1952.000    1640.000       0.000
GR       1956.000    1420.000    1941.500    2140.000    1946.000    2150.000    1946.000    2300.000    1941.400    2341.000
GR       1936.100    2366.000    1936.100    2405.000    1936.100    2432.000    1942.700    2462.000    1944.400    2477.000
GR       1945.200    2532.000    1945.600    2606.000    1952.000    2696.000    1952.000    3300.000       0.000       0.000
1
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NC      0.140       0.180       0.025       0.100       0.300       0.000       0.000       0.000       0.000       0.000
                ####                    Centerline =  2030                                  ####
                ####  Near Algonquin Drive Alignment                                        ####
X1      5.570      16.000    2002.000    2059.000    1320.000    1320.000    1320.000       0.000       0.000       0.000
GR   1976.000     970.000    1972.000    1240.000    1972.000    1240.000    1972.000    1240.000    1968.000    1710.000
GR   1964.000    2000.000    1961.000    2002.000    1951.720    2008.000    1951.720    2053.000    1961.000    2059.000
GR   1964.000    2062.000    1967.500    2250.000    1965.800    2870.000    1968.000    2980.000    1972.000    3110.000
GR   1976.000    3350.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
EJ      0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 1

 CCHV=   0.100  CEHV=   0.300
 *SECNO 2.650
                ####  Flows less than specified for CP35 due to lost breakout
                ####  at Spring Mountain Rd
                ####                Centerline =  2290                                  ####
                ####  Starting Water Levels taken from Reach 5 Analysis of 2.65         ####
      2.65       9.01   1798.51      0.00   1798.51   1801.36      2.85      0.00       0.00   1804.70
      6400.        0.      6400.       0.        0.        472.      0.        0.         0.   1802.00
       0.00      0.00      13.55      0.00      0.120     0.045     0.060     0.000   1789.50   2251.39
  0.014103       815.       760.       745.         0         0         0      0.00     68.30   2319.70
3
 CCHV=   0.300  CEHV=   0.500
 *SECNO 2.680
                ##########################################################################
                ####                BOULDER HIGHWAY - Northbound Crossing                 ####
                ####                     Special Bridge Routine                           ####
                ##########################################################################
      2.68       8.75   1800.55      0.00      0.00   1803.42      2.87      2.05       0.01   1791.80
      6400.       303.      5645.      452.       94.       394.      70.       2.         0.   1791.80
       0.00      3.22      14.34      6.43      0.120     0.045     0.060     0.000   1791.80   9958.48
  0.010452       200.       170.       140.         4         0         0      0.00     83.35  10041.83
3

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1798.20 ,NOT   1800.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SS  XK        XKOR      COEG      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
       1.25      1.56      2.80      0.00     40.50      8.70    229.00      0.00   1792.90   1791.80

 *SECNO 2.690

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

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EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1819.47	1811.64	0.00	2615.	3804.	229.	229.	1800.10	1805.40

2.69	13.51	1806.41	0.00	0.00	1807.23	0.83	3.82	0.00	1792.90
6400.	448.	4979.	972.	256.	608.	397.	3.	1.	1792.90
0.01	1.75	8.19	2.45	0.120	0.045	0.060	0.000	1792.90	9897.75
0.001913	50.	50.	50.	3	0	6	0.00	433.69	10331.44

*SECNO 2.700

##
BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine
##

2.70	11.94	1806.34	0.00	0.00	1807.60	1.26	0.15	0.21	1794.40
6400.	426.	5243.	731.	175.	537.	154.	4.	1.	1794.40
0.01	2.43	9.76	4.76	0.120	0.050	0.060	0.000	1794.40	9950.65
0.003952	55.	55.	55.	3	0	0	0.00	136.21	10086.86

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1800.98 ,NOT 1806.34 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1844.14	1817.80	0.00	5219.	1188.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 8923.0 10730.0 TYPE= 1 TARGET= 1810.000

2.71	9.19	1806.79	0.00	0.00	1808.96	2.17	0.00	0.00	1797.60
6400.	422.	4835.	1143.	127.	368.	169.	5.	1.	1797.60
0.01	3.33	13.16	6.77	0.120	0.050	0.060	0.000	1797.60	9952.44
0.010181	50.	50.	50.	20	0	8	0.00	104.32	10056.75

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.790

3301 HV CHANGED MORE THAN HVINS

Centerline = 2320

2.79	10.85	1810.25	0.00	0.00	1810.87	0.62	1.45	0.46	1807.10
6000.	645.	4978.	377.	409.	720.	635.	17.	5.	1808.40
0.03	1.58	6.91	0.59	0.050	0.035	0.160	0.000	1799.40	1978.88
0.001644	380.	420.	460.	3	0	0	0.00	741.44	2720.32

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####              Centerline =  2340                          ####
      2.98     10.51  1817.91  1817.91     0.00  1820.11     2.20     3.17     0.47  1817.40
     60.00.       2.     5894.      104.      7.      491.      156.      46.      20.  1817.60
      0.05      0.34     12.01     0.53    0.160    0.040    0.150    0.000  1807.40  2295.44
  0.008156     1070.     1010.     990.       20        8        0     0.00   493.98  2789.42
)
 *SECNO 3.180
        ####              Centerline =  2300                          ####
      3.18      7.29  1827.99     0.00     0.00  1829.98     1.99     9.85     0.02  1831.10
     60.00.       0.     6000.       0.       0.      530.       0.      60.      27.  1832.10
      0.08      0.00     11.31     0.00    0.140    0.040    0.130    0.000  1820.70  2272.03
  0.011367     1060.     1030.     1020.        4        0        0     0.00   107.86  2379.89
)
 *SECNO 3.370

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

        ####              Centerline =  2350                          ####
      3.37      9.41  1833.91     0.00     0.00  1834.94     1.03     4.87     0.10  1832.90
     60.00.       115.     5885.       0.      196.      716.       1.      76.      31.  1833.30
      0.11      0.59     8.22     0.25    0.140    0.035    0.140    0.000  1824.50  1992.45
  0.002735      805.      990.     1020.        3        0        0     0.00   307.84  2360.32
)
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         ALOB      ACH       AROB      XNL       XNCH      XNR       WTN       ELMIN    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNR       XNCH      ICONT     CORAR     TOPWID     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *SECNO 3.530

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
        ####              Centerline =  2390                          ####
      3.53      6.63  1838.73  1838.73     0.00  1841.36     2.63     4.23     0.48  1847.60
     60.00.       0.     6000.       0.       0.      461.       0.      90.      35.  1847.80
      0.13      0.00     13.03     0.30    0.120    0.035    0.140    0.000  1832.10  2337.19
  0.010964      825.      870.      885.       20       19        0     0.00    88.63  2425.82
)
 CCHV=   0.300  CEHV=   0.500
 *SECNO 3.550

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1843.00 ELREA=     1843.00

        ##########################################################################
        ####                      MOJAVE ROAD                                 ####
        ####                  Special Bridge Routine                          ####
```

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                ##########################################################
      3.55      7.64   1839.74   1839.74      0.00   1843.57      3.83      1.00      0.60   1832.10
     6000.        0.      6000.        0.        0.       382.        0.       91.       35.   1832.10
      0.13      0.00     15.70      0.33     0.120     0.035     0.140     0.000   1832.10   2370.00
 0.009088       90.       100.       130.         2         8         0      0.00     50.00   2420.00
3

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1839.22 ,NOT   1839.74 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

 SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.63       0.00      48.70      18.70     240.00       0.00    1835.00    1834.50

 *SECNO 3.560
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

  PRESS FLOW BECAUSE EGLWC OF   1855.90  EXCEEDS 1.5 DEPTH

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                    AREA
   1854.88   1855.90      0.00      1167.      4849.      240.      240.      1843.00    1847.10


      3.56     16.63   1849.23      0.00       0.00   1849.63      0.40      6.06      0.00   1832.60
     6000.       888.      4726.       386.       774.       832.       680.       92.       35.   1832.60
      0.13       1.15      5.68       0.57      0.120      0.035     0.140     0.000   1832.60   2134.64
 0.000422        50.       50.        50.          2          0         4      0.00    636.33   2775.47
3
 *SECNO 3.580
      3.58     16.80   1849.40      0.33       0.00   1849.69      0.29      0.03      0.03   1832.60
     6000.       1532.      4208.       260.       815.       840.       742.       98.       37.   1832.60
      0.14       1.88      5.01       0.35      0.045      0.025     0.140     0.000   1832.60   2129.35
 0.000165        110.      110.       110.          2          0         0      0.00    659.92   2789.27
3
 CCHV=    0.100  CEHV=    0.300
 *SECNO 3.710

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
      3.71      8.61   1858.61   1858.61      0.00   1860.64      2.13      0.31      0.52   1860.00
     6000.        0.      5485.       515.        0.       459.       480.       123.       44.   1858.00
      0.15      0.00     11.95      1.07      0.045      0.025     0.140     0.000   1850.00   9955.20
 0.004387       630.      660.       640.         20          8         0      0.00    339.99  10295.19
3
1
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```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.300 CEHV= 0.500

*SECNO 3.770

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

DESERT INN ROAD
Special Bridge Routine
BT points follow off road, high ground to north & south.
Centerline = 2720

3.77	8.55	1862.35	1862.35	0.00	1864.43	2.08	1.04	0.03	1853.80
6000.	502.	5254.	244.	120.	427.	173.	129.	46.	1853.80
0.17	4.18	12.30	1.36	0.045	0.025	0.140	0.000	1853.80	2671.69
0.002450	340.	330.	250.	20	8	0	0.00	120.00	2791.89

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1858.52 ,NOT 1862.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1877.48	1873.45	0.00	2755.	3276.	240.	240.	1862.30	1865.50

3.78	11.64	1865.94	0.00	0.00	1866.86	0.91	2.43	0.00	1854.30
6000.	638.	4901.	461.	223.	582.	705.	131.	46.	1854.30
0.17	2.86	8.42	0.55	0.045	0.025	0.140	0.000	1854.30	2661.69
0.000760	75.	75.	75.	3	0	5	0.00	445.53	3107.22

CCHV= 0.100 CEHV= 0.300

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note

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However, that the Selk doesn't cross will define by 5? pts

3.83	5.61	1865.61	1865.61	0.00	1867.96	2.35	0.43	0.43	1872.00
6000.	0.	6000.	0.	0.	488.	0.	137.	48.	1868.00
0.18	0.00	12.31	0.00	0.045	0.035	0.140	0.000	1860.00	9526.63
0.010976	130.	230.	300.	20	11	0	0.00	103.88	10030.51

CCHV= 0.300 CEHV= 0.500

*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	8.43	1873.63	0.00	0.00	1875.38	1.76	7.25	0.18	1874.70
6000.	0.	6000.	0.	0.	564.	0.	147.	50.	1880.00
0.20	0.00	10.64	0.00	0.045	0.035	0.060	0.000	1865.20	2242.32
0.006157	900.	900.	900.	2	0	0	0.00	96.35	2338.67

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

PECOS-McLEOD DRIVE
Special Bridge Routine

4.05	7.49	1875.89	0.00	0.00	1876.93	1.04	1.33	0.22	1888.00
6000.	0.	6000.	0.	0.	733.	0.	152.	51.	1888.00
0.21	0.00	8.19	0.00	0.045	0.035	0.060	0.000	1868.40	9947.71
0.003458	100.	295.	400.	3	0	0	0.00	120.67	10068.38

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	RWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070.LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1877.432 ELLC= 1884.900 PCWSE= 1875.892 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	7.32	1876.22	0.00	0.00	1877.32	1.10	0.36	0.03	1888.50
6000.	0.	6000.	0.	0.	713.	0.	153.	51.	1888.50
0.21	0.00	8.42	0.00	0.045	0.035	0.060	0.000	1868.90	9948.44
0.003754	100.	100.	100.	2	0	0	0.00	119.64	10068.08

1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####                Centerline =  2500                                  ####
      4.21        7.04   1883.84   1883.84       0.00   1686.38       2.54       3.95       0.72   1882.10
     6000.         161.      5839.         3.         56.       451.         3.        164.         53.   1884.80
      0.23        2.89      12.95       0.00       0.060      0.035      0.035      0.000   1876.80   2438.09
 0.008768         720.       720.       720.         20          8          0       0.00    116.82   2554.92
```

)
CCHV=   0.100 CEHV=   0.300
1490 NH CARD USED
*SECNO 4.410

```
          ####                Centerline =  2530                                  ####
      4.41        7.74   1893.64       0.00       0.00   1896.39       2.75       9.95       0.06   1898.60
     6000.           0.      6000.         0.         0.       451.         3.        176.         56.   1905.40
      0.25        0.00      13.31       0.00       0.060      0.035      0.035      0.000   1885.90   2493.25
 0.009593        1140.      1085.      1080.          3          0          0       0.00     72.93   2566.18
```

)
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.630

3301 HV CHANGED MORE THAN HVINS

```
          ####                Centerline =  2460                                  ####
      4.63        7.47   1904.17       0.00       0.00   1905.95       1.79       9.47       0.10   1907.80
     6000.           0.      6000.         0.         0.       559.         0.        189.         58.   1909.50
      0.28        0.00      10.73       0.00       0.120      0.035      0.050      0.000   1896.70   2386.45
 0.006972         930.      1165.      1185.          2          0          0       0.00    102.75   2489.20
```

)
CCHV=   0.300 CEHV=   0.500
*SECNO 4.690
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##################################################################
          ####                    EASTERN AVENUE                        ####
          ####                Special Bridge Routine                    ####
          ##################################################################
      4.69        8.51   1911.81   1911.81       0.00   1913.91       2.09       1.69       0.15   1903.30
     6000.         190.      4472.      1338.         83.       341.       253.        153.         59.   1903.30
      0.29        2.28      13.13       5.19       0.120      0.035      0.060      0.000   1903.30   9960.43
 0.005501         330.       280.       220.         20         10          0       0.00    127.72  10088.15
```

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1909.91 ,NOT   1911.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	AREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	32.00	10.00	176.00	0.00	1903.80	1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS

Commercial Interface © Haestad Methods, Inc.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.97	1926.32	0.00	3387.	2615.	176.	176.	1911.80	1914.10

4.70	13.13	1916.93	0.00	0.00	1917.16	0.24	3.26	0.00	1903.80
6000.	516.	2862.	2623.	796.	525.	1617.	195.	59.	1903.80
0.29	0.65	5.45	1.52	0.120	0.035	0.060	0.000	1903.80	9643.91
0.000532	56.	56.	56.	2	0	8	0.00	811.42	10455.33

1490 NH CARD USED
*SECNO 4.750
Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.10	1917.20	0.00	0.00	1917.29	0.10	0.09	0.04	1912.40
6000.	124.	5534.	342.	130.	2155.	343.	210.	63.	1912.70
0.32	0.95	2.57	1.00	0.045	0.035	0.045	0.000	1907.10	2119.67
0.000262	350.	260.	150.	3	0	0	0.00	524.91	2644.58

*SECNO 4.820
3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	6.98	1916.98	0.00	0.00	1918.26	1.28	0.37	0.59	1910.00
6000.	1148.	3684.	1168.	225.	349.	171.	226.	66.	1910.00
0.33	5.11	10.56	6.83	0.140	0.140	0.140	0.000	1910.00	9825.30
0.074127	400.	400.	400.	4	0	0	0.00	259.20	10084.50

SPECIAL BRIDGE

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

5227 DOWNSTREAM ELEV IS 1915.64 ,NOT 1916.98 HYDRAULIC JUMP OCCURS DOWNSTREAM «IF LOW FLOW CONTROLS»

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830
3301 HV CHANGED MORE THAN HVINS

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PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1947.78	1928.28	0.00	3506.	2548.	165.	165.	1916.10	1918.50
4.83	11.84	1922.44	0.00	0.00	1922.53	0.10	4.28	0.00	1910.60
6000.	2304.	1961.	1735.	1117.	592.	985.	228.	67.	1910.60
0.34	2.06	3.31	1.76	0.140	0.140	0.140	0.000	1910.60	9738.64
0.003612	60.	60.	60.	2	0	7	0.00	661.83	10400.47

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400 #### Small Golf Course Bridge not modeled - assumed to fail ####

4.87	11.09	1922.59	0.00	0.00	1922.79	0.20	0.21	0.05	1916.10
6000.	1124.	4392.	484.	439.	1108.	217.	238.	69.	1917.30
0.35	2.56	3.96	2.23	0.035	0.035	0.035	0.000	1911.50	1991.05
0.000546	240.	170.	133.	2	0	0	0.00	419.63	2557.21

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLORL	XLCH	XLORR	ITRIAL	IDC	ICCNT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

Centerline = 2390

5.04	6.65	1924.95	1924.95	0.00	1926.29	1.34	1.35	0.34	1926.40
6000.	0.	6000.	0.	0.	646.	0.	262.	76.	1925.80
0.38	0.00	9.29	0.00	0.045	0.035	0.120	0.000	1918.30	2304.49
0.013973	765.	890.	1040.	20	14	0	0.00	255.27	2559.76

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

Centerline = 2380 #### Small Golf Course Bridge not modeled - assumed to fail ####
Some of breakout returns from north; modeled flows do
not change because flows from Tropicana Wash confluence
still control.

5.21	8.50	1932.70	1931.64	0.00	1934.65	1.95	8.18	0.18	1931.60
6000.	59.	5941.	0.	34.	527.	0.	275.	80.	1933.70
0.40	1.73	11.27	0.00	0.045	0.035	0.045	0.000	1924.20	2274.05
0.006155	920.	920.	920.	7	8	0	0.00	141.99	2416.05

*SECNO 5.260

```
          ####          Centerline = 2415
      5.26       6.59    1934.59       0.00       0.00    1936.77       2.18       2.05       0.07    1936.00
     6000.          0.       6000.          0.          0.        506.          0.        278.        81.     1936.00
      0.41       0.00      11.86       0.00      0.120      0.035      0.120      0.000    1928.09    2362.93
 0.009632        200.        270.        300.          4          0          0       0.00     103.55    2466.48
 )
  CCHV=   0.300  CEHV=   0.500
  *SECNO 5.280
  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      SPENCER STREET                              ####
          ####                  Special Bridge Routine                          ####
          ####          Centerline = 2460                                       ####
          ##########################################################################
 1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK       EG         HV         HL        OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB        ACH        AROB       VOL       TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL         XNCH       XNR        WTN       ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL      IDC        ICONT      CORAR     TOPWID      ENDST

      5.28       6.39    1942.09    1942.09       0.00    1943.99       1.90       0.57       0.08    1935.70
     6000.       1162.      4481.       358.       522.       352.       161.       279.        81.     1935.70
      0.41       2.23      12.75       2.23      0.120      0.035      0.120      0.000    1935.70    2175.70
 0.007597         30.        70.        100.         20          8          0       0.00     386.59    2562.29
 )
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1940.71 ,NOT   1942.09 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
  SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.63       0.00      50.25      14.25     180.00      0.00    1936.20    1935.70
  *SECNO 5.290
  3301 HV CHANGED MORE THAN HVINS
  PRESSURE AND WEIR FLOW

    EGPRS      EGLWC       H3         QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                      AREA
    1969.01    1952.63       0.00      4058.      1948.       180.      180.     1941.20    1942.20

      5.29       7.80    1944.00       0.00       0.00    1944.93       0.93       0.93       0.00    1936.20
     6000.       1513.      4024.       464.       964.       429.       295.       281.        82.     1936.20
      0.41       1.57       9.38       1.57      0.120      0.035      0.120      0.000    1936.20    2058.09
 0.003150         65.        65.         65.          3          0          7       0.00     539.49    2597.57
 )
  *SECNO 5.320
  3265 DIVIDED FLOW
          ####          Centerline =  2390                                      ####
      5.32       8.74    1944.84       0.00       0.00    1945.38       0.54       0.34       0.12    1946.00
     6000.       262.       5736.          2.       217.       951.         7.       288.        84.     1944.40
      0.42       1.21       6.03       0.23      0.060      0.028      0.080      0.000    1936.10    2017.09
 0.001208        260.        170.        150.          3          0          0       0.00     319.48    2507.00
 )
  CCHV=   0.100  CEHV=   0.300
 1
```

```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 5.570

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE  MINIMUM SPECIFIC ENERGY
 3720 CRITICAL  DEPTH ASSUMED
          ####              Centerline =  2030                                  ####
          ####  Near Algonquin Drive Alignment                                  ####
        5.57      7.86  1959.58  1959.58      0.00  1963.19      3.61      3.01      0.92  1961.00
     6000.         0.     6000.     0.          0.      394.      0.        312.      90.   1961.00
       0.45      0.00    15.25     0.00      0.140     0.025     0.130     0.000  1951.72  2002.92
  0.005806     1320.     1320.     1320.        20        11         0      0.00    55.16  2058.08
0
1
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 ************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
          0.        3.        0.        0.  0.000000      0.00      1.0       0.  1799.400      0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 2

 CCHV=   0.100  CEHV=   0.300
 *SECNO 2.650
 3720 CRITICAL  DEPTH ASSUMED
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####              Centerline =  2290                                  ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65       ####
       2.65      9.93  1799.43  1799.43  1799.40  1803.24      3.81      0.00      0.00  1804.70
```

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8400.	0.	8400.	0.	0.	537.	0.	0.	1802.00	
0.00	0.00	15.66	0.00	0.120	0.045	0.060	0.000	1789.50	2249.99
0.016844	815.	760.	745.	0	4	0	0.00	71.11	2321.10

)

CCHV= 0.300 CEHV= 0.500

*SECNO 2.680

##
BOULDER HIGHWAY - Northbound Crossing
Special Bridge Routine
##

2.68	10.58	1802.38	0.00	0.00	1805.49	3.11	2.04	0.21	1791.80
8400.	466.	7184.	750.	137.	476.	106.	2.	0.	1791.80
0.00	3.39	15.10	7.05	0.120	0.045	0.060	0.000	1791.80	9954.01
0.009018	200.	170.	140.	3	0	0	0.00	93.89	10047.90

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1799.47 ,NOT 1802.38 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	0.00	40.50	8.70	229.00	0.00	1792.90	1791.80

*SECNO 2.690

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1834.97	1815.03	0.00	4933.	3482.	229.	229.	1800.10	1805.40

2.69	13.83	1806.73	0.00	0.00	1807.98	1.25	2.49	0.90	1792.90
8400.	604.	6351.	1445.	286.	623.	502.	4.	1.	1792.90
0.01	2.11	10.20	2.88	0.120	0.045	0.060	0.000	1792.90	9884.51
0.002871	50.	50.	50.	3	0	7	0.00	470.11	10354.61

)

*SECNO 2.700

##
BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine
##

2.70	12.15	1806.55	0.00	0.00	1808.61	2.05	0.23	0.40	1794.40
8400.	567.	6843.	993.	182.	547.	168.	5.	1.	1794.40
0.01	3.12	12.51	5.39	0.120	0.050	0.060	0.000	1794.40	9950.12
0.006345	55.	55.	55.	3	0	0	0.00	147.50	10097.61

)

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1802.30 ,NOT 1806.55 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.80	3.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
6870 D.S. ENERGY OF 1808.61 HIGHER THAN COMPUTED ENERGY OF 1808.14

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1871.68	1822.70	0.00	7169.	1313.	162.	162.	1802.50	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	SSTA
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	ENDST
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=		8920.0	10730.0	TYPE=	1	TARGET=	1810.000		
2.71	10.39	1807.99	1807.99	1806.79	1810.60	2.61	0.41	-0.41	1797.60
8400.	620.	6101.	1679.	170.	415.	229.	6.	1.	1797.60
0.01	3.65	14.69	7.34	0.120	0.050	0.050	0.000	1797.60	9507.54
0.010774	50.	50.	50.	20	11	0	0.00	221.94	10129.48

*SECNO 2.790

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2320						####	
2.79	12.49	1811.89	0.00	1810.25	1812.30	0.41	1.04	0.66	1807.10
8000.	1815.	5335.	849.	920.	863.	1328.	25.	7.	1808.40
0.03	1.97	6.18	0.64	0.050	0.035	0.150	0.000	1799.40	1942.41
0.001034	380.	420.	460.	3	0	0	0.00	899.55	2841.96

CCHV= 0.100 CEHV= 0.300
*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2340						####	
2.98	11.92	1819.32	1819.32	1817.91	1821.28	1.95	2.13	0.46	1817.40
8000.	71.	7021.	908.	86.	587.	842.	79.	25.	1817.60
0.06	0.83	11.96	1.08	0.160	0.040	0.150	0.000	1807.40	2235.24
0.006383	1070.	1010.	990.	20	8	0	0.00	669.42	2904.65

*SECNO 3.190

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.18	7.95	1828.65	1828.65	1827.99	1831.39	2.74	9.32	0.24	1831.10
8000.	0.	8000.	0.	0.	602.	0.	104.	34.	1832.10
0.08	0.00	13.28	0.00	0.140	0.040	0.130	0.000	1820.70	2270.54
0.013825	1060.	1030.	1020.	2	14	0	0.00	111.28	2381.82

*SECNO 3.370

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2350						####	
3.37	10.78	1835.28	0.00	1833.91	1836.41	1.13	4.86	0.16	1832.90
8000.	512.	7477.	11.	586.	848.	27.	126.	40.	1833.30
0.11	0.87	8.82	0.42	0.140	0.035	0.140	0.000	1824.50	1577.71
0.002511	805.	990.	1020.	4	0	0	0.00	458.04	2514.23

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2390						####	
3.53	7.82	1839.92	1839.92	1838.73	1842.98	3.06	3.93	0.58	1847.60
8000.	0.	8000.	0.	0.	570.	0.	146.	45.	1847.80
0.13	0.00	14.04	0.00	0.120	0.035	0.140	0.000	1832.10	2336.09
0.010501	825.	870.	885.	20	19	0	0.00	94.33	2430.42

CCHV= 0.300 CEHV= 0.500
*SECNO 3.550

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1843.00 ELREA= 1843.00

####		MOJAVE ROAD						####	
####		Special Bridge Routine						####	
3.55	9.27	1841.37	1841.37	1839.74	1846.00	4.63	0.94	0.78	1832.10
8000.	0.	8000.	0.	0.	463.	0.	147.	46.	1832.10
0.13	0.00	17.27	0.00	0.120	0.035	0.140	0.000	1832.10	2370.00
0.008495	90.	100.	130.	20	8	0	0.00	50.00	2420.00

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SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1840.22 ,NOT 1841.37 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	3.00	48.70	18.70	240.00	0.00	1835.00	1834.50

*SECNO 3.560

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1868.29	1860.31	0.00	3263.	4749.	240.	240.	1843.00	1847.10

3.56	17.71	1850.31	0.00	1849.23	1850.85	0.54	4.86	0.00	1832.60
8000.	1274.	6014.	712.	1046.	886.	1105.	149.	46.	1832.60
0.14	1.22	6.79	0.65	0.120	0.035	0.140	0.000	1832.60	2101.36
0.000554	50.	50.	50.	2	0	6	0.00	737.24	2838.60

*SECNO 3.580

3.58	17.96	1850.56	0.00	1849.40	1850.94	0.38	0.04	0.05	1832.60
8000.	2207.	5305.	488.	1115.	898.	1209.	157.	48.	1832.60
0.14	1.98	5.91	0.40	0.045	0.025	0.140	0.000	1832.60	2093.66
0.000210	110.	110.	110.	2	0	0	0.00	755.38	2849.04

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLORL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300

*SECNO 3.710

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Overflows, paralleling Desert Inn, Conflue at this Section

3.71	9.57	1859.57	1859.57	1858.61	1861.88	2.31	0.37	0.58	1860.00
8000.	0.	7039.	961.	0.	541.	747.	191.	57.	1858.00
0.16	0.00	13.00	1.29	0.045	0.025	0.140	0.000	1850.00	9951.63
0.004404	680.	660.	640.	20	12	0	0.00	394.95	10346.58

CCHV= 0.300 CEHV= 0.500

*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
##########################################################################
####                      DESERT INN ROAD                             ####
####                   Special Bridge Routine                         ####
####  BT points follow off road, high ground to north & south.        ####
####                  Centerline = 2720                               ####
##########################################################################
```

3.77	8.81	1862.41	1862.41	1862.33	1863.76	3.26	1.33	0.48	1853.80
7610.	641.	6657.	312.	122.	431.	182.	158.	58.	1853.80
0.16	5.25	15.46	1.72	0.045	0.025	0.140	0.000	1853.80	2671.66
0.003829	340.	330.	250.	20	15	0	0.00	120.56	2792.23

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1859.33 ,NOT 1862.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SB	XK	XKOR	COEF	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	0.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.730

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1886.77	1877.59	0.00	4111.	3543.	240.	240.	1862.30	1865.50

	3.78	12.11	1866.41	0.30	1865.94	1867.69	1.28	2.00	0.00	1854.30
	7610.	826.	6095.	689.	241.	606.	875.	200.	59.	1854.30
	0.17	3.42	10.06	0.79	0.045	0.025	0.140	0.000	1854.30	2660.14
0.001029		75.	75.	75.	3	0	6	0.00	449.45	3109.59

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	6.46	1866.46	1866.46	1865.61	1869.15	2.59	0.55	0.42	1872.00
7610.	0.	7610.	0.	0.	579.	0.	207.	60.	1868.00
0.17	0.00	13.15	0.00	0.045	0.035	0.140	0.000	1860.00	9923.07
0.010667	130.	230.	300.	20	11	0	0.00	109.05	10032.12

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

```
        ####          Centerline =  2250                          ####
     4.00     9.39  1874.59     0.00  1873.63  1876.65     2.06     7.31     0.19  1874.70
     7610.       0.     7610.       0.       0.      660.       0.      220.      63.   1880.00
     0.19     0.00    11.52     0.00    0.045    0.035    0.060    0.000  1865.20  2238.45
 0.006395     900.     900.     900.        4        0        0     0.00   102.82  2341.27
```

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

```
        ##########################################################################
        ####                    PECOS-McLEOD DRIVE                            ####
        ####                 Special Bridge Routine                           ####
        ##########################################################################
     4.85     8.67  1877.07     0.00  1875.89  1878.23     1.16     1.31     0.27  1888.00
     7610.       0.     7610.       0.       0.      881.       0.      225.      63.   1888.00
     0.20     0.00     8.64     0.00    0.045    0.035    0.060    0.000  1868.40  9942.58
 0.003268     100.     295.     400.        2        0        0     0.00   127.92 10070.59
```

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1876.735 ELLC= 1884.900 PCWSE= 1877.073 ELTRD= 1885.500

3370 NORMAL BRIDGE,NRD= 2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

```
     4.07     8.48  1877.38     0.00  1876.22  1878.61     1.23     0.34     0.04  1888.50
     7610.       0.     7610.       0.       0.      855.       0.      227.      64.   1888.50
     0.21     0.00     8.90     0.00    0.045    0.035    0.060    0.000  1868.90  9943.46
 0.003561     100.     100.     100.        2        0        0     0.00   126.69 10070.14
```

1

1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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```
          ####                Centerline =  2500                          ####
      4.21       8.46  1885.26  1885.26  1883.84  1887.62      2.36      3.40      0.56  1882.10
      7610.       469.     7079.       62.       130.       556.       30.       240.       66.  1884.80
      0.22       3.61     12.74      2.04     0.060     0.035     0.035     0.000  1876.80  2422.27
 0.006570       720.      720.      720.        20         5         0      0.00   200.82  2623.09
)
 CCHV=    0.100  CEHV=    0.300
 1490 NH CARD USED
 *SECNO 4.410

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2530                          ####
      4.41       8.58  1894.48  1894.43  1893.64  1897.89      3.41      8.94      0.32  1898.60
      7610.         0.     7610.        0.        0.       513.        0.       255.       70.  1905.40
      0.24       0.00     14.83      0.00     0.060     0.035     0.050     0.000  1885.90  2491.01
 0.010592      1140.     1085.     1080.         1         5         0      0.00    75.63  2566.64
)
 *SECNO 4.630

 3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =  2460                          ####
      4.63       8.66  1905.36     0.00  1904.17  1907.28      1.92      9.24      0.15  1907.80
      7610.         0.     7610.        0.        0.       684.        0.       271.       72.  1909.50
      0.27       0.00     11.13      0.00     0.120     0.035     0.050     0.000  1896.70  2383.03
 0.006159       930.     1165.     1185.         2         0         0      0.00   108.12  2491.16
)
 CCHV=    0.300  CEHV=    0.500
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 4.690

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##########################################################################
          ####                      EASTERN AVENUE                              ####
          ####                Special Bridge Routine                            ####
          ##########################################################################
      4.69       8.94  1912.24  1912.24  1911.81  1915.15      2.91      1.83      0.49  1903.30
      7610.       253.     5578.     1779.       94.       358.       288.       276.       73.  1903.30
      0.28       2.71     15.60      6.17     0.120     0.035     0.060     0.000  1903.30  9945.11
 0.007278       330.      280.      220.        20         8         0      0.00   154.42 10099.53
)
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1911.84 ,NOT   1912.24 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COFQ        ROLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.63        0.00       32.00       10.00      176.00       0.00     1903.80     1903.30

 *SECNO 4.700

 3301 HV CHANGED MORE THAN HVINS
```

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1957.53	1930.65	0.00	5003.	2620.	176.	176.	1911.80	1914.10

4.70	13.49	1917.29	0.00	1916.93	1917.61	0.32	2.46	0.00	1903.80
7610.	713.	3452.	3444.	931.	540.	1779.	278.	74.	1903.80
0.28	0.77	6.40	1.94	0.120	0.035	0.060	0.000	1903.80	9586.77
0.000706	56.	56.	56.	2	0	8	0.00	873.17	10459.94

1490 NH CARD USED

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.750

Centerline = 2300
Small Golf Course Bridge not modeled - assumed to fail

4.75	10.54	1917.64	0.00	1917.20	1917.77	0.13	0.11	0.06	1912.40
7610.	179.	6921.	510.	156.	2288.	426.	295.	78.	1912.70
0.30	1.15	3.02	1.20	0.045	0.035	0.045	0.000	1907.10	2114.62
0.000335	350.	260.	150.	3	0	0	0.00	553.93	2668.54

*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

TIOGA WAY
Special Bridge Routine

4.82	7.40	1917.40	1917.35	1916.98	1918.96	1.56	0.48	0.71	1910.00
7610.	1685.	4394.	1531.	288.	370.	201.	312.	81.	1910.00
0.32	5.85	11.86	7.61	0.140	0.140	0.140	0.000	1910.00	9818.86
0.086444	400.	400.	400.	8	19	0	0.00	276.37	10995.23

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1916.60 ,NOT 1917.40 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1966.95	1931.38	0.00	5027.	2600.	165.	165.	1916.10	1918.50

4.83	12.48	1923.08	0.11	1922.44	1923.19	0.11	4.22	0.00	1910.60
7610.	2944.	2290.	2377.	1269.	624.	1247.	315.	82.	1910.60

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

```
          ####          Centerline =  2400                          ####
          ####  Small Golf Course Bridge not modeled - assumed to fail  ####
```

4.87	11.74	1923.24	0.00	1922.59	1923.49	0.25	0.24	0.07	1916.10
7610.	1571.	5343.	696.	601.	1198.	268.	326.	85.	1917.30
0.34	2.62	4.46	2.59	0.036	0.035	0.035	0.000	1911.50	1925.74
0.000624	240.	170.	130.	2	0	0	0.00	506.39	2564.65

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

```
          ####          Centerline =  2390                          ####
```

5.04	7.16	1925.46	1925.46	1924.95	1926.93	1.47	1.49	0.37	1926.40
7610.	0.	7610.	0.	0.	783.	0.	354.	93.	1925.90
0.36	0.00	9.72	0.00	0.045	0.035	0.120	0.000	1918.30	2300.76
0.013202	765.	890.	1040.	20	14	0	0.00	277.29	2578.05

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

```
          ####          Centerline =  2380                          ####
          ####  Small Golf Course Bridge not modeled - assumed to fail  ####
          ####  Some of breakout returns from north; modeled flows do
          ####  not change because flows from Tropicana Wash confluence
          ####  still control.
```

5.21	9.09	1933.29	1933.05	1932.70	1935.57	2.28	8.40	0.24	1931.60
7300.	220.	7080.	3.	81.	576.	0.	369.	97.	1933.70
0.38	2.71	12.30	0.00	0.045	0.035	0.045	0.000	1924.20	2240.94
0.006605	920.	920.	920.	6	11	0	0.00	175.67	2416.62

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260

```
          ####      Centerline = 2410
      5.26      7.30   1935.30      0.00   1934.59   1937.75      2.44      2.13      0.05   1936.00
    7300.         0.      7300.         0.         0.       582.         0.       373.       98.    1936.00
      0.39      0.00     12.55      0.00      0.120     0.035     0.120     0.000   1928.00   2358.92
 0.009636       200.       270.       300.          4         0         0      0.00    109.34   2468.26
 )
  CCHV=   0.300  CEHV=   0.500
  *SECNO 5.280
  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    SPENCER STREET                        ####
          ####                Special Bridge Routine                    ####
          ####          Centerline = 2460                               ####
          ##################################################################
      5.28      7.08   1942.78   1942.78   1942.09   1944.75      1.77      0.55      0.14   1935.70
    7300.      1623.      5178.       499.       717.       389.       220.       375.       98.    1935.70
      0.39      2.26     13.30      2.27      0.120     0.035     0.120     0.000   1935.70   2118.25
 0.007212        30.        70.       100.         20         8         0      0.00    461.28   2579.53
 )
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1941.41 ,NOT   1942.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)
  SB  XK          XKOR        COFG        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.63        0.00       50.25       14.25      180.00       0.00     1936.20     1935.70
  *SECNO 5.290
  PRESSURE AND WEIR FLOW
   EGPRS       EGLWC        H3         QWEIR       QPR         BAREA     TRAPEZOID       ELLC        ELTRD
                                                                          AREA
    1982.62    1954.72       0.00       5498.       1822.       180.      180.       1941.20     1942.20
      5.29      7.31   1943.51      0.00   1944.00   1945.26      1.75      0.51      0.00   1936.20
    7300.      1695.      5084.       520.       793.       403.       245.       377.       99.    1936.20
      0.39      2.14     12.63      2.14      0.120     0.035     0.120     0.000   1936.20   2098.43
 0.006228        65.        65.        65.          5         0         0      0.00    487.04   2585.47
 )
 I
  27-APR-88     00:07:33                                                                          PAGE   37
     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST
  *SECNO 5.320
  3265 DIVIDED FLOW
  3301 HV CHANGED MORE THAN HVINS
          ####          Centerline =  2390                              ####
      5.32      9.31   1945.41      0.00   1944.84   1946.05      0.63      0.45      0.33   1946.00
    7300.       424.      6859.        17.       299.      1044.        38.       383.      101.    1944.40
      0.40      1.42      6.57      0.45      0.060     0.028     0.080     0.000   1936.10   1991.72
 0.001308       260.       170.       150.          4         0         0      0.00    414.21   2571.20
 )
  CCHV=   0.100  CEHV=   0.300
  *SECNO 5.570
```

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```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####              Centerline =  2130                                  ####
          ####  Near Algonquin Drive Alignment                                  ####
      5.57      8.94   1960.66   1960.66   1959.58   1964.68      4.02      3.14      1.02   1961.00
    7300.         0.      7300.        0.        0.       454.        3.       411.      109.    1961.00
      0.42      0.00     16.09      0.30     0.140     0.025     0.180     0.000   1951.72   2002.22
 0.005632     1320.     1320.     1320.        20         8         0      0.00     56.56   2058.78
0
1
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 ****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 ****************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

 J1   ICHECK      INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
         0.         4.         0.         0.   0.000000       0.00       1.0         0.    1801.700     0.000
 J2   NPROF       IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
        3.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
1
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      SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
      Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
      TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
      SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *PROF 3

 CCHV=   0.100  CEHV=   0.300
 *SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####              Centerline =  2290                                  ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65       ####
      2.65     12.20   1801.70   1801.45   1801.70   1806.13      4.43      0.00      0.00   1804.70
    11920.         0.     11920.        0.        0.       706.        0.        0.        0.    1802.00
      0.00      0.00     16.89      0.30     0.120     0.045     0.060     0.000   1789.50   2246.55
 0.015598       815.      760.      745.         0         4         0      0.00     77.99   2324.54
3
 CCHV=   0.300  CEHV=   0.500
 *SECNO 2.680

 1645 INT SEC ADDED BY RAISING SEC      2.68,  -1.725FT AND MULTIPLYING BY    1.214

 3301 HV CHANGED MORE THAN HVINS
```

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```
     1.01     17.00   1807.37      0.00      0.00   1807.45      0.38      0.10      1.22   1790.08
 11920.     1114.     6138.     4663.      958.      928.     2317.        2.         1.   1790.08
     0.00      1.16      6.61      2.32     0.120     0.045     0.060     0.000   1790.08   9825.38
 0.000917       50.       43.       35.         6         0         0      0.00   1047.92  10873.30
)

 1645 INT SEC ADDED BY RAISING SEC      1.01,   0.575FT AND MULTIPLYING BY   0.941

     1.02     16.36   1807.01      0.00      0.00   1807.60      0.58      0.05      0.10   1790.65
 11920.     1047.     6694.     4180.      749.      842.     1785.        6.         1.   1790.65
     0.00      1.40      7.95      2.34     0.120     0.045     0.060     0.000   1790.65   9834.98
 0.001395       50.       43.       35.         2         0         0      0.00    866.51  10701.49
)

 1645 INT SEC ADDED BY RAISING SEC      1.02,   0.575FT AND MULTIPLYING BY   0.938

     1.03     15.69   1806.91      0.00      0.00   1807.84      0.93      0.07      0.17   1791.23
 11920.      988.     7303.     3629.      570.      757.     1324.        9.         2.   1791.23
     0.01      1.73      9.65      2.74     0.120     0.045     0.060     0.000   1791.23   9838.69
 0.002173       50.       43.       35.         2         0         0      0.00    722.63  10561.32
)
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        GLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 1645 INT SEC ADDED BY RAISING SEC      1.03,   0.575FT AND MULTIPLYING BY   0.933

          ##################################################################
          ####          BOULDER HIGHWAY - Northbound Crossing           ####
          ####              Special Bridge Routine                      ####
          ##################################################################
     2.68     14.91   1806.71      0.00      0.00   1808.26      1.55      0.11      0.31   1791.80
 11920.      928.     8036.     2955.      412.      571.      899.       11.         3.   1791.80
     0.01      2.25     11.97      3.29     0.120     0.045     0.060     0.000   1791.80   9841.46
 0.003581       50.       43.       35.         3         0         0      0.00    588.50  10429.96
)

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1801.49 ,NOT   1806.71 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK          XKOR        COEF        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.56        2.80        0.00       40.50        8.70      229.00        0.00     1792.90     1791.80

 *SECNO 2.690
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       H3          QWEIR       QPR         BAREA    TRAPEZOID AREA    ELLC        ELTRD
  1872.35     1818.47       0.00       9658.      2267.       229.       229.          1800.10     1805.40

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
     2.69     14.05   1806.95   1806.93      0.00   1809.25      2.30      0.22     -0.22   1792.90
 11920.      870.     8830.     2221.      307.      632.      574.       13.         3.   1792.90
     0.01      2.84     13.97      3.87     0.120     0.045     0.060     0.000   1792.90   9876.00
 0.005275       50.       50.       50.        20         8         0      0.00    493.50  10369.50
)
```

*SECNO 2.700

1645 INT SEC ADDED BY RAISING SEC 2.70, -1.000FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.01	13.95	1807.35	1807.35	0.00	1809.57	2.23	0.11	0.02	1793.40
11920.	934.	8678.	2309.	296.	628.	538.	13.	4.	1793.40
0.01	3.15	13.83	4.29	0.120	0.050	0.060	0.000	1793.40	9880.18
0.006448	18.	18.	18.	5	5	0	0.00	482.02	10362.19

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1645 INT SEC ADDED BY RAISING SEC 1.01, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.02	13.95	1807.85	1807.85	0.00	1810.07	2.22	0.12	0.00	1793.90
11920.	934.	8674.	2313.	297.	628.	540.	14.	4.	1793.90
0.01	3.15	13.82	4.28	0.120	0.050	0.060	0.000	1793.90	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

1

1645 INT SEC ADDED BY RAISING SEC 1.02, 0.500FT AND MULTIPLYING BY 1.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

##
BOULDER HIGHWAY - Southbound Crossing
Special Bridge Routine
##

2.70	13.95	1808.35	1808.35	0.00	1810.57	2.22	0.12	0.00	1794.40
11920.	934.	8674.	2313.	297.	628.	540.	15.	4.	1794.40
0.01	3.15	13.82	4.28	0.120	0.050	0.060	0.000	1794.40	9879.99
0.006435	18.	18.	18.	3	5	0	0.00	482.54	10362.53

1

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1804.40 ,NOT 1808.35 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.90	0.00	33.60	10.50	162.00	0.00	1795.90	1794.30

*SECNO 2.710
6870 D.S. ENERGY OF 1810.57 HIGHER THAN COMPUTED ENERGY OF 1809.18
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1939.58	1829.38	0.00	11000.	949.	162.	162.	1802.90	1804.40

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1

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```
     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
     Q          OLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

  3710 WSEL ASSUMED BASED ON MIN DIFF

  3470 ENCROACHMENT STATIONS=     8920.0    10730.0  TYPE=      1  TARGET=     1810.000
         2.71      13.15    1810.75       0.00    1806.79    1811.85      1.10       0.00       0.00    1797.60
     11920.      1497.      5970.      4453.       744.       526.    1153.        17.         5.      1797.60
         0.01       2.01      11.35       3.85       0.120      0.050      0.060      0.000    1797.60    9686.71
    0.004693        50.        50.        50.          20          0         10       0.00     822.74   10509.46
  3
   *SECNO 2.790
          ####                 Centerline =  2320                                          ####
         2.79      13.03    1812.43       0.00    1810.25    1813.06      0.62       1.06       0.14    1807.10
     11420.      2943.      7116.      1361.      1103.       911.    1595.        46.        13.      1808.40
         0.03       2.67       7.82       0.85       0.050      0.035      0.160      0.000    1799.40    1929.12
    0.001539        380.       420.       460.           2          0          0       0.00     925.23    2854.35
  3
   CCHV=   0.100  CEHV=   0.300
   *SECNO 2.980

   3301 HV CHANGED MORE THAN HVINS

   3685 20 TRIALS ATTEMPTED WSEL,CWSEL
   3693 PROBABLE MINIMUM SPECIFIC ENERGY
   3720 CRITICAL DEPTH ASSUMED
          ####                 Centerline =  2340                                          ####
         2.98      13.25    1820.65    1820.65    1817.91    1822.68      2.03       2.79       0.42    1817.40
     11420.       264.      8800.      2357.       236.       677.    1580.       117.        33.      1817.60
         0.06       1.12      13.00       1.49       0.160      0.040      0.160      0.000    1807.40    2179.36
    0.006228        1070.      1010.       990.          20          5          0       0.00     782.26    2961.62
  3
   *SECNO 3.180

   3301 HV CHANGED MORE THAN HVINS

   7185 MINIMUM SPECIFIC ENERGY
   3720 CRITICAL DEPTH ASSUMED

   3470 ENCROACHMENT STATIONS=     2223.0     2960.0  TYPE=      1  TARGET=      737.000
          ####                 Centerline =  2300                                          ####
         3.18       9.49    1830.19    1830.19    1827.99    1833.52      3.33       8.99       0.39    1831.10
     11420.         0.      11420.         0.         0.       780.         0.        156.        44.      1832.10
         0.08       0.00      14.65       0.00       0.140      0.040      0.180      0.000    1820.72    2267.06
    0.013125        1060.      1030.      1020.           3          19          0       0.00     119.30    2386.36
  3
  1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
     Q          OLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

   *SECNO 3.370

   3301 HV CHANGED MORE THAN HVINS

          ####                 Centerline =  2350                                          ####
         3.37      12.54    1837.04       0.00    1833.91    1838.30      1.25       4.57       0.21    1832.90
     11420.      1413.      9838.       170.      1145.      1017.     248.       190.        52.      1833.30
         0.11       1.23       9.67       0.69       0.140      0.035      0.140      0.000    1824.50    1938.78
    0.002372        805.       960.      1020.           3          0          0       0.00     619.87    2558.65
```

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*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
                ####          Centerline =  2390                                  ####
      3.53      9.60   1841.70   1841.70   1838.73   1845.34      3.64      3.72      0.72   1847.60
  11420.         0.     11420.       0.        0.       746.        1.       221.       59.    1847.80
     0.13      0.00      15.32      0.00      0.120     0.035     0.140     0.000  1832.10   2333.53
 0.009966       825.       870.       885.        20        15         0      0.00   103.77   2437.29
```

CCHV= 0.300 CEHV= 0.500
*SECNO 3.550
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
                ##################################################################
                ####                      MOJAVE ROAD                         ####
                ####                Special Bridge Routine                    ####
                ##################################################################
      3.55     11.18   1843.28   1843.28   1839.74   1847.15      3.87      0.80      0.11   1832.10
  11420.       1516.     9580.      325.      341.      559.      113.      223.       59.    1832.10
     0.13       4.44     17.14      2.75      0.120     0.035     0.140     0.000  1832.10   2329.64
 0.006521        90.      100.      130.        20        10         0      0.00   115.63   2445.27
```

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1841.75 ,NOT 1843.28 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	48.70	18.70	240.00	0.00	1835.00	1834.58

*SECNO 3.560

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1898.12	1865.09	0.00	5826.	4605.	240.	240.	1843.00	1847.10

```
      3.56     18.76   1851.36      0.00   1849.23   1852.20      0.84      5.05      0.00   1832.60
  11420.       1961.     8125.     1335.     1345.      938.     1566.      225.       59.    1832.60
     0.13       1.46      8.66      0.85      0.120     0.035     0.140     0.000  1832.60   2069.02
 0.000835         50.       50.       50.         3         0         7      0.00   813.41   2882.43
```

*SECNO 3.580

```
      3.58     19.19   1851.79      0.00   1849.40   1852.34      0.55      0.05      0.09   1832.60
  11420.       3427.     7060.      933.     1478.      960.     1769.      236.       61.    1832.60
     0.14       2.32      7.36      0.53      0.045     0.025     0.140     0.000  1832.60   2055.70
 0.000298        110.      110.      110.         2         0         8      0.00   844.78   2900.48
```

CCHV= 0.100 CEHV= 0.300
*SECNO 3.710

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Overflows, paralleling Desert Inn, Conflue at this Section

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
	3.71	11.63	1861.63	1861.63	1858.61	1863.24	1.61	0.44	0.32	1860.00
	11420.	846.	8537.	2033.	506.	726.	1498.	298.	76.	1858.00
	0.16	1.67	11.75	1.36	0.045	0.025	0.140	0.000	1850.00	8868.66
0.002490		680.	660.	640.	20	14	0	0.00	1031.63	10463.54

3
CCHV= 0.300 CEHV= 0.500
*SECNO 3.770

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
DESERT INN ROAD
Special Bridge Routine
BT points follow off road, high ground to north & south.
Centerline = 2720

3.77	9.61	1863.41	1863.41	1862.35	1867.50	4.10	1.00	1.24	1853.80
9680.	896.	8347.	436.	152.	480.	225.	300.	80.	1853.80
0.16	5.91	17.38	1.93	0.045	0.025	0.140	0.000	1853.80	2668.40
0.004184	340.	330.	250.	20	12	0	0.00	128.70	2797.09

3
SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1860.30 ,NOT 1863.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	3.00	48.70	18.70	240.00	0.00	1854.30	1853.80

*SECNO 3.780

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

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SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1902.81	1881.88	0.00	6231.	3524.	240.	240.	1862.30	1865.50

3.78	12.45	1866.75	0.00	1865.94	1868.63	1.88	1.13	0.00	1854.30
9680.	1064.	7643.	974.	255.	623.	996.	302.	80.	1854.30
0.16	4.17	12.28	0.98	0.045	0.025	0.140	0.000	1854.30	2659.04
0.001478	75.	75.	75.	4	0	6	0.00	452.21	3111.26

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	7.47	1867.47	1867.47	1865.61	1870.51	3.04	0.71	0.35	1872.00
9680.	0.	9680.	0.	0.	692.	0.	310.	82.	1868.00
0.17	0.00	14.00	0.00	0.045	0.035	0.140	0.000	1860.00	9918.87
0.010269	130.	230.	300.	20	14	0	0.00	115.14	10034.01

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1874.70 ELREA= 1880.00

Centerline = 2250

4.00	10.37	1875.57	1874.93	1873.63	1877.67	2.10	6.88	0.28	1874.70
9680.	558.	9122.	0.	143.	763.	0.	326.	85.	1880.00
0.19	3.89	11.95	0.00	0.045	0.035	0.060	0.000	1865.20	2103.37
0.005912	900.	900.	900.	5	18	0	0.00	206.80	2343.92

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

PECOS-McLEOD DRIVE
Special Bridge Routine

```
     4.05      9.27  1877.67      0.00  1875.89  1879.25      1.59      1.43      0.15  1888.00
     9680.        0.     9680.        0.        0.     957.        0.     332.      66.  1888.00
      0.20      0.00     10.12      0.00     0.045    0.035     0.050     0.000  1868.40  9940.06
 0.004170       100.      295.      400.         3        0         0      0.00   131.49 10071.55
)
SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      72.00       0.00    1488.00       1.31    1868.90    1868.40

*SECNO 4.070

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=     0.000  EGLWC=  1879.755  ELLC=  1884.900  PCWSE=  1877.665  ELTRD=  1885.500

3370 NORMAL BRIDGE,NRD=  2 MIN ELTRD= 1885.50 MAX ELLC= 1884.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1890.10 ELREA=     1890.90

     4.07      9.17  1876.07      0.00  1876.22  1879.70      1.63      0.43      0.02  1888.50
     9680.        0.     9680.        0.        0.     944.        0.     334.      86.  1888.50
      0.20      0.00     10.25      0.00     0.045    0.035     0.060     0.000  1868.90  9940.48
 0.004335       100.      100.      100.         2        0         0      0.00   130.89 10071.37
)
1490 NH CARD USED
*SECNO 4.210

3301 HV CHANGED MORE THAN HVINS

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        ####                Centerline =  2500                                    ####
     4.21      9.75  1886.55  1886.55  1883.84  1888.72      2.16      3.43      0.27  1882.10
     9680.      894.     8255.      531.      244.      651.      122.      351.      90.  1884.80
      0.22      3.66     12.63      4.34     0.060    0.035     0.035     0.000  1876.80  2325.67
 0.005271       720.      720.      720.        20        8         0      0.00   306.01  2631.68
)
CCHV=    0.100  CEHV=    0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        ####                Centerline =  2530                                    ####
     4.41     10.39  1896.29  1896.29  1893.64  1899.54      3.25      7.08      0.33  1898.60
     9680.        0.     9550.      130.        0.     655.      56.     372.      96.  1905.40
      0.24      0.00     14.57      2.32     0.060    0.035     0.050     0.000  1885.90  2486.17
 0.008260      1140.     1085.     1080.         4        8         0      0.00   151.81  2792.72
)
```

*SECNO 4.650

3301 HV CHANGED MORE THAN HVINS

```
          ####          Centerline =  2460                                  ####
     4.63      9.39  1906.09      0.00  1904.17  1908.58      2.49      8.96      0.08  1907.80
  9680.         0.    9680.         0.       0.      765.         3.      392.       95.   1909.50
    0.27      0.00     12.66      0.00     0.120    0.035     0.060     0.000  1896.70  2380.92
0.007174      930.     1165.     1185.         2        0         0      0.00   111.45  2492.37
```

CCHV= 0.300 CEHV= 0.500

*SECNO 4.690

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ##################################################################
          ####                    EASTERN AVENUE                        ####
          ####              Special Bridge Routine                      ####
          ##################################################################
     4.69     11.18  1914.48  1914.48  1911.81  1916.29      1.82      1.42      0.20  1903.30
  9680.        537.     6004.     3139.      329.      447.      802.      399.       102.   1903.30
    0.27      1.63     13.43      3.91     0.120    0.035     0.060     0.000  1903.30  9805.09
0.004001      330.      280.      220.        20        8         0      0.00   614.48 10419.57
```

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1912.39 ,NOT 1914.48 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	32.00	10.00	176.00	0.00	1903.80	1903.30

*SECNO 4.700

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1987.75	1933.72	0.00	7585.	2169.	176.	176.	1911.80	1914.10

```
     4.70     13.95  1917.75      0.00  1916.93  1918.16      0.40      1.86      0.00  1903.80
  9680.        1005.     4131.     4544.     1130.      558.     1984.      402.       103.   1903.80
    0.28      0.89      7.40      2.29     0.120    0.035     0.060     0.000  1903.80  9514.93
0.008503        56.       56.       56.         2        0         8      0.00   950.81 10465.73
```

1490 NH CARD USED

*SECNO 4.750

```
          ####          Centerline =  2300                                  ####
```


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```
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
     4.75    11.09   1918.19     0.00   1917.20   1918.36     0.18     0.14     0.07   1912.40
    9680.     259.     8650.     771.      190.     2450.     541.     421.     107.    1912.70
     0.30     1.37     3.53     1.43     0.045     0.035    0.045    0.000  1907.10   2108.46
 0.000417     350.     260.     150.         3         0        0     0.00   589.27   2697.73
0
 *SECNO 4.820

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                                                          ####
          ####                    TIOGA WAY                             ####
          ####              Special Bridge Routine                      ####
          ##################################################################
     4.82     8.05   1918.05   1918.05   1916.98   1919.75     1.70     0.58     0.76   1910.00
    9680.    2538.     5109.     2034.      388.      403.     255.     441.     111.    1910.00
     0.31     6.54    12.69     7.99      0.140     0.140    0.140    0.000  1910.00   9809.24
 0.088601     400.     400.     400.         4        15        0     0.00   302.02  10111.26
3
 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1917.75 ,NOT   1918.05 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB   XK        XKOR      COEG      ROLEN      BWC       BWP       BAREA      SS        ELCHU     ELCHD
      1.25      1.50      2.63      0.00      42.00     12.00     165.00     0.00    1910.60   1910.00

 *SECNO 4.830

 3301 HV CHANGED MORE THAN HVINS

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                          AREA
  1998.22   1934.87     0.00      7120.     2591.      165.      165.     1916.10   1918.50


     4.83    13.06   1923.66     0.00   1922.44   1923.80     0.14     4.04     0.00   1910.60
    9680.    3747.     2705.     3223.     1416.      653.     1520.     444.     112.    1910.60
     0.31     2.65     4.14     2.12      0.140     0.140    0.140    0.000  1910.60   9711.24
 0.004956      60.      60.      60.         2         0        8     0.00   806.14  10517.38
3
 1490 NH CARD USED
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 4.870

 3265 DIVIDED FLOW
          ####           Centerline =  2400                                ####
          ####  Small Golf Course Bridge not modeled - assumed to fail      ####
     4.87    12.35   1923.85     0.00   1922.59   1924.16     0.31     0.28     0.08   1916.10
    9680.    2181.     6523.     976.      799.     1281.     356.     456.     115.    1917.30
     0.33     2.73     5.09     2.74      0.037     0.035    0.035    0.000  1911.50   1864.61
 0.000743     240.     170.     130.         2         0        0     0.00   788.17   3090.44
```

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 2129.0 3070.0 TYPE= 1 TARGET= 941.000

####		Centerline = 2390						####	
5.04	7.68	1925.98	1925.98	1924.95	1927.66	1.68	1.71	0.41	1926.40
9680.	0.	9680.	0.	0.	931.	0.	490.	126.	1925.80
0.35	0.00	10.39	0.28	0.045	0.035	0.120	0.000	1918.30	2297.04
0.012903	765.	890.	1040.	20	14	0	0.00	294.18	2591.22

1490 NH CARD USED
*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2380
Small Golf Course Bridge not modeled - assumed to fail
Some of breakout returns from north; modeled flows do
not change because flows from Tropicana Wash confluence
still control.

5.21	9.69	1934.09	1934.09	1932.70	1936.51	2.42	8.20	0.22	1931.60
8860.	607.	8251.	2.	174.	640.	2.	509.	132.	1933.70
0.37	3.49	12.89	0.89	0.045	0.035	0.045	0.000	1924.20	2197.65
0.006359	920.	920.	920.	3	11	0	0.00	228.64	2426.29

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5.260
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2410

5.26	7.91	1935.91	1935.91	1934.59	1938.80	2.89	2.15	0.14	1936.00
8860.	0.	8860.	0.	0.	650.	0.	513.	133.	1936.00
0.38	0.00	13.64	0.00	0.120	0.035	0.120	0.000	1928.00	2355.50
0.010425	200.	270.	300.	3	15	0	0.00	114.28	2469.78

CCHV= 0.300 CEHV= 0.500
*SECNO 5.280

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SPENCER STREET
Special Bridge Routine
Centerline = 2460

5.28	7.80	1943.50	1943.50	1942.09	1945.53	2.03	0.55	0.26	1935.70

```
      8860.      2253.      5943.       684.       962.       429.       294.       515.       133.    1935.70
        0.38       2.32      13.85       2.32      0.120      0.035      0.120      0.000    1935.70    2058.38
  0.005884        30.        70.        100.         20          6          0       0.00     539.10    2597.48
0
  SPECIAL BRIDGE
  5227 DOWNSTREAM ELEV IS   1942.20 ,NOT   1943.50 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

  SB   XK        XKOR       COEG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.25       1.56       2.63       3.00      50.25      14.25     180.00       0.00    1936.20    1935.70

  *SECNO 5.290
  PRESSURE AND WEIR FLOW

1
  27-APR-88     00:07:33                                                                                PAGE    53

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST

    EGPRS       EGLWC        H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                          AREA
   2002.19    1957.06       0.00       7246.      1678.       180.       180.    1941.20    1942.20

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3710 WSEL ASSUMED BASED ON MIN DIFF
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
       5.29       7.76    1943.96    1943.91    1944.00    1946.03       2.06       0.45      -0.45    1936.20
       8860.      2219.      5561.       680.       948.       427.       298.       517.       134.    1936.20
        0.38       2.34      13.96       2.34      0.120      0.035      0.120      0.000    1936.20    2061.47
  0.007035         55.        65.         65.         20          5          0       0.00     535.08    2596.56
0
  *SECNO 5.320

  3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =   2390                                          ####
       5.32      10.15    1946.25       0.33    1944.84    1946.90       0.64       0.45       0.43    1946.00
       8860.      759.      7998.       103.       497.      1182.       145.       525.       137.    1944.40
        0.39       1.53       6.77       0.71      0.060      0.028      0.030      0.000    1936.10    1929.76
  0.001212        260.       170.        150.          4          0          0       0.00     685.36    2615.12
0
  CCHV=   0.100  CEHV=   0.300
  *SECNO 5.570

  3301 HV CHANGED MORE THAN HVINS

  3685 20 TRIALS ATTEMPTED WSEL,CWSEL
  3693 PROBABLE MINIMUM SPECIFIC ENERGY
  3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =   2030                                          ####
          ####  Near Algonquin Drive Alignment                                             ####
       5.57      10.00    1961.72    1961.72    1959.58    1966.33       4.60       2.97       1.19    1961.00
       8860.        0.       8860.         0.       0.       515.         1.       561.       148.    1961.00
        0.41       0.27      17.22       0.25      0.140      0.025      0.130      0.000    1951.72    2001.52
  0.005547       1320.      1320.       1320.         20          5          0       0.00      58.21    2059.72
0
1
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```

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       5.        0.        0.  0.000000      0.00      1.0       0.  1809.300     0.000

MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

*PROF 4

CCHV=   0.100  CEHV=   0.300
*SECNO 2.650
          ####  Flows less than specified for CP35 due to lost breakout
          ####  at Spring Mountain Rd
          ####          Centerline =  2290                                  ####
          ####  Starting Water Levels taken from Reach 5 Analysis of 2.65   ####
     2.65     19.80  1809.30  1809.23  1809.30  1811.67     2.37     0.00     0.00  1804.70
    3542.     288.    2074.    1179.    116.     132.      218.       0.       0.   1802.00
     0.00      2.47    15.60     5.41    0.120    0.045    0.060    0.000  1789.50  1927.25
 0.006259      815.     760.     745.        0        4        0     0.00   976.35  2903.60
}
CCHV=   0.300  CEHV=   0.500
*SECNO 2.630
          ##################################################################
          ####          BOULDER HIGHWAY - Northbound Crossing               ####
          ####              Special Bridge Routine                          ####
          ##################################################################
     2.68     19.36  1811.16     0.00     0.00  1812.72     1.56     0.80     0.24  1791.80
    3542.     388.    1324.    1829.     146.      87.     364.      20.       4.   1791.80
     0.01      2.65    15.20     5.32    0.120    0.045    0.060    0.000  1791.80  9639.65
 0.004074      200.     170.     140.        3        0        0     0.00  1260.18 10899.83
}
SPECIAL BRIDGE

SB  XK         XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      2.80      0.00     40.50      8.70    229.00      0.00   1792.90   1791.80

*SECNO 2.630
6870 D.S. ENERGY OF 1812.72 HIGHER THAN COMPUTED ENERGY OF 1812.55
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
```

```
 2390.68   1814.11      1.40     33592.     1733.      229.      229.     1800.10   1805.40

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
      2.69     19.05   1811.95      0.33      0.00  1813.75      1.80      0.00      0.00  1792.90
     35420.     3815.   13815.    17790.    1357.     857.     3374.      26.         6.   1792.90
       0.01      2.81     16.12     5.27    0.120    0.045    0.060     0.000   1792.90   9654.66
  0.004681       50.       50.       50.       20        0        8      0.00   1207.27  10861.92
)
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

 *SECNO 2.700
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      ##########################################################################
      ####                BOULDER HIGHWAY - Southbound Crossing                 ####
      ####                     Special Bridge Routine                           ####
      ##########################################################################
      2.70     18.65   1813.05   1813.05      0.00  1814.93      1.38      0.29      0.04  1794.40
     35420.     3884.   13695.    17841.    1230.     839.     3046.      33.         7.   1794.40
       0.01      3.16     16.32     5.85    0.120    0.050    0.060     0.000   1794.40   9673.84
  0.006099       55.       55.       55.       20        6        0      0.00   1139.63  10813.47
)
 SPECIAL BRIDGE

 SB   XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.25        1.56        2.80        0.00       33.60       10.50       162.00      0.00       1795.90     1794.30

 *SECNO 2.710
 6870 D.S. ENERGY OF 1814.93 HIGHER THAN COMPUTED ENERGY OF 1813.70
 PRESSURE AND WEIR FLOW

  EGPRS        EGLWC         H3         QWEIR       QPR         BAREA     TRAPEZOID AREA      ELLC        ELTRD
  2971.04    1818.48        3.55      34574.       840.        162.          162.          1802.90     1804.40

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF

 3470 ENCROACHMENT STATIONS=    8920.0    10730.0  TYPE=      1  TARGET=     1810.000
      2.71     15.87   1813.47      0.00  1806.79  1815.35      1.87      0.00      0.00  1797.60
     35420.     5830.   11084.    18505.    1679.     635.     2769.      39.         8.   1797.60
       0.01      3.47     17.46     6.58    0.120    0.050    0.060     0.000   1797.60   9584.82
  0.008650       50.       50.       50.       20        0        8      0.00   1135.23  10720.05
)
 *SECNO 2.790

 3301 HV CHANGED MORE THAN HVINS
      ####            Centerline =  2320                                         ####
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

2.79	16.77	1816.17	0.00	1810.25	1817.35	1.18	1.80	0.21	1807.10
34420.	13394.	15065.	5961.	2558.	1235.	3514.	100.	19.	1808.40
0.03	5.24	12.19	1.70	0.050	0.035	0.160	0.000	1759.40	1928.58
0.002495	380.	420.	460.	3	0	0	0.00	1063.54	2892.11

CCHV= 0.100 CEHV= 0.300

*SECNO 2.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2340						####	
2.98	17.62	1825.02	1825.02	1817.91	1828.20	3.18	4.25	0.60	1817.40
34420.	2763.	18710.	12947.	1258.	974.	4108.	259.	43.	1817.60
0.05	2.20	19.21	3.15	0.160	0.040	0.160	0.000	1807.40	1996.15
0.008365	1070.	1010.	990.	20	8	0	0.00	976.40	2972.55

*SECNO 3.180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2300						####	
3.18	16.34	1837.04	1837.04	1827.99	1840.98	3.94	8.16	0.23	1831.10
34420.	5125.	28643.	653.	1891.	1643.	442.	361.	63.	1832.10
0.07	2.71	17.43	1.43	0.140	0.040	0.180	0.000	1820.70	1833.66
0.007502	1060.	1030.	1020.	4	11	0	0.00	740.25	2573.91

*SECNO 3.370

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2350						####	
3.37	18.72	1843.22	0.00	1833.91	1845.07	1.85	3.88	0.21	1832.90
34420.	8760.	21885.	3775.	4043.	1610.	2137.	503.	84.	1833.30
0.10	2.17	13.60	1.77	0.140	0.035	0.140	0.000	1824.50	1616.89
0.002540	805.	990.	1020.	3	0	0	0.00	1209.04	2825.93

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.530

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2390						####	
3.53	18.40	1850.50	1850.50	1838.73	1854.32	3.82	3.11	0.59	1847.60
34420.	914.	32087.	1413.	553.	1976.	933.	614.	103.	1847.80
0.11	1.65	16.24	1.52	0.120	0.035	0.140	0.000	1832.10	2080.09

```
 0.005486      825.      870.      885.       20          5          0      0.00    787.32   2867.42
)
 CCHV=   0.300  CEHV=   0.500
 *SECNO 3.550
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                                                          ####
          ####                    MOJAVE ROAD                           ####
          ####              Special Bridge Routine                      ####
          ####                                                          ####
          ##################################################################
     3.55     21.50  1853.60  1853.60  1839.74  1857.19     3.59     0.44     0.07  1832.10
    34420.     7067.    20868.     6485.     2287.     1075.     3015.      626.      106.    1832.10
     0.11      3.09     19.41      2.15     0.120     0.035     0.140    0.000  1832.10  1970.79
 0.003498       90.      100.      130.        20         8         0     0.00  1062.99  3033.78
)

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1849.63 ,NOT   1853.60 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK         XKOR       COFG       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.63       0.00      48.70      18.70     240.00      0.00    1835.00    1834.50

 *SECNO 3.560
 6870 D.S. ENERGY OF 1857.19 HIGHER THAN COMPUTED ENERGY OF 1857.01
 PRESSURE AND WEIR FLOW

1
  27-APR-88     00:07:33                                                                                PAGE    59

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
     0         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


   EGPRS       EGLWC       H3        QWEIR       QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                        AREA
    2351.84   1893.30       0.00     31730.     2850.      240.       240.     1843.00   1847.10


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
     3.56     21.57  1854.17  1853.95  1849.23  1857.69     3.52     0.17    -0.17  1832.60
    34420.     7101.    20771.     6547.     2317.     1079.     3062.      633.      107.    1832.60
     0.12      3.06     19.26      2.14     0.120     0.035     0.140    0.000  1832.60  1966.41
 0.003426       50.       50.       50.        20         5         0     0.00  1072.21  3038.62
)
 *SECNO 3.580
 3280 CROSS SECTION       3.58 EXTENDED       1.16 FEET

 3301 HV CHANGED MORE THAN HVINS

     3.58     25.05  1857.65     0.00  1849.40  1858.58     0.94     0.12     0.78  1832.60
    34420.    14376.    14422.     5622.     4368.     1253.     5569.      656.      110.    1832.60
     0.12      3.29     11.51     1.01     0.045     0.025     0.140    0.000  1832.60  1590.00
 0.000511       110.      110.      110.         5         0         0     0.00  1600.00  3190.00
)
 CCHV=   0.100  CEHV=   0.300
 *SECNO 3.710

 3265 DIVIDED FLOW
```

```
 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####  Overflows, paralleling Desert Inn, Confluence at this Section ####
      3.71    14.98   1864.98   1864.98   1858.61   1866.80      1.82      0.66      0.27   1860.00
     34420.   12267.    15519.    6234.     3049.     1028.     3219.      795.      134.    1858.00
       0.14     4.02     15.48     1.94     0.045     0.025     0.140     0.000   1850.00   8742.64
  0.002719      680.      660.      640.        20        15         0      0.00   1581.51  10609.81
 0
 1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS    BANK ELEV
     Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=   0.300  CEHV=   0.500
 *SECNO 3.770
 3280 CROSS SECTION       3.77 EXTENDED       2.68 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    DESERT INN ROAD                       ####
          ####                 Special Bridge Routine                   ####
          ####  BT points follow off road, high ground to north & south.  ####
          ####                 Centerline = 2720                         ####
          ##################################################################
      3.77    16.88   1870.68   1870.68   1862.35   1874.86      4.18      0.85      1.18   1853.80
     25760.    3445.    16882.    5433.      521.      844.     2627.      833.      142.    1853.80
       0.15     6.62     20.00     2.07     0.045     0.025     0.140     0.000   1853.80   2582.76
  0.002614      340.      330.      250.        20         8         0      0.00    537.24   3120.00
 0

 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS   1866.27 ,NOT   1870.68 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR      CDFO      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.56      3.00      0.00     48.70     18.70    240.00      0.00   1854.30   1853.80

 *SECNO 3.780
 6870 D.S. ENERGY OF 1874.86 HIGHER THAN COMPUTED ENERGY OF 1872.72
 3280 CROSS SECTION       3.78 EXTENDED       2.68 FEET

 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                               AREA
  2149.75   1903.57      0.00    23565.    2203.      240.      240.     1862.30   1865.50


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.78	16.88	1871.18	1871.13	1865.94	1875.36	4.18	0.20	-0.20	1854.30
25760.	3444.	16894.	5432.	520.	844.	2625.	840.	143.	1854.30
0.15	6.62	20.01	2.07	0.045	0.025	0.140	0.000	1854.30	2582.90
0.002617	75.	75.	75.	20	5	0	0.00	537.10	3120.00

CCHV= 0.100 CEHV= 0.300
*SECNO 3.830
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3593 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2240
This Section crosses Desert Inn to avoid skew. Note
however, that the Sect. doesn't cross wier define by BT pts

3.83	13.85	1873.85	1873.85	1865.61	1877.72	3.87	0.88	0.03	1872.00
25760.	177.	24451.	1132.	73.	1510.	671.	859.	146.	1868.00
0.15	2.43	16.20	1.69	0.045	0.035	0.140	0.000	1860.00	9821.42
0.006017	130.	230.	300.	20	15	0	0.00	504.89	10326.31

CCHV= 0.300 CEHV= 0.500
*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

Centerline = 2250

4.00	14.89	1880.09	1879.64	1873.63	1883.24	3.14	5.30	0.22	1874.70
25760.	5005.	19741.	14.	781.	1259.	17.	903.	154.	1880.00
0.17	7.69	15.69	0.32	0.045	0.035	0.060	0.000	1865.20	2085.39
0.005764	900.	900.	900.	7	8	0	0.00	325.87	2411.26

*SECNO 4.050

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

PECOS-McLEOD DRIVE

Special Bridge Routine

4.05	13.70	1882.10	1882.10	1875.89	1885.78	3.38	1.98	0.27	1888.00
25760.	0.	25760.	0.	0.	1673.	0.	914.	156.	1888.00
0.18	0.00	15.40	0.00	0.045	0.035	0.060	0.000	1868.40	9851.26
0.009507	100.	295.	400.	5	12	0	0.00	228.20	10079.46

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.63	0.00	72.00	0.00	1488.00	1.31	1868.90	1868.40

*SECNO 4.070
ERROR ELTRD.LT.MIN ROAD ELEV, ELTRD SET EQUAL TO MIN ROAD ELEV
3280 CROSS SECTION 4.07 EXTENDED 0.40 FEET

3301 HV CHANGED MORE THAN HVINS

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1889.36	1886.28	0.00	0.	25760.	1488.	1487.	1884.90	1890.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1890.10 ELREA= 1890.90

4.07	20.00	1888.90	0.00	1876.22	1889.36	0.46	3.58	0.00	1888.50
25760.	0.	25760.	0.	0.	4723.	1.	921.	157.	1888.50
0.18	0.00	5.45	0.00	0.045	0.035	0.050	0.000	1868.90	9440.00
0.001188	100.	100.	100.	2	0	0	0.00	650.00	10090.00

1490 NH CARD USED
*SECNO 4.210

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2500						####	
4.21	14.31	1891.11	1891.11	1883.84	1893.13	2.02	1.42	0.78	1882.10
25760.	6851.	14294.	4585.	1784.	989.	603.	988.	169.	1884.80
0.20	3.86	14.46	7.54	0.062	0.035	0.035	0.000	1876.80	1852.84
0.003930	720.	720.	720.	20	14	0	0.00	889.51	2838.89

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.410

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2530						####	
4.41	15.61	1901.51	1901.51	1893.64	1903.93	2.42	5.43	0.12	1898.60
25760.	2873.	16852.	6035.	644.	1137.	932.	1066.	188.	1905.40
0.23	4.46	14.82	6.48	0.060	0.035	0.050	0.000	1885.90	2280.56
0.006474	1140.	1085.	1080.	20	8	0	0.00	542.99	2909.46

*SECNO 4.630

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####                Centerline =  2460                                  ####
     4.63     15.53  1912.23  1912.23  1904.17  1914.83     2.59     5.88     0.05  1907.80
 25760.     1993.    21261.    2506.    1264.    1500.     808.     1145.     206.    1909.50
    0.25      1.58     14.17     3.10    0.120    0.035    0.060    0.000  1896.70  1890.62
0.004167      930.     1165.     1185.        4        5        0     0.00   927.50  3323.71
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 4.690

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ##################################################################
          ####                    EASTERN AVENUE                        ####
          ####                Special Bridge Routine                    ####
          ##################################################################
     4.69     14.73  1918.03  1918.03  1911.81  1919.98     1.96     1.14     0.19  1903.30
 25760.     3128.    9975.    12657.    1534.     589.    2331.     1170.     212.    1903.30
    0.26      2.04     16.93     5.43    0.120    0.035    0.050    0.000  1903.30  9394.34
0.004404      330.     280.      220.       20       10        0     0.00  1081.02 10475.35
3.
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 SPECIAL BRIDGE

 SB  XK       XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      2.63      3.00     32.00     10.00    176.00     0.00   1903.80   1903.30

 *SECNO 4.700
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
  2436.95   1924.39      4.41    24060.    1709.      176.      176.     1911.80   1914.10

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
     4.70     14.60  1918.40  1918.23  1916.93  1920.48     2.18     0.25    -0.25  1903.80
 25760.     3052.    10129.    12579.    1462.     584.    2275.     1176.     214.    1903.80
    0.26      2.09     17.34     5.53    0.120    0.035    0.060    0.000  1903.80  9414.83
0.004671       56.      56.       56.       20        5        0     0.00  1058.97 10473.80
3.
 1490 NH CARD USED
 *SECNO 4.750

 3301 HV CHANGED MORE THAN HVINS

          ####                Centerline =  2300                                  ####
          ####  Small Golf Course Bridge not modeled - assumed to fail          ####
     4.75     13.71  1920.81     0.00  1917.20  1921.36     0.55     0.42     0.46  1912.40
 25760.     1083.    20942.    3735.     402.     3235.    1398.     1201.     219.    1912.70
    0.27      2.70     6.47      2.67    0.045    0.035    0.045    0.000  1907.10  2074.36
0.000968      350.     260.      150.        2        0        0     0.00   952.24  3026.60
3
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*SECNO 4.820

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Special Bridge Routine
##

4.82	11.52	1921.52	1921.52	1916.98	1923.57	2.05	1.26	0.75	1910.00
25760.	9820.	8760.	7160.	1045.	576.	869.	1236.	226.	1910.00
0.28	9.40	15.24	8.24	0.140	0.140	0.140	0.000	1910.00	9745.79
0.079245	400.	400.	400.	4	16	0	0.00	624.15	10369.95

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.50	2.63	0.00	42.00	12.00	165.00	0.00	1910.60	1910.00

*SECNO 4.830

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
2489.23	1928.35	4.78	23465.	2343.	165.	165.	1916.10	1918.50

4.83	15.31	1925.91	0.00	1922.44	1926.22	0.31	2.65	0.00	1910.60
25760.	9190.	5140.	11430.	2121.	766.	3713.	1242.	228.	1910.60
0.29	4.33	6.71	3.08	0.140	0.140	0.140	0.000	1910.60	9562.08
0.010520	60.	60.	60.	2	0	8	0.00	1590.72	11152.80

1490 NH CARD USED
*SECNO 4.870

3265 DIVIDED FLOW

Centerline = 2400
Small Golf Course Bridge not modeled - assumed to fail

4.87	14.80	1926.30	0.00	1922.59	1927.00	0.69	0.59	0.19	1916.10
25760.	7565.	13918.	4275.	2095.	1617.	1872.	1266.	234.	1917.30
0.30	3.61	8.61	2.28	0.044	0.035	0.054	0.000	1911.50	1665.66
0.001557	240.	170.	130.	2	0	0	0.00	1632.97	3370.48

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV LEFT/RIGHT
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE  MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     2129.0     3070.0  TYPE=      1  TARGET=      941.000
         ####                Centerline =  2390                                ####
        5.04     10.80   1929.10   1929.10   1924.95   1931.88      2.79      2.73      0.63   1926.40
    25760.      580.    25121.      61.      135.      1953.       37.      1344.      255.    1925.80
       0.31      4.31      13.55     1.52     0.045     0.035     0.120     0.000   1918.30   2201.74
   0.008885     765.      890.     1040.        20        19         0      0.00    410.63   2612.37

 1490 NH CARD USED
 *SECNO 5.210
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
         ####                Centerline =  2380                                ####
         ####  Small Golf Course Bridge not modeled - assumed to fail          ####
         ####  Some of breakout returns from north; modeled flows do
         ####  not change because flows from Tropicana Wash confluence
         ####  still control.
        5.21     13.98   1938.18   1938.18   1932.70   1940.76      2.58      6.18      0.02   1931.60
    22500.      6875.    14795.      830.     1067.      971.       172.      1389.      264.    1933.70
       0.33      6.45      15.23     4.83     0.045     0.035     0.045     0.000   1924.20   2065.68
   0.005092     920.      920.      920.         5        11         0      0.00    426.94   2492.63

 *SECNO 5.250

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE  MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
         ####          Centerline - 2410
        5.26     13.21   1941.21   1941.21   1934.59   1945.83      4.62      1.55      0.61   1936.00
    22500.      299.    21979.      222.     171.      1259.       102.      1400.      266.    1936.00
       0.34      1.75      17.45     2.18     0.120     0.035     0.120     0.000   1928.00   2223.02
   0.007128     200.      270.      300.        20        11         0      0.00    286.07   2509.09

 CCHV=   0.300 CEHV=   0.500

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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 5.280
 3280 CROSS SECTION       5.28 EXTENDED      2.73 FEET

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE  MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
         ##########################################################################
         ####                    SPENCER STREET                                ####
         ####                Special Bridge Routine                            ####
         ####          Centerline = 2460                                       ####
         ##########################################################################
        5.29     11.23   1946.93   1946.93   1942.09   1949.56      2.63      0.46      0.60   1935.78
    22500.      3404.    11207.     2889.     2417.      618.       977.      1403.      267.    1935.70
       0.34      3.48      18.14     2.95     0.120     0.035     0.120     0.000   1935.70   2000.00
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0.007262       30.       70.      100.       20        15        0      0.00   785.79  2785.79
]
 SPECIAL BRIDGE

 SB   XK          XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
       1.25        1.56        2.63        0.00       50.25       14.25      180.00       0.00     1936.20     1935.70

 *SECNO 5.290
 6870 D.S. ENERGY OF 1949.56 HIGHER THAN COMPUTED ENERGY OF 1947.83
 3280 CROSS SECTION        5.29 EXTENDED        2.87 FEET

 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC        H3         QWEIR       QPR         BAREA     TRAPEZOID       ELLC        ELTRD
                                                                          AREA
   2325.42    1957.07       7.51      21418.      1100.       180.       180.       1941.20     1942.20


 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3710 WSEL ASSUMED BASED ON MIN DIFF
        5.29       11.37     1947.57     1947.43     1944.00     1950.06        2.49        0.46       -0.46     1936.20
    22500.        8470.      11087.       2943.       2479.        626.      1021.       1409.         268.     1936.20
        0.34        3.42       17.72        2.88       0.120       0.035      0.120       0.000     1936.20     2000.00
   0.006812         65.        65.         65.          20           5          0        0.00      794.42     2794.42
]
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS     BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

 *SECNO 5.320

 3301 HV CHANGED MORE THAN HVINS

           ####                Centerline =  2390                                    ####
        5.32       14.12     1950.22        0.00     1944.84     1951.00        0.77        0.42        0.51     1946.00
    22500.        5711.      15477.       1312.       2512.       1847.       806.       1432.         272.     1944.40
        0.35        2.27       8.38        1.53       0.060       0.028      0.080       0.000     1936.10     1710.90
   0.001026         260.       170.         150.          5           0          0        0.00      960.17     2671.07
]
 CCHV=   0.100 CEHV=   0.300
 *SECNO 5.570

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
           ####                Centerline =  2030                                    ####
           ####  Near Algonquin Drive Alignment                                      ####
        5.57       19.01     1970.73     1970.73     1959.58     1973.73        3.00        1.82        0.67     1961.00
    22500.        2083.      16613.       3804.       1827.       1028.      4034.       1615.         312.     1961.00
        0.38        1.14       16.16        0.94       0.140       0.025      0.180       0.000     1951.72     1389.08
   0.001943        1320.      1320.       1320.          20          18          0        0.00     1679.68     3068.76
]
1
 27-APR-88     00:07:33                                                                                    PAGE    69
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2.650	0.00	0.00	0.00	1789.50	6400.00	1798.51	0.00	1801.36	141.03	13.55	472.21	538.91
*	2.650	0.00	0.00	0.00	1789.50	8400.00	1799.43	1799.43	1803.24	168.44	15.66	536.56	647.23
	2.650	0.00	0.00	0.00	1789.50	11920.00	1801.70	1801.45	1806.13	155.98	16.89	705.54	954.43
	2.650	0.00	0.00	0.00	1789.50	35420.00	1809.30	1809.23	1811.67	62.59	15.60	4677.72	4477.24
	2.680	170.00	0.00	0.00	1791.80	6400.00	1800.55	0.00	1803.42	104.52	14.34	558.17	626.00
	2.680	170.00	0.00	0.00	1791.80	8400.00	1802.38	0.00	1805.49	90.18	15.10	719.39	884.57
*	2.680	170.00	0.00	0.00	1791.80	11920.00	1806.71	0.00	1808.26	35.81	11.97	1980.45	1991.81
	2.680	170.00	0.00	0.00	1791.80	35420.00	1811.16	0.00	1812.72	40.74	15.20	5978.25	5549.48
*	2.690	50.00	1805.40	1800.10	1792.90	6400.00	1806.41	0.00	1807.23	19.13	8.19	1261.16	1463.21
*	2.690	50.00	1805.40	1800.10	1792.90	8400.00	1806.73	0.00	1807.98	28.71	10.20	1410.76	1567.67
*	2.690	50.00	1805.40	1800.10	1792.90	11920.00	1806.95	1806.93	1809.25	52.75	13.97	1513.21	1641.21
*	2.690	50.00	1805.40	1800.10	1792.90	35420.00	1811.95	0.00	1813.75	46.81	16.12	5588.49	5176.97
	2.700	55.00	0.00	0.00	1794.40	6400.00	1806.34	0.00	1807.60	39.52	9.76	865.88	1018.00
	2.700	55.00	0.00	0.00	1794.40	8400.00	1806.55	0.00	1808.61	63.45	12.51	896.39	1054.58
*	2.700	55.00	0.00	0.00	1794.40	11920.00	1808.35	1808.35	1810.57	64.35	13.82	1464.60	1486.00
*	2.700	55.00	0.00	0.00	1794.40	35420.00	1813.05	1813.05	1814.93	60.99	16.32	5114.64	4535.53
*	2.710	50.00	1804.40	1802.90	1797.60	6400.00	1806.79	0.00	1808.96	101.81	13.16	663.00	634.30
*	2.710	50.00	1804.40	1802.90	1797.60	8400.00	1807.99	1807.99	1810.60	107.74	14.69	814.06	809.28
*	2.710	50.00	1804.40	1802.90	1797.60	11920.00	1810.75	0.00	1811.85	46.93	11.35	2423.08	1740.03
*	2.710	50.00	1804.40	1802.90	1797.60	35420.00	1813.47	0.00	1815.35	86.50	17.46	5083.27	3808.28
	2.790	420.00	0.00	0.00	1799.40	6000.00	1810.25	0.00	1810.87	16.44	6.91	1764.16	1479.88
	2.790	420.00	0.00	0.00	1799.40	8000.00	1811.89	0.00	1812.30	10.34	6.18	3110.68	2488.37
	2.790	420.00	0.00	0.00	1799.40	11420.00	1812.43	0.00	1813.06	15.39	7.82	3608.07	2910.88
	2.790	420.00	0.00	0.00	1799.40	34420.00	1816.17	0.00	1817.35	24.95	12.19	7307.65	6891.38
*	2.980	1010.00	0.00	0.00	1807.40	6000.00	1817.91	1817.91	1820.11	81.56	12.01	693.07	664.38
*	2.980	1010.00	0.00	0.00	1807.40	8000.00	1819.32	1819.32	1821.28	63.83	11.96	1514.30	1001.37
*	2.980	1010.00	0.00	0.00	1807.40	11420.00	1820.65	1820.65	1822.68	62.28	13.00	2453.26	1447.08
*	2.980	1010.00	0.00	0.00	1807.40	34420.00	1825.02	1825.02	1828.20	83.65	19.21	6340.34	3763.43

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	3.180	1030.00	0.00	0.00	1820.70	6000.00	1827.99	0.00	1829.98	113.67	11.31	530.41	562.77
*	3.180	1030.00	0.00	0.00	1820.70	8000.00	1828.65	1828.65	1831.39	138.25	13.28	602.22	680.38
*	3.180	1030.00	0.00	0.00	1820.70	11420.00	1830.19	1830.19	1833.52	131.25	14.65	779.76	996.82
*	3.180	1030.00	0.00	0.00	1820.70	34420.00	1837.04	1837.04	1840.98	75.02	17.43	3975.57	3973.89
	3.370	990.00	0.00	0.00	1824.50	6000.00	1833.91	0.00	1834.94	27.35	8.22	912.83	1147.21
	3.370	990.00	0.00	0.00	1824.50	8000.00	1835.28	0.00	1836.41	25.11	8.82	1460.86	1596.54
	3.370	990.00	0.00	0.00	1824.50	11420.00	1837.04	0.00	1838.30	23.72	9.67	2409.18	2344.80
	3.370	990.00	0.00	0.00	1824.50	34420.00	1843.22	0.00	1845.07	25.40	13.60	7750.26	6830.20

*	3.530	870.00	0.00	0.00	1832.10	8000.00	1839.92	1839.92	1842.98	105.01	14.04	569.63	780.69
*	3.530	870.00	0.00	0.00	1832.10	11420.00	1841.70	1841.70	1845.34	99.66	15.32	745.53	1143.93
*	3.530	870.00	0.00	0.00	1832.10	34420.00	1850.50	1850.50	1854.32	54.88	16.24	3461.38	4646.21
•	3.550	100.00	0.00	0.00	1832.10	6000.00	1839.74	1839.74	1843.57	90.88	15.70	382.08	529.40
*	3.550	100.00	0.00	0.00	1832.10	8000.00	1841.37	1841.37	1846.00	84.95	17.27	463.34	867.97
*	3.550	100.00	0.00	0.00	1832.10	11420.00	1843.28	1843.28	1847.15	65.21	17.14	1017.99	1414.23
*	3.550	100.00	0.00	0.00	1832.10	34420.00	1853.60	1853.60	1857.19	34.98	19.41	6378.13	5819.93
*	3.560	50.00	1847.10	1843.00	1832.60	6000.00	1849.23	0.00	1849.63	4.22	5.68	2286.45	2921.45
*	3.560	50.00	1847.10	1843.00	1832.60	8000.00	1850.31	0.00	1850.85	5.54	6.79	3035.54	3399.36
*	3.560	50.00	1847.10	1843.00	1832.60	11420.00	1851.36	0.00	1852.20	8.35	8.66	3848.82	3953.18
•	3.560	50.00	1847.10	1843.00	1832.60	34420.00	1854.17	1853.95	1857.69	34.26	19.26	6457.62	5880.74
	3.580	110.00	0.00	0.00	1832.60	6000.00	1849.40	0.00	1849.69	1.65	5.01	2397.93	4672.57
	3.580	110.00	0.00	0.00	1832.60	8000.00	1850.56	0.00	1850.94	2.10	5.91	3221.94	5522.08
	3.580	110.00	0.00	0.00	1832.60	11420.00	1851.79	0.00	1852.34	2.98	7.36	4207.00	6614.81
	3.580	110.00	0.00	0.00	1832.60	34420.00	1857.65	0.00	1858.58	5.11	11.51	11190.34	15219.25
*	3.710	660.00	0.00	0.00	1850.00	6000.00	1858.61	1858.61	1860.64	43.87	11.95	538.55	905.92
*	3.710	660.00	0.00	0.00	1850.00	8000.00	1859.57	1859.57	1861.88	44.04	13.00	1288.26	1205.50
*	3.710	660.00	0.00	0.00	1850.00	11420.00	1861.63	1861.63	1863.24	24.90	11.75	2730.39	2288.38
•	3.710	660.00	0.00	0.00	1850.00	34420.00	1864.98	1864.98	1866.80	27.19	15.48	7296.51	6601.14
*	3.770	330.00	0.00	0.00	1853.80	6000.00	1862.35	1862.35	1864.43	24.50	12.38	726.31	1212.28
*	3.770	330.00	0.00	0.00	1853.80	7610.00	1862.41	1862.41	1865.70	38.29	15.46	734.61	1229.87
*	3.770	330.00	0.00	0.00	1853.80	9680.00	1863.41	1863.41	1867.58	41.84	17.38	858.37	1496.43
*	3.770	330.00	0.00	0.00	1853.80	25760.00	1870.68	1870.68	1874.86	26.14	20.00	3991.59	5038.21
•	3.780	75.00	1865.50	1862.30	1854.30	6000.00	1865.94	0.00	1866.86	7.60	8.42	1511.22	2176.86
*	3.780	75.00	1865.50	1862.30	1854.30	7610.00	1866.41	0.00	1867.69	10.29	10.06	1722.62	2372.31
*	3.780	75.00	1865.50	1862.30	1854.30	9680.00	1866.75	0.00	1868.63	14.78	12.28	1873.14	2518.03
*	3.780	75.00	1865.50	1862.30	1854.30	25760.00	1871.18	1871.13	1875.36	26.17	20.01	3989.70	5035.71
•	3.830	230.00	0.00	0.00	1860.00	6000.00	1865.61	1865.61	1867.96	109.76	12.31	487.53	572.69
*	3.830	230.00	0.00	0.00	1860.00	7610.00	1866.46	1866.46	1869.15	106.67	13.15	578.69	736.83
*	3.830	230.00	0.00	0.00	1860.00	9680.00	1867.47	1867.47	1870.51	102.69	14.00	691.64	955.26
*	3.830	230.00	0.00	0.00	1860.00	25760.00	1873.85	1873.85	1877.72	60.17	16.20	2252.56	3320.95

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	4.000	900.00	0.00	0.00	1865.20	6000.00	1873.63	0.00	1875.38	61.57	10.64	563.98	764.67
	4.000	900.00	0.00	0.00	1865.20	7610.00	1874.59	0.00	1876.65	63.95	11.52	660.32	951.59
	4.000	900.00	0.00	0.00	1865.20	9680.00	1875.57	1874.98	1877.67	59.12	11.95	906.55	1259.00
	4.000	900.00	0.00	0.00	1865.20	25760.00	1880.09	1879.64	1883.24	57.64	15.69	2856.48	3392.95
	4.050	295.00	0.00	0.00	1868.40	6000.00	1875.89	0.00	1876.93	34.58	8.19	733.01	1020.35
	4.050	295.00	0.00	0.00	1868.40	7610.00	1877.07	0.00	1878.23	32.68	8.64	880.88	1331.24
	4.050	295.00	0.00	0.00	1868.40	9680.00	1877.67	0.00	1879.25	41.70	10.12	956.76	1499.09
•	4.050	295.00	0.00	0.00	1868.40	25760.00	1882.10	1882.10	1885.78	95.07	15.40	1672.67	2642.00
	4.070	100.00	1885.50	1884.90	1868.90	6000.00	1876.22	0.00	1877.32	37.54	8.42	712.61	979.27
	4.070	100.00	1885.50	1884.90	1868.90	7610.00	1877.38	0.00	1878.61	35.61	8.90	855.00	1275.21
	4.070	100.00	1885.50	1884.90	1868.90	9680.00	1878.07	0.00	1879.70	43.35	10.26	943.89	1470.23
	4.070	100.00	1890.10	1884.90	1868.90	25760.00	1888.90	0.00	1889.36	11.88	5.45	4723.01	7473.07
*	4.210	720.00	0.00	0.00	1876.80	6000.00	1883.84	1883.84	1886.38	87.68	12.95	506.52	640.75
*	4.210	720.00	0.00	0.00	1876.80	7610.00	1885.26	1885.26	1887.62	65.70	12.74	716.01	938.88
*	4.210	720.00	0.00	0.00	1876.80	9680.00	1886.55	1886.55	1888.72	52.71	12.68	1017.65	1333.33
*	4.210	720.00	0.00	0.00	1876.80	25760.00	1891.11	1891.11	1893.13	39.30	14.46	3380.58	4109.27
	4.410	1085.00	0.00	0.00	1885.90	6000.00	1893.64	0.00	1896.39	95.93	13.31	450.87	612.60
*	4.410	1085.00	0.00	0.00	1885.90	7610.00	1894.48	1894.48	1897.89	105.92	14.83	513.24	739.43

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*	4.410	1085.00	0.00	0.00	1885.90	25760.00	1901.51	1901.51	1903.93	64.74	14.82	2712.29	3201.63
	4.630	1165.00	0.00	0.00	1896.70	6000.00	1904.17	0.00	1905.95	69.72	10.73	559.17	718.57
	4.630	1165.00	0.00	0.00	1896.70	7610.00	1905.36	0.00	1907.28	61.59	11.13	683.95	969.68
	4.630	1165.00	0.00	0.00	1896.70	9680.00	1906.09	0.00	1908.58	71.74	12.66	764.57	1142.85
*	4.630	1165.00	0.00	0.00	1896.70	25760.00	1912.23	1912.23	1914.83	41.67	14.17	3571.56	3990.78
*	4.690	280.00	0.00	0.00	1903.30	6000.00	1911.81	1911.81	1913.91	55.01	13.13	681.62	808.98
*	4.690	280.00	0.00	0.00	1903.30	7610.00	1912.24	1912.24	1915.15	72.78	15.60	739.38	892.04
*	4.690	280.00	0.00	0.00	1903.30	9680.00	1914.48	1914.48	1916.29	40.01	13.43	1577.59	1530.35
*	4.690	280.00	0.00	0.00	1903.30	25760.00	1918.03	1918.03	1919.98	44.04	16.93	4453.53	3881.63
*	4.700	56.00	1914.10	1911.80	1903.80	6000.00	1916.93	0.00	1917.16	5.32	5.45	2938.75	2601.19
*	4.700	56.00	1914.10	1911.80	1903.80	7610.00	1917.29	0.00	1917.61	7.06	6.40	3249.26	2863.88
*	4.700	56.00	1914.10	1911.80	1903.80	9680.00	1917.75	0.00	1918.16	9.03	7.40	3671.97	3220.68
*	4.700	56.00	1914.10	1911.80	1903.80	25760.00	1918.40	1918.23	1920.48	46.71	17.34	4320.88	3768.95
	4.750	260.00	0.00	0.00	1907.10	6000.00	1917.20	0.00	1917.29	2.62	2.57	2629.00	3708.61
	4.750	260.00	0.00	0.00	1907.10	7610.00	1917.64	0.00	1917.77	3.35	3.02	2869.87	4155.81
	4.750	260.00	0.00	0.00	1907.10	9680.00	1918.19	0.00	1918.36	4.17	3.53	3180.78	4740.56
	4.750	260.00	0.00	0.00	1907.10	25760.00	1920.81	0.00	1921.36	9.68	6.47	5034.42	8278.42
	4.820	400.00	0.00	0.00	1910.00	6000.00	1916.98	0.00	1918.26	741.27	10.56	744.80	220.38
	4.820	400.00	0.00	0.00	1910.00	7610.00	1917.40	1917.36	1918.96	864.44	11.86	859.77	258.83
*	4.820	400.00	0.00	0.00	1910.00	9680.00	1918.05	1918.05	1919.75	886.01	12.69	1045.17	325.20
*	4.820	400.00	0.00	0.00	1910.00	25760.00	1921.52	1921.52	1923.57	792.45	15.24	2489.94	915.08

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	4.830	60.00	1918.50	1916.10	1910.60	6000.00	1922.44	0.00	1922.53	36.12	3.31	2694.40	998.37
*	4.830	60.00	1918.50	1916.10	1910.60	7610.00	1923.08	0.00	1923.19	41.32	3.67	3140.53	1183.86
*	4.830	60.00	1918.50	1916.10	1910.60	9680.00	1923.66	0.00	1923.80	49.56	4.14	3588.22	1375.08
	4.830	60.00	1918.50	1916.10	1910.60	25760.00	1925.91	0.00	1926.22	105.20	6.71	6596.61	2511.53
	4.870	170.00	0.00	0.00	1911.50	6000.00	1922.59	0.00	1922.79	5.46	3.96	1764.22	2566.78
	4.870	170.00	0.00	0.00	1911.50	7610.00	1923.24	0.00	1923.45	6.24	4.46	2066.58	3045.53
	4.870	170.00	0.00	0.00	1911.50	9680.00	1923.85	0.00	1924.16	7.43	5.09	2436.34	3551.58
	4.870	170.00	0.00	0.00	1911.50	25760.00	1926.30	0.00	1927.00	15.57	8.61	5583.63	6528.22
*	5.040	890.00	0.00	0.00	1918.30	6000.00	1924.95	1924.95	1926.29	139.73	9.29	645.98	507.58
*	5.040	890.00	0.00	0.00	1918.30	7610.00	1925.46	1925.46	1926.93	132.02	9.72	783.21	662.31
*	5.040	890.00	0.00	0.00	1918.30	9680.00	1925.98	1925.98	1927.66	129.03	10.39	931.41	852.19
*	5.040	890.00	0.00	0.00	1918.30	25760.00	1929.10	1929.10	1931.88	88.85	13.55	2024.94	2732.79
	5.210	920.00	0.00	0.00	1924.20	6000.00	1932.70	1931.64	1934.65	61.55	11.27	561.19	764.80
	5.210	920.00	0.00	0.00	1924.20	7300.00	1933.29	1933.05	1935.57	66.05	12.30	657.07	898.21
*	5.210	920.00	0.00	0.00	1924.20	8860.00	1934.09	1934.09	1936.51	63.59	12.89	815.87	1111.04
*	5.210	920.00	0.00	0.00	1924.20	22500.00	1938.18	1938.18	1940.76	50.92	15.23	2209.84	3153.14
	5.250	270.00	0.00	0.00	1928.00	6000.00	1934.59	0.00	1936.77	96.32	11.86	505.96	611.34
	5.250	270.00	0.00	0.00	1928.00	7300.00	1935.30	0.00	1937.75	96.36	12.55	581.80	743.66
*	5.250	270.00	0.00	0.00	1928.00	8860.00	1935.91	1935.91	1938.80	104.25	13.64	649.79	867.74
*	5.250	270.00	0.00	0.00	1928.00	22500.00	1941.21	1941.21	1945.83	71.28	17.45	1532.50	2665.06
*	5.280	70.00	0.00	0.00	1935.70	6000.00	1942.09	1942.09	1943.99	75.97	12.75	1033.86	688.38
*	5.280	70.00	0.00	0.00	1935.70	7300.00	1942.78	1942.78	1944.75	72.12	13.30	1326.14	859.59
*	5.280	70.00	0.00	0.00	1935.70	8860.00	1943.50	1943.50	1945.53	68.84	13.85	1685.45	1067.89
*	5.280	70.00	0.00	0.00	1935.70	22500.00	1946.93	1946.93	1949.56	72.62	18.14	4011.95	2640.36
*	5.290	65.00	1942.20	1941.20	1936.20	6000.00	1944.00	0.00	1944.93	31.50	9.38	1687.38	1069.01
*	5.290	65.00	1942.20	1941.20	1936.20	7300.00	1943.51	0.00	1945.26	62.28	12.63	1438.90	925.03
*	5.290	65.00	1942.20	1941.20	1936.20	8860.00	1943.96	1943.91	1946.03	70.35	13.96	1665.52	1056.34
*	5.290	65.00	1942.20	1941.20	1936.20	22500.00	1947.57	1947.48	1950.06	68.12	17.72	4125.57	2726.08

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5.320	170.00	0.00	0.00	1936.10	6000.00	1944.84	0.00	1945.38	12.08	6.03	1174.87	1726.50
5.320	170.00	0.00	0.00	1936.10	7300.00	1945.41	0.00	1946.05	13.08	6.57	1380.57	2018.78
5.320	170.00	0.00	0.00	1936.10	8860.00	1946.25	0.00	1946.90	12.12	6.77	1824.31	2545.18
5.320	170.00	0.00	0.00	1936.10	22500.00	1950.22	0.00	1951.00	10.26	8.38	5164.67	7024.67
5.570	1320.00	0.00	0.00	1951.72	6000.00	1959.58	1959.58	1963.19	58.06	15.25	393.52	787.46
5.570	1320.00	0.00	0.00	1951.72	7300.00	1960.66	1960.66	1964.68	56.32	16.09	453.83	972.70
5.570	1320.00	0.00	0.00	1951.72	8860.00	1961.72	1961.72	1966.33	55.47	17.22	515.03	1189.59
5.570	1320.00	0.00	0.00	1951.72	22500.00	1970.73	1970.73	1973.73	19.43	16.16	6888.85	5104.82

FLAMINGO WASH REACH 4 (

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
2.650	6400.00	1798.51	0.00	0.00	0.00	68.30	0.00
2.650	8400.00	1799.43	0.92	0.00	0.03	71.11	0.00
2.650	11920.00	1801.70	2.27	0.00	0.00	77.99	0.00
2.650	35420.00	1809.30	7.60	0.00	0.03	976.35	0.00
2.680	6400.00	1800.55	0.00	2.04	0.00	83.35	170.00
2.680	8400.00	1802.38	1.83	2.95	0.00	93.89	170.00
2.680	11920.00	1806.71	4.33	-0.20	0.00	588.50	170.00
2.680	35420.00	1811.16	4.45	1.86	0.03	1260.18	170.00
2.690	6400.00	1806.41	0.00	5.86	0.00	433.69	50.00
2.690	8400.00	1806.73	0.32	4.35	0.00	470.11	50.00
2.690	11920.00	1806.95	0.22	0.24	0.00	493.50	50.00
2.690	35420.00	1811.95	5.00	0.79	0.00	1207.27	50.00
2.700	6400.00	1806.34	0.00	-0.07	0.00	136.21	55.00
2.700	8400.00	1806.55	0.21	-0.18	0.00	147.50	55.00
2.700	11920.00	1809.35	1.90	0.50	0.00	482.54	55.00
2.700	35420.00	1813.05	4.69	1.10	0.03	1139.63	55.00
2.710	6400.00	1806.79	0.00	0.45	0.00	104.32	50.00
2.710	8400.00	1807.99	1.20	1.43	1.20	221.94	50.00
2.710	11920.00	1810.75	2.77	2.40	3.97	822.74	50.00
2.710	35420.00	1813.47	2.72	0.43	6.68	1135.23	50.00
2.790	6000.00	1810.25	0.00	3.46	0.00	741.44	420.00
2.790	8000.00	1811.89	1.64	3.91	1.64	899.55	420.00
2.790	11420.00	1812.43	0.54	1.68	2.18	925.23	420.00
2.790	34420.00	1816.17	3.74	2.70	5.92	1063.54	420.00
2.980	6000.00	1817.91	0.00	7.66	0.00	493.98	1010.00
2.980	8000.00	1819.32	1.41	7.43	1.41	669.42	1010.00
2.980	11420.00	1820.65	1.32	8.21	2.74	782.26	1010.00
2.980	34420.00	1825.02	4.37	8.85	7.11	976.40	1010.00
3.180	6000.00	1827.99	0.00	10.08	0.00	107.86	1030.00
3.180	8000.00	1828.65	0.66	9.33	0.66	111.28	1030.00
3.180	11420.00	1830.19	1.54	9.54	2.20	119.30	1030.00
3.180	34420.00	1837.04	6.85	12.02	9.04	740.25	1030.00
3.370	6000.00	1833.91	0.00	5.92	0.00	307.84	990.00
3.370	8000.00	1835.28	1.37	6.63	1.37	458.04	990.00
3.370	11420.00	1837.04	1.76	6.86	3.13	619.87	990.00
3.370	34420.00	1843.22	6.17	6.18	9.30	1209.04	990.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	3.530	6000.00	1838.73	0.00	4.81	0.00	88.63	870.00
*	3.530	8000.00	1839.92	1.19	4.64	1.19	94.33	870.00
*	3.530	11420.00	1841.70	1.78	4.65	2.97	103.77	870.00
*	3.530	34420.00	1850.50	8.80	7.29	11.78	787.32	870.00
*	3.550	6000.00	1839.74	0.00	1.02	0.00	50.00	100.00
*	3.550	8000.00	1841.37	1.63	1.45	1.63	50.00	100.00
*	3.550	11420.00	1843.28	1.91	1.58	3.54	115.63	100.00
*	3.550	34420.00	1853.60	10.32	3.09	13.85	1062.99	100.00
*	3.560	6000.00	1846.23	0.00	9.49	0.00	636.33	50.00
*	3.560	8000.00	1850.31	1.08	8.94	1.08	737.24	50.00
*	3.560	11420.00	1851.36	1.05	8.08	2.13	813.41	50.00
*	3.560	34420.00	1854.17	2.81	0.57	4.94	1072.21	50.00
	3.580	6000.00	1849.40	0.00	0.17	0.00	659.92	110.00
	3.580	8000.00	1850.56	1.16	0.25	1.16	755.38	110.00
	3.580	11420.00	1851.79	1.23	0.43	2.39	844.78	110.00
	3.580	34420.00	1857.65	5.86	3.48	8.24	1600.00	110.00
*	3.710	6000.00	1858.61	0.00	9.21	0.00	339.99	660.00
*	3.710	8000.00	1859.57	0.95	9.00	0.95	394.55	660.00
*	3.710	11420.00	1861.63	2.06	9.84	3.01	1031.63	660.00
*	3.710	34420.00	1864.98	3.35	7.33	6.37	1581.51	660.00
*	3.770	6000.00	1862.35	0.00	3.73	0.00	120.00	330.00
*	3.770	7610.00	1862.41	0.07	2.85	0.07	120.56	330.00
*	3.770	9680.00	1863.41	0.99	1.78	1.05	128.70	330.00
*	3.770	25760.00	1870.68	7.27	5.70	8.34	537.24	330.00
*	3.780	6000.00	1865.94	0.00	3.60	0.00	445.53	75.00
*	3.780	7610.00	1866.41	0.47	4.00	0.47	449.45	75.00
*	3.780	9680.00	1866.75	0.34	3.34	0.81	452.21	75.00
*	3.780	25760.00	1871.18	4.43	0.50	5.23	537.10	75.00
*	3.830	6000.00	1865.61	0.00	-0.34	0.00	103.88	230.00
*	3.830	7610.00	1866.46	0.86	0.05	0.86	109.05	230.00
*	3.830	9680.00	1867.47	1.01	0.72	1.86	115.14	230.00
*	3.830	25760.00	1873.85	6.38	2.67	8.24	504.89	230.00
	4.000	6000.00	1873.63	0.00	8.02	0.00	96.35	900.00
	4.000	7610.00	1874.59	0.96	8.12	0.96	102.82	900.00
	4.000	9680.00	1875.57	0.98	8.10	1.94	206.80	900.00
	4.000	25760.00	1880.09	4.52	6.25	6.47	325.87	900.00
	4.050	6000.00	1875.89	0.00	2.27	0.00	120.67	295.00
	4.050	7610.00	1877.07	1.18	2.49	1.18	127.92	295.00
	4.050	9680.00	1877.67	0.59	2.10	1.77	131.49	295.00
*	4.050	25760.00	1882.10	4.43	2.01	6.21	228.20	295.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.070	6000.00	1876.22	0.00	0.33	0.00	119.64	100.00
	4.070	7610.00	1877.38	1.16	0.31	1.15	126.69	100.00
	4.070	9680.00	1878.07	0.69	0.40	1.85	130.89	100.00
	4.070	25760.00	1888.90	10.83	6.80	12.68	650.00	100.00
*	4.210	6000.00	1883.84	0.00	7.61	0.00	116.82	720.00
*	4.210	7610.00	1885.26	1.43	7.89	1.43	200.82	720.00

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*	4.210	9680.00	1886.55	1.29	8.48	2.72	305.01	720.00
*	4.210	25760.00	1891.11	4.56	2.21	7.28	889.51	720.00
	4.410	6000.00	1893.64	0.00	9.81	0.00	72.93	1085.00
*	4.410	7610.00	1894.48	0.84	9.22	0.84	75.63	1085.00
*	4.410	9680.00	1896.29	1.81	9.74	2.65	151.81	1085.00
*	4.410	25760.00	1901.51	5.22	10.40	7.87	542.99	1085.00
	4.630	6000.00	1904.17	0.00	10.53	0.00	102.75	1165.00
	4.630	7610.00	1905.36	1.19	10.88	1.19	108.12	1165.00
	4.630	9680.00	1906.09	0.73	9.80	1.92	111.45	1165.00
*	4.630	25760.00	1912.23	6.15	10.72	8.07	927.50	1165.00
*	4.690	6000.00	1911.81	0.00	7.65	0.00	127.72	280.00
*	4.690	7610.00	1912.24	0.42	6.88	0.42	154.42	280.00
*	4.690	9680.00	1914.48	2.24	8.39	2.66	614.48	280.00
*	4.690	25760.00	1918.03	3.55	5.79	6.21	1081.02	280.00
*	4.700	6000.00	1916.93	0.00	5.11	0.00	811.42	56.00
*	4.700	7610.00	1917.29	0.37	5.05	0.37	873.17	56.00
*	4.700	9680.00	1917.75	0.46	3.28	0.83	950.81	56.00
*	4.700	25760.00	1918.40	0.65	0.38	1.48	1058.97	56.00
	4.750	6000.00	1917.20	0.00	0.27	0.00	524.91	260.00
	4.750	7610.00	1917.64	0.45	0.35	0.45	553.93	260.00
	4.750	9680.00	1918.19	0.54	0.43	0.99	589.27	260.00
	4.750	25760.00	1920.81	2.63	2.41	3.62	952.24	260.00
	4.820	6000.00	1916.98	0.00	-0.22	0.00	259.20	400.00
	4.820	7610.00	1917.40	0.43	-0.24	0.43	276.37	400.00
*	4.820	9680.00	1918.05	0.65	-0.14	1.07	302.02	400.00
*	4.820	25760.00	1921.52	3.47	0.71	4.54	624.15	400.00
*	4.830	6000.00	1922.44	0.00	5.46	0.00	661.83	60.00
*	4.830	7610.00	1923.08	0.64	5.67	0.64	737.40	60.00
*	4.830	9680.00	1923.66	0.58	5.61	1.22	806.14	60.00
	4.830	25760.00	1925.91	2.25	4.39	3.47	1590.72	60.00
	4.870	6000.00	1922.59	0.00	0.15	0.00	419.63	170.00
	4.870	7610.00	1923.24	0.65	0.17	0.65	506.39	170.00
	4.870	9680.00	1923.85	0.61	0.20	1.26	788.17	170.00
	4.870	25760.00	1926.30	2.45	0.39	3.71	1632.97	170.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.040	6000.00	1924.95	0.00	2.36	0.00	255.27	890.00
*	5.040	7610.00	1925.46	0.52	2.22	0.52	277.29	890.00
*	5.040	9680.00	1925.98	0.52	2.13	1.03	294.18	890.00
*	5.040	25760.00	1929.10	3.12	2.79	4.15	410.63	890.00
	5.210	6000.00	1932.70	0.00	7.75	0.00	141.99	920.00
	5.210	7300.00	1933.29	0.59	7.83	0.59	175.67	920.00
*	5.210	8860.00	1934.09	0.80	8.11	1.39	228.64	920.00
*	5.210	22500.00	1938.18	4.09	9.08	5.48	426.94	920.00
	5.260	6000.00	1934.59	0.00	1.89	0.00	103.55	270.00
	5.260	7300.00	1935.30	0.71	2.01	0.71	109.34	270.00
*	5.260	8860.00	1935.91	0.61	1.82	1.32	114.28	270.00
*	5.260	22500.00	1941.21	5.30	3.03	6.62	286.07	270.00
*	5.280	6000.00	1942.09	0.00	7.50	0.00	385.59	70.00
*	5.280	7300.00	1942.78	0.69	7.48	0.69	461.28	70.00
*	5.280	8860.00	1943.50	0.72	7.59	1.41	539.10	70.00
*	5.280	22500.00	1946.93	3.43	5.72	4.84	785.79	70.00

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*	5.290	6000.00	1944.00	0.00	1.91	0.00	539.49	65.00
*	5.290	7300.00	1943.51	-0.48	0.73	-0.48	487.04	65.00
*	5.290	8860.00	1943.96	0.45	0.46	-0.04	535.08	65.00
*	5.290	22500.00	1947.57	3.61	0.64	3.57	794.42	65.00
	5.320	6000.00	1944.84	0.00	0.84	0.00	319.48	170.00
	5.320	7300.00	1945.41	0.57	1.90	0.57	414.21	170.00
	5.320	8860.00	1946.25	0.84	2.29	1.41	685.36	170.00
	5.320	22500.00	1950.22	3.97	2.65	5.38	960.17	170.00
*	5.570	6000.00	1959.58	0.00	14.74	0.00	55.16	1320.00
*	5.570	7300.00	1960.66	1.08	15.24	1.08	56.56	1320.00
*	5.570	8860.00	1961.72	1.07	15.47	2.15	58.21	1320.00
*	5.570	22500.00	1970.73	9.01	20.51	11.15	1679.68	1320.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2.650 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 2.680 PROFILE= 3 INTERPOLATED XSECTIONS USED

CAUTION SECNO= 2.690 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.690 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.690 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.690 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.700 PROFILE= 3 INTERPOLATED XSECTIONS USED
CAUTION SECNO= 2.700 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.700 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.700 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.710 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.710 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.710 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 2 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 3 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.710 PROFILE= 3 HYDRAULIC JUMP D.S.
CAUTION SECNO= 2.710 PROFILE= 4 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 2.710 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.980 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.980 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.980 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.980 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 3.180 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.180 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.180 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.180 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 3.530 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 3.530 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.530 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.530 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.530 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.530 PROFILE= 3 CRITICAL DEPTH ASSUMED
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 **************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **************************************************


 EOF..
```

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```
  66
2.65 ####  Flows less than specified for CP35 due to lost breakout
2.65 ####  at Spring Mountain Rd
2.65 ####           Centerline =  2290                                  ####
2.65 ####  Starting Water Levels taken from Reach 5 Analysis of 2.65    ####
2.68 ##########################################################################
2.68 ####           BOULDER HIGHWAY - Northbound Crossing               ####
2.68 ####              Special Bridge Routine                           ####
2.68 ##########################################################################
2.70 ##########################################################################
2.70 ####           BOULDER HIGHWAY - Southbound Crossing               ####
2.70 ####              Special Bridge Routine                           ####
2.70 ##########################################################################
2.79 ####           Centerline =  2320                                  ####
2.98 ####           Centerline =  2340                                  ####
3.18 ####           Centerline =  2300                                  ####
3.37 ####           Centerline =  2350                                  ####
3.53 ####           Centerline =  2390                                  ####
3.55 ##########################################################################
3.55 ####                 MOJAVE ROAD                                   ####
3.55 ####              Special Bridge Routine                           ####
3.55 ##########################################################################
3.71 ####  Overflows, paralleling Desert Inn, Conflue at this Section ####
3.77 ##########################################################################
3.77 ####                 DESERT INN ROAD                               ####
3.77 ####              Special Bridge Routine                           ####
3.77 ####  BT points follow off road, high ground to north & south.     ####
3.77 ####                 Centerline = 2720
3.77 ##########################################################################
3.83 ####           Centerline =  2240                                  ####
3.83 ####  This Section crosses Desert Inn to avoid skew.  Note         ####
3.83 ####  however, that the Sect. doesn't cross wier define by BT pts ####
4.00 ####           Centerline =  2250                                  ####
4.05 ##########################################################################
4.05 ####                 PECOS-McLEOD DRIVE                            ####
4.05 ####              Special Bridge Routine                           ####
4.05 ##########################################################################
4.21 ####           Centerline =  2500                                  ####
4.41 ####           Centerline =  2530                                  ####
4.63 ####           Centerline =  2460                                  ####
4.69 ##########################################################################
4.69 ####                 EASTERN AVENUE                                ####
4.69 ####              Special Bridge Routine                           ####
4.69 ##########################################################################
4.75 ####           Centerline =  2300                                  ####
4.75 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
4.82 ##########################################################################
4.82 ####                 TIOGA WAY                                     ####
4.82 ####              Special Bridge Routine                           ####
4.82 ##########################################################################
4.87 ####           Centerline =  2400                                  ####
4.87 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
5.04 ####           Centerline =  2390                                  ####
5.21 ####           Centerline =  2380                                  ####
5.21 ####  Small Golf Course Bridge not modeled - assumed to fail       ####
5.21 ####  Some of breakout returns from north; modeled flows do
5.21 ####  not change because flows from Tropicana Wash confluence
5.21 ####  still control.
5.26 ####     Centerline - 2410
5.28 ##########################################################################
5.28 ####                 SPENCER STREET                                ####
5.28 ####              Special Bridge Routine                           ####
5.28 ####        Centerline = 2460
```

Reach 4

Sec 2.69 to 5.57

```
C    5.28 ##############################################################################
C    5.32 ####              Centerline =  2390                                      ####
C    5.57 ####              Centerline =  2030                                      ####
C    5.57 ####  Near Algonquin Drive Alignment                                      ####
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY                          DMH 10/5/87
T3        FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             2                                    1          1798.51
J2        1              -1
NC    .12       .06      .045      .1        .3
QT       4       6400      8400     11920     35420
X1    2.65         17      2242      2325       815       745       760
GR   1812       1880      1812      1880      1812      1880      1812      1880      1808      1550
GR1805.8       2000    1804.6      2171    1804.7      2242    1790.2      2264    1790.2      2280
GR1789.5       2306    1802.0      2325    1803.8      2415    1804.7      2596      1808      2810
GR1810.5       2990      1812      3210
NC                                  .3        .5
X1    2.68         15      9980     10025       200       140       170
X3      10                                                        1800.1    1800.1
GR1816.0       9410    1812.0      9600    1808.0      9790    1804.0      9950    1791.8      9980
GR1791.8      10025      1800     10040      1803     10050      1804     10130      1805     10220
GR   1805      10310      1808     10620    1809.5     10700    1812.0     11000    1813.0     11100
SB    1.25      1.560      2.80                40.5       8.7       229              1792.9    1791.8
X1    2.69                                     50        50        50                 1.1
X2                            1    1800.1    1805.4
X3      10                                                        1805.4    1805.4
BT       8       2000      1814                2235    1809.6                2490    1806.2      1801
BT    2538    1805.4      1801      2880    1805.7                3230    1810.5                3450
BT    1812                3540      1813
NC                         .05
X1    2.70                                     55.0      55.0      55.0                 1.5
X3      10                                                        1802.9    1802.9
ET                 6.1       6.1       6.1       6.1      8920     10730
SB    1.25      1.560      2.80                33.6      10.5       162              1795.9  1794.30
X1    2.71         13      9980     10020        50        50        50                 1.6
X2                            1    1802.9    1804.4
X3      10                                                        1804.4    1804.4
BT       9       1730    1817.3                2000    1813.5                2200      1809
BT    2450    1804.4                2517    1804.6                2850    1806.2                3170
BT1811.5                   3600    1812.5                4260    1815.2
GR   1820       8920      1816      9400      1812      9580      1808      9730      1806      9950
GR   1796       9980      1796     10020      1806     10060      1808     10420      1812     10730
GR   1813      10900      1813     11200      1816     11400
QT       4       6000      8000     11420     34420
NC    .05        .16      .035
X1    2.79         17      2272      2359       380       460       420
GR   1820       1570      1816      1840      1812      1940      1812      1940      1812      1940
GR1809.3       2000    1808.6      2200    1808.9      2231    1807.1      2272    1799.4      2302
GR1799.4       2335    1808.4      2359    1807.5      2439    1808.6      2598      1812      2850
GR   1816       2890      1820      2940
NC    .16        .16       .04        .1        .3
X1    2.98         15      2321      2389      1070       990      1010
GR   1828       1900      1828      1900      1828      1900      1828      1900      1828      1900
GR1824.9       2000    1818.0      2291    1817.4      2321    1807.7      2338    1807.4      2363
GR1817.6       2389    1817.2      2512    1817.6      2764      1820      2960      1828      2980
ET                                  6.1                2223      2960
NC    .14        .18
X1    3.18         18      2265      2392      1060      1020      1030
GR   1840       1730      1840      1730      1840      1730      1840      1730      1836      1870
GR1832.7       2000    1829.8      2107    1832.5      2223    1831.1      2265    1822.7      2284
GR1820.7       2296    1820.7      2312    1822.9      2332    1824.3      2369    1832.1      2392
GR1834.6       2481    1838.3      2622    1838.3      2960
NC    .14        .14      .035
X1    3.37         24      2280      2376       805      1020       990
X4       1    1833.2      2000
GR   1844       1560      1844      1560      1844      1560      1844      1560      1840      1850
GR   1836       1970    1832.2      2125    1834.3      2168    1833.8      2259    1832.9      2280
GR1827.0       2295    1824.5      2344    1824.5      2366    1833.3      2376    1834.7      2386
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GR1837.0	2409	1834.7	2491	1837.3	2584	1839.5	2648		
GR1842.1	2690	1840.9	2757	1841.1	2788	1844.0	2840		
NC .12	.14								
X1 3.53	24	2319	2481	825	885	870			
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2380	1832.1	2402	1836.7	2418	1842.4	2440
GR1845.4	2458	1847.8	2481	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
NC			.3	.5					
X1 3.55	24	2370	2420	90	130	100			
X3 10							1843	1843	
GR 1856	1590	1855	1610	1855	1610	1855	1610	1856.5	1800
GR1853.1	2000	1847.1	2185	1848.0	2233	1847.6	2319	1841.1	2335
GR1833.5	2342	1832.1	2370	1832.1	2420	1836.7	2428	1842.4	2440
GR1845.4	2458	1847.8	2491	1848.8	2536	1846.3	2567	1846.8	2591
GR1846.8	2620	1849.2	2813	1852	2930	1856	3190		
SB 1.25	1.560	2.63		48.7	18.7	240		1835	1834.5
X1 3.56				50	50	50		.5	
X2			1	1843	1847.1				
X3 10							1847.1	1847.1	
BT 7	1900	1856		1920	1852		2000	1849.6	
BT 2190	1847.1		2242.7	1848.4		2550	1854.1		2890
BT1857.1									
NC .045	.140	.025							
X1 3.58				110	110	110			
VC			.1	.3					
X1 3.71	15	9950	10040	680	640	660			
X4 3	1861	8900	1860	9220	1864	9480			
GR 1868	8720	1864	8750	1868	9560	1868	9740	1864	9800
GR 1860	9950	1852	9980	1850	10000	1852	10020	1858	10040
GR 1855	10100	1860	10370	1864	10600	1868	10640	1869.3	10980
BT 4	6000	7610	9680	25760					
NC		.025	.3	.5					
X1 3.77	13	2700	2750	340	250	330			
X3 10							1862.3	1862.3	
GR 1875	2310	1872	2350	1872	2430	1876	2480	1872	2530
GR 1869	2650	1853.8	2700	1853.8	2750	1864	2810	1865	2850
GR 1864	2920	1864	3100	1868	3120	1868	3280	1872	3470
SB 1.25	1.560	3.00		48.7	18.7	240		1854.3	1853.8
X1 3.78				75	75	75		0.5	
X2			1	1862.3	1865.5				
X3 10							1865.5	1865.5	
BT 8	0	1876		150	1872		260	1868.2	
BT 380	1868		520	1868		540	1864		720
BT 1864		760	1872						
NC .045	.14	.035	.1	.3					
X1 3.83	12	9900	10035	130	300	230			
GR1880.0	9060	1876.0	9170	1876	9510	1876	9730	1872	9900
GR 1860	9950	1860	10020	1868	10035	1872	10150	1872	10220
GR 1876	10450	1880	10750						
NC .045	.06		.3	.5					
X1 4.00	15	2238	2351	900	900	900			
X3 10									
GR1886.7	2000	1881.7	2079	1873.9	2110	1872.8	2130	1873.2	2152
GR1875.3	2177	1874.7	2238	1355.7	2274	1865.2	2316	1875.6	2344
GR1880.9	2351	1879.6	2404	1883.6	2463	1888.5	2628	1908	2610
X1 4.05	8	9440	10090	100	400	295			
X3 10							1890.1	1890.9	
GR 1888	9440	1884	9590	1884	9780	1880	9930	1868.4	9980
GR1868.4	10055	1888	10090	1892	10210				
SB 1.25	1.560	2.63		72	0	1488	1.31	1868.9	1868.4
X1 4.07				100	100	100		.5	
X2			1	1884.9	1885.5				
X3 10							1890.1	1890.9	
BT 2	2475	1890.1	1884.9	2568	1890.9	1884.9			
VH 4	.12	2000	.06	2482	.035	2689	.05	3071	
X1 4.21	26	2482	2556	720	720	720			

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GR 1908	1878	1268	1892	1340	1894	1894	1890	1894	1890
GR1888.5	2000	1890.4	2229	1886.3	2332	1886.1	2413	1882.4	2454
GR1882.1	2482	1876.8	2495	1876.8	2547	1884.8	2556	1884.8	2620
GR1890.8	2660	1893.9	2689	1893.9	2722	1890.4	2769	1889.4	2789
GR1890.7	2828	1892.7	2881	1900.2	2966	1902.2	3005	1904.8	3043
GR1910.3	3071								
NC .06	.05	.033	.1	.3					
NH 4	.12	2000	.06	2480	.035	2599	.05	3520	
X1 4.41	25	2480	2599	1140	1080	1085			
GR 1912	960	1908	1130	1908	1130	1908	1130	1906.5	1330
GR1904.4	2000	1905.3	2250	1899.1	2300	1897.4	2347	1898.6	2480
GR1887.0	2511	1886.3	2527	1885.9	2562	1900.7	2570	1900.3	2593
GR1905.4	2599	1905.1	2649	1898.8	2704	1894.7	2734	1898.9	2889
GR1902.6	2918	1902.0	3013	1904.2	3198	1912	3310	1914	3520
NC .12	.06	.035							
X1 4.63	20	2376	2498	930	1185	1165			
GR 1920	1030	1915.3	1150	1916.3	1500	1916	1580	1912	1910
GR1907.6	2000	1911.4	2235	1918.6	2329	1907.8	2376	1896.7	2408
GR1899.4	2426	1897.4	2448	1897.4	2478	1909.5	2498	1909.5	2551
GR1909.0	2731	1920	2990	1916	3250	1911.8	3320	1920	3390
NC			.3	.5					
X1 4.69	12	9980	10020	330	220	280			
X3 10							1911.8	1911.8	
GR 1920	9000	1918	9400	1916	9710	1912	9960	1903.3	9980
GR1903.3	10020	1908	10050	1912	10090	1913.5	10150	1913.5	10400
GR 1916	10450	1920	10500						
SB 1.25	1.560	2.63		32	10	176		1903.8	1903.3
X1 4.70				56	56	56		.5	
X2		1	1911.8	1914.1					
X3 10							1914.1	1914.1	
BT 11	1740	1922.8		2000	1920.3		2440	1917.4	
BT 2790	1914.6		2790	1961.1		2860	1915.6		2860
BT1914.1		3190	1916.6		3550	1918.6		3910	1921.4
BT	4230	1924							
NH 4	.045	2180	.035	2472	.045	2795	.14	3910	
X1 4.75	19	2174	2472	350	150	260			
GR 1928	1850	1928	1850	1928	1850	1928	1850	1928	1850
GR1922.4	2000	1920.7	2080	1912.4	2174	1909.7	2272	1908.1	2286
GR1907.1	2313	1908.0	2329	1908.5	2363	1912.7	2472	1915.9	2575
GR1920.0	2795	1922	3360	1924	3770	1928	3910		
X1 4.82	14	9970	10020	400	400	400.			
X3 10							1916.1	1916.1	
GR 1928	9300	1924	9690	1920	9780	1916	9840	1916	9940
GR 1910	9970	1910	10020	1916	10060	1920	10160	1921	10320
GR1923.5	10560	1923.5	10900	1924	11120	1928	11220		
SB 1.25	1.500	2.63		42	12	165		1910.6	1910.0
X1 4.83				60	60	60		.6	
X2		1	1916.1	1918.5					
X3 10							1918.5	1918.5	
BT 8	1750	1928.7		2000	1925.2		2380	1923.3	
BT 2660	1918.5		2708	1918.7		2820	1922.7		3220
BT 1924		3260	1928						
NH 5	.120	2000	.045	2225	.035	2685	.045	2735	.12
NH 3650									
X1 4.87	26	2345	2462	240	130	170			
GR 1932	1420	1928	1530	1928	1530	1928	1530	1924	1850
GR1922.5	2000	1921.6	2106	1924.3	2132	1925.7	2225	1922.6	2262
GR1917.8	2290	1916.1	2345	1915.8	2381	1912.7	2406	1911.5	2430
GR1911.5	2445	1915.4	2449	1917.3	2482	1920.2	2530	1923.8	2571
GR1925.5	2642	1928.2	2685	1924.2	2735	1923.5	3050	1927	3450
GR 1932	3650								
ET	6.1	6.1	6.1	6.1	2129	3070			
NC			.1	.3					
NH 5	.120	2129	.045	2294	.035	2590	.045	2590	.12
NH 3070									
X1 5.04	22	2294	2590	765	1040	890			
GR1936.0	1460	1932	1560	1932	1560	1932	1560	1928.4	1670
GR1930.6	2000	1932.3	2129	1931.1	2155	1928.4	2218	1926.4	2294

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GR1922.8     2320    1921.0     2372    1918.3     2376    1918.3     2390    1920.1     2415
GR1923.2     2436    1923.8     2519    1925.8     2590    1931.4     2628    1932.8     2724
GR1932.6     2781      1936     3070
QT       4   6000      7300     8860     22500
VH       4    .12      2000     .045      2336     .035      2417     .045      2676
X1    5.21      22      2336     2417       920      920       920
GR    1948    1030    1942.5     1260    1942.5     1260    1942.5     1260      1945     1630
GR1944.2     2000    1940.7     2034    1937.2     2078    1934.8     2159    1932.8     2268
GR1931.6     2336    1925.9     2351    1925.4     2369    1924.6     2396    1924.2     2408
GR1933.7     2417    1934.5     2436    1936.4     2460    1938.2     2493    1941.1     2584
GR1944.4     2608    1949.4     2676
NC    .12     .12      .035
X1    5.26      13      2355     2470       200      300       270
GR    1948    1030    1942.5     1260    1945.5     1630      1944     2000      1940     2320
GR    1936    2355      1928     2400      1928     2450      1936     2470      1940     2500
GR    1944    2530      1944     2820      1948     2950
NC    .12     .12      .035       .3        .5
X1    5.28       7      2430     2485        30      100        70
X3      10                                                  1941.2    1941.2
GR1944.2     2000    1940.0     2350    1935.7     2430    1935.7     2485      1940     2510
GR    1944    2610      1948     2850
SB    1.25   1.550      2.63                50.25     14.25      180                1936.2    1935.7
X1    5.29                                    65        65        65                  .5
X2                           1    1941.2    1942.2
X3      10                                                  1942.2    1942.2
BT       8    1820      1948                 2000    1945.2                2260    1944.1
BT    2590    1942.2                2750    1943.7                2862    1943.8                3180
BT1946.3                3340    1947.6
NC    .06     .08      .028
X1    5.32      14      2310     2477        260       150       170
X4       4  1945.3      2000     1946       2310      1948      1800      1952      1640
GR1956.0     1420    1941.5     2140    1946.0     2150    1946.0     2300    1941.4     2341
GR1936.1     2366    1936.1     2405    1936.1     2432    1942.7     2462    1944.4     2477
GR1945.2     2532    1945.6     2606      1952     2696      1952     3300
VC    .14     .18      .025       .1        .3
X1    5.57      16      2002     2059      1320     1320      1320
GR    1976     970      1972     1240      1972     1240      1972     1240      1968     1710
GR    1964    2000      1961     2002   1951.72     2008   1951.72     2053      1961     2059
GR    1964    2062    1967.5     2250    1965.8     2870      1968     2980      1972     3110
GR    1976    3350
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             3                                                  1                1799.4
J2       2             -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             4                                                  1                1801.7
J2       3             -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH  REACH 4 (BOULDER HYW. TO ALGONQUIN)
J1             5                                                  1                1809.3
J2    15               -1


ER
EOF..
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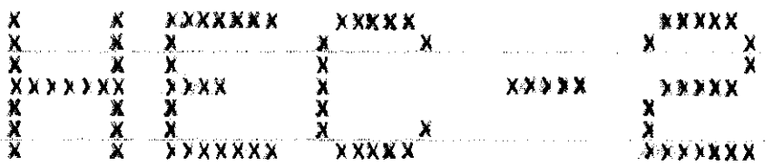
Continuous Interfolded ® Moore Business Forms, Inc.

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1*******************************************
*  WATER SURFACE PROFILES                 *
*  VERSION OF NOVEMBER 1976               *
*  UPDATED AUGUST 1983                    *
*                                         *
*  RUN DATE  26-APR-88 TIME   23:36:57    *
*******************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


Reach 5

Flow Splits



1
26-APR-88 23:36:57


```
*******************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*******************************************
```

SPLIT FLOW BEING PERFORMED

SF

```
TN       ROB BREAKOUT WEST OF NELLIS
NS      2      0.93      0.98        -1     .040     .008
NG      0    1729.6       290    1730.3

TN       ROB BREAKOUT EAST OF NELLIS
NS      2      0.98      1.12        -1     .040     .0043
NG    290    1730.3      1030    1732.5

TN       ROB BREAKOUT EAST OF NELLIS
NS      3      1.12      1.27        -1     .040     .0011
NG   1030    1732.5      1370    1732.5      1820    1735.0

TN       ROB BREAKOUT EAST OF NELLIS
NS      4      1.27      1.40        -1     .040     .0015
NG   1820      1735      1860      1736      2010      1736      2500      1739

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      6      1.92      2.06        -1     .180     .004
NG      0    1774.8        50      1776       400      1778       401      1788       600      1790
NG    760    1790.5

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
```

Flamingo Wash - C

```
NS      4     2.06      2.20        -1      .025      .010
NG    760  1790.5      1300  1792.9      1301  1782.9      1520  1784.1

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAME; CODE BLDGS
NS      4     2.20      2.29        -1      .025      .0167
NG   1520  1784.1      1840  1786.2      1841  1796.0      2040  1798.0

TN       SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY
NS      6     2.40      2.51        -1      .080      .008
NG      0  1796.0       200      1792       370  1788.5       450      1788       520  1787.5
NG    580     1800
1
 26-APR-88    23:36:57                                                                    PAGE    2

C
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH - REACH 5 (CONFLUENCE TO BOULDER HWY)    DMH 10/7/87

J1  ICHECK      INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         2.         0.         0.  0.001400       0.00       0.0        0.     1702.150     0.000

J2  NPROF       IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
     1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.045      0.045      0.135      0.100      0.300      0.000      0.000      0.000      0.000      0.000
GT      4.000   6400.000   8400.000  11920.000  35420.000      0.000      0.000      0.000      0.000      0.000
          ********** THIS IS A SPLIT FLOW RUN TO COMPLTE BREAKOUTS. *******

          ####  STARTING SLOPE SET EQUAL TO FIS EFEL'S SLOPE DOWNSTREAM     ####
          ####  ON LAS VEGAS CREEK.  THIS IS A DUMMY SECTION SET AT THE     ####
          ####  NORMAL/LOW FLOW CONFLUENCE TO GIVE FULL PROFILE DEFINITION.####
X1      0.000     13.000   2278.000   2629.000      0.000      0.000          0.000      0.000     -1.700      0.000
GR   1715.100   2000.000   1715.300   2278.000   1709.400   2314.000       1702.900   2328.000   1702.900   2353.000
GR   1701.400   2359.000   1701.400   2379.000   1702.300   2389.000       1709.100   2400.000   1710.400   2409.000
GR   1711.500   2459.000   1713.000   2563.000   1714.300   2620.000          0.000      0.000      0.000      0.000

          ####            CENTERLINE =  2350                                ####
X1      0.240      0.000      0.000      0.000   1250.000   1250.000       1250.000      0.000      1.700      0.000

          ####            CENTERLINE =  2230                                ####
X1      0.390     10.000   2192.000   2348.000    820.000    845.000        825.000      0.000      0.000      0.000
GR   1716.600   2000.000   1716.300   2192.000   1704.000   2218.000       1704.000   2239.000   1706.500   2262.000
GR   1711.900   2283.000   1714.500   2348.000   1714.300   2478.000       1714.100   2531.000   1716.000   2560.000

          ####            CENTERLINE =  2380                                ####
X1      0.560     10.000   2329.000   2411.000    970.000    830.000        900.000      0.000      0.000      0.000
X3      0.000      0.000      0.000      0.000      0.000   2533.000          0.000      0.000      0.000      0.000
GR   1719.200   2165.000   1719.200   2165.000   1716.900   2252.000       1714.900   2329.000   1708.300   2349.000
GR   1708.300   2385.000   1708.300   2397.000   1715.100   2411.000       1715.600   2438.000   1716.600   2499.000
GR   1720.100   2533.000   1718.600   2582.000   1718.400   2633.000       1716.100   2692.000   1716.100   2798.000
GR   1716.900   2872.000   1715.700   3021.000   1716.600   3086.000          0.000      0.000      0.000      0.000

          ####            CENTERLINE =  2430                                ####
X1      0.740     13.000   2330.000   2433.000    815.000    945.000        930.000      0.000      0.000      0.000
GR   1724.300   2149.000   1724.300   2149.000   1724.300   2149.000       1723.500   2281.000   1722.900   2330.000
GR   1720.000   2355.000   1713.200   2365.000   1713.200   2396.000       1714.300   2416.000   1721.400   2433.000
GR   1721.700   2487.000   1722.800   2579.000   1726.200   2660.000          0.000      0.000      0.000      0.000

          ####            CENTERLINE =  2320                                ####
X1      0.880     16.000   2278.000   2379.000    760.000    720.000        760.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000          0.000      0.000      0.000      0.000
GR   1730.800   2234.000   1727.900   2278.000   1718.100   2297.000       1718.100   2323.000   1718.200   2354.000
GR   1726.100   2379.000   1724.800   2400.000   1727.000   2423.000       1726.700   2439.000   1728.200   2452.000
```

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GR   1728.200   2430.000   1728.200   2514.000   1725.600   2528.000   1725.600   2550.000   1726.500   2566.000
1
 26-APR-88     23:36:57                                                                              PAGE     3

GR   1728.900   2585.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
          ####                    NELLIS BOULEWARD                              ####
          ####  SPECIAL BRIDGE ROUTINE                                          ####
          ####  USE ONLY 1 ET DEBRIS DUE SLOPED PIERS AND WINGWALLS
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
X1        0.910     16.000   2279.000   2384.000    140.000    140.000    140.000      0.000      0.000      0.000
X3       10.000      0.000      0.000      0.000      0.000      0.000      0.000   1724.500   1724.500      0.000
GR    1730.800   2234.000   1727.900   2278.000   1718.100   2279.000   1718.100   2323.000   1718.200   2354.000
GR    1718.200   2384.000   1724.800   2400.000   1727.000   2423.000   1726.700   2439.000   1728.200   2452.000
GR    1728.200   2480.000   1728.200   2514.000   1725.600   2528.000   1725.600   2550.000   1726.500   2566.000
GR    1728.900   2585.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB       1.100      1.560      2.800      0.000    107.000     11.000    480.000      0.000   1719.500   1719.000
X1       0.930      0.000      0.000      0.000     90.000     90.000     90.000      0.000      0.500      0.000
X2       0.000      0.000      1.000   1724.500   1726.000      0.000      0.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000   1726.000   1726.000      0.000
BT       8.000   2000.000   1728.300      0.000   2300.000   1727.400      0.000   2510.000   1727.600      0.000
BT    2710.000   1726.000      0.000   2720.000   1728.500   1724.500   2800.000   1728.500   1724.500   2827.000
BT    1726.000   1724.500   2950.000   1728.400      0.000      0.000      0.000      0.000      0.000      0.000

          ####            CENTERLINE =  2630                                    ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
          ####  A MAJOR BREAK OUT OCCURS UPSTREAM OF NELLIS BLVD WHICH           ####
          ####  FLOWS SOUTH.  SPLIT FLOW OPTION USED TO COMPUTE BREAKOUTS       ####
          ####  FROM .93 TO 1.40                                                ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
X1       0.980     14.000   2557.000   2669.000    300.000    300.000    300.000      0.000      0.000      0.000
X4       1.000   1731.400   2310.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    1732.000   1670.000   1729.400   2301.000   1730.700   2341.000   1729.600   2373.000   1729.700   2464.000
GR    1728.700   2484.000   1728.800   2532.000   1729.000   2557.000   1723.800   2578.000   1723.800   2599.000
GR    1726.900   2600.000   1723.700   2607.000   1724.700   2657.000   1730.300   2669.000      0.000      0.000

NC       .180      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          ####            CENTERLINE =  2340                                    ####
X1       1.120     10.000   2268.000   2403.000    725.000    725.000    730.000      0.000      0.000      0.000
GR    1736.000   1720.000   1732.700   1850.000   1732.900   2225.000   1731.800   2268.000   1725.000   2280.000
GR    1725.000   2333.000   1725.000   2333.000   1727.400   2342.000   1725.400   2393.000   1732.500   2403.000

NC       0.670      0.050      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####            CENTERLINE =  2330                                    ####
X1       1.270      8.000   2225.000   2380.000    795.000    800.000    800.000      0.000      0.000      0.000
X4       2.000   1732.000   2000.000   1735.000   2380.000      0.000      0.000      0.000      0.000      0.000
GR    1736.500   1850.000   1731.600   2225.000   1726.100   2239.000   1725.900   2263.000   1725.000   2352.000
GR    1731.400   2370.000   1732.100   2378.000   1735.000   2460.000      0.000      0.000      0.000      0.000

          ####            CENTERLINE =  2780                                    ####
X1       1.400     19.000   2644.000   2854.000    695.000    690.000    690.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    1740.600   2000.000   1738.400   2184.000   1738.200   2252.000   1740.700   2284.000   1739.200   2320.000
GR    1737.500   2389.000   1737.600   2476.000   1737.100   2552.000   1737.600   2626.000   1740.100   2644.000
GR    1739.300   2688.000   1737.500   2715.000   1735.200   2732.000   1727.900   2753.000   1727.500   2790.000
1
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GR   1736.000   2815.000   1736.900   2832.000   1735.000   2894.000   1735.000   3300.000      0.000      0.000

NC       0.050      0.050      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
NH       0.050   2437.000      0.035   2544.000      0.050   2900.000      0.180   3830.000      0.000      0.000
          ####            CENTERLINE =  2490                                    ####
```

X1	1.570	21.000	2437.000	2544.000	870.000	880.000	880.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1752.700	1740.000	1752.800	1740.000	1752.800	1740.000	1752.800	1740.000	1752.800	1740.000
GR	1748.800	2000.000	1745.600	2339.000	1746.200	2377.000	1747.100	2404.000	1747.000	2431.000
GR	1751.900	2437.000	1740.400	2462.000	1740.400	2478.000	1740.400	2494.000	1741.600	2508.000
GR	1743.500	2527.000	1747.500	2544.000	1745.800	2623.000	1748.200	2851.000	1749.000	2900.000
GR	1756.000	3839.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.050	0.050	0.035	0.100	0.300	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2310

X1	1.720	22.000	2245.000	2407.000	775.000	810.000	810.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1760.200	1640.000	1760.200	1640.000	1760.200	1640.000	1760.200	1640.000	1760.200	1640.000
GR	1755.300	2000.000	1755.300	2055.000	1755.300	2110.000	1755.300	2135.000	1755.300	2227.000
GR	1760.500	2245.000	1758.900	2262.000	1756.100	2281.000	1749.700	2303.000	1749.700	2311.000
GR	1751.200	2326.000	1752.100	2348.000	1751.000	2360.000	1758.600	2395.000	1759.300	2407.000
GR	1759.300	2453.000	1761.400	2526.000	0.000	0.000	0.000	0.000	0.000	0.000

CENTERLINE = 2271.

X1	1.880	16.000	2232.000	2341.000	755.000	790.000	795.000	0.000	0.000	0.000
GR	1774.000	2000.000	1773.600	2135.000	1773.400	2205.000	1771.300	2232.000	1760.800	2255.000
GR	1758.000	2262.000	1758.000	2278.000	1756.800	2281.000	1756.800	2296.000	1761.700	2308.000
GR	1770.700	2334.000	1774.000	2341.000	1774.000	2356.000	1774.000	2430.000	1772.000	2465.000
GR	1773.700	2596.000	1776.000	2880.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	1.890	0.000	0.000	0.000	105.000	105.000	105.000	0.000	1.900	0.000

%%%%

X1	2.200	12.000	2383.000	2517.000	755.000	760.000	760.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1783.800	2035.000	1783.300	2035.000	1783.800	2035.000	1781.600	2197.000	1783.500	2383.000
GR	1778.400	2487.000	1774.700	2441.300	1774.700	2483.000	1777.200	2496.000	1779.600	2508.000
GR	1784.400	2517.000	1785.900	2565.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	0.000	0.000	0.000	2850.000	3210.000
	####	CENTERLINE =	3020				####			
X1	2.290	43.000	2947.300	3064.000	510.000	460.000	480.000	0.000	0.000	0.000
GR	1784.300	2000.000	1786.000	2112.000	1783.600	2151.000	1783.400	2179.000	1783.300	2235.000
GR	1781.200	2258.000	1782.100	2286.000	1782.100	2319.000	1781.000	2343.000	1781.000	2376.000
GR	1781.400	2404.000	1782.900	2422.000	1781.800	2433.000	1781.400	2457.000	1781.700	2479.000
GR	1780.600	2599.000	1781.600	2522.000	1786.000	2529.000	1786.000	2592.000	1784.500	2599.000
GR	1785.800	2614.000	1786.100	2664.000	1785.300	2672.000	1785.900	2689.000	1785.900	2722.000
GR	1785.400	2733.000	1785.400	2754.000	1785.900	2779.000	1785.400	2800.000	1786.300	2842.000
GR	1788.100	2885.000	1785.700	2906.000	1786.400	2947.000	1776.900	2968.000	1776.900	2995.000
GR	1778.200	3005.000	1778.200	3040.000	1780.600	3050.000	1784.100	3064.000	1785.400	3087.000
GR	1787.100	3107.000	1785.100	3181.000	1786.600	3210.000	0.000	0.000	0.000	0.000
NC	0.050	0.050	0.020	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	####	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx					####			
	####	LAS VEGAS EXPRESSWAY - INTERSTATE 515					####			
	####	SPECIAL BRIDGE ROUTINE USED TO MODEL FLOW THROUGH THE					####			
	####	FLAMINGO WASH CROSSING. OVERFLOW TO THE NORTH MODELED					####			
	####	WITH SPLIT FLOW OPTION.					####			
	####	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx					####			
X1	2.380	6.000	2413.000	2547.000	450.000	450.000	450.000	0.000	-1.000	0.000
GR	1797.000	2000.000	1797.000	2413.000	1782.000	2442.000	1782.000	2519.000	1797.000	2547.000
GR	1800.000	3430.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.560	3.000	500.000	77.100	0.000	1266.000	2.375	1782.000	1781.000
X1	2.400	0.000	0.000	0.000	150.000	150.000	150.000	0.000	1.000	0.000
X2	0.000	0.000	1.000	1794.000	1800.000	0.000	0.000	0.000	0.000	0.000

NC	0.000	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2600				####			
X1	2.510	13.000	2571.000	2646.000	550.000	550.000	550.000	0.000	0.000	0.000
GR	1802.800	2000.000	1795.300	2180.000	1792.700	2463.000	1792.900	2571.000	1763.300	2589.000
GR	1783.700	2614.000	1788.900	2622.000	1789.400	2636.000	1796.900	2646.000	1791.100	2677.000
GR	1794.500	2834.000	1801.600	2963.000	1807.000	3117.000	0.000	0.000	0.000	0.000
NC	0.120	0.060	0.045	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	####	CENTERLINE =	2290				####			
X1	2.650	17.000	2242.000	2325.000	815.000	745.000	760.000	0.000	0.000	0.000
GR	1812.000	1880.000	1812.000	1880.000	1812.000	1880.000	1812.000	1880.000	1808.000	1950.000
GR	1805.800	2000.000	1804.600	2171.000	1804.700	2242.000	1790.200	2264.000	1790.200	2280.000
GR	1789.500	2306.000	1802.000	2325.000	1803.300	2415.000	1804.700	2596.000	1808.000	2810.000
GR	1810.500	2990.000	1812.000	3210.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CHSEL	CRIWS	CHSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	VCL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPHIC	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
*SECNO 0.000
********** THIS IS A SPLIT FLOW RUN TO COMPUTE BREAKOUTS. *******

```
          ####  STARTING SLOPE SET EQUAL TO FIS EFEL'S SLOPE DOWNSTREAM     ####
          ####  ON LAS VEGAS CREEK.  THIS IS A DUMMY SECTION SET AT THE     ####
          ####  NORMAL/LOW FLOW CONFLUENCE TO GIVE FULL PROFILE DEFINITION.####
      0.00        9.02  1708.72      0.00    1712.19   1709.14      0.42        0.00        0.00   1713.60
    3250.           0.    3250.        0.         0.       624.         0.          0.          0.   1712.60
      0.00        0.00     5.20      0.00     0.045     0.035       0.045       0.000     1699.70   2307.79
 0.001429          0.       0.        0.         0         0           0           0.00      102.00   2409.79
0
 *SECNO 0.240
          ####                CENTERLINE =  2350                                          ####
      0.24        9.10  1710.50      0.00       0.00   1710.91      0.41        1.77        0.00   1715.30
    3250.           0.    3250.        0.         0.       633.         0.         18.          3.   1714.30
      0.07        0.00     5.14      0.00     0.045     0.035       0.045       0.000     1701.40   2307.31
 0.001418        1250.    1250.     1250.         2         0           0           0.00      106.11   2413.41
0
 *SECNO 0.390
          ####                CENTERLINE =  2230                                          ####
      0.39        7.90  1711.90      0.00       0.00   1712.74      0.83        1.70        0.13   1716.00
    3250.           0.    3250.        0.         0.       444.         0.         28.          5.   1714.50
      0.10        0.00     7.33      0.00     0.045     0.035       0.045       0.000     1704.00   2200.87
 0.003279         820.     825.      845.         3         0           0           0.00       82.27   2283.14
0
 *SECNO 0.560

 3470 ENCROACHMENT STATIONS=        0.0     2533.0   TYPE=      1   TARGET=     2532.999
          ####                CENTERLINE =  2380                                          ####
      0.56        6.68  1714.98      0.00       0.00   1715.87      0.90        3.12        0.02   1714.90
    3250.           0.    3250.        0.         0.       427.         0.         37.          6.   1715.10
      0.13        0.23     7.60      0.00     0.045     0.035       0.045       0.000     1708.30   2326.00
 0.003669         970.     900.      830.         3         0           0           0.00       84.73   2410.73
0
 *SECNO 0.740
1
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    SECNO      DEPTH      CHSEL      CRIWS      WSELK      EG         HV         HL         CLOSS     BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        ARCH       VCL        TWA     LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELPIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     ICC        ICONT      CORAR      TOPWID      ENDST


 3301 HV CHANGED MORE THAN HVINS

          ####                CENTERLINE =  2430                                          ####
      0.74        5.88  1719.08      0.00       0.00   1720.49      1.41        4.46        0.15   1722.90
    3250.           0.    3250.        0.         0.       341.         0.         45.          8.   1721.40
      0.16        0.00     9.52      0.00     0.045     0.035       0.045       0.000     1713.20   2356.36
 0.006533         815.     930.      945.         2         0           0           0.00       71.07   2427.43
0
 *SECNO 0.880

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1727.90 ELREA=     1726.10
          ####                CENTERLINE =  2320                                          ####
      0.88        5.65  1723.75      0.00       0.00   1724.77      1.02        4.25        0.04   1727.90
    3250.           0.    3250.        0.         0.       400.         0.         52.         10.   1726.10
      0.18        0.00     8.12      0.00     0.045     0.035       0.045       0.000     1718.10   2286.05
 0.004838         760.     760.      720.         2         0           0           0.00       85.51   2371.56
0
 CCHV=    0.300 CEHV=    0.500
 *SECNO 0.910

 3301 HV CHANGED MORE THAN HVINS

          ####  %%%%
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```
          ####                    NELLIS BOLLEVARD                                  ####
          ####  SPECIAL BRIDGE ROUTINE                                              ####
          ####  USE ONLY 1 FT DEBRIS DUE SLOPED PIERS AND WINGWALLS
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
      0.91      5.39  1724.89      0.00      0.00  1725.29      0.40      0.33      0.19  1719.00
    3250.         .     3152.        96.         2.     614.        41.       54.       10.   1719.10
      0.19      0.55     5.13      2.37     0.045     0.035     0.045     0.000  1719.00  2278.40
 0.001387       140.      140.      140.         2         0         0      0.00    119.64  2398.04
6

 SPECIAL BRIDGE

1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLCSS    BANK ELEV
     G         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TCPWIC     ENDST

 SB  XK        XKOR      COFQ      RDLEN     BWC       EWP       BAREA     SS        ELCHU     ELCHD
       1.10      1.56      2.80      0.00    197.00     11.00    480.00     0.00   1719.50   1719.00

 *SECNO 0.930
 PRESSURE AND WEIR FLOW

  EGFRS      EGLWC       H3        QWEIR       GPR       EAREA    TRAPEZCID       ELLC      ELTRD
                                                                    AREA
   1726.00   1725.50      3.11         0.     3249.      480.      480.      1724.50   1726.00


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1726.00 ELREA=     1726.00

      0.93      6.39  1725.59      0.00      0.00  1726.00      0.41      0.71      0.00  1719.50
    3250.         0.     3250.        0.         0.     635.        0.       55.       10.   1715.60
      0.20      0.00     5.12      0.00     0.045     0.035     0.045     0.000  1719.50  2279.00
 0.001316        93.      93.       90.         3         0         0      0.00    105.00  2384.00
5
 *SECNO 0.980

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####              CENTERLINE =  2630                                      ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
          ####  A MAJOR BREAK OUT OCCURS UPSTREAM OF NELLIS BLVD WHICH                   ####
          ####  FLOWS SOUTH.  SPLIT FLOW OPTION USED TO COMPUTE BREAKOUTS               ####
          ####  FROM 0.93 TO 1.40                                                       ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
      0.98      4.04  1727.74  1727.74      0.00  1729.34      1.60      0.91      0.00  1729.00
    3250.         0.     3250.        0.         0.     320.        0.       58.       11.   1730.30
      0.21      0.00    10.15      0.00     0.045     0.035     0.045     0.000  1723.70  2562.10
 0.013017       300.      300.      300.        29        14         0      0.00    101.41  2663.51
4
 CCHV=   0.100 CEHV=   0.300
 *SECNO 1.120

 3301 HV CHANGED MORE THAN HVINS

3
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          ####                CENTERLINE =  2340                                    ####
      1.12       6.39  1731.39       0.00       0.00  1731.72       0.33       2.26       0.13  1731.80
    3250.          1.    3250.         0.         0.      700.         0.        67.        13.   1732.50
      0.25       0.00     4.64       0.00       0.18     0.035      0.045      0.000  1725.00  2268.74
 0.001354        735.      730.       725.          3         0          0       0.00   132.68  2401.42
0
 *SECNO 1.270
          ####                CENTERLINE =  2330                                    ####
      1.27       7.30  1732.30       0.00       0.00  1732.50       0.20       .76       0.01  1731.60
    3250.         41.    3200.         0.       116.     889.         0.        82.        18.   1735.00
      0.31       0.36     3.61       0.00       0.07     0.035      0.050      0.000  1725.00  1989.71
 0.000707        795.      800.       800.          2         0          0       0.00   388.44  2378.14
0
 *SECNO 1.400

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1740.10 ELREA=     1739.00

          ####                CENTERLINE =  2780                                    ####
      1.40       4.60  1732.50  1732.50       0.00  1734.26       1.85       1.26       0.50  1740.10
    3250.          0.    3250.         0.         0.      297.         0.        93.        21.   1735.00
      0.33       0.00    10.92       0.00       0.07     0.035      0.050      0.000  1727.90  2739.75
 0.012026        695.      690.       690.          5        14          0       0.00    81.42  2821.17
0
 CCHL=    0.10  CEHV=    0.30
 1490 NH CARD USED
 *SECNO 1.570
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1751.90 ELREA=     1747.50

          ####                CENTERLINE =  2490                                    ####
      1.57       4.86  1745.26  1745.26       0.00  1747.10       1.83      10.62       0.00  1751.90
    3250.          0.    3250.         0.         0.      299.         0.        99.        23.   1747.50
      0.35       0.00    10.86       0.00       0.05     0.035      0.050      0.000  1740.40  2451.43
 0.012118        870.      880.       880.          3         8          0       0.00    83.07  2534.50
0
 CCHL=    0.10  CEHV=    0.30
 *SECNO 1.720
1
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    SECNO      DEPTH     CHSEL     CRIWS     HSELK     EG        HV        HL        CLOSS     BANK ELEV
    6          QLOB      QCH       QROB      ALOB      ACH       ARCE      VOL       TEA    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN        SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID       ENDST


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1760.50 ELREA=     1759.30

          ####                CENTERLINE =  2310                                    ####
      1.72       5.38  1755.38  1755.01       0.00  1756.69       1.61       5.58       0.02  1760.50
    3250.          0.    3250.         0.         0.      319.         0.       105.        25.   1759.30
      0.37       0.00    10.18       0.00       0.05     0.035      0.050      0.000  1749.70  2284.48
 0.011540        775.      810.       810.          6         8          0       0.00    94.35  2378.83

 *SECNO 1.880
          ####                CENTERLINE =  2270                                    ####
      1.88       6.51  1763.31       0.00       0.00  1765.30       1.99       8.49       0.11  1771.30
    3250.          0.    3250.         0.         0.      287.         0.       110.        26.   1774.00
```

```
      0.39        0.0        11.31        0.00       0.050       0.035       0.050       0.000    1756.80    2249.49
 0.009918        795.       795.         790.           4           0           0        0.00      63.18    2312.67

CCHV=   0.300 CEHV=   0.500
*SECNO 1.890
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      1.89        6.28    1764.88    1764.88       0.00    1767.09        2.20        1.12       0.11    1773.10
      3250.          0.      3250.         0.          0.      273.          0.       111.         26.    1775.80
       0.40        0.0        11.91        0.00       0.050       0.035       0.050       0.000    1758.60    2250.00
 0.011498        105.       105.         105.           3           8           0        0.00      61.59    2311.99

*SECNO 1.900

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1772.39 ELREA=     1772.30

          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
          ####                          LAMB BOULEVARD                          ####
          ####                    SPECIAL BRIDGE ROUTINE                        ####
          ####              CENTERLINE = 2480                                   ####
          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####

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    SECNO       DEPTH       CWSEL       CRIWS       WSELK       EG          HV          HL          CLOSS    BANK ELEV
    Q           GLOB        QCH         QROB        ALOB        ACH         ARCB        VOL         TWA    LEFT/RIGHT
    TIME        VLOB        VCH         VROB        XNL         XNCH        XNR         WIN         ELPIN       SSTA
    SLOPE       XLOBL       XLCH        XLOBR       ITRIAL      IOC         ICONT       CORAR       TCP&ID      ENDST

      1.90        3.35    1768.85    1768.85       0.00    1770.31        1.47        0.12       0.22    1772.00
      3250.          0.      3250.         0.          0.      334.          0.       111.         26.    1776.00
       0.40        0.0        9.72        0.00       0.050       0.035       0.050       0.000    1765.60    2425.08
 0.012801         10.        10.         10.          20          11           0        0.00     114.40    2539.48

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1768.50 ,NOT   1768.85 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB   XK          XKOR        COFG        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
      1.10        1.56        2.63        0.00      102.00        4.00      588.00        0.00     1766.30     1765.80

*SECNO 1.920
CLASS B LOW FLOW

3420 BRIDGE W.S.=   1769.29 BRIDGE VELOCITY=,     10.22      CALCULATED CHANNEL AREA=,      253.

 EGFRS       EGLWC         H3          QWEIR       GLCH        EAREA       TRAPEZOID AREA      ELLC        ELTRD
      0.00    1771.29        0.00           0.      3250.        588.          608.          1772.50     1774.80


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1772.40 ELREA=     1772.40

      1.92        3.45    1770.25       0.00       0.00    1771.28        1.03        0.97       0.00    1776.50
      3250.          0.      3250.         0.          0.      399.          0.       112.         26.    1776.00
       0.40        0.00       8.15        0.00       0.050       0.035       0.050       0.000    1766.80    9955.62
 0.007996        100.       100.        100.           0           0           0        0.00     125.64   10081.26
```

*SECNO 2.060

3470 ENCROACHMENT STATIONS= 2310.0 3400.0 TYPE= 1 TARGET= 1050.000

```
####                CENTERLINE =  2480.                                  ####
####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
####  A MAJOR BREAKOUT OF FLOWS FOLLOWS AN OLD STREAM CHANNEL             ####
####  TO THE NORTH, UPSTREAM OF LAMB BLVD AND I-515.                      ####
####  BREAKOUT MODELED WITH SPLIT FLOW OPTION.                            ####
####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
```

2.06	4.65	1775.35	0.00	1775.35	1776.24	0.89	4.52	0.04	1779.60
3250.	0.	3250.	0.	0.	429.	0.	119.	29.	1777.20
0.43	0.00	7.58	0.00	0.180	0.035	0.180	0.000	1770.70	2427.17
0.005609	740.	740.	740.	4	6	0	0.00	115.62	2542.79

SECNO	DEPTH	CHSEL	CRIWS	HSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TLA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.10[illegible] CEHV= 0.300

*SECNO 2.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1783.50 ELREA= 1784.40

```
####                CENTERLINE =  2480.                                  ####
```

2.20	5.13	1779.83	0.00	1779.83	1780.85	1.02	4.57	0.04	1783.50
3250.	0.	3250.	0.	0.	400.	0.	126.	30.	1784.40
0.45	0.00	8.12	0.00	0.180	0.035	0.180	0.000	1774.70	2400.24
0.006467	760.	760.	760.	2	0	0	0.00	108.20	2508.44

*SECNO 2.290

3470 ENCROACHMENT STATIONS= 2850.0 3210.0 TYPE= 1 TARGET= 360.000

```
####                CENTERLINE =  3020.                                  ####
```

2.29	5.71	1782.61	0.00	1782.61	1783.47	0.87	2.60	0.02	1786.40
3250.	0.	3250.	0.	0.	435.	0.	131.	32.	1784.10
0.47	0.00	7.47	0.00	0.180	0.035	0.180	0.000	1776.90	2955.38
0.004618	510.	480.	460.	3	0	0	0.00	102.65	3058.03

CCHV= 0.300 CEHV= 0.500

*SECNO 2.380

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

```
####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
####                LAS VEGAS EXPRESSWAY - INTERSTATE 515                ####
####  SPECIAL BRIDGE ROUTINE USED TO MODEL FLOW THROUGH THE               ####
####  FLAMINGO WASH CROSSING.  OVERFLOW TO THE NORTH MODELED              ####
####  WITH SPLIT FLOW OPTION.                                             ####
####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
```

2.38	3.68	1784.68	1784.68	1784.68	1786.40	1.72	1.94	0.43	1796.00
3250.	0.	3250.	0.	0.	309.	0.	134.	33.	1796.00
0.48	0.00	10.51	0.00	0.050	0.020	0.050	0.000	1781.00	2434.89
0.004026	450.	450.	450.	3	14	0	0.00	90.98	2525.87

SECNO	DEPTH	CHSEL	CRIWS	HSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TLA	LEFT/RIGHT

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WIN	ELPIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFS	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	3.00	500.00	77.10	0.00	1266.00	2.38	1782.00	1781.00

*SECNO 2.400

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= 0.000 EGLWC= 1787.396 ELLC= 1794.000 PCWSE= 1784.680 ELTRD= 1800.000

3370 NORMAL BRIDGE,NRO= 0 MIN ELTRD= 1800.00 MAX ELLC= 1794.00

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.40	3.68	1785.68	1785.68	1785.68	1787.40	1.71	0.60	0.00	1797.00
3250.	0.	3250.	0.	0.	309.	0.	135.	33.	1797.00
0.49	0.00	10.50	0.00	0.050	0.020	0.050	0.000	1782.00	2434.88
0.004013	150.	150.	150.	3	18	0	0.00	91.00	2525.88

*SECNO 2.510

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2600						####	
2.51	10.79	1794.09	1794.09	1794.09	1795.47	1.38	2.32	0.10	1792.90
6400.	485.	5327.	588.	245.	519.	231.	144.	37.	1796.90
0.50	1.98	10.27	2.55	0.050	0.034	0.050	0.000	1783.30	2311.52
0.004319	550.	550.	550.	20	20	0	.00	484.87	2815.15

CCHV= 0.100 CEHV= 0.300
*SECNO 2.650

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE = 2290						####	
2.65	9.01	1798.51	0.00	1798.51	1801.36	2.85	5.45	0.44	1804.70
6400.	0.	6400.	0.	0.	472.	0.	157.	42.	1802.00
0.52	0.00	13.55	1.00	0.120	0.045	0.060	0.000	1789.50	2261.39
0.014102	815.	760.	745.	3	0	0	0.00	68.30	2319.70

TN ROB BREAKOUT WEST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	290.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	USWS	USWS	USSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	6	1725.595	1727.737	0.930	0.980

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH

0.0	0.00	0.00	0.00	740.0	0.0							
ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC	
0.00	0.00	0.00	0.00	0.00	0.00		6	1727.737	1731.390	0.980	1.120	

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	750.0	0.0

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00		6	1731.390	1732.301	1.120	1.270

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	680.0	0.0

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00		6	1732.301	1732.505	1.270	1.400

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CCCE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00		6	1770.252	1775.351	1.920	2.060

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CCCE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00		6	1775.351	1779.829	2.060	2.200

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CCCE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	520.0	0.0

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00		6	1779.829	1782.608	2.200	2.290

TN SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
794.6	3.96	5.72	3.15	580.0	252.1

ASQ	QCOMP	ERRAC	TASG	TCG	TABER	NITER		DSLS	USLS	DSSNC	USSNC
3150.27	3149.94	0.01	3150.27	3149.94	0.01		6	1785.683	1794.092	2.400	2.510

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
I2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH - REACH 5 (CONFLUENCE TO BOULDER HWY)   DMH 10/3/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        3.        0.        0.  0.001400      0.00      0.0       0.  1702.190     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    2.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCH      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCHAR     TOPWID      ENDST

*PROF 2

CCHV=   0.100  CEHV=   0.300
*SECNO 0.000
          ********** THIS IS A SPLIT FLOW RUN TO COMPUTE BREAKOUTS. *******

          ####  STARTING SLOPE SET EQUAL TO FIS EFEL'S SLOPE DOWNSTREAM     ####
          ####  ON LAS VEGAS CREEK.  THIS IS A DUMMY SECTION SET AT THE     ####
          ####  NORMAL/LOW FLOW CONFLUENCE TO GIVE FULL PROFILE DEFINITION.####
     0.00     11.45  1711.15      0.00  1702.19  1711.40      0.25      0.00      0.00  1713.60
     4163.       0.     4163.       0.       0.     1048.       0.        0.        0.     1712.60
     0.00      0.00      3.57      0.00     0.045     0.035     0.045     0.000  1699.70  2292.92
 0.001353        0.        0.        0.         3         0        10      0.00   259.99  2552.91

*SECNO 0.240
          ####          CENTERLINE =  2350                                  ####
     0.24     11.49  1712.89      0.00      0.00  1713.13      0.24      1.73      0.00  1715.30
     4163.       0.     4163.       0.       0.     1056.       0.       30.       7.     1714.30
     0.09      0.00      3.54      0.00     0.045     0.035     0.045     0.000  1701.40  2292.72
 0.001372     1250.     1250.     1250.         2         0         0      0.00   262.46  2555.18

*SECNO 0.396

3265 DIVIDED FLOW

          ####          CENTERLINE =  2230                                  ####
     0.39     10.15  1714.15      0.00      0.00  1714.71      0.55      1.49      0.00  1716.00
     4163.       0.     4163.       0.       0.      698.       0.       47.      11.     1714.50
     0.13      0.00      3.57      0.14     0.045     0.035     0.045     0.000  1704.00  2195.99
 0.002466      825.      825.      845.         3         0         0      0.00   159.29  2531.86

*SECNO 0.560
```

3470 ENCROACHMENT STATIONS= 0.0 2533.0 TYPE= 1 TARGET= 2532.999

```
      ####                CENTERLINE =  2380                                  ####
      0.56      7.37  1716.27      0.00      0.00  1717.15      0.88      2.34      0.10  1714.90
      4163.       49.     4062.       52.       36.      533.       35.       60.       15.  1715.10
      0.16      1.35      7.62      1.35     0.045     0.035     0.045     0.000  1708.30  2276.27
  0.002754       970.       900.       830.         3         0         0      0.00    202.58  2478.85
```

1


```
   SECNO     DEPTH     CHSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   &         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TEA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

*SECNO 0.740

3301 HV CHANGED MORE THAN HVINS

```
      ####                CENTERLINE =  2430                                  ####
      0.74      6.41  1719.61      0.00      0.00  1721.48      1.86      4.03      0.30  1722.90
      4163.        0.     4163.        0.        0.      380.        0.       71.       10.  1721.40
      0.18      0.13     10.95      0.00     0.045     0.035     0.045     0.000  1713.20  2355.57
  0.007811       815.       930.       945.         3         0         0      0.00     73.15  2428.72
```

*SECNO 0.880

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1727.90 ELREA= 1726.10

```
      ####                CENTERLINE =  2320                                  ####
      0.88      6.68  1724.78      0.00      0.00  1725.90      1.12      4.35      0.07  1727.90
      4163.        0.     4163.        0.        0.      491.        0.       78.       20.  1726.10
      0.21      0.00      8.48      0.00     0.045     0.035     0.045     0.000  1718.10  2284.05
  0.004367       760.       760.       720.         2         0         0      0.00     90.77  2374.82
```

CCHV= 0.300 CEHV= 0.500
*SECNO 0.910

3301 HV CHANGED MORE THAN HVINS

```
      ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
      ####                NELLIS BOULEVARD                                          ####
      ####  SPECIAL BRIDGE ROUTINE                                                  ####
      ####  USE ONLY 1 FT DEBRIS DUE SLOPED PIERS AND WINGWALLS
      ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ####
      0.91      6.93  1725.93      0.00      0.00  1726.40      0.46      0.31      0.20  1719.00
      4163.        1.     4013.      148.        2.      723.       57.       80.       20.  1719.10
      0.22      0.59      5.55      2.61     0.045     0.035     0.045     0.000  1719.00  2278.29
  0.001302       140.       140.       140.         2         0         0      0.00    124.14  2402.44
```



```
   SECNO     DEPTH     CHSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   &         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TEA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
```

SPECIAL BRIDGE

SB	XK	XKOR	COFG	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.10	1.56	2.30	0.00	197.00	11.00	480.00	0.00	1719.50	1719.00

*SECNO 0.930
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPF	EAREA	TRAPEZOID AREA	ELLC	ELTRD
1727.75	1726.52	3.12	446.	3688.	480.	480.	1724.50	1726.00

0.93	7.47	1726.97	0.00	0.00	1727.36	0.39	0.97	0.00	1719.50
4163.	2.	3995.	167.	3.	780.	68.	82.	20.	1719.60
0.22	0.55	5.12	2.44	0.045	0.035	0.045	0.000	1719.50	2278.24
0.001005	90.	90.	90.	2	0	2	0.00	129.80	2408.04

*SECNO 0.980

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2630
%%%%

```
      1.40       5.31   1733.21   1733.21       0.00   1735.33       2.12       1.22       0.57   1740.10
      4165.         0.      4165.        0.         0.       356.         0.      130.         32.    1739.00
      0.34       0.00      11.69       0.00      0.070     0.035      0.050     0.000    1727.90    2737.72
  0.011524        695.       690.        690.          5        14          0      0.00      85.19    2822.91
0
 CCHV=   0.100  CEHV=    0.300
 1490 NH CARD USED
 *SECNO 1.570
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1751.90 ELREA=     1747.50

          ####                CENTERLINE =  2490                          ####
      1.57       5.57   1745.97   1745.97       0.00   1748.05       2.08      10.19       0.00   1751.90
      4165.         0.      4165.        0.         0.       359.         0.      137.         34.    1747.50
      0.37       0.00      11.59       0.00      0.050     0.035      0.050     0.000    1740.40    2449.89
  0.011625        870.       880.        880.          3         8          0      0.00      87.60    2537.49
0
 CCHV=   0.100  CEHV=    0.300
 *SECNO 1.720
1
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    SECNO      DEPTH      CHSEL      CRIWS      WSELK      EG         HV         HL         GLOSS     BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        ARCB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELPIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1760.50 ELREA=     1759.30

          ####                CENTERLINE =  2310                          ####
      1.72       5.96   1755.66   1755.65       0.00   1757.58       1.92       9.51       0.02   1760.50
      4165.         0.      4165.        0.         0.       375.         0.      144.         36.    1759.30
      0.39       0.00      11.12       0.00      0.050     0.035      0.050     0.000    1749.70    2282.51
  0.011859        775.       810.        810.          5         8          0      0.00      98.96    2381.47
0
 *SECNO 1.880
          ####                CENTERLINE =  2270                          ####
      1.88       7.31   1764.11       0.00       0.00   1766.45       2.34       8.74       0.13   1771.30
      4165.         0.      4165.        0.         0.       339.         0.      150.         37.    1774.80
      0.40       0.00      12.28       0.00      0.050     0.035      0.050     0.000    1756.80    2247.76
  0.010225        795.       795.        790.          4         6          0      0.00      67.20    2314.95
0
 CCHV=   0.300  CEHV=    0.500
 *SECNO 1.890
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      1.89       7.15   1765.75   1765.75       0.00   1768.25       2.49       1.12       0.07   1773.10
      4165.         0.      4165.        0.         0.       329.         0.      151.         37.    1775.80
      0.41       0.00      12.67       0.00      0.050     0.035      0.050     0.000    1758.60    2248.09
  0.011145        105.       105.        105.          3         8          0      0.00      66.42    2314.51
0
 *SECNO 1.900

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1772.30 ELREA=     1772.30

          ####  XXXX
```

```
          ####                SPECIAL BRIDGE ROUTINE                          ####
          ####           CENTERLINE = 2480
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   ####
```


SECNO / Q / TIME / SLOPE	DEPTH / QLOB / YLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / ARCB / XNR / ICONT	HL / VOL / WTN / CORAR	CLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
1.90	3.58	1769.38	1769.38	0.00	1771.10	1.72	0.12	0.23	1772.00
4165.	.	4165.	0.	0.	396.	0.	151.	37.	1776.00
0.41	0.00	10.52	0.00	0.050	0.035	0.050	0.000	1765.80	2424.22
0.012257	10.	10.	10.	20	8	0	0.00	116.04	2540.27

0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1768.99 ,NOT 1769.38 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	XKOR	COFG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.10	1.56	2.63	0.00	192.00	4.00	586.00	0.00	1766.30	1765.80

*SECNO 1.920

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1769.88 BRIDGE VELOCITY=, 11.11 CALCULATED CHANNEL AREA=, 350.

EGPRS	EGLWC	H3	QWEIR	QLOW	EAREA	TRAPEZOID AREA	ELLC	ELTRD
0.00	1772.09	3.00	0.	4165.	588.	608.	1772.50	1774.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1772.40 ELREA= 1772.40

SECNO / Q / TIME / SLOPE	DEPTH / QLOB / YLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / ARCB / XNR / ICONT	HL / VOL / WTN / CORAR	CLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
1.92	4.15	1770.96	0.00	0.00	1772.09	1.12	.99	0.00	1776.50
4165.	.	4165.	0.	0.	489.	0.	152.	38.	1776.00
0.41	0.00	8.51	0.00	0.050	0.035	0.050	0.000	1766.80	9553.84
0.006934	100.	100.	100.	0	0	0	0.00	129.73	10083.57

0
*SECNO 2.060

3470 ENCROACHMENT STATIONS= 2310.0 3400.0 TYPE= 1 TARGET= 1090.000

```
          ####           CENTERLINE = 2480                                    ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   ####
          ####  A MAJOR BREAKOUT OF FLOWS FOLLOWS AN OLD STREAM CHANNEL       ####
          ####  TO THE NORTH, UPSTREAM OF LAMB BLVD AND I-515.                ####
          ####  BREAKOUT MODELED WITH SPLIT FLOW OPTION.                      ####
          ####  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   ####
```


SECNO / Q / TIME / SLOPE	DEPTH / QLOB / YLOB / XLOBL	CWSEL / QCH / VCH / XLCH	CRIWS / QROB / VROB / XLOBR	WSELK / ALOB / XNL / ITRIAL	EG / ACH / XNCH / IDC	HV / ARCB / XNR / ICONT	HL / VOL / WTN / CORAR	CLOSS / TWA / ELMIN / TOPWID	BANK ELEV LEFT/RIGHT / SSTA / ENDST
2.06	5.16	1775.86	0.00	1775.86	1776.99	1.13	4.99	0.00	1779.60
4165.	.	4165.	0.	0.	488.	0.	161.	40.	1777.20

```
      0.43       0.00       8.53       0.00      0.180      0.035      0.180      0.000   1770.70   2423.65
  0.006337       740.       740.       740.          3          0          0       0.00    120.95   2544.20
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 2.200

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1783.50 ELREA=     1784.40

          ####              CENTERLINE =  2450                                  ####
       2.28       5.37  1780.57       0.00  1780.57  1781.73       1.16       4.73       0.01   1783.50
       4165.         .       4165.       0.       0.      481.       0.       169.       42.    1784.40
       0.46       0.00       8.66       0.00      0.180      0.035      0.180      0.000   1774.70   2396.80
  0.006115       755.       760.       760.          3          0          0       0.00    113.01   2509.81
0
 *SECNO 2.290

 3470 ENCROACHMENT STATIONS=     2850.0     3210.0  TYPE=      1  TARGET=       360.000
          ####              CENTERLINE =  3020                                  ####
       2.29       6.39  1783.29       0.00  1783.29  1784.34       1.05       2.60       0.01   1786.40
       4165.         .       4165.       0.       0.      507.       0.       174.       43.    1784.10
       0.47       0.00       8.21       0.00      0.180      0.035      0.180      0.000   1776.90   2953.87
  0.004820       510.       480.       460.          3          0          0       0.00    106.91   3060.78
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 2.380

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####  XXXX
```

4165.	0.	4165.	0.	0.	368.	0.	180.	44.	1797.00	
0.49	0.00	11.33	0.00	0.050	0.020	0.050	0.000	1782.00	2433.66	
0.003853	150.	150.	150.	3	19	0	0.00	93.40	2527.06	

*SECNO 2.510

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2600						####	
2.51	11.54	1794.84	1794.84	1794.84	1796.16	1.32	2.24	0.20	1792.90
8400.	1186.	6112.	1102.	471.	573.	360.	191.	45.	1796.90
0.61	2.52	10.67	3.06	0.050	0.034	0.050	0.000	1783.30	2229.60
0.004176	560.	550.	550.	20	17	0	0.00	556.93	2840.26

CCHV= 0.100 CEHV= 0.300
*SECNO 2.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCPAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

####		CENTERLINE = 2290						####	
2.65	9.34	1799.44	1799.44	1799.45	1803.24	3.79	5.67	0.74	1804.70
8400.	0.	8400.	0.	0.	537.	0.	209.	55.	1802.00
0.52	0.00	15.63	0.00	0.120	0.045	0.060	0.000	1789.50	2249.97
0.016772	815.	760.	745.	4	11	0	0.00	71.14	2321.12

TN ROB BREAKOUT WEST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	290.0	0.0

ASG	QCOMP	ERRAC	TASG	TCG	TABER	NITER	DSWS	USWS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00	15	1726.568	1726.325	0.930	0.980

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	740.0	0.0

ASG	QCOMP	ERRAC	TASG	TCG	TABER	NITER	DSWS	USWS	DSSNC	USSNC
0.00	0.00	0.00	0.00	0.00	0.00	15	1726.325	1732.208	0.980	1.120

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
7.9	0.19	0.12	0.06	790.0	128.5

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
1.50	1.50	0.05	1.50	1.50	0.05	15	1732.208	1733.171	1.120	1.270

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	680.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
0.00	0.00	0.00	1.50	1.50	0.05	15	1733.171	1733.212	1.270	1.400

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
0.00	0.00	0.00	1.50	1.50	0.05	15	1770.963	1775.862	1.920	2.060

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
0.00	0.00	0.00	1.50	1.50	0.05	15	1775.862	1780.569	2.060	2.200

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	520.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
0.00	0.00	0.00	1.50	1.50	0.05	15	1780.569	1783.294	2.200	2.290

TN SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
584.4	4.3	5.46	3.57	580.0	275.6

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSLS	LSLS	DSSNC	USSNC
4235.35	4237.89	0.06	4236.85	4239.39	0.06	15	1786.316	1794.844	2.400	2.510

```
**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********************************************************

T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       FLAMINGO WASH - REACH 5 (CONFLUENCE TO BOULDER HWY)   CMH 10/3/87

J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.        4.        0.        0.  0.001400      0.00      0.0          0.  1702.190     0.000
J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW        CHNIM     ITRACE
     15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS     BANK ELEV
   6         QLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCHAR     TOPWID      ENDST

*PROF 3

CCHV=   0.10  CEHV=   0.300
*SECNO 0.000
          ********** THIS IS A SPLIT FLOW RUN TO COMPLTE BREAKOUTS. *******

          ####  STARTING SLOPE SET EQUAL TO FIS EFEL'S SLOPE DOWNSTREAM    ####
          ####  ON LAS VEGAS CREEK.  THIS IS A DUMMY SECTION SET AT THE    ####
          ####  NORMAL/LOW FLOW CONFLUENCE TO GIVE FULL PROFILE DEFINITION.####
     0.00     12.56  1712.26      0.00  1702.19   1712.53      0.27      0.00         0.00  1713.60
     5686.       0.     5686.       0.       0.      1370.       0.        0.           0.  1712.60
     0.06      0.00     4.15      0.00     0.045     0.035     0.045     0.000   1695.70  2286.17
 0.001392        0.       0.        0.         0         0         0      0.00    318.95   2605.13
0
*SECNO 0.240
          ####            CENTERLINE =  2350                                   ####
     0.24     12.59  1713.59      0.00      0.00  1714.25      0.26      1.73         0.00  1715.30
     5686.       0.     5686.       0.       0.      1379.       0.       39.           9.  1714.30
     0.06      0.00     4.12      0.00     0.045     0.035     0.045     0.000   1701.40  2285.99
 0.001369     1250.    1250.     1250.         2         0         0      0.00    320.42   2606.41

*SECNO 0.390
          ####            CENTERLINE =  2230                                   ####
     0.39     11.20  1715.20      0.00      0.00  1715.81      0.60      1.45         0.10  1716.00
     5686.       0.     5444.     242.       0.       857.     168.       62.          16.  1714.50
     0.12      0.00     6.35      1.44     0.045     0.035     0.045     0.000   1704.00  2153.71
 0.002339      820.     825.      845.         2         0         0      0.00    354.20   2547.92
0
*SECNO 0.560
3280 CROSS SECTION       1.56 EXTENDED       0.62 FEET

3470 ENCROACHMENT STATIONS=        0.0     2533.0  TYPE=      1  TARGET=     2532.999
          ####            CENTERLINE =  2380                                   ####
     0.56      8.92  1717.22      0.00      0.00  1718.26      1.03      2.32         0.13  1714.90
     5686.     217.     5201.     267.      104.      511.     121.       81.          22.  1715.10
     0.15      2.10     8.51      2.21     0.045     0.035     0.045     0.000   1708.30  2239.91
 0.002866      970.     930.      830.         3         0         0      0.00    265.11   2505.02
```

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 0.740

3301 HV CHANGED MORE THAN HVINS

####		CENTERLINE = 2430						####	
0.74	7.43	1720.63	0.00	0.00	1723.02	2.39	4.36	0.41	1722.90
5686.	0.	5686.	0.	0.	458.	0.	95.	25.	1721.40
0.17	0.00	12.41	0.00	0.045	0.035	0.045	0.000	1713.20	2349.55
0.009051	815.	930.	945.	3	0	0	0.00	81.61	2431.16

*SECNO 0.880

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1727.90 ELREA= 1726.10

####		CENTERLINE = 2320						####	
0.88	8.12	1726.22	0.00	0.00	1727.45	1.23	4.31	0.12	1727.90
5686.	0.	5615.	70.	0.	627.	45.	105.	28.	1726.10
0.20	0.00	8.95	1.56	0.045	0.035	0.045	0.000	1718.10	2281.25
0.003890	760.	760.	720.	2	0	0	0.00	170.07	2561.08

CCHV= 0.300 CEHV= 0.500
*SECNO 0.910

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

####	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX							####	
####	NELLIS BOULEVARD							####	
####	SPECIAL BRIDGE ROUTINE							####	
####	USE ONLY 1 FT DEBRIS DUE SLOPED PIERS AND WINGWALLS								
####	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX							####	
0.91	8.37	1727.37	0.00	0.00	1727.93	0.56	2.28	0.20	1719.00
5686.	2.	5388.	298.	4.	875.	122.	108.	28.	1719.10
0.20	0.66	6.16	2.44	0.045	0.035	0.045	0.000	1719.00	2278.15
0.001246	140.	140.	140.	2	0	0	0.00	181.56	2565.52

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	EWP	BAREA	SS	ELCHU	ELCHD
	1.10	1.56	2.80	0.00	107.00	11.00	480.00	0.00	1719.50	1719.00

*SECNO 0.930

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW

EGFRS	EGLWC	H3	QWEIR	QPR	EAREA	TRAPEZCID AREA	ELLC	ELTRD
1730.77	1728.09	0.15	2601.	3089.	480.	480.	1724.50	1726.00

	0.93	8.30	1727.80	0.00	0.00	1728.38	0.57	0.44	0.00	1719.50
	5686.	2.	5392.	291.	4.	868.	117.	110.	29.	1719.60
	0.21	0.66	6.22	2.48	0.045	0.035	0.045	0.000	1719.50	2278.15
0.001283		90.	90.	90.	2	0	4	0.00	179.29	2564.32

*SECNO 0.980

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2630

XXXX

####		CENTERLINE = 2330						####	
1.27	9.18	1734.18	0.00	0.00	1734.48	0.30	0.93	0.03	1731.60
6051.	626.	5425.	0.	614.	1176.	0.	156.	49.	1735.00
0.30	1.02	4.61	0.00	0.010	0.035	0.050	0.000	1725.00	1927.43
0.000810	795.	800.	800.	2	6	0	0.00	452.01	2379.43

*SECNO 1.400

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED *SEL,C*SEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1740.10 ELREA= 1739.00

####		CENTERLINE = 2760						####	
1.40	6.58	1734.48	1734.48	0.00	1737.07	2.59	1.38	0.69	1740.10
6051.	0.	6051.	0.	0.	469.	0.	174.	52.	1739.00
0.32	0.00	12.91	0.00	0.070	0.035	0.050	0.000	1727.90	2734.07
0.010850	695.	690.	690.	20	19	0	0.00	51.97	2826.04

SECNO	DEPTH	C*SEL	CRIWS	*SELK	EG	HV	HL	CLOSS	BANK ELEV
6	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TRA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XACH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.100 CEHV= 0.300
1490 NR CARD USED
*SECNO 1.570

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1751.90 ELREA= 1747.50

####		CENTERLINE = 2490						####	
1.57	7.40	1747.90	1747.80	0.00	1749.23	1.43	7.07	0.12	1751.90
6051.	0.	5375.	676.	0.	530.	280.	187.	56.	1747.50
0.34	0.00	10.14	2.41	0.050	0.035	0.050	0.000	1740.40	2445.92
0.006194	870.	880.	880.	3	5	0	0.00	366.88	2812.80

CCHV= 0.100 CEHV= 0.300
*SECNO 1.720

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1760.50 ELREA= 1759.30

####		CENTERLINE = 2310						####	
1.72	7.17	1756.87	1756.87	0.00	1759.13	2.26	6.57	0.25	1760.50
6051.	0.	6051.	0.	0.	501.	0.	199.	62.	1759.30
0.36	0.00	12.07	0.00	0.050	0.035	0.050	0.000	1749.70	2275.75
0.011080	775.	810.	810.	3	8	0	0.00	111.30	2387.05

*SECNO 1.880

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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          ####                CENTERLINE =  2270                          ####
      1.88        8.68  1765.48  1765.48      0.00  1768.47      2.99      6.65      0.22  1771.30
      6051.          .     6051.      0.         .      436.       0.       207.       64.   1774.00
       0.38        0.00    13.88     0.00     0.050    0.035     0.050     0.000  1756.60  2244.75
  0.010687         795.     795.      790.         3        11         0      0.00     74.17  2318.92
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1


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   SECNO     DEPTH     C&SEL     CRIWS     &SELK     EG        HV        HL        CLOSS     BANK ELEV
   6         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       T&A     LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       ANCH      XNR       WTA       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOP&IC      ENDST
```

CCH&= 0.300 CEHV= 0.500
*SECNO 1.890
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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      1.89        8.69  1767.29  1767.29      0.00  1770.27      2.98      1.12      0.00  1773.10
      6051.          0.     6051.      0.         0.      437.       0.       208.       64.   1775.80
       0.38        0.00    13.85     0.00     .050     0.035     0.050     0.000  1758.60  2244.72
  0.010618         105.     105.      105.         3         5         0      0.00     74.24  2318.96
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*SECNO 1.900

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED &SEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1772.30 ELREA= 1772.30

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          ####  %%%%
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CLASS 6 LOW FLOW

3420 BRIDGE W.S.= 1770.96 BRIDGE VELOCITY=, 12.57 CALCULATED CHANNEL AREA=, 457.

EGFRS	EGLWC	H3	QWEIR	QLOW	EAREA	TRAPEZOID AREA	ELLC	ELTRD
1772.93	1773.56	0.00	0.	6051.	588.	608.	1772.50	1774.80

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1772.40 ELREA= 1772.40

1.92	5.48	1772.28	0.00	0.00	1773.56	1.28	1.83	0.00	1776.50
6051.	0.	6051.	0.	0.	666.	0.	210.	64.	1776.00
0.38	0.00	9.09	0.00	0.050	0.035	0.050	0.000	1766.80	9950.55
0.005690	100.	100.	100.	0	0	0	0.00	137.33	10687.87

*SECNO 2.060

3470 ENCROACHMENT STATIONS= 2310.0 3400.0 TYPE= 1 TARGET= 1050.000

CENTERLINE = 2480

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

A MAJOR BREAKOUT OF FLOWS FOLLOWS AN OLD STREAM CHANNEL

TO THE NORTH, UPSTREAM OF LAMB BLVD AND I-515.

BREAKOUT MODELED WITH SPLIT FLOW OPTION.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

2.06	6.13	1776.83	0.00	1776.83	1778.35	1.52	4.67	0.12	1779.60
6051.	0.	6051.	0.	0.	611.	0.	221.	67.	1777.20
0.40	0.00	9.90	0.00	0.180	0.035	0.180	0.000	1770.70	2416.42
0.007041	740.	740.	740.	2	0	0	0.00	130.55	2546.97

CCHV= 0.100 CEHV= 0.300

*SECNO 2.200

3470 ENCROACHMENT STATIONS= 2383.0 2565.0 TYPE= 1 TARGET= 182.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1783.50 ELREA= 1784.40

CENTERLINE = 2450

2.20	7.10	1781.80	0.00	1781.80	1783.26	1.45	4.89	0.01	1783.50
6051.	0.	6051.	0.	0.	626.	0.	231.	69.	1784.40
0.43	0.00	9.67	0.00	0.180	0.035	0.180	0.000	1774.70	2390.98
0.005912	760.	760.	760.	3	0	0	0.00	121.15	2512.13

SECNO	DEPTH	QLSEL	QRIWS	QSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TCHWIC	ENDST

*SECNO 2.290

3470 ENCROACHMENT STATIONS= 2850.0 3210.0 TYPE= 1 TARGET= 360.000

CENTERLINE = 3020

2.29	7.59	1784.49	0.00	1784.49	1785.88	1.39	2.62	0.01	1786.40
6051.	0.	6050.	0.	0.	639.	1.	238.	70.	1784.10
0.44	0.00	9.47	0.20	0.180	0.035	0.180	0.000	1776.90	2551.22
0.005061	510.	490.	460.	3	0	0	0.00	119.70	3070.92

CCHV= 0.30 CEHV= 0.500

*SECNO 2.380

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CENTERLINE = 2293

2.65	12.18	1801.68	1801.68	1801.68	1806.13	4.45	5.81	0.52	1804.70	
11920.	0.	11920.	0.	0.	704.	0.	284.	83.	1802.00	
2.48	0.00	16.93	0.00	0.120	0.045	0.060	0.000	1785.50	2246.58	
0.015688	815.	760.	745.	20	6	0	0.00	17.94	2324.52	

0
1

TN ROB BREAKOUT WEST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	290.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	0.00	0.00	0.00	12	1727.801	1730.081	0.930	0.980

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
96.1	.81	1.38	1.19	740.0	470.6

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
71.77	72.83	1.46	71.77	72.83	1.46	12	1730.081	1732.883	0.980	1.120

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
338.8	0.87	3.94	0.58	790.0	581.1

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
293.28	295.63	0.80	365.05	368.45	0.93	12	1732.883	1734.183	1.120	1.270

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	680.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	365.05	368.45	0.93	12	1734.183	1734.481	1.270	1.400

1

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	365.05	368.45	0.93	12	1772.281	1776.832	1.920	2.060

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.00	0.00	0.00	760.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCG	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	365.05	368.45	0.93	12	1776.832	1781.803	2.060	2.200

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LANE; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
0.0	0.0	0.00	0.00	520.0	0.0

ASQ	QCOMP	ERRAC	TASQ	TCG	TABER	NITER	DSWS	USWS	DSSNO	USSNO
0.00	0.00	0.00	365.05	368.45	0.93	12	1781.803	1784.492	2.200	2.290

TN SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
1254.4	4.69	7.32	4.06	580.0	309.0

ASQ	QCOMP	ERRAC	TASQ	TCG	TABER	NITER	DSWS	USWS	DSSNO	USSNO
5869.35	5868.52	0.01	6234.40	6236.57	0.04	12	1787.499	1795.660	2.400	2.510

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 21,22,23,24,25
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLAMINGO WASH - REACH 5

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	1699.70	3249.73	1708.72	0.00	1709.14	14.08	5.20	624.37	865.91
0.000	0.00	0.00	0.00	1699.70	4163.15	1711.15	0.00	1711.40	13.93	3.97	1047.95	1115.56
0.000	0.00	0.00	0.00	1699.70	5685.60	1712.26	0.00	1712.53	13.52	4.15	1369.98	1524.01
0.240	1250.00	0.00	0.00	1701.40	3249.73	1710.50	0.00	1710.91	14.18	5.14	632.65	862.92
0.240	1250.00	0.00	0.00	1701.40	4163.15	1712.89	0.00	1713.13	13.72	3.94	1056.50	1123.76
0.240	1250.00	0.00	0.00	1701.40	5685.60	1713.99	0.00	1714.25	13.69	4.12	1379.35	1536.76
0.390	825.00	0.00	0.00	1704.00	3249.73	1711.90	0.00	1712.74	32.79	7.33	443.62	567.52
0.390	825.00	0.00	0.00	1704.00	4163.15	1714.15	0.00	1714.71	24.66	5.97	698.08	838.37
0.390	825.00	0.00	0.00	1704.00	5685.60	1715.20	0.00	1715.81	23.39	6.35	1025.17	1175.64
0.560	900.00	0.00	0.00	1708.30	3249.73	1714.98	0.00	1715.87	36.69	7.60	427.62	536.52
0.560	900.00	0.00	0.00	1708.30	4163.15	1716.27	0.00	1717.15	27.54	7.62	608.03	793.24
0.560	900.00	0.00	0.00	1708.30	5685.60	1717.22	0.00	1718.26	28.66	8.51	835.52	1061.95
0.740	930.00	0.00	0.00	1713.20	3249.73	1719.08	0.00	1720.49	65.33	9.52	341.34	402.07

0.740	930.00	0.00	0.00	1713.20	4163.15	1719.61	0.00	1721.48	78.11	10.95	380.08	471.04
0.740	930.00	0.00	0.00	1713.20	5685.60	1720.63	0.00	1723.02	90.51	12.41	458.05	597.63
0.880	760.00	0.00	0.00	1716.10	3249.73	1723.75	0.00	1724.77	48.38	8.12	400.14	467.22
0.880	760.00	0.00	0.00	1716.10	4163.15	1724.78	0.00	1725.90	43.67	8.48	450.87	629.99
0.880	760.00	0.00	0.00	1716.10	5685.60	1726.22	0.00	1727.45	38.91	8.95	672.35	911.59
0.910	140.00	0.00	0.00	1719.00	3249.73	1724.69	0.00	1725.29	13.87	5.13	656.54	872.58
0.910	140.00	0.00	0.00	1719.00	4163.15	1725.93	0.00	1726.40	13.02	5.55	782.68	1153.66
0.910	140.00	0.00	0.00	1719.00	5685.60	1727.37	0.00	1727.93	12.46	6.16	1000.38	1610.97
0.930	90.00	1726.00	1724.50	1719.50	3249.73	1725.59	0.00	1726.00	13.16	5.12	635.32	895.71
0.930	90.00	1726.00	1724.50	1719.50	4163.15	1726.97	0.00	1727.36	10.05	5.12	850.77	1313.17
0.930	90.00	1726.00	1724.50	1719.50	5685.60	1727.80	0.00	1728.38	12.83	6.22	988.23	1587.31

	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CNSEL	CRITS	EG	10K*S	VCH	AREA	.01K
*	0.980	300.00	0.00	0.00	1723.70	3249.73	1727.74	1727.74	1729.34	130.17	10.15	320.12	284.83
*	0.980	300.00	0.00	0.00	1723.70	4163.15	1728.32	1728.32	1730.18	125.61	10.93	380.80	371.45
*	0.980	300.00	0.00	0.00	1723.70	5685.60	1730.08	1730.08	1731.27	55.21	9.13	802.98	765.22
	1.120	730.00	0.00	0.00	1725.80	3249.73	1731.39	0.00	1731.72	13.54	4.64	699.85	883.01
	1.120	730.00	0.00	0.00	1725.80	4163.15	1732.21	0.00	1732.62	13.96	5.14	813.19	1114.36
	1.120	730.00	0.00	0.00	1725.80	5757.36	1732.88	0.00	1733.51	18.79	6.38	956.20	1328.14
	1.270	800.00	0.00	0.00	1725.00	3249.73	1732.30	0.00	1732.50	7.07	3.61	1004.78	1222.13
	1.270	800.00	0.00	0.00	1725.00	4164.65	1733.17	0.00	1733.39	6.81	3.87	1350.59	1595.95
	1.270	800.00	0.00	0.00	1725.00	6050.65	1734.18	0.00	1734.48	8.10	4.61	1789.93	2126.01
*	1.400	690.00	0.00	0.00	1727.90	3249.73	1732.50	1732.50	1734.36	120.26	10.92	297.47	296.33
*	1.400	690.00	0.00	0.00	1727.90	4164.65	1733.21	1733.21	1735.33	115.24	11.69	356.37	387.95
*	1.400	690.00	0.00	0.00	1727.90	6050.65	1734.48	1734.48	1737.07	108.50	12.91	468.82	580.87
*	1.570	880.00	0.00	0.00	1740.40	3249.73	1745.26	1745.26	1747.10	121.18	10.86	299.24	295.22
*	1.570	880.00	0.00	0.00	1740.40	4164.65	1745.97	1745.97	1748.05	116.25	11.59	359.42	386.27
*	1.570	880.00	0.00	0.00	1740.40	6050.65	1747.80	1747.80	1749.23	61.94	10.14	810.43	768.83
	1.720	810.00	0.00	0.00	1749.70	3249.73	1755.08	1755.01	1756.69	115.40	10.18	319.18	302.52
	1.720	810.00	0.00	0.00	1749.70	4164.65	1755.66	1755.65	1757.58	118.59	11.12	374.57	382.43
*	1.720	810.00	0.00	0.00	1749.70	6050.65	1756.87	1756.87	1759.13	110.80	12.07	501.47	574.83
	1.880	795.00	0.00	0.00	1756.80	3249.73	1763.31	0.00	1765.30	95.18	11.31	287.40	326.31
	1.880	795.00	0.00	0.00	1756.80	4164.65	1764.11	0.00	1766.45	102.25	12.28	339.03	411.85
*	1.880	795.00	0.00	0.00	1756.80	6050.65	1765.48	1765.48	1768.47	106.87	13.88	435.99	585.30
*	1.890	105.00	0.00	0.00	1756.60	3249.73	1764.88	1764.88	1767.09	114.98	11.91	272.79	303.07
*	1.890	105.00	0.00	0.00	1756.60	4164.65	1765.75	1765.75	1768.25	111.45	12.67	328.79	394.45
*	1.890	105.00	0.00	0.00	1756.60	6050.65	1767.29	1767.29	1770.27	106.18	13.85	437.01	587.20
*	1.900	10.00	0.00	0.00	1765.80	3249.73	1768.85	1768.85	1770.31	128.01	9.72	334.39	287.23
*	1.900	10.00	0.00	0.00	1765.80	4164.65	1769.38	1769.38	1771.10	122.57	10.52	395.77	376.16
*	1.900	10.00	0.00	0.00	1765.80	6050.65	1770.37	1770.37	1772.54	114.41	11.83	511.68	565.67
*	1.920	100.00	1774.80	1772.50	1766.80	3249.73	1770.25	0.00	1771.28	79.56	8.15	398.72	363.42
*	1.920	100.00	1774.80	1772.50	1766.80	4164.65	1770.96	0.00	1772.09	69.34	8.51	489.47	500.14
*	1.920	100.00	1774.80	1772.50	1766.80	6050.65	1772.28	0.00	1773.56	56.90	9.09	665.52	802.12
	2.060	740.00	0.00	0.00	1770.70	3249.73	1775.35	0.00	1776.24	56.05	7.58	428.94	433.93
	2.060	740.00	0.00	0.00	1770.70	4164.65	1775.86	0.00	1776.99	63.37	8.53	488.09	523.17
	2.060	740.00	0.00	0.00	1770.70	6050.65	1776.83	0.00	1778.35	70.41	9.90	611.12	721.06
	2.200	760.00	0.00	0.00	1774.70	3249.73	1779.63	0.00	1780.85	64.67	8.12	400.15	404.09
	2.200	760.00	0.00	0.00	1774.70	4164.65	1780.57	0.00	1781.73	61.15	8.66	480.89	532.56
	2.200	760.00	0.00	0.00	1774.70	6050.65	1781.89	0.00	1783.26	59.12	9.67	625.69	786.93

2.290	480.00	0.00	0.00	1776.90	3249.73	1782.61	0.00	1783.47	46.18	7.47	435.15	478.22
2.290	480.00	0.00	0.00	1776.90	4164.65	1783.29	0.00	1784.34	48.20	8.21	506.99	599.87
2.290	480.00	0.00	0.00	1776.90	6050.65	1784.49	0.00	1785.88	50.61	9.47	640.52	850.49

	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	WCH	AREA	.01K
*	2.380	450.00	0.00	0.00	1781.00	3249.73	1784.68	1784.68	1786.40	40.26	10.51	309.08	512.19
*	2.380	450.00	0.00	0.00	1781.00	4164.65	1785.32	1785.32	1787.31	38.43	11.32	367.99	671.83
*	2.380	450.00	0.00	0.00	1781.00	6050.65	1786.49	1786.49	1788.96	35.72	12.59	480.43	1012.37
*	2.400	150.00	1800.00	1794.00	1782.00	3249.73	1785.68	1785.68	1787.40	40.13	10.50	309.40	512.99
*	2.400	150.00	1800.00	1794.00	1782.00	4164.65	1786.32	1786.32	1788.31	38.53	11.33	367.68	670.96
*	2.400	150.00	1800.00	1794.00	1782.00	6050.65	1787.50	1787.50	1789.96	35.61	12.58	480.91	1013.94
*	2.510	550.00	0.00	0.00	1783.30	6400.00	1794.09	1794.09	1795.47	43.19	10.27	994.29	973.87
*	2.510	550.00	0.00	0.00	1783.30	8400.00	1794.84	1794.84	1796.16	41.76	10.67	1403.37	1299.84
*	2.510	550.00	0.00	0.00	1783.30	11920.00	1795.66	1795.66	1797.04	44.72	11.66	1929.18	1782.45
	2.650	760.00	0.00	0.00	1785.50	6400.00	1798.51	0.00	1801.36	141.02	13.55	472.22	538.94
*	2.650	760.00	0.00	0.00	1785.50	8400.00	1799.44	1799.44	1803.24	167.72	15.63	537.36	648.61
*	2.650	760.00	0.00	0.00	1785.50	11920.00	1801.63	1801.68	1806.13	156.88	16.93	704.10	951.67

FLAMINGO WASH - REACH 5

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	3249.73	1708.72	0.00	0.00	6.53	182.00	0.00
0.000	4163.15	1711.15	2.44	0.00	8.96	259.99	0.00
0.000	5685.60	1712.26	1.11	0.00	10.07	318.95	0.00
0.240	3249.73	1710.50	0.00	1.78	0.00	106.11	1250.00
0.240	4163.15	1712.89	2.39	1.73	0.00	262.46	1250.00
0.240	5685.60	1713.99	1.10	1.73	0.00	320.42	1250.00
0.390	3249.73	1711.90	0.00	1.41	0.00	82.27	825.00
0.390	4163.15	1714.15	2.25	1.27	0.00	159.29	825.00
0.390	5685.60	1715.20	1.05	1.21	0.00	354.20	825.00
0.560	3249.73	1714.98	0.00	3.07	0.00	84.73	900.00
0.560	4163.15	1716.27	1.29	2.12	0.00	202.58	900.00
0.560	5685.60	1717.22	0.95	2.02	0.00	265.11	900.00
0.740	3249.73	1719.08	0.00	4.10	0.00	71.07	930.00
0.740	4163.15	1719.61	0.53	3.34	0.00	73.15	930.00
0.740	5685.60	1720.63	1.02	3.41	0.00	81.61	930.00
0.880	3249.73	1723.75	0.00	4.67	0.00	85.51	760.00
0.880	4163.15	1724.78	1.03	5.17	0.00	90.77	760.00
0.880	5685.60	1726.22	1.44	5.59	0.00	170.07	760.00
0.910	3249.73	1724.89	0.00	1.14	0.00	119.64	140.00
0.910	4163.15	1725.93	1.04	1.15	0.00	124.14	140.00
0.910	5685.60	1727.37	1.44	1.15	0.00	181.56	140.00
0.930	3249.73	1725.59	0.00	0.73	0.00	105.03	90.00
0.930	4163.15	1726.97	1.37	1.04	0.00	129.80	90.00

	0.930	5585.60	1727.30	0.83	0.43	0.00	179.29	90.00
*	0.980	3249.73	1727.74	0.00	2.14	0.00	101.41	300.00
*	0.980	4163.15	1728.32	0.59	1.36	0.00	105.04	300.00
*	0.980	5685.60	1730.08	1.76	2.28	0.00	535.43	300.00
	1.120	3249.73	1731.39	0.00	3.65	0.00	132.68	730.00
	1.120	4163.15	1732.21	0.82	3.88	0.00	150.35	730.00
	1.120	5757.36	1732.88	0.68	2.80	0.00	525.84	730.00
	1.270	3249.73	1732.30	0.00	6.91	0.00	388.44	800.00
	1.270	4164.65	1733.17	0.87	6.96	0.00	417.63	800.00
	1.270	6050.65	1734.18	1.01	1.30	0.00	452.01	800.00
*	1.400	3249.73	1732.50	0.00	6.20	0.00	81.42	690.00
*	1.400	4164.65	1733.21	0.71	6.04	0.00	85.19	690.00
*	1.400	6050.65	1734.48	1.27	6.30	0.00	91.97	690.00

	SECNO	Q	CHSEL	DIFWSP	DIFHSX	DIFKWS	TOPWID	XLOC
*	1.570	3249.73	1745.26	0.00	12.76	0.00	83.07	880.00
*	1.570	4164.65	1745.97	0.71	12.76	0.00	87.63	880.00
*	1.570	6050.65	1747.80	1.83	13.32	0.00	366.89	880.00
	1.720	3249.73	1755.08	0.00	9.32	0.00	94.35	810.00
	1.720	4164.65	1755.66	0.58	9.69	0.00	98.96	810.00
*	1.720	6050.65	1756.87	1.21	9.08	0.00	111.30	810.00
	1.880	3249.73	1763.31	0.00	8.23	0.00	63.18	795.00
	1.880	4164.65	1764.11	0.79	8.45	0.00	67.20	795.00
*	1.880	6050.65	1765.48	1.37	8.61	0.00	74.17	795.00
*	1.890	3249.73	1764.38	0.00	1.57	0.00	61.59	105.00
*	1.890	4164.65	1765.75	0.87	1.65	0.00	66.42	105.00
*	1.890	6050.65	1767.29	1.54	1.81	0.00	74.24	105.00
*	1.900	3249.73	1768.85	0.00	3.97	0.00	114.40	10.00
*	1.900	4164.65	1769.38	0.53	3.63	0.00	116.04	10.00
*	1.900	6050.65	1770.37	0.99	3.07	0.00	119.08	10.00
*	1.920	3249.73	1770.25	0.00	1.40	0.00	125.64	100.00
*	1.920	4164.65	1770.96	0.71	1.58	0.00	129.73	100.00
*	1.920	6050.65	1772.28	1.32	1.91	0.00	137.33	100.00
	2.060	3249.73	1775.35	0.00	5.10	0.00	115.62	740.00
	2.060	4164.65	1775.86	0.51	4.90	0.00	120.56	740.00
	2.060	6050.65	1776.83	0.97	4.55	0.00	130.55	740.00
	2.200	3249.73	1779.83	0.00	4.48	0.00	108.20	760.00
	2.200	4164.65	1780.57	0.74	4.71	0.00	113.01	760.00
	2.200	6050.65	1781.80	1.23	4.97	0.00	121.15	760.00
	2.290	3249.73	1782.61	0.00	2.78	0.00	102.65	480.00
	2.290	4164.65	1783.29	0.69	2.73	0.00	106.91	480.00
	2.290	6050.65	1784.49	1.20	2.69	0.00	115.70	480.00
*	2.380	3249.73	1784.68	0.00	2.07	0.00	90.98	450.00
*	2.380	4164.65	1785.32	0.64	2.02	0.00	93.41	450.00
*	2.380	6050.65	1786.49	1.18	2.03	0.00	97.88	450.00
*	2.400	3249.73	1785.68	0.00	1.00	0.00	91.00	150.00
*	2.400	4164.65	1786.32	0.63	1.00	0.00	93.40	150.00
*	2.400	6050.65	1787.50	1.18	1.01	0.00	97.90	150.00

*	2.510	6400.00	1794.09	0.00	6.41	0.00	484.87	550.00
*	2.510	8400.00	1794.84	0.75	6.53	0.00	596.93	550.00
*	2.510	11920.00	1795.66	0.82	6.16	0.00	675.43	550.00
	2.650	6400.00	1798.51	0.00	4.42	0.00	68.30	760.00
*	2.650	8400.00	1799.44	0.94	4.60	0.00	71.14	760.00
*	2.650	11920.00	1801.68	2.24	6.02	0.00	77.94	760.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION	SECNO=	0.980	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	0.980	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	0.980	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	0.980	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	0.980	PROFILE= 2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	0.980	PROFILE= 2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	0.980	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	0.980	PROFILE= 3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	0.980	PROFILE= 3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	1.400	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.400	PROFILE= 1	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.400	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.400	PROFILE= 2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.400	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.400	PROFILE= 3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.400	PROFILE= 3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	1.570	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.570	PROFILE= 1	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.570	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.570	PROFILE= 2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.570	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.570	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.720	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.720	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.880	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.880	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.890	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.890	PROFILE= 1	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.890	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.890	PROFILE= 2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.890	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.890	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.900	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.900	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.900	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	1.900	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.900	PROFILE= 2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.900	PROFILE= 2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	1.900	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	1.900	PROFILE= 3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	1.900	PROFILE= 3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	1.920	PROFILE= 1	HYDRAULIC JUMP D.S.
CAUTION	SECNO=	1.920	PROFILE= 2	HYDRAULIC JUMP D.S.
CAUTION	SECNO=	1.920	PROFILE= 3	HYDRAULIC JUMP D.S.

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 CAUTION  SECNO=     2.380  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.380  PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.380  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.380  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.380  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.380  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     2.400  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.400  PROFILE= 1  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.400  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.400  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.400  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.400  PROFILE= 3  MINIMUM SPECIFIC ENERGY

 CAUTION  SECNO=     2.510  PROFILE= 1  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.510  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.510  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     2.510  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.510  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.510  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION  SECNO=     2.510  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.510  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.510  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL

 CAUTION  SECNO=     2.650  PROFILE= 2  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.650  PROFILE= 2  MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.650  PROFILE= 3  CRITICAL DEPTH ASSUMED
 CAUTION  SECNO=     2.650  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION  SECNO=     2.650  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
```



```
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************


 EOF..
```

```
SF
TN       ROB BREAKOUT WEST OF NELLIS
NS      2      0.93      0.98         -1      .040      .008
NG      0   1729.6       290   1730.3
TN       ROB BREAKOUT EAST OF NELLIS
NS      2      0.98      1.12         -1      .040     .0043
NG    290   1730.3      1030   1732.5
TN       ROB BREAKOUT EAST OF NELLIS
NS      3      1.12      1.27         -1      .040     .0011
NG   1030   1732.5      1370   1732.5      1820   1735.0
TN       ROB BREAKOUT EAST OF NELLIS
NS      4      1.27      1.40         -1      .040     .0015
NG   1820      1735      1860      1736      2010      1736      2500      1739
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      4      1.92      2.06         -1      .078      .004
NG      0   1774.8        50      1776       400      1778       600   1780.5
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      3      2.06      2.20         -1      .076      .010
NG    760   1780.5      1300   1782.9      1520   1784.1
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB
NS      4      2.20      2.29         -1      .044      .017
NG      0   1784.1       300   1786.2       520   1788.1
TN       SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY
NS      6      2.40      2.51         -1      .080      .008
NG      0   1786.0       200      1792       370   1788.5       450      1788       520   1787.5
NG    580      1800
EE

      48
     .00 ********** This is a split flow run to compute breakouts. *******
     .00
     .00 ####  Starting Slope set equal to FIS REEL's slope downstream    ####
     .00 ####  on Las Vegas Creek.  This is a dummy section set at the    ####
     .00 ####  Normal/Low Flow confluence to give full profile definition.####
     .24 ####          Centerline =  2350                                 ####
     .39 ####          Centerline =  2230                                 ####
     .56 ####          Centerline =  2380                                 ####
     .74 ####          Centerline =  2430                                 ####
     .88 ####          Centerline =  2320                                 ####
     .91 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
     .91 ####                  NELLIS BOULEVARD                           ####
     .91 ####  Special Bridge Routine                                     ####
     .91 ####  Use only 1 ft cebris due sloped piers and wingwalls
     .91 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
     .98 ####          Centerline =  2630                                 ####
     .98 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
     .98 ####  A major break out occurs upstream of Nellis Blvd which     ####
     .98 ####  flows south.  Split flow option used to compute breakouts  ####
     .98 ####  from 0.93 to 1.40                                          ####
     .98 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
    1.12 ####          Centerline =  2340                                 ####
    1.27 ####          Centerline =  2330                                 ####
    1.40 ####          Centerline =  2780                                 ####
    1.57 ####          Centerline =  2490                                 ####
    1.72 ####          Centerline =  2310                                 ####
    1.88 ####          Centerline =  2270                                 ####
    1.90 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
    1.90 ####                  LAMB BOULEVARD                             ####
    1.90 ####                Special Bridge Routine                       ####
    1.90 ####          Centerline = 2480                                  ####
    1.99 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
    2.06 ####          Centerline =  2480                                 ####
    2.06 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
    2.06 ####  A Major Breakout of flows follows an old stream channel    ####
```

Reach 5
Sec 0 to 2.65
Flow Splits

```
C     2.06 ####  to the North, Upstream of Lamb Blvd and I-515.                    ####
C     2.06 ####  Breakout modeled with split flow option.                         ####
C     2.06 ####  %%%%
```

X1 1.27	4	2225	2380	795	800	800			
X4 2	1732	2000	1735	2380					
GR1736.5	1850	1731.6	2225	1726.1	2239	1725.9	2263	1725.0	2352
GR1731.4	2370	1732.1	2378	1735.0	2460				
X1 1.40	19	2644	2854	695	690	690			
X3 10									
GR1740.6	2000	1738.4	2184	1738.2	2252	1740.7	2284	1739.2	2320
GR1737.5	2389	1737.6	2476	1737.1	2552	1737.6	2626	1740.1	2644
GR1739.3	2688	1737.5	2715	1735.2	2732	1727.9	2753	1727.9	2790
GR1730.0	2815	1736.9	2832	1739.0	2894	1739.0	3300		
NC .05	.05	.035	.1	.3					
NH .05	2437	.035	2544	.05	2900	.18	3830		
X1 1.57	21	2437	2544	870	880	880			
X3 10									
GR1752.7	1740	1752.8	1740	1752.8	1740	1752.8	1740	1752.8	1740
GR1748.8	2000	1745.6	2339	1748.2	2377	1747.1	2404	1747.0	2431
GR1751.9	2437	1740.4	2462	1740.4	2478	1740.4	2494	1741.6	2508
GR1743.5	2527	1747.5	2544	1745.8	2623	1748.2	2851	1749	2900
GR 1756	3930								
NC .05	.05	.035	.1	.3					
X1 1.72	22	2245	2407	775	810	810			
X3 10									
GR1760.2	1640	1760.2	1640	1760.2	1640	1760.2	1640	1760.2	1640
GR1755.3	2000	1755.3	2055	1755.3	2110	1755.3	2135	1755.3	2227
GR1760.5	2245	1758.9	2262	1756.1	2281	1749.7	2303	1749.7	2311
GR1751.2	2326	1752.1	2348	1751.0	2360	1758.6	2395	1759.3	2407
GR1759.3	2453	1761.4	2526						
X1 1.88	16	2232	2341	795	790	795			
GR1774.0	2000	1773.6	2135	1773.4	2205	1771.3	2232	1760.8	2255
GR1758.0	2262	1758.0	2278	1756.8	2281	1756.8	2296	1761.7	2308
GR1770.7	2334	1774.0	2341	1774.0	2356	1774.0	2430	1772.0	2465
GR1773.7	2596	1776	2880						
NC			.3	.5					
X1 1.89				105	105	105		1.8	
X1 1.90	7	2420	2550	10	10	10			
X3 10							1772.3	1772.3	
GR1774.5	2400	1772	2420	1765.8	2430	1765.8	2535	1776	2550
GR 1776	3120	1778	3440						
SB 1.10	1.550	2.63		102	4	588		1766.3	1765.8
X1 1.92	8	9940	10100	100	100	100		.5	
X2		1	1772.5	1774.8					
X3 10							1772.4	1772.4	
BT 5	2180	1774.8		2180	1774.8		2185	1776.3	1772.5
BT 2290	1776.7	1772.5	2300	1775.2					
GR 1776	9730	1776	9940	1768	9960	1766.3	9965	1766.3	10070
GR1775.5	10100	1776	10450	1778	10850				
NC .18	.18	.035							
X1 2.06	17	2396	2548	740	740	740			
GR1781.9	2310	1781.9	2310	1781.9	2310	1781.9	2310	1779.4	2326
GR1780.5	2335	1780.5	2382	1779.5	2396	1775.4	2427	1771.7	2440
GR1770.9	2464	1770.7	2512	1773.3	2537	1777.2	2548	1779.5	2590
GR1777.2	2753	1784	3400						
ET			6.1		2383	2565			
NC			.1	.3					
X1 2.20	12	2383	2517	755	760	760			
GR1783.8	2035	1783.8	2035	1783.8	2035	1781.6	2197	1783.5	2383
GR1778.4	2407	1774.7	2441	1774.7	2483	1777.2	2496	1779.6	2508
GR1784.4	2517	1785.9	2565						
ET	9.1	9.1	6.1	9.1				2850	3210
X1 2.29	43	2947	3064	510	460	480			
GR1784.3	2900	1786.0	2113	1783.5	2151	1783.4	2179	1783.3	2235
GR1781.2	2258	1782.1	2286	1782.1	2319	1781.0	2343	1781.0	2376
GR1781.4	2404	1782.9	2422	1781.8	2433	1781.4	2457	1781.7	2479
GR1780.6	2509	1781.6	2522	1786.0	2529	1786.0	2592	1784.9	2599
GR1785.8	2614	1786.1	2664	1785.3	2672	1785.9	2689	1785.9	2722
GR1785.4	2738	1785.4	2754	1785.9	2779	1785.4	2800	1786.3	2842
GR1788.1	2835	1785.7	2906	1786.4	2947	1776.9	2968	1776.9	2995
GR1778.2	3005	1778.2	3040	1780.6	3050	1784.1	3064	1785.4	3087

```
GR1787.1      3107    1785.1      3181    1786.5      3210
VC    .05      .05      .020       2.3       0.5
X1   2.38        6      2413      2547       450       450       450                  -1
GR   1797     2000      1797      2413      1782      2442      1782      2519      1797      2547
GR   1800     3430
SB   1.25     1.56         3       500      77.1                  1266     2.375      1782      1781
X1   2.40                                    150       150       150                    1
X2                             1      1754      1800
VC                        .034
X1   2.51       13      2571      2646       550       550       550
GR1802.8     2000    1795.3      2180    1792.7      2463    1792.9      2571    1783.3      2589
GR1783.7     2514    1788.9      2622    1799.4      2636    1796.9      2646    1791.1      2677
GR1794.5     2834    1801.6      2963    1807.0      3117
VC    .12      .06      .045        .1        .3
X1   2.65       17      2242      2325       815       745       760
GR   1812     1880      1812      1880      1812      1680      1812      1880      1808      1550
GR1805.8     2000    1804.6      2171    1804.7      2242    1790.2      2264    1790.2      2280
GR1789.5     2306    1802.0      2325    1803.8      2415    1804.7      2596      1808      2810
GR1810.5     2990      1812      3210
EJ


ER
EOF..
```

```
H    H   Y    Y   DDDDD    RRRRR     AAAA    U    U   L        IIIII     CCCC     SSSS
H    H    Y  Y    D    D   R    R   A    A   U    U   L          I      C    C   S
H    H     YY     D    D   R    R   A    A   U    U   L          I      C         SSSS
HHHHHH     Y      D    D   RRRR     AAAAAA   U    U   L          I      C             S
H    H     Y      D    D   R  R     A    A   U    U   L          I      C    C   S    S
H    H     Y      DDDDD    R   R    A    A    UUUU    LLLLLL   IIIII     CCCC     SSSS
```

ACOE LOS ANGELES HARRIS 500 PRINTER: 5

HYDRAULICS 22 FEB 89 9:34:51

TERMINAL: 55

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*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED AUGUST 1983                              *
*                                                   *
*  RUN DATE  27-APR-88 TIME   11:44:54              *
*****************************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```



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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*****************************************************


SPLIT FLOW BEING PERFORMED

SF

TN       ROB BREAKOUT WEST OF NELLIS
NS      2      0.93      0.98        -1     .040     .008
NG      0   1729.6       290   1730.3

TN       ROB BREAKOUT EAST OF NELLIS
NS      2      0.98      1.12        -1     .040    .0043
NG    290   1730.3      1030   1732.5

TN       ROB BREAKOUT EAST OF NELLIS
NS      3      1.12      1.27        -1     .040    .0011
NG   1030   1732.5      1370   1732.5     1920   1735.0

TN       ROB BREAKOUT EAST OF NELLIS
NS      4      1.27      1.40        -1     .040    .0015
NG   1820      1735      1860      1736     2310      1736     2500      1739

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      4      1.92      2.06        -1     .078     .004
NG      0   1774.8        50      1776      400      1778      600   1780.5

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      3      2.06      2.20        -1     .076     .010
```

```
NG     760  1781.5     1300  1782.9     1520  1784.1

TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB
NS     4     2.20     2.29       -1     .044     .017
NG     0  1784.1      300  1786.2      520  1788.1

TN       SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY
NS     6     2.40     2.51       -1     .090     .008
NG     0  1795.0      200  1792        370  1788.5      450     1788      520  1787.5
NG   580     1900
1
 27-APR-88    11:44:54                                                                    PAGE     2

C
T1       James M. Montgomery, Consulting Engineers, Inc.
T2       Las Vegas Valley Overflow Study
T3       Flamingo Wash - Reach 5 (Confluence to Boulder Hyw)   CMH 10/7/87

J1   ICHECK      INQ       NINV      IDIR       STRT      METRIC     HVINS      Q          WSEL       FQ
       0.          5.        0.        0.  0.001400       0.00       0.0         0.   1702.190     0.000
J2   NPROF       IPLOT     PRFVS     XSECV      XSECH      FN        ALLDC      IBW        CHNIM      ITRACE
     -1.000      0.000     -1.000     0.000      0.000     0.000     0.000      0.000      0.000      0.000

NC       0.045      0.045      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
QT       4.000   6400.000   8400.000  11920.000  35420.000      0.000      0.000      0.000      0.000      0.000
          ********** This is a split flow run to compute breakouts. *******

          ####  Starting Slope set equal to FIS BFEL's slope downstream    ####
          ####  on Las Vegas Creek.  This is a dummy section set at the    ####
          ####  Normal/Low Flow confluence to give full profile definition.####
X1       0.100     13.000   2278.000   2620.000      0.000      0.000      0.000      0.000     -1.700      0.000
GR  1715.100   2000.000   1715.300   2278.000   1709.400   2314.000   1702.900   2328.000   1702.900   2353.000
GR  1701.400   2359.000   1701.400   2379.000   1702.300   2389.000   1709.100   2400.000   1710.400   2409.000
GR  1711.500   2459.000   1713.000   2563.000   1714.300   2620.000      0.000      0.000      0.000      0.000

          ####              Centerline =  2350                          ####
X1       0.240      0.000      0.000      0.000   1250.000   1250.000   1250.000      0.000      1.700      0.000

          ####              Centerline =  2230                          ####
X1       0.390     10.000   2152.000   2348.000    820.000    845.000    825.000      0.000      0.000      0.000
GR  1716.500   2000.000   1715.000   2192.000   1704.000   2218.000   1704.000   2239.000   1706.500   2262.000
GR  1711.900   2283.000   1714.500   2348.000   1714.300   2478.000   1714.100   2531.000   1716.000   2560.000

          ####              Centerline =  2380                          ####
X1       0.560     13.000   2329.000   2411.000    970.000    830.000    900.000      0.000      0.000      0.000
X3       0.100      0.000      0.000      0.000      0.000   2533.000      0.000      0.000      0.000      0.000
GR  1719.200   2165.000   1719.200   2165.000   1716.900   2252.000   1714.900   2329.000   1708.300   2349.000
GR  1708.300   2385.000   1708.800   2397.000   1715.100   2411.000   1715.600   2438.000   1716.600   2499.000
GR  1720.100   2533.000   1718.600   2582.000   1718.400   2633.000   1716.100   2692.000   1716.100   2758.000
GR  1716.900   2872.000   1715.700   3021.000   1716.600   3086.000      0.000      0.000      0.000      0.000

          ####              Centerline =  2430                          ####
X1       0.740     13.000   2330.000   2433.000    815.000    945.000    930.000      0.000      0.000      0.000
GR  1724.300   2149.000   1724.300   2149.000   1724.300   2149.000   1723.500   2281.000   1722.900   2330.000
GR  1720.000   2355.000   1713.200   2365.000   1713.200   2396.000   1714.300   2416.000   1721.400   2433.000
GR  1721.700   2487.000   1722.800   2579.000   1726.200   2660.000      0.000      0.000      0.000      0.000

          ####              Centerline =  2320                          ####
X1       0.880     16.000   2278.000   2379.000    760.000    720.000    760.000      0.000      0.000      0.000
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR  1730.300   2234.000   1727.900   2278.000   1718.100   2297.000   1718.100   2323.000   1718.200   2354.000
GR  1726.100   2379.000   1724.800   2400.000   1727.000   2423.000   1726.700   2439.000   1728.200   2452.000
GR  1728.200   2480.000   1728.200   2514.000   1725.600   2528.000   1725.600   2550.000   1726.500   2566.000
```

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GR   1728.900   2585.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
        ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
        ####                    NELLIS BOULEVARD                               ####
        ####  Special Bridge Routine                                           ####
        ####  Use only 1 ft cebris due sloped piers and wingwalls
        ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
XI      0.910     16.000   2279.000   2384.000    140.000    140.000    140.000      0.000      0.500      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1724.500   1724.500      0.000
GR   1730.800   2234.000   1727.900   2278.000   1718.100   2279.000   1718.100   2323.000   1718.200   2354.000
GR   1718.200   2384.000   1724.800   2400.000   1727.000   2423.000   1726.700   2439.000   1728.200   2452.000
GR   1728.200   2480.000   1728.200   2514.000   1725.600   2528.000   1725.600   2550.000   1726.500   2566.000
GR   1728.900   2585.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB      1.100      1.560      2.800      0.000    107.000     11.000    480.000      0.000   1719.500   1719.000
XI      0.930      0.000      0.000      0.000     90.000     90.000     90.000      0.000      0.500      0.000
X2      0.000      0.000      1.000   1724.500   1726.000      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000   1726.000   1726.000      0.000
BT      8.000   2000.000   1728.300      0.000   2300.000   1727.400      0.000   2510.000   1727.600      0.000
BT   2710.000   1726.000      0.000   2720.000   1728.500   1724.500   2800.000   1728.500   1724.500   2827.000
BT   1726.000   1724.500   2990.000   1728.400      0.000      0.000      0.000      0.000      0.000      0.000

        ####                Centerline =  2630                               ####
        ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
        ####  A major break out occurs upstream of Nellis Blvd which           ####
        ####  flows south.  Split flow option used to compute breakouts        ####
        ####  from 0.93 to 1.40                                                ####
        ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
X1      0.980     14.000   2557.000   2669.000    300.000    300.000    300.000      0.000      0.000      0.000
X4      1.300   1730.400   2000.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   1732.300   1670.000   1729.400   2301.000   1730.700   2341.000   1729.600   2373.000   1729.700   2464.000
GR   1728.700   2484.000   1728.800   2532.000   1729.000   2557.000   1723.800   2578.000   1723.800   2599.000
GR   1726.900   2600.000   1723.700   2607.000   1724.700   2657.000   1730.300   2669.000      0.000      0.000

NC      0.180      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
        ####                Centerline =  2340                               ####
X1      1.120     10.000   2268.000   2403.000    735.000    725.000    730.000      0.000      0.000      0.000
GR   1736.300   1720.000   1732.700   1850.000   1732.900   2225.000   1731.800   2268.000   1725.000   2280.000
GR   1725.300   2333.000   1725.300   2333.000   1727.400   2342.000   1725.400   2393.000   1732.500   2403.000

NC      0.070      0.050      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        ####                Centerline =  2330                               ####
X1      1.270      8.000   2225.000   2380.000    795.000    800.000    800.000      0.000      0.000      0.000
X4      2.300   1732.000   2000.000   1735.000   2380.000      0.000      0.000      0.000      0.000      0.000
GR   1736.500   1850.000   1731.600   2225.000   1726.100   2239.000   1725.900   2263.000   1725.000   2352.000
GR   1731.400   2370.000   1732.100   2378.000   1735.000   2460.000      0.000      0.000      0.000      0.000

        ####                Centerline =  2780                               ####
X1      1.400     19.000   2644.000   2894.000    695.000    690.000    690.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   1740.500   2000.000   1738.400   2184.000   1738.200   2252.000   1740.700   2284.000   1739.200   2320.000
GR   1737.500   2339.000   1737.600   2476.000   1737.100   2552.000   1737.600   2626.000   1740.100   2644.000
GR   1739.300   2688.000   1737.500   2715.000   1735.200   2732.000   1727.900   2753.000   1727.900   2790.000
```



```
GR   1730.300   2815.000   1736.900   2832.000   1739.000   2894.000   1739.000   3300.000      0.000      0.000

NC      0.050      0.050      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
NH      0.050   2437.000      0.035   2544.000      0.050   2900.000      0.180   3830.000      0.000      0.000
        ####                Centerline =  2490                               ####
X1      1.570     21.000   2437.000   2544.000    870.000    880.000    880.000      0.000      0.000      0.000
```

```
X3      10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    1752.700   1740.000   1752.800   1740.000   1752.800   1740.000   1752.800   1740.000   1752.800   1740.000
GR    1748.300   2000.000   1745.600   2339.000   1748.200   2377.000   1747.100   2404.000   1747.000   2431.000
GR    1751.900   2437.000   1740.400   2462.000   1740.400   2478.000   1740.400   2494.000   1741.600   2508.000
GR    1743.500   2527.000   1747.500   2544.000   1745.800   2623.000   1748.200   2851.000   1749.000   2900.000
GR    1756.000   3830.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC        0.050      0.050      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
     ####                Centerline =   2310                          ####
X1        1.720     22.000   2245.000   2407.000    775.000    810.000    810.000      0.000      0.000      0.000
X3       10.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    1760.200   1640.000   1760.200   1640.000   1760.200   1640.000   1760.200   1640.000   1760.200   1640.000
GR    1755.300   2000.000   1755.300   2055.000   1755.300   2110.000   1755.300   2135.000   1755.300   2227.000
GR    1760.500   2245.000   1758.900   2262.000   1756.100   2281.000   1749.700   2303.000   1749.700   2311.000
GR    1751.200   2326.000   1752.100   2348.000   1751.000   2360.000   1758.600   2395.000   1759.300   2407.000
GR    1759.300   2453.000   1761.400   2526.000      0.000      0.000      0.000      0.000      0.000      0.000

     ####                Centerline =   2270                          ####
X1        1.380     16.000   2232.000   2341.000    795.000    790.000    795.000      0.000      0.000      0.000
GR    1774.000   2000.000   1773.600   2135.000   1773.400   2205.000   1771.300   2232.000   1760.800   2255.000
GR    1758.000   2262.000   1758.000   2278.000   1756.800   2281.000   1756.800   2296.000   1761.700   2308.000
GR    1770.700   2334.000   1774.000   2341.000   1774.000   2356.000   1774.000   2430.000   1772.000   2465.000
GR    1773.700   2596.000   1776.000   2880.000      0.000      0.000      0.000      0.000      0.000      0.000

NC        0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
X1        1.890      0.000      0.000      0.000    105.000    105.000    105.000      0.000      1.800      0.000

     ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
     ####                    LAMB BOULEVARD                                        ####
     ####                Special Bridge Routine                                    ####
     ####                Centerline =   2480                                       ####
     ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
X1        1.900      7.000   2420.000   2550.000     10.000     10.000     10.000      0.000      0.000      0.000
X3       10.000      0.000      0.000      0.000      0.000      0.000      0.000   1772.300   1772.300      0.000
GR    1774.500   2400.000   1772.000   2420.000   1765.800   2430.000   1765.800   2535.000   1776.000   2550.000
GR    1776.000   3120.000   1778.000   3440.000      0.000      0.000      0.000      0.000      0.000      0.000

SB        1.100      1.560      2.630      0.000    102.000      4.000    588.000      0.000   1766.300   1765.800
X1        1.920      8.000   9940.000  10100.000    100.000    100.000    100.000      0.000      0.500      0.000
X2        0.300      0.000      1.000   1772.500   1774.800      0.000      0.000      0.000      0.000      0.000
X3       10.000      0.000      0.000      0.000      0.000      0.000      0.000   1772.400   1772.400      0.000
BT        5.100   2180.000   1774.800      0.000   2180.000   1774.800      0.000   2185.000   1776.300   1772.500
BT     2290.000   1776.700   1772.500   2300.000   1775.200      0.000      0.000      0.000      0.000      0.000
GR    1776.200   9730.000   1776.000   9940.000   1768.000   9960.000   1766.300   9965.000   1766.300  10070.000
GR    1775.500  10100.000   1776.000  10450.000   1778.000  10850.000      0.000      0.000      0.000      0.000
1
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NC        0.180      0.180      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
     ####                Centerline =   2480                          ####
     ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
     ####  A Major Breakcut of flows follows an old stream channel                   ####
     ####  to the north, upstream of Lamb Blvd and I-515.                            ####
     ####  Breakcut modeled with split flow option.                                  ####
     ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx  ####
X1        2.060     17.000   2396.000   2548.000    740.000    740.000    740.000      0.000      0.000      0.000
GR    1781.900   2310.000   1781.900   2310.000   1781.900   2310.000   1781.900   2310.000   1779.400   2326.000
GR    1780.500   2335.000   1780.500   2382.000   1779.600   2396.000   1775.400   2427.000   1771.700   2440.000
GR    1770.300   2464.000   1770.700   2512.000   1773.300   2537.000   1777.200   2548.000   1779.500   2550.000
GR    1777.200   2753.000   1784.000   3400.000      0.000      0.000      0.000      0.000      0.000      0.000

ET        0.000      0.000      0.000      6.100      0.000   2383.000   2565.000      0.000      0.000      0.000
NC        0.300      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
     ####                Centerline =   2450                          ####
X1        2.200     12.000   2383.000   2517.000    755.000    760.000    760.000      0.000      0.000      0.000
GR    1783.300   2035.000   1783.800   2035.000   1783.800   2035.000   1781.600   2197.000   1783.500   2383.000
```

```
GR    1773.400   2497.000   1774.700   2441.000   1774.700   2483.000   1777.200   2496.000   1779.600   2508.000
GR    1784.400   2517.000   1785.900   2565.000      0.000      0.000      0.000      0.000      0.000      0.000

ET       0.000      9.100      9.100      9.100      9.100      0.000      0.000      0.000   2850.000   3210.000
          ####              Centerline =  3020                          ####
X1       2.290     43.000   2547.000   3064.000    510.000    460.000    480.000      0.000      0.000      0.000
GR    1784.300   2000.000   1786.000   2113.000   1783.600   2151.000   1783.400   2179.000   1783.300   2235.000
GR    1781.200   2258.000   1782.100   2286.000   1782.100   2319.000   1781.000   2343.000   1781.000   2376.000
GR    1781.400   2404.000   1782.900   2422.000   1781.800   2433.000   1781.400   2457.000   1781.700   2479.000
GR    1789.500   2509.000   1781.600   2522.000   1786.000   2529.000   1786.000   2592.000   1784.900   2599.000
GR    1785.800   2614.000   1786.100   2664.000   1785.300   2672.000   1785.900   2689.000   1785.900   2722.000
GR    1785.400   2738.000   1785.400   2754.000   1785.900   2779.000   1785.400   2800.000   1786.300   2842.000
GR    1788.100   2885.000   1785.700   2906.000   1786.400   2947.000   1776.900   2568.000   1776.900   2995.000
GR    1778.200   3005.000   1778.200   3040.000   1780.600   3050.000   1784.100   3064.000   1785.400   3087.000
GR    1787.100   3107.000   1785.100   3181.000   1786.600   3210.000      0.000      0.000      0.000      0.000

NC       0.050      0.050      0.020      0.300      0.500      0.000      0.000      0.000      0.000      0.000
          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx     ####
          ####              LAS VEGAS EXPRESSWAY - INTERSTATE 515            ####
          ####  Special Bridge Routine used to model flow through the      ####
          ####  Flamingo Wash Crossing.  Overflow to the north modeled     ####
          ####  with split flow option.                                    ####
          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx     ####
X1       2.380      6.000   2413.000   2547.000    450.000    450.000    450.000      0.000     -1.000      0.000
GR    1797.300   2000.000   1797.000   2413.000   1782.000   2442.000   1782.000   2519.000   1797.000   2547.000
GP    1800.300   3430.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB       1.250      1.560      3.000    500.000     77.100      0.000   1266.000      2.375   1782.000   1781.000
X1       2.400      0.000      0.000      0.000    150.000    150.000    150.000      0.000      1.000      0.000
X2       0.300      0.000      1.000   1794.000   1800.000      0.000      0.000      0.000      0.000      0.000
I
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NC       0.300      0.000      0.034      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          ####              Centerline =  2500                          ####
X1       2.510     13.000   2571.000   2646.000    550.000    550.000    550.000      0.000      0.000      0.000
GR    1802.300   2000.000   1795.300   2180.000   1792.700   2463.000   1792.900   2571.000   1783.300   2589.000
GR    1783.700   2514.000   1788.900   2622.000   1789.400   2636.000   1796.900   2646.000   1791.100   2677.000
GR    1794.500   2934.000   1801.600   2963.000   1807.000   3117.000      0.000      0.000      0.000      0.000

NC       0.120      0.060      0.045      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          ####              Centerline =  2290                          ####
X1       2.550     17.000   2242.000   2325.000    815.000    745.000    760.000      0.000      0.000      0.000
GR    1812.300   1880.000   1812.000   1880.000   1812.000   1880.000   1812.000   1880.000   1808.000   1950.000
GR    1805.300   2000.000   1804.600   2171.000   1804.700   2242.000   1790.200   2264.000   1790.200   2280.000
GR    1789.500   2306.000   1802.000   2325.000   1803.800   2415.000   1804.700   2596.000   1808.000   2810.000
GR    1810.500   2990.000   1812.000   3210.000      0.000      0.000      0.000      0.000      0.000      0.000
EJ       0.300      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
1
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       WLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

*PROF 1

CCHV=   0.100  CEHV=   0.300
*SECNO 0.000
3280 CROSS SECTION       0.00 EXTENDED       0.75 FEET

          ********** This is a split flow run to compute breakouts. *******
```

```
          ####  Starting slope set equal to FIS BFEL's slope downstream    ####
          ####  on Las Vegas Creek.  This is a dummy section set at the    ####
          ####  Normal/Low Flow confluence to give full profile definition.####
      0.00     13.65   1713.35     0.00   1702.19   1713.68     0.34     0.00      0.00   1713.60
     8069.        0.      8069.       0.      0.      1734.       0.       0.        0.   1712.60
      0.00      0.30      4.65     0.00    0.045     0.035    0.045    0.000   1699.70   2279.54
  0.001397         0.        0.       0.        0         0       12     0.00    340.47   2620.00
)
 *SECNO 0.240
 3280 CROSS SECTION       0.24 EXTENDED       0.78 FEET

          ####              Centerline =  2350                          ####
      0.24     13.68   1715.08     0.00      0.00   1715.41     0.33     1.73      0.00   1715.30
     8069.        0.      8069.       0.        0.      1745.       0.      50.       10.   1714.30
      0.08      0.00      4.62     0.00    0.045     0.035    0.045    0.000   1701.40   2279.33
  0.001368      1250.     1250.    1250.         2         0        0     0.00    340.67   2620.00
)
 *SECNO 0.390
 3280 CROSS SECTION       0.39 EXTENDED       0.28 FEET

          ####              Centerline =  2230                          ####
      0.39     12.27   1716.27     0.00      0.00   1716.95     0.68     1.43      0.10   1716.00
     8069.        5.      7137.     928.      12.      1023.     389.      80.       17.   1714.50
      0.11      0.42      6.98     2.38    0.045     0.035    0.045    0.000   1704.00   2103.79
  0.002265       820.      825.     845.         2         0        0     0.00    456.21   2560.00
)
 *SECNO 0.560
 3280 CROSS SECTION       0.56 EXTENDED       1.64 FEET

 3301 HV CHANGED MORE THAN HVINS

1
 27-APR-88    11:44:54                                                                    PAGE     8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL        OLOSS    BANK ELEV
    Q         ALOB      ACH       AROB      ALOB       ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL        XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR     TOPWID      ENDST


 3470 ENCROACHMENT STATIONS=       0.0     2533.0   TYPE=      1   TARGET=     2532.999
          ####              Centerline =  2380                          ####
      0.56      9.95   1718.25     0.00      0.00   1719.48     1.23     2.36      0.17   1714.90
     8069.      635.      6719.     715.      215.      695.      222.      106.      25.   1715.10
      0.14      2.96      9.66     3.22    0.045     0.035    0.045    0.000   1708.30   2201.14
  0.003114       970.      900.     830.         3         0        0     0.00    313.84   2514.98
)
 *SECNO 0.740

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####              Centerline =  2430                          ####
      0.74      9.59   1722.79   1722.79       0.00   1724.98     2.09     4.10      0.26   1722.90
     8069.        0.      7769.     301.        0.      658.      117.      126.      31.   1721.40
      0.16      0.00     11.81     2.57    0.045     0.035    0.045    0.000   1713.20   2330.94
  0.006769       815.      930.     945.         3         8        0     0.00    247.34   2578.28
)
 *SECNO 0.890

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1727.90 ELREA= 1726.10

```
          ####                Centerline =  2320                          ####
          0.88      9.28  1727.38      0.00      0.00  1728.94      1.56      4.00      0.05  1727.90
         8069.        0.     7625.      445.        0.     742.      157.      141.        35.  1726.10
          0.19      0.00     10.28      2.82     0.045    0.035     0.045     0.000  1716.10  2279.00
     0.004236       760.      760.      720.         2         0         0      0.00  220.51  2572.99
```

CCHV= 0.300 CEHV= 0.500

*SECNO 0.910

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

```
          ####  %%%%
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
          ####              Centerline =  2630                                  ####
          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx   ####
          ####  A major break out occurs upstream of Nellis Blvd which      ####
          ####  flows south.  Split flow option used to compute breakouts   ####
          ####  from 0.93 to 1.40                                           ####
          ####  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx   ####
     0.98       7.39  1731.09  1731.19      0.00  1732.00      0.32      0.79      0.00  1729.00
     3157.      2130.    6027.       0.       812.     685.       0.      156.       40.   1730.30
     0.20       2.62     8.80      0.00     0.045    0.035    0.045     0.000  1723.70  1858.65
 0.004100        300.     300.      300.        20       14        0      0.00   810.35  2669.00

CCHV=   0.100  CEHV=   0.300
*SECNO 1.120
3280 CROSS SECTION       1.12 EXTENDED       1.10 FEET

3301 HV CHANGED MORE THAN HVINS

          ####              Centerline =  2340                                  ####
     1.12       8.60  1733.60  1731.53      0.00  1735.01      1.42      2.86      0.15  1731.80
     9782.       166.    9616.       0.       368.     998.       0.      180.       52.   1732.50
     0.23       0.45     9.64      0.00     0.180    0.035    0.045     0.000  1725.00  1814.70
 0.003772        735.     730.      725.         6        9        0      0.00   588.30  2403.00

*SECNO 1.270
3280 CROSS SECTION       1.27 EXTENDED       1.06 FEET

3301 HV CHANGED MORE THAN HVINS

          ####              Centerline =  2330                                  ####
     1.27      11.06  1736.06     0.00      0.00  1736.61      0.55      1.51      0.09  1731.60
    11944.     2208.    9645.       91.      1234.    1468.       85.      218.       62.   1735.00
     0.26       1.79     6.57      1.08     0.070    0.035    0.050     0.000  1725.00  1864.60
 0.001233        795.     800.      801.         3        0        0      0.00   595.40  2460.00
```


SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.400
3280 CROSS SECTION   1.40 EXTENDED   0.38 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 1740.10 ELREA= 1739.00

```
          ####                Centerline =  2780                          ####
     1.40     11.48  1739.38  1739.38     0.00  1741.21     1.83     1.74     0.38  1740.10
    12446.        0.    12240.      206.       0.     1118.      154.      250.       72.    1739.00
      0.28     0.00    10.95     1.33    0.070    0.035    0.050    0.000  1727.90  2683.60
 0.007313      695.      690.      690.       20       12        0     0.00   616.40  3300.00
 CCHV=   0.100 CEHV=   0.300
 1490 NH CARD USED
 *SECNO 1.575

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1751.90 ELREA=     1747.50

          ####                Centerline =  2490                          ####
     1.57     11.25  1751.65  1751.65     0.00  1752.12     0.46     2.61     0.14  1751.90
    12446.        0.     6509.     5937.       0.      925.     2074.      293.       86.    1747.50
      0.33     0.00     7.04     2.86    0.050    0.035    0.050    0.000  1740.40  2437.54
 0.001600      870.      880.      880.       20        5        0     0.00   815.03  3252.56
 CCHV=   0.100 CEHV=   0.300
 *SECNO 1.720
 3280 CROSS SECTION       1.72 EXTENDED       0.60 FEET

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IOC       ICONT     CORAR     TOPWID      ENDST

 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2310                          ####
     1.72     11.10  1760.80  1760.80     0.00  1761.06     0.26     1.16     0.02  1760.50
    12446.     5797.     5917.      133.    2400.     1044.      103.      353.      102.    1759.30
      0.39     2.83     5.28     1.22    0.050    0.035    0.050    0.000  1749.70  1640.00
 0.001315      775.      810.      810.       20        8        0     0.00   865.20  2505.20
 *SECNO 1.830

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
          ####                Centerline =  2270                          ####
     1.88     12.61  1769.41  1769.41     0.00  1773.50     4.09     2.22     1.15  1771.30
    12446.        0.    12446.        0.       0.      766.        0.      393.      111.    1774.00
      0.40     0.00    16.24     0.00    0.050    0.035    0.050    0.000  1756.90  2236.15
 0.009553      795.      795.      795.       20        8        0     0.00    94.11  2330.26
 CCHV=   0.300 CEHV=   0.500
 *SECNO 1.890
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
     1.89     12.58  1771.18  1771.18     0.00  1775.30     4.13     1.01     0.02  1773.10
    12446.        0.    12446.        0.       0.      764.        0.      394.      111.    1775.80
      0.40     0.00    16.30     0.00    0.050    0.035    0.050    0.000  1758.60  2236.22
 0.009651      105.      105.      105.        4        5        0     0.00    93.96  2330.17
```

*SECNO 1.900

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

%%%
LAMB BOULEVARD
Special Bridge Routine

Centerline = 2480
%%%

1.90	7.30	1773.10	1773.10	0.00	1776.44	3.34	0.10	0.24	1772.00
12446.	10.	12437.	0.	5.	848.	0.	395.	111.	1776.00
0.40	1.96	14.66	0.00	0.050	0.035	0.050	0.000	1765.80	2411.18
0.009762	10.	10.	13.	20	11	0	0.00	134.56	2545.74

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1772.42 ,NOT 1773.10 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COEG	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.10	1.56	2.63	0.00	102.00	4.00	588.00	0.00	1766.30	1765.80

*SECNO 1.920
3280 CROSS SECTION 1.92 EXTENDED 3.52 FEET

3301 HV CHANGED MORE THAN HVINS

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	F3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
1783.96	1779.31	0.00	2356.	10086.	588.	608.	1772.50	1774.80

1.92	13.21	1780.01	0.00	0.00	1780.23	0.22	3.79	0.00	1776.50
12446.	1042.	8291.	3114.	739.	1858.	2324.	401.	112.	1776.00
0.41	1.41	4.46	1.34	0.050	0.035	0.050	0.000	1766.80	9730.00
0.000431	101.	100.	100.	2	0	2	0.00	1120.00	10850.00

*SECNO 2.060

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

Centerline = 2480
%%%
A Major Breakout of flows follows an old stream channel
to the north, upstream of Lamb Blvd and I-515.
Breakout modeled with split flow option.

```
          ####  %%%%
```

6070,FLOW BY NORMAL BRIDGE

EGPRS= 1796.913 EGLWC= 1797.445 ELLC= 1794.000 PCWSE= 1791.895 ELTRD= 1800.000

3370 NORMAL BRIDGE,NRD= 0 MIN ELTRD= 1800.00 MAX ELLC= 1794.00

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.40	10.92	1792.92	1792.92	1792.92	1797.45	4.52	0.45	0.01	1797.00
18222.	0.	18222.	0.	0.	1068.	0.	537.	146.	1797.00
0.46	0.00	17.06	0.00	0.050	0.020	0.050	0.000	1782.00	2420.88
0.002985	150.	150.	150.	4	6	0	0.00	118.51	2539.39

•SECNO 2.510

3301 HV CHANGED MORE THAN HVINS

####		Centerline = 2600						####	
2.51	15.51	1798.81	1798.46	1798.81	1800.63	1.82	2.38	0.81	1792.90
35420.	13610.	13478.	8333.	2157.	867.	1261.	571.	152.	1796.90
0.48	6.31	15.54	6.51	0.050	0.034	0.050	0.000	1783.30	2095.84
0.005398	550.	550.	550.	14	15	0	0.00	816.42	2912.25

CCHV= 0.100 CEHV= 0.300

•SECNO 2.550

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

####		Centerline = 2290						####	
2.65	19.86	1809.36	1809.36	1809.36	1811.67	2.31	4.41	0.15	1804.70
35420.	2916.	20604.	11900.	1184.	1334.	2216.	651.	168.	1802.00
0.59	2.46	15.44	5.37	0.120	0.045	0.060	0.000	1789.50	1926.23
0.006101	815.	760.	745.	28	12	0	0.00	981.59	2907.81

TN ROB BREAKOUT WEST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
49.6	1.78	0.79	0.39	290.0	126.4

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
87.71	88.43	0.82	87.71	88.43	0.82	21	1728.584	1731.085	0.930	0.980

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
696.2	2.34	1.10	0.94	740.0	740.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
1624.74	1628.23	0.21	1712.45	1716.56	0.25	21	1731.085	1733.596	0.980	1.120

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
1277.6	1.70	2.16	1.62	790.0	790.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
2162.29	2168.91	0.31	3874.74	3885.57	0.28	21	1733.596	1736.063	1.120	1.270

TN ROB BREAKOUT EAST OF NELLIS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
455.5	1.10	1.06	0.67	680.0	680.0

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	CSSNO	USSNO
502.19	502.20	0.00	4376.93	4387.78	0.25	21	1736.063	1739.380	1.270	1.400

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TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
1575.3	2.53	5.21	2.64	600.0	597.4

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	CSSNO	USSNO
3988.09	3987.81	0.01	8365.02	8375.59	0.13	21	1780.015	1780.469	1.920	2.060

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
625.0	1.90	1.52	0.84	760.0	746.8

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	CSSNO	USSNO
1185.00	1184.94	0.01	9550.02	9560.43	0.11	21	1780.469	1785.617	2.060	2.200

TN LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
164.4	3.66	1.52	0.76	0.0	216.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	CSSNO	USSNO
602.63	602.10	0.09	10152.66	10162.53	0.10	21	1785.617	1788.495	2.200	2.290

TN SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
2793.1	6.16	10.70	5.92	580.0	471.9

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	CSSNO	USSNO
17198.09	17196.73	0.01	27350.75	27359.26	0.03	21	1792.924	1798.809	2.400	2.510

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Flamingo Wash - Reach 5

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	0.000	0.00	0.00	0.00	1699.70	8069.26	1713.35	0.00	1713.68	13.97	4.65	1734.16	2158.95
	0.240	1250.00	0.00	0.00	1701.40	8069.26	1715.08	0.00	1715.41	13.68	4.62	1745.42	2181.37
	0.390	825.00	0.00	0.00	1704.00	8069.26	1716.27	0.00	1716.95	22.65	6.98	1424.58	1695.49
	0.560	900.00	0.00	0.00	1708.30	8069.26	1718.25	0.00	1719.48	31.14	9.66	1132.20	1446.06
*	0.740	930.00	0.00	0.00	1713.20	8069.25	1722.79	1722.79	1724.88	67.69	11.81	774.50	980.76
	0.830	760.00	0.00	0.00	1718.10	8069.25	1727.38	0.00	1728.94	42.36	10.28	899.40	1239.76
	0.910	140.00	0.00	0.00	1719.00	8069.26	1728.75	0.00	1729.50	13.96	7.22	1252.56	2160.04
	0.930	90.00	1726.00	1724.50	1719.50	8069.26	1729.58	0.00	1729.50	18.39	7.91	1144.00	1881.44
*	0.980	300.00	0.00	0.00	1723.70	8156.97	1731.09	1731.09	1732.00	41.00	8.80	1496.50	1273.86
	1.120	730.00	0.00	0.00	1725.00	9781.71	1733.60	1731.63	1735.01	37.72	9.64	1365.87	1592.75
	1.270	800.00	0.00	0.00	1725.00	11944.00	1736.06	0.00	1736.61	12.33	6.57	2786.78	3401.19
*	1.410	690.00	0.00	0.00	1727.90	12446.19	1739.38	1739.38	1741.21	73.13	10.95	1271.90	1455.39
*	1.570	880.00	0.00	0.00	1740.40	12446.19	1751.65	1751.65	1752.12	16.00	7.04	2998.24	3111.34
*	1.720	810.00	0.00	0.00	1749.70	12446.19	1760.80	1760.80	1761.06	13.15	5.28	3552.06	3432.65
*	1.880	795.00	0.00	0.00	1756.80	12446.19	1769.41	1769.41	1773.50	95.53	16.24	766.43	1273.42
*	1.890	105.00	0.00	0.00	1758.60	12446.19	1771.18	1771.18	1775.30	96.51	16.30	763.56	1266.91
*	1.900	10.00	0.00	0.00	1765.80	12446.19	1773.10	1773.10	1776.44	97.62	14.66	852.93	1259.72

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	1.920	100.00	1774.80	1772.50	1766.80	12446.19	1780.01	0.00	1780.23	4.31	4.46	4920.47	5994.66
*	2.060	740.00	0.00	0.00	1770.70	16434.28	1780.47	1780.47	1783.17	71.24	13.60	2052.45	1947.14
	2.200	760.00	0.00	0.00	1774.70	17619.28	1785.62	1785.52	1788.55	68.69	14.35	2190.48	2125.89
*	2.290	480.00	0.00	0.00	1776.90	18221.91	1788.49	1788.49	1792.25	72.38	15.87	1661.65	2141.88
*	2.380	450.00	0.00	0.00	1781.00	18221.91	1791.89	1791.89	1796.45	30.13	17.12	1064.42	3319.68
*	2.400	150.00	1800.00	1794.00	1782.00	18221.91	1792.92	1792.92	1797.45	29.85	17.06	1067.84	3335.26
	2.510	550.00	0.00	0.00	1783.30	35420.00	1798.81	1798.46	1800.63	53.98	15.54	4284.47	4821.14
*	2.650	760.00	0.00	0.00	1789.50	35420.00	1809.36	1809.36	1811.67	61.01	15.44	4734.95	4534.70

Flamingo Wash - Reach 5

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	0.000	8069.26	1713.35	0.00	0.00	11.16	340.47	0.00
	0.240	8069.26	1715.08	0.00	1.73	0.00	340.67	1250.00
	0.390	8069.26	1716.27	0.00	1.19	0.00	456.21	825.00
	0.550	8069.26	1717.25	0.00	1.98	0.00	313.84	900.00
*	0.740	8069.26	1722.79	0.00	4.55	0.00	247.34	930.00
	0.880	8069.26	1727.38	0.00	4.59	0.00	220.51	760.00
	0.910	8069.26	1728.75	0.00	1.37	0.00	231.88	140.00
	0.930	8069.26	1728.58	0.00	-0.17	0.00	217.28	90.00
*	0.980	8156.97	1731.09	0.00	2.50	0.00	810.35	300.00
	1.120	9781.71	1733.60	0.00	2.51	0.00	588.30	730.00
	1.270	11944.00	1736.06	0.00	2.47	0.00	595.40	800.00
*	1.400	12446.19	1739.38	0.00	3.32	0.00	616.40	690.00
*	1.570	12446.19	1751.65	0.00	12.27	0.00	815.03	880.00
*	1.720	12446.19	1760.80	0.00	9.15	0.00	865.20	810.00
*	1.880	12446.19	1769.41	0.00	8.60	0.00	94.11	795.00
*	1.890	12446.19	1771.18	0.00	1.77	0.00	93.96	105.00
*	1.900	12446.19	1773.10	0.00	1.93	0.00	134.56	10.00
*	1.920	12446.19	1780.01	0.00	6.91	0.00	1120.00	100.00
*	2.060	16434.28	1780.47	0.00	0.45	0.00	697.17	740.00
	2.200	17619.28	1785.62	0.00	5.15	0.00	520.95	760.00
*	2.290	18221.91	1788.49	0.00	2.88	0.00	360.00	480.00
*	2.380	18221.91	1791.89	0.00	3.40	0.00	118.40	450.00
*	2.430	18221.91	1792.92	0.00	1.03	0.00	118.51	150.00
	2.510	35420.00	1798.81	0.00	5.89	0.00	816.42	550.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	2.650	35420.00	1809.36	0.00	10.55	0.00	981.59	760.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 0.740 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 0.740 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 0.980 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 0.980 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 0.980 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.400 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.400 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.570 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.570 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.570 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.720 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.720 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.720 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.880 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.880 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.880 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.890 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.890 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 1.900 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.900 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.900 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 1.920 PROFILE= 1 HYDRAULIC JUMP D.S.

CAUTION SECNO= 2.060 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.060 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.060 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 2.290 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.290 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2.380 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.380 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2.400 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.400 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 2.650 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.650 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.650 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

EOF..

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SF
TN       ROB BREAKOUT WEST OF NELLIS
NS      2     0.93     0.98        -1     .040     .008
NG      0  1729.6      290  1730.3
TN       ROB BREAKOUT EAST OF NELLIS
NS      2     0.98     1.12        -1     .040    .0043
NG    290  1730.3     1030  1732.5
TN       ROB BREAKOUT EAST OF NELLIS
NS      3     1.12     1.27        -1     .040    .0011
NG   1030  1732.5     1370  1732.5     1820  1735.0
TN       ROB BREAKOUT EAST OF NELLIS
NS      4     1.27     1.40        -1     .040    .0015
NG   1820     1735     1850     1736     2011     1736     2500     1739
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      6     1.92     2.06        -1     .180     .004
NG      0  1774.8       50     1776      400     1778      401     1788      600     1790
NG    760  1790.5
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      4     2.06     2.20        -1     .025     .010
NG    760  1790.5     1300  1792.9     1301  1782.9     1520  1784.1
TN       LOB BREAKOUT OVER SAHARA AVE WEST OF LAMB; CODE BLDGS
NS      4     2.20     2.29        -1     .025    .0167
NG   1520  1784.1     1940  1786.2     1841  1796.0     2040  1798.0
TN       SPLIT FLOW FOR BREAKOUT NORTH ALONG EXPRESSWAY
NS      6     2.40     2.51        -1     .080     .008
NG      0  1796.0      200     1792      370  1788.5      450     1788      520  1787.5
NG    580     1800
EE

      48
    .00 ********** This is a split flow run to compute breakouts. *******
    .00
    .00 ####   Starting Slope set equal to FIS BFEL's slope downstream     ####
    .00 ####   on Las Vegas Creek.  This is a dummy section set at the     ####
    .00 ####   Normal/Low Flow confluence to give full profile definition.####
    .24 ####            Centerline =  2350                                 ####
    .39 ####            Centerline =  2230                                 ####
    .56 ####            Centerline =  2380                                 ####
    .74 ####            Centerline =  2430                                 ####
    .88 ####            Centerline =  2320                                 ####
    .91 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
    .91 ####                     NELLIS BOULEVARD                          ####
    .91 ####   Special Bridge Routine                                      ####
    .91 ####   Use only 1 ft cebris due sloped piers and wingwalls
    .91 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
    .98 ####            Centerline =  2630                                 ####
    .98 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
    .98 ####   A major break out occurs upstream of Nellis Blvd which      ####
    .98 ####   flows south.  Split flow option used to compute breakouts   ####
    .98 ####   from 0.93 to 1.40                                           ####
    .98 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
   1.12 ####            Centerline =  2340                                 ####
   1.27 ####            Centerline =  2330                                 ####
   1.40 ####            Centerline =  2780                                 ####
   1.57 ####            Centerline =  2490                                 ####
   1.72 ####            Centerline =  2310                                 ####
   1.88 ####            Centerline =  2270                                 ####
   1.90 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
   1.90 ####                     LAMB BOULEVARD                            ####
   1.90 ####                  Special Bridge Routine                       ####
   1.90 ####            Centerline = 2480
   1.90 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
   2.06 ####            Centerline =  2480                                 ####
   2.06 ####   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ####
```

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C    2.06 ####  A Major Breakout of flows follows an old stream channel      ####
C    2.06 ####  to the north, upstream of Lamb Blvd and I-515.               ####
C    2.06 ####  Breakout modelec with split flow option.                     ####
C    2.06 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
C    2.20 ####            Centerline =  2450                                ####
C    2.29 ####            Centerline =  3020                                ####
C    2.38 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
C    2.38 ####              LAS VEGAS EXPRESSWAY - INTERSTATE 515           ####
C    2.38 ####  Special Bridge Routine used to model flow through the       ####
C    2.38 ####  Flamingo Wash Crossing.  Overflow to the north modeled      ####
C    2.38 ####  with split flow option.                                     ####
C    2.38 ####  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  ####
C    2.51 ####            Centerline =  2600                                ####
C    2.65 ####            Centerline =  2290                                ####
T1       James M. Montgomery, Consulting Engineers, Inc.
T2       Las Vegas Valley Overflow Study
T3       Flamingo Wash - Reach 5 (Confluence to Boulder Hyw)    DWH 10/7/87
J1           2                .00140                    1702.19
J2     1          -1
NC   .045    .045    .035      .1       .3
BT     4    6400    9400    11920    35420
X1   .00      13    2278     2620                                  -1.7
GR1715.1    2000  1715.3     2278   1709.4     2314   1702.9     2328  1702.9     2353
GR1701.4    2359  1701.4     2379   1702.3     2389   1709.1     2400  1710.4     2409
GR1711.5    2459  1713.0     2563   1714.3     2620
X1   .24                           1250     1250     1250                 1.7
X1   .39      10    2192     2348      920      845      825
GR1716.6    2000  1716.0     2192   1704.0     2218   1704.0     2239  1706.5     2262
GR1711.9    2283  1714.5     2348   1714.3     2478   1714.1     2531    1716     2560
X1   .56      18    2329     2411      970      830      900
X3                                             2533
GR1719.2    2165  1719.2     2165   1716.9     2252   1714.9     2329  1708.3     2349
GR1708.3    2385  1708.8     2397   1715.1     2411   1715.6     2438  1716.6     2499
GR1720.1    2533  1718.6     2582   1718.4     2633   1716.1     2692  1716.1     2798
GR1716.9    2872  1715.7     3021   1716.6     3086
X1   .74      13    2330     2433      815      945      930
GR1724.3    2149  1724.3     2149   1724.3     2149   1723.5     2281  1722.9     2330
GR1720.0    2355  1713.2     2365   1713.2     2396   1714.3     2416  1721.4     2433
GR1721.7    2487  1722.8     2579   1726.2     2660
X1   .88      16    2278     2379      760      720      760
X3   10
GR1730.8    2234  1727.9     2278   1718.1     2297   1718.1     2323  1718.2     2354
GR1726.1    2379  1724.8     2400   1727.0     2423   1726.7     2439  1728.2     2452
GR1728.2    2480  1728.2     2514   1725.6     2528   1725.6     2550  1726.5     2566
GR1728.9    2585
NC                   .3        .5
X1   .91      16    2279     2384      140.     140      140                  .9
X3   10                                                      1724.5  1724.5
GR1730.8    2234  1727.9     2278   1718.1     2279   1718.1     2323  1718.2     2354
GR1718.2    2384  1724.8     2400   1727.0     2423   1726.7     2439  1728.2     2452
GR1728.2    2480  1728.2     2514   1725.6     2528   1725.6     2550  1726.5     2566
GR1728.9    2585
SB  1.10    1.56     2.8                 107       11      480                1719.5     1719
X1   .93                                  80       90       90                   .5
X2                        1   1724.5     1726
X3   10                                                      1726     1726
BT     8    2000  1728.3                2300   1727.4                2510  1727.6
BT  2710    1726                 2720   1728.5   1724.5     2800  1728.5  1724.5     2827
BT  1726  1724.5     2990   1728.4
X1  0.98      14    2557     2669      300      300      300
X4     1  1730.4     2000
GR   1732    1670  1729.4     2301   1730.7     2341   1729.6     2373  1729.7     2464
GR1728.7    2484  1728.8     2532   1729.0     2557   1723.8     2578  1723.8     2599
GR1726.9    2600  1723.7     2607   1724.7     2657   1730.3     2669
NC   .19                      .1        .3
X1  1.12      10    2268     2403      735      725      730
GR   1736    1720  1732.7     1850   1732.9     2225   1731.8     2268  1725.2     2280
GR1725.0    2333  1725.0     2333   1727.4     2342   1725.4     2393  1732.5     2403
```

NC	.070	.05	.035							
X1	1.27	8	2225	2380	795	800	800			
X4	2	1732	2000	1735	2380					
GR1736.5		1850	1731.6	2225	1726.1	2239	1725.9	2263	1725.0	2352
GR1731.4		2370	1732.1	2378	1735.0	2460				
X1	1.40	19	2644	2894	695	690	690			
X3	10									
GR1740.6		2000	1738.4	2184	1738.2	2252	1740.7	2284	1738.2	2320
GR1737.5		2389	1737.6	2476	1737.1	2552	1737.6	2626	1740.1	2644
GR1739.3		2688	1737.5	2715	1735.2	2732	1727.9	2753	1727.9	2790
GR1730.0		2815	1736.9	2832	1739.0	2894	1739.0	3300		
NC	.05	.05	.035	.1	.3					
VH	.05	2437	.035	2544	.05	2900	.18	3830		
X1	1.57	21	2437	2544	870	880	880			
X3	10									
GR1752.7		1740	1752.8	1740	1752.8	1740	1752.8	1740	1752.8	1740
GR1748.8		2010	1745.6	2339	1748.2	2377	1747.1	2404	1747.8	2431
GR1751.9		2437	1740.4	2462	1740.4	2478	1740.4	2494	1741.6	2508
GR1743.5		2527	1747.5	2544	1745.3	2623	1748.2	2851	1749	2900
GR	1756	3830								
NC	.05	.05	.035	.1	.3					
X1	1.72	22	2245	2407	775	810	810			
X3	10									
GR1760.2		1640	1760.2	1640	1760.2	1640	1760.2	1640	1760.2	1640
GR1755.3		2000	1755.3	2095	1755.3	2110	1755.3	2135	1755.3	2227
GR1760.5		2245	1758.9	2262	1756.1	2281	1749.7	2303	1749.7	2311
GR1751.2		2326	1752.1	2348	1751.0	2360	1758.6	2395	1759.3	2407
GR1759.3		2453	1761.4	2526						
X1	1.89	16	2232	2341	795	790	795			
GR1774.0		2000	1773.6	2135	1773.4	2205	1771.3	2232	1760.8	2255
GR1758.0		2262	1758.0	2278	1756.8	2281	1756.8	2296	1761.7	2308
GR1770.7		2334	1774.0	2341	1774.0	2356	1774.0	2430	1772.0	2465
GR1773.7		2596	1776	2880						
NC				.3	.5					
X1	1.89				105	105	105		1.8	
X1	1.90	7	2420	2550	10	10	10			
X3	10							1772.3	1772.3	
GR1774.5		2430	1772	2420	1765.8	2430	1765.8	2535	1776	2550
GR	1776	3120	1778	3440						
SB	1.10	1.560	2.63		102	4	588		1766.3	1765.8
X1	1.92	8	9940	10100	100	100	100		.5	
X2			1	1772.5	1774.8					
X3	10							1772.4	1772.4	
BT	5	2180	1774.8		2180	1774.8		2185	1775.5	1772.5
BT	2290	1775.9	1772.5	2300	1775.6					
GR	1776	9730	1776	9940	1763	9960	1766.3	9965	1766.3	10070
GR1775.5		10100	1776	10450	1778	10850				
ET		6.1	6.1	6.1	6.1	2310	3400			
NC	.10	.18	.035							
X1	2.06	17	2396	2548	740	740	740			
GR1781.9		2310	1781.9	2310	1781.9	2310	1781.9	2310	1779.4	2326
GR1780.5		2335	1780.5	2382	1779.5	2396	1775.4	2427	1771.7	2440
GR1776.9		2464	1778.7	2512	1773.3	2537	1777.2	2548	1779.5	2590
GR1777.2		2753	1784	3400						
ET				6.1		2383	2565			
NC				.1	.3					
X1	2.20	12	2383	2517	755	760	760			
X3	10									
GR1783.8		2035	1783.8	2035	1783.8	2035	1781.6	2197	1783.5	2383
GR1778.4		2407	1774.7	2441	1774.7	2483	1777.2	2496	1779.6	2508
GR1784.4		2517	1785.9	2565						
ET		9.1	9.1	9.1	9.1				2850	3210
X1	2.29	43	2547	3064	510	460	480			
GR1784.3		2000	1786.0	2113	1783.5	2151	1783.4	2179	1783.3	2235
GR1781.2		2258	1782.1	2286	1782.1	2319	1781.0	2343	1781.9	2376
GR1781.4		2404	1782.9	2422	1781.8	2433	1781.4	2457	1781.7	2479
GR1780.6		2509	1781.6	2522	1786.0	2529	1786.0	2592	1784.9	2599
GR1785.8		2614	1786.1	2664	1785.3	2672	1785.9	2689	1785.9	2722

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GR1785.4     2738   1785.4     2754   1785.9     2779   1785.4     2800   1786.3     2842
GR1788.1     2835   1785.7     2906   1786.4     2947   1776.9     2558   1776.9     2595
GR1778.2     3005   1778.2     3040   1780.6     3050   1784.1     3064   1785.4     3087
GR1787.1     3107   1785.1     3181   1786.6     3210
VC    .05      .05     .020       0.3        0.5
X1   2.38        6     2413      2547        450        450        450                  -1
GR   1797     2030     1797      2413       1782       2442       1782     2519     1797     2547
GR   1800     3430
SB   1.25     1.56        3       500       77.1                  1266    2.375     1782     1781
X1   2.40                                    150        150        150                    1
X2                       1      1794       1800
VC                    .034
X1   2.51       13     2571      2646        550        550        550
GR1802.8     2010   1795.3     2180   1792.7     2463   1792.9     2571   1783.3     2589
GR1783.7     2614   1788.9     2622   1789.4     2636   1796.9     2646   1791.1     2677
GR1794.5     2834   1801.6     2963   1807.0     3117
VC    .12      .06     .045       .1         .3
X1   2.65       17     2242      2325        815        745        760
GR   1812     1880     1812      1880       1812       1880       1812     1880     1808     1950
GR1805.8     2000   1804.6     2171   1804.7     2242   1790.2     2264   1790.2     2280
GR1789.5     2306   1802.0     2325   1803.8     2415   1804.7     2596     1808     2810
GR1810.5     2990     1812     3210
EJ
T1        James M. Montgomery, Consulting Engineers, Inc.
T2        Las Vegas Valley Overflow Study
T3        Flamingo Wash - Reach 5 (Confluence to Boulder Hyw)    DMH 10/3/87
J1              3                .0014                            1702.19
J2      2                -1
T1        James M. Montgomery, Consulting Engineers, Inc.
T2        Las Vegas Valley Overflow Study
T3        Flamingo Wash - Reach 5 (Confluence to Boulder Hyw)    DMH 10/3/87
J1              4                .0014                            1702.19
J2     15                -1
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ER
EOF..
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330

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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   16:23:48          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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27-APR-88 16:23:49

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
*************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT;  Q50

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         2.         0.         0.   0.009000       0.00       0.0        0.   2052.000      0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
        1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000     15.000

ET        0.000      9.100      9.100      0.000      0.000      0.000      0.000      0.000   2000.000   4140.000
NC        0.000      0.000      0.100      0.100      0.300      0.000      0.000      0.000      0.000      0.000
NH        4.000      0.100   1750.000      0.120   2000.000      0.030   3740.000      0.060   4140.000      0.000
QT        3.000    840.000   2560.000  11920.000      0.000      0.000      0.000      0.000      0.000      0.000
          Q50 and Q100 encroached to stay south of Desert Inn Rd
X1        3.000     13.000   2150.000   2540.000      0.000      0.000      0.000      0.000      0.000      0.000
GR     2050.000   -600.000   2050.000   -200.000   2046.000    750.000   2046.000   1750.000   2046.000   1900.000
GR     2051.000   2000.000   2044.800   2150.000   2046.000   2540.000   2047.000   2940.000   2047.000   3340.000
GR     2051.000   3740.000   2048.000   3860.000   2051.000   4140.000      0.000      0.000      0.000      0.000
EJ        0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS   BANK ELEV
    Q          OLOB       OCH        QROB       ALOB       ACH        AROB       VOL        TWA   LEFT/RIGHT
```

	TIME	WLOB	WCH	WROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
	SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.000

3470 ENCROACHMENT STATIONS= 2001.0 4140.0 TYPE= 1 TARGET= 2140.000
950 and 9100 encroached to stay south of Desert Inn Rd

3.00	1.20	2046.00	0.00	0.00	2046.17	0.17	0.00	0.00	2044.80
840.	58.	782.	0.	18.	235.	0.	0.	0.	2046.00
0.00	3.32	3.33	0.05	0.030	0.030	0.030	0.000	2044.80	2120.90
0.008850	0.	0.	0.	0	0	9	0.00	420.27	2541.17

FLOW DISTRIBUTION FOR SECNO= 3.00 CWSEL= 2046.00

STA=	2121.	2150.	2540.
PER Q=	6.9	93.1	
AREA=	17.5	235.1	
VEL=	3.3	3.3	

1
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****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT; Q100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FB
	0.	3.	0.	0.	0.009000	0.00	0.0	0.	2052.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.000

3470 ENCROACHMENT STATIONS= 2001.0 4140.0 TYPE= 1 TARGET= 2140.000

3.00	1.75	2046.55	0.00	2046.00	2046.93	0.38	0.00	0.00	2044.80
2560.	157.	2286.	117.	37.	447.	60.	0.	0.	2046.00

0.00	4.26	5.12	1.97	0.050	0.030	0.030	0.000	2044.80	2107.76	
0.008895	0.	0.	0.	0	0	8	0.00	650.55	2758.31	

FLOW DISTRIBUTION FOR SECNO= 3.00 CWSEL= 2046.55

STA=	2138.	2150.	2540.	2758.
PER Q=	6.1	89.3	4.6	
AREA=	36.3	446.8	59.6	
VEL=	4.3	5.1	2.0	

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT; Q500

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.009000	0.00	0.0	0.	2052.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 3.000

3265 DIVIDED FLOW

3.00	2.64	2047.44	0.00	2052.00	2047.95	0.51	0.00	0.00	2044.80
11920.	3696.	6023.	2201.	2011.	797.	564.	0.	0.	2046.00
0.00	1.84	7.56	3.91	0.093	0.030	0.030	0.000	2044.80	407.43
0.008592	0.	0.	0.	0	0	7	0.00	2619.59	3384.24

FLOW DISTRIBUTION FOR SECNO= 3.00 CWSEL= 2047.44

STA=	407.	750.	1750.	1900.	1929.	2150.	2540.	2940.	3340.	3384.
PER Q=	2.3	21.8	2.7	0.2	4.0	50.5	14.3	4.0	0.1	
AREA=	247.1	1442.4	216.4	20.8	84.5	796.5	377.0	177.0	9.6	
VEL=	1.1	1.8	1.5	0.9	5.7	7.6	4.5	2.7	1.7	

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  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 3 OF FL
SUMMARY PRINTOUT TABLE  150

      SECNO       XLCH       ELTRD      ELLC       ELMIN        Q         CWSEL      CRIWS      EG         10K*S      VCH        AREA       .01K
      3.000       0.00       0.00       0.00      2044.80     840.00     2046.00       0.00     2046.17      88.50       3.33     252.64      89.29
      3.000       0.00       0.00       0.00      2044.80    2560.00     2046.55       0.00     2046.93      88.95       5.12     543.27     271.43
      3.000       0.00       0.00       0.00      2044.80   11920.00     2047.44       0.00     2047.95      89.92       7.56    3371.27    1257.02

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OVERFLOW SECTION 3 OF FL
SUMMARY PRINTOUT TABLE  150

      SECNO         Q          CWSEL     DIFWSP     DIFWSX     DIFKWS     TOPWID     XLCH
      3.000       840.00     2046.00       0.00       0.00       0.00     420.27       0.00
      3.000      2560.00     2046.55       0.54       0.00       0.56     650.55       0.00
      3.000     11920.00     2047.44       0.90       0.00      -4.56    2819.58       0.00

1
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SUMMARY OF ERRORS AND SPECIAL NOTES

1
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

EOF..
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```
ED      1
ED      3  Q50 and Q100 encroached to stay south of Desert Inn Rd
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT;  Q50
J1             2                    .0090                                2052
J2     1               -1                                                        15
ET           9.1       9.1
NC                                  0.1       0.3                        2000     4140
NH     4     .100      1750      .120      2000      .030      3740      .060     4140
QT     3      840      2560     11920
XI     3       13      2150      2540
GR 2050      -600      2050      -200      2046       750      2046      1750     2046     1900
GR 2051      2000   2044.8       2150      2046      2540      2047      2940     2047     3340
GR 2051      3740      2048      3860      2051      4140
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT;  Q100
J1             3                    .0090                                2052
J2     2               -1                                                        15
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 3 OF FLAMINGO WASH - I15 BREAKOUT;  Q500
J1             4                    .0090                                2052
J2    15               -1                                                        15


ER
EOF..
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```
CC       5
CC       4  Elevations for points left of sta 2000 taken from USGS quad;
CC       4  these elevations reduced by about 4 ft to give better
CC       4  agreement with County 200 scale maps.  Section stopped at
CC       4  Karen Ave based on 1:1 expansions.  ET encroached 025 and 050
CC       4  south of Desert Inn Rd.
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT      050
J1                2                .0090                                2021
J2       1                -1
ET             9.1       9.1
NC                                  0.1       0.3                      2000      4490
NH       4     .045      2000      .060      2920      .140      3920     .140      4490
QT       3     8140      2560     11920
X1       4       11      2920      3920
GR   2022    -1850      2022     -1000      2020      -200      2020      500      2023      1850
GR2022.5     2000      2021      2920      2020      3020      2019     3440      2020      3920
GR   2024    4490
EJ
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT      0100
J1                3                .0090                                2021
J2       2                -1
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT      0500
J1                4                .0090                                2021
J2     15                -1

ER
EOF..
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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   16:26:54          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
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X      X  XXXXXXX   XXXXX                XXXXX
X      X  X        X     X            X      X
X      X  X        X                  X      X
XXXXXXXX  XXXX     X           XXXXX   XXXXX
X      X  X        X                  X
X      X  X        X     X            X
X      X  XXXXXXX   XXXXX              XXXXXXX
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT      G50

J1   ICHECK     INQ       NINN      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.        2.        0.        0.  0.009000      0.00      0.0       0.  2021.000     0.000

J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

ET       0.000     9.100     9.100     0.000     0.000     0.000     0.000     0.000  2000.000  4490.000
NC       0.000     0.000     0.000     0.100     0.300     0.000     0.000     0.000     0.000     0.000
NH       4.000     3.045  2000.000     0.360  2920.000     0.140  3920.000     0.140  4490.000     0.000
GT       3.000  8140.000  2563.000 11920.000     0.000     0.000     0.000     0.000     0.000     0.000
         ELEVATIONS FOR POINTS LEFT OF STA 2000 TAKEN FROM USGS QUAD;
         THESE ELEVATIONS REDUCED BY ABOUT 4 FT TO GIVE BETTER
         AGREEMENT WITH COUNTY 200 SCALE MAPS.  SECTION STOPPED AT
         KAREN AVE BASED ON 1:1 EXPANSIONS.  EI ENCROACHED G25 AND G50
         SOUTH OF DESERT INN RD.
X1       4.000    11.000  2920.000  3920.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  2022.000  -185.000  2022.000 -1000.000  2020.000  -200.000  2020.000   500.000  2023.000  1850.000
GR  2022.500  2000.000  2021.000  2920.000  2020.000  3020.000  2019.000  3440.000  2020.000  3920.000
GR  2024.000  4490.000     3.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
EJ       0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	T&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	&NCH	XNR	&TA	ELPIA	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.000

347 ENCROACHMENT STATIONS= 2000.[illegible] 4491.0 TYPE= 1 TARGET= 2490.000
ELEVATIONS FOR POINTS LEFT OF STA 2000 TAKEN FROM USGS QUAD;
THESE ELEVATIONS REDUCED BY ABOUT 4 FT TO GIVE BETTER
AGREEMENT WITH COUNTY 200 SCALE MAPS. SECTION STOPPED AT
KAREN AVE BASED ON 1:1 EXPANSIONS. ET ENCROACHED G25 AND G50
SOUTH OF DESERT INN RD.

4.00	3.56	2022.56	0.00	0.00	2022.62	0.06	0.00	0.00	2021.00
8140.	1500.	6091.	549.	742.	2956.	466.	0.	0.	2020.00
0.00	2.02	2.06	1.18	0.060	0.140	0.140	0.000	2019.00	2000.00
0.058880	.	0.	0.	[illegible]	0	5	0.00	2284.29	4284.29

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT G100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	&SEL	FQ
	.	3.	0.	0.	0.009000	0.00	0.	0.	2021.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	3.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	C&SEL	CRIWS	&SELK	EG	HV	HL	CLOSS	BANK ELEV
G	GLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	T&A	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	&NCH	XNR	&TA	ELPIA	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.100 CEHV= 0.300
1490 NH CARD USED
*SECNO 4.000

347 ENCROACHMENT STATIONS= 2000.[illegible] 4491.0 TYPE= 1 TARGET= 2490.000
ELEVATIONS FOR POINTS LEFT OF STA 2000 TAKEN FROM USGS QUAD;

THESE ELEVATIONS REDUCED BY ABOUT 4 FT TO GIVE BETTER
AGREEMENT WITH COUNTY 200 SCALE MAPS. SECTION STOPPED AT
KAREN AVE BASED ON 1:1 EXPANSIONS. ET ENCROACHED Q25 AND Q50
SOUTH OF DESERT INN RD.

4.00	2.31	2021.31	0.00	2022.56	2021.34	0.03	0.00	0.00	2021.00
2560.	20.	2448.	92.	25.	1709.	122.	0.	0.	2020.00
0.00	0.67	1.43	0.76	0.060	0.140	0.140	0.000	2019.00	2730.50
0.006914	.	0.	0.	0	0	5	0.00	1376.02	4106.53

HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 4 OF FLAMINGO WASH - I15 BREAKOUT Q500

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	.	4.	3.	0.	0.000000	0.00	0.0	0.	2021.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TEA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.100 CEHV= 0.300
1496 NH CARD USED
*SECNO 4.000

3265 DIVIDED FLOW

ELEVATIONS FOR POINTS LEFT OF STA 2000 TAKEN FROM USGS QUAD;
THESE ELEVATIONS REDUCED BY ABOUT 4 FT TO GIVE BETTER
AGREEMENT WITH COUNTY 200 SCALE MAPS. SECTION STOPPED AT
KAREN AVE BASED ON 1:1 EXPANSIONS. ET ENCROACHED Q25 AND Q50
SOUTH OF DESERT INN RD.

4.00	2.65	2021.65	0.00	2021.00	2021.79	0.14	0.00	0.00	2021.00
11920.	8409.	3338.	172.	2446.	2052.	194.	0.	0.	2020.00
0.00	3.44	1.63	0.89	0.045	0.140	0.140	0.000	2019.00	-860.64
0.009015	.	3.	0.	0	0	6	0.00	3738.88	4155.35

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 4 OF FL
SUMMARY PRINTOUT TABLE  150

      SECNO      XLCH      ELTRD      ELLC      ELMIN        Q         CWSEL      CRIWS      EG        10K*S     VCH      AREA      .01K
      4.000      0.00      0.00       0.00      2015.00    8140.00    2022.56      0.00     2022.62    88.80     2.06     4163.91   863.86
      4.000      0.00      0.00       0.00      2015.00    2560.00    2021.31      0.00     2021.34    99.14     1.43     1860.29   271.14
      4.000      0.00      0.00       0.00      2015.00   11920.00    2021.65      0.00     2021.79    90.15     1.63     4691.63  1255.45

1
 27-APR-88    16:26:55                                                                                          PAGE    8

OVERFLOW SECTION 4 OF FL
SUMMARY PRINTOUT TABLE  150

      SECNO        Q         CWSEL      DIFWSP     DIFWSX     DIFKWS     TOPWID     XLCH
      4.000      8140.00     2022.56       0.00       0.00       0.00    2264.29     0.00
      4.000      2560.00     2021.31      -1.25       0.00      -1.25    1376.02     0.00
      4.000     11920.00     2021.65       0.34       0.00       0.65    3738.88     0.00

1
 27-APR-88    16:26:55                                                                                          PAGE    9

  SUMMARY OF ERRORS AND SPECIAL NOTES

1
 27-APR-88    16:27:05                                                                                          PAGE    1

 **************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 **************************************************

EOF..
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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  27-APR-88 TIME   16:30:41          *
*************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


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X      X  XXXXXX   XXXXX              XXXXX
X      X  X       X     X            X     X
X      X  X       X                  X     X
XXXXXXXX  XXXX    X          XXXXX    XXXXX
X      X  X       X                  X
X      X  X       X     X            X
X      X  XXXXXXX  XXXXX              XXXXXXX
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1
27-APR-88 16:30:42

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************

C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 5 OF FLAMINGO WASH - I15 BREAKOUT      G50

J1   ICHECK     INQ        NINN       IDIR       STRT       METRIC     HVINS      G          WSEL       FQ
        0.         2.         0.         0.   0.005000       0.00       0.0        0.    1989.000     0.000

J2   NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
       1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

ET       0.000      9.100      9.100      0.000      0.000      0.000      0.000      0.000   2000.000   5070.000
NC       0.180      0.180      0.180      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ST       3.000    840.000   2560.000  11520.000      0.000      0.000      0.000      0.000      0.000      0.000
         STATIONS LEFT OF 2100 TAKEN FROM USGS QUAD; ELEVATIONS REDUCED
         BY 2 FT FOR BETTER AGREEMENT WITH 200 SCALE MAPS.
X1       5.000     16.000   3363.000   4003.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    2000.000  -1300.000   1998.000   -900.000   1995.000   -600.000   1995.000      0.000   1998.000    700.000
GR    1992.000   1200.000   1990.000   1600.000   1990.000   1600.000   1990.000   1600.000   1990.000   1600.000
GR    1989.000   2000.000   1985.000   3360.000   1984.800   3700.000   1985.000   4000.000   1987.500   4700.000
GR    1992.000   5070.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
EJ       0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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27-APR-88 16:30:42

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   SECNO     DEPTH     WSEL      CRIWS     WSELK      EG         HV         HL        OLOSS     BANK ELEV
```

Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	

*PROF 1

*SECNO 5.000

3470 ENCROACHMENT STATIONS= 2000.0 5070.0 TYPE= 1 TARGET= 3070.000
STATIONS LEFT OF 2000 TAKEN FROM USGS QUAD; ELEVATIONS REDUCED
BY 2 FT FOR BETTER AGREEMENT WITH 200 SCALE MAPS.

5.00	1.46	1986.26	0.00	0.00	1586.27	0.01	0.00	0.00	1985.00
840.	117.	627.	96.	272.	873.	224.	0.	0.	1985.00
0.00	0.43	0.72	0.43	0.180	0.180	0.180	0.000	1984.80	2930.02
0.004995	0.	0.	0.	0	0	6	0.00	1424.08	4354.10

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 5 OF FLAMINGO WASH - 115 BREAKOUT G100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.005000	0.00	0.0	0.	1989.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

*SECNO 5.000

3470 ENCROACHMENT STATIONS= 2000.0 5070.0 TYPE= 1 TARGET= 3070.000
STATIONS LEFT OF 2000 TAKEN FROM USGS QUAD; ELEVATIONS REDUCED
BY 2 FT FOR BETTER AGREEMENT WITH 200 SCALE MAPS.

5.00	2.46	1987.26	0.00	1986.26	1987.28	0.01	0.00	0.00	1985.00
2560.	549.	1558.	452.	872.	1513.	718.	0.	0.	1985.00
0.00	0.63	1.03	0.63	0.180	0.180	0.180	0.000	1984.80	2690.14
0.004940	0.	0.	0.	0	0	4	0.00	2043.85	4634.00

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 5 OF FLAMINGO WASH - I15 BREAKOUT      Q500

J1   ICHECK      INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         4.         3.         0.   0.005000       0.00       0.0        0.      1989.000     0.000

J2   NPROF      IPLOT      PRFVS      XSECV      XSECH        FN        ALLDC      IBW        CHNIM      ITRACE
     15.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

 27-APR-88    16:30:42                                                                    PAGE     6

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         CLOSS      BANK ELEV
   Q          GLOB       QCH        QROB       ALOB       ACH        ARCB       VOL        IBA     LEFT/RIGHT
   TIME       VLOB       VCH        VROB       ANL        ANCH       ANR        WTN        ELMIN        SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CCHAR      TOPWID       ENDST

*PROF 3

*SECNO 5.000
          STATIONS LEFT OF 2000 TAKEN FROM USGS QUAD; ELEVATIONS REDUCED
          BY 2 FT FOR BETTER AGREEMENT WITH 200 SCALE MAPS.
      5.00       4.77    1989.57       0.00    1989.00    1989.60       0.03       0.00       0.00    1985.00
  11920.       3867.      4908.      3144.      3555.      2987.      2497.         0.         0.      1985.00
      0.00       1.09       1.64       1.26      0.180      0.180      0.180      0.000    1984.80    1773.34
 0.015081          .          .         0.         0          0          4       0.00    3096.58    4869.92

 27-APR-88    16:30:42                                                                    PAGE     7


**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********************************************************

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 5 OF FL

SUMMARY PRINTOUT TABLE  150

      SECNO       XLCH       ELTRD      ELLC       ELMIN          Q          CWSEL      CRIWS      EG         10K*S      VCH        AREA       .01K
      5.000       0.00       0.00       0.00    1984.80     840.00     1986.26       0.00    1986.27      49.95      0.72    1369.15     118.86
      5.000       0.00       0.00       0.00    1984.80    2560.00     1987.26       0.00    1987.28      49.40      1.03    3102.40     364.22
      5.000       0.00       0.00       0.00    1984.80   11920.00     1989.57       0.00    1989.60      50.81      1.64    9038.75    1672.16
```

OVERFLOW SECTION 5 OF FL

SUMMARY PRINTOUT TABLE 151

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
5.000	840.00	1986.26	0.00	0.00	0.00	1424.08	0.00
5.000	2560.00	1987.26	1.00	0.00	1.00	2043.85	0.00
5.000	11920.00	1989.57	2.30	0.00	0.57	3096.58	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES


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**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
**************************************************
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EOF..

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CC      2
CC      5  Stations left of 2000 taken from USGS quad; elevations reduced
C       5  by 2 ft for better agreement with 200 scale maps.
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 5 OF FLAMINGO WASH - I15 BREAKOUT      Q50
J1              2                .0050                                  1989
J2     1                -1
ET           9.1       9.1                                             2000     5070
NC    .18      .18       .18
QT      3      840      2560    11520
X1      5       16      3360     4000
GR  2000    -1300      1998     -900     1995     -600     1995        0     1998      700
GR  1992     1200      1990     1600     1990     1600     1990     1600     1990     1600
GR  1989     2000      1985     3360   1984.8     3700     1985     4000   1987.5     4700
GR  1992     5070
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 5 OF FLAMINGO WASH - I15 BREAKOUT      Q100
J1              3                .0050                                  1989
J2     2                -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 5 OF FLAMINGO WASH - I15 BREAKOUT      Q500
J1              4                .0050                                  1989
J2    15                -1
```

```
ER
EOF..
```

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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  15-OCT-87 TIME   12:01:35          *
*************************************************
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```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
```


```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X              X     X
X     X  X        X                    X     X
XXXXXXX  XXXX     X           XXXXX    XXXXX
X     X  X        X                    X
X     X  X        X     X              X
X     X  XXXXXXX   XXXXX               XXXXXXX
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1
15-OCT-87 12:01:35


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*************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
*************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

J1  ICHECK     INQ      NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
       0.       2.        0.        0.  0.010700      0.00      0.0       0.  1975.000     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    1.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.120     0.120     0.200     0.400     0.000     0.000     0.000     0.000     0.000
QT     12.000   300.000   500.000   700.000  1000.000  1500.000  2100.000  2700.000  3500.000  5000.000
QT  10000.000 15000.000 22000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      1.000    10.000   440.000   550.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1972.000     0.000  1968.000    20.000  1964.000   100.000  1960.000   440.000  1957.000   510.000
GR   1963.000   550.000  1965.000   740.000  1963.000   820.000  1964.000   960.000  1990.000   961.000

NC      0.035     0.035     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      2.000     8.000     1.000   110.000  1300.000  1250.000  1300.000     0.000     0.000     0.000
GR   1999.000     0.000  1982.000     1.000  1982.500   110.000  1990.000   111.000  1990.000   250.000
GR   1983.000   251.000  1983.000   350.000  1990.000   351.000     0.000     0.000     0.000     0.000

QT     12.000  1700.000  1700.000  1700.000  1700.000  6300.000  6300.000  6300.000  6300.000 30180.000
QT  30180.000 30180.000 30180.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC      0.120     0.120     0.120     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      5.000     5.000  3490.000  3940.000  2000.000   600.000  1400.000     0.000     0.000     0.000
GR   1990.000  2000.000  1985.000  3490.000  1984.800  3800.000  1985.000  3940.000  1992.000  5070.000
```

EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.200 CEHV= 0.400

*SECNO 1.000

1.00	3.38	1960.08	0.33	1975.00	1960.12	0.05	0.00	0.00	1960.00
300.	0.	300.	0.	0.	173.	0.	0.	0.	1960.00
0.00	0.14	1.73	0.14	0.120	0.120	0.120	0.000	1957.00	433.59
0.010679	0.	0.	0.	0	0	11	0.00	119.28	552.87

*SECNO 2.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2.00	0.87	1982.87	1982.87	0.00	1983.18	0.31	18.99	0.11	1982.00
300.	0.	300.	0.	0.	57.	0.	4.	3.	1982.50
0.08	0.06	4.47	0.06	0.035	0.035	0.035	0.000	1982.00	0.89
0.021175	1300.	1300.	1250.	5	14	0	0.00	109.16	110.95

*SECNO 5.000

5.00	2.35	1987.15	0.00	0.00	1987.17	0.01	3.93	0.06	1985.00
1700.	424.	1045.	231.	686.	1038.	375.	40.	30.	1985.00
0.54	3.62	1.81	0.52	0.120	0.120	0.120	0.000	1984.80	2841.68
0.002235	2000.	1400.	600.	8	0	0	0.00	1446.44	4286.12

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	2.	3.	2.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	YSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

```
 *PROF 2

 CCHV=   0.200  CEHV=   0.400
 *SECNO 1.000
      1.00      3.61   1960.61      0.00   1975.00   1960.68      0.07      0.00      0.00   1960.00
       500.       9.       487.       4.       16.       232.       7.        0.        0.   1960.00
      0.00      0.58      2.10      0.58     0.120     0.120     0.120     0.000   1957.00    388.05
 0.010598        0.        0.        0.         0         0        10      0.00    185.18    573.23

 *SECNO 2.000

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      2.00      1.19   1983.19   1983.19      0.00   1983.50      0.31     15.05      0.10   1982.00
       500.       0.       470.      30.       0.       102.      19.       6.        6.   1982.50
      0.02      0.05      4.60      1.58     0.035     0.035     0.035     0.000   1982.00      0.85
 0.012735      1300.     1300.     1250.         5        17         0      0.00    208.29    350.03

 *SECNO 5.000
      5.00      2.43   1987.23      0.00      0.00   1987.24      0.01      3.68      0.06   1985.00
      1700.      433.     1031.     236.      736.     1072.     401.      44.       33.   1985.00
      2.56      0.59      3.96      0.59     0.120     0.120     0.120     0.000   1984.80   2820.03
 0.001954      2000.     1400.      600.         9         0         0      0.00   1479.88   4299.92


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 ********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -   01,02,03,04,05
   MODIFICATION -   50,51,52,53,54,55
 ********************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       SOUTHERN SPLIT FLOW & MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.        4.        0.        0.  0.010700      0.00      0.0         0.  1975.000     0.000
 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 3

 CCHV=   0.200  CEHV=   0.400
 *SECNO 1.000
      1.00      4.01   1961.01      0.00   1975.00   1961.09      0.08      0.00      0.00   1960.00
       700.      35.       650.      16.       43.       276.      19.       0.        0.   1960.00
```

0.00	0.81	2.36	0.81	0.120	0.120	0.120	0.000	1957.00	354.54
0.010674	0.	0.	0.	0	0	10	0.00	233.66	588.20

)
*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.35	1983.35	1983.35	0.00	1983.72	0.37	15.09	0.12	1982.00
700.	0.	616.	84.	0.	120.	35.	7.	7.	1982.50
0.08	0.92	5.12	2.39	0.035	0.035	0.035	0.000	1982.00	0.83
0.012746	1300.	1300.	1250.	4	22	0	0.00	208.38	350.05

)
*SECNO 5.000

5.00	2.51	1987.31	0.00	0.00	1987.32	0.01	3.52	0.07	1985.00
1700.	443.	1016.	241.	788.	1107.	430.	48.	35.	1985.00
0.57	0.56	0.92	0.55	0.120	0.120	0.120	0.000	1984.80	2797.16
0.001702	2000.	1400.	603.	3	0	0	0.00	1515.23	4312.40

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ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 4

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

1.00	4.48	1961.48	0.00	1975.00	1961.57	0.09	0.00	0.00	1960.00
1000.	96.	861.	43.	93.	327.	41.	0.	0.	1960.00
0.00	1.04	2.63	1.04	0.120	0.120	0.120	0.000	1957.00	314.51
0.010559	0.	0.	0.	0	0	9	0.00	251.59	606.10

)
*SECNO 2.000

3265 DIVIDED FLOW

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 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      2.00       1.55   1983.55   1983.55      0.00   1984.01      0.46     15.15       0.14   1982.00
      1000.         0.      821.      179.        0.      142.       55.       10.         7.   1982.50
       0.07       1.02      5.78      3.26     0.035     0.035     0.035     0.000    1982.00      0.81
  0.013049      1300.     1300.     1250.         4        22         0      0.00     208.49    350.08
0
 *SECNO 5.000
      5.00       2.62   1987.42      0.30      0.00   1987.43      0.01      3.33       0.89   1985.00
      1700.       457.      994.      249.      870.     1161.      474.       54.        36.   1985.00
       0.59       0.52      0.36      0.52     0.120     0.120     0.120     0.000    1984.80   2762.33
  0.001390      2000.     1400.      600.         8         0         0      0.00     1569.06   4331.39
0
1
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   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ********************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1  ICHECK      INQ        NINV       IDIR        STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         6.         0.         0.    0.010700        0.00       0.0        0.    1975.000     0.000

 J2  NPROF       IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IPW        CHNIM      ITRACE
       5.000      0.000     -1.000      0.300      0.300      0.000      0.000      0.000      0.000      0.000

1
 15-OCT-87    12:01:35                                                                    PAGE    10

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROP       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNP        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *PROF 5

 CCHV=   0.200 CEHV=   0.400
 *SECNO 1.000
      1.00       5.35   1962.35      0.00   1975.00   1962.17      0.11       0.00       0.00   1960.00
      1500.       233.      1163.      104.      179.      391.       80.        0.         0.   1960.00
       0.00       1.30      2.98       1.30     0.120     0.120     0.120     0.000    1957.00    265.52
  0.010671          0.        0.         0.         0         0         9      0.00     362.49    628.00
0
 *SECNO 2.000

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      2.00       1.83   1983.83   1983.83      0.00   1984.42      0.59     15.34       0.19   1982.00
      1500.         0.     1144.      356.        0.      172.       82.       13.         8.   1982.50
       0.06       1.15      5.64      4.31     0.035     0.035     0.035     0.000    1982.00      0.77
  0.013275      1300.     1300.     1250.         3        22         0      0.00     208.64    350.12
0
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```
 *SECNO 5.000

 3301 HV CHANGED MORE THAN HVINS

      5.00      4.08  1988.88      0.00      0.00  1988.90      0.03      4.37      0.11  1985.00
    6300.      2194.     2910.     1196.     2228.     1831.     1215.      106.       45.  1985.00
       0.35      0.98      1.59      0.98     0.120     0.120     0.120     0.000  1984.80  2331.48
  0.002612      2000.     1400.      600.         5         0         0      0.00  2234.88  4566.36
1
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 **************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       SOUTHERN SPLIT FLOW & MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1  ICHECK     INQ       NINV      IDIR       STRT      METRIC     HVINS      Q          WSEL      FQ
        0.        7.        0.        0.  0.010700        0.00       0.2        0.  1975.000     0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       6.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
1
  15-OCT-87    12:01:35                                                                    PAGE   12

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       ARCR      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 6

 CCHV=   0.200  CEHV=   0.400
 *SECNO 1.000
       1.00      5.60  1962.60      0.00  1975.00  1962.73      0.13      0.00      0.00  1960.00
     2100.       437.     1468.      195.      288.      452.      129.        0.         0.  1960.00
       0.00      1.51      3.25      1.51     0.120     0.120     0.120     0.000  1957.00   218.58
  0.010510         0.        0.        0.         0         0         8      0.00   430.41   648.99
3
 *SECNO 2.000

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      2.00      2.12  1984.12  1984.12      0.00  1984.86      0.73     15.14      0.24  1982.00
     2100.        0.     1513.      585.        0.      204.      112.       18.         9.  1982.50
       0.85      1.26      7.41      5.25     0.035     0.035     0.035     0.000  1982.00      0.73
  0.013182     1300.     1300.     1250.         4        22         0      0.00   208.80   350.16
3
 *SECNO 5.000
```

3301 HV CHANGED MORE THAN HVINS

5.00	4.22	1989.02	0.00	0.00	1989.04	0.02	4.04	0.14	1985.00
6300.	2231.	2852.	1217.	2393.	1896.	1305.	116.	51.	1985.00
0.36	0.93	1.50	0.93	0.120	0.120	0.120	0.000	1984.80	2289.68
0.002233	2000.	1400.	600.	5	0	0	0.00	2299.49	4589.16

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
J1	0.	8.	0.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
J2	7.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	WLOB	WCH	WROB	ALOB	ACH	ARCP	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 7

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	6.04	1963.04	0.00	1975.00	1963.18	0.14	0.00	0.00	1960.00
2700.	661.	1744.	295.	392.	499.	175.	0.	0.	1960.00
0.00	1.69	3.49	1.58	0.120	0.120	0.120	0.000	1957.00	181.91
0.010616	0.	0.	0.	0	0	8	0.00	490.36	825.25

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.39	1984.39	1984.39	0.00	1985.25	0.87	15.14	0.29	1982.00
2700.	0.	1872.	827.	0.	233.	138.	21.	10.	1982.50
0.05	1.36	8.04	6.01	0.035	0.035	0.035	0.000	1982.00	0.70
0.013052	1300.	1300.	1250.	5	18	0	0.00	208.95	350.20

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.36	1989.16	0.00	0.00	1989.18	0.02	3.76	0.17	1985.00
6300.	2268.	2794.	1237.	2570.	1963.	1401.	126.	53.	1985.00
0.37	0.88	1.42	0.88	0.120	0.120	0.120	0.000	1984.80	2246.61
0.001910	2000.	1400.	600.	4	0	0	0.00	2366.05	4612.65

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	0.	0.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	8.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 8

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	6.52	1963.52	0.00	1975.00	1963.67	0.15	0.00	0.00	1960.00
3500.	981.	2068.	451.	526.	552.	259.	0.	0.	1960.00
0.00	1.86	3.75	1.74	0.120	0.120	0.120	0.000	1957.00	140.91
0.010672	0.	0.	0.	0	0	0	0.00	636.16	892.61

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.71	1984.71	1984.71	0.00	1985.74	1.03	15.02	0.35	1982.00
3500.	1.	2340.	1159.	0.	268.	170.	26.	12.	1982.50

0.04	1.46	8.74	6.33	0.035	0.035	0.035	0.000	1982.00	0.66
0.012776	1300.	1300.	1250.	8	18	0	0.00	209.12	350.24

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.56	1989.36	0.00	0.00	1989.38	0.02	3.43	0.20	1985.00
6300.	2316.	2721.	1263.	2816.	2052.	1536.	140.	57.	1985.00
0.39	0.82	1.33	0.32	0.120	0.120	0.120	0.000	1984.80	2188.87
0.001560	2000.	1400.	600.	4	0	0	0.00	2455.28	4644.14

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW & MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	G	WSEL	FQ
	0.	10.	0.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PREVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 9

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	7.20	1964.20	0.00	1975.00	1964.37	0.16	0.00	0.00	1960.00
5000.	1618.	2553.	828.	749.	627.	463.	0.	0.	1960.00
0.00	2.16	4.07	1.79	0.120	0.120	0.120	0.000	1957.00	95.95
0.010627	0.	0.	0.	0	0	7	0.00	801.87	960.01

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

```
      2.00      3.25   1985.25   1985.25      0.00   1986.56      1.31     14.67      0.46   1982.00
     5000.      1.      3199.     1800.       1.      327.       224.      35.       15.     1982.50
      0.04      1.62     5.78      8.04      0.035     0.035     0.035     0.000  1982.00     0.59
 0.012267     1300.     1300.     1250.        9         14         0       0.00    209.42    350.32
J
 *SECNO 5.000
 3280 CROSS SECTION       5.00 EXTENDED       2.09 FEET

 3301 HV CHANGED MORE THAN HVINS

      5.00      7.29   1992.09      0.00      0.00   1992.17      0.08      5.36      0.25   1985.00
     30180.    13942.    9162.     7075.     6796.     3308.     4059.      279.       66.     1985.00
      0.20      2.05     2.77      1.74      0.120     0.120     0.120     0.000  1984.80  2000.00
 0.003603     2000.     1400.      600.         5         0         0       0.00   3070.00  5070.00
J
1
 15-OCT-87    12:01:35                                                                    PAGE   19


 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************

 T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2      LAS VEGAS VALLEY OVERFLOW STUDY
 T3      SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1  ICHECK     INQ       NINV      IDTR      STRT      METRIC     HVINS      G          WSEL       FQ
        0.       11.        0.        0.   0.010700      0.00       0.0        0.    1975.000     0.000
 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC      IBW        CHNIM      ITRACE
      10.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000      0.000      0.000

1
 15-OCT-87    12:01:35                                                                    PAGE   20

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IOC       ICONT     COPAR     TOPWID     ENDST

 *PROF 10

 CCHV=   0.200  CEHV=   0.400
 *SECNO 1.000
      1.00      8.65   1965.65      0.00   1975.00   1965.85      0.20      0.00      0.00   1960.00
    10000.     3778.     3717.     2505.     1267.      786.     1030.       0.        0.     1960.00
      0.02      2.98     4.73      2.43      0.120     0.120     0.120     0.000  1957.00     67.07
 0.010613        0.        0.        0.         0         0         6       0.00    853.00    960.06
J
 *SECNO 2.000

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
```

3720 CRITICAL DEPTH ASSUMED

2.00	4.77	1986.77	1986.77	0.00	1988.85	2.07	13.80	0.75	1982.00
10000.	3.	5978.	4020.	1.	493.	377.	58.	16.	1982.50
0.03	1.97	12.12	10.67	0.035	0.035	0.035	0.000	1982.00	0.40
0.010892	1300.	1300.	1250.	11	11	0	0.00	210.24	350.54

*SECNO 5.000

3280 CROSS SECTION 5.00 EXTENDED 2.00 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	8.10	1992.90	0.00	0.00	1992.95	0.05	3.70	0.40	1985.00
30180.	14087.	8444.	7649.	7986.	3678.	4968.	345.	68.	1985.00
0.22	1.76	2.30	1.54	0.120	0.120	0.120	0.000	1984.80	2000.00
0.002149	2000.	1400.	600.	7	0	0	0.00	3070.00	5070.00

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	3.	12.	3.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	11.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 11

CCHV= 0.200 CEHV= 0.400

*SECNO 1.000

1.00	9.71	1966.71	0.00	1975.00	1966.95	0.25	0.00	0.00	1960.00
15000.	5867.	4696.	4437.	1673.	903.	1465.	0.	0.	1960.00
0.00	3.51	5.20	3.13	0.120	0.120	0.120	0.000	1957.00	45.88
0.010686	0.	0.	0.	0	0	6	0.00	914.23	960.10

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	6.04	1988.04	1986.04	0.00	1990.77	2.72	13.34	0.99	1982.00
15000.	5.	8706.	6283.	2.	631.	505.	76.	16.	1982.50
0.03	2.22	13.79	12.45	0.035	0.035	0.035	0.000	1982.00	0.24
0.010136	1300.	1300.	1250.	13	14	0	0.00	210.94	350.72

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 3.85 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	9.06	1993.86	0.00	0.00	1993.90	0.04	2.60	0.54	1985.00
30180.	14197.	7829.	8154.	9405.	4119.	6051.	414.	68.	1985.00
0.25	1.51	1.90	1.35	0.120	0.120	0.120	0.000	1984.80	2000.00
0.001267	2000.	1400.	600.	5	0	0	0.00	3070.00	5070.00

1

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 SOUTHERN SPLIT FLOW & MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	13.	0.	0.	0.010700	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 12

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

1.00	10.96	1967.96	0.00	1975.00	1968.27	0.31	0.00	0.00	1960.00
22000.	8923.	5935.	7242.	2185.	1041.	1981.	0.	0.	1960.00
0.00	4.94	5.70	3.55	0.120	0.120	0.120	0.000	1957.00	20.72
0.010609	0.	0.	0.	0	0	5	0.00	939.44	960.15

2

*SECNO 2.000
3280 CROSS SECTION 2.00 EXTENDED 0.42 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	8.42	1990.42	1990.42	0.00	1993.07	2.65	10.45	0.94	1982.00
22300.	10.	12322.	9663.		4.	890.	804.	101.	19.	1982.50
0.03	2.21	13.84	12.03	0.035	0.035	0.035	0.000	1982.00	0.00
0.006465	1300.	1300.	1250.		14	22	0	0.00	351.00	351.00

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 5.22 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	10.42	1995.22	0.00	0.00	1995.24	0.03	1.65	0.53	1985.00
30180.	14293.	7224.	8663.	11424.	4747.	7592.	512.	71.	1985.00
0.30	1.25	1.52	1.14	0.120	0.120	0.120	0.000	1984.80	2000.00
0.000672	2000.	1400.	600.		4	0	0	0.00	3070.00	5070.00

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SOUTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	1.000	0.00	0.00	0.00	1957.00	300.00	1960.08	0.00	1960.12	106.79	1.73	173.65	29.03
	1.000	0.00	0.00	0.00	1957.00	500.00	1960.61	0.00	1960.68	105.98	2.10	255.20	48.57
	1.000	0.00	0.00	0.00	1957.00	700.00	1961.01	0.00	1961.09	106.74	2.36	337.75	67.75
	1.000	0.00	0.00	0.00	1957.00	1000.00	1961.48	0.00	1961.57	105.50	2.63	461.44	97.36
	1.000	0.00	0.00	0.00	1957.00	1500.00	1962.05	0.00	1962.17	106.71	2.98	649.94	145.21
	1.000	0.00	0.00	0.00	1957.00	2100.00	1962.60	0.00	1962.73	105.10	3.25	868.88	204.84
	1.000	0.00	0.00	0.00	1957.00	2700.00	1963.04	0.00	1963.18	106.16	3.49	1066.64	262.05
	1.000	0.00	0.00	0.00	1957.00	3500.00	1963.52	0.00	1963.67	106.72	3.75	1337.67	338.80
	1.000	0.00	0.00	0.00	1957.00	5000.00	1964.20	0.00	1964.37	106.27	4.07	1839.47	485.03
	1.000	0.00	0.00	0.00	1957.00	10000.00	1965.65	0.00	1965.85	106.13	4.73	3083.36	970.70
	1.000	0.00	0.00	0.00	1957.00	15000.00	1966.71	0.00	1966.95	106.86	5.20	4040.68	1451.07
	1.000	0.00	0.00	0.00	1957.00	22000.00	1967.96	0.00	1968.27	106.09	5.70	5206.69	2135.91
*	2.000	1300.00	0.00	0.00	1982.00	300.00	1982.87	1982.87	1983.19	211.75	4.47	67.16	20.62
*	2.000	1300.00	0.00	0.00	1982.00	500.00	1983.19	1983.19	1983.50	127.35	4.60	121.23	44.31
*	2.000	1300.00	0.00	0.00	1982.00	700.00	1983.35	1983.35	1983.72	127.46	5.12	155.51	62.00
*	2.000	1300.00	0.00	0.00	1982.00	1000.00	1983.55	1983.55	1984.01	130.49	5.78	196.94	87.54
*	2.000	1300.00	0.00	0.00	1982.00	1500.00	1983.83	1983.83	1984.42	132.75	6.64	255.01	130.19
*	2.000	1300.00	0.00	0.00	1982.00	2100.00	1984.12	1984.12	1984.86	131.82	7.41	316.13	182.91
*	2.000	1300.00	0.00	0.00	1982.00	2700.00	1984.39	1984.39	1985.25	130.52	8.04	370.77	236.33
*	2.000	1300.00	0.00	0.00	1982.00	3500.00	1984.71	1984.71	1985.74	127.76	8.74	437.99	309.65
*	2.000	1300.00	0.00	0.00	1982.00	5000.00	1985.25	1985.25	1986.56	122.67	9.78	551.64	451.45
*	2.000	1300.00	0.00	0.00	1982.00	10000.00	1986.77	1986.77	1988.85	108.92	12.12	871.45	958.16
*	2.000	1300.00	0.00	0.00	1982.00	15000.00	1988.04	1988.04	1990.77	101.36	13.79	1138.65	1489.88
*	2.000	1300.00	0.00	0.00	1982.00	22000.00	1990.42	1990.42	1993.07	64.65	13.84	1698.44	2736.20

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	FG	10K*S	VCH	AREA	.01K
5.000	1400.00	0.00	0.00	1984.80	1700.00	1987.15	0.00	1987.17	22.35	1.01	2101.60	359.63
5.000	1400.00	0.00	0.00	1984.80	1700.00	1987.23	0.00	1987.24	19.54	0.96	2208.53	384.57
5.000	1400.00	0.00	0.00	1984.80	1700.00	1987.31	0.00	1987.32	17.02	0.92	2324.31	412.01
5.000	1400.00	0.00	0.00	1984.80	1700.00	1987.42	0.00	1987.43	13.90	0.86	2505.78	455.92
5.000	1400.00	0.00	0.00	1984.80	6300.00	1988.88	0.00	1988.90	26.12	1.59	5274.23	1232.72
5.000	1400.00	0.00	0.00	1984.80	6300.00	1989.02	0.00	1989.04	22.33	1.50	5594.32	1333.11
5.000	1400.00	0.00	0.00	1984.80	6300.00	1989.16	0.00	1989.19	19.10	1.42	5933.75	1441.59
5.000	1400.00	0.00	0.00	1984.80	6300.00	1989.36	0.00	1989.38	15.60	1.33	6403.99	1595.14
5.000	1400.00	0.00	0.00	1984.80	30180.00	1992.09	0.00	1992.17	36.03	2.77	14162.43	5027.82
5.000	1400.00	0.00	0.00	1984.80	30180.00	1992.90	0.00	1992.95	21.49	2.30	16632.07	6510.20
5.000	1400.00	0.00	0.00	1984.80	30180.00	1993.86	0.00	1993.90	12.67	1.90	19575.03	8479.80
5.000	1400.00	0.00	0.00	1984.80	30180.00	1995.22	0.00	1995.24	6.72	1.52	23762.55	11640.11

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SOUTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	300.00	1960.08	0.00	0.00	-14.92	119.28	0.00
	1.000	500.00	1960.61	0.54	0.00	-14.39	185.19	0.00
	1.000	700.00	1961.01	0.39	0.00	-13.99	233.66	0.00
	1.000	1000.00	1961.48	0.47	0.00	-13.52	291.59	0.00
	1.000	1500.00	1962.05	0.58	0.00	-12.95	362.49	0.00
	1.000	2100.00	1962.60	0.55	0.00	-12.40	430.41	0.00
	1.000	2700.00	1963.04	0.43	0.00	-11.96	490.36	0.00
	1.000	3500.00	1963.52	0.48	0.00	-11.48	636.16	0.00
	1.000	5000.00	1964.20	0.68	0.00	-10.80	801.87	0.00
	1.000	10000.00	1965.65	1.44	0.00	-9.35	893.00	0.00
	1.000	15000.00	1966.71	1.06	0.00	-8.29	914.23	0.00
	1.000	22000.00	1967.96	1.26	0.00	-7.04	939.44	0.00
*	2.000	300.00	1982.87	0.00	22.79	0.00	109.16	1300.00
*	2.000	500.00	1983.19	0.32	22.58	0.00	208.29	1300.00
*	2.000	700.00	1983.35	0.16	22.35	0.00	208.38	1300.00
*	2.000	1000.00	1983.55	0.20	22.08	0.00	208.49	1300.00
*	2.000	1500.00	1983.83	0.28	21.78	0.00	208.64	1300.00
*	2.000	2100.00	1984.12	0.29	21.52	0.00	208.80	1300.00
*	2.000	2700.00	1984.39	0.26	21.35	0.00	208.95	1300.00
*	2.000	3500.00	1984.71	0.32	21.19	0.00	209.12	1300.00
*	2.000	5000.00	1985.25	0.54	21.05	0.00	209.42	1300.00
*	2.000	10000.00	1986.77	1.52	21.13	0.00	210.24	1300.00
*	2.000	15000.00	1988.04	1.27	21.34	0.00	210.94	1300.00
*	2.000	22000.00	1990.42	2.37	22.45	0.00	351.00	1300.00
	5.000	1700.00	1987.15	0.00	4.29	0.00	1446.44	1400.00
	5.000	1700.00	1987.23	0.07	4.04	0.00	1479.89	1400.00
	5.000	1700.00	1987.31	0.08	3.95	0.00	1515.23	1400.00
	5.000	1700.00	1987.42	0.12	3.87	0.00	1569.06	1400.00
	5.000	6300.00	1988.88	1.45	5.05	0.00	2234.88	1400.00
	5.000	6300.00	1989.02	0.14	4.90	0.00	2299.49	1400.00
	5.000	6300.00	1989.16	0.14	4.78	0.00	2366.05	1400.00
	5.000	6300.00	1989.36	0.20	4.65	0.00	2455.28	1400.00
	5.000	30180.00	1992.09	2.73	6.84	0.00	3070.00	1400.00
	5.000	30180.00	1992.90	0.80	6.12	0.00	3070.00	1400.00
	5.000	30180.00	1993.86	0.97	5.32	0.00	3070.00	1400.00
	5.000	30180.00	1995.22	1.35	4.20	0.00	3070.00	1400.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION  SECNO=    2.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 4  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 5  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 6  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 7  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 7  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 8  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 8  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 9  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 9  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=10  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=10  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=11  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=11  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=12  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=12  MINIMUM SPECIFIC ENERGY
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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EOF..

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TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             2                .0107                              1975
J2       1           -1
NC    .12      .12      .12      .2       .4
QT    12       300      500      700      1000     1500     2100     2700     3500     5000
QT 10000    15000    22000
XI     1        10      440      550
GR  1972        0     1968       20     1964      100     1960      440     1957      510
GR  1960      550     1965      740     1963      820     1964      960     1990      961
NC  .035     .035     .035
KI     2        8        1      110     1300     1250     1300
GR  1990        0     1982        1   1982.5      110     1990      111     1990      250
GR  1983      251     1983      350     1990      351
QT    12     1700     1700     1700     1700     6300     6300     6300     6300    30180
QT 30180    30180    30180
NC   .12      .12      .12
KI     5        5     3480     3940     2000      600     1400
GR  1990     2000     1985     3480   1984.8     3800     1985     3940     1992     5070
EJ
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             3                .0107                              1975
J2       2           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             4                .0107                              1975
J2       3           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             5                .0107                              1975
J2       4           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             6                .0107                              1975
J2       5           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             7                .0107                              1975
J2       6           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             8                .0107                              1975
J2       7           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1             9                .0107                              1975
J2       8           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            10                .0107                              1975
J2       9           -1
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
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J1          11          .0107                                   1975
J2    10          -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1          12          .0107                                   1975
J2    11          -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SOUTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1          13          .0107                                   1975
J2    15          -1


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EOF..
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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1993                          *
*                                               *
*  RUN DATE  15-OCT-87 TIME   12:02:46          *
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
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OF 5 5

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  31,32,33,34,35
  MODIFICATION -  50,51,52,53,54,55
*************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        2.        0.        0.  0.012500      0.00      0.0       0.  1975.000     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLOC     IBW       CHNIM     ITRACE
    1.000      0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.120     0.120     0.200     0.400     0.000     0.000     0.000     0.000     0.000
QT     12.000   600.000   800.000  1000.000  1300.000  2500.000  3100.000  3700.000  4500.000 10000.000
QT  15000.000 20000.000 27000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      1.000    12.000   790.000  1240.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1975.000     0.000  1974.000    50.000  1975.000   110.000  1972.000   210.000  1973.000   430.000
GR   1971.000   480.000  1975.000   790.000  1969.500   970.000  1973.000  1240.000  1976.000  1400.000
GR   1974.000  1500.000  1977.000  1640.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.035     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      2.000     9.000   330.000   741.000   620.000   580.000   610.000     0.000     0.000     0.000
GR   1985.000     0.000  1982.000    60.000  1984.000   330.000  1981.000   740.000  1990.000   741.000
GR   1990.000   990.000  1982.000   991.000  1982.000  1080.000  1990.000  1081.000     0.000     0.000

QT     12.000  1700.000  1700.000  1700.000  1700.000  6300.000  6300.000  6300.000  6300.000 30180.000
QT  30190.000 30180.000 30180.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC      0.120     0.120     0.120     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      5.000     5.000  3480.000  3940.000   590.000  1800.000  1100.000     0.000     0.000     0.000
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GR	1990.000	2000.000	1985.000	3480.000	1984.800	3800.000	1985.000	3940.000	1992.000	5070.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	∅LOB	∅CH	∅ROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 1

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

	1.00	2.51	1972.01	0.00	1975.00	1972.35	0.04	0.00	0.00	1975.00
	600.	46.	554.	0.	52.	346.	0.	0.	0.	1973.00
	0.00	0.87	1.60	0.00	0.120	0.120	0.120	0.000	1969.50	209.62
0.012325		0.	0.	0.	0	0	6	0.00	382.46	1163.73

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

	2.00	1.33	1982.33	1982.33	0.00	1982.59	0.26	8.98	0.09	1984.00
	600.	4.	518.	78.	8.	120.	29.	4.	5.	1990.00
	0.04	0.49	4.31	2.59	0.120	0.035	0.035	0.000	1981.00	53.49
0.017991		620.	610.	580.	4	11	0	0.00	320.85	1080.04

*SECNO 5.000

	5.00	2.24	1987.04	0.00	0.00	1987.05	0.01	4.41	0.05	1985.00
	1700.	409.	1068.	223.	618.	986.	337.	30.	26.	1985.00
	0.38	0.66	1.09	0.56	0.120	0.120	0.120	0.000	1984.80	2874.99
0.002768		590.	1100.	1800.	6	0	0	0.00	1364.96	4269.95

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.200 CEHV= 0.400

*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.76	1972.26	0.00	1975.00	1972.30	0.04	0.00	0.00	1975.00
800.	85.	715.	0.	89.	418.	0.	0.	0.	1973.00
0.00	0.95	1.71	0.00	0.120	0.120	0.120	0.000	1969.50	201.43
0.012461	0.	0.	0.	0	0	6	0.00	496.90	1182.69

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.44	1982.44	1982.44	0.00	1982.75	0.30	0.16	0.10	1984.00
800.	9.	659.	132.	15.	142.	39.	5.	6.	1990.00
0.04	0.62	4.63	3.36	0.120	0.035	0.035	0.000	1981.00	51.16
0.018579	620.	610.	580.	4	11	0	0.00	354.66	1080.06

*SECNO 5.000

5.00	2.32	1987.12	0.00	0.00	1987.13	0.01	4.33	0.06	1985.00
1700.	419.	1053.	228.	664.	1020.	362.	32.	29.	1985.00
0.40	0.63	1.03	0.63	0.120	0.120	0.120	0.000	1984.00	2853.10
0.002402	590.	1100.	1800.	7	9	0	0.00	1428.80	4281.89

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PREVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.97	1972.47	0.00	1975.00	1972.51	0.04	0.00	0.00	1975.00
1000.	137.	863.	0.	138.	483.	0.	0.	0.	1973.00
0.00	1.00	1.78	0.00	0.120	0.120	0.120	0.000	1969.50	194.44
0.012277	0.	0.	0.	0	0	5	0.00	594.51	1198.86

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.54	1982.54	1982.54	0.00	1982.88	0.34	9.14	0.12	1984.00
1000.	16.	756.	188.	23.	163.	48.	6.	7.	1990.00
0.04	0.71	4.88	3.88	0.120	0.035	0.035	0.000	1981.00	49.12
0.018822	620.	610.	580.	3	11	0	0.00	384.66	1080.07

*SECNO 5.000

5.00	2.38	1987.18	0.00	0.00	1987.20	0.01	4.25	0.07	1985.00
1700.	428.	1039.	233.	709.	1053.	387.	35.	29.	1985.00
0.42	0.60	0.99	0.50	0.120	0.120	0.120	0.000	1984.80	2832.14
0.002105	590.	1100.	1800.	6	0	0	0.00	1461.18	4293.32

HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNP	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.21	1972.71	0.00	1975.00	1972.76	0.05	0.00	0.00	1975.00
1300.	230.	1070.	0.	213.	565.	0.	0.	0.	1973.00
0.00	1.08	1.89	0.00	0.120	0.120	0.120	0.000	1969.50	186.43
0.012472	0.	0.	0.	0	0	5	0.00	706.56	1217.41

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.68	1982.68	1982.68	0.00	1983.06	0.39	5.23	0.13	1984.00
1300.	30.	998.	273.	36.	193.	61.	7.	8.	1990.00
0.03	0.83	5.17	4.51	0.120	0.035	0.035	0.000	1981.00	46.41
0.018890	620.	610.	580.	4	11	0	0.00	424.23	1080.08

*SECNO 5.000

5.00	2.49	1987.29	0.00	0.00	1987.39	0.01	4.16	0.07	1985.00
1700.	440.	1020.	240.	774.	1098.	422.	39.	31.	1985.00
0.44	0.57	0.93	0.57	0.120	0.120	0.120	0.000	1984.80	2803.23
0.001765	590.	1100.	1800.	5	0	0	0.00	1505.85	4309.09

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	6.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	5.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 5

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.84	1973.34	0.00	1975.00	1973.41	0.06	0.00	0.00	1975.00
2500.	702.	1797.	1.	496.	807.	3.	0.	0.	1973.00
0.00	1.42	2.23	0.43	0.120	0.120	0.120	0.000	1969.50	165.22
0.012510	0.	0.	0.	0	0	5	0.00	910.46	1258.31

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.12	1983.12	1983.12	0.00	1983.63	0.51	8.94	0.18	1984.00
2500.	108.	1788.	604.	97.	307.	100.	13.	10.	1990.00
0.03	1.11	5.82	6.35	0.120	0.035	0.035	0.000	1981.00	37.60
0.017510	620.	610.	580.	9	11	0	0.00	552.88	1080.14

*SECNO 5.000

5.00	3.95	1988.75	0.33	0.00	1988.78	0.03	5.04	0.10	1985.00
6300.	2156.	2968.	1176.	2075.	1768.	1132.	79.	43.	1985.00
0.27	1.04	1.68	1.04	0.120	0.120	0.120	0.000	1984.80	2371.63
0.003050	590.	1100.	1800.	7	0	0	0.00	2172.84	4544.47

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DWH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	7.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROR	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*PROF 6

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.08	1973.58	0.00	1975.00	1973.65	0.07	0.00	0.00	1975.00

3100.	964.	2130.	5.	615.	900.	9.	0.	0.	1973.00
0.00	1.57	2.37	0.50	0.120	0.120	0.120	0.000	1969.50	157.43
0.012524	0.	0.	0.	0	0	5	0.00	956.49	1270.77

*SECNO 2.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.30	1983.30	1983.30	0.00	1983.86	0.56	8.78	0.20	1984.00
3100.	158.	2181.	761.	131.	362.	115.	15.	11.	1990.00
0.33	1.21	6.02	6.56	0.120	0.035	0.035	0.000	1981.00	33.97
0.016833	620.	610.	580.	20	11	0	0.00	605.78	1080.16

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.04	1988.84	0.00	0.00	1988.86	0.03	4.89	0.11	1985.00
6300.	2132.	2929.	1190.	2178.	1811.	1188.	85.	44.	1985.00
0.28	1.00	1.62	1.00	0.120	0.120	0.120	0.000	1984.80	2344.45
0.002745	590.	1100.	1900.	7	0	0	0.00	2214.83	4559.29

HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	8.	7.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	7.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 7

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.29	1973.79	0.00	1975.00	1973.87	0.08	0.00	0.00	1975.00

3700.	1256.	2452.	12.	727.	986.	17.	0.	0.	1973.00
0.00	1.79	2.49	0.74	0.120	0.120	0.120	0.000	1969.50	150.43
0.012539	0.	0.	0.	0	0	5	0.00	957.86	1281.98

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.46	1983.46	1983.46	0.00	1984.07	0.60	8.65	0.21	1984.00
3700.	213.	2575.	911.	166.	415.	131.	17.	12.	1990.00
0.03	1.28	6.20	6.97	0.120	0.035	0.035	0.000	1981.00	30.71
0.016280	620.	610.	583.	16	11	0	0.00	653.52	1080.18

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.12	1988.92	0.00	0.00	1988.95	0.03	4.77	0.12	1985.00
6300.	2205.	2892.	1203.	2278.	1851.	1242.	91.	46.	1985.00
0.28	0.97	1.56	0.97	0.120	0.120	0.120	0.000	1984.80	2318.80
0.002490	590.	1100.	1800.	6	0	0	0.00	2254.48	4573.28

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	9.	3.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	8.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 8

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.54	1974.04	0.00	1975.00	1974.13	0.09	0.00	0.00	1975.00
4500.	1609.	2865.	26.	869.	1091.	29.	0.	0.	1973.00
0.00	1.85	2.63	0.89	0.120	0.120	0.120	0.000	1969.50	48.98
0.012546	0.	0.	0.	0	0	5	0.00	1055.16	1501.90

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.64	1983.64	1983.64	0.00	1984.31	0.67	8.68	0.23	1984.00
4500.	290.	3106.	1104.	209.	477.	145.	20.	12.	1990.00
0.03	1.39	6.51	7.54	0.120	0.035	0.035	0.000	1981.00	27.17
0.016361	620.	610.	580.	13	14	8	0.00	705.14	1080.21

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.24	1989.04	0.00	0.00	1989.07	0.02	4.62	0.13	1985.00
6300.	2237.	2843.	1220.	2420.	1906.	1320.	68.	48.	1985.00
0.30	0.92	1.49	0.82	0.120	0.120	0.120	0.000	1984.80	2283.14
0.002190	590.	1100.	1800.	6	0	0	0.00	2309.59	4592.73

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	10.	7.	0.	0.012500	0.00	0.0	0.	1975.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 9

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	5.78	1975.28	0.00	1975.00	1975.41	0.13	0.00	0.00	1975.00
10000.	4332.	5376.	292.	1725.	1632.	217.	0.	0.	1973.00
0.00	2.51	3.29	1.34	0.120	0.120	0.120	0.000	1969.50	18.09
0.012708	0.	0.	0.	0	0	4	0.00	1466.68	1559.56

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	3.56	1984.56	1984.56	0.00	1985.58	1.02	8.18	0.35	1984.00
10000.	950.	5890.	2159.	487.	845.	229.	36.	16.	1990.00
0.02	1.95	8.15	9.45	0.120	0.035	0.035	0.000	1981.00	8.81
0.014223	620.	610.	580.	5	14	0	0.00	821.22	1080.32

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 1.91 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.02	1991.82	0.00	0.00	1991.90	0.09	6.14	0.19	1985.00
30180.	13815.	9431.	6934.	6386.	3181.	3748.	216.	64.	1985.00
0.15	2.16	2.97	1.35	0.120	0.120	0.120	0.000	1984.80	2000.00
0.004351	590.	1100.	1800.	6	0	0	0.00	3040.11	5040.11

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	11.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	10.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 10

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 0.04 FEET

1.00	6.54	1976.04	0.00	1975.00	1976.21	0.17	0.00	0.00	1975.00
15000.	6885.	7375.	740.	2318.	1973.	446.	0.	0.	1973.00
0.00	2.97	3.74	1.66	0.120	0.120	0.120	0.000	1969.50	0.00
0.012688	0.	0.	0.	0	0	4	0.00	1594.99	1594.99

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 0.19 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	4.19	1985.19	1985.19	0.00	1986.49	1.30	7.89	0.45	1984.00
15000.	1526.	10367.	3008.	693.	1104.	285.	48.	17.	1990.00
0.02	2.35	9.39	10.54	0.120	0.035	0.035	0.000	1981.00	0.00
0.013228	620.	610.	580.	3	14	0	0.00	830.26	1080.40

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.14 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.34	1992.14	0.00	0.00	1992.22	0.08	5.48	0.25	1985.00
30180.	13954.	9109.	7117.	6871.	3332.	4116.	246.	65.	1985.00
0.16	2.03	2.73	1.73	0.120	0.120	0.120	0.000	1984.80	2000.00
0.003478	590.	1100.	1800.	7	0	0	0.00	3070.00	5070.00

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	12.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	11.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA	
SLOPE	YLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST	

•PROF 11

CCHV= 0.200 CEHV= 0.400
•SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 0.68 FEET

1.00	7.18	1976.68	0.00	1975.00	1976.88	0.20	0.00	0.00	1975.00
2000.	9386.	9195.	1419.	2824.	2262.	683.	0.	0.	1973.00
0.00	3.32	4.07	2.18	0.120	0.120	0.120	0.000	1969.50	0.00
0.012523	0.	0.	0.	0	0	4	0.00	1624.88	1624.88

•SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 0.74 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	4.74	1985.74	1985.74	0.00	1987.31	1.57	7.68	0.55	1984.00
2000.	2338.	13823.	3838.	874.	1329.	335.	58.	17.	1990.00
0.02	2.68	10.40	11.47	0.120	0.035	0.035	0.000	1981.00	0.00
0.012694	620.	610.	581.	4	14	0	0.00	830.46	1080.47

•SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.48 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.68	1992.48	0.00	0.00	1992.55	0.06	4.94	0.30	1985.00
30180.	14021.	8784.	7375.	7374.	3488.	4500.	275.	66.	1985.00
0.17	1.90	2.52	1.54	0.120	0.120	0.120	0.000	1984.00	2000.00
0.002776	590.	1100.	1800.	6	0	8	0.00	3070.00	5070.00

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	13.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 12

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 1.43 FEET

1.00	7.93	1977.43	0.00	1975.00	1977.68	0.25	0.00	0.00	1975.00
27000.	12837.	11634.	2528.	3424.	2603.	984.	0.	0.	1973.00
3.00	3.75	4.47	2.57	0.120	0.120	0.120	0.000	1969.50	0.00
0.012546	0.	0.	0.	3	0	4	0.00	1640.00	1640.00

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 1.41 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	5.41	1986.41	1986.41	0.00	1988.34	1.92	7.58	0.67	1584.00
27000.	3356.	18656.	4989.	1096.	1606.	395.	71.	17.	1990.00
0.02	3.06	11.62	12.63	0.120	0.035	0.035	0.000	1981.00	0.00
0.012349	620.	610.	583.	4	19	0	0.00	830.70	1080.55

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.99 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	8.19	1992.99	0.00	0.00	1993.04	0.05	4.33	0.37	1985.00
30100.	14100.	9374.	7706.	8126.	3722.	5074.	314.	66.	1985.00
0.18	1.74	2.25	1.52	0.120	0.120	0.120	0.000	1984.80	2000.00
0.002032	593.	1100.	1800.	6	0	0	0.00	3070.00	5070.00

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	1.000	0.00	0.00	0.00	1969.50	600.00	1972.01	0.00	1972.05	123.25	1.60	398.88	54.05
	1.000	0.00	0.00	0.00	1969.50	800.00	1972.26	0.00	1972.30	124.61	1.71	506.95	71.67
	1.000	0.00	0.00	0.00	1969.50	1000.00	1972.47	0.00	1972.51	122.77	1.78	621.29	90.25
	1.000	0.00	0.00	0.00	1969.50	1300.00	1972.71	0.00	1972.76	124.72	1.89	777.71	116.41
	1.000	0.00	0.00	0.00	1969.50	2500.00	1973.34	0.00	1973.41	125.10	2.23	1305.55	223.52
	1.000	0.00	0.00	0.00	1969.50	3100.00	1973.58	0.00	1973.65	125.24	2.37	1523.74	277.00
	1.000	0.00	0.00	0.00	1969.50	3700.00	1973.79	0.00	1973.87	125.38	2.49	1729.05	330.44
	1.000	0.00	0.00	0.00	1969.50	4500.00	1974.04	0.00	1974.13	125.46	2.63	1988.49	401.75
	1.000	0.00	0.00	0.00	1969.50	10000.00	1975.28	0.00	1975.41	127.38	3.29	3573.47	887.09
	1.000	0.00	0.00	0.00	1969.50	15000.00	1976.04	0.00	1976.21	126.88	3.74	4737.46	1331.67
	1.000	0.00	0.00	0.00	1969.50	20000.00	1976.68	0.00	1976.88	125.23	4.07	5768.63	1787.18
	1.000	0.00	0.00	0.00	1969.50	27000.00	1977.43	0.00	1977.68	125.46	4.47	7010.60	2410.50
*	2.000	610.00	0.00	0.00	1981.00	600.00	1982.33	1982.33	1982.59	179.91	4.31	157.36	44.73
*	2.000	610.00	0.00	0.00	1981.00	800.00	1982.44	1982.44	1982.75	185.70	4.63	196.70	58.71
*	2.000	610.00	0.00	0.00	1981.00	1000.00	1982.54	1982.54	1982.88	188.22	4.88	234.43	72.89
*	2.000	610.00	0.00	0.00	1981.00	1300.00	1982.68	1982.68	1983.06	188.90	5.17	289.23	94.59
*	2.000	610.00	0.00	0.00	1981.00	2500.00	1983.12	1983.12	1983.63	175.10	5.82	504.48	188.93
*	2.000	610.00	0.00	0.00	1981.00	3100.00	1983.30	1983.30	1983.86	168.33	6.02	609.43	238.94
*	2.000	610.00	0.00	0.00	1981.00	3700.00	1983.46	1983.46	1984.07	162.80	6.20	712.32	289.98
*	2.000	610.00	0.00	0.00	1981.00	4500.00	1983.64	1983.64	1984.31	163.61	6.51	832.39	351.81
*	2.000	610.00	0.00	0.00	1981.00	10000.00	1984.56	1984.56	1985.58	142.23	8.15	1560.24	838.49
*	2.000	610.00	0.00	0.00	1981.00	15000.00	1985.19	1985.19	1986.49	132.28	9.39	2082.42	1304.19
*	2.000	610.00	0.00	0.00	1981.00	20000.00	1985.74	1985.74	1987.31	126.94	10.40	2537.84	1775.15
*	2.000	610.00	0.00	0.00	1981.00	27000.00	1986.41	1986.41	1988.34	123.49	11.62	3096.60	2429.65

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.04	0.00	1987.05	27.68	1.08	1941.71	323.11
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.12	0.00	1987.13	24.02	1.03	2046.15	346.86
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.18	0.00	1987.20	21.05	0.99	2148.46	370.51
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.29	0.00	1987.30	17.65	0.93	2293.33	404.63
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.75	0.00	1988.78	30.50	1.68	4975.24	1140.68
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.84	0.00	1988.86	27.45	1.62	5176.62	1202.49
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.92	0.00	1988.95	24.90	1.56	5370.30	1262.65
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1989.04	0.00	1989.07	21.80	1.49	5645.35	1349.29
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1991.82	0.00	1991.90	43.51	2.97	13315.18	4575.12
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.14	0.00	1992.22	34.78	2.73	14319.45	5117.26
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.48	0.00	1992.55	27.76	2.52	15362.02	5727.83
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.99	0.00	1993.04	20.32	2.25	16521.76	6694.47

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.000	600.00	1972.01	0.00	0.00	-2.99	382.46	0.00
1.000	800.00	1972.26	0.25	0.00	-2.74	496.90	0.00
1.000	1000.00	1972.47	0.21	0.00	-2.53	594.51	0.00
1.000	1300.00	1972.71	0.24	0.00	-2.29	706.50	0.00
1.000	2500.00	1973.34	0.64	0.00	-1.66	910.46	0.00
1.000	3100.00	1973.58	0.23	0.00	-1.42	956.49	0.00
1.000	3700.00	1973.79	0.21	0.00	-1.21	997.86	0.00
1.000	4500.00	1974.04	0.25	0.00	-0.96	1055.16	0.00
1.000	10000.00	1975.28	1.24	0.00	0.28	1466.68	0.00

	1.000	15000.00	1976.04	0.76	0.00	1.04	1594.99	0.00	
	1.000	20000.00	1976.68	0.64	0.00	1.68	1624.88	0.00	
	1.000	27000.00	1977.43	0.76	0.00	2.43	1640.00	0.00	
*	2.000	600.00	1982.33	0.00	10.31	0.00	320.85	610.00	
*	2.000	800.00	1982.44	0.12	10.18	0.00	354.86	610.00	
*	2.000	1000.00	1982.54	0.10	10.08	0.00	384.66	610.00	
*	2.000	1300.00	1982.68	0.14	9.97	0.00	424.23	610.00	
*	2.000	2500.00	1983.12	0.44	9.78	0.00	552.88	610.00	
*	2.000	3100.00	1983.30	0.18	9.72	0.00	605.78	610.00	
*	2.000	3700.00	1983.46	0.16	9.68	0.00	653.52	610.00	
*	2.000	4500.00	1983.64	0.18	9.60	0.00	705.14	610.00	
*	2.000	10300.00	1984.56	0.92	9.28	0.00	821.22	610.00	
*	2.000	15000.00	1985.19	0.63	9.16	0.00	830.26	610.00	
*	2.000	20000.00	1985.74	0.55	9.06	0.00	830.46	610.00	
*	2.000	27000.00	1986.41	0.67	8.98	0.01	830.70	610.00	
	5.000	1700.00	1987.04	0.00	4.71	0.00	1394.96	1100.00	
	5.000	1700.00	1987.12	0.08	4.68	0.00	1428.80	1100.00	
	5.000	1700.00	1987.18	0.07	4.64	0.00	1461.18	1100.00	
	5.000	1700.00	1987.29	0.10	4.61	0.00	1505.85	1100.00	
	5.000	6300.00	1988.75	1.46	5.63	0.01	2172.84	1100.00	
	5.000	6300.00	1988.84	0.09	5.53	0.00	2214.83	1100.00	
	5.000	6300.00	1988.92	0.09	5.46	0.00	2254.48	1100.00	
	5.000	6300.00	1989.04	0.12	5.40	0.00	2309.59	1100.00	
	5.000	30180.00	1991.82	2.77	7.26	0.00	3040.11	1100.00	
	5.000	30180.00	1992.14	0.33	6.95	0.00	3070.00	1100.00	
	5.000	30180.00	1992.48	0.34	6.74	0.00	3070.00	1100.00	
	5.000	30180.00	1992.99	0.51	6.58	0.00	3070.00	1100.00	

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION  SECNO=    2.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 4  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 5  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 6  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 6  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=    2.000  PROFILE= 7  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 7  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 8  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 8  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE= 9  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE= 9  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=10  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=10  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=11  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=11  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    2.000  PROFILE=12  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    2.000  PROFILE=12  MINIMUM SPECIFIC ENERGY
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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EOF..

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TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            2                  .0125                              1975
J2      1           -1
NC    .12      .12      .12      .2       .4
QT     12      600      900     1000     1300     2500     3100     3700     4560    10000
QT  15000    20000    27000
X1      1       12      790     1240
GR   1976        0     1974       50     1975      110     1972      210     1973      430
GR   1971      480     1975      790   1969.5      970     1973     1240     1976     1400
GR   1974     1500     1977     1640
NC    .12     .035     .035
X1      2        9      330      741      620      580      610
GR   1985        0     1982       60     1984      330     1981      740     1990      741
GR   1990      990     1982      991     1982     1080     1990     1081
QT     12     1700     1700     1700     1700     6300     6300     6300     6300    30180
QT  30180    30180    30180
NC    .12      .12      .12
X1      5        5     3480     3940      590     1800     1100
GR   1990     2000     1985     3480   1934.8     3800     1985     3940     1992     5070
EJ
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            3                  .0125                              1975
J2      2           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            4                  .0125                              1975
J2      3           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            5                  .0125                              1975
J2      4           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            6                  .0125                              1975
J2      5           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            7                  .0125                              1975
J2      6           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            8                  .0125                              1975
J2      7           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            9                  .0125                              1975
J2      8           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1           10                  .0125                              1975
J2      9           -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
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T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1          11                  .0125                              1975
J2    10            -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1          12                  .0125                              1975
J2    11            -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1          13                  .0125                              1975
J2    15            -1


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EOF..
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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  15-OCT-87 TIME   12:02:46          *
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.        2.        0.        0.  0.012500      0.00      0.0       0.  1975.000     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.120     0.120     0.200     0.400     0.000     0.000     0.000     0.000     0.000
QT     12.000   600.000   800.000  1000.000  1300.000  2500.000  3100.000  3700.000  4500.000 10000.000
QT  15000.000 20000.000 27000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      1.000    12.000   750.000  1240.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1976.000     0.000  1974.000    50.000  1975.000   110.000  1972.000   210.000  1973.000   430.000
GR   1971.000   480.000  1975.000   790.000  1969.500   870.000  1973.000  1240.000  1976.000  1400.000
GR   1974.000  1500.000  1977.000  1640.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.035     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      2.000     9.000   330.000   741.000   620.000   580.000   610.000     0.000     0.000     0.000
GR   1985.000     0.000  1982.000    60.000  1984.000   330.000  1981.000   740.000  1990.000   741.000
GR   1990.000   990.000  1982.000   991.000  1982.000  1980.000  1990.000  1081.000     0.000     0.000

QT     12.000  1700.000  1700.000  1700.000  1700.000  6300.000  6300.000  6300.000  6300.000 30180.000
QT  30180.000 30180.000 30180.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC      0.120     0.120     0.120     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      5.000     5.000  3490.000  3940.000   590.000  1800.000  1100.000     0.000     0.000     0.000
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GR	1990.000	2000.000	1985.000	3450.000	1984.800	3800.000	1985.000	3940.000	1992.000	5070.000	
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.51	1972.01	0.00	1975.00	1972.05	0.04	0.00	0.00	1975.00
600.	46.	554.	0.	52.	346.	0.	0.	0.	1973.00
0.00	0.87	1.60	0.00	0.120	0.120	0.120	0.000	1969.50	209.62
0.012325	0.	0.	0.	0	0	6	0.00	382.46	1163.73

3
*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.33	1982.33	1982.33	0.00	1982.59	0.26	8.98	0.09	1984.00
600.	4.	518.	78.	8.	120.	29.	4.	5.	1990.00
0.04	0.49	4.31	2.59	0.120	0.035	0.035	0.000	1981.00	53.49
0.017991	620.	610.	580.	4	11	0	0.00	320.85	1080.04

3
*SECNO 5.000

5.00	2.24	1987.04	0.00	0.00	1987.05	0.01	4.41	0.05	1985.00
1700.	409.	1068.	223.	618.	986.	337.	30.	26.	1985.00
0.38	0.66	1.09	0.56	0.120	0.120	0.120	0.000	1984.80	2874.99
0.002768	590.	1100.	1803.	6	0	0	0.00	1354.96	4269.95

3
1

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.200 CEHV= 0.400

*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.76	1972.26	0.00	1975.00	1972.30	0.04	0.00	0.00	1975.00
800.	85.	715.	0.	89.	418.	0.	0.	0.	1973.00
0.00	0.95	1.71	0.00	0.120	0.120	0.120	0.000	1969.50	201.43
0.012461	0.	0.	0.	0	0	6	0.00	456.90	1182.69

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.44	1982.44	1982.44	0.00	1982.75	0.30	5.16	0.10	1984.00
800.	9.	659.	132.	15.	142.	39.	5.	6.	1990.00
0.04	0.62	4.63	3.36	0.120	0.035	0.035	0.000	1981.00	51.16
0.018570	620.	610.	580.	4	11	0	0.00	354.86	1080.06

*SECNO 5.000

5.00	2.32	1987.12	0.00	0.00	1987.13	0.01	4.33	0.06	1985.00
1700.	419.	1053.	228.	664.	1020.	362.	32.	28.	1985.00
0.40	0.63	1.33	0.53	0.120	0.120	0.120	0.000	1964.80	2853.10
0.002402	590.	1100.	1801.	7	0	0	0.00	1428.80	4281.89

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	YLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 3

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.97	1972.47	0.00	1975.00	1972.51	0.04	0.00	0.00	1975.00
1000.	137.	863.	0.	138.	483.	0.	0.	0.	1973.00
0.00	1.00	1.78	0.00	0.120	0.120	0.120	0.000	1969.50	194.44
0.012277	0.	0.	0.	0	0	5	0.00	594.51	1198.86

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.54	1982.54	1982.54	0.00	1982.88	0.34	9.14	0.12	1984.00
1000.	16.	796.	183.	23.	163.	48.	6.	7.	1990.00
0.04	0.71	4.88	3.88	0.120	0.035	0.035	0.000	1981.00	49.12
0.018822	620.	610.	580.	3	11	0	0.00	384.66	1080.07

*SECNO 5.000

5.00	2.38	1987.18	0.00	0.00	1987.20	0.01	4.25	0.07	1985.00
1700.	428.	1039.	233.	709.	1053.	387.	35.	29.	1985.00
0.42	0.60	0.99	0.60	0.120	0.120	0.120	0.000	1984.80	2832.14
0.002105	590.	1100.	1800.	6	0	0	0.00	1461.18	4293.32

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	YLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 4

*PROF 4

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.21	1972.71	0.00	1975.00	1972.76	0.05	0.00	0.00	1975.00
1300.	230.	1070.	0.	213.	565.	1.	0.	0.	1973.00
0.00	1.08	1.89	0.00	0.120	0.120	0.120	0.000	1969.50	186.43
0.012472	0.	0.	0.	0	0	5	0.00	706.50	1217.41

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.68	1982.68	1982.68	0.00	1983.06	0.39	9.23	0.13	1984.00
1300.	30.	998.	273.	36.	193.	61.	7.	8.	1990.00
0.03	0.83	5.17	4.51	0.120	0.035	0.035	0.000	1981.00	46.41
0.018890	520.	610.	580.	4	11	0	0.00	424.23	1080.08

*SECNO 5.000

5.00	2.49	1987.29	0.00	0.00	1987.30	0.01	4.16	0.07	1985.00
1700.	440.	1020.	240.	774.	1098.	422.	39.	31.	1985.00
0.44	0.57	0.93	0.57	0.120	0.120	0.120	0.000	1984.80	2803.23
0.001765	590.	1100.	1900.	5	0	0	0.00	1505.85	4309.09

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ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	6.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	5.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCPWID	ENDST

*PROF 5

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.84	1973.34	0.00	1975.00	1973.41	0.06	0.00	0.00	1975.00
2500.	702.	1797.	1.	496.	807.	3.	0.	0.	1973.00
0.00	1.42	2.23	0.43	0.120	0.120	0.120	0.000	1969.50	165.22
0.012510	0.	0.	0.	0	0	5	0.00	910.46	1258.31

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.12	1983.12	1983.12	0.00	1983.63	0.51	8.94	0.18	1984.00
2500.	108.	1788.	604.	97.	307.	100.	13.	10.	1990.00
0.03	1.11	5.82	6.05	0.120	0.035	0.035	0.000	1981.00	37.60
0.017510	620.	610.	580.	9	11	0	0.00	552.88	1080.14

*SECNO 5.000

5.00	3.95	1988.75	0.00	0.00	1988.78	0.03	5.04	0.10	1985.00
6300.	2156.	2968.	1176.	2075.	1768.	1132.	79.	43.	1985.00
0.27	1.04	1.68	1.34	0.120	0.120	0.120	0.000	1984.80	2371.63
0.003050	590.	1100.	1800.	7	0	0	0.00	2172.84	4544.47

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ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	7.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 6

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.08	1973.58	0.00	1975.00	1973.65	0.07	0.00	0.00	1975.00

3100.	964.	2150.	5.	615.	900.	9.	0.	0.	1973.00
0.00	1.57	2.37	0.60	0.120	0.120	0.120	0.000	1969.50	157.43
0.012524	0.	0.	0.	0	0	5	0.00	956.49	1270.77

*SECNO 2.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.30	1983.30	1983.30	0.00	1983.86	0.56	8.78	0.20	1984.00
3100.	158.	2181.	761.	131.	362.	116.	15.	11.	1990.00
0.03	1.21	6.02	6.56	0.120	0.035	0.035	0.000	1981.00	33.97
0.016833	620.	610.	580.	20	11	0	0.00	605.78	1060.16

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.04	1988.84	0.00	0.00	1988.86	0.03	4.89	0.11	1985.00
6300.	2182.	2929.	1190.	2178.	1811.	1188.	85.	44.	1985.00
0.28	1.00	1.62	1.00	0.120	0.120	0.120	0.000	1984.80	2344.45
0.002745	590.	1100.	1800.	7	0	0	0.00	2214.83	4559.29

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDTR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	8.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	7.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 7

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.29	1973.79	0.00	1975.00	1973.97	0.08	0.00	0.00	1975.00

3700.	1236.	2452.	12.	727.	986.	17.	0.	0.	1973.00	
0.00	1.70	2.49	0.74	0.120	0.120	0.120	0.000	1969.50	150.43	
0.012538	0.	0.	3.	0	0	5	0.00	997.86	1281.98	

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.46	1983.46	1983.46	0.00	1984.07	0.60	8.65	0.21	1984.00
3700.	213.	2575.	911.	166.	415.	131.	17.	12.	1990.00
0.03	1.28	6.20	6.97	0.120	0.035	0.035	0.000	1981.00	30.71
0.016280	620.	510.	580.	16	11	0	0.00	653.52	1080.18

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.12	1988.92	0.00	0.00	1988.95	0.03	4.77	0.12	1985.00
6300.	2205.	2892.	1203.	2278.	1851.	1242.	91.	46.	1985.00
0.28	0.97	1.56	0.97	0.120	0.120	0.120	0.000	1984.80	2318.80
0.002490	590.	1100.	1800.	6	0	0	0.00	2254.48	4573.28

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/97

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	9.	3.	0.	0.012500	0.00	0.?	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	8.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 8

CCHV= 1.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

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      1.00       4.54   1974.04       0.00   1975.00   1974.13       0.19       0.00       0.00   1975.00
      4500.      1609.      2865.       26.      869.     1091.       29.         0.         0.     1973.00
      0.00       1.85       2.63       0.39     0.120     0.120      0.120      0.000   1969.50      48.98
 0.012546          0.         0.         0.       0         0          5       0.00   1055.16    1501.90
)
 *SECNO 2.000

 3265 DIVIDED FLOW

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
      2.00       2.64   1983.64   1983.64       0.00   1984.31       0.67       8.68       0.23   1984.00
      4500.      290.      3106.     1104.      209.      477.      146.         20.        12.     1990.00
      0.03       1.39       6.51      7.54     0.120     0.035     0.035      0.000   1981.00      27.17
 0.016361        620.       610.      583.        13        14          8       0.00    705.14    1080.21
)
 *SECNO 5.000

 3301 HV CHANGED MORE THAN HVINS

      5.00       4.24   1989.04       0.00       0.00   1989.07       0.02       4.62       0.13   1985.00
      6300.      2237.      2843.     1220.      2420.     1906.     1320.        98.        48.     1985.00
      0.30       0.92       1.49      0.92     0.120     0.120     0.120      0.000   1984.80    2283.14
 0.002180        590.      1100.     1800.          6         0         8       0.00   2309.59    4592.73
)
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   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

        0.       10.         0.         0.   0.012500        0.00       0.0         0.   1975.000      0.000

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       9.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *PROF 9

 CCHV=   0.200 CEHV=   0.400
 *SECNO 1.000
```

3265 DIVIDED FLOW

1.00	5.78	1975.28	0.00	1975.00	1975.41	0.13	0.00	0.00	1975.00
10000.	4332.	5376.	292.	1725.	1632.	217.	0.	0.	1973.00
0.00	2.51	3.29	1.34	0.120	0.120	0.120	0.000	1969.50	18.09
0.012708	0.	0.	3.	0	0	4	0.00	1466.68	1555.56

*SECNO 2.000

3265 DIVIDED FLOW

3331 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	3.56	1984.56	1984.56	0.00	1985.58	1.02	8.18	0.35	1984.00
10000.	950.	6890.	2159.	487.	845.	229.	36.	16.	1990.00
0.02	1.95	9.15	9.45	0.120	0.035	0.035	0.000	1981.00	8.81
0.014223	620.	610.	580.	5	14	0	0.00	821.22	1080.32

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 1.81 FEET

3331 HV CHANGED MORE THAN HVINS

5.00	7.02	1991.82	0.00	0.00	1991.90	0.09	6.14	0.19	1985.00
30180.	13315.	9431.	6934.	6386.	3191.	3748.	216.	64.	1985.00
0.15	2.16	2.97	1.35	0.120	0.120	0.120	0.000	1984.80	2000.00
0.004351	590.	1100.	1800.	6	0	0	0.00	3040.11	5040.11

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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	11.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	10.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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*PROF 10

CCHV=   0.200  CEHV=   0.400
*SECNO 1.000
3280 CROSS SECTION       1.00 EXTENDED       0.04 FEET

     1.00      6.54   1976.04      0.00   1975.00   1976.21      0.17      0.00      0.00   1975.00
  1500.      5885.     7375.      740.      2318.     1973.      446.        0.        0.     1973.00
     0.00      2.97      3.74      1.56     0.120     0.120     0.120     0.000   1969.50      0.00
 0.012688        0.        0.        0.         0         0         4      0.00   1594.99   1594.99
)
*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION       2.00 EXTENDED       0.19 FEET


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.00      4.19   1985.19   1985.19      0.00   1986.49      1.30      7.89      0.45   1984.00
  1500.      1626.     1037.     300.      693.      1104.      285.       48.       17.     1990.00
     0.02      2.35      9.39     10.54     0.120     0.035     0.035     0.000   1981.00      0.00
 0.013229       620.      610.      580.         3        14         0      0.00    830.26   1080.40
)
*SECNO 5.000
3280 CROSS SECTION       5.00 EXTENDED       2.14 FEET


3301 HV CHANGED MORE THAN HVINS

     5.00      7.34   1992.14      0.00      0.00   1992.22      0.08      5.48      0.25   1985.00
  3018.      1395.     910.      711.      687.      333.      411.       24.        6.     1985.00
     3.16      2.33      2.73      1.73     0.120     0.120     0.120     0.000   1984.80   2000.00
 0.003478       590.     1100.     1900.         7         0         0      0.00   3070.00   5070.00
)
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   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
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   MODIFICATION -  50,51,52,53,54,55
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 T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2      LAS VEGAS VALLEY OVERFLOW STUDY
 T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1  ICHECK     INQ       NINV      IDTR       STRT      METRIC     HVINS      Q          WSEL      FQ

       0.        12.        0.        0.  0.012500       0.00       0.0        0.  1975.000     0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH      FN        ALLDC     IBW       CHNIM     ITRACE

      11.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       OLOSS   BANK ELEV
```

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICCNT	CORAR	TOPWID	ENDST

*PROF 11

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 0.68 FEET

1.00	7.18	1976.68	0.00	1975.00	1976.88	0.20	0.00	0.00	1975.00
20000.	9386.	9155.	1419.	2824.	2252.	683.	0.	0.	1973.00
0.00	3.32	4.07	2.08	0.120	0.120	0.120	0.000	1969.50	0.00
0.012523	0.	0.	0.	0	0	4	0.00	1624.88	1624.88

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 0.74 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	4.74	1985.74	1985.74	0.00	1987.31	1.57	7.68	0.55	1984.00
20000.	2338.	13823.	3838.	874.	1329.	335.	59.	17.	1990.00
0.02	2.68	10.40	11.47	0.120	0.035	0.035	0.000	1981.00	0.00
0.012694	620.	610.	580.	4	14	8	0.00	830.46	1080.47

*SECNO 5.000
3290 CROSS SECTION 5.00 EXTENDED 2.48 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.68	1992.48	0.00	0.00	1992.55	0.06	4.94	0.30	1585.00
30180.	14021.	8794.	7375.	7374.	3488.	4500.	275.	66.	1985.00
0.17	1.90	2.52	1.64	0.120	0.120	0.120	0.000	1984.90	2000.00
0.002776	590.	1100.	1800.	6	0	0	0.00	3070.00	5070.00

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	13.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 12

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 1.43 FEET

1.00	7.93	1977.43	0.00	1975.00	1977.68	0.25	0.00	0.00	1975.00
27000.	12837.	11634.	2528.	3424.	2603.	984.	0.	0.	1973.00
0.00	3.75	4.47	2.57	0.120	0.120	0.120	0.000	1969.50	0.00
0.012546	0.	0.	0.	0	0	4	0.00	1640.00	1640.00

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 1.41 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	5.41	1986.41	1986.41	0.00	1988.34	1.92	7.58	0.67	1984.00
27000.	3356.	18656.	4989.	1096.	1606.	395.	71.	17.	1990.00
0.02	3.06	11.62	12.63	0.120	0.035	0.035	0.000	1981.00	0.00
0.012349	620.	610.	580.	4	19	0	0.00	830.70	1080.55

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.99 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	8.19	1992.99	0.00	0.00	1993.04	0.05	4.33	0.37	1985.00
30180.	14100.	8374.	7706.	8126.	3722.	5074.	314.	66.	1985.00
0.18	1.74	2.25	1.52	0.120	0.120	0.120	0.090	1984.80	2000.00
0.002032	590.	1100.	1800.	6	0	0	0.00	3070.00	5070.00

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	1.000	0.00	0.00	0.00	1969.50	600.00	1972.01	0.00	1972.05	123.25	1.60	398.88	54.05
	1.000	0.00	0.00	0.00	1969.50	800.00	1972.26	0.00	1972.30	124.61	1.71	506.95	71.67
	1.000	0.00	0.00	0.00	1969.50	1000.00	1972.47	0.00	1972.51	122.77	1.78	621.29	90.25
	1.000	0.00	0.00	0.00	1969.50	1300.00	1972.71	0.00	1972.76	124.72	1.89	777.71	116.41
	1.000	0.00	0.00	0.00	1969.50	2500.00	1973.34	0.00	1973.41	125.10	2.23	1305.55	223.52
	1.000	0.00	0.00	0.00	1969.50	3100.00	1973.58	0.00	1973.65	125.24	2.37	1523.74	277.00
	1.000	0.00	0.00	0.00	1969.50	3700.00	1973.79	0.00	1973.87	125.38	2.49	1729.05	330.44
	1.000	0.00	0.00	0.00	1969.50	4500.00	1974.04	0.00	1974.13	125.46	2.63	1988.49	401.75
	1.000	0.00	0.00	0.00	1969.50	10000.00	1975.28	0.00	1975.41	127.08	3.29	3573.47	887.09
	1.000	0.00	0.00	0.00	1969.50	15000.00	1976.04	0.00	1976.21	126.88	3.74	4737.46	1331.67
	1.000	0.00	0.00	0.00	1969.50	20000.00	1976.68	0.00	1976.88	125.23	4.07	5768.63	1787.18
	1.000	0.00	0.00	0.00	1969.50	27000.00	1977.43	0.00	1977.68	125.46	4.47	7010.60	2410.50
*	2.000	610.00	0.00	0.00	1981.00	600.00	1982.33	1982.33	1982.55	179.91	4.31	157.36	44.73
*	2.000	610.00	0.00	0.00	1981.00	800.00	1982.44	1982.44	1982.75	185.70	4.63	196.70	58.71
*	2.000	610.00	0.00	0.00	1981.00	1000.00	1982.54	1982.54	1982.88	188.22	4.88	234.43	72.89
*	2.000	610.00	0.00	0.00	1981.00	1300.00	1982.68	1982.68	1983.06	188.90	5.17	289.23	94.59
*	2.000	610.00	0.00	0.00	1981.00	2500.00	1983.12	1983.12	1983.63	175.10	5.82	504.48	188.93
*	2.000	610.00	0.00	0.00	1981.00	3100.00	1983.30	1983.30	1983.86	168.33	6.02	609.43	238.94
*	2.000	610.00	0.00	0.00	1981.00	3700.00	1983.46	1983.46	1984.07	162.80	6.20	712.32	289.98
*	2.000	610.00	0.00	0.00	1981.00	4500.00	1983.64	1983.64	1984.31	163.61	6.51	832.39	351.81
*	2.000	610.00	0.00	0.00	1981.00	10000.00	1984.56	1984.56	1985.58	142.23	8.15	1560.24	838.49
*	2.000	610.00	0.00	0.00	1981.00	15000.00	1985.19	1985.19	1986.49	132.28	9.39	2082.42	1304.19
*	2.000	610.00	0.00	0.00	1981.00	20000.00	1985.74	1985.74	1987.31	126.94	10.40	2537.84	1775.15
*	2.000	610.00	0.00	0.00	1981.00	27000.00	1986.41	1986.41	1988.34	123.49	11.62	3096.60	2429.65

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.04	0.00	1987.05	27.68	1.08	1541.71	323.11
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.12	0.00	1987.13	24.02	1.03	2046.15	346.36
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.18	0.00	1987.20	21.05	0.99	2148.46	370.51
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.29	0.00	1987.30	17.65	0.93	2293.33	404.63
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.75	0.00	1988.79	30.50	1.68	4975.24	1140.68
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.84	0.00	1988.86	27.45	1.62	5176.62	1202.49
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.92	0.00	1988.95	24.90	1.56	5370.30	1262.65
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1989.04	0.00	1989.07	21.80	1.49	5645.35	1349.29
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1991.92	0.00	1991.99	43.51	2.97	13315.18	4575.12
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.14	0.00	1992.22	34.78	2.73	14319.45	5117.26
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.48	0.00	1992.55	27.76	2.52	15362.02	5727.83
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.99	0.00	1993.04	20.32	2.25	16921.76	6694.47

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.000	600.00	1972.01	0.00	0.00	-2.99	382.46	0.00
1.000	800.00	1972.26	0.25	0.00	-2.74	496.90	0.00
1.000	1000.00	1972.47	0.21	0.00	-2.53	594.51	0.00
1.000	1300.00	1972.71	0.24	0.00	-2.29	706.50	0.00
1.000	2500.00	1973.34	0.64	0.00	-1.66	910.46	0.00
1.000	3100.00	1973.58	0.23	0.00	-1.42	956.49	0.00
1.000	3700.00	1973.79	0.21	0.00	-1.21	997.86	0.00
1.000	4500.00	1974.04	0.25	0.00	-0.96	1055.16	0.00
1.000	10000.00	1975.28	1.24	0.00	0.28	1466.68	0.00

	1.000	15000.00	1976.04	0.76	0.00	1.04	1594.99	0.00	
	1.000	20000.00	1976.68	0.64	0.00	1.68	1624.88	0.00	
	1.000	27000.00	1977.43	0.76	0.00	2.43	1640.00	0.00	
*	2.000	600.00	1982.33	0.00	10.31	0.00	320.85	610.00	
*	2.000	800.00	1982.44	0.12	10.18	0.00	354.86	610.00	
*	2.000	1000.00	1982.54	0.10	10.08	0.00	384.66	610.00	
*	2.000	1300.00	1982.68	0.14	9.97	0.00	424.23	610.00	
*	2.000	2500.00	1983.12	0.44	9.78	0.00	552.88	610.00	
*	2.000	3100.00	1983.30	0.18	9.72	0.00	605.78	610.00	
*	2.000	3700.00	1983.46	0.16	9.69	0.00	653.52	610.00	
*	2.000	4500.00	1983.64	0.18	9.60	0.00	705.14	610.00	
*	2.000	10000.00	1984.56	0.92	9.28	0.00	821.22	610.00	
*	2.000	15000.00	1985.19	0.63	9.16	0.00	830.26	610.00	
*	2.000	20000.00	1985.74	0.55	9.06	0.00	830.46	610.00	
*	2.000	27000.00	1986.41	0.67	8.98	0.00	830.70	610.00	
	5.000	1700.00	1987.04	0.00	4.71	0.00	1394.96	1100.00	
	5.000	1700.00	1987.12	0.08	4.68	0.00	1428.80	1100.00	
	5.000	1700.00	1987.18	0.07	4.64	0.00	1461.18	1100.00	
	5.000	1700.00	1987.29	0.10	4.61	0.00	1505.85	1100.00	
	5.000	6300.00	1988.75	1.46	5.63	0.00	2172.84	1100.00	
	5.000	6300.00	1988.84	0.09	5.53	0.00	2214.83	1100.00	
	5.000	6300.00	1988.92	0.09	5.46	0.00	2254.48	1100.00	
	5.000	6300.00	1989.04	0.12	5.40	0.00	2309.59	1100.00	
	5.000	30180.00	1991.82	2.77	7.26	0.00	3040.11	1100.00	
	5.000	30180.00	1992.14	0.33	6.95	0.00	3070.00	1100.00	
	5.000	30180.00	1992.48	0.34	6.74	0.00	3070.00	1100.00	
	5.000	30180.00	1992.99	0.51	6.58	0.00	3070.00	1100.00	

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION  SECNO=     2.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 4  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 5  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 6  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 6  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=     2.000  PROFILE= 7  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 7  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 8  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 8  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE= 9  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE= 9  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE=10  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE=10  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE=11  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE=11  MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     2.000  PROFILE=12  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     2.000  PROFILE=12  MINIMUM SPECIFIC ENERGY
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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EOF..

256

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1*************************************************
*  WATER SURFACE PROFILES                       *
*  VERSION OF NOVEMBER 1976                     *
*  UPDATED AUGUST 1983                          *
*                                               *
*  RUN DATE  15-OCT-87 TIME   12:02:46          *
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616              *
*  (916) 440-2105 (FTS) 448-2105        *
*****************************************
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X     X  XXXXXXX   XXXXX                 XXXXX
X     X  X        X     X               X     X
X     X  X        X                     X     X
XXXXXXX  XXXX     X           XXXXX     XXXXX
X     X  X        X                     X
X     X  X        X     X               X
X     X  XXXXXXX   XXXXX                 XXXXXXX
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15-OCT-87 12:02:46 PAGE 1

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  1,2,3,4,5
  MODIFICATION -  50,51,52,53,54,55
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T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW 8 HALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     G         LSEL      FQ
        0.        2.        0.        0.  0.012500      0.00      0.0       0.  1975.000     0.000

J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1.000     0.000    -1.000     0.000     0.000     0.00      0.000     0.000     0.000     0.000

NC      0.120     0.120     0.120     0.200     0.400     0.000     0.000     0.000     0.000     0.000
GT     12.000   600.000   800.000  1000.000  1300.000  2500.000  3100.000  3700.000  4500.000 10000.000
GT  15000.000 20000.000 27000.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      1.000    12.000   790.000  1240.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1976.000     0.000  1974.000    50.000  1975.000   110.000  1972.000   210.000  1973.000   430.000
GR   1971.000   480.000  1975.000   790.000  1969.500   970.000  1972.000  1240.000  1976.000  1400.000
GR   1974.000  1500.000  1977.000  1640.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.120     0.035     0.035     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      2.000     9.000   330.000   741.000   620.000   580.000   610.000     0.000     0.000     0.000
GR   1985.000     0.000  1982.000    60.000  1984.000   330.000  1981.000   740.000  1990.000   741.000
GR   1990.000   990.000  1982.000   991.000  1982.000  1080.000  1990.000  1981.000     0.000     0.000

GT     12.000  1700.000  1700.000  1700.000  1700.000  6300.000  6300.000  6300.000  6300.000 30180.000
GT  30180.000 30180.000 30180.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
NC      0.120     0.120     0.120     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1      5.000     5.000  3480.000  3940.000   590.000  1800.000  1100.000     0.000     0.000     0.000
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GR	1990.000	2000.000	1985.000	3480.000	1984.800	3800.000	1985.000	3940.000	1992.000	5070.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	GLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	ANL	ANCH	ANR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCBAR	TCRWID	ENDST

*PROF 1

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.51	1972.11	0.00	1975.00	1972.05	0.04	0.00	0.00	1975.00
600.	46.	554.	0.	52.	346.	0.	0.	0.	1973.00
0.00	0.87	1.60	0.00	0.120	0.120	0.120	0.000	1965.50	209.62
0.012325	7.	0.	0.	0	0	6	0.00	382.46	1163.73

0
*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.33	1982.33	1982.33	0.00	1982.59	0.26	8.98	0.09	1984.00
600.	4.	518.	78.	8.	120.	29.	4.	5.	1990.00
0.04	0.49	4.31	2.69	0.120	0.026	0.036	0.000	1981.00	53.49
0.017991	620.	610.	580.	4	11	6	0.00	320.85	1080.04

0
*SECNO 5.000

5.00	2.24	1987.04	0.00	0.00	1987.05	0.01	4.41	0.05	1985.00
1700.	409.	1068.	223.	618.	986.	337.	38.	26.	1985.00
0.38	0.66	1.08	0.66	0.120	0.120	0.120	0.000	1984.80	2874.99
0.002768	59.	1100.	1810.	6	0	0	0.00	1354.56	4269.95

0
1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 81,82,83,84,85
MODIFICATION - 51,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	WCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= 0.20 CEHV= 1.40

*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.76	1972.26	0.00	1975.00	1972.30	0.04	0.00	0.00	1975.00
800.	85.	715.	0.	85.	418.	0.	0.	0.	1973.00
0.00	0.95	1.71	0.00	0.120	0.120	0.120	0.000	1969.50	201.43
0.012461	0.	0.	0.	0	0	6	0.00	496.90	1182.69

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.44	1982.44	1982.44	0.00	1982.75	0.30	9.16	0.10	1984.00
800.	9.	659.	132.	15.	142.	5.	39.	6.	1990.00
0.04	0.62	4.63	3.36	0.120	0.035	0.035	0.000	1981.00	51.16
0.018570	620.	610.	580.	4	11	0	0.00	354.86	1080.06

*SECNO 5.000

5.00	2.32	1987.12	0.00	0.00	1987.13	0.01	4.33	0.06	1985.00
1700.	418.	1053.	228.	664.	1020.	362.	32.	28.	1985.00
0.40	0.63	1.33	1.63	0.120	0.120	0.120	0.000	1984.80	2853.10
0.002402	590.	1100.	1800.	7	0	0	0.00	1428.80	4281.89

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	3.	0.	0.012500	0.00	0.	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
G	QLOB	QCH	QROB	ALOB	ACH	ARCB	WCL	TWA	LEFT/RIGHT

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCHWID	ENDST

*PROF 3

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	2.97	1972.47	0.00	1975.00	1972.51	0.04	0.00	0.00	1975.00
1000.	137.	863.	0.	138.	483.	0.	0.	0.	1973.00
0.00	1.30	1.78	0.00	0.120	0.120	0.120	0.000	1969.50	194.44
0.012277	0.	0.	0.	0	0	5	0.00	594.51	1158.86

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	1.54	1982.54	1982.54	0.00	1982.88	0.34	9.14	0.12	1984.00
1000.	16.	796.	188.	23.	163.	48.	6.	7.	1990.00
0.04	0.71	4.88	3.88	0.120	0.035	0.035	0.000	1981.00	49.12
0.18822	52.	610.	589.	3	11	0	0.00	384.66	1080.07

*SECNO 5.000

5.00	2.38	1987.18	0.00	0.00	1987.20	0.01	4.25	0.07	1985.00
1700.	423.	1039.	233.	709.	1053.	387.	35.	29.	1985.00
0.42	0.60	1.99	0.60	0.120	0.120	0.120	0.000	1984.80	2832.14
0.002185	590.	1100.	1800.	6	8	0	0.00	1461.18	4293.32

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 1,2,3,4,5
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TAA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TCHWID	ENDST

*PROF 4

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.21	1972.71	0.00	1975.00	1972.76	0.05	0.00	0.00	1975.00
1300.	230.	1070.	0.	213.	565.	0.	0.	0.	1973.00
0.00	1.08	1.89	0.00	0.120	0.120	0.120	0.000	1969.50	186.43
0.012472	.	1.	0.	1	6	5	.00	706.50	1217.41

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3726 CRITICAL DEPTH ASSUMED

2.00	1.68	1982.68	1982.68	0.00	1983.06	0.39	9.23	0.13	1984.00
1300.	30.	998.	273.	36.	193.	61.	7.	8.	1990.00
0.03	0.33	8.17	4.51	0.120	0.036	0.035	.000	1961.00	46.41
0.018890	620.	610.	580.	4	11	0	0.00	424.23	1080.08

*SECNO 5.000

5.00	2.49	1987.29	0.00	0.00	1987.30	0.01	4.16	0.07	1985.00
1700.	440.	1020.	240.	774.	1098.	422.	39.	31.	1985.00
0.44	0.07	1.93	0.57	0.120	0.120	0.120	0.000	1984.80	2803.23
0.001765	593.	1130.	1800.	5	0	0	0.00	1505.85	4309.09

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,32,33,34,35
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	6.	3.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHAIM	ITRACE
	5.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TIA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CCHAR	TOPWID	ENDST

*PROF 5

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	3.84	1973.34	0.00	1975.00	1973.41	0.06	0.00	0.00	1975.00
2500.	702.	1797.	1.	496.	807.	3.	3.	0.	1973.00
0.00	1.42	2.23	0.43	0.120	0.120	0.120	0.000	1969.50	165.22
0.012510	.	3.	3.	3	0	5	0.00	910.46	1258.31

*SECNO 2.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	2.12	1983.12	1983.12	0.00	1983.63	0.51	8.94	0.18	1984.00
2500.	108.	1738.	604.	97.	307.	100.	13.	10.	1990.00
0.03	1.11	5.82	6.05	0.120	0.035	0.035	0.000	1981.00	37.60
0.017510	620.	610.	580.	9	11	0	0.00	552.88	1080.14

*SECNO 5.000

5.00	3.95	1988.75	0.00	0.00	1988.79	0.03	5.04	0.10	1985.00
6300.	2156.	2968.	1176.	2075.	1768.	1132.	79.	43.	1985.00
0.27	1.04	1.68	1.04	0.120	0.120	0.120	0.000	1984.80	2371.63
0.003050	590.	1100.	1800.	7	0	0	0.00	2172.84	4544.47

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,32,33,34,35
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW CMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	7.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
6	WLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	ICC	ICONT	CCHAR	TCHWID	ENDST

*PROF 6

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.18	1973.58	0.00	1975.00	1973.65	0.07	0.00	0.00	1975.00

3100.	964.	2130.	5.	615.	900.	9.	0.	0.	1973.00	
0.00	1.57	2.37	0.60	0.120	0.120	0.120	0.000	1969.50	157.43	
0.012524	0.	0.	0.	0	0	5	0.00	956.49	1270.77	

*SECNO 2.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3721 CRITICAL DEPTH ASSUMED

2.00	2.30	1983.30	1983.30	0.00	1983.86	0.56	8.78	0.20	1984.00
3100.	158.	2131.	761.	131.	362.	116.	15.	11.	1990.00
0.03	1.21	6.02	6.56	0.120	0.035	0.035	0.000	1981.00	33.97
0.016833	623.	610.	580.	20	11	0	0.00	605.78	1080.16

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.44	1988.84	0.00	0.00	1988.86	0.03	4.89	0.11	1985.00
6300.	2132.	2929.	1190.	2178.	1811.	1188.	85.	44.	1985.00
0.28	1.00	1.62	1.00	0.120	0.120	0.120	0.000	1984.80	2344.45
0.002745	590.	1100.	1800.	7	3	0	0.00	2214.83	4559.29

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,32,33,34,35
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	8.	3.	0.	0.012500	0.00	0.2	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	7.000	0.000	-1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
6	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	ANCH	XNR	WTA	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 7

CCH= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	4.29	1973.79	0.00	1975.00	1973.87	0.08	0.00	0.00	1975.00

```
    3700.     1236.     2452.       12.      727.      986.       17.        0.        0.   1973.00
      0.00      1.70      2.49     0.74     0.120     0.120     0.120     0.000   1965.50    150.43
 0.012538        0.        0.        0.         0         0         5      0.00    957.86   1281.98

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      2.00      2.46   1983.46   1983.46      0.00   1984.07      0.60      6.65      0.21   1984.00
    3700.      213.     2575.      911.      166.      415.      131.       17.       12.   1990.00
      0.03      1.28      6.23      6.97     0.120     0.525     0.336     0.000   1981.00     30.71
 0.016280      620.      610.      580.        16        11         0      0.00    653.52   1080.18

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

      5.00      4.12   1988.92      0.00      0.00   1988.95      0.03      4.77      0.12   1985.00
    6300.     2205.     2892.     1203.     2278.     1851.     1242.       91.       46.   1985.00
      0.28      0.97      1.56      0.97     0.120     0.120     0.120     0.000   1984.80   2318.80
 0.002490       59.      110.      180.         6         6         9      0.00   2254.48   4573.28

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   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,14,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************

 T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2      LAS VEGAS VALLEY OVERFLOW STUDY
 T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87

 J1   ICHECK      INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
         0.        9.        0.        0.  0.012500      0.00      0.0         0.   1975.000     0.000

 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       8.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        CLOSS   BANK ELEV
    Q         GLOB      QCH       QROB      ALOB      ACH       ARCB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CCRAB     TOPWID     ENDST

 *PROF 8

 CCHV=    0.20   CEHV=    0.40
 *SECNO 1.000

 3265 DIVIDED FLOW
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1.00	4.54	1974.14	0.00	1975.00	1974.13	0.09	0.00	0.00	1975.00
4500.	1639.	2865.	26.	869.	1091.	29.	0.	0.	1973.00
0.00	1.85	2.63	0.89	0.120	0.120	0.120	0.000	1969.50	48.98
0.012546	0.	0.	0.	0	0	5	0.00	1055.16	1501.90

*SECNO 2.000

3268 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3728 CRITICAL DEPTH ASSUMED

2.00	2.64	1983.64	1983.64	0.00	1984.31	0.67	8.68	0.23	1984.00
4500.	293.	3106.	1104.	209.	477.	146.	20.	12.	1990.00
0.03	1.39	6.51	7.54	0.120	0.035	0.035	0.000	1981.00	27.17
0.016361	628.	610.	580.	13	14	0	0.00	705.14	1080.21

*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

5.00	4.24	1989.24	0.00	0.00	1989.07	0.02	4.62	0.13	1985.00
6300.	2237.	2843.	1220.	2420.	1906.	1320.	98.	48.	1985.00
0.30	0.92	1.49	0.92	0.120	0.120	0.120	0.000	1984.80	2283.14
0.002180	590.	1100.	1800.	6	0	0	0.00	2309.59	4592.73

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	10.	0.	0.	0.012500	0.00	0.	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 9

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000

3265 DIVIDED FLOW

1.00	5.78	1975.28	0.00	1975.00	1975.41	0.13	0.00	0.00	1975.00
10000.	4332.	5376.	292.	1725.	1632.	217.	0.	0.	1973.00
0.00	2.51	3.29	1.34	0.120	0.120	0.120	0.000	1969.50	18.09
0.012708	0.	0.	0.	0	0	4	0.00	1466.68	1559.56

*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	3.56	1984.56	1984.56	0.00	1985.58	1.02	8.18	0.35	1984.00
1000.	95.	6890.	2159.	487.	845.	229.	36.	16.	1990.00
0.02	1.95	8.15	9.45	0.120	0.035	0.035	0.000	1981.00	8.81
0.014223	620.	610.	580.	5	14	0	0.00	821.22	1080.32

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 1.81 FEET

3301 HV CHANGED MORE THAN HVINS

5.10	7.12	1991.82	0.00	0.00	1991.99	0.09	6.14	0.19	1985.00
30180.	13815.	9431.	6934.	6386.	3181.	3748.	216.	64.	1985.00
0.15	2.16	2.97	1.85	0.120	0.120	0.120	0.000	1984.80	2000.00
0.004351	590.	1130.	1800.	6	0	0	0.00	3040.11	5040.11

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,32,33,34,35
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	11.	0.	0.	0.012500	0.00	0.0	0.	1975.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	10.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	GLOB	QCH	QROB	ALOB	ACH	ARCH	WCL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CCHAR	ICHNL	ENDST

*PROF 10

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 0.04 FEET

1.00	6.54	1976.04	0.00	1975.00	1976.21	0.17	0.00	0.00	1975.00
15000.	6885.	7375.	740.	2318.	1973.	446.	0.	0.	1973.00
0.00	2.97	3.74	1.66	0.120	0.120	0.120	0.000	1969.50	0.00
0.012688	0.	0.	0.	0	0	4	0.00	1994.99	1994.99

*SECNO 2.000

3265 DIVIDED FLOW

3284 CROSS SECTION 2.00 EXTENDED 0.19 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	4.19	1985.19	1985.19	0.00	1986.49	1.30	7.89	0.45	1984.00
15000.	1626.	10367.	3108.	693.	1104.	285.	48.	17.	1990.00
0.02	2.35	9.39	10.54	0.120	0.035	0.035	0.000	1981.00	0.00
0.013226	620.	610.	580.	3	14	0	0.00	830.26	1080.40

*SECNO 5.000
3284 CROSS SECTION 5.10 EXTENDED 2.14 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.34	1992.14	0.00	0.00	1992.22	0.08	5.48	0.25	1985.00
3118.	13954.	9109.	7117.	6871.	3332.	4116.	246.	65.	1985.00
0.16	2.23	2.73	1.73	0.120	0.120	0.120	0.000	1984.80	2000.00
0.003478	593.	1100.	1800.	7	0	0	0.00	3070.00	5070.00

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW DMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	12.	0.	0.	0.012500	0.00	0.	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	11.000	0.000	-1.000	0.00	0.000	0.00	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV

	Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
	TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
	SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 11

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 1.68 FEET

1.00	7.18	1976.68	0.00	1975.00	1976.88	0.20	0.00	0.00	1975.00
20000.	9386.	9195.	1419.	2824.	2262.	683.	0.	0.	1973.00
0.00	3.32	4.07	2.08	0.120	0.120	0.120	0.000	1969.50	0.00
0.012523	.	0.	0.	0	0	4	0.00	1624.88	1624.88

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 0.74 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	4.74	1985.74	1985.74	0.00	1987.31	1.57	7.68	0.55	1984.00
20000.	2338.	13823.	3838.	874.	1329.	335.	58.	17.	1990.00
0.02	2.68	10.40	11.47	0.120	0.035	0.035	0.000	1981.00	0.00
0.012694	62.	810.	580.	4	14	0	0.00	830.46	1080.47

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.48 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	7.69	1992.48	0.00	0.00	1992.55	0.06	4.94	0.20	1985.00
30180.	14021.	8784.	7375.	7374.	3488.	4500.	275.	66.	1985.00
0.17	1.90	2.52	1.64	0.120	0.120	0.120	0.000	1984.80	2000.00
0.002776	59.	1100.	1800.	6	8	8	0.00	3070.00	5070.00

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW CMH 10/15/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	13.	0.	0.	0.012500	3.00	0.0	0.	1975.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.00	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	CLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TIA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 12

CCHV= 0.200 CEHV= 0.400
*SECNO 1.000
3280 CROSS SECTION 1.00 EXTENDED 1.43 FEET

1.00	7.93	1977.43	3.00	1975.00	1977.68	0.25	0.00	0.00	1975.00
27000.	12637.	11634.	2528.	3424.	2603.	984.	0.	0.	1973.00
0.00	3.75	4.47	2.57	0.120	0.120	0.120	0.000	1969.50	0.00
0.012546	0.	0.	0.	0	0	4	0.00	1640.00	1640.00

*SECNO 2.000

3265 DIVIDED FLOW

3280 CROSS SECTION 2.00 EXTENDED 1.41 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.00	5.41	1986.41	1986.41	0.00	1988.34	1.92	7.58	0.67	1984.00
27000.	3353.	18656.	4989.	1096.	1606.	395.	71.	17.	1990.00
0.02	3.36	11.62	12.63	0.120	0.035	0.035	0.000	1961.00	0.00
0.012349	620.	610.	587.	4	19	0	0.00	830.71	1080.55

*SECNO 5.000
3280 CROSS SECTION 5.00 EXTENDED 2.99 FEET

3301 HV CHANGED MORE THAN HVINS

5.00	8.19	1992.99	0.00	0.00	1993.04	0.05	4.33	0.37	1985.00
38180.	14103.	8374.	7706.	8126.	3722.	5074.	314.	66.	1985.00
0.18	1.74	2.25	1.52	0.120	0.120	0.120	0.000	1984.80	2000.00
0.002032	590.	1100.	1800.	6	0	0	0.00	3070.00	5070.00

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	C&SEL	CRI&S	EG	10K*S	VCH	AREA	.01K
	1.000	0.00	0.00	0.00	1965.50	600.00	1972.01	0.00	1972.05	123.25	1.60	398.88	54.05
	1.000	0.00	0.00	0.00	1965.50	800.00	1972.26	0.00	1972.30	124.61	1.71	506.95	71.67
	1.000	0.00	0.00	0.00	1965.50	1000.00	1972.47	0.00	1972.51	122.77	1.78	621.29	90.25
	1.000	0.00	0.00	0.00	1965.50	1300.00	1972.71	0.00	1972.76	124.72	1.89	777.71	116.41
	1.000	0.00	0.00	0.00	1965.50	2500.00	1973.34	0.00	1973.41	125.10	2.23	1305.55	223.52
	1.000	0.00	0.00	0.00	1965.50	3100.00	1973.58	0.00	1973.65	125.24	2.37	1523.74	277.00
	1.000	0.00	0.00	0.00	1965.50	3700.00	1973.79	0.00	1973.87	125.38	2.49	1729.05	330.44
	1.000	0.00	0.00	0.00	1965.50	4500.00	1974.04	0.00	1974.13	125.46	2.63	1988.49	401.75
	1.000	0.00	0.00	0.00	1965.50	10000.00	1975.28	0.00	1975.41	127.08	3.29	3573.47	887.09
	1.000	0.00	0.00	0.00	1965.50	15000.00	1976.04	0.00	1976.21	126.86	3.74	4737.46	1331.67
	1.000	0.00	0.00	0.00	1965.50	20000.00	1976.68	0.00	1976.88	125.23	4.07	5768.63	1787.16
	1.000	0.00	0.00	0.00	1965.50	27000.00	1977.43	0.00	1977.68	125.46	4.47	7010.60	2410.56
*	2.000	610.00	0.00	0.00	1981.00	600.00	1982.33	1982.33	1982.59	179.91	4.31	157.36	44.75
*	2.000	610.00	0.00	0.00	1981.00	800.00	1982.44	1982.44	1982.75	185.70	4.63	196.70	58.71
*	2.000	610.00	0.00	0.00	1981.00	1000.00	1982.54	1982.54	1982.88	188.22	4.88	234.43	72.89
*	2.000	610.00	0.00	0.00	1981.00	1300.00	1982.68	1982.68	1983.06	188.50	5.17	285.23	94.55
*	2.000	610.00	0.00	0.00	1981.00	2500.00	1983.12	1983.12	1983.63	175.10	5.82	504.48	188.93
*	2.000	610.00	0.00	0.00	1981.00	3100.00	1983.30	1983.30	1983.86	168.33	6.02	609.43	238.94
*	2.000	610.00	0.00	0.00	1981.00	3700.00	1983.46	1983.46	1984.07	162.80	6.20	712.32	289.98
*	2.000	610.00	0.00	0.00	1981.00	4500.00	1983.64	1983.64	1984.31	163.61	6.51	832.39	351.81
*	2.000	610.00	0.00	0.00	1981.00	10000.00	1984.56	1984.56	1985.58	142.23	8.15	1560.24	838.49
*	2.000	610.00	0.00	0.00	1981.00	15000.00	1985.19	1985.19	1986.49	132.28	9.39	2082.42	1304.19
*	2.000	610.00	0.00	0.00	1981.00	20000.00	1985.74	1985.74	1987.31	126.94	10.40	2537.84	1775.15
*	2.000	610.00	0.00	0.00	1981.00	27000.00	1986.41	1986.41	1988.34	123.49	11.62	3096.60	2429.65

	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	C&SEL	CRI&S	EG	10K*S	VCH	AREA	.01K
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.04	0.00	1987.05	27.68	1.08	1941.71	323.11
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.12	0.00	1987.13	24.02	1.03	2046.15	346.86
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.18	0.00	1987.20	21.05	0.99	2148.46	370.51
	5.000	1100.00	0.00	0.00	1984.80	1700.00	1987.29	0.00	1987.30	17.65	0.93	2293.33	404.63
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.75	0.00	1988.78	30.50	1.68	4975.24	1140.68
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.84	0.00	1988.86	27.45	1.62	5176.62	1202.49
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1988.92	0.00	1988.95	24.50	1.56	5370.30	1262.65
	5.000	1100.00	0.00	0.00	1984.80	6300.00	1989.04	0.00	1989.07	21.80	1.49	5645.35	1349.29
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1991.82	0.00	1991.90	43.51	2.97	13315.18	4575.12
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.14	0.00	1992.22	34.78	2.73	14319.45	5117.26
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.48	0.00	1992.55	27.76	2.52	15362.02	5727.83
	5.000	1100.00	0.00	0.00	1984.80	30180.00	1992.99	0.00	1993.04	20.32	2.25	16921.76	6694.47

NORTHERN SPLIT FLOW @ MA

SUMMARY PRINTOUT TABLE 150

SECNO	Q	C&SEL	DIFWSP	DIF&SX	DIFK&S	TOP&ID	XLCH
1.000	600.00	1972.01	0.00	0.00	-2.99	382.46	0.00
1.000	800.00	1972.26	0.25	0.00	-2.74	496.50	0.00
1.000	1000.00	1972.47	0.21	0.00	-2.53	594.51	0.00
1.000	1300.00	1972.71	0.24	0.00	-2.29	706.50	0.00
1.000	2500.00	1973.34	0.64	0.00	-1.66	910.46	0.00
1.000	3100.00	1973.58	0.23	0.00	-1.42	956.49	0.00
1.000	3700.00	1973.79	0.21	0.00	-1.21	997.85	0.00
1.000	4500.00	1974.04	0.25	0.00	-0.96	1045.16	0.00
1.000	10000.00	1975.28	1.24	0.00	0.29	1466.68	0.00

	1.000	15000.00	1976.04	0.76	0.00	1.04	1594.99	0.00	
	1.000	20000.00	1976.68	0.64	0.00	1.68	1624.68	0.00	
	1.000	27000.00	1977.43	0.76	0.00	2.43	1640.00	0.00	
*	2.000	600.00	1982.33	0.00	10.31	0.00	320.85	E10.00	
*	2.000	800.00	1982.44	0.12	10.18	0.00	354.66	E10.00	
*	2.000	1000.00	1982.54	0.10	10.08	0.00	384.66	E10.00	
*	2.000	1300.00	1982.68	0.14	9.97	0.00	424.23	E10.00	
*	2.000	2500.00	1983.12	0.44	9.78	0.00	552.88	E10.00	
*	2.000	3100.00	1983.30	0.18	9.72	0.00	605.78	E10.00	
*	2.000	3700.00	1983.46	0.16	9.68	0.00	652.52	E10.00	
*	2.000	4500.00	1983.64	0.18	9.60	0.00	705.14	E10.00	
*	2.000	14000.00	1984.56	0.92	9.28	0.00	821.22	E10.00	
*	2.000	15000.00	1985.19	0.63	9.16	0.00	838.26	E10.00	
*	2.000	20000.00	1985.74	0.55	9.06	0.00	830.46	E10.00	
*	2.000	27000.00	1986.41	0.67	8.98	0.00	830.70	E10.00	
	5.000	1700.00	1987.14	0.00	4.71	0.00	1394.56	1100.00	
	5.000	1700.00	1987.12	0.08	4.68	0.00	1428.80	1100.00	
	5.000	1700.00	1987.18	0.07	4.64	0.00	1461.18	1100.00	
	5.000	1700.00	1987.29	0.10	4.61	0.00	1505.85	1100.00	
	5.000	6300.00	1988.75	1.46	5.63	0.00	2172.84	1100.00	
	5.000	6300.00	1988.84	0.09	5.53	0.00	2214.83	1100.00	
	5.000	6300.00	1988.92	0.09	5.46	0.00	2254.48	1100.00	
	5.000	6300.00	1989.04	0.12	5.40	0.00	2309.59	1100.00	
	5.000	30180.00	1991.82	2.77	7.26	0.00	3041.11	1100.00	
	5.000	30180.00	1992.14	0.33	6.95	0.00	3070.00	1100.00	
	5.000	30180.00	1992.48	0.34	6.74	0.00	3070.00	1100.00	
	5.000	30180.00	1992.99	0.51	6.58	0.00	3070.00	1100.00	

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 4 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 5 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 5 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 6 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 6 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 6 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 2.000 PROFILE= 7 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 7 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 8 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 8 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE= 9 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE= 9 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE=10 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE=10 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE=11 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE=11 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.000 PROFILE=12 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.000 PROFILE=12 MINIMUM SPECIFIC ENERGY

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**********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            2                  .0125                            1975
J2     1             -1
NC   .12      .12      .12      .2       .4
QT     12      600      800     1000     1300     2500     3100     3700     4500    10000
QT  15000    20000    27000
X1      1       12      790     1240
GR   1976        0     1974       50     1975      110     1972      210     1973      430
GR   1971      480     1975      750   1969.5      970     1973     1240     1976     1400
GR   1974     1500     1977     1640
NC   .12     .035     .035
X1      2        9      330      741      620      580      610
GR   1985        0     1982       60     1984      330     1981      740     1990      741
GR   1990      990     1982      991     1982     1080     1990     1081
QT     12     1700     1700     1700     1700     6300     6300     6300     6300    30180
QT  30180    30180    30180
NC   .12      .12      .12
X1      5        5     3480     3940      590     1800     1100
GR   1990     2000     1985     3480   1984.8     3800     1985     3940     1992     5070
EJ
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            3                  .0125                            1975
J2     2             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            4                  .0125                            1975
J2     3             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            5                  .0125                            1975
J2     4             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            6                  .0125                            1975
J2     5             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            7                  .0125                            1975
J2     6             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            8                  .0125                            1975
J2     7             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1            9                  .0125                            1975
J2     8             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1           10                  .0125                            1975
J2     9             -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
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T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1         11                .0125                                 1975
J2   10              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1         12                .0125                                 1975
J2   11              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW     DMH 10/15/87
J1         13                .0125                                 1975
J2   15              -1


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TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            2                  .0125                          1975
J2     1                 -1
NC    .12       .12       .12       .2        .4
QT      12       600       800      1000      1300      2500      3100      3700      4500     10000
QT   15000     20000     27000
X1       1        12       790      1240
GR    1976         0      1974        50      1975       110      1972       210      1973       430
GR    1971       480      1975       790    1969.5       970      1973      1240      1976      1400
GR    1974      1500      1977      1640
NC    .12      .035      .035
X1       2         9       330       741       620       580       610
GR    1985         0      1982        60      1984       330      1981       740      1990       741
GR    1990       990      1982       991      1982      1080      1990      1081
QT      12      1700      1700      1700      1700      6300      6300      6300      6300     30180
QT   30180     30180     30180
NC    .12       .12       .12
X1       5         5      3480      3940       590      1800      1100
GR    1990      2000      1985      3480    1984.8      3800      1985      3940      1992      5070
EJ
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            3                  .0125                          1975
J2     2                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            4                  .0125                          1975
J2     3                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            5                  .0125                          1975
J2     4                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            6                  .0125                          1975
J2     5                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            7                  .0125                          1975
J2     6                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            8                  .0125                          1975
J2     7                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1            9                  .0125                          1975
J2     8                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1           10                  .0125                          1975
J2     9                 -1
TI      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
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T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1          11                  .0125                              1975
J2    10              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1          12                  .0125                              1975
J2    11              -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       NORTHERN SPLIT FLOW @ MALL, FLAMINGO WASH OVERFLOW    DMH 10/15/87
J1          13                  .0125                              1975
J2    15              -1


ER
EOF..
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329

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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   16:38:02          *
 *************************************************
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**************************************
*  U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D        *
*  DAVIS, CALIFORNIA 95616           *
*  (916) 440-2105 (FTS) 448-2105     *
**************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X           X     X
X     X  X        X                 X     X
XXXXXXX  XXXX     X           XXXXX  XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX   XXXXX            XXXXXXX
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27-APR-88 16:38:03 PAGE 1

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
```

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT 050

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.018200	0.00	0.0	0.	1918.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.120	0.120	0.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OT	3.000	580.000	1740.000	8660.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	6.000	8.000	520.000	970.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1923.500	0.000	1920.000	520.000	1914.000	750.000	1916.500	970.000	1916.000	1130.000
GR	1915.500	1700.000	1920.000	2000.000	1924.000	2200.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
27-APR-88 16:38:03 PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XAL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

*PROF 1

```
 *SECNO 6.000
 3265 DIVIDED FLOW

      6.00      1.87  1915.87      0.03  1918.00  1915.90      0.03      0.00      0.00  1920.00
       580.        0.       352.      228.       0.       221.      238.        0.        0.  1916.50
      0.00      0.00      1.60      0.95     0.120     0.120     0.120     0.000  1914.00   678.34
 0.018169         0.        0.        0.         0         0         5      0.00   783.79  1752.16
J
1
  27-APR-88     16:38:03                                                                    PAGE     3



 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT     Q100

 J1  ICHECK      INQ       NINV      IDIR       STRT      METRIC     HVINS      G          WSEL       FQ

        0.        3.        0.        0.  0.018200        0.00       0.0         0.  1918.000      0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH      FN        ALLDC      IBW        CHNIM      ITRACE

       2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000      0.000

1
  27-APR-88     16:38:03                                                                    PAGE     4

    SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
    Q          QLOB      QCH       QROB      ALOB      ACH       AROP      VOL       TWA    LEFT/RIGHT
    TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IOC       ICONT     COPAR     TOPWID      ENDST

 *PROF 2
 *SECNO 6.000
 3265 DIVIDED FLOW

      6.00      2.46  1916.46      0.03  1918.00  1916.50      0.05      0.00      0.00  1920.00
      1740.        3.       738.     1002.       0.       382.      643.        0.        0.  1916.50
      0.00      0.00      1.93      1.55     0.120     0.120     0.120     0.000  1914.00   655.79
 0.018526         0.        0.        0.         0         0         5      0.00  1114.45  1787.47
J
1
  27-APR-88     16:38:03                                                                    PAGE     5



 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***************************************************
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT 0500

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.015200	0.00	0.0	0.	1918.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IOC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

*SECNO 6.030

5.00	4.03	1918.03	0.00	1918.00	1918.17	0.14	0.00	0.00	1920.00
8660.	0.	2835.	5825.	0.	924.	2004.	0.	0.	1916.50
0.00	0.00	3.07	2.91	0.120	0.120	0.120	0.000	1914.00	595.44
0.018438	0.	0.	0.	0	0	3	0.00	1286.49	1881.93

1
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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 6 OF FL

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
6.000	0.00	0.00	0.00	1914.00	580.00	1915.87	0.00	1915.90	181.69	1.60	458.69	43.03
6.000	0.00	0.00	0.00	1914.00	1740.00	1916.46	0.00	1916.50	185.26	1.93	1024.77	127.84
6.000	0.00	0.00	0.00	1914.00	8660.00	1918.03	0.00	1918.17	184.38	3.07	2927.90	637.77

1
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OVERFLOW SECTION 6 OF FL

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH

6.000	580.00	1915.87	0.00	0.00	-2.13	783.79	0.00
6.000	1740.00	1916.46	0.59	0.00	-1.54	1114.45	0.00
6.000	8660.00	1918.03	1.57	0.00	0.03	1286.49	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES


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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
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EOF..

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T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT    050
J1              2                  .0182                            1918
J2     1                -1
NC   .12      .12       .12
QT      3      580      1740      8660
X1      6        8       520       570
GR1923.5        0      1920       520     1914      750  1916.5      970     1916     1130
GR   1915     1700      1920      2000     1924     2200
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT    0100
J1              3                  .0182                            1918
J2     2                -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 6 OF FLAMINGO WASH - NORTH I15 BREAKOUT    0500
J1              4                  .0182                            1918
J2    15                -1


ER
EOF..
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T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 11 OF FLAMINGO WASH      SOUTH I-15 BREAKOUT     0100
J1                 2                    -1                                2124
J2       1                -1                                                    15
MC    .05       .04      .04
QT       2       100     7810
K1       1        12     9800    10300
GR  2132     8950     2124     9070   2123.3     9150  2122.8     9250     2124     9300
GR  2132     9330     2132     9560     2124     9800  2123.5    10000     2124    10300
GR  2128    11770     2138    12620
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 11 OF FLAMINGO WASH      SOUTH I-15 BREAKOUT     0500
J1                 3                    -1                                2124
J2    15                 -1                                                    15


ER
EOF..
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4

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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  20-SEP-88 TIME   11:51:32          *
 *************************************************
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```
 *****************************************
 *  U.S. ARMY CORPS OF ENGINEERS         *
 *  THE HYDROLOGIC ENGINEERING CENTER    *
 *  609 SECOND STREET, SUITE D           *
 *  DAVIS, CALIFORNIA 95616              *
 *  (916) 440-2105 (FTS) 448-2105        *
 *****************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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 20-SEP-88 11:51:33 PAGE 1

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 ***********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***********************************************
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T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 11 OF FLAMINGO WASH     SOUTH I-15 BREAKOUT     0100
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	-1.000000	0.00	0.0	0.	2124.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

NC	0.050	0.040	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	2.000	100.000	7810.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	1.000	12.000	9800.000	10300.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2132.000	8960.000	2124.000	9070.000	2123.300	9150.000	2122.800	9250.000	2124.000	9300.000
GR	2132.000	9330.000	2132.000	9560.000	2124.000	9800.000	2123.500	10000.000	2124.000	10300.000
GR	2128.000	11770.000	2138.000	12620.000	0.000	0.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	OLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	COPAR	TOPWID	ENDST

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*PROF 1

*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.00      0.52  2123.32  2123.32  2124.00  2123.47     0.14     0.00     0.00  2124.00
      100.      100.       0.       0.       33.       0.       0.       0.       0.  2124.00
     0.01      3.01     0.00     0.00    0.050    0.040    0.040    0.000  2122.80  9147.15
 0.057969        0.       0.       0.        0       17        0     0.00   124.72  9271.87

FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=   2123.32

STA=    9147.    9250.    9272.   10300.
  PER Q=    83.2     16.8      0.0
   AREA=    27.5      5.7      0.0
    VEL=     3.0      2.9      0.3

1
 20-SEP-88    11:51:33                                                    PAGE     3


 ***********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ***********************************************

 T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2      LAS VEGAS VALLEY OVERFLOW STUDY
 T3      OVERFLOW SECTION 11 OF FLAMINGO WASH     SOUTH I-15 BREAKOUT     0500

 J1  ICHECK     INQ       NINV      IDIR       STRT      METRIC    HVINS     Q          WSEL      FQ
        0.       3.        0.        0.  -1.000000        0.00      0.0       0.  2124.000     0.000
 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      15.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000    15.000

1
 20-SEP-88    11:51:33                                                    PAGE     4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *PROF 2

 *SECNO 1.000
 3265 DIVIDED FLOW
 3720 CRITICAL DEPTH ASSUMED
      1.00      2.29  2125.09  2125.09  2124.00  2125.68     0.59     0.00     0.00  2124.00
      7810.     2646.     4384.      780.      431.      668.      217.       0.       0.  2124.00
       0.00      6.14      6.56      3.60    0.050    0.040    0.040    0.000  2122.80  9055.07
 0.021228        0.       0.        0.         0       19        0     0.00  1180.56 10698.99

 FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=   2125.09

 STA=    9055.    9070.    9150.    9250.    9300.    9304.    9800.   10300.   10699.
```

PER Q=	0.3	6.1	18.1	6.6	0.1	0.7	56.1	10.0
AREA=	8.1	114.8	203.6	84.3	2.2	17.7	667.8	216.5
VEL=	2.9	5.5	7.0	6.1	2.8	2.9	6.6	3.6

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 11 OF F

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	1.000	0.00	0.00	0.00	2122.80	100.00	2123.32	2123.32	2123.47	579.69	0.00	33.27	4.15
*	1.000	0.00	0.00	0.00	2122.80	7810.00	2125.09	2125.09	2125.68	212.28	6.56	1315.06	536.04

OVERFLOW SECTION 11 OF F

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.000	100.00	2123.32	0.00	0.00	-0.68	124.72	0.00
*	1.000	7810.00	2125.09	1.76	0.00	1.09	1180.56	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

EOF..

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*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED AUGUST 1983                              *
*                                                   *
*  RUN DATE  27-APR-88 TIME   15:33:16              *
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
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X     X  XXXXXXX   XXXXX                 XXXXX
X     X  X         X     X             X     X
X     X  X         X                         X
XXXXXXX  XXXX      X           XXXXX     XXXXX
X     X  X         X                   X
X     X  X         X     X             X
X     X  XXXXXXX   XXXXX               XXXXXXX
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27-APR-88 15:33:17 PAGE 1

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*****************************************************
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C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 11.1 OF FLAMINGO WASH     WEST OF I-15    Q500 ONLY
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.008300	0.00	0.0	0.	2140.000	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

NC	0.120	0.120	0.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	1.000	5560.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
      Flow is breakout over UPRR between sections 8.74 and 8.94;
      does not include 500-yr breakout at upstream xsecs; this is
      added in at xsec 11.  Normal depth cross section.
      Assume infill of industrial buildings in LOB subsequent to
      1984 photography.
```

X1	11.100	9.000	1010.000	1140.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	2144.000	0.000	2136.000	25.000	2136.000	240.000	2136.500	500.000	2136.580	940.000
GR	2136.000	1010.000	2136.000	1140.000	2140.000	1550.000	2144.000	1900.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK	ELEV

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA LEFT	RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

•PROF 1

•SECNO 11.100
Flow is breakout over UPRR between sections 8.74 and 8.94;
does not incluce 500-yr breakout at upstream xsecs; this is
added in at xsec 11. Normal depth cross section.
Assume infill of incustrial buildings in LOB subsequent to
1984 photography.

11.10	2.59	2138.59	0.30	2140.00	2138.65	0.06	0.00	0.00	2136.00
5560.	4393.	710.	457.	2261.	337.	344.	0.	0.	2136.00
0.00	1.94	2.11	1.33	0.120	0.120	0.120	0.000	2136.00	16.90
0.008139	0.	0.	0.	0	0	4	0.00	1388.76	1405.66

FLOW DISTRIBUTION FOR SECNO= 11.10 CWSEL= 2138.59

STA=	17.	25.	240.	500.	940.	1010.	1140.	1406.
PER Q=	0.2	21.1	21.6	30.2	5.8	12.8	8.2	
AREA=	10.5	557.2	608.9	920.4	163.9	336.9	344.3	
VEL=	1.3	2.1	2.0	1.8	2.0	2.1	1.3	

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****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 11.1 OF
SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
11.100	0.00	0.00	0.00	2136.00	5560.00	2138.59	0.00	2138.65	81.39	2.11	2942.12	616.29

1
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OVERFLOW SECTION 11.1 OF
SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
11.100	5560.00	2138.59	0.00	0.00	-1.41	1388.76	0.00

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**************************************************
  HEC2 RELEASE DATED NOV 76 (FDATE) MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************
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EOF..

320

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C      5
C   11.1  Flow is breakout over UPRR between sections 8.74 and 8.94;
C   11.1  does not incluce 500-yr breakout at upstream xsecs; this is
C   11.1  added in at xsec 11.  Normal depth cross section.
C   11.1  Assume infill of industrial buildings in LOB subsequent to
C   11.1  1984 photography.
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 11.1 OF FLAMINGO WASH     WEST OF I-15     Q500 ONLY
J1              2                .3083                              2140
J2     -1              -1                                                    15
NC   .12      .12      .12
QT      1     5560
X1   11.1         9     1010     1140
GR   2144         0     2136       25     2136      240   2136.5      500   2136.5      940
GR   2136      1010     2136     1140     2140     1550     2144     1900
EJ


ER

EOF..
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SF      SPLIT FLOW ANALYSIS OF FLAMINGO WASH ALONG UPRR AND I15
TW      WEIR Q OVER UPRR BETWEEN 9.43 AND 9.62
WS     8     9.43     9.62       -1      3.0
WC     0     2181      200     2184      350   2185.8      520     2188      670   2188.6
WC   910     2192     1030   2192.7     1180   2194.2
TW      WEIR Q OVER UPRR BETWEEN 9.13 AND 9.43
WS     6     9.18     9.43       -1      3.0
WC     0     2173      350     2176      560   2176.4      870   2179.3      930     2180
WC  1220   2181.0
TW      WEIR Q OVER UPRR BETWEEN 8.94 AND 9.18
WS     6     8.94     9.19       -1      3.0
WC     0     2160      450     2164      690     2164      900     2168     1350     2172
WC  1450     2173
TW      WEIR OVER UPRR WITH RAILS
WS    10     8.74     8.94       -1     2.75
WC     0   2147.2       50   2147.4      120   2148.7      430   2150.5      700   2151.2
WC   830   2152.7     1020   2154.0     1090     2156     1160     2160     1190     2164
TW      WEIR OVER UPRR WITH RAILS FROM CHANNEL CROSSING TO FLAM RD OVERPASS
WS     2     8.68     8.74       -1     2.75
WC     0   2145.4      400   2147.2
TC      RATING CURVE FOR FLOW THRU UPRR CULVERT; LVWFWRR&LVWFRRB COE FILES
CS    15     8.66     8.68       -1
CR     0   2132.2     3500  2137.38     4000  2137.87     4500  2138.33     4800  2138.62
CR  4900  2139.69     4950  2140.08     5000  2141.46     5500  2143.14     6000  2144.7
CR  6210   2145.4     6355  2145.83     6500  2146.27     7000  2147.57     8000  2149.85
TW      WEIR OVER UPRR WITH RAILS
WS     5     8.53     8.66       -1     2.75
WC     0   2139.7      200   2142.7      470   2143.7      580   2144.7      700   2145.2
TW      WEIR OVER UPRR WITH RAILS
WS     5     8.37     8.53       -1     2.75
WC     0   2132.7      340   2135.2      500   2136.7      620   2138.2      820   2139.7
TW      UPRR WEIR FLOW TO I15 AND INDUSTRIAL RD UNDERPASS, WITH RAILS
WS     3     8.24     8.37       -1     2.75
WC     0   2127.1      150   2129.7      700   2132.7
TW      UPRR UNDERPASS NORMAL TO TRACKS, WITH RAILS
WS    10     8.23     8.24       -1     .040    .0078
NC     0     2149       23     2127       23     2123       28     2123       31   2126.7
NC    45   2126.7       48   2126.7       63   2126.7       63     2128       86     2149
TW      I-15 WEIR FLOW
WS     2     8.02     8.23       -1      3.0
WC     0   2144.5     1000   2154.9
TW      SPRING MTN RD NORMAL DEPTH TO EAST; 1974 TOPO RAISED 1 FT TO MATCH 1984
NS     7     7.92     8.02       -1     .030    .0111
NC     0     2131       40     2120       41   2119.7      100   2119.7      101     2120
NC   150     2131      910     2136
E


  18
7.92 This  is a split flow analysis to determine weir flows over UPRR
7.92 and flows thru UPRR and I-15 underpasses.  HEC-2 coding taken from
7.92 input file supplied by COE (LVWFWRRW).  After split flows were
7.92 calculated, Q's put back in regular R2 run.
7.92
7.92 WEIR FLOW OVER HEAVY RAILS INCLUDED FOR UPRR WEIR CONDITIONS
7.92 X-7.92 AND X-8.02 HAD 1 FT ADDED FOR AGREEMENT BETWEEN '74 AND '84 TOPO
7.92 STARTED AT SLOPE = .0001 AS SUGGESTED IN WRITTEN COMMENTS
7.92     Subsequent results submitted by COE showed difference in flow
7.92     split at Spring Mtn Rd; JMM not given input data.  final COE
7.92     results have 0/670/1730/3030 flowing east thru Spring Mtn Rd
7.92     opening and 0/860/2080/3580 cfs flowing north over Spring Mtn Rd.
7.92     Rest of run is ok.
8.23 U/S SIDE OF UPRR UNDERPASS BELOW I-15; WEST SIDE ABUTMENT
8.24 D/S SIDE OF UPRR UNDERPASS BELOW I-15; EAST SIDE ABUTMENT
8.66 D/S ABUTMENT UPRR BRIDGE; HIGH CHANNEL CODED WITH DIVERTER LEVEE
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C    8.74 O/S SIDE FLAMINGO RD OVERPASS OVER I-15
C    8.94 CL = 2636
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - 025
J1            2                .0017                              2117
J2       1          -1
NC   .065    .040    .030      0.2       0.4
QT       4    4100    7000    10500     35000
X1    7.92       8    9940    10050
GR    2135    9000    2130     9950      2125    9650    2125    9800    2120    9940
GR    2119   10000    2120    10050      2135   10090
NC    .165    .040    .045      0.1       0.3
X1    8.02       9    9950    10015       520     520     520
GR    2136    8750    2131     9000      2125    9430    2121    9750    2120    9950
GR    2117   10000    2121    10015    2145.5   10075  2145.5   10250
X1    8.23      11    9940     9954       830    1130    1130
GR    2144    8080    2140     8300      2136    8450    2132    8950    2128    9200
GR    2124    9550    2124     9900      2122    9940    2122    9950    2124    9954
GR2154.8   10000
X1    8.24      13    9985    10004        30      30      30
GR    2144    7920    2140     8100      2135    8460    2132    8900    2128    9200
GR2124.4    9550    2124     9900      2122    9985    2122   10000  2127.1   10004
GR2127.1   10035    2128    10035      2149   10057
NC    .145    .045    .045
X1    8.37       9    9970    10000       700     700     700
GR    2140    8900    2136     9000      2132    9170    2128    9600    2124    9850
GR    2124    9970  2223.5    10000      2124   10010  2132.7   10020
X1    8.53       8    9850     9970       830     830     830
GR    2148    9150    2144     9250      2140    9550    2136    9800  2133.5    9950
GR    2136    9970    2140    10020      2139   10040
X1    8.66       9    9870    10000       700     700     700
GR    2152    8850    2148     8980      2144    9150  2141.1    9580    2140    9800
GR    2140    9870    2140    10000      2142   10015  2145.2   10040
NC    .065    .045    .045      0.2       0.4
X1    8.68       9    9850    10004       100     100     100
GR    2152    8850    2148     8900      2144    9160  2141.9    9470    2140    9850
GR    2136    9950  2132.2    10000      2136   10004  2145.4   10040
NC    .045    .045    .045
X1    8.74       6    9920    10062       500     450     450
GR    2168    9920    2140     9920    2137.3    9921  2137.3   10054    2140   10055
GR2147.2   10062
NC    .045    .045     .04       .1        .3
X1    8.94      35    2551     2663      1030    1355    1060
GR    2160    1630    2160     1630      2160    1630    2160    1630    2160    1630
GR2152.7    2000  2152.8     2100    2151.5    2134  2149.5    2198  2148.2    2325
GR2149.2    2551  2147.9     2581    2143.3    2623  2143.3    2649  2144.6    2669
GR2149.7    2674  2152.1     2683    2151.5    2721  2147.7    2739  2146.0    2751
GR2145.6    2767  2150.2     2790    2149.5    2821  2148.3    2840  2150.9    2869
GR2149.7    2953  2148.3     2972    2148.8    2989  2150.9    3001  2153.2    3092
GR2150.9    3132  2153.7     3210    2157.2    3310    2160    3370  2160.0    3700
NC    .170    .170    .040
X1    9.18      20    2144     2382      1240    1170    1230
GR    2172    1130    2168     1210      2164    1600    2164    1730    2165    1820
GR2161.7    2000  2162.3     2103    2151.5    2144  2156.2    2157  2153.9    2195
GR2153.9    2233  2166.8     2261    2158.4    2382  2167.3    2514  2168.5    2544
GR2168.2    2567  2168.9     2635      2168    2880    2165    3670    2172    3750
NH       4  .045    2272     .040      2395    .170    3700       5    4500
X1    9.43      19    2272     2395      1315    1280    1330
GR2181.5    2000  2181.2     2124    2179.8    2215  2176.8    2241  2176.9    2272
GR2172.8    2276  2171.3     2289    2171.3    2357  2172.2    2338  2176.1    2395
GR2176.5    2470  2177.6     2587    2177.4    2709    2175    2930    2177    3260
GR    2175    3360  2180.5     4240      2180    4490    2181    4500
ET       9.1       9.1       9.1       9.1                             1870    3630
NH       4  .045    2493     .04       2652     .06    3630    .090    5330
X1    9.62      33    2493     2691       985    1005    1020
GR    2194    1870    2194     1870      2194    1870    2194    1870    2194    1870
GR2193.8    2000  2191.4     2136    2191.6    2179  2191.5    2255  2190.0    2280
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GR2189.6    2397  2189.0    2335  2188.5    2372  2190.0    2388  2187.9    2418
GR2186.3    2426  2186.3    2432  2188.1    2444  2188.3    2493  2186.3    2558
GR2184.4    2577  2184.4    2591  2182.8    2607  2182.8    2652  2185.9    2691
GR2187.4    2717  2189.3    2782  2189.5    3027  2189.5    3630    2185    4520
GR   2188    5020    2192    5240    2195    5330
EJ
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q50
J1            3                 .0017                                 2117
J2     2               -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q100
J1            4                 .0017                                 2117
J2     3               -1
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      SPLIT FLOW ANALYSIS OF WEIR OVER UPRR & I-15 - Q500
J1            5                 .0017                                 2117
J2    15               -1


ER
EOF..
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T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1              2                .0080                                  1755
J2     1                -1
NC   .08      .08       .12
QT     4     2950      3990      5500     21540
XI    31       13      1550      1680
GR 1758         0      1753       350    1754.5       600      1752       800   1756.3      1040
GR 1753      1200      1754      1550    1751.8      1600      1755      1680   1751.5      2050
GR 1754      2350      1753      3550      1756      3960
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1              3                .0080                                  1755
J2     2                -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1              4                .0080                                  1755
J2     3                -1
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1              5                .0080                                  1755
J2    15                -1


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EOF..
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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   15:47:12          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   01,02,03,04,05
  MODIFICATION -   50,51,52,53,54,55
*************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT

J1   ICHECK      INQ       NINV      IDIR       STRT      METRIC     HVINS      G          WSEL       FQ
        0.         2.        0.        0.   0.308000       0.00       0.2        0.   1755.000    0.000

J2   NPROF      IPLOT     PRFVS     XSECV     XSECH        FN       ALLDC      IBW       CHNIM      ITRACE
        1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC       0.080     0.080     0.120     0.000     0.000     0.000     0.000     0.000     0.000     0.000
QT       4.000  2950.000  3990.000  5500.000 21540.000     0.000     0.000     0.000     0.000     0.000
X1      31.000    13.000  1550.000  1680.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    1756.000     0.000  1753.000   350.000  1754.500   600.000  1752.000   800.000  1756.300  1040.000
GR    1753.000  1200.000  1754.000  1550.000  1751.800  1600.000  1755.000  1680.000  1751.500  2050.000
GR    1754.000  2350.000  1753.000  3550.000  1756.000  3960.000     0.000     0.000     0.000     0.000
EJ       0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
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1


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   SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL       QLOSS    BANK ELEV
   Q          QLOB      QCH       QROB      ALOB       ACH       ARCB      VOL      TWA    LEFT/RIGHT
   TIME       VLOB      VCH       VROB      XNL        XNCH      XNR       WTN      ELMIN       SSTA
   SLOPE      XLOBL     XLCH      XLOBR     ITRIAL     IDC       ICONT     CORAR    TOPWID      ENDST
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```
 *PROF 1
 *SECNO 31.000
 3265 DIVIDED FLOW
     31.00      2.49   1753.99      0.00   1755.00   1754.02      0.03      0.00      0.00   1754.00
   2950.       791.      135.     2024.      600.      114.     1348.        0.        0.     1755.00
      0.00      1.32      1.18      1.50      0.080     0.120     0.080     0.000  1751.50    234.89
  0.008072        0.        0.        0.         0         0         8      0.00  2927.09   3684.85
1
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 **********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **********************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
 J1   ICHECK     INQ       NINV      IDIR       STRT      METRIC    HVINS     Q          WSEL      FQ
         0.        3.        0.        0.   0.028000       0.00      0.0        0.   1755.000     0.000
 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        2.000     0.000    -1.000     0.000     0.200     0.000     0.000     0.000     0.300     0.000
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    RANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROR      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IOC       ICONT     CORAR     TOPWID      ENDST

 *PROF 2
 *SECNO 31.000
 3265 DIVIDED FLOW
     31.00      2.66   1754.16      0.00   1755.00   1754.19      0.04      0.00      0.00   1754.00
   3990.      1097.      167.     2726.      768.      132.     1675.        0.        0.     1755.00
      0.00      1.43      1.26      1.63      0.080     0.120     0.080     0.000  1751.50    215.05
  0.008012        0.        0.        0.         0         0         8      0.00  3074.60   3708.09
1
  27-APR-88     15:47:13                                                                    PAGE     5


 **********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 **********************************************
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T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.008000	0.00	0.0	0.	1755.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

*SECNO 31.000

3265 DIVIDED FLOW

31.00	2.86	1754.36	0.00	1755.00	1754.41	0.05	0.00	0.00	1754.00
5500.	1553.	211.	3736.	991.	155.	2082.	0.	0.	1755.00
0.00	1.57	1.36	1.79	0.080	0.120	0.080	0.000	1751.50	190.82
0.007942	0.	0.	3.	0	0	7	0.00	3227.22	3736.47

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 OVERFLOW SECTION 31 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.008000	0.00	0.0	0.	1755.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

*SECNO 31.000

3265 DIVIDED FLOW

31.00	4.18	1755.68	0.00	1755.00	1755.79	0.12	0.00	0.00	1754.00
21540.	6949.	648.	13943.	2697.	321.	4877.	0.	0.	1755.00
0.00	2.58	2.02	2.85	0.080	0.120	0.080	0.000	1751.50	37.77
0.007591	0.	0.	0.	0	0	5	0.00	3812.93	3915.76

3
1

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 31,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 31 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
31.000	0.00	0.00	0.00	1751.50	2950.00	1753.99	0.00	1754.02	80.72	1.18	2062.38	328.34
31.000	0.00	0.00	0.00	1751.50	3990.00	1754.16	0.00	1754.19	80.12	1.26	2574.60	445.75
31.000	0.00	0.00	0.00	1751.50	5500.00	1754.36	0.00	1754.41	79.42	1.36	3228.78	617.18
31.000	0.00	0.00	0.00	1751.50	21540.00	1755.68	0.00	1755.79	79.91	2.02	7854.58	2409.66

1

OVERFLOW SECTION 31 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
31.000	2950.00	1753.99	0.00	0.00	-1.01	2927.09	0.00
31.000	3990.00	1754.16	0.17	0.00	-0.84	3074.60	0.00
31.000	5500.00	1754.36	0.21	0.00	-0.64	3227.22	0.00
31.000	21540.00	1755.68	1.31	0.00	0.68	3812.93	0.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

1

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************
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EOF..

```
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1             2                    .0050                                  1732
J2     1              -1                                                              15
NC   .08      .08      .08
QT     4    2950     3990     5500    21540
X1    32      12     3150     4000
SR  1740     2000     1738     2300     1737     2650     1736     3150     1736     4000
GR1736.5     4300  1736.5     6000     1737     6430     1738     6700     1738     7200
GR1738.5     7650     1739     7900
EJ
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1             3                    .0050                                  1738
J2      2              -1                                                              15
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
JI             4                    .0050                                  1738
J2      3              -1                                                              15
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1             5                    .0050                                  1738
J2    15               -1                                                              15



ER
EOF..
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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   15:49:42          *
 *************************************************
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U.S. ARMY CORPS OF ENGINEERS
THE HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET, SUITE D
DAVIS, CALIFORNIA 95616
(916) 440-2105 (FTS) 448-2105


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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X         X     X            X     X
X     X  X         X                  X     X
XXXXXXX  XXXX      X          XXXXX    XXXXX
X     X  X         X                  X
X     X  X         X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   31,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         2.         0.         0.  0.005000       0.00       0.0        0.  1738.000     0.000

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLOC      IBW        CHNIM      ITRACE
      1.000      0.000     -1.000      0.000      0.000      0.000      0.000      0.000      0.000     15.000


NC      0.080      0.080      0.080      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GT      4.000   2950.000   3999.000   5500.000  21540.000      0.000      0.000      0.000      0.000      0.000
X1     32.300     12.000   3150.000   4000.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   1740.000   2000.000   1738.000   2300.000   1737.000   2650.000   1736.000   3150.000   1736.000   4000.000
GR   1736.500   4300.000   1736.500   6000.000   1737.000   6430.000   1738.000   6700.000   1738.000   7200.000
GR   1739.500   7650.000   1739.000   7900.000      0.000      0.000      0.000      0.000      0.000      0.000
EJ      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         QLOSS    BANK ELEV
   0          GLOB       0CH        0ROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XAL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST
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```
 *PROF 1

 *SECNO 32.000
    32.00      1.10   1737.10      0.00   1738.00   1737.12      0.02      0.00      0.00   1736.00
  2950.       282.     1310.     1358.      303.      938.     1435.        0.        0.     1736.00
     0.00      0.93      1.40      0.95     0.080     0.080     0.080     0.000   1736.00   2613.90
 0.004961        0.        0.        0.         0         0         4      0.00   3843.95   6457.85

 FLOW DISTRIBUTION FOR SECNO=      32.00          CWSEL=    1737.10

 STA=    2614.     2650.     3150.     4000.     4300.     6000.     6430.     6458.
   PER Q=     0.0       9.5      44.4      10.2      32.5       3.4       0.2
    AREA=     1.9     301.6     937.7     255.9    1025.4     151.9       1.4
     VEL=     0.2       0.9       1.4       1.2       0.9       0.7       0.2

1
  27-APR-88    15:49:43                                                              PAGE     3


 ********************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -  01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ********************************************

 T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2       LAS VEGAS VALLEY OVERFLOW STUDY
 T3       OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT

 J1  ICHECK     INQ       NINV      IDIR       STRT      METRIC    HVINS      Q          WSEL       FQ
        0.        3.        0.        0.   0.005000        0.00      0.0        0.   1738.000     0.000

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH      FN        ALLDC     IBW       CHNIM      ITRACE
       2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     15.000

I
  27-APR-88    15:49:43                                                              PAGE     4

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

 *PROF 2

 *SECNO 32.000
    32.00      1.25   1737.25      0.00   1738.00   1737.28      0.03      0.00      0.00   1736.00
  3990.       411.     1621.     1959.      386.     1063.     1799.        0.        0.     1736.00
     0.00      1.06      1.52      1.19     0.090     0.080     0.080     0.000   1736.00   2562.41
 0.005024        0.        0.        0.         0         0         5      0.00   3935.15   6497.57

 FLOW DISTRIBUTION FOR SECNO=      32.00          CWSEL=    1737.25

 STA=    2562.     2650.     3150.     4000.     4300.     6000.     6430.     6498.
   PER Q=     0.1      13.2      40.6       9.9      34.7       4.5       0.1
    AREA=    11.2     375.1    1062.7     300.1    1275.4     215.1       8.5
     VEL=     0.3       1.1       1.5       1.3       1.1       0.3       0.3

1
  27-APR-88    15:49:43                                                              PAGE     5
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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       4.        0.        0.  0.005000      0.00      0.0       0.  1738.000     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      3.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000    15.000

1
 27-APR-88    15:49:43                                                                  PAGE     6

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IOC       ICONT     CORAR     TOPWID      ENDST

 •PROF 3

 +SECNO 32.000
    32.00      1.44   1737.44      0.33   1738.00   1737.47      0.03      0.00      0.00   1736.00
    5500.     606.     2046.     2848.      502.     1222.     2272.        0.        0.   1736.00
     0.00      1.21      1.67      1.25     0.080     0.080     0.080     0.000   1736.00   2496.83
 0.005009        0.        0.        0.         0         0         5      0.00   4051.33   6548.16

 FLOW DISTRIBUTION FOR SECNO=     32.00          CWSEL=   1737.44

 STA=     2497.     2650.     3150.     4000.     4300.     6000.     6430.     6548.
  PER Q=     0.3      10.7      37.2       9.5      36.5       5.5       0.2
   AREA=    33.5     468.8    1222.0     356.3    1594.0     295.7      25.8
    VEL=     0.5       1.3       1.7       1.5       1.3       1.0       0.5

1
 27-APR-88    15:49:43                                                                  PAGE     7


**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 32 OF FLAMINGO WASH - EXPRESSWAY BREAKOUT
J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       5.        0.        0.  0.005000      0.00      0.0       0.  1738.000     0.000
```

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	15.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	WLOB	QCH	QROB	ALOB	ACH	ARCB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

*SECNO 32.000

32.00	2.69	1738.69	0.00	1738.00	1738.77	0.07	0.00	0.00	1736.00
21540.	3362.	5807.	12671.	1548.	2287.	6162.	0.	0.	1736.00
0.00	1.98	2.54	2.06	0.080	0.080	0.080	0.000	1736.00	2196.36
0.004990	0.	0.	0.	0	0	5	0.00	5510.91	7707.28

FLOW DISTRIBUTION FOR SECNO= 32.00 CWSEL= 1738.69

STA=	2196.	2300.	2650.	3150.	4000.	4300.	6000.	6430.	6700.	7200.	7650.	7707.
PER Q=	0.1	2.9	11.3	27.0	8.1	38.3	7.9	2.2	1.6	0.7	0.0	
AREA=	35.3	416.9	1095.5	2287.3	732.3	3724.6	834.6	321.5	345.5	198.4	5.5	
VEL=	0.6	1.5	2.2	2.5	2.4	2.2	2.0	1.5	1.0	0.6	0.3	

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 32 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
32.000	0.00	0.00	0.00	1736.00	2950.00	1737.10	0.00	1737.12	49.61	1.40	2675.70	418.94
32.000	0.00	0.00	0.00	1736.00	3990.00	1737.25	0.00	1737.28	50.04	1.52	3247.84	564.05
32.000	0.00	0.00	0.00	1736.00	5500.00	1737.44	0.00	1737.47	50.08	1.67	3956.06	777.19
32.000	0.00	0.00	0.00	1736.00	21540.00	1738.69	0.00	1738.77	49.90	2.54	9597.68	3049.22

OVERFLOW SECTION 32 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH

32.000	2950.00	1737.10	0.00	0.00	-0.90	3843.95	0.00
32.000	3990.00	1737.25	0.15	0.00	-0.75	3935.15	0.00
32.000	5500.00	1737.44	0.19	0.00	-0.56	4051.33	0.00
32.000	21540.00	1738.69	1.25	0.00	0.69	5510.91	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES


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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**********    **********************************
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EOF..

```
TI       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 41 OF FW - SOUTH FLAMINGO BREAKOUT      6500
J1             3                  .0057                                1727
J2     -1              -1
NC    .06     .06      .06
QT      2      300     4370
X1     41        9     2830     4120
GR   1728     2030     1727     2440   1724.3     2830   1725.5     2980   1724.6     3240
GR1725.2     3370   1724.5     3920     1725     4120     1730     4880
EJ


ER
EOF..
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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   15:58:33          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X     X  XXXXXXX   XXXXX                XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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 ************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
 ************************************************

 T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
 T2      LAS VEGAS VALLEY OVERFLOW STUDY
 T3      OVERFLOW SECTION 41 OF FW - SOUTH FLAMINGO BREAKOUT     Q500

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        3.        0.        0.  0.005700      0.00      0.0       0.  1727.000     0.000
 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     -1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

 NC      0.060     0.060     0.063     0.000     0.000     0.000     0.000     0.000     0.000     0.000
 GT      2.300   300.000  4370.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
 X1     41.300     9.000  2830.000  4120.000     0.000     0.000     0.000     0.000     0.000     0.000
 GR   1728.200  2000.000  1727.000  2440.000  1724.300  2630.000  1725.500  2980.000  1724.600  3240.000
 GR   1725.200  3370.000  1724.500  3920.000  1725.000  4120.000  1730.000  4890.000     0.000     0.000
 EJ      0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```



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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 1
```

*SECND 41.000

41.00	1.89	1726.19	0.00	1727.00	1726.26	0.87	0.00	0.00	1724.30
4370.	465.	3762.	142.	258.	1681.	107.	0.	0.	1725.00
0.00	1.81	2.24	1.33	0.060	0.060	0.050	0.000	1724.30	2557.20
0.005740	0.	0.	0.	0	0	6	0.00	1743.46	4300.67

1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 41 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
41.000	0.00	0.00	0.00	1724.30	4370.00	1726.19	0.00	1726.26	57.40	2.24	2045.72	576.73

1

OVERFLOW SECTION 41 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
41.000	4370.00	1726.19	0.00	0.00	-0.81	1743.46	0.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

EOF..

```
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 42 OF FW - SOUTH FLAMINGO BREAKOUT        0500
J1             3                  .3042                              1715
J2      -1                -1
NC   .045     .045     .045
QT       2      300     4370
X1       42       10     2500     4000
GR   1716     2000     1715     2800   1713.4     3200     1712     3600     1716     3860
GR1715.0     4000     1716     4190   1714.5     4320     1715     4570   1716.3     4800
EJ


ER
EOF..
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12

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1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME    15:56:30         *
 *************************************************
```

```
**************************************
*  U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D        *
*  DAVIS, CALIFORNIA 95616           *
*  (916) 440-2105 (FTS) 448-2105     *
**************************************
```

```
X     X  XXXXXXX   XXXXX                 XXXXX
X     X  X        X     X              X     X
X     X  X        X                    X     X
XXXXXXX  XXXX     X          XXXXX     XXXXX
X     X  X        X                    X
X     X  X        X     X              X
X     X  XXXXXXX   XXXXX                XXXXXXX
```

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1
  27-APR-88     15:56:32                                                    PAGE     1
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 ************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
   ERROR CORR -   01,02,03,04,05
   MODIFICATION -  50,51,52,53,54,55
 ************************************************
```

```
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 42 OF FW - SOUTH FLAMINGO BREAKOUT      9500
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.004200	0.00	0.0	0.	1715.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.045	0.045	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GT	2.000	300.000	4370.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	42.000	10.000	2800.000	4000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1716.000	2000.000	1715.000	2800.000	1713.400	3200.000	1712.000	3600.000	1716.000	3860.000	
GR	1715.000	4000.000	1716.000	4190.000	1714.500	4320.000	1715.000	4570.000	1716.300	4800.000	
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

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1
  27-APR-88     15:56:32                                                    PAGE     2
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

*SECNO 42.000

3265 DIVIDED FLOW

42.00	2.98	1714.98	0.00	1715.00	1715.11	0.12	0.00	0.00	1715.00
4370.	0.	4313.	57.	0.	1516.	69.	0.	0.	1715.00
0.00	0.00	2.84	0.83	0.045	0.045	0.045	0.000	1712.00	2804.03
0.004201	0.	0.	0.	0	0	5	0.00	1273.80	4561.94

1

27-APR-88 15:56:32 PAGE 3

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 42 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
42.000	0.00	0.00	0.00	1712.00	4370.00	1714.98	0.00	1715.11	42.01	2.84	1585.13	674.26

1

27-APR-88 15:56:32 PAGE 4

OVERFLOW SECTION 42 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
42.000	4370.00	1714.98	0.00	0.00	-0.02	1273.80	0.00

1

27-APR-88 15:56:32 PAGE 5

SUMMARY OF ERRORS AND SPECIAL NOTES

1

27-APR-88 15:56:39 PAGE 1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

EOF..

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H    H   Y    Y   DDDDD    RRRRR     AAAA    U    U   L        IIIII     CCCC     SSSS
H    H    Y  Y    D    D   R    R   A    A   U    U   L          I      C    C   S
H    H     YY     D    D   R    R   A    A   U    U   L          I      C         SSSS
HHHHHH     Y      D    D   RRRRR    AAAAAA   U    U   L          I      C             S
H    H     Y      D    D   R   R    A    A   U    U   L          I      C    C   S    S
H    H     Y      DDDDD    R    R   A    A    UUUU    LLLLLL   IIIII     CCCC     SSSS
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ACOE LOS ANGELES HARRIS 500 PRINTER: 5

HYDRAULICS 22 FEB 8? 7:43:33

TERMINAL: 55

```
T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       OVERFLOW SECTION 43 OF FW - FLAMINGO SOUTH BREAKOUT        0500
J1             3                  .0057                                1695
J2      -1                -1
NC   .045      .045      .045
QT       2       300      4370
X1      43         9        70       240
GR  1700         0      1695        30      1695        70    1695.5       110      1697       240
GR  1696       650    1696.5      1190      1700      1320      1701      1770
EJ


ER
EOF..
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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1993                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   16:11:05          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
27-APR-88 16:11:06 PAGE 1

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -   01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 43 OF FW - FLAMINGO SOUTH BREAKOUT      G500

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       3.        0.        0.  0.005700      0.00      0.0       0.  1695.000      0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IRU       CHNIM     ITRACE
     -1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.045     0.045     0.045     0.000     0.000     0.000     0.000     0.000     0.000     0.000
QT      2.000   300.000  4370.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1     43.000     9.000    70.000   240.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1700.000     0.000  1695.000    30.000  1696.000    70.000  1695.500   110.000  1697.000   240.000
GR   1696.000   650.000  1696.500  1130.000  1700.000  1320.000  1701.000  1770.000     0.000     0.000
EJ      0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

1
27-APR-88 16:11:06 PAGE 2

```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
   Q         OLOB      OCH       OROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1
```

*SECNO 43.000										
43.00	2.56	1697.56	0.00	1695.00	1697.70	0.14	0.00	0.00	1696.00	
4370.	388.	763.	3219.	102.	243.	1152.	0.	0.	1697.00	
0.00	3.80	3.14	2.79	0.045	0.045	0.045	0.000	1695.00	14.64	
0.005630	0.	0.	0.	0	0	5	0.00	1207.80	1222.43	

1
27-APR-88 16:11:06 PAGE 3

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 43 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
43.000	0.00	0.00	0.00	1695.00	4370.00	1697.56	0.00	1697.70	56.30	3.14	1497.09	582.40

1
27-APR-88 16:11:06 PAGE 4

OVERFLOW SECTION 43 OF F

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
43.000	4370.00	1697.56	0.00	0.00	2.56	1207.80	0.00

1
27-APR-88 16:11:06 PAGE 5

SUMMARY OF ERRORS AND SPECIAL NOTES

1
27-APR-88 16:11:12 PAGE 1

****
HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

EOF..

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I*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   16:12:49          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X      X  XXXXXXX   XXXXX                XXXXX
X      X  X        X     X              X     X
X      X  X        X                    X     X
XXXXXXXX  XXXX     X          XXXXX     XXXXX
X      X  X        X                    X
X      X  X        X     X              X
X      X  XXXXXXX  XXXXX                XXXXXXX
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1
27-APR-88 16:12:50


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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
*************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 44 OF FW - FLAMINGO SOUTH BREAKOUT      0500

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ
        0.        3.        0.        0.  0.003300      0.00      0.0        0.  1683.000     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW        CHNIM     ITRACE
     -1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.045     0.045     0.060     0.000     0.000     0.000     0.000     0.000     0.000     0.000
QT      2.000   300.000  4370.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
X1     44.000     5.000  2330.000  3630.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   1684.000  2000.000  1683.000  2330.000  1682.000  3170.000  1683.000  3630.000  1684.000  4230.000
EJ      0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
```

1
27-APR-88 16:12:50


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1
```

*SECNO 44.000
3280 CROSS SECTION 44.00 EXTENDED 0.03 FEET

44.00	2.03	1684.03	0.00	1683.00	1684.08	0.05	0.00	0.00	1683.00
4370.	217.	3759.	394.	174.	1987.	317.	0.	0.	1683.00
0.00	1.24	1.89	1.24	0.045	0.060	0.045	0.000	1682.00	2000.00
0.003315	0.	0.	0.	0	0	6	0.00	2230.00	4230.00

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OVERFLOW SECTION 44 OF F
SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
44.000	0.00	0.00	0.00	1682.00	4370.00	1684.03	0.00	1684.08	33.15	1.89	2478.43	759.05

OVERFLOW SECTION 44 OF F
SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
44.000	4370.00	1684.03	0.00	0.00	1.03	2230.00	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES

HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55

EOF..

```
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      OVERFLOW SECTION 44 OF FW - FLAMINGO SOUTH BREAKOUT          0500
J1            3                  .0033                              1683
J2     -1                 -1
NC   .045      .045       .06
QT     2       300       4370
K1    44         5       2330      3630
GR  1684      2000       1683      2330      1682      3170      1683      3630      1684      4230
EJ
ER
EOF..
```

```
1*************************************************
 *  WATER SURFACE PROFILES                       *
 *  VERSION OF NOVEMBER 1976                     *
 *  UPDATED AUGUST 1983                          *
 *                                               *
 *  RUN DATE  27-APR-88 TIME   11:57:35          *
 *************************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X         X     X           X     X
X     X  X         X                 X     X
XXXXXXX  XXXX      X           XXXXX  XXXXX
X     X  X         X                 X
X     X  X         X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

1
27-APR-88 11:57:36

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*************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1992
 ERROR CORR -  01,02,03,04,05
 MODIFICATION -  50,51,52,53,54,55
*************************************************

SPLIT FLOW BEING PERFORMED

SF

TN        WYOMING UNDERPASS BREAKOUT
NS      4    51.0      51.1       -1     .025     .008
NS      0    1790         1     1778       90     1778       91     1790

TN        SAHARA UNDERPASS BREAKOUT
NS      4    52.0      52.1       -1     .025     .008
NS      0    1796         1     1784      140     1784      141     1796
```

1
27-APR-88 11:57:36

```
C
T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0.       2.        0.        0.  0.008000      0.00      0.0       0.  1792.000     0.000

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
```

	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.160	0.035	0.025	0.100	0.300	0.000	0.000	0.000	0.000	0.000
QT	4.100	3150.000	4240.000	5870.000	17200.000	0.000	0.000	0.000	0.000	0.000

Analysis of breakout flowing north along I-515 (Expressway).
Flows were determined by a split flow analysis on the main
channel run (Reach 5). Split flows analyses are used to
calculate flows through the Wyoming and Sahara Ave underpasses.

X1	51.000	5.000	1300.000	1400.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1800.000	0.000	1780.000	900.000	1778.000	1300.000	1778.000	1400.000	1799.000	1450.000
X1	51.100	0.000	0.000	0.000	90.000	90.000	90.000	0.000	0.000	0.000
X1	52.000	7.000	860.000	950.000	1950.000	1950.000	1950.000	0.000	0.000	0.000
GR	1796.000	0.000	1792.000	110.000	1788.000	420.000	1784.500	760.000	1784.000	860.000
GR	1784.000	950.000	1800.000	1000.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	52.100	8.000	710.000	820.000	140.000	140.000	140.000	0.000	0.000	0.000
GR	1796.000	0.000	1792.000	90.000	1788.000	390.000	1787.000	450.000	1787.000	600.000
GR	1784.000	710.000	1784.000	820.000	1800.000	870.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	QLOSS	RANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	WLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= 0.100 CEHV= 0.300

*SECNO 51.000

Analysis of breakout flowing north along I-515 (Expressway).
Flows were determined by a split flow analysis on the main
channel run (Reach 5). Split flows analyses are used to
calculate flows through the Wyoming and Sahara Ave underpasses.

51.00	0.55	1778.55	0.00	1792.00	1778.73	0.18	0.00	0.00	1778.00
203.	10.	192.	1.	30.	55.	3.	0.	0.	1778.00
0.00	0.35	3.53	1.51	0.160	0.025	0.035	0.000	1778.00	1190.59
0.007924	0.	0.	0.	0	0	10	0.00	210.37	1401.36

*SECNO 51.100

51.10	1.03	1779.03	0.00	0.00	1779.33	0.30	0.56	0.03	1778.00
522.	48.	472.	3.	106.	103.	1.	0.	1.	1778.00
0.01	0.45	4.59	1.37	0.160	0.025	0.035	0.000	1778.00	1094.46
0.005752	90.	90.	90.	4	0	0	0.00	306.11	1402.57

*SECNO 52.000

52.00	1.45	1785.45	0.00	0.00	1785.61	0.16	6.27	0.01	1784.00
522.	68.	449.	5.	164.	130.	3.	12.	14.	1784.00
0.19	0.42	3.44	1.50	0.160	0.025	0.035	0.000	1784.00	667.84
0.002049	1950.	1950.	1950.	4	0	0	0.00	286.69	954.53

*SECNO 52.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

52.10	2.83	1786.83	1786.83	0.00	1788.16	1.32	2.73	0.35	1784.00
3150.	138.	2961.	52.	147.	312.	13.	13.	15.	1784.00

0.19	0.93	9.50	4.14	0.160	0.025	0.035	0.000	1784.00	606.11	
0.006368	140.	140.	140.	20	14	0	0.00	222.75	828.85	

TN WYOMING UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
70.1	4.53	1.02	0.79	91.0	89.1

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
318.83	317.58	0.39	318.83	317.58	0.39	5	1778.545	1779.029	51.000	51.100

TN SAHARA UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
298.0	8.82	2.82	2.14	141.0	139.4

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
2627.56	2628.49	0.02	2946.69	2946.07	0.02	5	1785.448	1786.833	52.000	52.100


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**************************************************
  HEC2 RELEASE DATED NOV 76 (EDATE) MARCH 1982
  ERROR CORR -  01,02,03,04,05
  MODIFICATION -  50,51,52,53,54,55
**************************************************

T1      JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2      LAS VEGAS VALLEY OVERFLOW STUDY
T3      I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FB
            2.        3.        3.        0.  0.008000      0.00      0.0       0.  1792.000     0.000
J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        2.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XAL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COPAR     TOPWID      ENDST

*PROF 2

CCHV=   0.100  CEHV=   0.300
*SECNO 51.000
          Analysis of breakout flowing north along I-515 (Expressway).
          Flows were determined by a split flow analysis on the main
```

channel run (Reach 5). Split flows analyses are used to
calculate flows through the Wyoming and Sahara Ave underpasses.

51.00	0.62	1778.62	1778.57	1792.00	1778.84	0.22	0.00	0.00	1778.00
255.	15.	239.	1.	38.	62.	0.	0.	0.	1778.00
0.00	0.38	3.86	1.55	0.160	0.025	0.035	0.000	1778.00	1175.95
0.007964	0.	0.	0.	0	26	0	0.00	225.60	1401.55

*SECNO 51.100

51.10	1.12	1779.12	1779.11	0.00	1779.47	0.35	0.60	0.04	1778.00
632.	63.	566.	3.	126.	112.	2.	0.	1.	1779.00
0.01	0.50	5.05	2.16	0.160	0.025	0.035	0.000	1778.00	1075.54
0.005177	90.	90.	90.	5	14	0	0.00	327.27	1402.91

*SECNO 52.000

52.00	1.63	1785.63	0.00	0.00	1785.81	0.18	6.32	0.02	1784.00
632.	88.	537.	7.	199.	146.	4.	14.	15.	1784.00
0.17	0.44	3.67	1.60	0.160	0.025	0.035	0.000	1764.00	650.49
0.001991	1950.	1950.	1950.	3	0	0	0.00	304.60	955.09

*SECNO 52.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

52.10	3.55	1787.55	1787.55	0.00	1788.95	1.41	0.52	0.37	1784.00
4240.	281.	3974.	85.	316.	390.	21.	15.	16.	1784.00
0.19	0.89	9.93	4.33	0.160	0.025	0.035	0.000	1784.00	417.29
0.005167	140.	140.	140.	20	17	0	0.00	413.79	831.38

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TN WYOMING UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
77.5	4.84	1.11	0.87	91.0	89.1

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
377.51	375.37	0.57	377.51	375.37	0.57	7	1778.620	1779.120	51.000	51.100

TN SAHARA UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
360.5	10.01	3.53	2.59	141.0	139.4

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3607.92	3603.40	0.02	3985.33	3983.77	0.04	7	1785.633	1787.545	52.000	52.100

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

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T1       JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2       LAS VEGAS VALLEY OVERFLOW STUDY
T3       I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87

J1   ICHECK      INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
        0.         4.         0.         0.   0.008000       0.00       0.0        0.   1792.000      0.000

J2   NPROF      IPLOT      PREVS      XSECV      XSECH      FN         ALLOC      IBW        CHNIM      ITRACE
       3.000      0.000     -1.000      0.300      0.000      0.000      0.000      0.000      0.000      0.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST

*PROF 3

CCHV=   0.100 CEHV=   0.300
*SECNO 51.000
          Analysis of breakout flowing north along I-515 (Expressway).
          Flows were determined by a split flow analysis on the main
          channel run (Reach 5).  Split flows analyses are used to
          calculate flows through the Wyoming and Sahara Ave underpasses.

     51.00       0.78  1778.78  1778.73  1792.00  1779.07       0.29       0.00       0.00  1778.00
      377.        27.      349.        1.       60.       78.        1.         0.         0.   1778.00
     0.00       0.44       4.49       1.92       0.160      0.025      0.035      0.000  1778.00  1144.58
 0.007993         0.         0.         0.          0         27          0       0.00     257.36  1401.94

*SECNO 51.100
     51.10       1.30  1779.30  1779.25       0.00  1779.79       0.49       0.66       0.06  1778.00
      883.        100.      778.        5.      169.      130.        2.         0.         1.   1778.00
     0.00       0.59       5.99       2.56       0.160      0.025      0.035      0.000  1778.00  1039.89
 0.007135         90.        90.        90.          5         14          0       0.00     363.36  1403.25

*SECNO 52.000
     52.00       2.00  1786.00       0.00       0.00  1786.22       0.22       6.40       0.03  1784.00
      883.        138.      734.       11.      283.      180.        6.        18.        16.   1784.00
     0.16       0.49       4.08       1.78       0.160      0.025      0.035      0.000  1784.00   614.61
 0.001877        1950.      1950.      1950.          3          0          0       0.00     341.63   956.24

*SECNO 52.100

3301 HV CHANGED MORE THAN HVINS

3585 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     52.10       4.29  1788.29  1788.29       0.00  1789.94       1.64       0.58       0.43  1784.00
     5970.        569.     5193.      137.      552.      472.       29.        20.        18.   1784.00
     0.16       1.03      10.94       4.75       0.160      0.025      0.035      0.000  1784.00   368.13
 0.004855         140.       140.       140.         20         17          0       0.00     465.28   833.41
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TN       WYOMING UNDERPASS BREAKOUT
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TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
92.6	5.45	1.29	1.04	91.0	89.2

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
505.80	504.35	0.29	505.80	504.35	0.29	7	1778.777	1779.301	51.000	51.100

T7 SAHARA UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
438.2	11.39	4.28	3.14	141.0	139.5

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
4986.99	4992.43	0.11	5492.78	5496.78	0.07	7	1786.000	1788.292	52.000	52.100

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

T1 JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2 LAS VEGAS VALLEY OVERFLOW STUDY
T3 I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH DMH 7/20/87

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0.008000	0.00	0.0	0.	1792.000	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= 0.100 CEHV= 0.300
*SECNO 51.000
3725 CRITICAL DEPTH ASSUMED
Analysis at breakout flowing north along I-515 (Expressway).
Flows were determined by a split flow analysis on the main
channel run (Reach 5). Split flows analyses are used to
calculate flows through the Wyoming and Sahara Ave underpasses.

51.00	1.69	1779.69	1779.59	1792.00	1780.39	0.69	0.00	0.00	1778.00
1440.	284.	1225.	11.	286.	169.	4.	0.	0.	1778.00
0.00	0.71	7.24	3.13	0.166	0.025	0.035	0.000	1778.00	961.50
0.007351	0.	0.	0.	0	17	0	0.00	442.73	1404.23

*SECNO 51.100

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

51.13	2.67	1780.67	1780.67	0.00	1781.67	1.00	0.60	0.09	1778.00
3176.	701.	2440.	35.	678.	257.	9.	1.	1.	1778.00
0.00	1.03	9.14	3.91	0.160	0.025	0.035	0.000	1778.00	869.85
0.006381	90.	90.	90.	20	14	0	0.00	536.82	1406.67

*SECNO 52.000

52.00	3.89	1787.89	0.00	0.00	1788.45	0.55	6.73	0.05	1784.00
3176.	714.	2391.	70.	923.	350.	24.	52.	25.	1784.00
0.10	0.77	6.83	2.97	0.160	0.025	0.035	0.000	1784.00	430.60
0.002157	1950.	1950.	1950.	3	0	0	0.00	531.56	962.16

*SECNO 52.100

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

52.10	7.80	1791.80	1791.80	0.00	1794.53	2.73	0.52	0.65	1784.00
17200.	3567.	13006.	628.	2212.	858.	95.	59.	27.	1784.00
0.11	1.61	15.16	6.50	0.160	0.025	0.035	0.000	1784.00	105.12
0.004206	140.	140.	140.	20	17	0	0.00	739.25	844.37

TN WYOMING UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
194.5	8.93	2.66	2.19	91.0	89.4

ASO	QCOMP	ERRAC	TASO	TCO	TABER	NITER	DSWS	USWS	DSSNO	USSNO
1735.83	1736.32	0.03	1735.33	1736.32	0.03	7	1779.693	1780.670	51.000	51.100

TN SAHARA UNDERPASS BREAKOUT

TOTAL AREA	AVG VELOCITY	MAX DEPTH	AVG DEPTH	TOP WIDTH	TOP WIDTH
815.9	17.20	7.77	5.83	141.0	140.9

ASO	QCOMP	ERRAC	TASO	TCO	TABER	NITER	DSWS	USWS	DSSNO	USSNO
14023.99	14029.67	0.04	15759.82	15765.99	0.04	7	1787.895	1791.798	52.000	52.100

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HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
ERROR CORR - 01,02,03,04,05
MODIFICATION - 50,51,52,53,54,55
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

I-515 EXPRESSWAY BREAKOU

SUMMARY PRINTOUT TABLE 100

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	51.000	0.00	0.00	0.00	1778.00	203.31	1778.55	0.00	1778.73	79.24	3.53	84.58	22.84
	51.000	0.00	0.00	0.00	1778.00	254.67	1778.62	1778.57	1778.84	79.64	3.86	100.97	28.54
	51.000	0.00	0.00	0.00	1778.00	377.22	1778.78	1778.73	1779.07	79.93	4.49	138.85	42.19
*	51.000	0.00	0.00	0.00	1778.00	1440.18	1779.69	1779.69	1780.39	73.51	7.24	459.27	167.97
	51.100	90.00	0.00	0.00	1778.00	522.14	1779.03	0.00	1779.33	57.52	4.59	209.70	68.84
	51.100	90.00	0.00	0.00	1778.00	632.18	1779.12	1779.01	1779.47	61.77	5.05	239.76	80.44
	51.100	90.00	0.00	0.00	1778.00	883.01	1779.30	1779.25	1779.79	71.35	5.98	301.31	104.54
*	51.100	90.00	0.00	0.00	1778.00	3176.01	1780.67	1780.67	1781.67	63.81	9.14	953.97	397.58
	52.000	1950.00	0.00	0.00	1784.00	522.14	1785.45	0.00	1785.61	20.49	3.44	257.26	115.35
	52.000	1950.00	0.00	0.00	1784.00	632.18	1785.63	0.00	1785.81	19.91	3.67	350.05	141.67
	52.000	1950.00	0.00	0.00	1784.00	883.01	1786.00	0.00	1786.22	18.77	4.08	469.40	203.79
	52.000	1950.00	0.00	0.00	1784.00	3176.01	1787.89	0.00	1788.45	21.57	6.83	1256.39	683.36
*	52.100	140.00	0.00	0.00	1784.00	3150.00	1786.83	1786.83	1788.16	63.68	9.50	471.42	394.73
*	52.100	140.00	0.00	0.00	1784.00	4240.00	1787.55	1787.55	1788.95	51.67	9.93	725.27	589.85
*	52.100	140.00	0.00	0.00	1784.00	5870.00	1788.29	1788.29	1789.94	48.55	10.94	1052.36	842.48
*	52.100	140.00	0.00	0.00	1784.00	17200.00	1791.80	1791.80	1794.53	42.06	15.16	3164.41	2652.05

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I-515 EXPRESSWAY BREAKOU

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	51.000	203.31	1778.55	0.00	0.00	-13.45	210.37	0.00
	51.000	254.67	1778.62	0.08	0.00	-13.38	225.60	0.00
	51.000	377.22	1778.78	0.16	0.00	-13.22	257.36	0.00
*	51.000	1440.18	1779.69	0.92	0.00	-12.31	442.73	0.00
	51.100	522.14	1779.03	0.00	0.48	0.00	309.11	90.00
	51.100	632.18	1779.12	0.09	0.50	0.00	327.27	90.00
	51.100	883.01	1779.30	0.18	0.52	0.00	363.36	90.00
*	51.100	3176.01	1780.67	1.37	0.98	0.00	536.82	90.00
	52.000	522.14	1785.45	0.00	6.42	0.00	285.69	1950.00
	52.000	632.18	1785.63	0.18	6.51	0.00	304.60	1950.00
	52.000	883.01	1786.00	0.37	6.70	0.00	341.63	1950.00
	52.000	3176.01	1787.89	1.89	7.22	0.00	531.56	1950.00
*	52.100	3150.00	1786.83	0.00	1.39	0.00	222.75	140.00
*	52.100	4240.00	1787.55	0.71	1.91	0.00	413.79	140.00
*	52.100	5870.00	1788.29	0.75	2.28	0.00	465.28	140.00
*	52.100	17200.00	1791.80	3.51	3.90	0.00	739.25	140.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 51.000 PROFILE= 4 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 51.100 PROFILE= 4 CRITICAL DEPTH ASSUMED

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CAUTION  SECNO=   51.100  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   51.100  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=   52.100  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   52.100  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   52.100  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   52.100  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   52.100  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   52.100  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   52.100  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   52.100  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   52.100  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION  SECNO=   52.100  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   52.100  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=   52.100  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL

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  27-APR-88     11:58:36                                                  PAGE     1


  **************************************************
    HEC2 RELEASE DATED NOV 76 UPDATED MARCH 1982
    ERROR CORR -  01,02,03,04,05
    MODIFICATION -  50,51,52,53,54,55
  **************************************************



EOF..
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SE
TN        WYOMING UNDERPASS BREAKOUT
NS      4     51.0      51.1        -1      .025      .008
NG      0     1790         1      1778        90      1778        91      1790
TN        SAHARA UNDERPASS BREAKOUT
NS      4     52.0      52.1        -1      .025      .008
NG      0     1796         1      1784       140      1784       141      1796
EE
CC      5
CC   51.0  Analysis of breakout flowing north along I-515 (Expressway).
CC   51.0  Flows were determined by a split flow analysis on the main
CC   51.0  channel run (Reach 5).  Split flows analyses are used to
CC   51.0  calculate flows through the Wyoming and Sahara Ave underpasses.
CC   51.0
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87
J1              2                .0080                                1792
J2      1              -1
NC    .15    .035      .025       0.1       0.3
QT       4    3150      4240      5970     17200
X1    51.0       5      1300      1400
GR    1800       0      1780       900      1778      1300      1778      1400      1798      1450
X1    51.1                                    90        90        90
X1    52.3       7       960       950      1950      1950      1950
GR    1796       0      1792       110      1788       420    1784.5       760      1784       860
GR    1784     950      1800      1000
X1    52.1       8       710       920       140       140       140
GR    1796       0      1792        50      1788       390      1787       450      1787       600
GR    1784     710      1784       920      1800       870
EJ
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87
J1              3                .0080                                1792
J2      2              -1
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87
J1              4                .0080                                1792
J2      3              -1
T1        JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
T2        LAS VEGAS VALLEY OVERFLOW STUDY
T3        I-515 EXPRESSWAY BREAKOUT OF FLAMINGO WASH  DMH 7/20/87
J1              5                .0080                                1792
J2     15              -1


ER
EOF..
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Upper Flamingo Wash Detention Basin

Letter of Map Revision

Volume 2
Appendices

Prepared By:

Black & Veatch
1900 East Flamingo Road, Suite 295
Las Vegas, NV 89119

Prepared For:

Clark County Regional Flood Control District
301 East Clark Avenue, Suite 301
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Geotechnical Investigation
Proposed Flamingo Wash
Detention Basin
Clark County, Nevada

KLEINFELDER

KLEINFELDER

Geotechnical Investigation
Proposed Flamingo Wash
Detention Basin
Clark County, Nevada

For: Black & Veatch, Inc.

Kleinfelder Project No. 128106
February 14, 1989

KLEINFELDER 6000 South Eastern, Bldg. 5-D, Las Vegas, NV 89119 (702) 736-2936

KLEINFELDER

February 14, 1989

Black & Veatch, Inc.
1771 East Flamingo Road
Las Vegas, Nevada 89119

Attention: Mr. Dana Reel, P.E.

Subject: Geotechnical Investigation
Proposed Flamingo Wash Detention Basin
Clark County, Nevada
Kleinfelder Project No. 128106

Dear Mr. Reel:

Enclosed please find our geotechnical investigation for the proposed Flamingo Wash Detention Basin in Clark County, Nevada.

The soil conditions revealed in our investigation appeared to be relatively consistent between the locations explored. Generally, very dense sands and gravels with numerous layers of calcareous cemented soils were encountered.

The enclosed report details our field and laboratory investigations, and presents our opinions and recommendations regarding the proposed project.

We appreciate the opportunity to be of service on this phase of the project, and look forward to being of service as the project progresses. If you have any comments or questions, please contact this office at your convenience.

Sincerely,

KLEINFELDER

William C Siegel

William C. Siegel, P.E.
Senior Engineer

Reviewed and Approved by,

Larry M. Peterson, P.E.
Engineering Manager

REGISTERED PROFESSIONAL ENGINEER'S STATE OF NEVADA
WILLIAM C SIEGEL
CIVIL
No. 7967
4/24/09

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APPENDIX A

Laboratory Test Results Raw Data

INTRODUCTION

General

This report presents the results of a geotechnical investigation performed at the site of the Flamingo Wash Detention Basin in Clark County, Nevada. The purposes of the investigation were to:

- assess the nature and engineering properties of the subsurface soils,
- provide analysis and recommendations to aid in the design of the proposed project, and
- provide a discussion regarding various construction related items including the presence of cemented soils.

The investigation included subsurface exploration, representative soil sampling, field and laboratory testing, engineering analysis, and preparation of this report.

A site plan/topographic map provided by the client was utilized as a reference for this investigation.

Project Description

The proposed Flamingo Wash Detention Basin is to be located generally at the southeast corner of Hacienda Road and Durango Drive in Clark County, Nevada. The basin will be utilized to detain flows in the upper Flamingo Wash due to design storm events and control discharge into the Flamingo Wash downstream of the basin.

The embankment for the basin will have a maximum height of approximately 36 to 38 feet and will be approximately 4800

feet in length. The embankment will have an on-channel, concrete labyrinth spillway connected to a 3100 foot discharge channel which will convey flows from the basin into the Flamingo Wash. The labyrinth spillway will be 20 to 25 feet in height.

We understand that the embankment will be constructed of alluvial sands and gravels (on-site soils) and will utilize an internal drainage system that will safely control and convey seepage. The client has indicated that with the exception of surficial relatively fine grained soils and oversized cemented pieces, the native soils will be used as embankment fill. Filter materials will be obtained by screening native soils to provide a uniformly graded material three inch to No. 4 sieve size. The embankment, spillway, and other features of this project will be designed by the client, utilizing design recommendations from Kleinfelder, Inc. when applicable.

Report Format

The initial sections of this report describe the proposed development and the field and laboratory phases of the study. These sections are followed by a discussion of the general site and soil conditions, as well as comments relative to geologic conditions. The subsequent sections pre-

sent our opinions and recommendations with regard to the geotechnical phases of the project. A vicinity map, summaries of all field explorations, and laboratory test results are presented in appendices following the text of the report.

FIELD INVESTIGATION

Drilling and Trenching. The subsurface soil conditions at the project site were explored by excavating a total of 31 borings and 29 trenches. The approximate breakdown of the explorations is as follows:

Location	Number of Borings	Number of Trenches
Embankment	16	17
Borrow Area/basin	8	12
Drainage channel	7	--

Five of the borings and 11 of the trenches were excavated for a preliminary investigation conducted by our firm at the subject site. The results of those explorations, and other field and laboratory tests conducted for the preliminary investigation, have been included in this final report.

The borings and trenches were numbered consecutively. Where borings and trenches were excavated near known stationing, the approximate stationing is also noted on the boring log.

Logs of the subsurface conditions, as encountered in the explorations, were recorded at the time of drilling and trenching, and are presented on Plates 2 through 32 (boring logs) and Plates 33 through 68 (trench logs). A key to soil symbols and terms is presented on Plate 69.

Drilling was accomplished with truck-mounted drill rigs equipped for soil sampling, utilizing rotary-air and rotary-wash drilling. Soil samples were obtained using a 2.6-inch diameter thick-walled (JHKA) sampler driven by a 350-pound hammer free-falling through a distance of 30 inches. Sampler driving resistance, expressed as "blows per foot of penetration", is presented on the boring logs at the respective sampling depths. The samples were classified by a field engineer/field geologist and representative portions of each sample were packaged and transported to our laboratory for testing.

It was attempted to obtain cores of cemented material utilizing an NX-core barrel. However, coring with the barrel utilized was only possible below five feet in depth. Cemented deposits at the site were generally found near the ground surface, and could not be cored. It was attempted to obtain a core of partially cemented soils encountered below 5 feet but competent cores could not be recovered.

Trenching was accomplished with a Case 580D backhoe. All soil samples from trenches were obtained with hand sampling equipment, were classified by a field engineer/field geologist, and were packaged and transported to our laboratory for testing.

The trenches were backfilled with the excavated soils to the extent possible with the equipment on hand. However, the backfill was not compacted to requirements of "structural fill". If any improvements are to be located in the vicinity of any of the trenches, the backfill should be removed and replaced with "structural fill" as defined in this report. Failure to properly compact backfill could result in excessive settlement of improvements located over trenches.

Boring elevations indicated on the individual boring logs in the upper right-hand corner were provided by the client based upon field locations provided by this office.

Sand Cone Density Tests. Ten Sand Cone Density tests (ASTM D-1556) were performed in the trenches excavated. The sand cone tests were performed at various depths to evaluate the in-place dry density and the field moisture content of the subsurface soils. The results of the tests are presented on the trench logs (Plates 44-61).

Seismic Refraction Tests. Eight seismic refraction tests were conducted to evaluate the shear wave velocity of the near surface cemented soils. The tests were conducted utilizing a seismic vibration monitor at geophone intervals of up to 100 feet. The approximate locations of the seismic lines are shown on Plate 1, while the results of the tests are presented in the tables of test results following the text of this report.

In-situ Infiltration Tests. Six in-situ (field) infiltration tests were conducted to aid in the evaluation of the permeability of the subsurface soils. The tests were conducted by isolating a screened section of PVC pipe packed in gravel and infiltrating with water utilizing either constant head or falling head techniques. The location and depth of the screened intervals was determined by the client.

LABORATORY INVESTIGATION

Representative samples were tested in the laboratory to determine the pertinent physical and engineering properties of the subsurface soils. The laboratory testing program was directed primarily toward classification of the subsurface soils, evaluation of strength and subsurface soil parameters for embankment design, and assessment of permeability of embankment and foundation soils. The laboratory testing program is described in the following sections.

Grain Size Analysis. Seventeen sieve analyses were conducted to assess the grain size distribution of the subsurface soils and to verify our field classification. The results of the tests performed are presented graphically on Plates 62-67.

Direct Shear Tests. Nine direct shear tests were conducted on representative samples to assess shear strength characteristics of the subsurface soils. The tests were conducted on portions of the samples passing the No. 4 sieve remolded into a direct shear apparatus with a stationary bottom half and an upper half capable of lateral movement. Utilizing normal loads ranging from 1000 to 5000 psf, the sample was sheared and applicable data was recorded. Assessment of the angle of internal friction and measurement of cohesion was then conducted based on the data obtained from the tests. Because of the granular nature of the samples, the measured cohesion values likely represent friction of fine sand grains in the direct shear apparatus between the stationary and moveable portions of the sample rather than cohesion of fine grained soil particles.

Laboratory Permeability Tests. Seven laboratory permeability tests were conducted on remolded samples of soil collected during our field investigation. The tests were utilized to aid in the assessment of the permeability of the

subsurface soils to be utilized in construction of the embankment. Three tests were conducted in 4-inch diameter molds utilizing portions of the samples passing the 3/8-inch sieve recompacted to 115 pcf. Four tests were conducted in 12-inch diameter molds utilizing whole bulk samples recompacted as near as possible to field density (generally 90 to 100 percent of maximum dry density).

Maximum Density/Optimum Moisture Content Determination. Three maximum density/optimum moisture content determinations were conducted to evaluate the compaction characteristics of the subsurface soils and for use in evaluating the relative field density of the soils at the sand cone test locations.

Specific Gravity Tests. One specific gravity test was conducted on a representative sample to aid in the assessment of the subsurface soils and for use in embankment design.

The results of all laboratory tests are presented in the tables of test results following the text of this report, and on Plates 62-67 (grain size analysis). Selected raw data and/or the equations utilized in determining the values for test results presented in this report are presented in Appendix A.

GENERALIZED SOIL CONDITIONS

Site Conditions

At the time of our field investigation, the site was undeveloped desert. The topography was dominated by the presence of the Flamingo Wash, with the overall site sloping to the northeast. The ground surface was slightly vegetated, with somewhat heavier vegetation present near the wash. Several dirt roads crossed the site, and areas of scattered trash and debris were present, primarily near the roads.

Surficial sand deposits were encountered over a majority of the site, with some areas of gravels and cobbles exposed in the wash bottoms.

Generalized Subsurface Conditions

Based upon the 31 borings advanced and 29 trenches excavated for this investigation, the subsurface soils on the site are predominantly combinations of sand and gravel with traces of silt and some cobbles. The surficial soils generally contain higher percentages of silt and, although loose at the ground surface, were generally medium dense to dense below one or two feet. Deeper deposits contained less silt and were generally very dense.

Calcareous cemented materials were encountered in many of our explorations. These soils were usually calcareous

cemented combinations of sand and gravel and are described on our boring logs as "cemented sand and gravel". However, in some areas the calcareous cemented material was composed of fine grained soils and are described on our boring logs as "caliche". The cemented material was often present near the ground surface, and was generally moderately hard to hard in consistency. The results of the seismic refraction tests indicate that the near surface cemented soils exhibit measured velocities varying from 3000 to 4600 feet per second. Based upon available published literature, these velocities would correspond to relatively soft limestone or sandstone. Ground water was not encountered to the depths explored.

More detailed descriptions of the subsurface soil conditions are presented on the boring and trench logs following the text of this report. The contractor should be aware, however, that the boring and trench logs represent a general description of the conditions encountered at the boring or trench location. Cemented deposits are quite variable and additional and harder cemented deposits may be encountered beyond the locations explored.

GEOLOGIC CONDITIONS

Geologic Setting

The site of the proposed development is located within the southwest portion of the Las Vegas Valley. The Las Vegas Valley is filled with Quarternary and Tertiary aged unconsolidated sediments derived from the surrounding mountains.

The valley floor consists of alluvial and playa deposits surrounded by more steeply sloping alluvial aprons derived from erosion of the mountains surrounding the valley. The major source of the alluvial material is the Spring Mountain range located to the west of the valley. Generally, the grading of the sediments becomes increasingly finer with distance from the source area and with decreasing elevation. The alluvial and playa sediments can be several thousand feet thick in areas.

At the project site, the soils within the depths explored are alluvial deposits derived from the Spring Mountain Range west of the project site. The material is predominately of limestone origin, although some sandstone material is also present. Groundwater was not encountered during our field investigation and is anticipated to be greater than 75 feet in depth. Cemented deposits are the results of in-place, secondary cementation by calcium carbonate, and to a lesser

extent, magnesium carbonate. The cementation is derived primarly from the limestone mountains west of the project site. Outcroppings of bedrock are present immediately northwest of the subject site. We would anticipate that the total depth of alluvium at the site is less than 500 feet.

Seismicity and Tectonic Faulting

Numerous seismic events of Richter magnitude 3.0 or greater have been recorded in the Las Vegas area. Most were a probable result of underground blasting (some as high as 5.8 Richter magnitude) at the Nevada Test Site which remains the major source of seismic activity in the Las Vegas area. Tectonic shocks having epicenters within the Southern Nevada areas have been minimal.

The Las Vegas Valley is located in Seismic Zone 2 as categorized in the Uniform Building Code. Zone 2 represents a low to moderately active seismic area. No geologically recent (within the last 10,000 years) bedrock or tectonic faults are known to transect the alluvium deposits at the site of the proposed development. The nearest fault with evidence of possible geologically recent displacement is located at the base of Frenchman's Mountain. This fault is approximately 15 miles east of the project. The Las Vegas shear zone is also located approximately 15 miles north of

the site. Although generally considered inactive, a recent small (Richter magnitude less than 3.0) tectonic shock with an epicenter in the vicinity of the shear zone may indicate that the zone is active. A map of the geologic features relevant to the project is presented on Plate 1A.

Based upon the location of the site relative to faults exhibiting possible geologically recent movement, and our knowledge of the Las Vegas Valley area, we recommend that for design purposes, a maximum horizontal acceleration of 0.095g be utilized. An analysis to evaluate the vertical acceleration would require an extensive computer modeling beyond the scope of this study. However, in absence of such an analysis, the current standard is to assume the vertical acceleration will be approximately two-thirds of the maximum horizontal acceleration. Therefore, we recommend that a vertical acceleration of .06g be used in design.

Non-Tectonic Features

The nearest mapped compaction faults are located approximately five miles east of the project site (Bell, 1981). Compaction faults, which occur within unconsolidated alluvial deposits, are considered the result of differential consolidation of deep alluvial and lacustrine sediments having dissimilar grain size and consolidation charac-

teristics. The faults are not bedrock faults, although the displacement may have been at least partly induced by an earthquake. The age of one of these escarpments has been dated at about 14,000 years old. Differential stress including the presence of "fissures", has in some cases been localized near these compaction faults. This appears to be the result of regional and local subsidence due to the withdrawal of ground water from principal aquifers.

No indications of any significant differential subsidence or ground displacement which might adversely affect the project site were observed. Although there has been widely documented subsidence in the Las Vegas Valley due to groundwater withdrawal, differential subsidence at the site of the proposed embankment, if present, is anticipated to be relatively minor under current levels of ground water withdrawal and recharge (i.e., less than one-tenth inch per 1000 feet). Any changes, however, in ground water withdrawal rates may result in additional subsidence at the site and may possibly require consideration by the design engineer.

ENGINEERING ANALYSIS AND RECOMMENDATIONS

General

As indicated in earlier sections, the soils of the project site were primarily sands and gravels with lesser amounts of

silt and cobbles. The following paragraphs present our opinions and recommendations regarding the site.

Design Parameters For Slope Stability Analysis

Based upon the results of the field and laboratory investigations, the following paragraphs present our recommendations for design parameters for use in slope stability analysis:

Strength Parameters. The results of the direct shear tests indicated that the portion of the sample passing the No. 4 sieve generally exhibited angles of internal friction of 36 degrees or greater. The friction values of the entire sample are expected to be somewhat greater than the measured values. However, because two samples exhibited values slightly less than 36 degrees, we recommend that a value of 36 degrees be utilized for design.

Although some cohesion was measured during testing (see earlier description of direct shear tests), the samples are not expected to have cohesion to a degree which can safely be utilized for design. Therefore, we recommend that no cohesion be utilized in design.

Soil Properties. Based upon the preliminary specifications for soil embankment material provided by the client, a spe-

cific gravity of 2.61 and a maximum dry density of 134.0 pcf would be applicable for the embankment soils. A specific gravity of 2.63 should be utilized for the filter material.

Site Preparation and Grading

After stripping and removing any trash and debris, any other deleterious materials should be excavated. The excavations should extend laterally at least five feet beyond the perimeter of the embankment structure.

To provide a competent base for the proposed embankment and structures, we recommend that the surficial loose to medium dense native soils, and any soils disturbed during clearing and grubbing operations, be overexcavated to expose competent medium dense soils. Following excavation of the surficial soils, the exposed natural soils should be moistened to about optimum moisture content and compacted to at least 92 percent of maximum dry density as determined by ASTM D-1557. Where very dense or cemented soils are exposed in excavations, recompaction may be omitted.

Following excavation and recompaction, the excavated natural soils may then be placed in the excavations in maximum 8-inch loose lifts and compacted at about optimum moisture content to 92 percent of ASTM D-1557. We anticipate that the overexcavations will extend approximately one to three feet below the existing ground surface.

Soils exposed at subgrade level should be kept moist and not allowed to dry out. If the soils dry out prior to construction, the subgrade should be soaked and the moisture content increased to the recommended value.

Foundations

The client has indicated that counterfort retaining walls of up to 40 feet in height will be utilized at the central spillway structure. In addition, cantilevered retaining walls may also be used. Structures may be supported on conventional spread footings founded on medium dense to very dense soils or on cemented soils. However, footings should not be supported by a combination of cemented and uncemented soils. Where both cemented and uncemented soils are encountered, the footings should be extended to the caliche or the caliche should be overexcavated such that one foot of structural fill is placed between footings and cemented soils. The natural soils and/or structural fill should have been prepared as recommended in the "Site Preparation and Grading" section of this report.

We understand the footings will be embedded a minimum of two feet below lowest adjacent compacted grade. Although contilevered retaining walls may have footings as narrow as three feet in width, footings for counterfort retaining

walls will be on the order of 28 feet wide. Footings may be proportioned for a maximum net allowable bearing pressure in accordance with the following equation:

$$q_{all} = 1000\ B + 1300\ D,\ psf$$

where:

q_{all} = net allowable bearing pressure, psf
B = footing width, ft.
D = depth of embedment, ft.

A maximum net allowable bearing pressure of 6000 psf should be observed. A one-third increase may be used for transient wind and seismic loads.

Prior to constructing the foundations, the footing excavations should be observed by the Geotechnical Engineer to determine whether suitable bearing soils have been exposed and whether the excavation bottoms are free of loose or disturbed soils.

Settlement

Embankment. Total anticipated settlement under the proposed embankment will vary in relation to the embankment height, with a maximum settlement anticipated to be less than one-half inch under the central portion of the embankment. Differential settlements are anticipated to be minor over the length of the embankment. Because of the granular nature of the subsurface soils, most of the settlement is anticipated to occur during construction.

Footings. Total anticipated settlement under footings will be on the order of one-half inch or less. Differential settlement for footings bearing on natural medium dense soil or properly placed structural fill is expected to be less than one-half inch.

Resistance to Lateral Loads and Retaining Walls

Horizontal loads acting on foundations formed in open excavations will be resisted by friction acting on the base of foundations, and by passive earth pressures. If design makes use of passive earth pressure, the backfill should be compacted to the requirements of structural fill. It is also important that potential scour be accounted for when considering passive resistance.

The friction acting along the base of footings founded on suitable foundation soils may be computed by using an allowable coefficient of friction of 0.40 with the normal dead load. An allowable lateral passive earth pressure may be computed by using an equivalent fluid weighing 450 pcf for the side of footings poured against natural soils or properly placed and compacted backfill. The maximum allowable passive pressure should not exceed 3000 psf. Passive pressure in the upper foot or to the potential scour depth should be ignored unless confined by concrete slab-on-

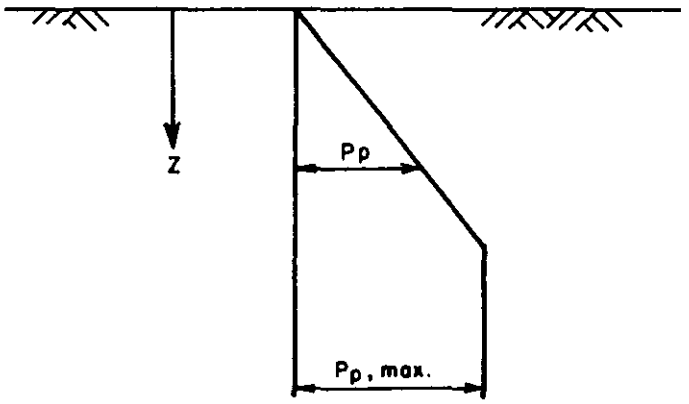
grade. The values given above may be increased by one-third for transient wind or seismic loads.

As indicated in an earlier section, counterfort retaining walls will be used. In addition, the client has indicated that short (10 feet or less) retaining walls may be utilized. Backfill behind retaining walls should be embankment fill material (i.e., granular soils) and should be placed and compacted to the requirements of embankment fill (i.e., minimum 92 % relative compaction).

Lateral earth pressures acting on retaining walls may be computed in accordance with the attached Figure 1. These pressures assume no hydrostatic buildup behind the walls. The design engineer should consider drains or design the walls to resist such pressures if they can develop.

Seepage

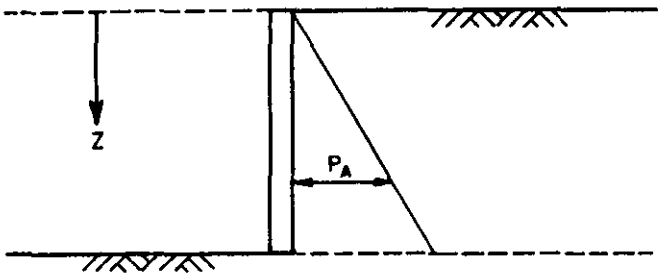
Permeability. Although the values of field and laboratory permeability varied somewhat, it is our opinion that a value of $1X10^{-3}$ cm/sec represents the "average" soil condition present. Somewhat higher permeabilities, on the order of $1X10^{-2}$ cm/sec are more likely present in the clean gravels and cobbles found near the surface in the wash bottoms. Since permeability values denote a capacity of soils to conduct water under a given hydraulic gradient, the actual



$P_p = \tan^2(45+\phi/2)\gamma$

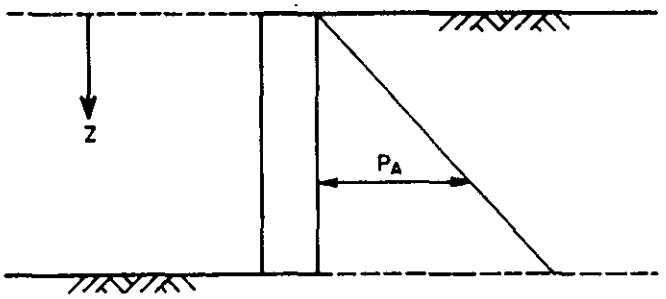
P_p, max. = 3000 psf

A. PASSIVE PRESSURE



$P_A = \tan^2(45-\phi/2)\gamma$

B. ACTIVE PRESSURE: CANTILEVERED RETAINING WALLS



$P_A = 1.5 \tan^2(45-\phi/2)\gamma$

C. ACTIVE PRESSURES: COUNTERFORT RETAINING WALLS (RIGID WALLS)

KLEINFELDER

PROJECT NO. 128106

LATERAL PRESSURES ON WALLS BELOW GRADE

FIGURE 1

volume of vertical and horizontal movement of water in and beneath the embankment will vary in relation to the hydraulic gradient.

Seepage Control. We understand that control of the seepage beneath the spillway and embankment will be required. Seepage control will be accomplished by utilizing drains, an upstream blanket of lower permeability material (possibly composed of surficial, on-site relatively fine grained soils), or by a seepage control device beneath the embankment. Because of the nature of the soils present, cut-off walls and/or grouting appear to be the most practical alternatives for seepage control beneath the embankment. Cut-off walls may be composed of lean concrete, soil cement, lower permeability soils such as clays, or a minimum 20 mil pvc liner. The client has indicated that a concrete shear key or other type of structural element may also be utilized as a cut-off wall.

Because ground water is not present, a number of grouting options appear practical. However, we anticipate that a portland cement grout would be the most cost-effective and impermeable material. Specific design recommendations for grouting were not provided because the location and extent of the required seepage control was not known.

Erosion Protection

Embankment and channel side slope materials should be protected to prevent erosion due to wave action and flows within the discharge channel. Rip-rap or soil cement may effectively be used to minimize potential erosion. The nature and thickness of erosion protection materials will be dependent upon a number of factors including slope of embankment or channel, wave heights, design flow velocities, etc. However, the following preliminary conclusions and opinions can be provided:

- cement contents for soil-cement are anticipated to be on the order of 8 to 12 percent by weight.
- thicknesses on the order of 12 to 18 inches are anticipated for soil-cement materials on the embankment face, with slightly thicker sections possibly required for the discharge channel.
- rip-rap may be composed of sound rock or broken-up pieces of cemented sand and gravel. However, partially cemented or weathered material may not be utilized.

Construction Considerations

As indicated in earlier sections, extensive deposits of calcareous cemented deposits were encountered throughout the project site. The deposits were generally moderately hard to hard, and were present near the ground surface. The seismic wave velocities of the materials were measured at eight locations and are presented in the tables of test

results following the text of this report. We anticipate that difficulty will be encountered excavating the cemented materials, and the very dense uncemented soils encountered at the site. Based upon published literature by manufacturers, soils exhibiting velocities in the range of the seismic wave test results may be removed by ripping with a Caterpiller D9H ripper or equivalent. However, excavation techniques including ripping, blasting, headache balls, and backhoe-mounted hammers may be necessary. The contractor should be aware that caliche is quite variable and additional or harder deposits may be encountered beyond the location explored.

Because of the potential for vibrational damage to nearby structures and structures under construction at the site, the contractor should submit a proposed excavation plan prior to removal operations. In addition, the peak particle velocity at nearby structures or structures under construction at the site should not exceed two inches per second.

The contractor should perform his own trial excavation as he deems necessary to ascertain the type of equipment and excavation effort needed for the earthwork operations.

CLOSURE

Limitations

The recommendations contained in this report are based on our field explorations, laboratory tests, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the 31 borings advanced and 29 trenches excavated for this investigation. It is possible and likely that variations in the soil and groundwater conditions could exist between the points explored. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at this site which are different from those described in this report, our firm should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, our firm should also be notified.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No other warranty, express or implied, is made.

It is the Client's responsibility to see that all parties to the project including the Designer, contractor, Subcontractors, etc. are made aware of this report in its

entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

Additional Services

The recommendations made in this report are based on the assumption that an adequate program of tests and observations will be made during the construction to verify compliance with these recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observations and testing during site preparation and earthwork, including preparation of subgrade and fill placement.
- Consultation as may be required during construction.

We also recommend that project plans and specifications be reviewed by us to verify compatibility with our conclusions and recommendations. Additional information concerning the scope and cost of these services can be obtained from our office.

Tables of Test Results

Table 1: Seismic Refraction Analysis

Seismic Line No.	Average Velocity, Feet Per Second
1	3896
2	3055
3	3043
4	3077
5	4529
6	4490
7	4477
8	4667

Table 2: In-situ Infiltration Test Results

Exploration Number	Screened Interval, ft.	Measured Permeability, cm/sec
B-3	25-45	$8.4X10^{-4}$
B-8	6-14.5	$5.3X10^{-2}$
B-11	9.5-19.5	$1.3X10^{-3}$
B-13	2-10	$1.5X10^{-3}$
B-18	15-26	$2.4X10^{-4}$
B-18	3-5	$2.2X10^{-4}$

Table 3: Direct Shear Test Results

Exploration	Depth, (Feet)	Soil Description	Angle of Internal Friction, Degrees	Measured* Cohesion, pcf
T-2	9	Sand and Gravel, some silt, brown	34	900
T-5	1	Sand and Gravel, some silt, brown	37	550
T-6	5½	Sand and Gravel, some silt, brown	39	250
T-15	1	Sand and Gravel, tr. silt, lt. brown	36	625
T-20	1	Sand and Gravel, tr. silt, brown	37	200
T-21	2	Sandy Gravel, tr. silt, brown	41	300
T-24	2	Sandy Gravel, tr. silt, lt. brown	33	400
T-26	4	Sandy Gravel, tr. silt, lt. brown	39	400
T-27	3	Sandy Gravel, tr. silt, lt. brown	36	375

*NOTE: As discussed in the text, we recommend cohesion not be considered in design of the embankment.

Table 4: Laboratory Permeability Test Results

Exploration	Depth, (Feet)	Soil Description	Permeability, cm/sec
T-4	3	Silty Sand, brown*	$1.9X10^{-5}$
T-5	9	Silty Sand, brown*	$2.7X10^{-5}$
T-8	9	Silty Sand, brown*	$5.9X10^{-5}$
T-15	1	Sand and Gravel, tr silt, lt. brown to tan	$1.3X10^{-4}$
T-21	2	Sandy Gravel, tr. silt, brown	$8.3X10^{-2}$
T-24	2	Sandy Gravel, tr. silt, lt. brown	$1.0X10^{-3}$
T-26	4	Sandy Gravel, tr. silt, lt. brown	$3.0X10^{-3}$

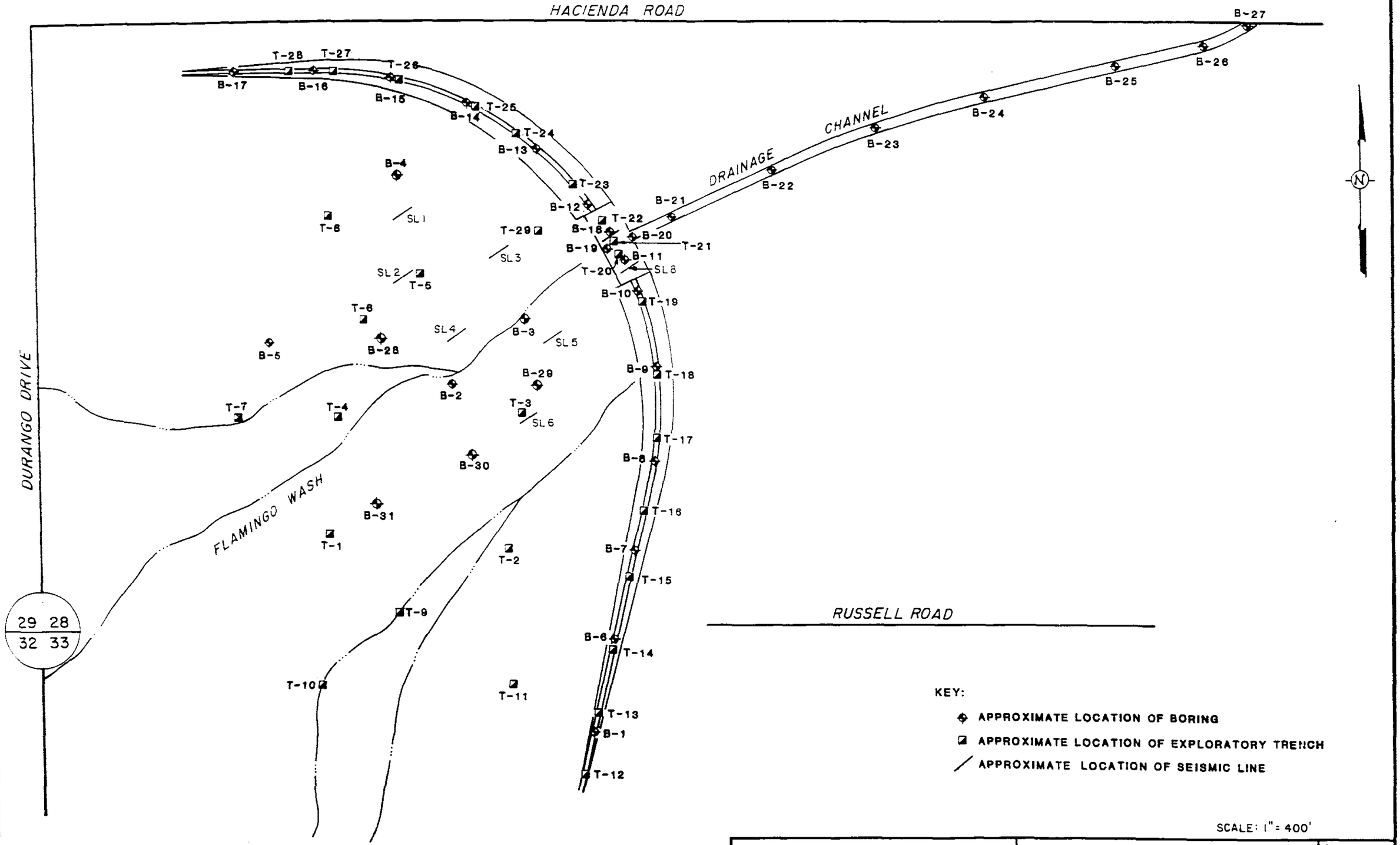
*tests performed on portions of sample passing 3/8 inch sieve compacted into 4-inch diameter permeameter, descriptions are for resultant sample. The last four test results are for complete samples compacted into a 12-inch diameter permeameter. Falling head method was used for all.

Table 5: Maximum Density/Optimum Moisture Content Test Results

Exploration	Depth, (Feet)	Soil Description	Maximum Density, pcf	Optimum Moisture Content, %
T-14	0-1	Sand, tr. silt, red/brown to white	117.8	12.2
T-18	0-1	Silty Sand & Gravel, lt. brown	133.5	5.8
T-25	3-4	Sand & Gravel, tr. silt, lt. brown	137.0	6.5

Table 6: Specific Gravity Test Results

Exploration	Depth, ft.	Specific Gravity + #4 portion	- #4 portion	Combined
T-26	4	2.63	2.58	2.61



KEY:

- APPROXIMATE LOCATION OF BORING
- APPROXIMATE LOCATION OF EXPLORATORY TRENCH
- APPROXIMATE LOCATION OF SEISMIC LINE

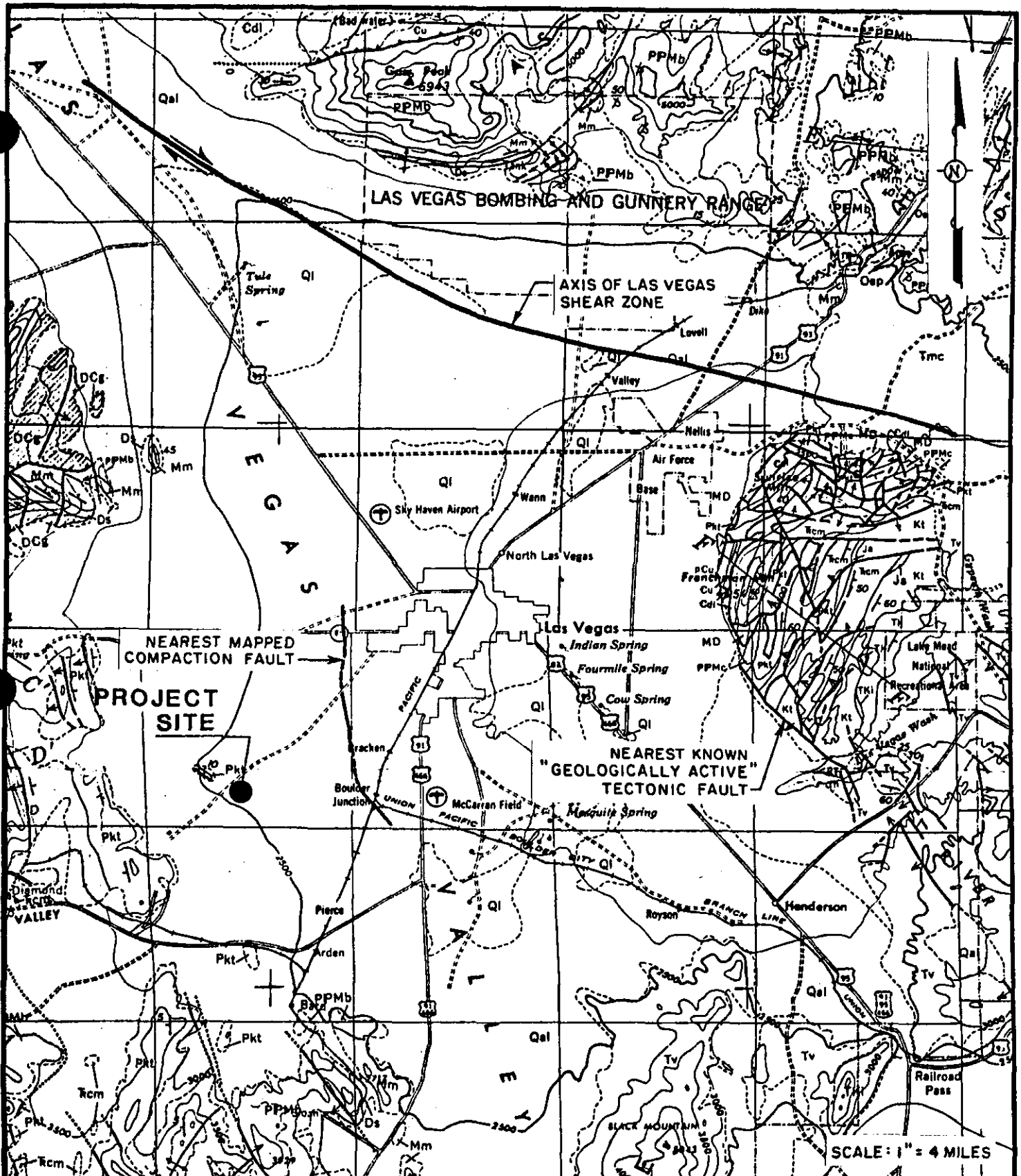
SCALE: 1" = 400'

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MATERIALS TESTING — LAND AND WATER RESOURCES

PROJECT NO. 128106

LOCATION OF EXPLORATIONS

PLATE 1



Reference: "Geologic Map of Clark County, Nevada", by C.R. Longwell, E.H. Pampeyan and Ben Bowyer, 1964.

KLEINFELDER	REGIONAL GEOLOGY AND SEISMICITY	PLATE 1A
PROJECT NO. 128106		

DATE DRILLED: 3/29/88 BORING NO. 1 ELEVATION: 2475.0'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SM	SILTY SAND with gravel, brown	dry	loose
							CALICHE white		hard
5				50/3"	⊠	SW/GW	SAND and GRAVEL brown and gray ---cemented, 3½' to 5' ---partially cemented, 5' to 7'	slightly moist	very dense to hard
10				50/4"	⊠	SP	GRAVELLY SAND partially cemented, brown ---less cementation, 9½' to 10' and 11' to 13'		
15						SW	SAND with gravel and scattered cementation, brown		
20				50/9"	⊠				
25									
30							Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

JHK03

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 2

DATE DRILLED: 4/11/88 BORING NO. 2 ELEVATION: 2454.8'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SW/GW	SAND and GRAVEL brown and gray ---cemented, 0' to 3' and 4½' to 9' ---moderately cemented, 3' to 4½' and 9' to 25'	slightly moist	very dense to very hard
20							---with cobbles		
30							---partially cemented, 30' to 37'		
40				50/6"		SW	SAND with some gravel, occasional cobbles, brown		very dense
50							Bottom at 50.0 feet.		

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____

BY: _____

JHK02

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 3

DATE DRILLED: 4/12/88 BORING NO. 3 ELEVATION: 2450.5'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SW	SAND some silt, little gravel, brown	slightly moist	medium dense
5									dense
10				43	☒				
15						SW/GW	SAND and GRAVEL little silt, brown		
20									
25				50/8"	☒				
30									
35							---with cobbles below 35'		very dense
40				50/2"	▬				
45						SW	SAND with some gravel, little silt, brown		
50							Bottom at 50.0 feet.		

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

JHK02

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 4

DATE DRILLED: 3/28/88 BORING NO. 4 ELEVATION: 2458.5'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SW/GW	SAND and GRAVEL with some cobbles, little silt, brown	slightly moist	medium dense to dense
5				39					
10									
15				50/7"			---grades with more sand, 17' to 19'		very dense
20							---with more cobbles below 19'		
25				50/3"					
30							Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ APPROV: ____

JHK03

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PROJECT NO. 129106

BORING LOG AND TEST SUMMARY

PLATE 5

DATE DRILLED: 3/29/88 BORING NO. 5 ELEVATION: 2465.5'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SW/GW	SAND and GRAVEL some silt, brown	slightly moist	medium dense to dense
5							CEMENTED SAND and GRAVEL brown and gray ---less cementation, 4' to 5½' and 7' to 10'		hard
15						SW/GW	SAND and GRAVEL brown and gray		dense to very dense
20							---well-cemented, 24' to 25'		very dense to hard
25									very dense
30							Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____ OTHER

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 6

DATE DRILLED: 8/30/88 BORING NO. 6 ELEVATION: 2470.0'

LOCATION: See Plate 1 (7+00)

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0					GP	SAND and GRAVEL tr. silt, lt. brown	slightly moist	v. dense
						CEMENTED SAND and GRAVEL light brown to brown		mod. hard
5				50/3"	GP	SAND and GRAVEL trace silt, partially cemented, light brown to brown		very dense to mod. hard
10						---less cementation below 10'		very dense
15				50/1"	SP	GRAVELLY SAND trace silt, trace partial cementation, light brown		
20								
25				50/1"	GP	SAND and GRAVEL trace silt, light brown to brown		
30						CEMENTED SAND and GRAVEL light brown		mod. hard

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Bottom at 30.0 feet.
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 7

DATE DRILLED: 8/30/88 BORING NO. 7 (11+00) ELEVATION: 2464.7'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							CEMENTED SAND and GRAVEL light brown ---fracture at 1'	slightly moist	mod. hard to hard
						GP	SAND and GRAVEL trace silt, lt. brown		very dense
						SM	SILTY SAND with gravel, light brown		
5						GP	SAND and GRAVEL trace silt, light brown to brown ---partially cemented 5'-5½', areas of partial cementation 5½'-8'		very dense to mod. hard
							CEMENTED SAND and GRAVEL light brown to brown		mod. hard
10						GP	SAND and GRAVEL light brown to brown ---partially cemented 10½'-11½' ---trace partial cementation below 11½'		very dense
15							CEMENTED SAND and GRAVEL light brown		mod. hard to hard
20						GP	SAND and GRAVEL trace silt, partially cemented, light brown to brown		very dense to mod. hard
25							CEMENTED SAND and GRAVEL light brown to brown ---lenses of partial cementation 24½'-27'		mod. hard
30						GP	SAND and GRAVEL trace silt, trace partial cementation, light brown to brown		hard very dense

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Bottom at 30.0 feet.
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 8

DATE DRILLED: 9/19/88 | BORING NO. 8 (15+00) | ELEVATION: 2459.4'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION		MOISTURE	CONSIST.
0					GP/GM	SAND and GRAVEL	trace silt, light brown	slightly moist	medium dense
5						CEMENTED SAND and GRAVEL	light brown		hard to very hard
				50/4"	GP	SAND and GRAVEL	trace silt, light brown to brown		very dense
10									
15				50/6"					
20									
25				50/2"					
30						Bottom at 30.0 feet.			

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 9

DATE DRILLED: 8/29/88 | BORING NO. 9 (19+00) | ELEVATION: 2450.17'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0					GM	SILTY SAND & GRAVEL lt.brn to brown		m.dense
						CEMENTED SAND and GRAVEL brown		hard
					GP/GM	SAND and GRAVEL trace silt, brown		very dense
5						---partially cemented 6'-8'		
					GP	---trace partial cementation, less silt below 8'		
10				50/4"			slightly moist	
15				50/2"				
20					GP	---more silt 21'-23'		
					GM			
					GP			
25				50/2"				
30						Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

JHK03

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 10

DATE DRILLED: 8/30/88 BORING NO. 10 (22+50) ELEVATION: 2449.8'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							CEMENTED SAND & GRAVEL light brown ---6" lense of silty sand & weathered cemented material at surface		mod.hard to hard
5						GP	SAND and GRAVEL some cobbles, trace silt, areas of partial cementation, light brown		very dense
10						SM	SILTY SAND little gravel and cobbles, light brown		dense
15						SP	GRAVELLY SAND some cobbles, areas of partial cementation, light brown	slightly moist	very dense
						SP	SAND trace silt, light brown		dense
20						GP	SANDY GRAVEL trace silt, trace partial cementation, light brown		very dense
25							---more cementation below 37'		
30									
35									
40									
45									
50							Bottom at 50.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

BORING LOG AND TEST SUMMARY

PLATE NO. 11

KLEINFELDER

PROJ. NO. 128106

LOGS AND SUMMARY ARE ONLY AT THIS LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION OF CONDITIONS MAY BE FOUND AT THE TIME OF LOGGING.

APP'D: ____

BY: ____

DATE DRILLED: 9/19/88 BORING NO. 11 ELEVATION: 2442.7'

LOCATION: See Plate 1 (24+00)

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							CEMENTED SAND and GRAVEL light brown		mod.hard
						GP	SAND and GRAVEL trace silt, light brown to brown		very dense
5				50/9"					
10							---trace partial cementation below 10'	slightly moist	
15				50/6"					
20									
25				50/4"			---clean sand layer 24'-26'		
30									
35				50/6"			---less gravel 37'-38'		
40							---some cobbles 39'-41'		
45				50/3"					
50							Continued on next page.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

BORING LOG AND TEST SUMMARY

PLATE NO. 12A

KLEINFELDER

PROJ. NO. 128106

...ED SUBSURFACE ... AT THIS LOCATION AND MAY CHANGE AT THIS ... ION AND AT THE TIME OF DRILLING. CONDITIONS MAY BE OTHER ... TION WITH TIME. DATA PRESENTED IS A SIMPLIFICA...
APP... BY:

DATE DRILLED: 9/19/88 BORING NO. 11 (con't) ELEVATION: 2442.7'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
50						GP	SAND and GRAVEL (con't) trace silt, light brown to brown ---some cobbles below 50'	slightly moist	very dense
55				50/1"					
60									
65									
70							Bottom at 70.0 feet.		
75									
80									
85									
90									
95									
100									

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____

BY: _____

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 12B

DATE DRILLED: 9/6/88

LOCATION: See Plate 1

BORING NO. 12 (27+00)

ELEVATION: 2445.08'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP/GM	SAND and GRAVEL trace silt, light brown to brown	slightly moist	dense
5							CEMENTED SAND & GRAVEL brown		mod.hard
10						GP	SAND and GRAVEL trace silt, light brown to brown		
15									
20									
25									
30									
35									
40									
45									
50							Bottom at 50.0 feet.		

IIS LOCATIONS AND MAY CHANGE AT THIS ... LY A... DIS... TIO... AND AT THE TIME OF BORING. CONDITIONS MAY DIFFER AT OTHER ... CATION WITH TIME. DATA PRESENTED IS A SIMPLIFICA...

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

BORING LOG AND TEST SUMMARY

PLATE NO. 13

KLEINFELDER

PROJ. NO. 128106

DATE DRILLED: 9/21/88 BORING NO. 13 ELEVATION: 2451.36'

LOCATION: See Plate 1 (30+00)

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0					SM	SILTY SAND little gravel, brown	slightly moist	medium dense
					GP	SAND and GRAVEL trace silt, brown		
5						CEMENTED SAND & GRAVEL lt. brown		mod.hard
					GP	SAND and GRAVEL trace silt, light brown to brown		very dense
15				50/5"		---cobbles below 18'		
20						---decreasing cobbles below 21'		
25				50/2"				
30						Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 108638

BORING LOG AND TEST SUMMARY

PLATE 14

JHK03

DATE DRILLED: 8/29/88
LOCATION: See Plate 1

BORING NO. 14 (34+00)

ELEVATION: 2455.7'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GM	SILTY SAND and GRAVEL light brown to brown	slightly moist	medium dense
5						GP	SAND and GRAVEL trace silt and cobbles, trace partial cementation, brown		very dense
10				50/6"					
15				50/1"			---less gravel 17½'-19'		
20									
25				50/1"					
30				50/2"			Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 15

JHK03

DATE DRILLED: 8/29/88
LOCATION: See Plate 1

BORING NO. 15 (37+50)

ELEVATION: 2462.6'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GM	SILTY SAND and GRAVEL light brown to brown	slightly moist	m.dense
									dense
						GP	SAND and GRAVEL trace silt, brown		very dense
5				50/5"	☒				
							---partially cemented 9'-11'		
10									very dense to mod.hard
						SP/SM	GRAVELLY SAND trace silt, light brown to brown		very dense
15						SP	---less silt below 15'		
						GP	SAND and GRAVEL trace silt and cobbles, brown		
20									
				50/3"	☒				
25							Bottom at 25.0 feet.		
30									

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____ JHK03

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 16

DATE DRILLED: 8/29/88 BORING NO. 16 (41+00) ELEVATION: 2468.15'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0					GM	SILTY SAND and GRAVEL — light brown to brown ---less silt 2'-3'	slightly moist	loose; medium dense
5				50/4"	GP	SAND and GRAVEL — trace silt, trace partial cementation, brown		very dense
10				85/9"		---partially cemented 8'-9' ---trace to little partial cementation 10½'-18½'		v.dense-mod.hard; dense to very dense
15				50/3"				
20						Bottom at 20.0 feet.		
25								
30								

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

JHK03

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 17

DATE DRILLED: 8/30/88 BORING NO. 17 (44+50) ELEVATION: 2473.53'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SAND and GRAVEL trace partial cementation, brown	slightly moist	very dense
5				50/6"					
							CEMENTED SAND and GRAVEL light brown		hard
						SP	GRAVELLY SAND trace silt, trace partial cementation, light brown to brown ---partially cemented 11'-13'		very dense
10				50/2"					very dense to mod. hard
				50/3"					very dense
15							Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

PROV: _____

BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 18

DATE DRILLED: 9/28/88 BORING NO. 18 (25+50) ELEVATION: 2445.53'

LOCATION: See Plate 1

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP/GM	SAND and GRAVEL trace silt, light brown to brown	slightly moist	dense
5							CEMENTED SAND and GRAVEL brown		hard
						GP	SAND and GRAVEL trace silt, brown		very dense
10				50/9"					
15									
20				20/4"					
25									
30				50/3"					
						SM	SILTY SAND trace gravel, brown		medium dense
35						GP	SAND and GRAVEL trace silt, brown ---partially cemented 35'-37'		very dense
40				50/2"					
45									
50									

Continued on next page.

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

BORING LOG AND TEST SUMMARY

PLATE NO. 19A

KLEINFELDER

PROJ. NO. 128106

DATE DRILLED: 9/28/88 BORING NO. 18 (con't) ELEVATION: 2445.53'

LOCATION: See Plate 1 *

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
50						GP	SAND and GRAVEL (con't) trace silt, brown	slightly moist	very dense
55									
60									
65									
70							Bottom at 70.0 feet.		
75									
80									
85									
90									
95									
100									

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 19B

JHK01

DATE DRILLED: 8/29/88 BORING NO. 19 ELEVATION: 2443.13'

LOCATION: See Plate 1 (24+75 RCL)

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GW	SAND and GRAVEL some cobbles, brown	slightly moist	medium dense
						GM	SILTY SAND and GRAVEL light brown		medium dense to dense
5							---partially cemented 4½'-7'		v. dense to mod. hard
10									dense
15						SC	CLAYEY SAND light brown		medium dense
						GP	SAND and GRAVEL trace silt, some cobbles, trace partial cementation, brown		very dense
20						SM	SILTY SAND with little gravel, light brown		medium dense
							---more gravel below 24'		
25									
30							Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ APPROV: ____

JHK03

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 20

DATE DRILLED: 8/29/88
LOCATION: See Plate 1

BORING NO. 20 (24+75, 50' LCL) **ELEVATION:** 2444.78'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GW	SAND and GRAVEL with cobbles, brown	slightly moist	medium dense
							CEMENTED SAND and GRAVEL light brown		mod. hard
5						GM	SILTY SAND and GRAVEL trace partial cementation, light brown		dense
10									
							---areas of partial cementation 13'-14'		v. dense
15									dense
20							---partially cemented 21'-23'		v. dense to mod. hard
						SP	GRAVELLY SAND trace silt, brown		dense
25									
30							Bottom at 30.0 feet.		

*OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

ROV: _____ BY: _____ JHK03

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 21

DATE DRILLED: 10/25/88 BORING NO. 21 ELEVATION: 2441.14'

LOCATION: 2+00 ℄ Channel

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						CEMENTED SAND and GRAVEL light brown to brown	slightly moist	hard
								mod. hard
					GP	SANDY GRAVEL trace silt, brown		very dense
5				50/1"				
10					SP	GRAVELLY SAND trace silt, brown		
						CEMENTED SAND brown and GRAVEL		mod. hard to hard
					GP	SANDY GRAVEL trace silt, brown		very dense
15						Bottom at 15.0 feet.		

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

PROV: _____

BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 22

JHK1/84

DATE DRILLED: 10/25/88 BORING NO. 22 ELEVATION: 2437.8'

LOCATION: See Plate 1 7+00 ℄ Channel

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SP	GRAVELLY SAND trace silt, brown severe borehole caving	slightly moist	loose
									loose to medium dense
5									
							CEMENTED SAND and GRAVEL brown		hard
						GP	SAND and GRAVEL trace silt, brown		dense
10									
15							Bottom at 15.0 feet.		

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 23

DATE DRILLED: 10/25/88 BORING NO. 23 ELEVATION: 2429.38'

LOCATION: 12+00 ℄ Channel

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	GRAVEL trace sand, brown borehole caving	slightly moist	loose
						GP	SANDY GRAVEL brown borehole caving		medium dense
							CALICHE tan		mod.hard
						GP	SANDY GRAVEL trace silt, brown		very dense
5									
10									
15							Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 24

DATE DRILLED: 10/25/88
LOCATION: See Plate 1

BORING NO. 24
17+00
℄ Channel

ELEVATION: 2424.82'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SAND and GRAVEL trace silt, areas of cobbles, brown	slightly moist	loose
							borehole caving		medium dense to dense
5							---some partial cementation 6-7½'		very dense
10							CEMENTED SAND brown and GRAVEL		hard
						GP	SANDY GRAVEL trace silt, brown		very dense
15							Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:
Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

OTHER

APPROV: _____

BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 25

DATE DRILLED: 10/25/88 BORING NO. 25 ELEVATION: 2421.38'

LOCATION: 23+00 ℄ Channel

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0					SP	SAND trace gravel, lt. brown borehole caving	slightly moist	loose
					GP	SANDY GRAVEL trace silt, occasional cobbles, light brown to brown ---borehole caving		medium dense to dense
5						---more cobbles below 6'		
						---less cobbles below 8'		
10								
						---more cobbles below 13'		
15						Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 26

DATE DRILLED: 10/25/88
LOCATION:

BORING NO. 26
27+00
℄ Channel

ELEVATION: 2419.94'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT.**	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						CEMENTED SAND and GRAVEL brown	slightly moist	hard
					GP	SANDY GRAVEL trace silt, brown		very dense
				35/6"		---3" cemented lense at 4'		
5						---partially cemented 7½'-9'		very dense to mod. hard
						---cobbles at 9'-10'		very dense
10								
						---cobbles at 13'-14'		
15								

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 27

DATE DRILLED: 10/25/88
LOCATION: See Plate 1

BORING NO. 27
30+00
℄ Channel

ELEVATION: 2419.78'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SANDY GRAVEL trace silt, brown		dense
							CEMENTED SAND and GRAVEL brown		hard
						GP	SANDY GRAVEL trace silt, areas of partial cementation, light brown	slightly moist	very dense
				50/2"			---3" cemented lense at 4', less cementation below 4' ---yellow staining below 5'		
5									
				50/3"					
10									
15							Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____ JH

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 28

DATE DRILLED: 10/25/88 BORING NO. 28 ELEVATION: 2455.96'

LOCATION: See Plate 1 (20+00) 1200' west

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SP/GP	SAND and GRAVEL trace silt, brown	slightly moist	medium dense
							---trace partial cementation 1½'-4'		dense
5									
							---trace partial cementation below 8'		
10									
15							Bottom at 15.0 feet.		

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

OTHER

BY: _____ APPROV: _____

JHK

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 29

DATE DRILLED: 11/2/88 BORING NO. 29 ELEVATION: 2458.56'

LOCATION: 18+00, 500' N

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SAND & GRAVEL tr. silt, light brown	slightly moist	
							CEMENTED SAND and GRAVEL brown ---fractured at 1' and 4'		hard to very hard
5						GP	SAND and GRAVEL trace silt, partially cemented, brown		very dense to mod. hard
10							Bottom at 10.0 feet.		
15									

* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

OTHER

BY: ____ ROV: ____

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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 30

DATE DRILLED: 11/2/88 BORING NO. 30 ELEVATION: 2462.39'

LOCATION: See Plate 1 (15+00) 800' W

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SAND and GRAVEL trace silt, brown	slightly moist	medium dense
							CEMENTED SAND and GRAVEL brown		hard
5						GP	SAND and GRAVEL trace silt, light brown to brown		very dense
							CEMENTED SAND and GRAVEL brown		hard
10							Bottom at 10.0 feet.		
15									

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

APPROV: _____ BY: _____

JHK:ug

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 31

DATE DRILLED: 11/2/88 BORING NO. 31 ELEVATION: 2467.25'

LOCATION: See Plate 1 (13+00) 1200'

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.**	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						GP	SAND and GRAVEL trace silt, brown	slightly moist	medium dense
							CEMENTED SAND and GRAVEL brown ---fractured 2½'-3'		hard to very hard
									mod.hard
				30/6"		GP	SAND and GRAVEL trace silt, light brown to brown		very dense
5									
									very dense to mod. hard
10							Bottom at 10.0 feet.		
15									

* OTHER TESTS: C - CONSOLIDATION, A - ATTERBERG, S - SHEAR
G - GRAIN SIZE, E - EXPANSION, CH - CHEMICAL

** USING 350 LB. DRIVING WEIGHT AND 2.625 INCH (I.D.) DIAMETER SAMPLER

NOTES:

Groundwater not encountered during drilling.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ NOV: ____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

BORING LOG AND TEST SUMMARY

PLATE 32

DATE EXCAVATED: 3/23/88 TRENCH NO. 1 ELEVATION: 2473.5'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/GW	SAND and GRAVEL brown	dry	dense	
			CEMENTED SAND and GRAVEL brown		mod. hard	

Bottom at ½ foot.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: BY:

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PROJECT NO. 128106

TRENCH LOG

PLATE 33

DATE EXCAVATED: 3/23/88 TRENCH NO. 2 ELEVATION: 2468.2'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/ GW	SAND and GRAVEL with trace silt and cobbles, brown	slightly moist	hard	
			---cemented to 3' and below 4½'			
	B		---partially cemented, 3' to 4½'		dense	Grain-size
5					hard to very hard	
	B					Backhoe refusal at 9 ft. Direct Shear Grain-size
			Bottom at 9.0 feet.			
10						
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ ROV: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 34

DATE EXCAVATED: 3/23/88 TRENCH NO. 3 ELEVATION: 2462.0'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/GW	SAND and GRAVEL brown	dry	dense	
			CEMENTED SAND and GRAVEL brown		mod. hard	

Bottom at ½ foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

PROV: _____

BY: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 35

DATE EXCAVATED: 3/23/88 TRENCH NO. 4 ELEVATION: 2461.4'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/ GW	SAND and GRAVEL trace silt, some cobbles, brown	slightly moist	medium dense to dense	
	B					Grain-size Permeability
5			---partially cemented, 7' to 10'			
	B					Grain-size
10						
			Bottom at 14.0 feet.			
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

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TRENCH LOG

PLATE 36

PROJECT NO. 128106

DATE EXCAVATED: 3/23/88 TRENCH NO. 5 ELEVATION: 2455.4'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0	B	SW/GW	SAND and GRAVEL trace silt, brown	slightly moist	medium dense to dense	Grain-size Direct Shear
5		GP	SANDY GRAVEL trace silt, partially cemented, with cobbles, brown			
			---becomes more cemented			
10	B					Grain-size Permeability
			---cemented below 11'			Backhoe refusal at 11½ ft.
			Bottom at 11½ feet.			
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 37

DATE EXCAVATED: 3/23/88 TRENCH NO. 6 ELEVATION: 2458.5'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/ GW	SAND and GRAVEL trace silt, brown	slightly moist	medium dense to dense	
			---partially cemented, 1½' to 5'		dense to mod. hard	
5	B		---sand lense, 5' to 6'		dense to mod. hard	Grain-size Direct Shear
			---scattered cementation, with cobbles below 6'			
10	B					Grain-size
			Bottom at 13.0 feet.			
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

PROV: _____ BY: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 38

DATE EXCAVATED: 3/23/88 TRENCH NO. 7 ELEVATION: 2468.13'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0	B	SP/ GP	SANDY GRAVEL with trace silt and cobbles, brown	dry to slightly moist	dense to very dense	Grain-size
5	B	SW/ GW	SAND and GRAVEL with cobbles and some silt, brown ---more sand 2' to 3'			Grain-size
			---partially cemented below 8'		very dense to mod. hard	
10						
			Bottom at 13½ feet.			
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

JHK12

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TRENCH LOG

PLATE 39

PROJECT NO. 128106

DATE EXCAVATED: 3/23/88 TRENCH NO. 8 ELEVATION: 2462.64'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/ GW	SAND and GRAVEL with little silt, some cobbles, brown	slightly moist	medium dense to dense	
	B					Grain-size
5		SM	GRAVELLY SAND little silt, brown ---partially cemented		dense to mod. hard	
	B					Grain-size Permeability
10						
			Bottom at 12.0 feet.			
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

OTHER

APPROV: BY:

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TRENCH LOG

PLATE 40

PROJECT NO. 128106

DATE EXCAVATED: 3/23/88 TRENCH NO. 9 ELEVATION: 2475.89'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/GW	SAND and GRAVEL brown	dry	dense	
			CEMENTED SAND brown and GRAVEL		mod. hard	

Bottom at ½ foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ APPROV: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 41

DATE EXCAVATED: 3/23/88 TRENCH NO. 10 ELEVATION: 2481.4'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/GW	SAND and GRAVEL brown	dry	dense	
			CEMENTED SAND and GRAVEL brown		mod. hard	

Bottom at ½ foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

PROV: _____

BY: _____

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TRENCH LOG

PLATE 42

PROJECT NO. 128106

DATE EXCAVATED: 3/23/88

LOCATION: See Plate 1

TRENCH NO. 11

ELEVATION: 2476.71'

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	COMMENTS
0		SW/GW	SAND and GRAVEL brown	dry	dense	
			CEMENTED SAND and GRAVEL brown		mod. hard	

Bottom at ½ foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____

BY: _____

JH

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PROJECT NO. 128106

TRENCH LOG

PLATE 43

DATE EXCAVATED: 9/9/88 TRENCH NO. 12 (1+00) ELEVATION: 2480.2'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		GP	SAND and GRAVEL some cobbles, trace silt, trace partial cementation, light brown	slightly moist	medium dense	
			CEMENTED SAND & GRAVEL light brown		hard	

Bottom at 8 inches.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

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TRENCH LOG

PLATE 44

PROJECT NO. 128106

HK14

DATE EXCAVATED: 9/9/88 TRENCH NO. 13 (4+00) ELEVATION: 2475.0'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		SP/ SM	SAND trace silt, trace partial cementation, brown to white	slightly moist	medium dense	
			CEMENTED SAND & GRAVEL light brown		hard	

Bottom at 1½ feet.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ BY: ____

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TRENCH LOG

PLATE 45

PROJECT NO. 128106

DATE EXCAVATED: 9/9/88 TRENCH NO. 14 ELEVATION: 2470.0'

LOCATION: See Plate 1 (7+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0	B	SP	SAND trace silt, areas of partial cementation, red-brown to white	slightly moist	medium dense	Maximum density
			CEMENTED SAND & GRAVEL brown		hard	
5			Bottom at 1.0 feet. Backhoe refusal on cemented material.			
10						
15						

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ APPROV: ____

IK12

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PROJECT NO. 128106

TRENCH LOG

PLATE 46

DATE EXCAVATED: 9/9/88 TRENCH NO. 15 ELEVATION: 2466.5'

LOCATION: See Plate 1 (10+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		SM	SILTY SAND trace roots, trace gravel, brown	slightly moist	medium dense	Grain-size analysis Direct Shear Permeability
	B	GP/ GM	SAND and GRAVEL some cobbles and areas of partial cementation, trace silt, light brown to tan		dense	
			CEMENTED SAND & GRAVEL brown		hard	

Bottom at 2½ feet.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ BY: ____

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TRENCH LOG

PLATE 47

PROJECT NO. 128106

DATE EXCAVATED: 9/9/88 TRENCH NO. 16 ELEVATION: 2460.6'

LOCATION: See Plate 1 (13+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		SP	GRAVELLY SAND trace silt, trace roots, areas of partial cementation, brown to light brown	slightly moist	medium dense	
			CEMENTED SAND & GRAVEL brown		hard	

Bottom at 2½ feet.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ OV: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 48

HK14

DATE EXCAVATED: 9/9/88

TRENCH NO. 17 (16+00)

ELEVATION: 2459.2'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		SM	SILTY SAND some partial cementation, light brown to tan		medium dense	
			CEMENTED SAND & GRAVEL brown		hard	

Bottom at 1.0 foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ OV: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 49

DATE EXCAVATED: 9/9/88 TRENCH NO. 18 ELEVATION: 2449.3'

LOCATION: See Plate 1 (19+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0	B	GM	SILTY SAND some cobbles, light and GRAVEL brown	slightly moist	medium dense	Maximum density
			CEMENTED SAND & GRAVEL brown		hard	

Bottom at 1.0 foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ OV: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 50

DATE EXCAVATED: 9/9/88 TRENCH NO. 19 (22+00) ELEVATION: 2449.8'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		SM	SILTY SAND trace partial cementation, light brown	slightly moist	medium dense	
			CEMENTED SAND & GRAVEL tan to white		hard	

Bottom at ½ foot.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

OTHER

BY:____ APPROV:____

HK...

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PROJECT NO. 128106

TRENCH LOG

PLATE 51

DATE EXCAVATED: 9/9/88 TRENCH NO. 20 (24+00) ELEVATION: 2444.61'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0	B	GP	SAND and GRAVEL, trace silt, trace roots, brown	slightly moist	medium dense	Direct Shear
		GP	SAND and GRAVEL, areas of partial cementation, brown		dense	
			CEMENTED SAND & GRAVEL, brown		hard	

Bottom at 3.0 feet.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: _____ DV: _____

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TRENCH LOG

PLATE 52

PROJECT NO. 128106

DATE EXCAVATED: 9/9/88 TRENCH NO. 21 (25+00) ELEVATION: 2443.78'

LOCATION: SEE PLATE 1.

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	FIELD MOISTURE (%)	DRY DENSITY pcf	OTHER TESTS*
0		GP	SANDY GRAVEL abundant roots, trace silt, light brown	slightly moist	medium dense	0.4	147.4	
		SW	GRAVELLY SAND some cobbles, light brown		dense			
	B	GW	SANDY GRAVEL some cobbles, trace silt, brown ---partially cemented below 3'		very dense			Permeability
			CEMENTED SAND & GRAVEL brown		hard			
5			Bottom at 3½ feet. Backhoe refusal on cemented material.					
10								
15								

NOTES: GROUNDWATER NOT ENCOUNTERED DURING TRENCHING.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

PROV: _____

BY: _____

J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

TRENCH LOG

PLATE 53

DATE EXCAVATED: 9/9/88 TRENCH NO. 22 (26+00) ELEVATION: 2444.6'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0	B	GP	SAND and GRAVEL, some cobbles, trace silt, trace roots, brown		medium dense to dense	
		GP	SAND and GRAVEL, trace silt, trace partial cementation, brown	slightly moist	dense	
5			CEMENTED SAND and GRAVEL		hard	

Bottom at 4.0 feet.
Backhoe refusal on cemented material.

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____

BY: _____

JHK12

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PROJECT NO. 128106

TRENCH LOG

PLATE 54

DATE EXCAVATED: 9/9/88 TRENCH NO. 23 (28+00) ELEVATION: 2444.4'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	FIELD MOISTURE (%)	DRY DENSITY pcf	OTHER TESTS*
0	B	GM	SILTY SAND and GRAVEL abundant roots, light brown	slightly moist	medium dense			
5		GP	SANDY GRAVEL some cobbles, trace silt, trace roots, light brown		medium dense to dense	1.0	153.2	
						1.3	120.0	
10			Bottom at 9½ feet.					
15								

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____ JHK12

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PROJECT NO. 128106

TRENCH LOG

PLATE 55

DATE EXCAVATED: 9/9/88 TRENCH NO. 24 ELEVATION: 2452.5'

LOCATION: See Plate 1 (31+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	FIELD MOISTURE (%)	DRY DENSITY pcf	OTHER TESTS*
0		GM	SILTY SAND and GRAVEL some cobbles, abundant roots, light brown	slightly moist	medium dense			
	B	GP	SANDY GRAVEL little cobbles, trace silt, trace roots, light brown		dense	0.9 1.1	124.5 134.2	Permeability
5			CEMENTED SAND and GRAVEL		hard			

Bottom at 5.0 feet.
Backhoe refusal on cemented material.

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION

ROV: ____ BY: ____ JHK12

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PROJECT NO. 128106

TRENCH LOG

PLATE 56

DATE EXCAVATED: 9/9/88 TRENCH NO. 25 (34+00) ELEVATION: 2455.8'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION		MOISTURE	CONSIST.	FIELD MOISTURE (%)	DRY DENSITY pcf	OTHER TESTS*
0		GM	SILTY SAND and GRAVEL	some cobbles, trace roots, light brown	slightly moist	medium dense to dense	1.1	141.3	
		SP	GRAVELLY SAND	trace roots, lt.brn.		medium dense	1.5	105.1	
	B	GW	SAND and GRAVEL	some cobbles, trace silt, lt. brown		dense			Max.Density
			CEMENTED SAND and GRAVEL	light brown		hard			
5									
10									
15									

Bottom at 4.0 feet.
Backhoe refusal on cemented material.

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

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PROJECT NO. 128106

TRENCH LOG

PLATE 57

DATE EXCAVATED: 9/9/88 TRENCH NO. 26 ELEVATION: 2461.8'

LOCATION: See Plate 1 (37+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	FIELD MOISTURE (%)	DRY DENSITY pcf	OTHER TESTS*
0		GM	SILTY SAND and GRAVEL some cobbles, trace roots, light brown		medium dense to dense			
5	B	GW	SANDY GRAVEL with cobbles, trace silt, lenses of partially cemented coarse sand, light brown	slightly moist	dense	1.3	140.1	Permeability
						1.5	147.8	
			CEMENTED SAND and GRAVEL		hard			
10								
15								

Bottom at 6½ feet.
Backhoe refusal on cemented material.

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

BY: ____ ROV: ____

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PROJECT NO. 128106

TRENCH LOG

PLATE 58

DATE EXCAVATED: 9/9/88 TRENCH NO. 27 (40+00) ELEVATION: 2467.1'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.	OTHER TESTS
0		GM	SILTY SAND and GRAVEL trace roots, lt.brn.	slightly moist	medium dense	Grain-size analysis
	B	GP	SANDY GRAVEL trace silt, light brown		dense	
5			CEMENTED SAND and GRAVEL		hard	
10						
15						

Bottom at 5.0 feet.
Backhoe refusal on cemented material.

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION

APPROV: _____ BY: _____

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TRENCH LOG

PLATE 59

PROJECT NO. 128106

DATE EXCAVATED: 9/9/88 TRENCH NO. 28 ELEVATION: 2472.5'

LOCATION: See Plate 1 (43+00)

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION		MOISTURE	CONSIST.	OTHER TESTS
0		GM	SILTY SAND and GRAVEL	trace roots, trace cobbles, light brown		medium dense	
	B	GP	SAND and GRAVEL	some cobbles, trace silt, areas of partial cementation, light brown to tan	slightly moist	dense	
5			CEMENTED SAND and GRAVEL			hard	

Bottom at 5.0 feet.
Backhoe refusal on cemented material.

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION

BY:____ ROV:____ JH....

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

TRENCH LOG

PLATE 60

PROJECT NO. 128106

DATE EXCAVATED: 9/9/88 TRENCH NO. 29 ELEVATION: 2449.58'

LOCATION: See Plate 1

DEPTH IN FEET	SAMPLES	SYMBOL	SOIL DESCRIPTION		MOISTURE	CONSIST.	OTHER TESTS
0		GM	SILTY SAND and GRAVEL	trace roots, light brown	slightly moist	medium dense	
		GP	SAND and GRAVEL	trace silt, areas of partial cementation, lt.brn.to brn.		dense	
			CEMENTED SAND and GRAVEL	light brown		hard	

Bottom at 3.0 feet.
Backhoe refusal on cemented material.

5

10

15

NOTES: Groundwater not encountered during trenching.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

TRENCH LOG

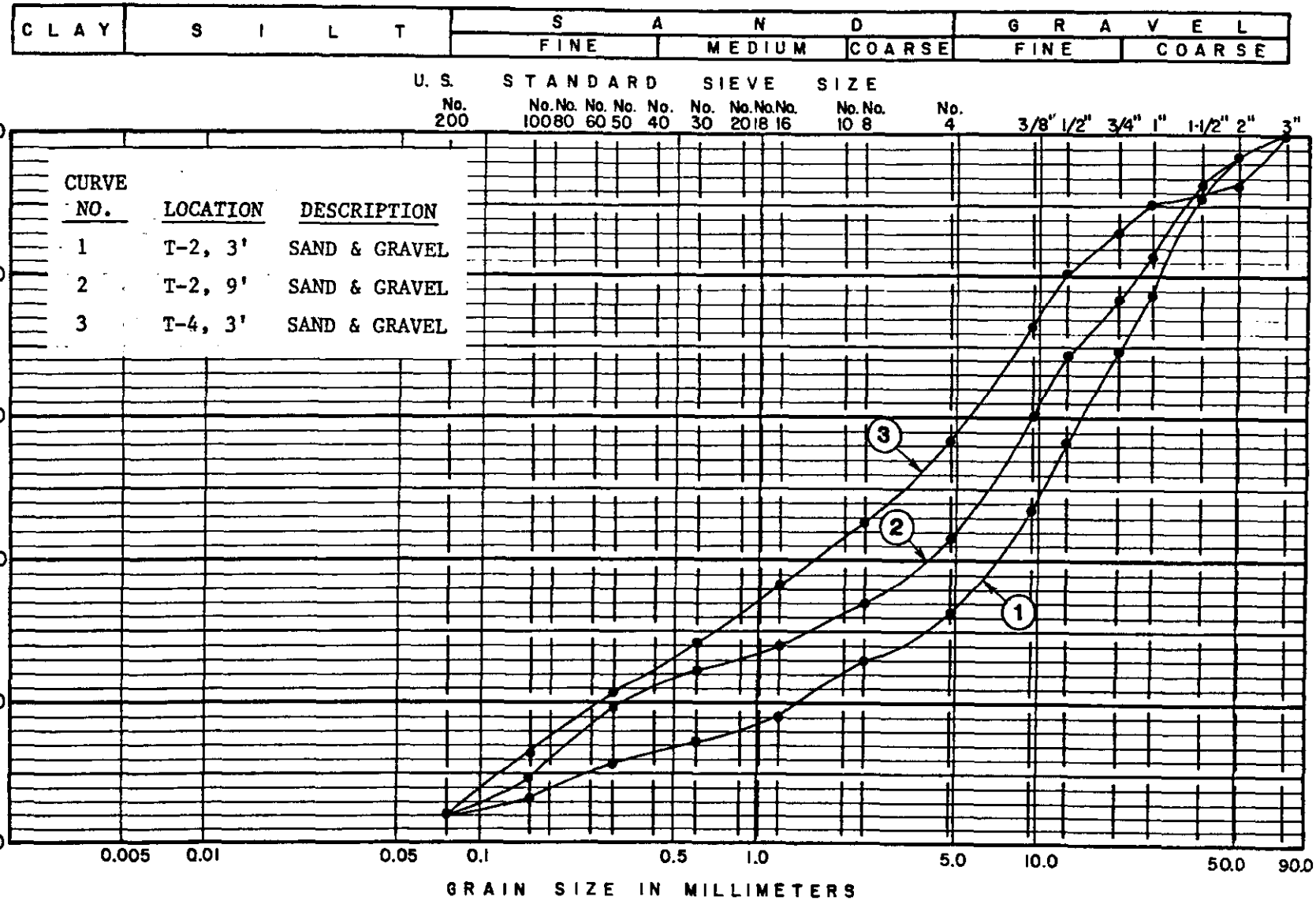
PLATE 61

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

GRAIN-SIZE DISTRIBUTION

PLATE 6.2



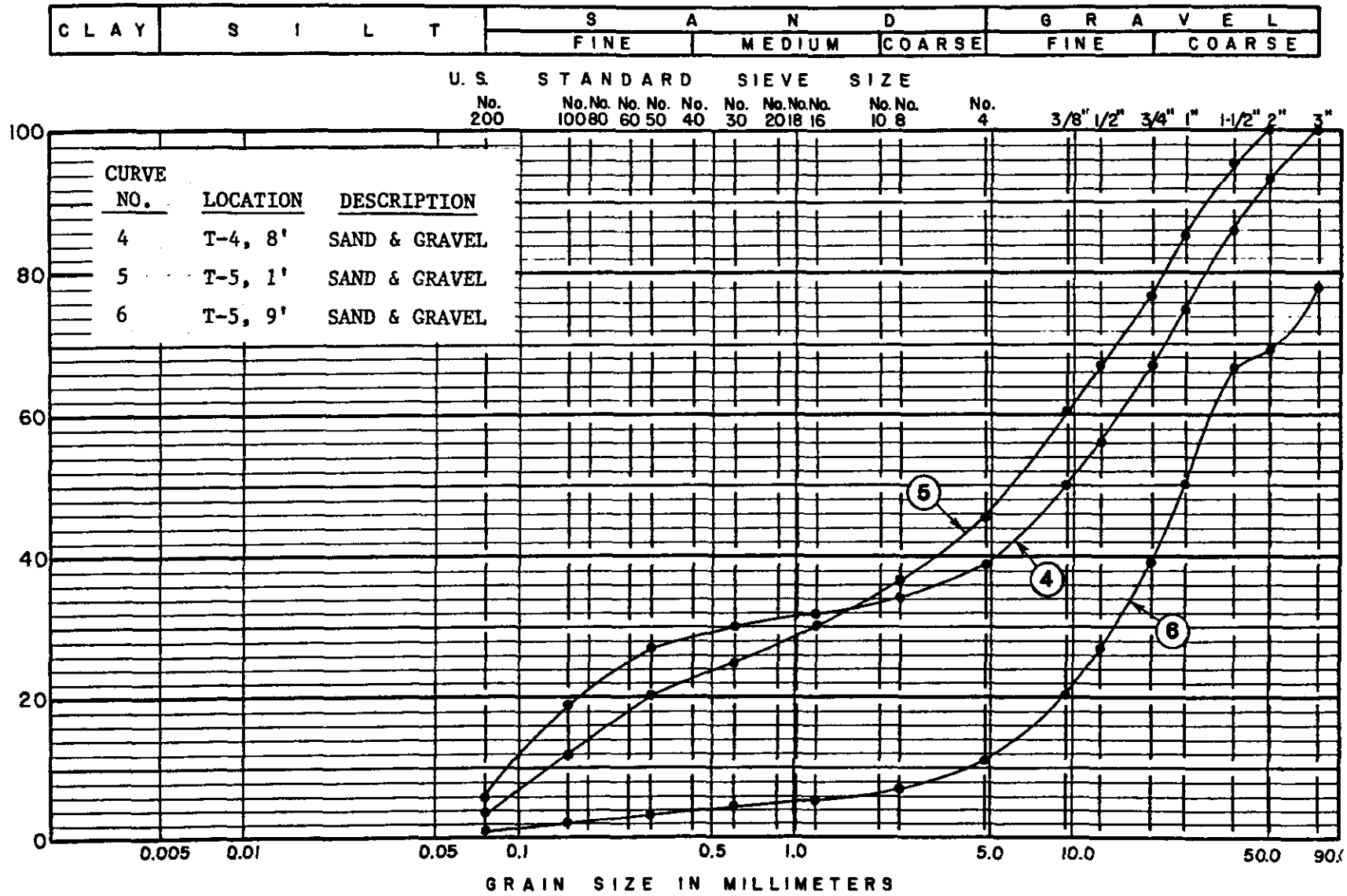
JHK19

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

GRAIN-SIZE DISTRIBUTION

PLATE 63

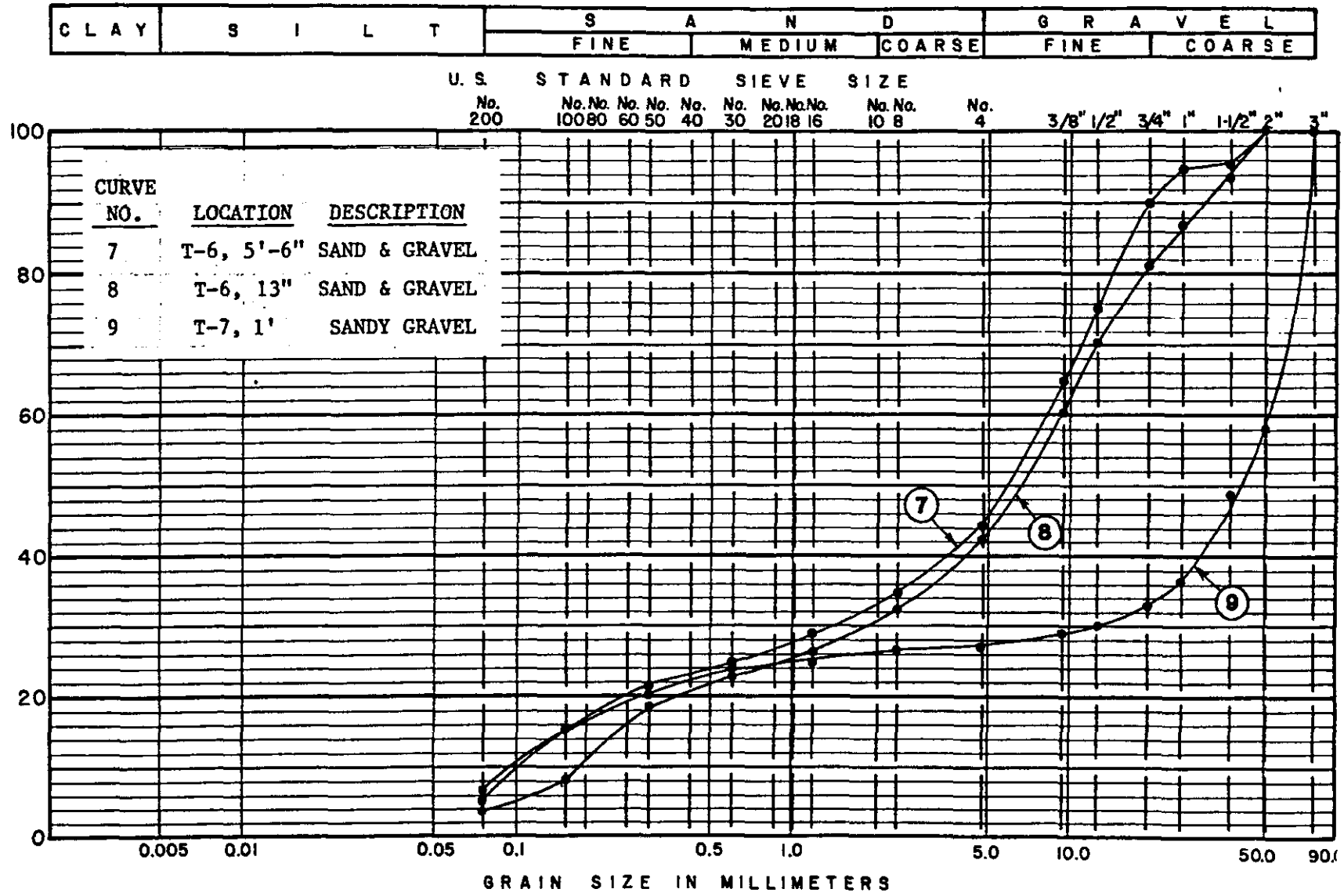


J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

GRAIN-SIZE DISTRIBUTION

PLATE 64



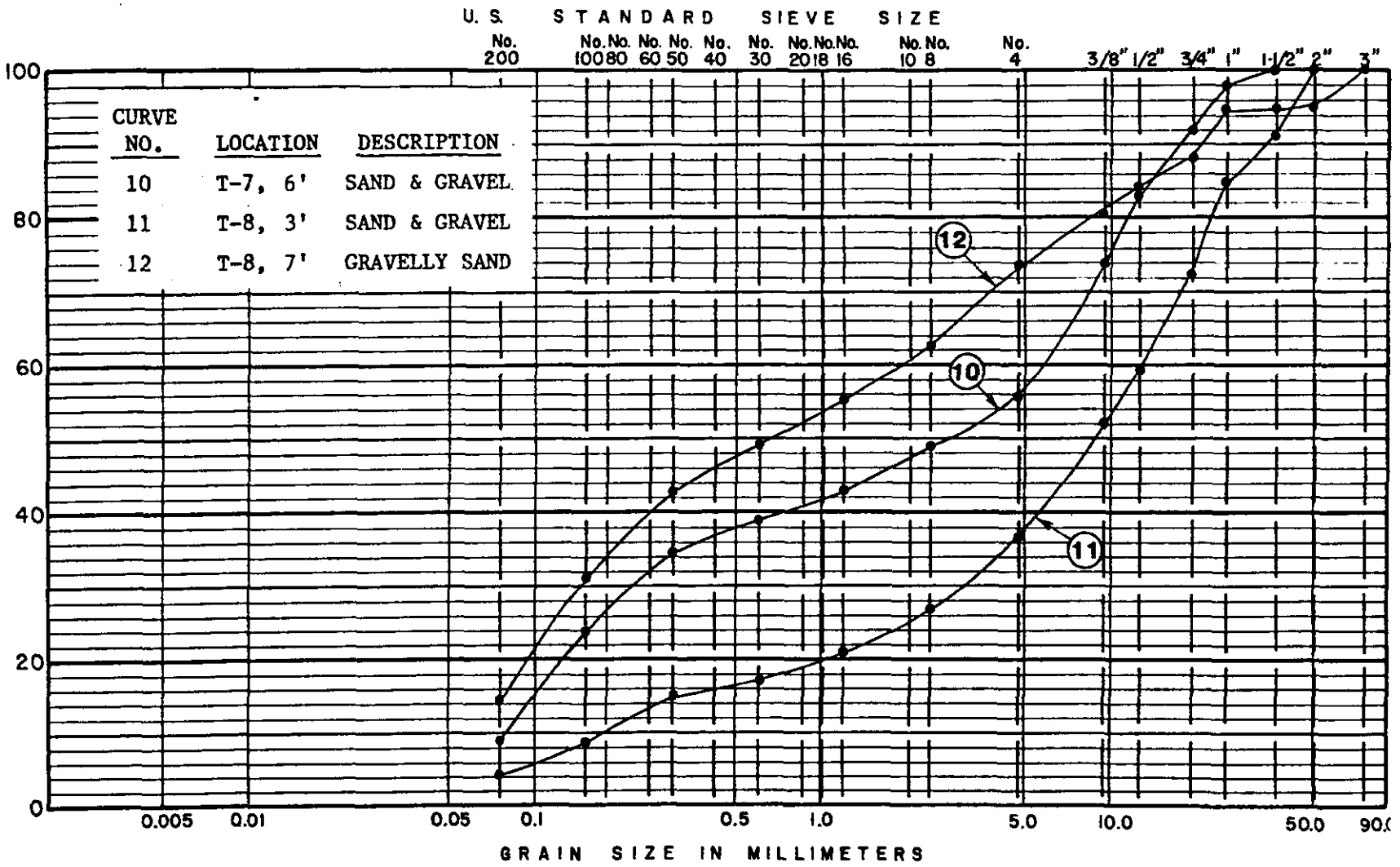
J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

GRAIN-SIZE DISTRIBUTION

PLATE 65

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

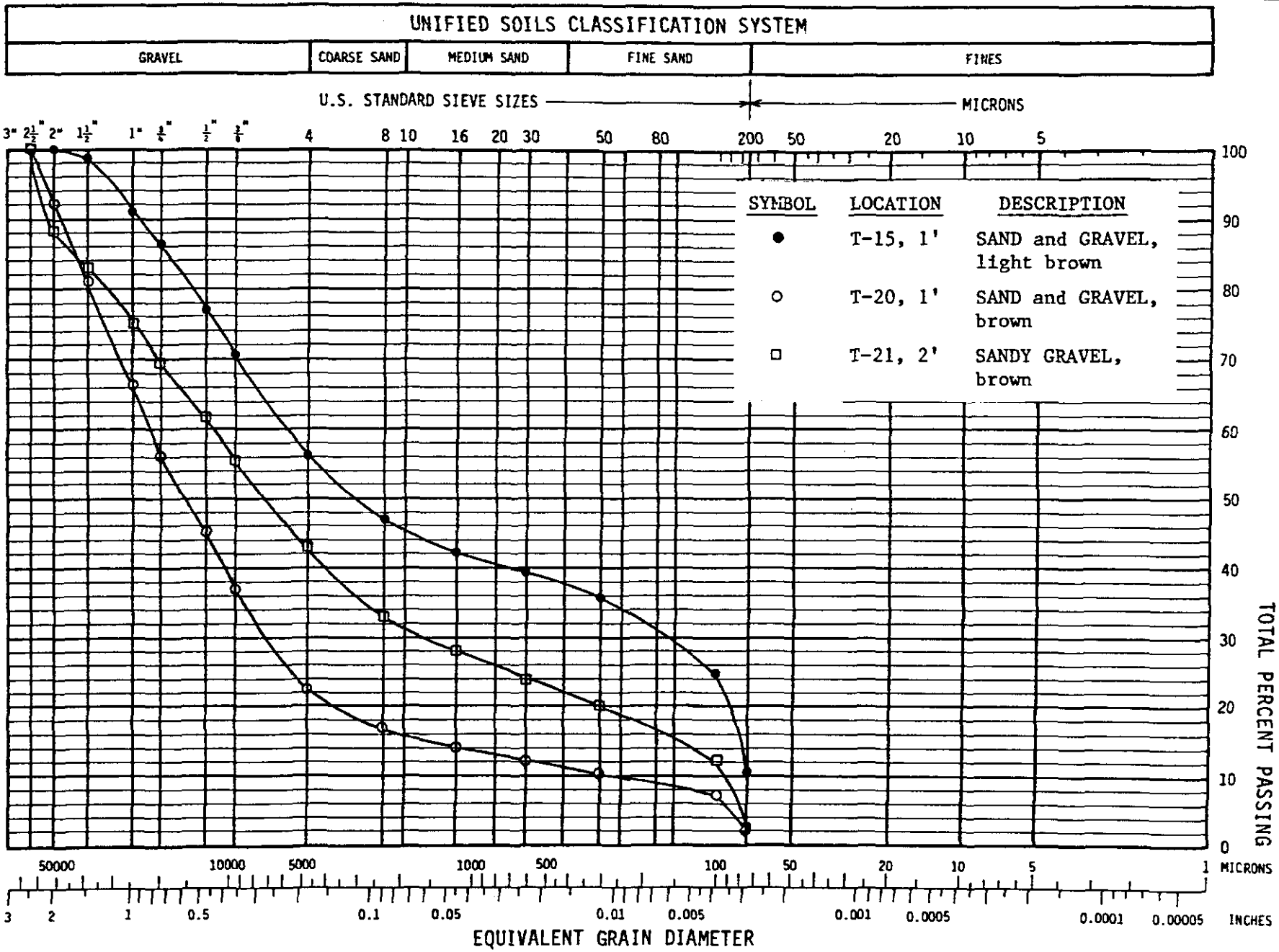


PROJECT NO. 128106

KLEINFELDER

GRAIN SIZE DISTRIBUTION

PLATE 66

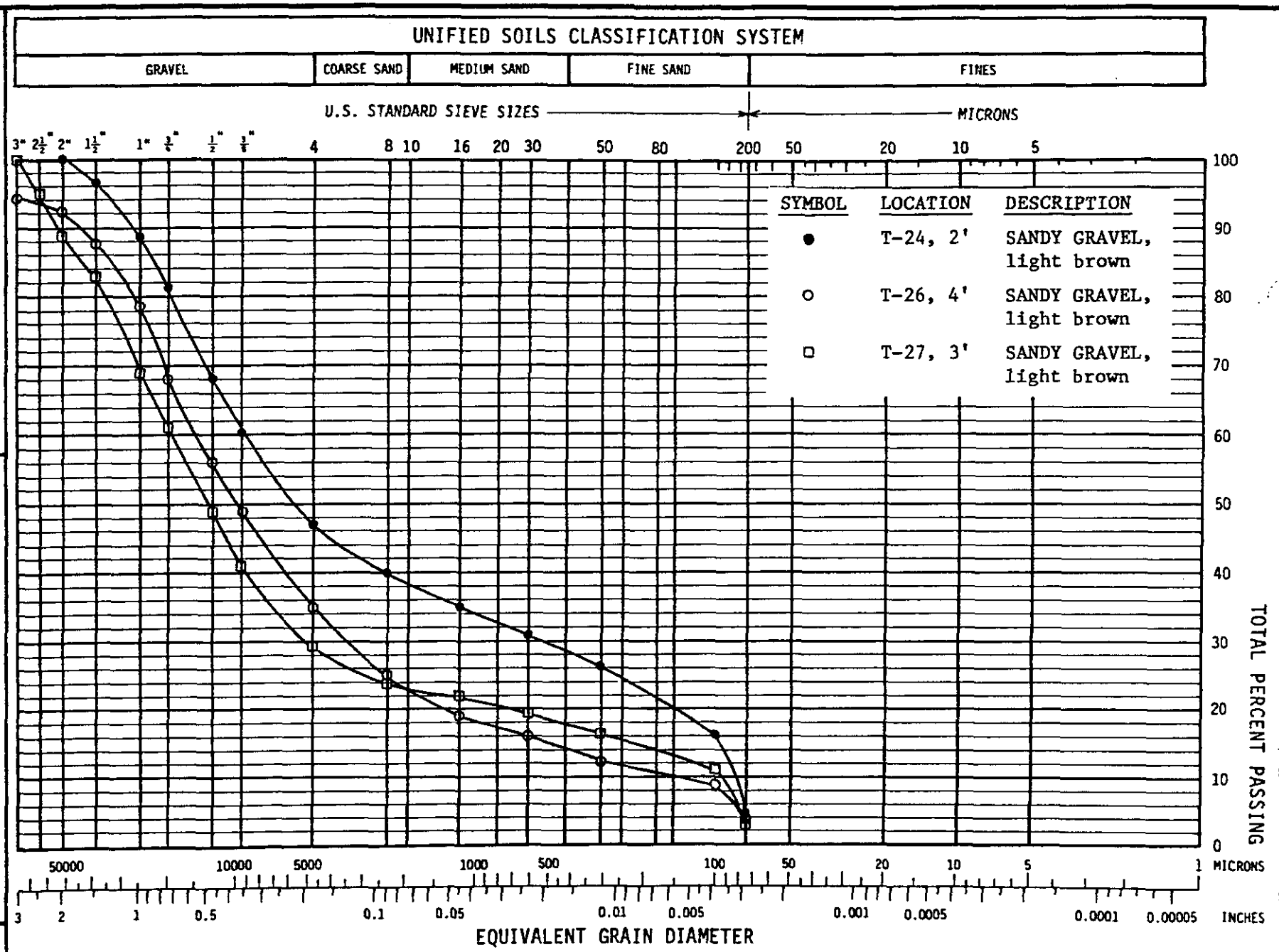


PROJECT NO. 128106

KLEINFELDER

GRAIN SIZE DISTRIBUTION

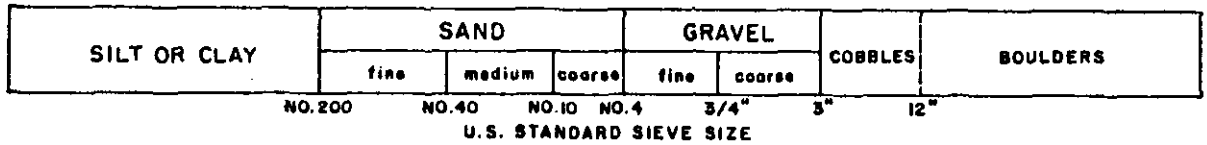
PLATE 67



MAJOR DIVISIONS			Group Symbols	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% of material is larger than the No. 200 sieve	GRAVELS More than 50% of coarse part is larger than the No. 4 sieve	CLEAN GRAVELS Little or no fines	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES Appreciable amount of fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse part is smaller than the No. 4 sieve	CLEAN SANDS Little or no fines	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES Appreciable amount of fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS More than 50% of material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit LESS than 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with low plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit GREATER than 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS



DESCRIPTIVE TERMS USED WITH SOILS

CONSISTENCY			MOISTURE CONTENT
	SILTS AND CLAYS	SANDS AND GRAVELS	
STRONGEST ↑	very stiff	very dense	WETTEST ↑ wet
	stiff	dense	very moist
	firm	medium dense	moist
	soft	loose	slightly moist
WEAKEST ↓			DRIEST ↓ dry

	CALICHE	CEMENTED SAND AND GRAVEL	IDENTIFICATION TEST USING KNIFE AND STANDARD GEOLOGIST'S HAMMER
STRONGEST ↑	very hard	very hard	Difficult to scratch or break
	hard	hard	Scratches leave only dust, requires many hammer blows to break
	moderately hard	moderately hard	Can be readily cut with knife and crumbles with several hammer blows
WEAKEST ↓	partially cemented	partially cemented	Gouges easily with knife and crumbles readily with a few blows of a hammer

EXPLANATION OF MATERIAL CLASSIFICATIONS

PLATE NO. 68

APPENDIX A

Laboratory Test Results Raw Data

1. LABORATORY FALLING HEAD PERMEABILITY

$$K = \frac{2.3\,a\,L}{A\,\Delta T} \log \frac{h_1}{h_2}$$

where:
- a = standpipe area
- L = sample length
- A = sample area
- h_1 = initial head
- h_2 = final head
- ΔT = time difference

2. IN-SITU FALLING HEAD TEST

$$K = \frac{R^2}{2L\,\Delta T} \text{Ln} \frac{L}{R} \text{Ln} \frac{H_1}{H_2}$$

where:
- R = hole radius
- L = slotted interval
- ΔT = time difference
- H_1 = initial head
- H_2 = final head

3. IN-SITU CONSTANT HEAD TEST

$$K = \frac{q \cdot \text{Ln}\left[\frac{mL}{D} + \sqrt{1 + \left(\frac{mL}{D}\right)^2}\right]}{2\pi L h_c}$$

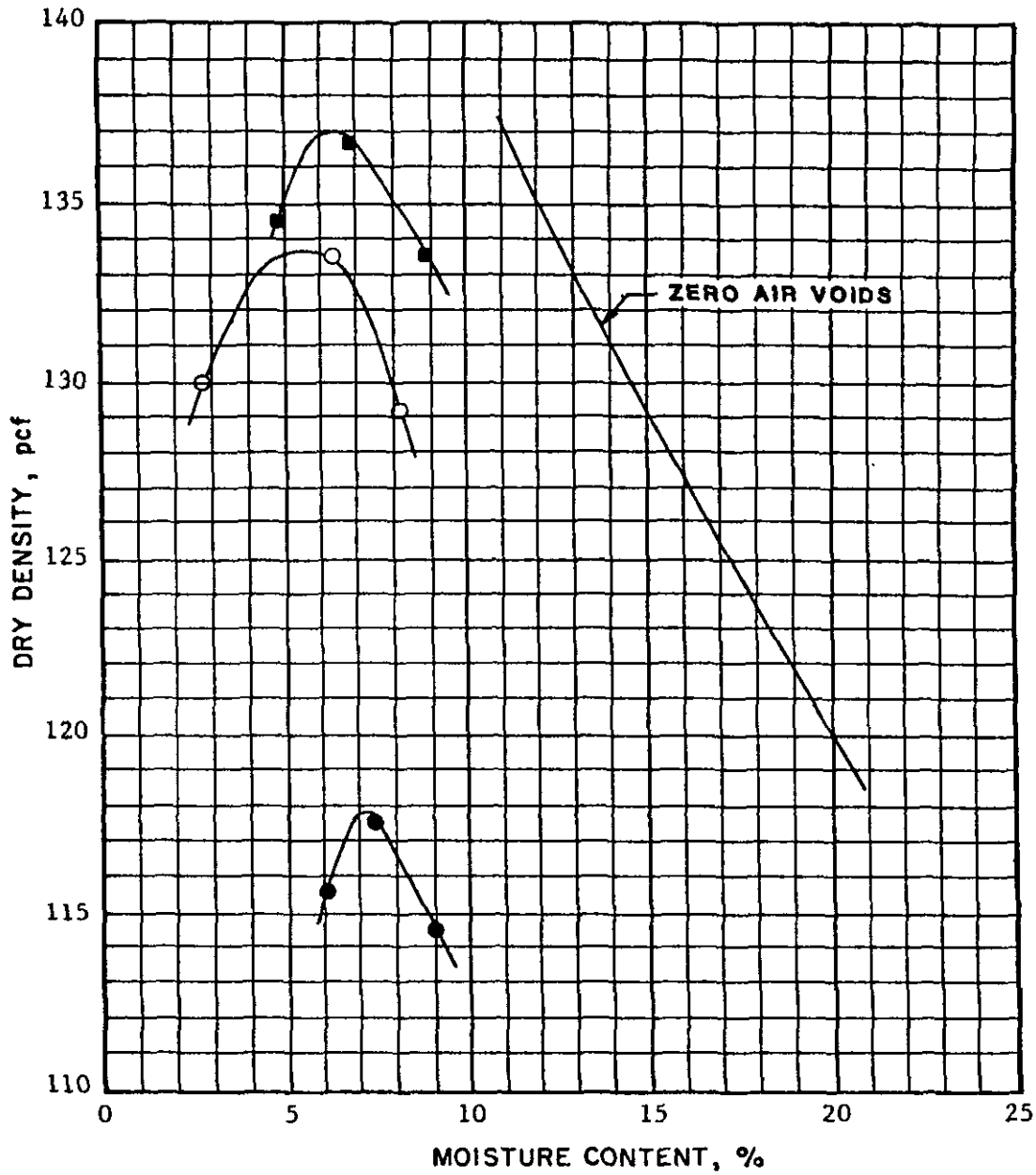
where:
- h_c = average head
- L = slotted length
- m = transformation ratio
- D = hole diameter
- q = volume/time

KLEINFELDER

PROJECT NO. 128106

FIELD AND LABORATORY PERMEABILITY EQUATIONS

PLATE A1



SYMBOL	SAMPLE LOCATION	SOIL DESCRIPTION	DRY DENSITY, pcf	MOISTURE CONTENT, %
●	T-14, 0'-1'	SAND, red-brown to white	117.8	12.2
○	T-18, 0'-1'	SILTY SAND & GRAVEL, brown	133.5	5.8
■	T-25, 3'-4'	SAND and GRAVEL, light brown	137.0	6.5

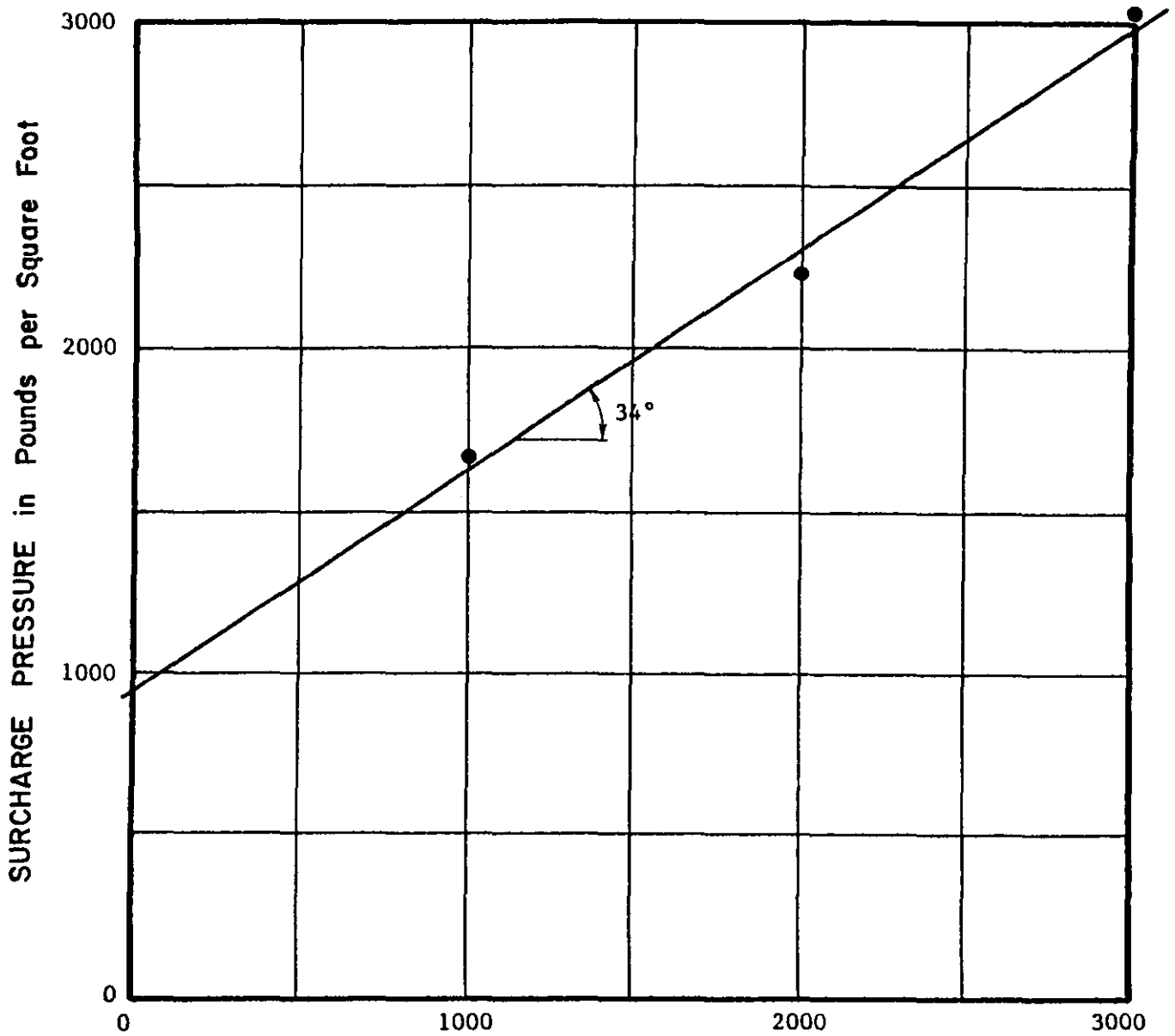
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PROJECT NO. 128106

COMPACTION TEST RESULTS

PLATE
A2

SHEAR STRENGTH in Pounds per Square Foot



SAMPLE: T-2 at 9 ft.

SOIL DESCRIPTION: SAND and GRAVEL, brown

MEASURED COHESION: 900 psf ANGLE OF INTERNAL FRICTION: 34°

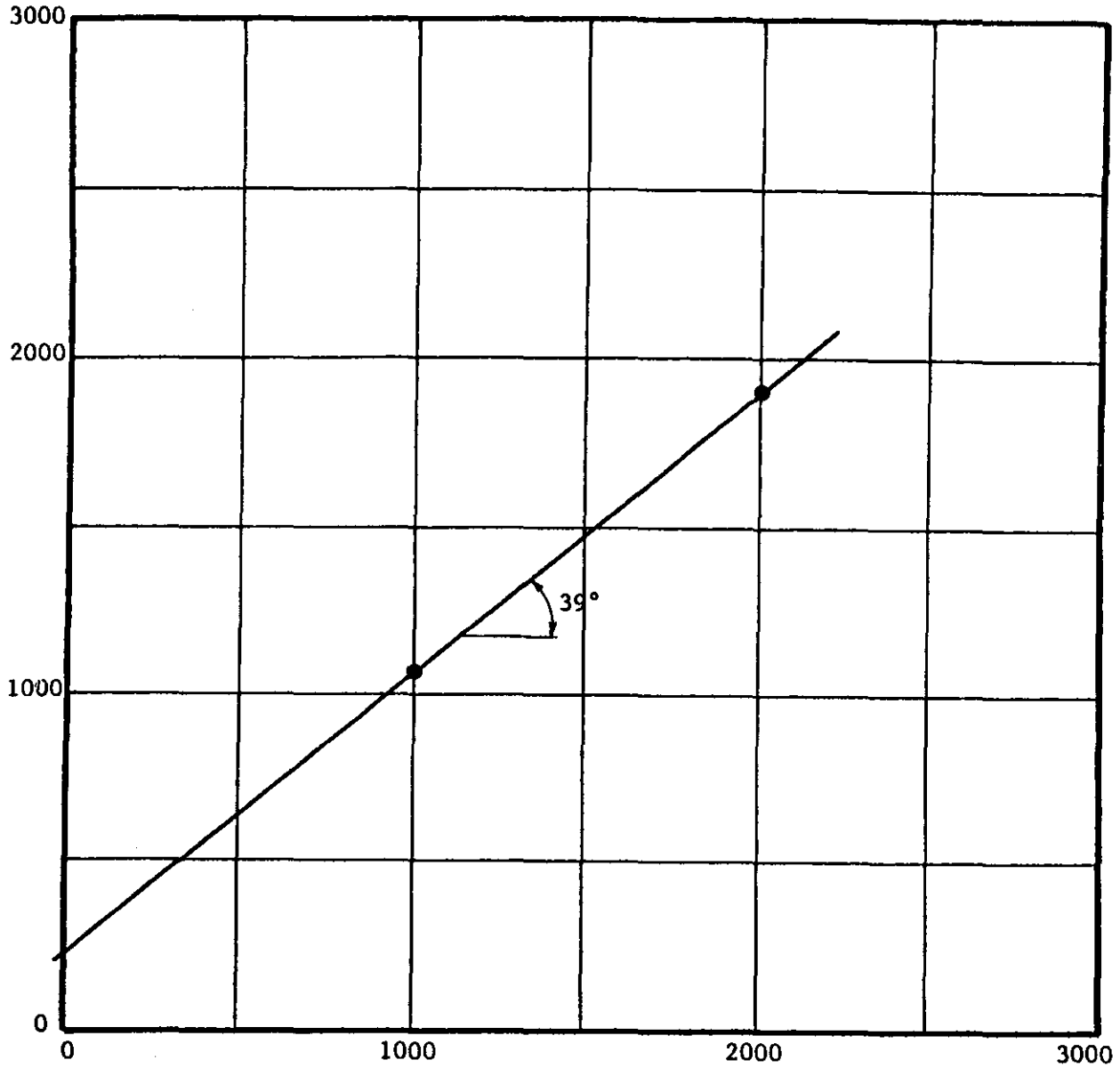
J.H. KLEINFELDER & ASSOCIATES
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PROJECT NO. 128106

DIRECT SHEAR TEST DATA

PLATE
A3

SHEAR STRENGTH in Pounds per Square Foot

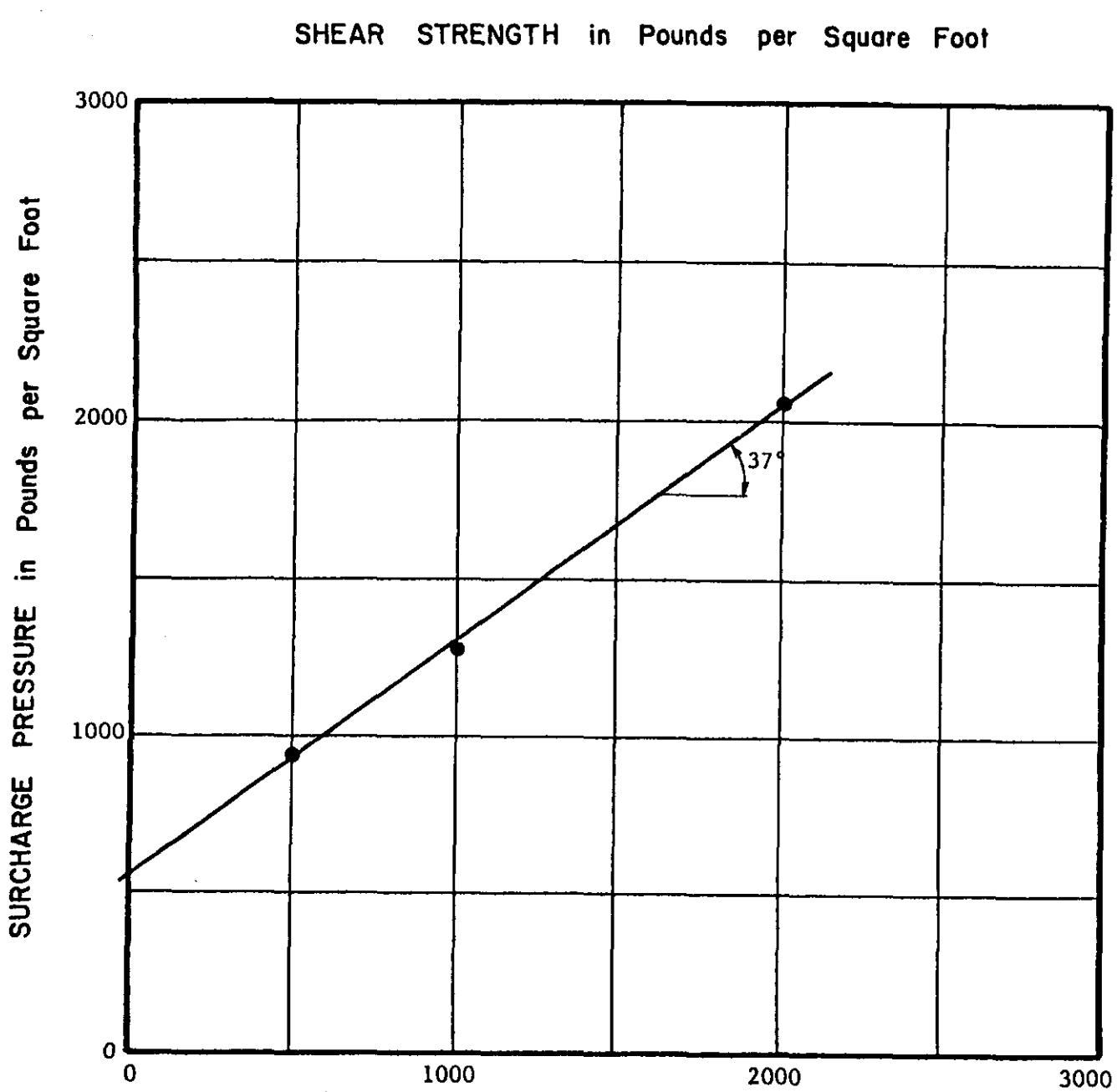


SAMPLE: T-6 at 5½ ft.

SOIL DESCRIPTION: SAND and GRAVEL, brown

MEASURED COHESION: 250 psf ANGLE OF INTERNAL FRICTION: 39°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A4
PROJECT NO. 128106		

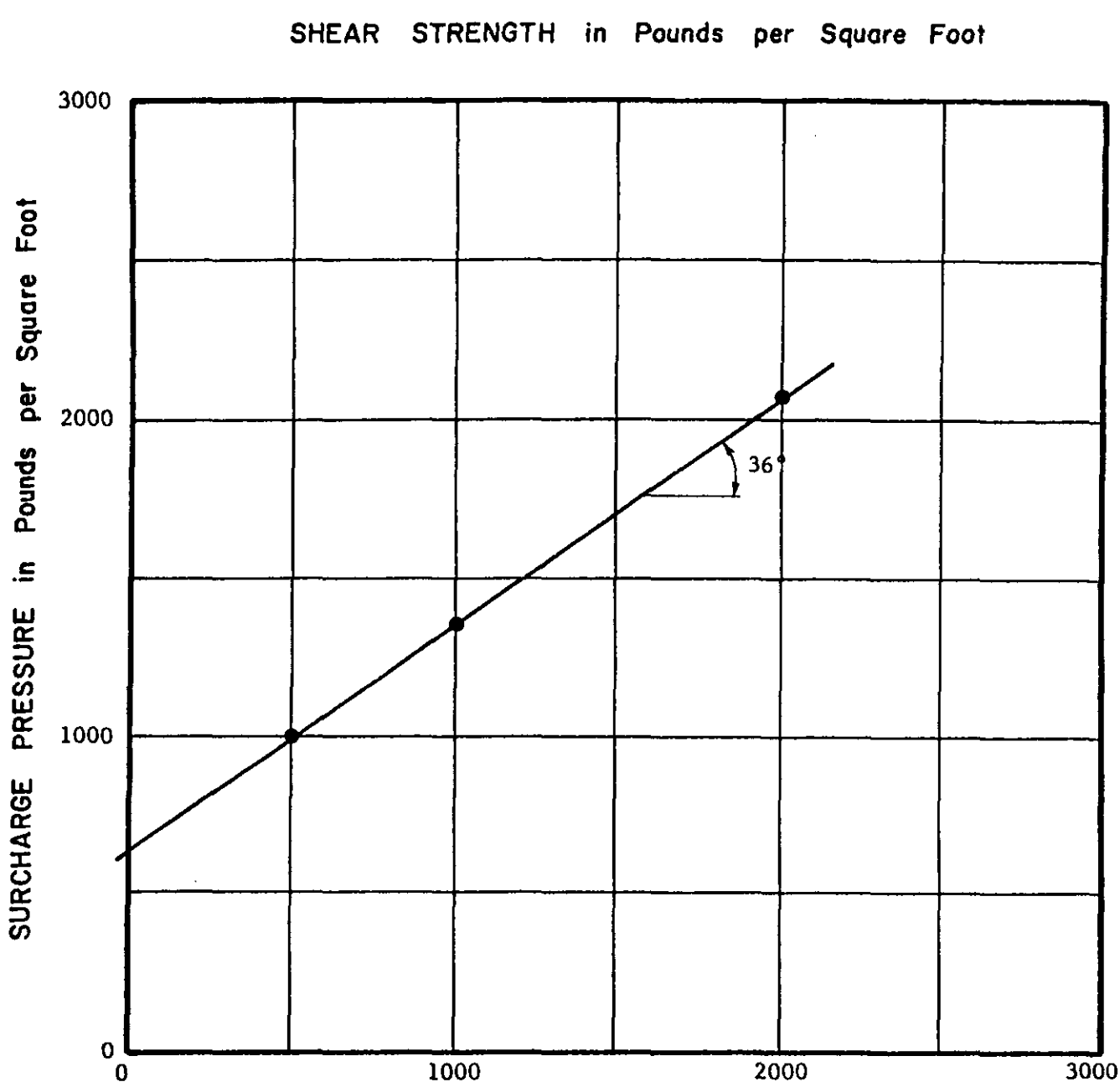


SAMPLE: T-5 at 1 ft.

SOIL DESCRIPTION: SAND and GRAVEL, brown

MEASURED COHESION: 550 psf ANGLE OF INTERNAL FRICTION: 37°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A5
PROJECT NO. 128106		



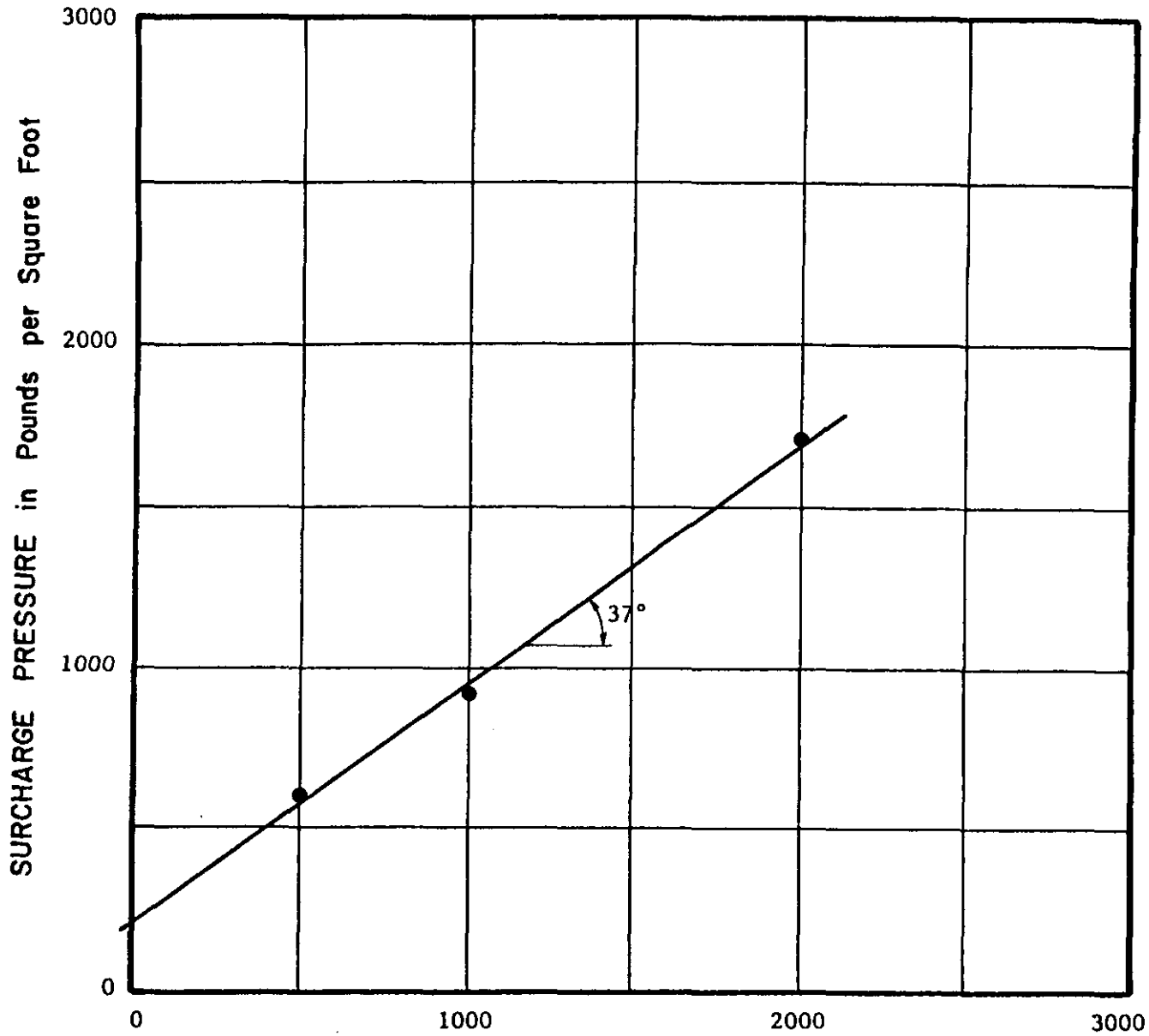
SAMPLE: T-15 at 1 ft.

SOIL DESCRIPTION: SAND and GRAVEL, lt. brown to tan

MEASURED COHESION: 625 psf ANGLE OF INTERNAL FRICTION: 36°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A6
PROJECT NO. 128106		

SHEAR STRENGTH in Pounds per Square Foot



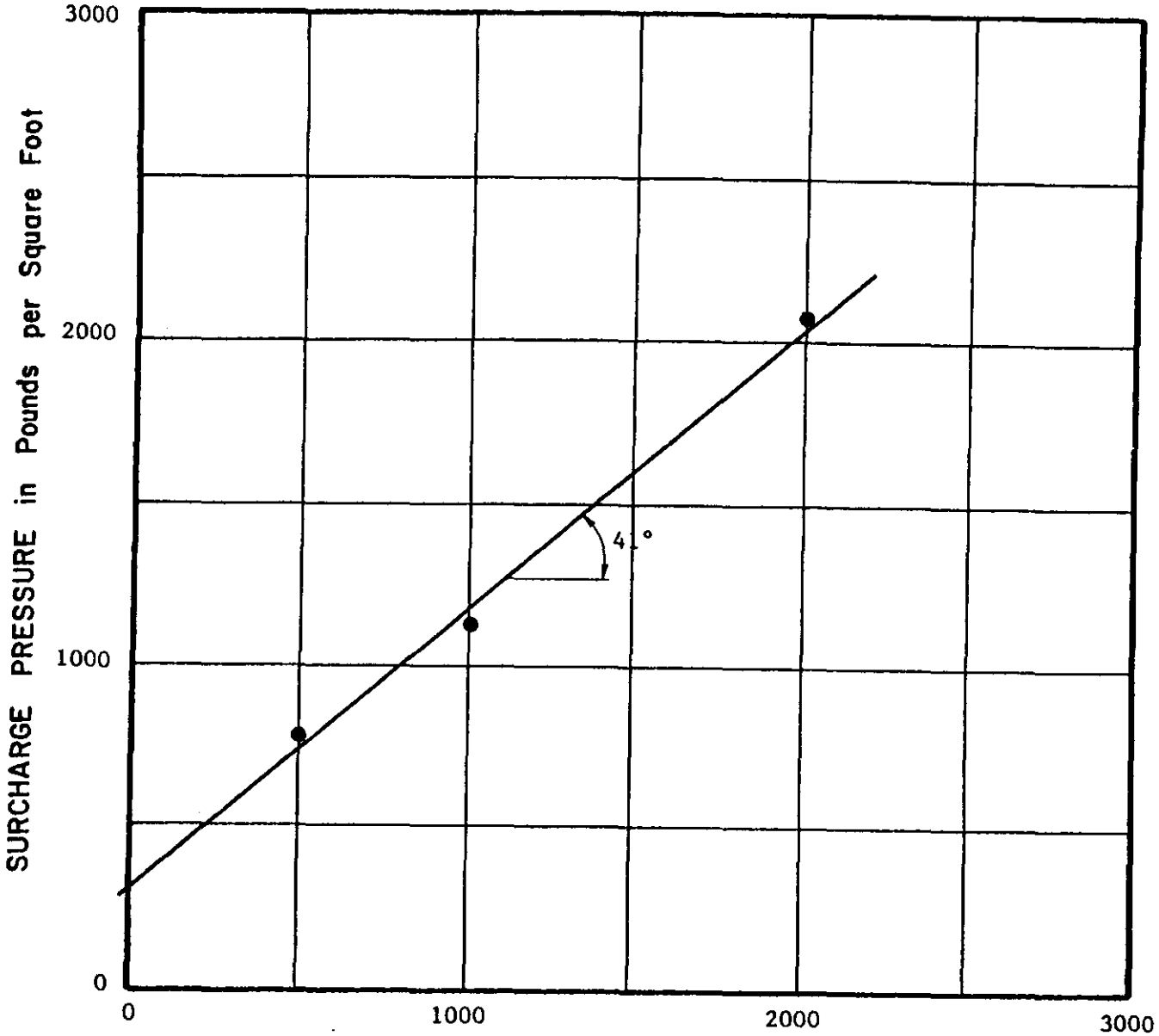
SAMPLE: T-20 at 1½ ft.

SOIL DESCRIPTION: SAND and GRAVEL, brown

MEASURED COHESION: 200 psf ANGLE OF INTERNAL FRICTION: 37°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A7
PROJECT NO. 128106		

SHEAR STRENGTH in Pounds per Square Foot

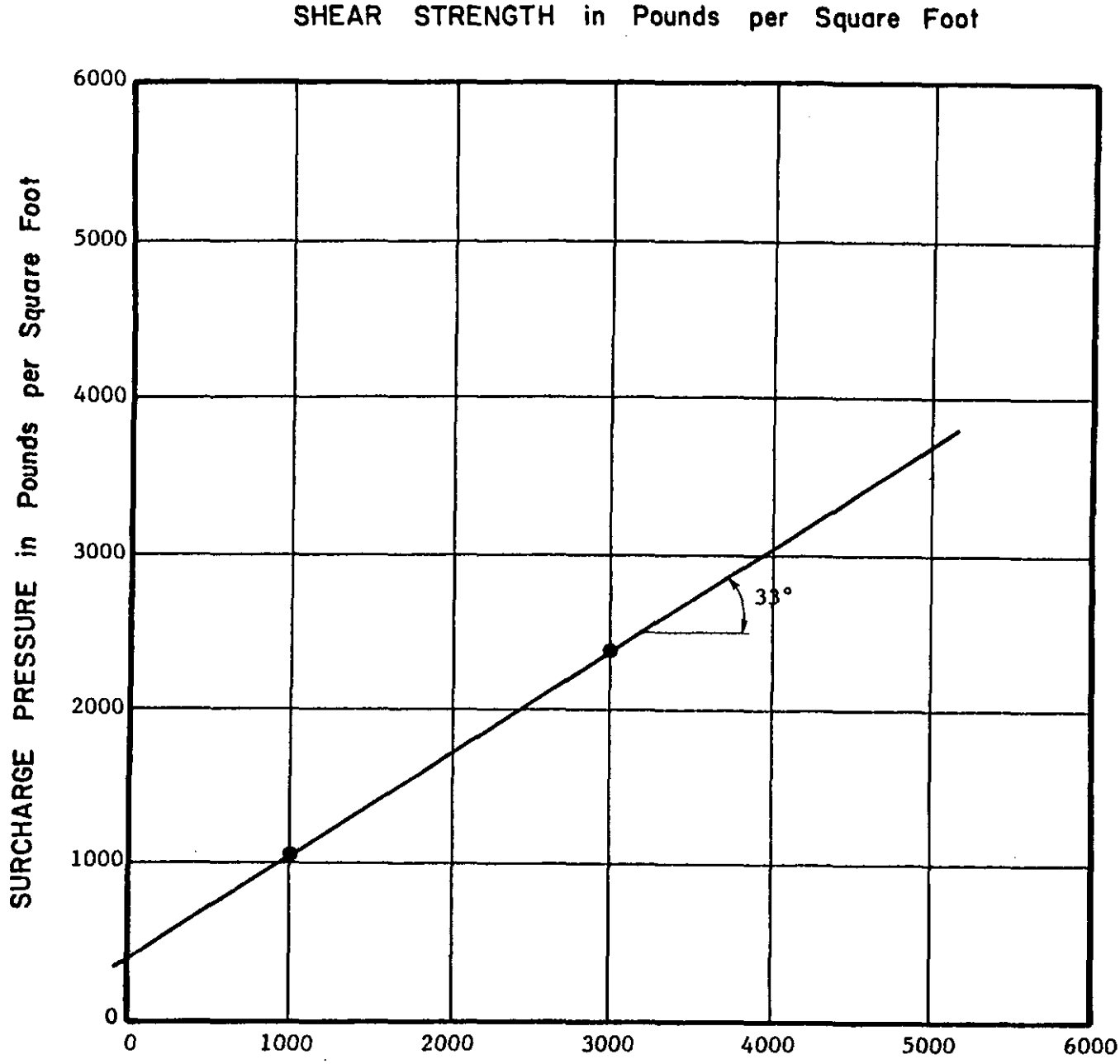


SAMPLE: T-21 at 1½ ft.

SOIL DESCRIPTION: SANDY GRAVEL, brown

MEASURED COHESION: 300 psf ANGLE OF INTERNAL FRICTION: 41°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A8
PROJECT NO. 128106		



SAMPLE: T-24 at 4 ft.

SOIL DESCRIPTION: SANDY GRAVEL, light brown

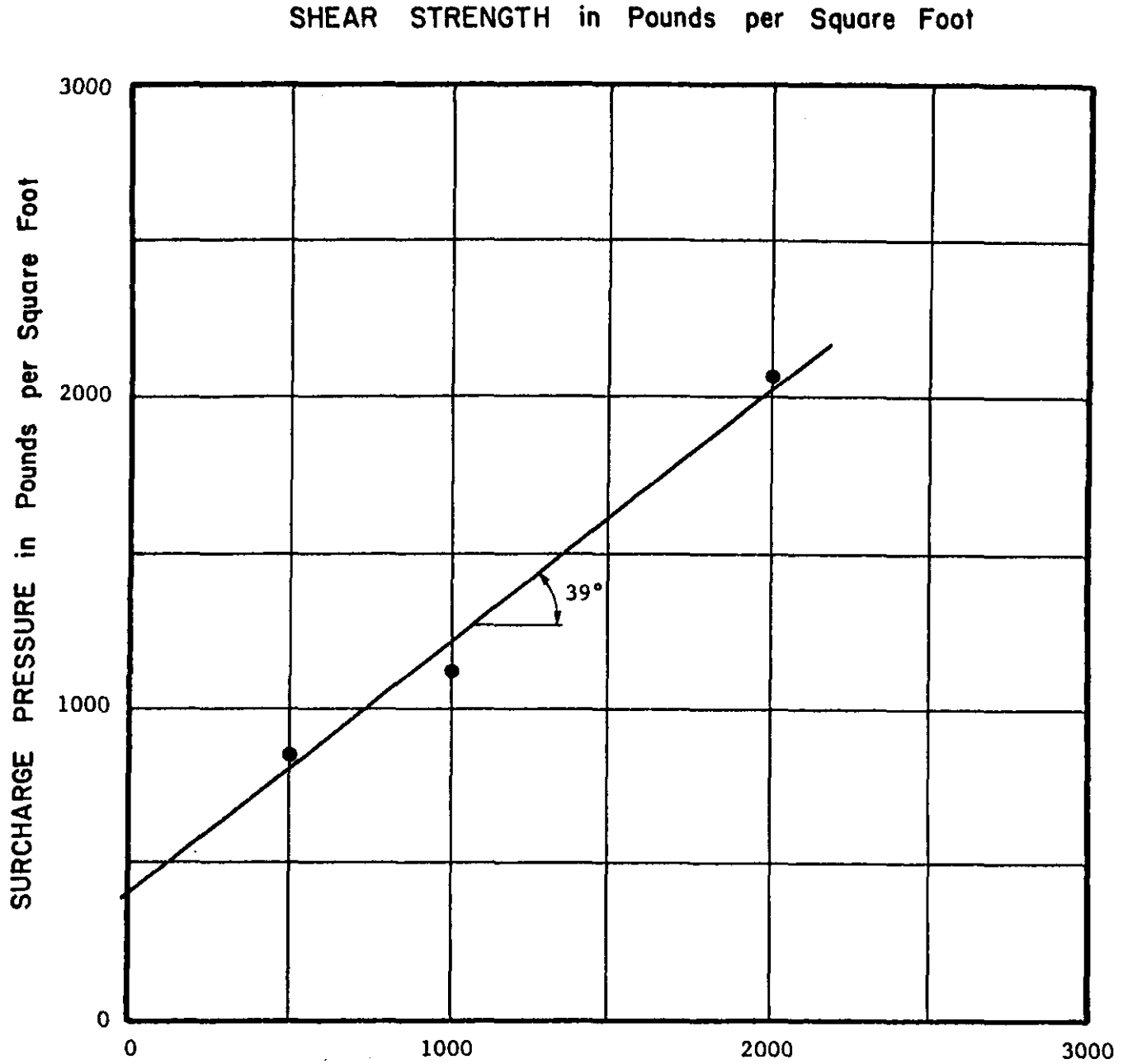
MEASURED COHESION: 400 psf ANGLE OF INTERNAL FRICTION: 33°

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. 128106

DIRECT SHEAR TEST DATA

PLATE
A9



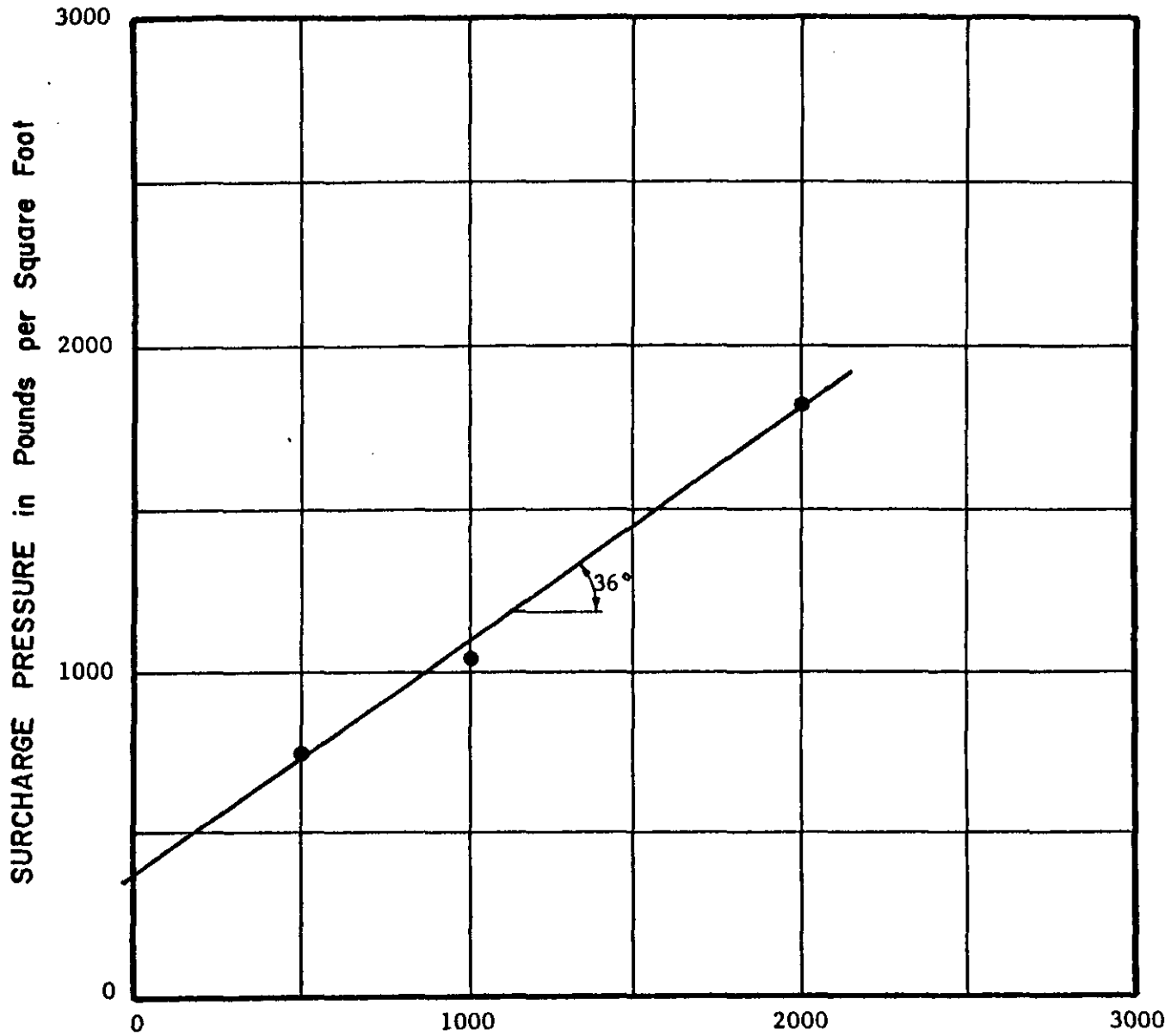
SAMPLE: T-26 at 4 ft.

SOIL DESCRIPTION: SANDY GRAVEL, light brown

MEASURED COHESION: 400 psf ANGLE ON INTERNAL FRICTION: 39°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A10
PROJECT NO. 128106		

SHEAR STRENGTH in Pounds per Square Foot



SAMPLE: T-27 at 2½ ft.

SOIL DESCRIPTION: SANDY GRAVEL, light brown

MEASURED COHESION: 375 psf ANGLE OF INTERNAL FRICTION: 36°

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	DIRECT SHEAR TEST DATA	PLATE A11
PROJECT NO. 128106		

To: From: Date:

Subject: Proj. No.:

Soil Density Tests

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *626-91*
REPORT DATE *08-08-91*
REVIEWED BY --
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-18-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
1	8.7	120.0	95	126.3	92	N/A	YES
2	10.7	121.0	96	126.3	92	N/A	YES
3	8.2	125.4	99	126.3	92	N/A	YES
4	9.6	119.9	95	126.3	92	N/A	YES
5	8.8	121.1	96	126.3	92	N/A	YES
6	5.5	130.6	95	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	7-18	Dam, Sta. 3+25 20'west of center	2478.0
2	7-18	Dam, Sta. 4+60 20'west of center	2475.0
3	7-18	Dam, Sta. 6+75 25'west of center	2470.5
4	7-18	Dam, Sta. 8+75 10'west of center	2469.0
5	7-18	Dam, Sta. 10+75 25'west of center	2465.0
6	7-18	Dam, Sta. 13+25 15' west of center	2464.0
+DATUM: 2480.0 = Top of Dam			

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-2922/D-3017
2	Subgrade	ASTM D-2922/D-3017
3	Subgrade	ASTM D-2922/D-3017
4	Subgrade	ASTM D-2922/D-3017
5	Subgrade	ASTM D-2922/D-3017
6	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty,Clayey Sand w/ Gr	Existing, Sta 1+00 to 5+00	9.4	126.3	D1557-D
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

Copies to: Addressee - (2)
Wheeler Construction (1)

Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *626-91*
REPORT DATE *08-08-91*
REVIEWED BY --
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-18-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
7	10.9	117.9	92	127.6	92	N/A	YES
8	10.8	118.9	93	127.6	92	N/A	YES
9	6.4	121.5	95	127.6	92	N/A	YES
10	7.4	121.0	95	127.6	92	N/A	YES
11	6.3	126.8	99	127.6	92	N/A	YES
12	6.6	124.6	98	127.6	92	N/A	YES
13	7.4	122.3	96	127.6	92	N/A	YES
14	7.3	121.3	95	127.6	92	N/A	YES
15	11.9	121.5	95	127.6	92	N/A	YES
16	6.8	128.2	100	127.6	92	N/A	YES
17	8.6	125.5	98	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	7-25	Dam, Sta. 9+45 18' west of center	2472.0
8	7-25	Dam, Sta. 10+95 35' west of center	2468.0
9	7-25	Dam, Sta. 13+25 12' west of center	2466.0
10	7-25	Dam, Sta. 17+00 40' west of center	2460.0
11	7-26	Dam, Sta. 1+50 10' west of center	2480.0
12	7-26	Dam, Sta. 4+35 center line	2478.0
13	7-26	Dam, Sta. 7+90 30' west of center	2472.0
14	7-26	Dam, Sta. 11+00 8' west of center	2470.0
15	7-26	Dam, Sta. 13+00 40' west of center	2465.5
16	7/26	Dam, Sta. 14+75 25' west of center line	2463.0
17	7/26	Dam, Sta. 18+00 30' west of center line	2456.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	Subgrade	ASTM D-2922/D-3017
8	Subgrade	ASTM D-2922/D-3017
9	Subgrade	ASTM D-2922/D-3017
10	Subgrade	ASTM D-2922/D-3017
11	Top of Dam	ASTM D-2922/D-3017
12	Subgrade	ASTM D-2922/D-3017
13	Subgrade	ASTM D-2922/D-3017
14	Subgrade	ASTM D-2922/D-3017
15	Subgrade	ASTM D-2922/D-3017
16	Subgrade	ASTM D-2922/D-3017
17	Subgrade	ASTM D-2922/D-3017

Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

9 1991
405

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *001-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
18	9.5	121.6	98	123.8	92	N/A	YES
19	8.4	121.7	98	123.8	92	N/A	YES
20	9.6	120.4	97	123.8	92	N/A	YES
21	9.5	120.5	97	123.8	92	N/A	YES
22	8.4	120.8	98	123.8	92	N/A	YES
23	9.2	122.1	99	123.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
18	7-29	Sta. 10+50 25' W of Dam center line	2471.0
19	7-29	Sta. 11+50 10' W of Dam center line	2468.0
20	7-29	Sta. 12+50 48' W of Dam center line	2467.0
21	7-29	Sta. 13+50 16' W of Dam center line	2466.0
22	7-29	Sta. 14+50 30' W of Dam center line	2465.0
23	7-29	Sta. 15+50 40' W of Dam center line	2464.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
18	Subgrade	ASTM D-2922/D-3017
19	Subgrade	ASTM D-2922/D-3017
20	Subgrade	ASTM D-2922/D-3017
21	Subgrade	ASTM D-2922/D-3017
22	Subgrade	ASTM D-2922/D-3017
23	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D
Lt Tan Silty Sand w/ Clch	Spillway Area, Existing	9.8	123.8	D1557-D
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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WESTERN TECHNOLOGIES INC.
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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *001-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
24	8.6	123.8	100	123.8	92	N/A	YES
25	4.8	132.3	94	140.7	92	N/A	YES
26	5.7	128.7	94	137.6	92	N/A	YES
27	5.8	134.3	95	140.7	92	N/A	YES
28	5.4	129.5	92	140.7	92	N/A	YES
29	9.9	126.7	99	127.6	92	N/A	YES
30	9.8	126.5	99	127.6	92	N/A	YES
31	9.2	127.8	100	127.6	92	N/A	YES
32	5.8	139.1	99	140.7	92	N/A	YES
33	8.3	133.2	95	140.7	92	N/A	YES
34	7.5	127.5	93	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
24	7-29	Sta. 16+50 20' W of Dam center line	2463.0
25	7-30	Sta. 6+70 25' W of Dam center line	2477.0
26	7-30	Sta. 5+50 10' W of Dam center line	2479.0
27	7-30	Sta. 4+50 28' W of Dam center line	2480.0
28	7-30	Sta. 7+50 2' W of Dam center line	2476.0
29	7-31	Sta. 20+50 30' W of Dam center line	2459.0
30	7-31	Sta. 19+25 15' W of Dam center line	2460.0
31	7-31	Sta. 17+30 50' W of Dam center line	2461.0
32	8-1	Sta. 4+50 4' W of Dam center line	2480.0
33	8-1	Sta. 6+00 15' W of Dam center line	2480.0
34	8-1	Sta. 7+50 6' E of Dam center line	2480.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
24	Subgrade	ASTM D-2922/D-3017
25	Subgrade	ASTM D-2922/D-3017
26	Subgrade	ASTM D-2922/D-3017
27	Top of Dam	ASTM D-2922/D-3017
28	Subgrade	ASTM D-2922/D-3017
29	Subgrade	ASTM D-2922/D-3017
30	Subgrade	ASTM D-2922/D-3017
31	Subgrade	ASTM D-2922/D-3017
32	Top of Dam	ASTM D-2922/D-3017
33	Top of Dam	ASTM D-2922/D-3017
34	Top of Dam	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *001-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
PAGE *3*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
35	6.8	132.7	94	140.7	92	N/A	YES
36	7.5	133.4	95	140.7	92	N/A	YES
37	7.9	129.1	94	137.6	92	N/A	YES
38	7.8	132.4	96	137.6	92	N/A	YES
39	8.5	128.3	91	140.7	92	N/A	NO
40	7.4	126.3	90	140.7	92	N/A	NO
41	7.9	127.1	90	140.7	92	N/A	NO
42	5.4	128.7	94	137.6	92	N/A	YES
43	8.1	129.5	94	137.6	92	N/A	YES
44	8.1	127.2	92	137.6	92	N/A	YES
45	6.0	128.8	94	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
35	8-1	Sta. 9+50 10' W of Dam center line	2477.0
36	8-1	Sta. 11+50 20' W of Dam center line	2472.0
37	8-1	Sta. 14+00 25' W of Dam center line	2469.5
38	8-1	Sta. 16+50 45' W of Dam center line	2464.0
39	8-1	Sta. 28+00 100' N/E of Dam center line	2453.0
40	8-1	Sta. 29+40 40' N/E of Dam center line	2452.0
41	8-1	Sta. 31+00 65' N/E of Dam center line	2452.0
42	8-2	Sta. 10+00 40' E of Dam center line	2468.0
43	8-2	Sta. 10+90 15' E of Dam center line	2468.0
44	8-2	Sta. 12+00 30' E of Dam center line	2465.0
45	8-2	Sta. 13+75 70' E of Dam center line	2463.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
35	Subgrade	ASTM D-2922/D-3017
36	Subgrade	ASTM D-2922/D-3017
37	Subgrade	ASTM D-2922/D-3017
38	Subgrade	ASTM D-2922/D-3017
39	Subgrade	ASTM D-2922/D-3017
40	Subgrade	ASTM D-2922/D-3017
41	Subgrade	ASTM D-2922/D-3017
42	Subgrade	ASTM D-2922/D-3017
43	Subgrade	ASTM D-2922/D-3017
44	Subgrade	ASTM D-2922/D-3017
45	Subgrade	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *001-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
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PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
46	5.4	129.6	94	137.6	92	N/A	YES
47	5.9	133.3	95	140.7	92	N/A	YES
48	9.4	129.8	92	140.7	92	N/A	YES
49	6.7	138.2	98	140.7	92	N/A	YES
50	7.0	117.1	95	123.8	92	N/A	YES
51	6.1	125.4	98	127.6	92	N/A	YES
52	4.2	126.8	99	127.6	92	N/A	YES
53	5.4	129.9	94	137.6	92	N/A	YES
54	6.0	129.4	94	137.6	92	N/A	YES
55	4.9	127.7	93	137.6	92	N/A	YES
56	5.8	117.9	95	123.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM+
46	8-2	Sta. 15+75 20' E of Dam center line	2461.0
47	8-2	Sta. 27+50 25' N/E of Dam center line	2453.0
48	8-2	Sta. 28+50 100' N/E of Dam center line	2452.0
49	8-2	Sta. 30+75 55' N/E of Dam center line	2452.0
50	8-5	Sta. 7+70 8' W of Dam center line	2477.0
51	8-5	Sta. 9+00 15' E of Dam center line	2471.0
52	8-5	Sta. 9+20 30' W of Dam center line	2475.0
53	8-5	Sta. 11+00 20' W of Dam center line	2470.0
54	8-5	Sta. 12+50 30' E of Dam center line	2468.0
55	8-5	Sta. 13+00 45' W of Dam center line	2469.0
56	8-5	Sta. 14+50 30' E of Dam center line	2465.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
46	Subgrade	ASTM D-2922/D-3017
47	Subgrade	ASTM D-2922/D-3017
48	Subgrade	ASTM D-2922/D-3017
49	Subgrade	ASTM D-2922/D-3017
50	Subgrade	ASTM D-2922/D-3017
51	Subgrade	ASTM D-2922/D-3017
52	Subgrade	ASTM D-2922/D-3017
53	Subgrade	ASTM D-2922/D-3017
54	Subgrade	ASTM D-2922/D-3017
55	Subgrade	ASTM D-2922/D-3017
56	Subgrade	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *001-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
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PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *07-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
57	*7.6*	*128.9*	*94*	*137.6*	*92*	*N/A*	*YES*
58	*7.3*	*129.6*	*92*	*140.7*	*92*	*N/A*	*YES*
59	*5.5*	*125.4*	*89*	*140.7*	*92*	*N/A*	*NO*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
57	*8-5*	*STa. 16+00 50' W of Dam center line*	*2470.0*
58	*8-5*	*Sta. 31+60 25' N/E of Dam center line*	*2453.0*
59	*8-5*	*Sta. 34+15 65' N/E of Dam center line*	*2454.5*

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
57	*Subgrade*	*ASTM D-2922/D-3017*
58	*Subgrade*	*ASTM D-2922/D-3017*
59	*Subgrade*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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JOB NO. *4141K255*
LAB/INV NO. *002-91*
REPORT DATE *08-08-91*
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PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-05-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
60	*4.8*	*132.6*	*94*	*140.7*	*92*	*N/A*	*YES*
61	*5.4*	*133.4*	*95*	*140.7*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
60	*8-5*	*Box culvert subgrade 20' S of roadway & 6' E of culvert center line*	*90.0*
61	*8-5*	*Box culvert subgrade 15' N of roadway & 5' W of culvert center line*	*90.0*

+DATUM: *100' = Finish Grade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
60	*Subgrade*	*ASTM D-2922/D-3017*
61	*Subgrade*	*ASTM D-2922/D-3017*

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sandy Gravel	*Over-ex. N side of Spiwy.*	*4.6*	*140.7*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *003-91*
REPORT DATE *08-08-91*
REVIEWED BY *EB*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-06-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
62	5.1	123.3	97	127.6	92	N/A	YES
63	6.3	135.8	97	140.7	92	N/A	YES
64	5.7	136.9	97	140.7	92	N/A	YES
65	4.5	136.9	97	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
62	8-6	Sta. 8+75 25' W of Dam center line	2475.0
63	8-6	Sta. 32+75 100' N/E of Dam center line	2455.0
64	8-6	Sta. 33+50 30' N/E of Dam center line	2456.0
65	8-6	Sta. 34+90 45' N/E of Dam center line	2458.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
62	Subgrade	ASTM D-2922/D-3017
63	Subgrade	ASTM D-2922/D-3017
64	Subgrade	ASTM D-2922/D-3017
65	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *007-91*
REPORT DATE *08-14-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-07-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
66	2.4	131.1	93	140.7	92	N/A	YES
67	2.7	132.0	94	140.7	92	N/A	YES
68	6.7	121.8	95	127.6	92	N/A	YES
69	8.6	137.7	98	140.7	92	N/A	YES
70	11.7	122.6	96	127.6	92	N/A	YES
71	11.7	121.1	95	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
66	8-7	Spillway 30' W of Dam center line & 50' S of channel	2441.0
67	8-7	Spillway 52' E of Dam center line & 75' N of channel	2441.0
68	8-7	Sta. 16+00 20' E of Dam center line	2465.0
69	8-9	Sta. 9+50 10' W of Dam center line	2478.0
70	8-9	Sta. 12+00 30' W of Dam center line	2472.0
71	8-9	Sta. 15+75 10' E of Dam center line	2467.0

+DATUM: 2480 = Top of Dam

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
66	Subgrade	ASTM D-2922/D-3017
67	Subgrade	ASTM D-2922/D-3017
68	Subgrade	ASTM D-2922/D-3017
69	Subgrade	ASTM D-2922/D-3017
70	Subgrade	ASTM D-2922/D-3017
71	Subgrade	ASTM D-2922/D-3017

Embankment fill

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *008-91*
REPORT DATE *08-14-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-07-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
72	*6.8*	*121.2*	*95*	*127.6*	*92*	*N/A*	*YES*
73	*6.3*	*138.6*	*99*	*140.7*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
72	*8-7*	*Sta. 16+00 20' E of Dam center line*	*2465.0*
73	*8-9*	*Sta. 9+50 10' W of Dam center line*	*2478.0*

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
72	*Subgrade* } Embankment Fill	*ASTM D-1556/AASHTO T-217*
73	*Subgrade* }	*ASTM D-1556/AASHTO T-217*

MOISTURE/DENSITY RELATIONSHIP

MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/brn Silty Sand w/ Gr	*Sta 9+00 to 10+00*	*7.4*	*127.6*	*D1557-D*
Drk Brn Sandy Gravel	*Over-ex. N side of Spiwy.*	*4.6*	*140.7*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *011-91*
REPORT DATE *08-19-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-14-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
74	4.8	132.3	94	140.7	92	N/A	YES
75	5.7	133.5	95	140.7	92	N/A	YES
76	5.1	131.4	93	140.7	92	N/A	YES
77	9.9	125.5	92	136.2	92	N/A	YES
78	6.1	133.7	95	140.7	92	N/A	YES
79	8.9	118.5	93	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
74	8-12	Sta. 47+90 8' N of Dam center line	2480.0
75	8-12	Sta. 45+95 6' S of Dam center line	2476.0
76	8-12	Sta. 43+60 22' N of Dam center line	2472.0
77	8-12	Sta. 41+60 20' S of Dam center line inspection trench	2467.0
78	8-12	Sta. 39+50 50' W of Dam center line	2466.5
79	8-12	Sta. 39+50 30' S of Dam center line inspection trench	2463.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
74	Top of Dam	ASTM D-2922/D-3017
75	Subgrade	ASTM D-2922/D-3017
76	Subgrade	ASTM D-2922/D-3017
77	Subgrade	ASTM D-2922/D-3017
78	Subgrade	ASTM D-2922/D-3017
79	Subgrade	ASTM D-2922/D-3017

Embankment Fill

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D

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WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
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(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *011-91*
REPORT DATE *08-19-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-14-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
80	*10.7*	*125.2*	*98*	*127.6*	*92*	*N/A*	*YES*
81	*11.3*	*122.5*	*96*	*127.6*	*92*	*N/A*	*YES*
82	*9.4*	*123.9*	*97*	*127.6*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
80	*8-12*	*Sta. 37+00 40' S of Dam center line inspection trench*	*2459.0*
81	*8-12*	*Sta. 34+00 32' S/W of Dam center line inspection trench*	*2457.0*
82	*8-12*	*Sta. 31+00 32' S/W of Dam center line inspection trench*	*2451.0*

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
80	*Subgrade*] Embankment Fill	*ASTM D-2922/D-3017*
81	*Subgrade*	*ASTM D-2922/D-3017*
82	*Subgrade*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *015-91*
REPORT DATE *08-14-91*
REVIEWED BY *E. B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-14-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
83	8.6	120.4	94	127.6	92	N/A	YES
84	10.5	123.4	97	127.6	92	N/A	YES
85	9.3	123.7	97	127.6	92	N/A	YES
86	10.1	127.7	100	127.6	92	N/A	YES
87	8.0	118.1	93	127.6	92	N/A	YES
88	7.3	124.9	98	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
83	8-13	Sta. 28+50 47' S/W of Dam center line	2449.0
84	8-13	Sta. 30+50 70' S/W of Dam center line	2451.0
85	8-13	Sta. 32+00 26' S/W of Dam center line	2454.0
86	8-13	Sta. 33+75 20' S/W of Dam center line	2457.0
87	8-13	Sta. 34+75 50' S/W of Dam center line	2458.0
88	8-13	Sta. 34+75 50' S/W of Dam center line	2458.0

+DATUM: 2480.0 = Top of Dam

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
83	Subgrade	ASTM D-2922/D-3017
84	Subgrade	ASTM D-2922/D-3017
85	Subgrade	ASTM D-2922/D-3017
86	Subgrade	ASTM D-2922/D-3017
87	Subgrade	ASTM D-2922/D-3017
88	Subgrade	ASTM D-1556/AASHTO T-217

Embankment Fill

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *017-91*
REPORT DATE *08-15-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-14-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
89	7.7	123.7	97	127.6	92	N/A	YES
90	7.1	119.1	93	127.6	92	N/A	YES
91	7.3	126.1	99	127.6	92	N/A	YES
92	8.8	123.4	97	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
89	8-14	Sta. 18+35 45' right of Dam center line	2455.0
90	8-14	Sta. 20+25 75' right of Dam center line	2451.0
91	8-14	Sta. 21+10 15' right of Dam center line	2452.0
92	8-14	Sta. 14+75 25' left of Dam center line	2479.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
89	Subgrade	ASTM D-2922/D-3017
90	Subgrade	ASTM D-2922/D-3017
91	Subgrade	ASTM D-2922/D-3017
92	Subgrade	ASTM D-2922/D-3017

Embankment Fill

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *021-91*
REPORT DATE *08-22-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-15-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
93	5.5	133.8	97	137.6	92	N/A	YES
94	4.6	129.4	94	137.6	92	N/A	YES
95	2.4	128.1	93	137.6	92	N/A	YES
96	6.1	119.4	94	127.6	92	N/A	YES
97	4.3	127.3	93	137.6	92	N/A	YES
98	4.1	128.1	93	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
93	8-15	Sta. 6+75 20' left of Dam center line	2480.0
94	8-16	Sta. 9+60 on Dam center line	2480.0
95	8-16	Sta. 10+95 5' right of Dam center line	2480.0
96	8-16	Sta. 18+25 75' right of Dam center line	2456.0
97	8-16	Sta. 19+25 35' right of Dam center line	2454.5
98	8-16	Sta. 21+60 60' right of Dam center line	2453.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
93	Top of Dam	ASTM D-2922/D-3017
94	Top of Dam	ASTM D-2922/D-3017
95	Top of Dam	ASTM D-2922/D-3017
96	Subgrade	ASTM D-2922/D-3017
97	Subgrade	ASTM D-2922/D-3017
98	Subgrade	ASTM D-2922/D-3017

Embankment Fill

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *021-91*
REPORT DATE *08-22-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-15-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
99	*5.6*	*121.4*	*95*	*127.6*	*92*	*N/A*	*YES*
100	*6.2*	*121.5*	*95*	*127.6*	*92*	*N/A*	*YES*
101	*4.7*	*125.1*	*98*	*127.6*	*92*	*N/A*	*YES*
102	*6.0*	*127.7*	*93*	*137.6*	*92*	*N/A*	*YES*
103	*4.3*	*132.7*	*96*	*137.6*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
99	*8-19*	*Sta. 19+25 15' left of Dam center line*	*2462.0*
100	*8-19*	*Sta. 20+25 15' right of Dam center line*	*2457.0*
101	*8-19*	*Sta. 21+25 35' right of Dam center line*	*2456.0*
102	*8-19*	*Sta. 28+90 25' left of Dam center line*	*2452.0*
103	*8-19*	*Sta. 30+75 40' left of Dam center line*	*2455.0*

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
99	*Subgrade*	*ASTM D-2922/D-3017*
100	*Subgrade*	*ASTM D-2922/D-3017*
101	*Subgrade*	*ASTM D-2922/D-3017*
102	*Subgrade*	*ASTM D-2922/D-3017*
103	*Subgrade*	*ASTM D-2922/D-3017*

Embankment Fill

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *027-91*
REPORT DATE *08-26-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-20-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
104	7.1	129.2	95	136.2	92	N/A	YES
105	7.0	127.8	94	136.2	92	N/A	YES
106	6.4	127.4	94	136.2	92	N/A	YES
107	5.7	126.8	93	136.2	92	N/A	YES
108	6.6	127.2	93	136.2	92	N/A	YES
109	7.3	118.4	93	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
104	8-20	Sta. 28+00 75' left of Dam center line	2450.0
105	8-20	Sta. 28+85 15' left of Dam center line	2451.0
106	8-20	Sta. 30+30 53' left of Dam center line	2452.0
107	8-20	Sta. 31+50 84' left of Dam center line	2457.5
108	8-20	Sta. 33+00 30' left of Dam center line	2458.0
109	8-21	Sta. 28+20 75' right of Dam center line	2450.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
104	Subgrade	ASTM D-2922/D-3017
105	Subgrade	ASTM D-2922/D-3017
106	Subgrade	ASTM D-2922/D-3017
107	Subgrade	ASTM D-2922/D-3017
108	Subgrade	ASTM D-2922/D-3017
109	Subgrade	ASTM D-2922/D-3017

Embankment Fill

MOISTURE/DENSITY RELATIONSHIP

MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *027-91*
REPORT DATE *08-26-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-20-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
110	*9.1*	*127.3*	*95*	*134.4*	*92*	*N/A*	*YES*
111	*9.6*	*126.7*	*94*	*134.4*	*92*	*N/A*	*YES*
112	*6.6*	*126.5*	*94*	*134.4*	*92*	*N/A*	*YES*
113	*7.7*	*130.7*	*97*	*134.4*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
110	*8-21*	*Sta. 29+75 35' right of Dam center line*	*2451.5*
111	*8-21*	*Sta. 31+50 10' left of Dam center line*	*2457.5*
112	*8-21*	*Sta. 34+50 55' left of Dam center line*	*2459.0*
113	*8-21*	*Sta. 38+40 50' left of Dam center line*	*2467.0*

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
110	*Subgrade*	*ASTM D-2922/D-3017*
111	*Subgrade*	*ASTM D-2922/D-3017*
112	*Subgrade*	*ASTM D-2922/D-3017*
113	*Subgrade*	*ASTM D-2922/D-3017*

Embankment Fill

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SOIL/AGGREGATE FIELD DENSITY TEST

SAND CONE DENSITIES

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *028-91*
REPORT DATE *08-27-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-21-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
114	*7.7*	*117.3*	*92*	*127.6*	*92*	*N/A*	*YES*
115	*8.8*	*126.8*	*94*	*134.4*	*92*	*N/A*	*YES*
116	*7.5*	*127.8*	*95*	*134.4*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
114	*8-21*	*Sta. 28+20 75' right of Dam center line*	*2450.0*
115	*8-21*	*Sta. 31+50 10' left of Dam center line*	*2457.5*
116	*8-21*	*Sta. 38+40 50' left of Dam center line*	*2467.0*
		+DATUM: *2480.0 = Top of Dam*	

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
114	*Subgrade, Correlation: See test # 109*	*ASTM D-1556/AASHTO T-217*
115	*Subgrade, Correlation: See test # 111*	*ASTM D-1556/AASHTO T-217*
116	*Subgrade, Correlation: See test # 113*	*ASTM D-1556/AASHTO T-217*

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Red/brn Silty Sand w/ Gr	*Sta 9+00 to 10+00*	*7.4*	*127.6*	*D1557-D*
Silty, Sandy Gravel	*Borrow, S/W of Scrn. Plant*	*7.8*	*134.4*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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JOB NO. *4141K255*
LAB/INV NO. *033-91*
REPORT DATE *08-30-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-22-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
117	7.2	122.2	96	127.6	92	N/A	YES
118	9.4	124.0	97	127.6	92	N/A	YES
119	7.0	124.5	98	127.6	92	N/A	YES
120	7.9	126.0	99	127.6	92	N/A	YES
121	8.3	121.9	96	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
117	8-22	Sta. 42+75 17' right of Dam center line	2475.0
118	8-22	Sta. 40+85 15' right of Dam center line	2471.0
119	8-22	Sta. 39+40 28' right of Dam center line	2470.0
120	8-22	Sta. 37+50 35' right of Dam center line	2467.0
121	8-22	Sta. 35+00 78' right of Dam center line	2461.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
117	Subgrade	ASTM D-2922/D-3017
118	Subgrade	ASTM D-2922/D-3017
119	Subgrade	ASTM D-2922/D-3017
120	Subgrade	ASTM D-2922/D-3017
121	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

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BLACK & VEATCH
SEP 06 1991
LAS VEGAS, NEVADA

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *034-91*
REPORT DATE *09-04-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-22-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
122	6.5	130.0	99	131.8	92	N/A	YES
123	6.7	137.8	100	137.6	92	N/A	YES
124	9.4	124.8	95	131.8	92	N/A	YES
125	9.4	128.3	97	131.8	92	N/A	YES
126	8.2	127.1	96	131.8	92	N/A	YES
127	7.9	129.6	98	131.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
122	8-22	Sta. 11+80 24' right of channel center line	2430.0
123	8-22	Sta. 10+15 33' right of channel center line	2432.0
124	8-22	Sta. 7+50 39' right of channel center line	2437.5
125	8-22	Sta. 10+75 38' left of channel center line	2432.0
126	8-22	Sta. 8+40 22' left of channel center line	2434.5
127	8-23	Sta. 4+10 38' right of channel center line	2442.0

+DATUM: *Sea Level*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
122	Subgrade	ASTM D-2922/D-3017
123	Subgrade	ASTM D-2922/D-3017
124	Subgrade	ASTM D-2922/D-3017
125	Subgrade	ASTM D-2922/D-3017
126	Subgrade	ASTM D-2922/D-3017
127	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Drk Brn Sand w/ Silt & Gr	Btwn Sta 8+00 and 12+00	6.7	131.8	D1557-C

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Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *034-91*
REPORT DATE *09-04-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-22-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
128	6.6	125.7	95	131.8	92	N/A	YES
129	6.5	124.3	94	131.8	92	N/A	YES
130	6.3	123.9	94	131.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
128	8-23	Sta. 6+00 28' right of channel center line	2440.5
129	8-23	Sta. 8+65 24' right of channel center line	2435.0
130	8-23	Sta. 13+00 35' right of channel center line	2430.5

+DATUM: *Sea Level*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
128	Subgrade	ASTM D-2922/D-3017
129	Subgrade	ASTM D-2922/D-3017
130	Subgrade	ASTM D-2922/D-3017

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LAS VEGAS, NEVADA

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *036-91*
REPORT DATE *08-30-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-26-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
131	*5.0*	*130.2*	*99*	*131.8*	*92*	*N/A*	*YES*
132	*5.2*	*131.1*	*99*	*131.8*	*92*	*N/A*	*YES*
133	*6.4*	*130.6*	*99*	*131.8*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
131	*8-26*	*Sta. 4+00 35' right of channel center line*	*2442.0*
132	*8-26*	*Sta. 6+20 42' right of channel center line*	*2441.0*
133	*8-26*	*Sta. 9+60 38' right of channel center line*	*2434.5*

+DATUM: *Sea Level*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
131	*Subgrade*	*ASTM D-2922/D-3017*
132	*Subgrade*	*ASTM D-2922/D-3017*
133	*Subgrade*	*ASTM D-2922/D-3017*

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sand w/ Silt & Gr	*Btwn Sta 8+00 and 12+00*	*6.7*	*131.8*	*D1557-C*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *037-91*
REPORT DATE *08-30-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-27-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
134	6.4	126.0	94	134.4	92	N/A	YES
135	6.9	122.0	91	134.4	92	N/A	NO
136	7.6	120.7	90	134.4	92	N/A	NO
137	8.1	126.2	94	134.4	92	N/A	YES
138	5.9	127.1	95	134.4	92	N/A	YES
139	6.5	131.0	97	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
134	8-27	Sta. 34+70 25' right of Dam center line	2463.0
135	8-27	Sta. 36+00 33' right of Dam center line	2465.5
136	8-27	Sta. 37+75 20' right of Dam center line	2468.0
137	8-28	Sta. 36+00 33' right of Dam center line	2465.5
138	8-28	Sta. 37+75 20' right of Dam center line	2468.0
139	8-28	Sta. 39+50 33' right of Dam center line	2470.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
134	Subgrade	ASTM D-2922/D-3017
135	Subgrade	ASTM D-2922/D-3017
136	Subgrade	ASTM D-2922/D-3017
137	Subgrade (Re-test of hole #135)	ASTM D-2922/D-3017
138	Subgrade (Re-test of hole #136)	ASTM D-2922/D-3017
139	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty, Sandy Gravel	*Borrow, S/W of Scrn. Plant*	*7.8*	*134.4*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *037-91*
REPORT DATE *08-30-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-27-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
140	6.7	132.3	98	134.4	92	N/A	YES
141	6.8	125.3	93	134.4	92	N/A	YES
142	5.3	126.3	94	134.4	92	N/A	YES
143	6.2	127.8	95	134.4	92	N/A	YES
144	6.4	128.8	96	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
140	8-28	Sta. 41+30 33' right of Dam center line	2472.5
141	8-28	Sta. 28+75 20' left of Dam center line	2451.5
142	8-28	Sta. 30+20 85' left of Dam center line	2455.5
143	8-28	Sta. 34+75 20' left of Dam center line	2456.0
144	8-28	Sta. 32+50 50' left of Dam center line	2458.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
140	Subgrade	ASTM D-2922/D-3017
141	Subgrade	ASTM D-2922/D-3017
142	Subgrade	ASTM D-2922/D-3017
143	Subgrade	ASTM D-2922/D-3017
144	Subgrade	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *040-91*
REPORT DATE *09-05-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *08-29-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
145	4.8	124.5	94	131.8	92	N/A	YES
146	5.5	125.1	95	131.8	92	N/A	YES
147	7.6	125.7	95	131.8	92	N/A	YES
148	8.0	122.6	93	131.8	92	N/A	YES
149	6.0	129.4	98	131.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
145	8-29	Sta. 28+00 80' left of Dam center line	2444.0
146	8-29	Sta. 28+75 on Dam center line	2452.0
147	8-29	Sta. 30+00 45' right of Dam center line	2456.0
148	8-29	Sta. 31+00 15' left of Dam center line	2458.0
149	8-29	Sta. 32+20 65' left of Dam center line	2458.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
145	Subgrade	ASTM D-2922/D-3017
146	Subgrade	ASTM D-2922/D-3017
147	Subgrade	ASTM D-2922/D-3017
148	Subgrade	ASTM D-2922/D-3017
149	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sand w/ Silt & Gr	Btwn Sta 8+00 and 12+00	6.7	131.8	D1557-C

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *042-91*
REPORT DATE *09-06-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-03-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
150	*3.0*	*136.1*	*99*	*137.6*	*92*	*N/A*	*YES*
151	*7.2*	*130.8*	*95*	*137.6*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
150	*9-3*	*Box Culvert center of N/E corner*	*99.0*
151	*9-3*	*Box Culvert center of S/W corner*	*99.0*
+DATUM: *100 = Finish Subgrade*			

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
150	*Subbase Fill*	*ASTM D-2922/D-3017*
151	*Subbase Fill*	*ASTM D-2922/D-3017*

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Brn Silty Sandy Gravel	*Crusher Output Stockpile*	*5.3*	*137.6*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *043-91*
REPORT DATE *09-06-91*
REVIEWED BY *E.B.*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-03-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
152	*6.7*	*126.3*	*96*	*131.8*	*92*	*N/A*	*YES*
153	*6.2*	*125.2*	*95*	*131.8*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
152	*9-3*	*Sta. 30+00 75' right of Dam center line*	*2456.5*
153	*9-3*	*Sta. 31+95 25' right of Dam center line*	*2458.5*

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
152	*General Fill*	*ASTM D-2922/D-3017*
153	*General Fill*	*ASTM D-2922/D-3017*

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sand w/ Silt & Gr	*Btwn Sta 8+00 and 12+00*	*6.7*	*131.8*	*D1557-C*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *048-91*
REPORT DATE *09-12-91*
REVIEWED BY *E.B.*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-05-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
154	9.3	119.7	94	127.6	92	N/A	YES
155	4.3	122.5	96	127.6	92	N/A	YES
156	6.3	122.2	96	127.6	92	N/A	YES
157	8.9	122.0	96	127.6	92	N/A	YES
158	7.5	120.7	95	127.6	92	N/A	YES
159	7.1	122.3	96	127.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
154	9-5	Sta. 28+50 40' left of Dam center line	2454.0
155	9-5	Sta. 30+00 75'right of Dam center line	2457.0
156	9-5	Sta. 31+85 65' left of Dam center line	2459.0
157	9-5	Sta. 32+90 45' right of Dam center line	2460.0
158	9-6	Sta. 19+00 15' right of Dam center line	2456.0
159	9-6	Sta. 21+00 on dam center line	2458.0

+DATUM: 2480.0 = Top of Dam

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
154	General Fill	ASTM D-2922/D-3017
155	General Fill	ASTM D-2922/D-3017
156	General Fill	ASTM D-2922/D-3017
157	General Fill	ASTM D-2922/D-3017
158	General Fill	ASTM D-2922/D-3017
159	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/brn Silty Sand w/ Gr	Sta 9+00 to 10+00	7.4	127.6	D1557-D

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LAS VEGAS, NEVADA

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *048-91*
REPORT DATE *09-12-91*
REVIEWED BY *E.B.*
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-05-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
160	4.8	128.9	94	137.6	92	N/A	YES
161	6.7	134.7	98	137.6	92	N/A	YES
162	4.4	133.0	97	137.6	92	N/A	YES
163	5.5	127.9	93	137.6	92	N/A	YES
164	6.3	130.9	95	137.6	92	N/A	YES
165	4.6	133.8	97	137.6	92	N/A	YES
166	4.6	134.8	98	137.6	92	N/A	YES
167	4.8	131.0	95	137.6	92	N/A	YES
168	8.3	128.6	93	137.6	92	N/A	YES
169	7.1	132.5	96	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
160	9-10	Sta. 18+00 40' right of dam center line	2461.0
161	9-10	Sta. 19+00 80' right of dam center line	2455.0
162	9-10	Sta. 20+00 50' right of dam center line	2460.0
163	9-10	Sta. 21+00 10' left of dam center line	2461.0
164	9-10	Sta. 22+00 85' right of dam center line	2459.0
165	9-11	Sta. 22+00 65' right of dam center line	2460.0
166	9-11	Sta. 21+00 40' left of dam center line	2461.5
167	9-11	Sta. 20+00 10' left of dam center line	2461.5
168	9-11	Sta. 19+00 20' right of dam center line	2462.0
169	9-11	Sta. 18+00 on dam center line	2462.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
160	General Fill	ASTM D-2922/D-3017
161	General Fill	ASTM D-2922/D-3017
162	General Fill	ASTM D-2922/D-3017
163	General Fill	ASTM D-2922/D-3017
164	General Fill	ASTM D-2922/D-3017
165	General Fill	ASTM D-2922/D-3017
166	General Fill	ASTM D-2922/D-3017
167	General Fill	ASTM D-2922/D-3017
168	General Fill	ASTM D-2922/D-3017
169	General Fill	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

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LAS VEGAS, NEVADA

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *057-91*
REPORT DATE *09-18-91*
REVIEWED BY *E.B.*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-12-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
170	5.8	130.4	93	140.7	92	N/A	YES
171	5.4	132.5	94	140.7	92	N/A	YES
172	6.0	137.1	97	140.7	92	N/A	YES
173	3.6	130.5	93	140.7	92	N/A	YES
174	6.3	135.7	96	140.7	92	N/A	YES
175	7.0	129.7	92	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
170	9-12	Sta. 17+75 25' right of dam center line	2463.5
171	9-12	Sta. 20+60 30' right of dam center line	2463.0
172	9-12	Sta. 28+85 10' left of dam center line	2456.5
173	9-12	Sta. 30+00 50' left of dam center line	2459.5
174	9-12	Sta. 31+75 50' right of dam center line	2461.0
175	9-13	Sta. 21+50 55' left of dam center line	2460.0

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
170	General Fill	ASTM D-2922/D-3017
171	General Fill	ASTM D-2922/D-3017
172	General Fill	ASTM D-2922/D-3017
173	General Fill	ASTM D-2922/D-3017
174	General Fill	ASTM D-2922/D-3017
175	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

Copies to: Addressee - (2)
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Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

WESTERN TECHNOLOGIES INC.
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Las Vegas, Nevada 89103
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SOIL/AGGREGATE FIELD DENSITY TEST

BLACK & VEATCH
SEP 20 1991

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *057-91*
REPORT DATE *09-18-91*
REVIEWED BY *E.B.*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-12-91*
TEST LOCATIONS DESIGNATED BY : *M. Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
176	*5.7*	*130.8*	*93*	*140.7*	*92*	*N/A*	*YES*
177	*5.3*	*133.3*	*95*	*140.7*	*92*	*N/A*	*YES*
178	*6.5*	*131.7*	*94*	*140.7*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
176	*9-13*	*Sta. 19+50 35' right of dam center line*	*2464.0*
177	*9-13*	*Sta. 18+00 10' right of dam center line*	*2463.0*
178	*9-13*	*Sta. 77+00 25' right of dam center line*	*2468.0*

+DATUM: *2480.0 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
176	*General Fill*	*ASTM D-2922/D-3017*
177	*General Fill*	*ASTM D-2922/D-3017*
178	*General Fill*	*ASTM D-2922/D-3017*

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SEP 2 3 1991

LAS VEGAS, NEVADA

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *061-91*
REPORT DATE *09-20-91*
REVIEWED BY *EB*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-16-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
179	5.6	132.8	94	140.7	92	N/A	YES
180	6.9	132.8	94	140.7	92	N/A	YES
181	6.9	132.2	94	140.7	92	N/A	YES
182	7.4	126.3	94	134.4	92	N/A	YES
183	5.9	127.4	95	134.4	92	N/A	YES
184	7.1	124.6	93	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
179	9-16	Sta. 29+15 65' right of dam center line	2458.0
180	9-16	Sta. 35+45 40' left of dam center line	2465.0
181	9-17	Sta. 21+40 38' right of dam center line	2465.0
182	9-17	Sta. 20+40 25' right of dam center line	2465.0
183	9-17	Sta. 19+00 on dam center line	2463.0
184	9-18	Sta. 21+00 40' left of dam center line	2465.0

+DATUM: 2480.0 = Top of dam

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
179	General Fill	ASTM D-2922/D-3017
180	General Fill	ASTM D-2922/D-3017
181	General Fill	ASTM D-2922/D-3017
182	General Fill	ASTM D-2922/D-3017
183	General Fill	ASTM D-2922/D-3017
184	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *061-91*
REPORT DATE *09-20-91*
REVIEWED BY *EB*
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-16-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
185	5.9	125.4	93	134.4	92	N/A	YES
186	5.3	123.8	92	134.4	92	N/A	YES
187	6.6	123.8	92	134.4	92	N/A	YES
188	7.3	124.9	93	134.4	92	N/A	YES
189	7.6	126.7	92	137.6	92	N/A	YES
190	8.5	127.5	93	137.6	92	N/A	YES
191	6.2	128.4	93	137.6	92	N/A	YES
192	8.1	129.8	94	137.6	92	N/A	YES
193	5.3	131.5	96	137.6	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
185	9-18	Sta. 20+00 on dam center line	2466.5
186	9-18	Sta. 19+00 50' right of dam center line	2466.0
187	9-18	Sta. 18+00 45' left of dam center line	2469.0
188	9-18	Sta. 16+00 25' right of dam center line	2471.0
189	9-19	Sta. 21+20 35' right of dam center line	2467.0
190	9-19	Sta. 20+00 30' left of dam center line	2467.0
191	9-19	Sta. 18+75 10' left of dam center lin	2468.0
192	9-19	Sta. 17+25 20' right of dam center line	2470.0
193	9-19	Sta. 15+40 10' right of dam center line	2471.5

+DATUM: *2480.0 = Top of dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
185	General Fill	ASTM D-2922/D-3017
186	General Fill	ASTM D-2922/D-3017
187	General Fill	ASTM D-2922/D-3017
188	General Fill	ASTM D-2922/D-3017
189	General Fill	ASTM D-2922/D-3017
190	General Fill	ASTM D-2922/D-3017
191	General Fill	ASTM D-2922/D-3017
192	General Fill	ASTM D-2922/D-3017
193	General Fill	ASTM D-2922/D-3017

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LAS VEGAS, NEVADA

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *062-91*
REPORT DATE *09-20-91*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-16-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
194	5.7	132.6	97	136.8	92	N/A	YES
195	5.7	134.5	98	136.8	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
194	9-16	Box culvert base at center of SW quad after re-work	100.0
195	9-16	Box culvert base at center after re-work	100.0

+DATUM: *100' = Finish Subgrade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
194	Base course	ASTM D-2922/D-3017
195	Base course	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Lt. Brn. Silty Sand w/Gr.	Subgrade, Box Culvert	6.7	136.8	D1557-C

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *063-91*
REPORT DATE *09-27-91*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-22-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
196	5.8	131.7	94	140.7	92	N/A	YES
197	3.7	130.8	93	140.7	92	N/A	YES
198	4.7	135.1	96	140.7	92	N/A	YES
199	5.5	131.7	94	140.7	92	N/A	YES
200	4.6	131.5	93	140.7	92	N/A	YES
201	4.5	132.7	94	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
196	9-22	Sta. 22+00 25' right of dam centerline	2468.0
197	9-22	Sta. 20+50 on dam centerline	2469.5
198	9-22	Sta. 19+00 15' left of dam centerline	2469.5
199	9-22	Sta. 17+50 10' left of dam centerline	2470.5
200	9-22	Sta. 16+00 7' right of dam centerline	2472.0
201	9-23	Sta. 20+75 20' left of dam centerline	2470.0

+DATUM: 2480 = Top of dam

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
196	General Fill	ASTM D-2922/D-3017
197	General Fill	ASTM D-2922/D-3017
198	General Fill	ASTM D-2922/D-3017
199	General Fill	ASTM D-2922/D-3017
200	General Fill	ASTM D-2922/D-3017
201	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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JOB NO. *4141K255*
LAB/INV NO. *063-91*
REPORT DATE *09-27-91*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *09-22-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
202	5.1	134.4	96	140.7	92	N/A	YES
203	5.5	132.6	94	140.7	92	N/A	YES
204	4.2	131.5	93	140.7	92	N/A	YES
205	4.9	133.9	95	140.7	92	N/A	YES
206	5.4	135.3	96	140.7	92	N/A	YES
207	3.8	134.1	95	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
202	9-23	Sta. 19+25 on dam centerline	2472.0
203	9-23	Sta. 17+50 15' right of dam centerline	2473.0
204	9-23	Sta. 16+00 on dam centerline	2475.0
205	9-25	Sta. 20+50 6' right of dam centerline	2479.0
206	9-25	Sta. 19+50 7' left of dam centerline	2479.5
207	9-25	Sta. 18+00 on dam centerline	2480.0

+DATUM: *2480 = Top of dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
202	General Fill	ASTM D-2922/D-3017
203	General Fill	ASTM D-2922/D-3017
204	General Fill	ASTM D-2922/D-3017
205	General Fill	ASTM D-2922/D-3017
206	General Fill	ASTM D-2922/D-3017
207	General Fill	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *070-91*
REPORT DATE *10-03-91*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-01-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
208	9.0	130.6	93	140.7	92	N/A	YES
209	5.5	133.9	95	140.7	92	N/A	YES
210	6.4	129.6	92	140.7	92	N/A	YES
211	7.4	131.1	93	140.7	92	N/A	YES
212	6.8	131.8	94	140.7	92	N/A	YES
213	7.7	131.9	97	136.2	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
208	10-1	Sta. 38+75 30' right of dam centerline	2472.5
209	10-1	Sta. 36+45 5' right of dam centerline	2468.5
210	10-1	Sta. 34+10 15' left of dam centerlin	2467.5
211	10-1	Sta. 32+00 on dam centerline	2465.0
212	10-1	Sta. 29+40 20' right of dam centerline	2462.5
213	10-2	Sta. 38+00 23' left of dam centerline	2472.0

+DATUM: *2480 = Top of dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
208	General Fill	ASTM D-2922/D-3017
209	General Fill	ASTM D-2922/D-3017
210	General Fill	ASTM D-2922/D-3017
211	General Fill	ASTM D-2922/D-3017
212	General Fill	ASTM D-2922/D-3017
213	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *070-91*
REPORT DATE *10-03-91*
REVIEWED BY *EB* EB

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-01-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
214	*6.8*	*132.7*	*97*	*136.2*	*92*	*N/A*	*YES*
215	*7.1*	*131.4*	*96*	*136.2*	*92*	*N/A*	*YES*
216	*4.6*	*129.6*	*95*	*136.2*	*92*	*N/A*	*YES*
217	*5.8*	*128.8*	*95*	*136.2*	*92*	*N/A*	*YES*
218	*5.9*	*127.8*	*94*	*136.2*	*92*	*N/A*	*YES*
219	*6.0*	*127.8*	*94*	*136.2*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
214	*10-2*	*Sta. 36+00 on dam centerline*	*2470.5*
215	*10-2*	*Sta. 33+75 15' left of dam centerline*	*2469.0*
216	*10-2*	*Sta. 31+90 20' left of dam centerline*	*2467.0*
217	*10-2*	*Sta. 28+75 on dam centerline*	*2463.5*
218	*10-2*	*Sta. 25+30 90' left of dam centerline*	*2443.5*
219	*10-2*	*Sta. 24+00 100' left of dam centerline*	*2443.5*

+DATUM: *2480 = Top of dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
214	*General Fill*	*ASTM D-2922/D-3017*
215	*General Fill*	*ASTM D-2922/D-3017*
216	*General Fill*	*ASTM D-2922/D-3017*
217	*General Fill*	*ASTM D-2922/D-3017*
218	*General Fill*	*ASTM D-2922/D-3017*
219	*General Fill*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *090-91*
REPORT DATE *10-11-91*
REVIEWED BY *EB*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-11-91*
TEST LOCATIONS DESIGNATED BY : *T Patlan/M Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
220	6.6	128.5	94	136.2	92	N/A	YES
221	7.2	130.6	96	136.2	92	N/A	YES
222	6.1	129.1	95	136.2	92	N/A	YES
223	6.7	129.3	95	136.2	92	N/A	YES
224	6.5	127.7	94	136.2	92	N/A	YES
225	6.5	131.4	96	136.2	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
220	9-26	Sta. 26+50 on dam centerline	2456.0
221	9-26	Sta. 27+25 10' left of dam centerline	2457.0
222	9-26	Sta. 28+00 10' right of dam centerline	2457.5
223	9-26	Sta. 29+00 on dam centerline	2462.0
224	9-26	Sta. 32+00 25' left of dam centerline	2468.0
225	9-26	Sta. 34+50 30' right of dam centerline	2467.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
220	General Fill	ASTM D-2922/D-3017
221	General Fill	ASTM D-2922/D-3017
222	General Fill	ASTM D-2922/D-3017
223	General Fill	ASTM D-2922/D-3017
224	General Fill	ASTM D-2922/D-3017
225	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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BLACK & VEATCH
OCT 15 1991
LAS VEGAS, NEVADA

Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

WESTERN TECHNOLOGIES INC.

3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *090-91*
REPORT DATE *10-11-91*
REVIEWED BY *EB*
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-11-91*
TEST LOCATIONS DESIGNATED BY : *T Patlan/M Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
226	6.7	133.1	98	136.2	92	N/A	YES
227	7.9	124.2	92	134.4	92	N/A	YES
228	8.2	129.5	96	134.4	92	N/A	YES
229	5.1	127.8	95	134.4	92	N/A	YES
230	8.7	129.8	97	134.4	92	N/A	YES
231	5.5	130.2	97	134.4	92	N/A	YES
232	6.7	128.2	93	137.6	92	N/A	YES
233	5.3	129.8	94	137.6	92	N/A	YES
234	8.1	131.8	96	137.6	92	N/A	YES
235	6.2	128.3	94	136.2	92	N/A	YES
236	6.5	127.4	94	136.2	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
226	9-26	Sta. 37+00 on dam centerline	2468.0
227	10-3	Sta. 24+00 115' left of dam centerline	2444.0
228	10-3	Sta. 25+00 105' left of dam centerline	2444.0
229	10-3	Sta. 25+75 90' left of dam centerline	2444.0
230	10-3	Sta. 37+00 on dam centerline	2472.0
231	10-3	Sta. 34+90 10' left of dam centerline	2471.0
232	10-3	Sta. 33+90 20' left of dam centerline	2470.0
233	10-3	Sta. 31+60 20' right of dam centerline	2468.5
234	10-3	Sta. 29+50 17' right of dam centerline	2466.0
235	10-4	Sta. 34+00 10' left of dam centerline	2473.0
236	10-4	Sta. 32+25 20' right of dam centerline	2469.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
226	General Fill	ASTM D-2922/D-3017
227	General Fill	ASTM D-2922/D-3017
228	General Fill	ASTM D-2922/D-3017
229	General Fill	ASTM D-2922/D-3017
230	General Fill	ASTM D-2922/D-3017
231	General Fill	ASTM D-2922/D-3017
232	General Fill	ASTM D-2922/D-3017
233	General Fill	ASTM D-2922/D-3017
234	General Fill	ASTM D-2922/D-3017
235	General Fill	ASTM D-2922/D-3017
236	General Fill	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *090-91*
REPORT DATE *10-11-91*
REVIEWED BY *EB*
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PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-11-91*
TEST LOCATIONS DESIGNATED BY : *T Patlan/M Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
237	7.1	128.7	94	136.2	92	N/A	YES
238	7.1	130.1	96	136.2	92	N/A	YES
239	7.1	129.7	97	134.4	92	N/A	YES
240	5.9	127.0	94	134.4	92	N/A	YES
241	6.8	130.3	97	134.4	92	N/A	YES
242	7.6	131.3	98	134.4	92	N/A	YES
243	8.1	132.7	99	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
237	10-4	Sta. 30+00 on dam centerline	2469.0
238	10-4	Sta. 29+50 30' left of dam centerline	2467.0
239	10-7	Sta. 37+00 32' left of dam centerline	2471.0
240	10-7	Sta. 35+00 on dam centerline	2572.0
241	10-7	Sta. 33+00 10' left of dam centerline	2474.0
242	10-7	Sta. 31+00 35' right of dam centerline	2471.0
243	10-7	Sta. 29+00 10' right of dam centerline	2470.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
237	General Fill	ASTM D-2922/D-3017
238	General Fill	ASTM D-2922/D-3017
239	General Fill	ASTM D-2922/D-3017
240	General Fill	ASTM D-2922/D-3017
241	General Fill	ASTM D-2922/D-3017
242	General Fill	ASTM D-2922/D-3017
243	General Fill	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *092-91*
REPORT DATE *10-16-91*
REVIEWED BY *EB*
PAGE *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-15-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
244	3.9	127.1	95	134.4	92	N/A	YES
245	4.7	124.8	93	134.4	92	N/A	YES
246	5.1	123.6	92	134.4	92	N/A	YES
247	6.9	125.5	93	134.4	92	N/A	YES
248	8.7	127.1	95	134.4	92	N/A	YES
249	8.5	126.6	94	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
244	10-8	Sta. 44+00 10' Right of dam centerline	2479.0
245	10-8	Sta. 42+50 on dam centerline	2478.0
246	10-8	Sta. 40+00 20' left of dam centerline	2477.0
247	10-9	Sta. 40+00 17' right of dam centerline	2477.5
248	10-9	Sta. 38+00 5' right of dam centerline	2478.0
249	10-9	Sta. 36+00 on dam centerline	2476.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
244	General Fill	ASTM D-2922/D-3017
245	General Fill	ASTM D-2922/D-3017
246	General Fill	ASTM D-2922/D-3017
247	General Fill	ASTM D-2922/D-3017
248	General Fill	ASTM D-2922/D-3017
249	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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OCT 21 1991
LAS VEGAS, NEVADA

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *092-91*
REPORT DATE *10-16-91*
REVIEWED BY *EB*
PAGE *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-15-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
250	7.3	127.9	95	134.4	92	N/A	YES
251	6.8	124.8	93	134.4	92	N/A	YES
252	5.6	131.0	96	136.2	92	N/A	YES
253	7.0	136.3	100	136.2	92	N/A	YES
254	5.5	130.1	96	136.2	92	N/A	YES
255	7.7	127.2	93	136.2	92	N/A	YES
256	7.0	127.3	93	136.2	92	N/A	YES
257	6.0	130.8	96	136.2	92	N/A	YES
258	5.6	130.6	96	136.2	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM+
250	10-9	Sta. 33+00 10' left of dam centerline	2478.0
251	10-9	Sta. 30+00 18' left of dam centerline	2478.0
252	10-10	Sta. 43+00 on dam centerline	2480.0
253	10-10	Sta. 40+50 10' right of dan centerline	2480.0
254	10-10	Sta. 38+00 10' left of dam centerline	2480.0
255	10-10	Sta. 35+00 10' right of dam centerline	2480.0
256	10-10	Sta. 30+90 10' left of dam centerline	2479.0
257	10-11	Sta. 28+75 7' right of dam centerline	2480.0
258	10-11	Sta. 31+50 10' left of dam centerline	2480.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
250	General Fill	ASTM D-2922/D-3017
251	General Fill	ASTM D-2922/D-3017
252	General Fill, Top of Dam	ASTM D-2922/D-3017
253	General Fill, Top of Dam	ASTM D-2922/D-3017
254	General Fill, Top of Dam	ASTM D-2922/D-3017
255	General Fill, Top of Dam	ASTM D-2922/D-3017
256	General Fill	ASTM D-2922/D-3017
257	General Fill, Top of Dam	ASTM D-2922/D-3017
258	General Fill, Top of Dam	ASTM D-2922/D-3017

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OCT 21 1991
LAS VEGAS, NEVADA

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *101-91*
REPORT DATE *10-17-91*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-15-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
259	5.9	131.5	93	140.7	92	N/A	YES
260	6.4	131.6	94	140.7	92	N/A	YES
261	6.2	129.8	92	140.7	92	N/A	YES
262	4.6	135.6	96	140.7	92	N/A	YES
263	6.7	132.8	94	140.7	92	N/A	YES
264	5.7	129.5	92	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
259	10-15	Sta. 24+10 135' right of dam centerline	2443.5
260	10-15	Sta. 23+60 95' right of dam centerline	2443.5
261	10-15	Sta. 23+20 76' right of dam centerline	2443.0
262	10-15	Sta. 24+90 125' right of dam centerline	2443.0
263	10-15	Sta. 25+65 85' right of dam centerline	2443.0
264	10-15	Sta. 23+00 75' right of dam centerline	2443.0

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
259	General Fill	ASTM D-2922/D-3017
260	General Fill	ASTM D-2922/D-3017
261	General Fill	ASTM D-2922/D-3017
262	General Fill	ASTM D-2922/D-3017
263	General Fill	ASTM D-2922/D-3017
264	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *101-91*
REPORT DATE *10-17-91*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-15-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
265	*5.7*	*130.6*	*93*	*140.7*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
265	*10-15*	*Sta. 23+00 80' left of dam centerline*	*2443.0*

+DATUM: *2480 = Top of Dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
265	*General Fill*	*ASTM D-2922/D-3017*

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BLACK & VEATCH
OCT 28 1991
LAS VEGAS

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *114-91*
REPORT DATE *10-23-91*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *10-16-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WTI*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
266	4.6	133.7	95	140.7	92	N/A	YES
267	5.1	134.8	96	140.7	92	N/A	YES
268	6.0	135.2	96	140.7	92	N/A	YES
269	4.7	132.9	94	140.7	92	N/A	YES
270	4.9	133.4	95	140.7	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
266	10-16	Sta. 25+10 100' right of dam centerline	2444.5
267	10-16	Sta. 25+60 63' right of dam centerline	2444.5
268	10-16	Sta. 24+85 145' right of dam centerline	2444.5
269	10-17	Sta. 22+80 80' right of dam centerline	2445.0
270	10-17	Sta. 22+80 65' left of dam centerline	2445.0

+DATUM: *2480 = Top of dam*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
266	General Fill	ASTM D-2922/D-3017
267	General Fill	ASTM D-2922/D-3017
268	General Fill	ASTM D-2922/D-3017
269	General Fill	ASTM D-2922/D-3017
270	General Fill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D

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LAS VEGAS, NEVADA

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *136-91*
REPORT DATE *11-12-91*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *11-12-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
271	2.1	133.7	98	136.8	95	N/A	YES
272	7.0	125.4	92	136.8	95	N/A	NO
273	4.4	126.4	92	136.8	95	N/A	NO
274	6.0	138.2	98	140.7	95	N/A	YES
275	5.6	136.9	97	140.7	95	N/A	YES
276	6.4	133.9	98	136.8	95	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
271	10-29	2' W of culvert and 25' S of roadway centerline	97.0
272	10-29	2' W of box on roadway centerline	97.0
273	10-29	2' W of box and 15' N of roadway centerlin	99.0
274	10-30	20' N of roadway centerline and 15' W of box	99.0
275	10-30	15' S of roadway centerline and 10' W of box	99.0
276	10-30	25' S of roadway centerline, 2' W of box	99.0

+DATUM: *100' = Finish Backfill*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
271	Backfill	ASTM D-2922/D-3017
272	Backfill	ASTM D-2922/D-3017
273	Backfill	ASTM D-2922/D-3017
274	Subbase Fill, Pavement Area	ASTM D-2922/D-3017
275	Subbase Fill, Pavement Area	ASTM D-2922/D-3017
276	Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Drk Brn Sandy Gravel	Over-ex. N side of Spiwy.	4.6	140.7	D1557-D
Lt. Brn. Silty Sand w/Gr.	Subgrade, Box Culvert	6.7	136.8	D1557-C

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *136-91*
REPORT DATE *11-12-91*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *11-12-91*
TEST LOCATIONS DESIGNATED BY : *Mark Sherrod/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
277	*7.3*	*132.0*	*96*	*136.8*	*95*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
277	*10-30*	*25' N of roadway centerline, 2' W of box*	*99.0*

+DATUM: *100' = Finish Backfill*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
277	*Backfill*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *191-91*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *12-18-91*
TEST LOCATIONS DESIGNATED BY : *T. Larson/B. Ilchik/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
278	7.3	123.6	92	134.4	92	N/A	YES
279	9.4	123.9	92	134.4	92	N/A	YES
280	8.7	125.8	94	134.4	92	N/A	YES
281	7.4	131.4	98	134.4	92	N/A	YES
282	7.1	136.3	100+	134.4	92	N/A	YES
283	11.2	125.0	93	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
278	12-12	42' W of dam centerline; station 22 + 45	2453.0
279	12-12	70' E of dam centerline; station 22 + 60	2455.0
280	12-12	Dam centerline; station 22 + 80	2456.0
281	12-13	75' E of dam centerline; station 22 + 55	2450.0
282	12-13	25' E of dam centerline; station 22 + 65	2456.0
283	12-13	10' W of dam centerline; station 22 + 75	2454.0

+DATUM: *2480 = Top of Dam Embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
278	Subgrade, Backfill	ASTM D-2922/D-3017
279	Subgrade, Backfill	ASTM D-2922/D-3017
280	Subgrade, Backfill	ASTM D-2922/D-3017
281	Backfill	ASTM D-2922/D-3017
282	Backfill	ASTM D-2922/D-3017
283	Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

WESTERN TECHNOLOGIES INC.

3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *191-91*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *12-18-91*
TEST LOCATIONS DESIGNATED BY : *T. Larson/B. Ilchik/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
284	*7.6*	*126.6*	*94*	*134.4*	*92*	*N/A*	*YES*
285	*7.4*	*123.4*	*92*	*134.4*	*92*	*N/A*	*YES*
286	*6.5*	*123.2*	*92*	*134.4*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
284	*12-13*	*30' W of dam centerline; station 22 + 62*	*2456.0*
285	*12-13*	*30' W of dam centerline; station 26 + 12*	*2446.0*
286	*12-13*	*10' W of dam centerline; station 26 + 20*	*2446.0*

+DATUM: *2480 = Top of Dam Embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
284	*Subgrade, Backfill*	*ASTM D-2922/D-3017*
285	*Subgrade, Backfill*	*ASTM D-2922/D-3017*
286	*Subgrade, Backfill*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *197-91*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *12-20-91*
TEST LOCATIONS DESIGNATED BY : *Began/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
287	7.6	124.6	93	134.4	92	N/A	YES
288	7.5	123.8	92	134.4	92	N/A	YES
289	6.1	125.3	93	134.4	92	N/A	YES
290	6.4	118.5	88	134.4	92	N/A	NO
291	7.5	125.0	93	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
287	12-16	Centerline dam, station 22 + 75	2460.0
288	12-16	30' W of dam centerline, station 22 + 35	2473.0
289	12-16	20' E of dam centerline, station 22 + 65	2465.0
290	12-16	66' E of dam centerline, 10' S of retaining wall, station 22 + 75	2458.0
291	12-16	Retest of 290	2458.0

+DATUM: *2480 = Top of Embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
287	Subgrade, Backfill	ASTM D-2922/D-3017
288	Subgrade, Backfill	ASTM D-2922/D-3017
289	Subgrade, Backfill	ASTM D-2922/D-3017
290	Subgrade, Backfill	ASTM D-2922/D-3017
291	Subgrade, Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : LAS VEGAS, NEVADA
Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *013-92*
REPORT DATE *01-10-92*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephan C. Roberts* DATE : *12-17-91*
TEST LOCATIONS DESIGNATED BY : *M. Begay*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
292	11.8	129.2	96	134.4	92	N/A	YES
293	6.9	130.6	97	134.4	92	N/A	YES
294	9.6	132.3	98	134.4	92	N/A	YES
295	5.3	126.2	94	134.4	92	N/A	YES
296	7.5	132.7	99	134.4	92	N/A	YES
297	7.2	134.1	100	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
292	12-17	Dam centerline, station 22 + 80	2466.0
293	12-17	22' E of dam centerline, station 22 + 63	2470.0
294	12-17	20' W of dam centerline, station 22 + 82	2470.0
295	12-17	15' W of dam centerline, station 22 + 53	2470.0
296	12-17	Dam centerline, station 22 + 45	2466.0
297	12-18	20' E of dam centerline, station 22 + 69	2468.0

+DATUM: 2480 = Top of dam embankment

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
292	Subgrade, Backfill	ASTM D-2922/D-3017
293	Subgrade, Backfill	ASTM D-2922/D-3017
294	Subgrade, Backfill	ASTM D-2922/D-3017
295	Subgrade, Backfill	ASTM D-2922/D-3017
296	Subgrade, Backfill	ASTM D-2922/D-3017
297	Subgrade, Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *013-92*
REPORT DATE *01-10-92*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *12-17-91*
TEST LOCATIONS DESIGNATED BY : *M. Begay*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
298	*8.2*	*128.8*	*96*	*134.4*	*92*	*N/A*	*YES*
299	*7.7*	*130.6*	*97*	*134.4*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
298	*12-18*	*Dam centerline, station 22 + 82*	*2470.0*
299	*12-18*	*15' W of dam centerline, station 22 + 75*	*2469.0*

+DATUM: *2480 = Top of dam embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
298	*Subgrade, Backfill*	*ASTM D-2922/D-3017*
299	*Subgrade, Backfill*	*ASTM D-2922/D-3017*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
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Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *218-91*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *01-02-92*
TEST LOCATIONS DESIGNATED BY : *P. Boedeker/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
300	7.9	123.6	92	134.4	92	N/A	YES
301	6.4	131.2	96	136.2	92	N/A	YES
302	7.1	125.6	93	134.4	92	N/A	YES
303	7.8	126.4	94	134.4	92	N/A	YES
304	9.3	127.2	95	134.4	92	N/A	YES
305	9.2	125.1	93	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
300	12-31	70' W of dam centerline, station 26 + 16	2450.0
301	12-31	Dam centerline, station 26 + 20	2448.0
302	12-31	100' E of dam centerline, station 26 + 40	2446.0
303	12-31	80' E of dam centerline, station 26 + 30	2449.0
304	12-31	Dam centerline, station 26 + 40	2451.0
305	12-31	60' W of dam centerline, station 26 + 60	2452.0

+DATUM: 2480 = Top of Dam Embankment

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
300	Subgrade, Backfill	ASTM D-2922/D-3017
301	Subgrade, Backfill	ASTM D-2922/D-3017
302	Subgrade, Backfill	ASTM D-2922/D-3017
303	Subgrade, Backfill	ASTM D-2922/D-3017
304	Subgrade, Backfill	ASTM D-2922/D-3017
305	Subgrade, Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *014-92*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *01-10-92*
TEST LOCATIONS DESIGNATED BY : *P. Boedeker/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
306	*8.2*	*127.6*	*95*	*134.4*	*92*	*N/A*	*YES*
307	*6.0*	*123.7*	*92*	*134.4*	*92*	*N/A*	*YES*
308	*5.3*	*125.5*	*93*	*134.4*	*92*	*N/A*	*YES*
309	*5.7*	*131.3*	*96*	*136.2*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
306	*1-2*	*60' W of dam centerline, station 26 + 20*	*2453.0*
307	*1-2*	*18' E of dam centerline, station 26 + 40*	*2451.0*
308	*1-2*	*32' E of dam centerline, station 26 + 25*	*2450.0*
309	*1-2*	*64' E of dam centerline, station 26 + 60*	*2449.0*

+DATUM: *2480 = Top of dam embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
306	*Subgrade, Backfill, Above footing bottom*	*ASTM D-2922/D-3017*
307	*Subgrade, Backfill, Above footing bottom*	*ASTM D-2922/D-3017*
308	*Subgrade, Backfill, Above footing bottom*	*ASTM D-2922/D-3017*
309	*Subgrade, Backfill, Above footing bottom*	*ASTM D-2922/D-3017*

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Red/Brn Silty Sand w/ Gr	*Sta. 36+80 to 37+40*	*6.0*	*136.2*	*D1557-D*
Silty, Sandy Gravel	*Borrow, S/W of Scrn. Plant*	*7.8*	*134.4*	*D1557-D*

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *015-92*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *01-10-92*
TEST LOCATIONS DESIGNATED BY : *P. Boedeker & M. Begay/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
310	5.2	127.8	95	134.4	92	N/A	YES
311	6.4	126.6	92	137.6	92	N/A	YES
312	7.3	128.3	95	134.4	92	N/A	YES
313	7.3	128.1	95	134.4	92	N/A	YES
314	9.9	127.8	95	134.4	92	N/A	YES
315	9.3	127.1	95	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
310	1-3	Dam centerline, station 26 + 35	2457.0
311	1-3	Dam centerline, station 26 + 50	2456.0
312	1-3	Dam centerline, station 26 + 18	2459.0
313	1-3	50' W of dam centerline, station 26 + 16	2455.0
314	1-6	40' E of dam centerline, station 26 + 30	2459.0
315	1-6	20' E of dam centerline, station 26 + 25	2462.0

+DATUM: *2480 = Top of dam embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
310	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
311	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
312	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
313	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
314	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
315	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Brn Silty Sandy Gravel	Crusher Output Stockpile	5.3	137.6	D1557-D
Red/Brn Silty Sand w/ Gr	Sta. 36+80 to 37+40	6.0	136.2	D1557-D
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *015-92*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *2* of *2*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *01-10-92*
TEST LOCATIONS DESIGNATED BY : *P. Boedeker & M. Begay/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
316	8.0	130.6	97	134.4	92	N/A	YES
317	9.2	128.5	96	134.4	92	N/A	YES
318	6.2	131.8	97	136.2	92	N/A	YES
319	8.2	126.7	94	134.4	92	N/A	YES
320	8.4	125.8	94	134.4	92	N/A	YES
321	7.6	130.1	97	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
316	1-6	46' W of dam centerline, station 26 + 60	2462.0
317	1-6	26' W of dam centerline, station 26 + 15	2464.0
318	1-6	4' W of dam centerline, station 26 + 15	2469.0
319	1-6	32' E of dam centerline, station 26 + 45	2467.0
320	1-6	6' E of dam centerline, station 26 + 14	2473.0
321	1-6	28' W of dam centerline, station 26 + 25	2469.0

+DATUM: *2480 = Top of dam embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
316	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
317	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
318	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
319	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
320	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017
321	Subgrade, Backfill, Above footing bottom	ASTM D-2922/D-3017

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *026-92*
REPORT DATE *01-14-92*
REVIEWED BY *EB*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *01-14-92*
TEST LOCATIONS DESIGNATED BY : *P. Boedeker/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
322	7.0	123.5	92	134.4	92	N/A	YES
323	8.2	128.2	95	134.4	92	N/A	YES
324	6.0	124.5	93	134.4	92	N/A	YES
325	7.6	127.1	95	134.4	92	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
322	1-7	40' E of dam centerline, Sta. 27 + 10	2465.0
323	1-7	20' W of dam centerline, Sta. 26 + 50	2465.0
324	1-7	Dam centerline, Sta. 26 + 90	2465.0
325	1-7	8' E of dam centerline, Sta. 26 + 14	2474.0

+DATUM: *2480 = Top of Dam Embankment*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
322	Subgrade, Backfill	ASTM D-2922/D-3017
323	Subgrade, Backfill	ASTM D-2922/D-3017
324	Subgrade, Backfill	ASTM D-2922/D-3017
325	Subgrade, Backfill	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Silty, Sandy Gravel	Borrow, S/W of Scrn. Plant	7.8	134.4	D1557-D

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *Black & Veatch*
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

JOB NO. *4141K255*
LAB/INV NO. *068-92*
REPORT DATE *02-05-92*
REVIEWED BY *E. Babine*
PAGE *1* of *1*

PROJECT : *Flamingo-Upper Wash Detention Basin & Discharge*
LOCATION : *S/O Tropicana Ave & Durango*
AUTHORIZED BY : *Stephen C. Roberts* DATE : *02-05-92*
TEST LOCATIONS DESIGNATED BY : *J. Usrey/WT*

TEST NO.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	IN-PLACE COMPACTION (%)	MAXIMUM DENSITY (pcf)	REQUIRED COMPACTION (%)	REQUIRED MOISTURE (%)	WITHIN SPECS?
326	*6.3*	*123.9*	*94*	*131.8*	*92*	*N/A*	*YES*
327	*7.0*	*124.8*	*95*	*131.8*	*92*	*N/A*	*YES*
328	*6.2*	*121.7*	*92*	*131.8*	*92*	*N/A*	*YES*

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
326	*1/21*	*45' N, 50' W of Southwest corner*	*100.0*
327	*1/21*	*185' N, 85' W of Southwest corner*	*100.0*
328	*1/21*	*50' S, 50' W of Northwest corner*	*100.0*

+DATUM: *100 = Finish Grade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
326	*Backfill*	*ASTM D-1556/AASHTO T-217*
327	*Backfill*	*ASTM D-1556/AASHTO T-217*
328	*Backfill*	*ASTM D-1556/AASHTO T-217*

MOISTURE/DENSITY RELATIONSHIP				
MATERIAL DESCRIPTION	SOURCE	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
Drk Brn Sand w/ Silt & Gr	*Btwn Sta 8+00 and 12+00*	*6.7*	*131.8*	*D1557-C*

Copies to: Addressee - (2)
Wheeler Construction (1)

Note - These tests are not part of a program of continuous monitoring of compaction operations. Results apply to the actual locations tested only.

To: *From:* *Date:*

Subject: *Proj. No.:*

MOISTURE-DENSITY RELATIONS

D-1557

WESTERN TECHNOLOGIES INC.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, Nevada 89119
Attn: Stephen C. Roberts

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JUL 24 1991
BLACK & VEATCH

Job No. 4141K255
Lab/Invoice No. 626-91
Date of Report 7-22-91
Reviewed By EB

Project Flamingo - Upper Wash Detention Basin & Discharge
Location Tropicana & Durango Sampled By Mark Sherrod (WTI) Date 7-17-91
Type of Material General Fill Submitted By Mark Sherrod (WTI) Date 7-17-91
Source of Material Existing, STA. 1+00 to 5+00 Authorized By _____ Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"	100	
2"	97	
1½"	89	
1"	80	
¾"	73	
⅜"	68	
⅛"	65	
¼"	-	
No. 4	60	0-50
8	57	
10	56	
16	54	
30	52	
40	51	
50	50	
100	41	
Finer than 200 ASTM D1140-	25.9	

Soil Classification SC-SM: Silty, Clayey Sand-w/gravel

Liquid Limit and Plasticity of Soils — LL = 26
ASTM D4318- — PI = 7

Moisture - Density Relations — Maximum Dry Density, pcf 126.3
☐ ASTM D698- ; ☒ ASTM D1557- ; Method D — Optimum Moisture, % 9.4

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity _____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value _____

Other: Project Specification
Section: 02201.10.01
General Fill

NOTE: Material Does Not Meet Spec.

Copies to: Client (2)

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, Nevada 89119
Attn: Stephen C. Roberts

Job No. 4141K255
Lab/Invoice No. 626-91
Date of Report 7-22-91
Reviewed By EB

Project Flamingo - Upper Wash Detention Basin & Discharge

Location Tropicana & Durango Sampled By Mark Sherrod (WTI) Date 7-17-91

Type of Material General Fill Submitted By Mark Sherrod (WTI) Date 7-17-91

Source of Material Native, Screened Authorized By _____ Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"	100	
2"	97	
1½"	97	
1"	89	
¾"	79	
½"	61	
⅜"	53	
¼"	-	
No. 4	41	0-50
8	35	
10	33	
16	31	
30	29	
40	28	
50	26	
100	21	
Finer than 200 ASTM D1140-	10.2	

Soil Classification GP-GM: Poorly-Graded Gravel-w/silt & sand

Liquid Limit and Plasticity of Soils ASTM D4318- LL = - PI = N/P

Moisture - Density Relations ☐ ASTM D698- ; ☒ ASTM D1557- ; Method D
Maximum Dry Density, pcf 137.6
Optimum Moisture, % 5.3

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value _____

Other: Project Specification
Section: 02201.10.01
General Fill

NOTE: Material Meets The Specifications

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LABORATORY REPORT

BLACK & VEATCH

PHYSICAL PROPERTIES OF SOILS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 661-91
Date of Report 7/30/91
Reviewed By EB

Project Flamingo - Upper Wash Detention Basin & Discharge

Location Tropicana & Durango Sampled By M. Sherrod/WTI Date 7/25/91

Type of Material General Fill Submitted By M. Sherrod/WTI Date 7/25/91

Source of Material Sta. 9+00 to 10+00 Authorized By _____ Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"		
2"	100	
1½"	94	
1"	94	
¾"	89	
½"	82	
⅜"	79	
¼"	--	
No. 4	72	0-50
8	68	
10	67	
16	66	
30	64	
40	63	
50	61	
100	51	
Finer than 200 ASTM D1140-	20.2	

Soil Classification

Liquid Limit and Plasticity of Soils — LL = --
ASTM D4318- — PI = N/P

Moisture - Density Relations — Maximum Dry Density, pcf 127.6
☐ ASTM D698- ; ☒ ASTM D1557- ; Method D — Optimum Moisture, % 7.4

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity _____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value _____

Other: Project Specification Section 02201.10.01
"General Fill"
NOTE: Material does not meet specifications

Copies to: Black & Veatch (2)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client BLACK AND VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 669-91
Date of Report 8-2-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 7-29-91
Type of Material General fill Submitted By Mark Sherrod Date 7-29-91
Source of Material Spillway area, existing Authorized By _____ Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"	100	
2"	95	
1½"	87	
1"	83	
¾"	75	
½"	69	
⅜"	65	
¼"	-	
No. 4	57	0-50
8	52	
10	51	
16	48	
30	44	
40	42	
50	39	
100	31	
Finer than 200 ASTM D1140-	19.0	

Soil Classification SC - Clayey Sand w/ Caliche

Liquid Limit and Plasticity of Soils ASTM D4318- LL = 35, PI = 12

Moisture - Density Relations ☐ ASTM D698- ; ☒ ASTM D1557- ; Method _____ Maximum Dry Density, pcf 123.8, Optimum Moisture, % 9.8

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value _____

Other:

Project Specification
Section: 02201.10.01
General Fill
Material does not meet specification

Approved

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PHYSICAL PROPERTIES OF SOILS

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 677-91
Date of Report 8-2-91
Reviewed By

Project Flamingo Upper Wash Detention Basin & Detention
Location Tropicana and Durango Sampled By Mark Sherrod Date 7-30-91
Type of Material General Fill Submitted By Mark Sherrod Date 7-30-91
Source of Material Over-ex. N. side of spillway Authorized By Date

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"	100	
2"	94	
1½"	90	
1"	77	
¾"	69	
½"	58	
⅜"	53	
¼"	-	
No. 4	43	0-50
8	36	
10	35	
16	32	
30	29	
40	27	
50	25	
100	19	
Finer than 200 ASTM D1140-	8.0	

Soil Classification GP-GM: Dark brown silty, sandy gravel

Liquid Limit and Plasticity of Soils ASTM D4318- LL = - PI = N/P

Moisture - Density Relations ☐ ASTM D698- ; ☒ ASTM D1557- ; Method D
Maximum Dry Density, pcf 140.7
Optimum Moisture, % 4.6

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value

Other: Project Specification
Section 02201.10.01
General Fill

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BLACK & VEATCH **PHYSICAL PROPERTIES OF SOILS**

Client Black & Veatch
1771 E Flamingo Rd. Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 700-91
Date of Report 8-12-91
Reviewed By

Project Flamingo- Upper Wash Detention Basin & Discharge
Location Tropicana & Durango — Sampled By Mark Sherrod — Date 8-6-91
Type of Material General Fill — Submitted By Mark Sherrod — Date 8-6-91
Source of Material Sta. 36+80 to 37+40 — Authorized By — Date

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"	100	
2"	98	
1½"	91	
1"	80	
¾"	74	
½"	66	
⅜"	61	
¼"	--	
No. 4	53	0-50
8	48	
10	47	
16	45	
30	43	
40	42	
50	40	
100	34	
Finer than 200 ASTM D1140-	14.8	

Soil Classification SM-Silty Sand w/gravel

Liquid Limit and Plasticity of Soils — LL = --
ASTM D4318- — PI = n/p

Moisture - Density Relations — Maximum Dry Density, pcf 136.2
☐ ASTM D698- ; ☒ ASTM D1557- ; Method D — Optimum Moisture, % 6.0

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value

Other: Project Specification
Section 02201.10.01
"General Fill"
NOTE: Material Does Not Meet Specification

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AUG 29 1991

PHYSICAL PROPERTIES OF SOILS

Client Black & Veatch
1771 E Flamingo Rd. Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 728-91
Date of Report 8-26-91
Reviewed By CB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana & Durango — Sampled By Mark Sherrod — Date 8-13-91
Type of Material General Fill — Submitted By Mark Sherrod — Date 8-13-91
Source of Material Borrow, S/W of screening plant — Authorized By _____ — Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6		100
3"		
2½"	100	
2"	94	
1½"	90	
1"	77	
¾"	70	
½"	59	
⅜"	53	
¼"	--	
No. 4	42	0-50
8	34	
10	32	
16	29	
30	26	
40	24	
50	23	
100	18	
Finer than 200 ASTM D1140-	11.1	

Soil Classification GW-GC:Well graded gravel w/clay & sand

Liquid Limit and Plasticity of Soils — LL = 33
ASTM D4318- — PI = 10

Moisture - Density Relations — Maximum Dry Density, pcf 134.4
☐ ASTM D698- ; ☒ ASTM D1557- ; Method D — Optimum Moisture, % 7.8

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity _____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value _____

Other: Project Specification
Section: 02201.10.01
"General Fill"

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

SEP 3 1991

Job No. 4141K255
Lab/Invoice No. 755-91
Date of Report 8-28-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana & Durango — Sampled By Mark Sherrod — Date 8-22-91
Type of Material General Fill — Submitted By Mark Sherrod — Date 8-22-91
Source of Material Between station 8 + 00 & 12 + 00 — Authorized By _____ — Date _____

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
6"		100
3"		
2½"		
2"	100	
1½"	95	
1"	92	
¾"	86	
½"	74	
⅜"	69	
¼"	-	
No. 4	56	0-50
8	50	
10	49	
16	45	
30	41	
40	39	
50	36	
100	27	
Finer than 200 ASTM D1140-	10.3	

Soil Classification SP-SM: Poorly graded sand w/ silt & gravel

Liquid Limit and Plasticity of Soils ASTM D4318- — LL = - — PI = N/P

Moisture - Density Relations — Maximum Dry Density, pcf 131.8
☐ ASTM D698- ; ☒ ASTM D1557- ; Method C — Optimum Moisture, % 6.7

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity _____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value _____

Other: Project Specification
Section: 02201.10.01
"General Fill"

Copies to: Client (2)
Wheeler Construction (1)

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To: *From:* *Date:*

Subject: *Proj. No.:*

FILTER BLANKET GRADATIONS

CCPIU File 14625.450 A

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PHYSICAL PROPERTIES OF AGGREGATES

Client Black & Veatch
1771 E Flamingo Rd, Ste 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 645-91
Date of Report 7-24-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana & Durango — Sampled By Mark Sherrod — Date 7-23-91
Type of Aggregate Filter Material — Submitted By Mark Sherrod — Date 7-23-91
Source of Aggregate Drain Trench Sta. 0+30 — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136- | Test Standards are ASTM unless otherwise noted.

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	97	
1½"	83	70-90
1⅛"	--	
1"	50	
¾"	27	45-65
½"	7	
⅜"	4	20-40
¼"	--	
No. 4	2	5-15
8		
10		
16	2	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.0	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Wheeler Construction (1)

- Project Specification
Section: 02201.10.01
"Filter Material"
NOTE: Material Does Not Meet Specification

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BLACK & VEATCH

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client Black & Veatch
1771 E. Flamingo Road, Suite 104A
Las Vega, NV 89119

Job No. 4141K255
Lab/Invoice No. 661-91
Date of Report 7/30/91
Reviewed By EB

Project Flamingo - Upper Wash Detention Basin & Discharge

Location Tropicana & Durango — Sampled By M. Sherrod/WTI — Date 7/25/91

Type of Aggregate Filter Material — Submitted By M. Sherrod/WTI — Date 7/25/91

Source of Aggregate Sta 8+50 Drain Trench — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	95	
1½"	88	70-90
1⅛"	--	
1"	65	
¾"	46	45-65
½"	17	
⅜"	6	20-40
¼"	--	
No. 4	4	5-15
8		
10		
16	3	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.5	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Wheeler Construction (1)

Project Specification Section 02201.10.0
"Filter Material"
NOTE: Material does not meet specificati.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

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AUG 12 1991
BLACK & VEATCH

Job No. 4141K255
Lab/Invoice No. 677-91
Date of Report 8-2-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango — Sampled By Mark Sherrod — Date 7-30-91
Type of Aggregate Filter material — Submitted By Mark Sherrod — Date 7-30-91
Source of Aggregate Sta. 10 + 00 to 11 + 00 — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136- Test Standards are ASTM unless otherwise noted.

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	94	
1½"	84	70-90
1⅛"	-	
1"	67	
¾"	55	45-65
½"	40	
⅜"	30	20-40
¼"	-	
No. 4	12	5-15
8		
10		
16	6	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.6	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
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Project Specification
Section 02201.10.01
"Filter material"

PDQ FORM #56

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 683-91
Date of Report 8-2-91
Reviewed By

Project Flamingo Upper Wash Detention Basin & Discharge

Location Tropicana and Durango Sampled By Mark Sherrod Date 7-31-91

Type of Aggregate Filter material Submitted By Mark Sherrod Date 7-31-91

Source of Aggregate Sta. 9 + 50 20' E/O Center Authorized By Date

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		100
2"	100	
1½"	97	70-90
1⅛"	-	
1"	85	
¾"	75	45-65
½"	63	
⅜"	52	20-40
¼"	-	
No. 4	27	5-15
8		
10		
16	16	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	5.7	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
Wheeler (1)

Project Specification
Section 02201.10.01
"Filter Material"
Material does not meet specification

CCFN file 14125.4/52
Res. Duits engrs

WESTERN TECHNOLOGIES INC.

3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 691-91
Date of Report 8-5-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-1-91
Type of Aggregate Filter material Submitted By Mark Sherrod Date 8-1-91
Source of Aggregate Sta. 13+00 to 14+00 E/O CL,"Dam" Authorized By _____ Date _____

Sieve Analysis, ASTM C136- Test Standards are ASTM unless otherwise noted.

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	96	
1½"	89	70-90
1¼"		
1"	67	
¾"	49	45-65
½"	34	
⅜"	24	20-40
¼"	--	
No. 4	11	5-15
8		
10		
16	6	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.3	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Wheeler (1)

Project Specification
Section 02201.10.01
"Filter material"

Accepted

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104 A
Las Vegas, NV 89119

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BLACK & VEATCH

Job No. 4141K255
Lab/Invoice No. 699-91
Date of Report 8-8-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin and Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-5-91
Type of Aggregate Filter Material Submitted By Mark Sherrod Date 8-5-91
Source of Aggregate Sta. 20 + 00, 30' to 60' Authorized By _____ Date _____
Sieve Analysis, ASTM C136- E. of CL Dam Test Standards are ASTM unless otherwise noted.

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	91	
1½"	87	70-90
1⅛"	-	
1"	71	
¾"	53	45-65
½"	36	
⅜"	27	20-40
¼"	-	
No. 4	11	5-15
8		
10		
16	7	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.3	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
Wheeler (1)

Project Specification
Section 02201.10.01
"Filter Material"

PDQ FORM #56

CCPW file 14625.450
resident's eng file

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LABORATORY REPORT

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BLACK & VEATCH

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 705-91
Date of Report 8-13-91
Reviewed By

Project Flamingo Upper Wash Detention Basin and Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-7-91
Type of Aggregate Filter Material Submitted By Mark Sherrod Date 8-7-91
Source of Aggregate S/O Spillway Area Authorized By Date

Sieve Analysis, ASTM C136- *Test Standards are ASTM unless otherwise noted.*

Sieve Size	% Passing Accumulative	Specification
4"		
3"		100
2"	100	
1½"	96	70–90
1⅛"	86	
1"	64	
¾"	50	45–65
½"	36	
⅜"	27	20–40
¼"	–	
No. 4	9	5–15
8		
10		
16	4	0–10
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.2	0–3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter Material"

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

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Job No. 4141K255
Lab/Invoice No. 707-91
Date of Report 8-15-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-8-91
Type of Aggregate Filter material Submitted By Mark Sherrod Date 8-8-91
Source of Aggregate N/O Spillway Authorized By _____ Date _____

Sieve Analysis, ASTM C136- **Test Standards are ASTM unless otherwise noted.**

Sieve Size	% Passing Accumulative	Specification
4"		
3"		100
2"	100	
1½"	89	70-90
1⅛"	-	
1"	74	
¾"	62	45-65
½"	41	
⅜"	31	20-40
¼"	-	
No. 4	13	5-15
8		
10		
16	7	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.6	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter material"

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 724-91
Date of Report 8-16-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-12-91
Type of Aggregate Filter material Submitted By Mark Sherrod Date 8-12-91
Source of Aggregate Sta. 30 + 50, 15' Rt. CL Authorized By _____ Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	91	
1½"	86	70-90
1⅛"		
1"	72	
¾"	60	45-65
⅜"	43	
⅛"	33	20-40
¼"		
No. 4	14	5-15
8		
10		
16	6	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.4	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter material"

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PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 728-91
Date of Report 8-26-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-13-91
Type of Aggregate Filter Materials Submitted By Mark Sherrod Date 8-13-91
Source of Aggregate Sta. 32+00 Authorized By _____ Date _____

Sieve Analysis, ASTM C136- **Test Standards are ASTM unless otherwise noted.**

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	97	
1½"	86	70-90
1¼"	--	
1"	70	
¾"	54	45-65
½"	40	
⅜"	31	20-40
¼"	--	
No. 4	13	5-15
8		
10		
16	6	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.9	0-3

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter material"

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

AUG 29 1991

Job No. 4141K255
Lab/Invoice No. 732-91
Date of Report 8-26-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango — Sampled By Mark Sherrod — Date 8-14-91
Type of Aggregate Filter Materials — Submitted By Mark Sherrod — Date 8-14-91
Source of Aggregate Sta. 35+00 — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	95	
1½"	92	70-90
1⅛"	--	
1"	70	
¾"	57	45-65
½"	43	
⅜"	32	20-40
¼"	--	
No. 4	12	5-15
8		
10		
16	6	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.4	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter material"
NOTE: Material does not meet specification

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 742-91
Date of Report 8-26-91
Reviewed By EP

AUG 29 1991

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-16-91
Type of Aggregate Filter Materials Submitted By Mark Sherrod Date 8-16-91
Source of Aggregate Sta. 28+50 Authorized By _____ Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		100
2"	100	
1½"	86	70-90
1⅛"	--	
1"	63	
¾"	46	45-65
½"	30	
⅜"	22	20-40
¼"	--	
No. 4	9	5-15
8		
10		
16	5	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.4	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
Wheeler (1)

Project Specification
Section 02201.10.01
"Filter material"

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

AUG 29 1991

Job No. 4141K255
Lab/Invoice No. 743-91
Date of Report 8-26-91
Reviewed By EP

Project Flamingo Upper Wash Detention Basin & Discharge
Location Tropicana and Durango Sampled By Mark Sherrod Date 8-19-91
Type of Aggregate Filter Materials Submitted By Mark Sherrod Date 8-19-91
Source of Aggregate Sta. 36+50 Authorized By _____ Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	90	
1½"	84	70-90
1¼"	--	
1"	68	
¾"	58	45-65
½"	46	
⅜"	37	20-40
¼"	--	
No. 4	15	OK 5-15
8		
10		
16	10	OK 0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	2.4	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131-
	% Wear, 500 rev.			Grading
	% Wear, rev.			C535-
	% Wear, 1000 rev.			Grading
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☒ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Project Specification
Section 02201.10.01
"Filter material"

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Las Vegas, Nevada 89103
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 897-91
Date of Report 10-28-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge

Location Tropicana & Durango — Sampled By Mark Sherrod — Date 10-16-91

Type of Aggregate Filter Material — Submitted By Mark Sherrod — Date 10-16-91

Source of Aggregate SE of spillway — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		100
2"	100	
1½"	82	70-90
1⅛"	--	
1"	61	
¾"	47	45-65
½"	31	
⅜"	21	20-40
¼"	--	
No. 4	7	5-15
8		
10		
16	3	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.0	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
Wheeler(1)

Project Specification
Section 02201.10.01 "Filter Material"

BLACK & VEATCH
OCT 30 1991
LAS VEGAS, NEVADA

319

WESTERN TECHNOLOGIES INC.

3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 901-91
Date of Report 10-28-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge

Location Tropicana & Durango — Sampled By Mark Sherrod — Date 10-18-91

Type of Aggregate Filter Material — Submitted By Mark Sherrod — Date 10-18-91

Source of Aggregate NE side of spillway — Authorized By _____ — Date _____

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"	100	100
2"	86	
1½"	82	70-90
1⅛"	--	
1"	65	
¾"	57	45-65
½"	39	
⅜"	29	20-40
¼"	--	
No. 4	11	5-15
8		
10		
16	7	0-10
30		
40		
50		
100		
Finer than 200 ASTM C117-	3.5	0-3

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

Copies to: Client (2)
Wheeler (1)

Project Specification
Section 02201.10.01
"Filter Material"
NOTE: Material does not meet specification.

BLACK & VEATCH
OCT 30 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 847-91
Date of Report 9-30-91
Reviewed By

Project Flamingo Upper Wash Detention Basin & Discharge

Location S/O Tropicana & Durango — Sampled By Mark Sherrod (WT) — Date 9-24-91

Type of Material 3/4 Concrete Aggregate — Submitted By Mark Sherrod (WT) — Date 9-24-91

Source of Material WMK Belt Cut Sample — Authorized By Client — Date 9-24-91

Sieve Analysis, ASTM D422- SAMPLE #1

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"	100	100
¾"	91	90-100
½"		
⅜"	22	20-55
¼"		
No. 4	3	0-10
8	2	0-5
10		
16		
30		
40		
50		
100		
Finer than 200 ASTM D1140-		

Soil Classification

Liquid Limit and Plasticity of Soils — LL = ____
ASTM D4318- — PI = ____

Moisture - Density Relations — Maximum Dry Density, pcf ____
☐ ASTM D698- ; ☐ ASTM D1557- ; Method ____ — Optimum Moisture, % ____

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity ____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value ____

Other:

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BLACK & VEATCH
OCT 01 1991
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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 847-91
Date of Report 9-30-91
Reviewed By

Project Flamingo Upper Wash Detention Basin & Discharge

Location S/O Tropicana & Durango — Sampled By Mark Sherrod — Date 9-24-91

Type of Material Concrete Sand — Submitted By Mark Sherrod — Date 9-24-91

Source of Material WMK Belt Cut Sample — Authorized By Client — Date 9-24-91

Sieve Analysis, ASTM D422- SAMPLE #2

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"		
¾"		
½"		
⅜"	100	100
¼"		
No. 4	100	95-100
8	87	80-100
10		
16	54	50-85
30	33	25-60
40		
50	20	10-30
100	10	2-10
	4.8	
Finer than 200 ASTM D1140-		

Soil Classification

Liquid Limit and Plasticity of Soils — LL = ____
ASTM D4318- — PI = ____

Moisture - Density Relations — Maximum Dry Density, pcf ____
☐ ASTM D698- ; ☐ ASTM D1557- ; Method ____ — Moisture, % 9.0

Specific Gravity of Soils (minus No. 4 material)
ASTM D854- — Specific Gravity ____

Resistance 'R' Value of Compacted Soils
ASTM D2844- — 'R' Value ____

Other:

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BLACK & VEATCH

SEP 30 1991

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 807-91
Date of Report 9-25-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge

Location S/O Tropicana & Durango — Sampled By Mark Sherrod — Date 9-11-91

Type of Aggregate 3/4" Concrete Agg. — Submitted By Mark Sherrod — Date 9-11-91

Source of Aggregate WMK Transit Mix — Authorized By Gary W/ B & V — Date

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"	100	100
¾"	93	90-100
⅜"	42	
⅜"	19	20-55
¼"	-	
No. 4	3	0-10
8	2	0-5
10		
16		
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.0	0-15

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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ASTM C-33
Size #67
Note: Material Does Not Meet Specification

PDQ FORM #56

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 807-91
Date of Report 9-25-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge
Location S/O Tropicana & Durango — Sampled By Mark Sherrod — Date 9-11-91
Type of Aggregate Fine Aggregate — Submitted By Mark Sherrod — Date 9-11-91
Source of Aggregate WMK Transit Mix — Authorized By Gary W/ B & V — Date

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"		
¾"		
½"		
⅜"		100
¼"		
No. 4	100	95-100
8	85	80-100
10	73	
16	52	50-85
30	33	25-60
40	26	
50	19	10-30
100	10	2-10
Finer than 200 ASTM C117-	3.4	0-5

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus		3.00	2.3-3.1	C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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Wheeler (1)

ASTM C-33

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK AND VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 870-91
Date of Report 10-15-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin and Discharge

Location S/O Tropicana & Durango — Sampled By Mark Sherrod — Date 10-4-91

Type of Aggregate 3/4" Conc. Agg. — Submitted By Mark Sherrod — Date 10-4-91

Source of Aggregate WMK Transit Mix — Authorized By Gary W/ Black & Veatch — Date 10-4-91

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"	100	100
¾"	94	90-100
½"	54	
⅜"	27	20-55
¼"	--	
No. 4	2	0-10
8	1	0-5
10		
16		
30		
40		
50		
100		
Finer than 200 ASTM C117-	0.4	0-15

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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ASTM C-33
Size No. 67

PDQ FORM #56

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK AND VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 870-91
Date of Report 10-15-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin and Discharge
Location S/O Tropicana & Durango Sampled By Mark Sherrod Date 10-4-91
Type of Aggregate Fine Aggregate *Submitted By* Mark Sherrod Date 10-4-91
Source of Aggregate WMK Transit Mix Authorized By Gary W/ Black & Veatch Date 10-4-91

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"		
¾"		
½"		
⅜"		100
¼"		
No. 4	100	95-100
8	86	80-100
10	76	
16	53	50-85
30	33	25-60
40	26	
50	20	10-30
100	10	2-10
Finer than 200 ASTM C117-	4.0	0-5

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus		2.97	2.3-3.1	C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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ASTM C-33

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 902-91
Date of Report 10-28-91
Reviewed By

Project Flamingo Upper Wash Detention Basin & Discharge
Location S/O Tropicana & Durango Sampled By Mark Sherrod Date 10-18-91
Type of Aggregate 3/4" Concrete Aggregate Submitted By Mark Sherrod Date 10-18-91
Source of Aggregate WMK Transit Mix Authorized By Gary W/ Black & Veatch Date

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"	100	100
¾"	91	90-100
½"	50	
⅜"	19	20-55
¼"	--	
No. 4	2	0-10
8	2	0-5
10		
16		
30		
40		
50		
100		
Finer than 200 ASTM C117-	1.2	0-1.5

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus				C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

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ASTM C-33
Size #67
Note: Material does not meet specifications

BLACK & VEATCH
OCT 30 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client BLACK & VEATCH
1771 E. Flamingo Rd., Suite 104A
Las Vegas, NV 89119

Job No. 4141K255
Lab/Invoice No. 902-91
Date of Report 10-28-91
Reviewed By EB

Project Flamingo Upper Wash Detention Basin & Discharge

Location S/O Tropicana & Durango — Sampled By Mark Sherrod — Date 10-18-91

Type of Aggregate Fine Aggregate — Submitted By Mark Sherrod — Date 10-18-91

Source of Aggregate WMK Transit Mix — Authorized By Gary W/ Black & Veatch — Date

Sieve Analysis, ASTM C136-

Sieve Size	% Passing Accumulative	Specification
4"		
3"		
2"		
1½"		
1⅛"		
1"		
¾"		
½"		
⅜"		100
¼"		
No. 4	100	95-100
8	97	80-100
10	77	
16	53	50-85
30	32	25-60
40	25	
50	19	10-30
100	6	2-10
Finer than 200 ASTM C117-	2.3	0-5

Test Standards are ASTM unless otherwise noted.

Test		Result	Specification	Test STD
Fineness Modulus		3.02	2.3-3.1	C125-
Dry Rodded Unit Weight, pcf				C29-
Lightweight Pieces, %				C123-
Clay Lumps and Friable Particles				C142-
Organic Impurities				C40-
Sand Equivalent Value				C2419-
Resistance to Abrasion	% Wear, rev.			C131- Grading
	% Wear, 500 rev.			
	% Wear, rev.			C535- Grading
	% Wear, 1000 rev.			
Scratch Hardness, % by: Weight | Count		|	|	C235-
Fractured Faces, % by: Weight | Count		|	|	
Liquid Limit | Plasticity Index		|	|	D4318-
Cleanness Value				Calif. 227-
Moisture Density Relations	Max. Dry Density, pcf		☐ D698- ☐ D1557- ☐ AASHTO T99- ☐ AASHTO T180-	
	Optimum Moisture, %			
	Method			
Specific Gravity	Absorption, %		☐ C127- ☐ C128-	
	Bulk (Dry)			
	Bulk (SSD)			
	Apparent			

ASTM C-33

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Wheeler (1)

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OCT 30 1991
LAS VEGAS, NEVADA

PDQ FORM #56

CONCRETE 28 DAY STRENGTHS

WESTERN TECHNOLOGIES INC.
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-18-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upstream side north end wall cap

Concrete Supplier: WMK Transit — Measured Slump, in.: 6

Ticket Number: 25124 — Measured Air Content, %: 6.5

Batch Size, cu.yds.: 8.0 — Concrete Temperature, °F: 68

Mix Identification: W418P — Ambient Air Temperature, °F: 57

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min. — Sampled By: J. Usrey — Date: 01/21/92

Water Added on Job, gal.: 10 — Submitted By: J. Usrey — Date: 01/22/92

Test Procedure: ASTM C39- 84B — Authorized By: ____ — Date: ____

Remarks: Out of Sequence

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
213A	01-28-92	7	89000	3150			GV
213B	01-28-92	7	83000	2940			GV
213C	02-18-92	28	126000	4460			GV
213D	02-18-92	28	126000	4460			GV
213E		HOLD					

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Wheeler ~~Construction (1)~~

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-17-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: --

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 7 1/2

Ticket Number: 24879/Truck 36 — Measured Air Content, %: 7.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 48

Mix Identification: W418P — Ambient Air Temperature, °F: 40

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 25 min. — Sampled By: P. Boedeker — Date: 01/20/92

Water Added on Job, gal.: 5 — Submitted By: P. Boedeker — Date: 01/21/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/20/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
211A	01-27-92	7	87500	3100			GV
211B	01-27-92	7	87000	3080			GV
211C	02-17-92	28	118000	4170			GV
211D	02-17-92	28	124000	4390			GV
211E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-12-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Wall A3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 6 3/4

Ticket Number: 24209

Measured Air Content, %: 6.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 71

Mix Identification: W418P

Ambient Air Temperature, °F: 59

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: hrs. 45 min.

Sampled By: J. Usrey Date: 01/15/92

Water Added on Job, gal.: 0

Submitted By: J. Usrey Date: 01/16/92

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfield Date: 01/14/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
210A	01-22-92	7	106000	3750			GV
210B	01-22-92	7	102000	3610			GV
210C	02-12-92	28	144000	5090			GV
210D	02-12-92	28	142000	5020			GV
210E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-11-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upsream slab on grade, E2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 23844 — Measured Air Content, %: 4.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 53

Mix Identification: W418 — Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: J. Usrey — Date: 01/14/92

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 01/15/92

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 01/13/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
209A	01-21-92	7	97000	3430			GV
209B	01-21-92	7	96500	3410			GV
209C	02-11-92	28	134000	4740			GV
209D	02-11-92	28	138000	4880			GV
209E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-11-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upstream slab on grade, A2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 23801 — Measured Air Content, %: 5.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 55

Mix Identification: W418 — Ambient Air Temperature, °F: 48

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 40 min. — Sampled By: J. Usrey — Date: 01/14/92

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 01/15/92

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 01/13/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
208A	01-21-92	7	109000	3860			GV
208B	01-21-92	7	112500	3980			GV
208C	02-11-92	28	145500	5150			GV
208D	02-11-92	28	145000	5130			GV
208E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-07-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: --

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 23368

Measured Air Content, %: 5.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 62

Mix Identification: W418P

Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. ____ min.

Sampled By: J. Usrey Date: 01/10/92

Water Added on Job, gal.: 0

Submitted By: J. Usrey Date: 01/11/92

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfield Date: 01/09/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
207A	01-17-92	7	117500	4160			GV
207B	01-17-92	7	107500	3800			GV
207C	02-07-92	28	149000	5270			GV
207D	02-07-92	28	157000	5550			GV
207E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-07-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upstream apron slab on grade, El

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 23309 — Measured Air Content, %: 5.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W418 — Ambient Air Temperature, °F: 47

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: J. Usrey — Date: 01/10/92

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 01/11/92

Test Procedure: ASTM C39- 84B — Authorized By: G. Sonnerfield — Date: 01/09/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
206A	01-17-92	7	87000	3080			GV
206B	01-17-92	7	69000	2440	Cone&Shear		GV
206C	02-07-92	28	122000	4320			GV
206D	02-07-92	28	131000	4630			GV
206E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-07-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upstream apron slab on grade, B2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 23274 — Measured Air Content, %: 5.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 54

Mix Identification: W418 — Ambient Air Temperature, °F: 40

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: J. Usrey — Date: 01/10/92

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 01/11/92

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 01/10/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
205A	01-17-92	7	91000	3220			GV
205B	01-17-92	7	90000	3180			GV
205C	02-07-92	28	132000	4670			GV
205D	02-07-92	28	127000	4490			GV
205E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-06-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Channel basin @ Sta. 28+00

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 23128 — Measured Air Content, %: 7.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 52

Mix Identification: W418 — Ambient Air Temperature, °F: 40

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: S. Gilmour — Date: 01/09/92

Water Added on Job, gal.: 0 — Submitted By: S. Gilmour — Date: 01/10/92

Test Procedure: ASTM C39- 848 — Authorized By: Gary S. — Date: 01/09/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
204A	01-16-92	7	78000	2760			GV
204B	01-23-92	14	91000	3220			GV
204C	02-06-92	28	110500	3910**			GV
204D	02-06-92	28	112000	3960**			GV
204E		HOLD					

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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-05-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall, section C3

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 230 — Measured Air Content, %: 3.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 51

Mix Identification: W418 — Ambient Air Temperature, °F: 43

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 25 min. — Sampled By: P. Boedeker — Date: 01/08/92

Water Added on Job, gal.: 10 — Submitted By: P. Boedeker — Date: 01/09/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/07/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
203A	01-15-92	7	120000	4240			GV
203B	01-15-92	7	111500	3940			GV
203C	02-05-92	28	144000	5090			GV
203D	02-05-92	28	145000	5130			GV
203E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-05-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall, section A5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 3/4

Ticket Number: 23054/Truck 58 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 53

Mix Identification: W418 — Ambient Air Temperature, °F: 43

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 25 min. — Sampled By: P. Boedeker — Date: 01/08/92

Water Added on Job, gal.: 10 — Submitted By: P. Boedeker — Date: 01/09/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/07/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
202A	01-15-92	7	124000	4390			GV
202B	01-15-92	7	125500	4440			GV
202C	02-05-92	28	155000	5480			GV
202D	02-05-92	28	156000	5520			GV
202E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-06-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low flow channel slab on grade

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 23014/Truck 38 — Measured Air Content, %: 9.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 51

Mix Identification: W418 — Ambient Air Temperature, °F: 33

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: P. Boedeker — Date: 01/08/92

Water Added on Job, gal.: 0 — Submitted By: P. Boedeker — Date: 01/09/92

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 01/07/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
201A	01-15-92	7	86000	3040			GV
201B	01-15-92	7	85500	3020			GV
201C	02-05-92	28	114000	4030			GV
201D	02-05-92	28	118500	4190			GV
201E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-04-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Upstream cut-off trench

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/4

Ticket Number: 22920 — Measured Air Content, %: 7.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 45

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: P. Boedeker — Date: 01/07/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/08/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/06/92

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
200A	01-14-92	7	86000	3040			GV
200B	01-14-92	7	84000	2970			GV
200C	02-04-92	28	125000	4420			GV
200D	02-04-92	28	120000	4240			GV
200E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-03-92

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall section D-3

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 22836 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W-418 — Ambient Air Temperature, °F: 47

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: P. Boedeker — Date: 01/06/92

Water Added on Job, gal.: 5 — Submitted By: P. Boedeker — Date: 01/07/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/03/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
199A	01-13-92	7	105000	3710			GV
199B	01-13-92	7	104500	3700			GV
199C	02-03-92	28	154000	5450			GV
199D	02-03-92	28	153000	5410			GV
199E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-03-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall section D3 & B5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 22820 — Measured Air Content, %: 2.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418 — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 2 hrs. ____ min. — Sampled By: P. Boedeker — Date: 01/06/92

Water Added on Job, gal.: 10 — Submitted By: P. Boedeker — Date: 01/07/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/03/92

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
198A	01-13-92	7	103000	3640			GV
198B	01-13-92	7	87000	3080			GV
198C	02-03-92	28	123000	4350			GV
198D	02-03-92	28	133000	4700			GV
198E		HOLD					

Copies to:
Addressee - (2)
Wheeler Construction (1)

BLACK & VEATCH
FEB 06 1992
LAS VEGAS, NEVADA

FORM #41
PDG Printing (702) 870-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-03-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low Flow channel slab

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 22795 — Measured Air Content, %: 9.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 54

Mix Identification: W-418 — Ambient Air Temperature, °F: 41

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: P. Boedeker — Date: 01/06/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/07/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/03/92

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
197A	01-13-92	7	72000	2550			GV
197B	01-13-92	7	70000	2480			GV
197C	02-03-92	28	90500	3200**	Cone&Shear		GV
197D	02-03-92	28	88000	3110**	Cone&Shear		GV
197E		HOLD					

Copies to:
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Wheeler Construction (1)

BLACK & VEATCH
FEB 06 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

FORM #41
PDQ Printing (702) 876-3235

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-31-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low flow channel slab

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 22676 — Measured Air Content, %: 11.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 45

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min. — Sampled By: P. Boedeker — Date: 01/03/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/02/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/02/92

Remarks

NOTE: HIGH AIR CONTENT
*LOW BREAK

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
* 196A	01-10-92	7	65000	2300			GV
* 196B	01-10-92	7	66500	2350			GV
196C	01-31-92	28	90500	3200**			GV
196D	01-31-92	28	94000	3330**			GV
196E		HOLD					

Copies to:
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Wheeler Construction (1)

BLACK & VEATCH

FEB 06 1992

LAS VEGAS, NEVADA

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

FORM #41
POG Printing (702) 870-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-30-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth walls, sections E3 and C5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 22642/Truck 16 — Measured Air Content, %: 1.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W418 — Ambient Air Temperature, °F: 51

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. ____ min. — Sampled By: P. Boedeker — Date: 01/02/92

Water Added on Job, gal.: 0 — Submitted By: P. Boedeker — Date: 01/03/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 12/31/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
195A	01-09-92	7	97000	3430			GV
195B	01-09-92	7	102000	3610			GV
195C	01-30-92	28	133000	4700			GV
195D	01-30-92	28	128000	4530			GV
195E		HOLD					

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Addressee - (2)
Wheeler Construction (1)

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-30-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth walls, sections E3 and C5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 22619/Truck 51 — Measured Air Content, %: 1.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W418 — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 45 min. — Sampled By: P. Boedeker — Date: 01/02/92

Water Added on Job, gal.: 0 — Submitted By: P. Boedeker — Date: 01/03/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 12/31/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
194A	01-09-92	7	113000	4000			GV
194B	01-09-92	7	119000	4210			GV
194C	01-30-92	28	159000	5620			GV
194D	01-30-92	28	146000	5160			GV
194E		HOLD					

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Wheeler Construction (1)

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-30-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low Flow Channel slab on grade

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 22574 — Measured Air Content, %: --

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 52

Mix Identification: W-418 — Ambient Air Temperature, °F: 33

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min. — Sampled By: P. Boedeker — Date: 01/02/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/03/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 12/31/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
193A	01-09-92	7	63500	2250	LOW		GV
193B	01-09-92	7	63000	2230	LOW		GV
193C	01-30-92	28	92500	3270**			GV
193D	01-30-92	28	89500	3170**			GV
193E		HOLD					

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Wheeler Construction (1)

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

FORM #41
PDQ Printing (702) 870-3226

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-28-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low flow slab on grade

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 22453 — Measured Air Content, %: 9.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W-418 — Ambient Air Temperature, °F: 38

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min. — Sampled By: P. Boedeker — Date: 12/31/91

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/02/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 12/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
192A	01-07-92	7	74500	2640			GV
192B	01-07-92	7	77000	2720			GV
192C	01-28-92	28	105500	3730**			GV
192D	01-28-92	28	107000	3780**			GV
192E		HOLD					

Copies to:
Addressee - (2)
Wheeler Construction (1)

BLACK & VEATCH
JAN 30 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

FORM #41
PDQ Printing (703) 876-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-24-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Second cycle, South end

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 22366 — Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 70

Mix Identification: W418P — Ambient Air Temperature, °F: 60

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 30 min. — Sampled By: J. Usrey — Date: 12/27/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/28/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 12/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
191A	01-03-92	7	120500	4260			BB
191B	01-03-92	7	122000	4320			BB
191C	01-24-92	28	162000	5730			GV
191D	01-24-92	28	165000	5840			GV
191E		HOLD					

Copies to:
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Wheeler Construction (1)

BLACK & VEATCH
JAN 30 1992
LAS VEGAS, NEVADA

FORM #41
PDQ Printing (702) 870-3236

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-24-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Channel floor

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 22348 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W418P — Ambient Air Temperature, °F: 57

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 30 min. — Sampled By: J. Usrey — Date: 12/27/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/28/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 12/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
190A	01-03-92	7	121000	4280			BB
190B	01-03-92	7	117000	4140			BB
190C	01-24-92	28	165000	5840			GV
190D	01-24-92	28	162000	5730			GV
190E		HOLD					

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BLACK & VEATCH
JAN 30 1992
LAS VEGAS, NEVADA

FORM #41
PDG Printing (702) 876-3236

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-21-92

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North half of West full cycle end of North spillway

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 14058 — Measured Air Content, %: 5.2

Batch Size, cu.yds.: 5.0 — Concrete Temperature, °F: 56

Mix Identification: W418P — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 42 min. — Sampled By: M. Begay — Date: 12/24/91

Water Added on Job, gal.: 5 — Submitted By: M. Begay — Date: 12/25/91

Test Procedure: ASTM C39- 84B — Authorized By: Pat Roman — Date: 12/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
189A	12-31-91	7	100000	3540			GV
189B	12-31-91	7	105000	3710			GV
189C	01-21-92	28	138000	4880			GV
189D	01-21-92	28	141000	4990			GV
189E		HOLD					

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BLACK & VEATCH
JAN 25 1992
LAS VEGAS, NEVADA

FORM #41
PDQ Printing (702) 876-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-20-92

Reviewed By CD

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Low flow channel slab on grade

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 13987 — Measured Air Content, %: 6.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W418P — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 52 min. — Sampled By: M. Begay — Date: 12/23/91

Water Added on Job, gal.: 15 — Submitted By: M. Begay — Date: 12/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
188A	12-30-91	7	99000	3500			GV
188B	12-30-91	7	102000	3610			GV
188C	01-20-92	28	137500	4860			GV
188D	01-20-92	28	136000	4810			GV
188E		HOLD					

Copies to:
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Wheeler Construction (1)

BLACK & VEATCH
JAN 23 1992
LAS VEGAS, NEVADA

FORM #41
PDQ Printing (702) 876-3238

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-20-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall F-5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 13951 — Measured Air Content, %: 5.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W418 — Ambient Air Temperature, °F: 54

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 12 min. — Sampled By: M. Begay — Date: 12/23/91

Water Added on Job, gal.: 0 — Submitted By: M. Begay — Date: 12/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
187A	12-30-91	7	86000	3040			GV
187B	12-30-91	7	84000	2970			GV
187C	01-20-92	28	114000	4030			GV
187D	01-20-92	28	114500	4050			GV
187E		HOLD					

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Addressee - (2)
Wheeler Construction (1)

BLACK & VEATCH
JAN 23 1992
LAS VEGAS, NEVADA

FORM #41
PDQ Printing (702) 878-3238

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-17-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North counterfort 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 13866 — Measured Air Content, %: 5.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 56

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 6

Time in Mixer: 1 hrs. ____ min. — Sampled By: M. Begay — Date: 12/20/91

Water Added on Job, gal.: 20 — Submitted By: M. Begay — Date: 12/21/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
186A	12-27-91	7	94500	3340			GV
186B	12-27-91	7	98000	3470			GV
186C	01-17-92	28	133500	4720			GV
186D	01-17-92	28	125500	4440			GV
186E		HOLD					
186F							

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BLACK & VEATCH
JAN 22 1992
LAS VEGAS, NEVADA

FORM #41
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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-17-92

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab on grade, section D10

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 13847 — Measured Air Content, %: 5.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W-418 — Ambient Air Temperature, °F: 54

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 26 min. — Sampled By: M. Begay — Date: 12/20/91

Water Added on Job, gal.: 0 — Submitted By: M. Begay — Date: 12/21/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/20/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
185A	12-27-91	7	89000	3150			GV
185B	12-27-91	7	91000	3220			GV
185C	01-17-92	28	129000	4560			GV
185D	01-17-92	28	125500	4440			GV
185E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-17-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream Apron slab on grade, section F11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 13833 — Measured Air Content, %: 7.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W-418 — Ambient Air Temperature, °F: 48

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 20 min. — Sampled By: M. Begay — Date: 12/20/91

Water Added on Job, gal.: 0 — Submitted By: M. Begay — Date: 12/21/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/20/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
184A	12-27-91	7	82500	2920			GV
184B	12-27-91	7	81000	2870			GV
184C	01-17-92	28	113500	4010			GV
184D	01-17-92	28	115000	4070			GV
184E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-16-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Const

Architect/Engineer: Black & Veatch

Source of Sample: North counterfort #3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4 1/2

Ticket Number: 13785

Measured Air Content, %: 5.3

Batch Size, cu.yds.: 6.0

Concrete Temperature, °F: 58

Mix Identification: W-418

Ambient Air Temperature, °F: 50

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 54 min.

Sampled By: M. Begay Date: 12/19/91

Water Added on Job, gal.: --

Submitted By: M. Begay Date: 12/20/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Summfield Date: 12/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
183A	12-26-91	7	113000	4000			GV
183B	12-26-91	7	108000	3820			GV
183C	01-16-92	28	145000	5130			GV
183D	01-16-92	28	140000	4950			GV
183E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-16-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Const — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slabs, section H-9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 13768 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 62

Mix Identification: W-418 — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 57 min. — Sampled By: M. Begay — Date: 12/19/91

Water Added on Job, gal.: -- — Submitted By: M. Begay — Date: 12/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/19/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
182A	12-26-91	7	83000	2940			GV
182B	12-26-91	7	82000	2900			GV
182C	01-16-92	28	116000	4100			GV
182D	01-16-92	28	118000	4170			GV
182E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-16-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Const — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slabs, section F-9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 13754 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 28 min. — Sampled By: M. Begay — Date: 12/19/91

Water Added on Job, gal.: 10 — Submitted By: M. Begay — Date: 12/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
181A	12-26-91	7	86000	3040			GV
181B	12-26-91	7	82500	2920			GV
181C	01-16-92	28	111500	3940**	Cone&Shear		GV
181D	01-16-92	28	108500	3840**	Cone&Shear		GV
181E		HOLD					

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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-15-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North Counterfort 4

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 3/4

Ticket Number: 19281 — Measured Air Content, %: 6.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418 — Ambient Air Temperature, °F: 58

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 51 min. — Sampled By: M. Begay — Date: 12/18/91

Water Added on Job, gal.: 10 — Submitted By: M. Begay — Date: 12/19/91

Test Procedure: ASTM C39- 848 — Authorized By: G. Summerfield — Date: 12/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
180A	12-25-91	7	90000	3180			GV
180B	12-25-91	7	90000	3180			GV
180C	01-15-92	28	121000	4280			GV
180D	01-15-92	28	122500	4330			GV
180E		HOLD					

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JAN 17 1992
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-15-92

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab on grade, section G11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 19250 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418 — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min. — Sampled By: M. Begay — Date: 12/18/91

Water Added on Job, gal.: 0 — Submitted By: M. Begay — Date: 12/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
179A	12-25-91	7	78000	2760			GV
179B	12-25-91	7	71500	2530			GV
179C	01-15-92	28	99000	3500**			GV
179D	01-15-92	28	96500	3410**			GV
179E		HOLD					

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BLACK & VEATCH
JAN 17 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-14-92

Reviewed By CB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North Counterfort 10

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 19183 — Measured Air Content, %: 5.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418 — Ambient Air Temperature, °F: 58

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: M. Regay — Date: 12/17/91

Water Added on Job, gal.: 5 — Submitted By: M. Regay — Date: 12/18/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/17/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
178A	12-24-91	7	98000	3470			GV
178B	12-24-91	7	89000	3150			GV
178C	01-14-92	28	115500	4090			GV
178D	01-14-92	28	122000	4320			GV
178E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-14-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab on grade, section C11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 19150 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 50

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. ____ min. — Sampled By: M. Begay — Date: 12/17/91

Water Added on Job, gal.: -- — Submitted By: M. Begay — Date: 12/18/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 12/17/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
177A	12-24-91	7	72500	2560			GV
177B	12-24-91	7	72500	2560			GV
177C	01-14-92	28	101000	3570**			GV
177D	01-14-92	28	100000	3540**			GV
177E		HOLD					

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BLACK & VEATCH
JAN 17 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-13-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: North counterfort 8, Center 1/3

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 21393 — Measured Air Content, %: 2.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 62

Mix Identification: W418P — Ambient Air Temperature, °F: 65

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 27 min. — Sampled By: Crev Carrillo — Date: 12/16/91

Water Added on Job, gal.: 15 — Submitted By: Crev Carrillo — Date: 12/17/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 12/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
176A	12-23-91	7	120500	4260			GV
176B	12-23-91	7	115000	4070			GV
176C	01-13-92	28	152000	5380			GV
176D	01-13-92	28	148000	5240			GV
176E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-13-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab C10, SEC

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 21372

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 60

Mix Identification: W418

Ambient Air Temperature, °F: 63

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ___ hrs. 45 min.

Sampled By: Crev Carrillo Date: 12/16/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 12/17/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 12/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
175A	12-23-91	7	100000	3540			GV
175B	12-23-91	7	90500	3200			GV
175C	01-13-92	28	119000	4210			GV
175D	01-13-92	28	131000	4630			GV
175E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-10-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: North counterfort #7

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/4

Ticket Number: 21292 — Measured Air Content, %: 2.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 66

Mix Identification: W-418P — Ambient Air Temperature, °F: 57

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 20 min. — Sampled By: B. Ilchik — Date: 12/13/91

Water Added on Job, gal.: 5 — Submitted By: B. Ilchik — Date: 12/14/91

Test Procedure: ASTM C39- 84B — Authorized By: _____ — Date: _____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
174A	12-20-91	7	127000	4490			GV
174B	12-20-91	7	126500	4470			GV
174C	01-10-92	28	115300	4080			GV
174D	01-10-92	28	153000	5410			GV
174E		HOLD					

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WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-10-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: North retaining wall section 3B

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/2

Ticket Number: 21257 — Measured Air Content, %: 2.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 61

Mix Identification: W-418P — Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: B. Ilchik — Date: 12/13/91

Water Added on Job, gal.: -- — Submitted By: B. Ilchik — Date: 12/14/91

Test Procedure: ASTM C39- 84B — Authorized By: ____ — Date: ____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
173A	12-20-91	7	109000	3860			GV
173B	12-20-91	7	104000	3680			GV
173C	01-10-92	28	151500	5360			GV
173D	01-10-92	28	147500	5220			GV
173E		HOLD					

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-09-92

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Wheeler Construction — Architect/Engineer Black & Veatch

Source of Sample Labyrinth wall at G, H8

Concrete Supplier WMK Transit Mix — Measured Slump, in. 6

Ticket Number 21128 — Measured Air Content, % 4.0

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 68

Mix Identification W418P — Ambient Air Temperature, °F 48

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 45 min. — Sampled By Tim Larson — Date 12/12/91

Water Added on Job, gal. -- — Submitted By Tim Larson — Date 12/31/91

Test Procedure ASTM C39- 84B — Authorized By ____ — Date ____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
172A	12-19-91	7	109000	3860			GV
172B	12-19-91	7	109500	3870			GV
172C	01-09-92	28	154000	5450			GV
172D	01-09-92	28	145000	5130			GV
172E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-09-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Wheeler Construction — Architect/Engineer: Black & Veatch

Source of Sample: Wall at G.5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 3/4

Ticket Number: 21085 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W418P — Ambient Air Temperature, °F: 45

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min. — Sampled By: Tim Larson — Date: 12/12/91

Water Added on Job, gal.: -- — Submitted By: Tim Larson — Date: 12/13/91

Test Procedure: ASTM C39- 84B — Authorized By: _____ — Date: _____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
171A	12-19-91	7	83500	2950			GV
171B	12-19-91	7	79000	2790			GV
171C	01-09-92	28	117500	4160			GV
171D	01-09-92	28	125500	4440			GV
171E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-08-92

Reviewed By

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Wheeler Construction — Architect/Engineer Black & Veatch

Source of Sample North retaining wall

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5.5

Ticket Number 21002 — Measured Air Content, % --

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 66

Mix Identification W-418P — Ambient Air Temperature, °F 46

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 40 min. — Sampled By T. Larson — Date 12/11/91

Water Added on Job, gal. -- — Submitted By T. Larson — Date 12/12/91

Test Procedure ASTM C39- 84B — Authorized By Client — Date 12/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
170A	12-18-91	7	87500	3100			GV
170B	12-18-91	7	87500	3100			GV
170C	01-08-92	28	117500	4160			GV
170D	01-08-92	28	123000	4350			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-07-92

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Section 1C, Level 3 north retaining wall

Concrete Supplier: WMK TRansit Mix — Measured Slump, in.: 5

Ticket Number: 20930 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418P — Ambient Air Temperature, °F: 50

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: 1 hrs. 36 min. — Sampled By: C. Carrillo — Date: 12/10/91

Water Added on Job, gal.: 10 — Submitted By: C. Carrillo — Date: 12/11/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 12/10/91

Remarks

Note: Cylinders are 6 in. x 12 in.; area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
169A	12-17-91	7	110500	3910			GV
169B	12-17-91	7	113500	4010			GV
169C	01-07-92	28	146000	5160			GV
169D	01-07-92	28	146500	5180			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-07-92

Reviewed By GB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low Flow slab @ Sta. 4+70 to 4+90

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 20914 — Measured Air Content, %: 8.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W-418 — Ambient Air Temperature, °F: 55

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ___ hrs. 58 min. — Sampled By: C. Carrillo — Date: 12/10/91

Water Added on Job, gal.: -- — Submitted By: C. Carrillo — Date: 12/11/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 12/10/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
168A	12-17-91	7	90500	3200			GV
168B	12-17-91	7	92500	3270			GV
168C	01-07-92	28	122500	4330			GV
168D	01-07-92	28	117500	4160			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-03-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Downstream section 4 level 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 20721 — Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W-418P — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min. — Sampled By: J. Usrey — Date: 12/06/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 12/07/91

Test Procedure: ASTM C39- 84B — Authorized By: Sommerfield — Date: 12/05/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
167A	12-13-91	7	113500	4010			GV
167B	12-13-91	7	111500	3940			GV
167C	01-03-92	28	144500	5110			BB
167D	01-03-92	28	145000	5130			BB
167E		HOLD					

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BLACK & VEATCH
JAN 08 1992
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-03-92

Reviewed By EJ

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Channel floor slab on grade Sta.2+45 to 2+65

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 20680 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 62

Mix Identification: W-418 — Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 15 min. — Sampled By: J. Usrey — Date: 12/06/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 12/07/91

Test Procedure: ASTM C39- 84B — Authorized By: Sommerfield — Date: 12/05/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
166A	12-13-91	7	98500	3480			GV
166B	12-13-91	7	93000	3290			GV
166C	01-03-92	28	141000	4990			BB
166D	01-03-92	28	128000	4530			BB
166E		HOLD					

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LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-03-92

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor JA Tiberti — Architect/Engineer Black & Veatch

Source of Sample Retaining wall section EF-S

Concrete Supplier WMK Transit Mix — Measured Slump, in. 6 1/2

Ticket Number 20573 — Measured Air Content, % 4.0

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 68

Mix Identification W-418P — Ambient Air Temperature, °F 52

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 48 min. — Sampled By J. Usrey — Date 12/05/91

Water Added on Job, gal. -- — Submitted By J. Usrey — Date 12/06/91

Test Procedure ASTM C39- 84B — Authorized By Sommerfield — Date 12/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
165A	12-12-91	7	120500	4260			GV
165B	12-12-91	7	119500	4230			GV
165C	01-02-92	28	158000	5590			BB
165D	01-02-92	28	147000	5200			BB
165E		HOLD					

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JAN 0 8 1992
LAS VEGAS, NEVADA

FORM #41
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-03-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Downstream Apron Slab A-11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 20429 — Measured Air Content, %: 4.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W418 — Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 25 min. — Sampled By: J. Usrey — Date: 12/04/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
164A	12-11-91	7	85000	3010			GV
164B	12-11-91	7	86000	3040			GV
164C	01-01-92	28	115500	4090			GV
164D	01-01-92	28	117500	4160			GV
164E		HOLD					

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LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-03-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Downstream Apron slabs A9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 20397 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W418 — Ambient Air Temperature, °F: 48

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min. — Sampled By: J. Usrey — Date: 12/04/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
163A	12-11-91	7	80500	2850			GV
163B	12-11-91	7	83500	2950			GV
163C	01-01-92	28	113500	4010			GV
163D	01-01-92	28	112000	3960**			GV
163E		HOLD					

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BLACK & VEATCH

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-02-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade B-11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 20245 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 62

Mix Identification: W418 — Ambient Air Temperature, °F: 48

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: J. Usrey — Date: 12/03/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 12/04/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/02/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in unless otherwise indicated

Average Compressive Strength @ 28 days=4040

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
162A	12-10-91	7	82500	2920			GV
162B	12-10-91	7	82500	2920			GV
162C	12-31-91	28	117000	4140			GV
162D	12-31-91	28	111000	3930**			GV
162E	01-28-92	56					

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BLACK & VEATCH
JAN 0 8 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength.

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-31-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade B9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 20202 — Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 59

Mix Identification: W418 — Ambient Air Temperature, °F: 36

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: J. Usrey — Date: 12/03/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/04/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/02/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
161A	12-10-91	7	90500	3200			GV
161B	12-10-91	7	90000	3180			GV
161C	12-31-91	28	130500	4620			GV
161D	12-31-91	28	121000	4280			GV
161E		HOLD					

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WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-31-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Counterfort wall 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6.5

Ticket Number: -- — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W418P — Ambient Air Temperature, °F: 55

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min. — Sampled By: J. Usrey — Date: 12/03/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 12/04/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/02/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
160A	12-10-91	7	98500	3480			GV
160B	12-10-91	7	100500	3560			GV
160C	12-31-91	28	142500	5040			GV
160D	12-31-91	28	140500	4970			GV
160E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-26-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North retaining wall section 1B, level 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/2

Ticket Number: 20020 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 72

Mix Identification: W-418P — Ambient Air Temperature, °F: 64

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 1 min. — Sampled By: E. Townsend — Date: 11/27/91

Water Added on Job, gal.: -- — Submitted By: E. Townsend — Date: 11/28/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 11/26/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
159A	12-04-91	7	73000	2580			GV
159B	12-04-91	7	72500	2560			GV
159C	12-25-91	28	104000	3680**			GV
159D	12-25-91	28	106500	3770**			GV
159E		HOLD					

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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-26-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Channel Transition slab SE Corner

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3

Ticket Number: 19983 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 72

Mix Identification: W-418 — Ambient Air Temperature, °F: 62

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 58 min. — Sampled By: E. Townsend — Date: 11/27/91

Water Added on Job, gal.: -- — Submitted By: D. Busick — Date: 11/28/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 11/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
158A	12-04-91	7	106000	3750			GV
158B	12-04-91	7	107500	3800			GV
158C	12-25-91	28	147500	5220			GV
158D	12-25-91	28	149500	5290			GV
158E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-02-92

Reviewed By CB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall H-5

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 19797 — Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 74

Mix Identification: W-418 — Ambient Air Temperature, °F: 68

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 55 min. — Sampled By: J. Usrey — Date: 11/26/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 11/27/91

Test Procedure: ASTM C39- 84B — Authorized By: Sommerfield — Date: 11/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
157A	12-03-91	7	124000	4390			GV
157B	12-03-91	7	122500	4330			GV
157C	12-24-91	28	158000	5590			GV
157D	12-24-91	28	153500	5430			GV
157E		HOLD					

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BLACK & VEATCH
JAN 0 8 1992
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-24-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Channel transition slab on grade NEC

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 19769 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 74

Mix Identification: W-418 — Ambient Air Temperature, °F: 67

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: J. Usrey — Date: 11/26/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 11/27/91

Test Procedure: ASTM C39- 84B — Authorized By: Sommerfield — Date: 11/25/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
156A	12-03-91	7	124500	4400			GV
156B	12-03-91	7	130000	4600			GV
156C	12-24-91	28	165000	5840			GV
156D	12-24-91	28	157000	5550			GV
156E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-23-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: North retaining wall downstream section 4 level

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 19734 — Measured Air Content, %: 5.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W-418P — Ambient Air Temperature, °F: 64

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 5 min. — Sampled By: J. Stark — Date: 11/25/91

Water Added on Job, gal.: 5 — Submitted By: J. Stark — Date: 11/26/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 11/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
155A	12-02-91	7	130000	4600			GV
155B	12-02-91	7	119500	4230			GV
155C	12-23-91	28	162500	5750			GV
155D	12-23-91	28	164500	5820			GV
155E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-23-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: South counterfort No 7

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 19713 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 72

Mix Identification: W-418P — Ambient Air Temperature, °F: 65

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min. — Sampled By: J. Stark — Date: 11/25/91

Water Added on Job, gal.: -- — Submitted By: J. Stark — Date: 11/26/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 11/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
154A	12-02-91	7	105000	3710			GV
154B	12-02-91	7	104500	3700			GV
154C	12-23-91	28	144000	5090			GV
154D	12-23-91	28	137500	4860			GV
154E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-23-91

Reviewed By CB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: South counter forts #4

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 3/4

Ticket Number: 19691 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W-418P — Ambient Air Temperature, °F: 68

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 5 min. — Sampled By: J. Stark — Date: 11/25/91

Water Added on Job, gal.: -- — Submitted By: J. Stark — Date: 11/26/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 11/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
153A	12-02-91	7	112000	3960			GV
153B	12-02-91	7	113500	4010			GV
153C	12-23-91	28	150500	5320			GV
153D	12-23-91	28	155000	5480			GV
153E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-23-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: SW slab on grade channel transition

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 19661 — Measured Air Content, %: 5.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 67

Mix Identification: W-418 — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 55 min. — Sampled By: J. Stark — Date: 11/25/91

Water Added on Job, gal.: -- — Submitted By: J. Stark — Date: 11/26/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 11/25/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
152A	12-02-91	7	97500	3450			GV
152B	12-02-91	7	90000	3180			GV
152C	12-23-91	28	125000	4420			GV
152D	12-23-91	28	124000	4390			GV
152E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-23-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: SW slab on grade channel transition

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 19643 — Measured Air Content, %: 5.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 66

Mix Identification: W-418 — Ambient Air Temperature, °F: 47

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min. — Sampled By: J. Stark — Date: 11/25/91

Water Added on Job, gal.: -- — Submitted By: J. Stark — Date: 11/26/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 11/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		*Type Fracture* If Other Than Cone	*Defects in* Specimens/Caps If Any	Tested By
			Pounds Force	psi			
151A	12-02-91	7	85500	3020			GV
151B	12-02-91	7	82500	2920			GV
151C	12-23-91	28	113000	4000			GV
151D	12-23-91	28	120000	4240			GV
151E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-19-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S half of spillway around chute blocks

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 19358 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 64

Mix Identification: W418 — Ambient Air Temperature, °F: 59

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 2 min. — Sampled By: J. Usrey — Date: 11/21/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 11/22/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
150A	11-28-91	7	82000	2900			GV
150B	11-28-91	7	79000	2790			GV
150C	12-19-91	28	102000	3610**			GV
150D	12-19-91	28	99500	3520**			GV
150E		HOLD					

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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

FORM #41
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 12-19-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Ramp 1

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 19321

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 64

Mix Identification: W418

Ambient Air Temperature, °F: 58

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 40 min.

Sampled By: J. Usrey Date: 11/21/91

Water Added on Job, gal.: --

Submitted By: J. Usrey Date: 11/22/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 11/21/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
149A	11-28-91	7	110500	3910			GV
149B	11-28-91	7	110000	3890			GV
149C	12-19-91	28	141500	5010			GV
149D	12-19-91	28	144500	5110			GV
149E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-18-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Counterfort wall #6

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 19268 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 69

Mix Identification: W418P — Ambient Air Temperature, °F: 59

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 7

Time in Mixer: 1 hrs. 20 min. — Sampled By: J. Usrey — Date: 11/20/91

Water Added on Job, gal.: 5 — Submitted By: J. Usrey — Date: 11/21/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 11/19/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
148A	11-27-91	7	129000	4560			GV
148B	11-27-91	7	120500	4260			GV
148C	12-18-91	28	168000	5940			GV
148D	12-18-91	28	157000	5550			GV
148E		HOLD					
148F		HOLD					
148G		HOLD					

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: South Retaining wall counterfort #10

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 19158 — Measured Air Content, %: 4.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W-418P — Ambient Air Temperature, °F: 58

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: J. Usrey — Date: 11/19/91

Water Added on Job, gal.: -- — Submitted By: J. Usrey — Date: 11/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 11/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
147A	11-26-91	7	129500	4580			GV
147B	11-26-91	7	124500	4400			GV
147C	12-17-91	28	167500	5930			GV
147D	12-17-91	28	168500	5960			GV
147E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-16-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S. retaining wall 1A, level 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 19069 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 70

Mix Identification: W418P — Ambient Air Temperature, °F: 68

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min. — Sampled By: J. Usrey — Date: 11/18/91

Water Added on Job, gal.: 10 — Submitted By: J. Usrey — Date: 11/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/15/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
146A	11-25-91	7	109500	3870			GV
146B	11-25-91	7	115000	4070			GV
146C	12-16-91	28	144500	5110			GV
146D	12-16-91	28	138500	4900			GV
146E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-16-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth wall H7

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 7 1/2

Ticket Number: 19046

Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 68

Mix Identification: W418P

Ambient Air Temperature, °F: 65

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: hrs. 40 min.

Sampled By: J. Usrey Date: 11/18/91

Water Added on Job, gal.: 10

Submitted By: J. Usrey Date: 11/19/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 11/15/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
145A	11-25-91	7	106500	3770			GV
145B	11-25-91	7	110000	3890			GV
145C	12-16-91	28	153000	5410			GV
145D	12-16-91	28	147500	5220			GV
145E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-13-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S retaining wall, section 3B (downstream)

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 7 3/4

Ticket Number: 18886 — Measured Air Content, %: 3.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W418P 6.5 sack — Ambient Air Temperature, °F: 47

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 19 min. — Sampled By: MS & JV — Date: 11/15/91

Water Added on Job, gal.: 10 — Submitted By: MS & JV — Date: 11/16/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/14/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in *Specimens/Caps* If Any	Tested By
			Pounds Force	psi			
144A	11-22-91	7	99000	3500			GV
144B	11-22-91	7	99500	3520			GV
144C	12-13-91	28	133500	4720			GV
144D	12-13-91	28	133000	4700			GV
144E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S retaining wall, section 3 (upstream)

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 18782 — Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 76

Mix Identification: W418P 6.5 sack — Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 8 min. — Sampled By: Mark Sherrod — Date: 11/13/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 11/14/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
143A	11-20-91	7	106500	3770			GV
143B	11-20-91	7	107500	3800			GV
143C	12-11-91	28	140500	4970			GV
143D	12-11-91	28	137500	4860			GV
143E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S retaining wall, section 3C, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 18764 — Measured Air Content, %: 5.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 74

Mix Identification: W418P 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 29 min. — Sampled By: Mark Sherrod — Date: 11/13/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 11/14/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
142A	11-20-91	7	107500	3800			GV
142B	11-20-91	7	105000	3710			GV
142C	12-11-91	28	134000	4740			GV
142D	12-11-91	28	132500	4690			GV
142E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 12-10-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: S Retaining walls, Section 1C, level 3, downstream section*

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 18676/Truck 92

Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 79

Mix Identification: W418P

Ambient Air Temperature, °F: 75

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 30 min.

Sampled By: Phil Boedeker Date: 11/12/91

Water Added on Job, gal.: 5

Submitted By: Phil Boedeker Date: 11/13/91

Test Procedure: ASTM C39- 84B

Authorized By: Oliver Date: 11/12/91

Remarks

*3A, level 1

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
141A	11-19-91	7	98500	3480			GV
141B	11-19-91	7	98500	3480			GV
141C	12-10-91	28	133000	4700			GV
141D	12-10-91	28	132000	4670			GV
141E		HOLD					

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DEC 13 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-10-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth Wall 6-7

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 6 1/4

Ticket Number: 18649/Truck 16

Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 78

Mix Identification: W418P

Ambient Air Temperature, °F: 71

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 10 min.

Sampled By: Phil Boedeker Date: 11/12/91

Water Added on Job, gal.: --

Submitted By: Phil Boedeker Date: 11/13/91

Test Procedure: ASTM C39- 84B

Authorized By: Oliver Date: 11/12/91

Remarks

Note: Cylinders are 6 in x 12 in, area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
140A	11-19-91	7	107500	3800			GV
140B	11-19-91	7	106000	3750			GV
140C	12-10-91	28	139500	4930			GV
140D	12-10-91	28	140500	4970			GV
140E		HOLD					

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DEC 13 1991
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH

Client Black & Veatch
DEC 1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119
(LAS VEGAS, NEVADA

Job No. 4141K255

Date of Report 12-05-91

Reviewed By

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample S Spillway retaining wall, section 4, level 1

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5 1/2

Ticket Number 18437 — Measured Air Content, % --

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 79

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 80

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer 1 hrs. 41 min. — Sampled By Mark Sherrod Date 11/07/91

Water Added on Job, gal. -- — Submitted By Mark Sherrod Date 11/08/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 11/06/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
139A	11-14-91	7	106000	3750			GV
139B	11-14-91	7	106000	3750			GV
139C	12-05-91	28	140000	4950			GV
139D	12-05-91	28	135000	4780			GV
139E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
DEC 9 1991
LAS VEGAS, NEVADA

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-05-91

Reviewed By GD

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway wall, section F7, middle third

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5 3/4

Ticket Number 18416 — Measured Air Content, % --

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 78

Mix Identification W418P 6.5 sack — Ambient Air Temperature, °F 78

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 53 min. — Sampled By Mark Sherrod Date 11/07/91

Water Added on Job, gal. 10 — Submitted By Mark Sherrod Date 11/08/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 11/06/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
138A	11-14-91	7	109500	3870			GV
138B	11-14-91	7	106500	3770			GV
138C	12-05-91	28	144500	5110			GV
138D	12-05-91	28	140000	4950			GV
138E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-03-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream cut-off wall, N end, middle third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 18223 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 77

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 55 min. — Sampled By: Mark Sherrod — Date: 11/05/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 11/06/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
137A	11-12-91	7	94000	3330			GV
137B	11-12-91	7	86000	3040			GV
137C	12-03-91	28	125500	4440			GV
137D	12-03-91	28	125000	4420			GV
137E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-03-91

Reviewed By EJ

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S retaining wall, section 4, upstream, level 1

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 7"

Ticket Number: 18188 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 75

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 26 min. — Sampled By: Mark Sherrod — Date: 11/05/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 11/06/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/04/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
136A	11-12-91	7	98500	3480			GV
136B	11-12-91	7	93500	3310			GV
136C	12-03-91	28	125000	4420			GV
136D	12-03-91	28	130000	4600			GV
136E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-03-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall, section E7, middle third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 3/4

Ticket Number: 18163 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 69

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 68

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 15 min. — Sampled By: Mark Sherrod — Date: 11/05/91

Water Added on Job, gal.: 10 — Submitted By: Mark Sherrod — Date: 11/06/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 11/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
135A	11-12-91	7	98500	3480			GV
135B	11-12-91	7	101000	3570			GV
135C	12-03-91	28	132000	4670			GV
135D	12-03-91	28	129000	4560			GV
135E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By GB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream cutoff, S half at 20' S end

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 18018 — Measured Air Content, %: 5.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W418 — Ambient Air Temperature, °F: 57

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: Crev Carrillo — Date: 11/01/91

Water Added on Job, gal.: -- — Submitted By: Crev Carrillo — Date: 11/02/91

Test Procedure: ASTM C39- 84B — Authorized By: ____ — Date: ____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
134A	11-08-91	7	91500	3240			GV
134B	11-08-91	7	100000	3540			GV
134C	11-29-91	28	130000	4600			GV
134D	11-29-91	28	132000	4670			GV
134E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall D7, center third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6

Ticket Number: 17982 — Measured Air Content, %: 7.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 55

Mix Identification: W418P — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: Crev Carrillo — Date: 11/01/91

Water Added on Job, gal.: 5 — Submitted By: Crev Carrillo — Date: 11/02/91

Test Procedure: ASTM C39- 848 — Authorized By: ____ — Date: ____

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
133A	11-08-91	7	84000	2970			GV
133B	11-08-91	7	86500	3060			GV
133C	11-29-91	28	115500	4090			GV
133D	11-29-91	28	113500	4010			GV
133E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section H6 at lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 17898 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 58

Mix Identification: W418P — Ambient Air Temperature, °F: 49

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: Crev Carrillo — Date: 10/31/91

Water Added on Job, gal.: 15 — Submitted By: Crev Carrillo — Date: 11/01/91

Test Procedure: ASTM C39- 84B — Authorized By: ____ — Date: ____

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
132A	11-07-91	7	89500	3170			GV
132B	11-07-91	7	87500	3100			GV
132C	11-28-91	28	115000	4070			GV
132D	11-28-91	28	116000	4100			GV
132E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By E.B

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S retaining wall at section 2B, level 3

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 17863 — Measured Air Content, %: 6.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 51

Mix Identification: W418P — Ambient Air Temperature, °F: 40

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: Crev Carrillo — Date: 10/31/91

Water Added on Job, gal.: 4 — Submitted By: Crev Carrillo — Date: 11/01/91

Test Procedure: ASTM C39- 84B — Authorized By: ____ — Date: ____

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
131A	11-07-91	7	79500	2810			GV
131B	11-07-91	7	84000	2970			GV
131C	11-28-91	28	114000	4030			GV
131D	11-28-91	28	115500	4090			GV
131E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, section 3A*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 17776 — Measured Air Content, %: 5.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 68

Mix Identification: W417 6.25 sack — Ambient Air Temperature, °F: 59

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 57 min. — Sampled By: Mark Sherrod — Date: 10/30/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/31/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/29/91

Remarks

*W third, upper portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
130A	11-06-91	7	98500	3480			GV
130B	11-06-91	7	98500	3480			GV
130C	11-27-91	28	139000	4920			GV
130D	11-27-91	28	145000	5130			GV
130E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-26-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section C7, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 3/4

Ticket Number: 17672 — Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 75

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 70

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 29 min. — Sampled By: Mark Sherrod — Date: 10/29/91

Water Added on Job, gal.: 17 — Submitted By: Mark Sherrod — Date: 10/30/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/28/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
129A	11-05-91	7	98500	3480			GV
129B	11-05-91	7	101000	3570			GV
129C	11-26-91	28	128500	4550			GV
129D	11-26-91	28	138000	4880			GV
129E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-26-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, section 1,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 17656 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 74

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 66

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 54 min. — Sampled By: Mark Sherrod — Date: 10/29/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/30/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/28/91

Remarks
*E third, upper portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
128A	11-05-91	7	84000	2970			GV
128B	11-05-91	7	90000	3180			GV
128C	11-26-91	28	123000	4350			GV
128D	11-26-91	28	133500	4720			GV
128E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 11-26-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, section 1,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5"

Ticket Number: 17645 — Measured Air Content, %: 4.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 72

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 64

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 43 min. — Sampled By: Mark Sherrod — Date: 10/29/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/30/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/28/91

Remarks

*E third, lower portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
127A	11-05-91	7	94000	3330			GV
127B	11-05-91	7	92500	3270			GV
127C	11-26-91	28	131500	4650			GV
127D	11-26-91	28	128000	4530			GV
127E		HOLD					

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-26-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, section 1,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 17628 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 73

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 63

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 59 min. — Sampled By: Mark Sherrod — Date: 10/29/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/30/91

Test Procedure: ASTM C39- 84B — Authorized By: Mark Sherrod — Date: 10/28/91

Remarks
*W third, lower portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
126A	11-05-91	7	111000	3930			GV
126B	11-05-91	7	107000	3780			GV
126C	11-26-91	28	147500	5220			GV
126D	11-26-91	28	143500	5080			GV
126E		HOLD					

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DEC 2 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-25-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S spillway retaining wall, section 4, downstream, lower half

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 17572 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 73

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 67

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 24 min. — Sampled By: Mark Sherrod — Date: 10/28/91

Water Added on Job, gal.: 20 — Submitted By: Mark Sherrod — Date: 10/29/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
125A	11-04-91	7	102000	3610			GV
125B	11-04-91	7	100500	3560			GV
125C	11-25-91	28	142500	5040			GV
125D	11-25-91	28	145500	5150			GV
125E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-25-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section G4, upper third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/4

Ticket Number: 17557 — Measured Air Content, %: 4.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 70

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 63

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 50 min. — Sampled By: Mark Sherrod — Date: 10/28/91

Water Added on Job, gal.: 10 — Submitted By: Mark Sherrod — Date: 10/29/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
124A	11-04-91	7	111500	3940			GV
124B	11-04-91	7	109000	3860			GV
124C	11-25-91	28	151500	5360			GV
124D	11-25-91	28	149500	5290			GV
124E		HOLD					

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DEC 2 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-25-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section G6, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 17536 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 69

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 60

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 17 min. — Sampled By: Mark Sherrod — Date: 10/28/91

Water Added on Job, gal.: 8 — Submitted By: Mark Sherrod — Date: 10/29/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/25/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
123A	11-04-91	7	112500	3980			GV
123B	11-04-91	7	116500	4120			GV
123C	11-25-91	28	147000	5200			GV
123D	11-25-91	28	141500	5010			GV
123E		HOLD					

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DEC 2 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-22-91

Reviewed By GB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N. Spillway retaining wall footing slab on grade, section3,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 17397 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 75

Mix Identification: W417 6.25 sack — Ambient Air Temperature, °F: 55

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 55 min. — Sampled By: Mark Sherrod Date: 10/25/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod Date: 10/26/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld Date: ____

Remarks

*upstream, lower half

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		*Type Fracture* If Other Than Cone	*Defects in* Specimens/Caps If Any	Tested By
			Pounds Force	psi			
122A	11-01-91	7	99000	3500			GV
122B	11-01-91	7	98500	3480			GV
122C	11-22-91	28	141000	4990			GV
122D	11-22-91	28	136500	4830			GV
122E		HOLD					

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-20-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section B7, upper third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 7 1/4

Ticket Number: 17198 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 81

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 52 min. — Sampled By: Mark Sherrod — Date: 10/23/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/22/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
121A	10-30-91	7	93000	3290			GV
121B	10-30-91	7	98000	3470			GV
121C	11-20-91	28	133000	4700			GV
121D	11-20-91	28	128000	4530			GV
121E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-20-91

Reviewed By ED

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section F6, middle third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/2

Ticket Number: 17158 — Measured Air Content, %: 4.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 78

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 70

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 4 min. — Sampled By: Mark Sherrod — Date: 10/23/91

Water Added on Job, gal.: 15 — Submitted By: Mark Sherrod — Date: 10/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/22/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
120A	10-30-91	7	99000	3500			GV
120B	10-30-91	7	99500	3520			GV
120C	11-20-91	28	143000	5060			GV
120D	11-20-91	28	137000	4850			GV
120E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-18-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section E4, upper third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 16912 — Measured Air Content, %: 4.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 91

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 54 min. — Sampled By: Mark Sherrod — Date: 10/21/91

Water Added on Job, gal.: 10 — Submitted By: Mark Sherrod — Date: 10/22/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
119A	10-28-91	7	95000	3360			GV
119B	10-28-91	7	100000	3540			GV
119C	11-18-91	28	125500	4440			GV
119D	11-18-91	28	123500	4370			GV
110E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-18-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section F4, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 3/4

Ticket Number: 16892 — Measured Air Content, %: 5.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. ____ min. — Sampled By: Mark Sherrod — Date: 10/21/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 10/22/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
118A	10-28-91	7	96500	3410			GV
118B	10-28-91	7	98500	3480			GV
118C	11-18-91	28	122500	4330			GV
118D	11-18-91	28	115500	4090			GV
118E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-15-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, downstream*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 16811 — Measured Air Content, %: 3.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 89

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 36 min. — Sampled By: Mark Sherrod — Date: 10/18/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/17/91

Remarks: * section #4, upper portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
117A	10-25-91	7	87000	3080			GV
117B	10-25-91	7	97500	3450			GV
117C	11-15-91	28	120000	4240			GV
117D	11-15-91	28	120000	4240			GV
117E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-15-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, upstream,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 16801 — Measured Air Content, %: 6.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 88

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 36 min. — Sampled By: Mark Sherrod — Date: 10/18/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/17/91

Remarks
* section 4, lower portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
116A	10-25-91	7	87500	3100			GV
116B	10-25-91	7	88000	3110			GV
116C	11-15-91	28	122000	4320			GV
116D	11-15-91	28	115000	4070			GV
116E		HOLD					

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-15-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N Spillway retaining wall footing slab on grade, section*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 16786 — Measured Air Content, %: 5.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min. — Sampled By: Mark Sherrod — Date: 10/18/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/17/91

Remarks: * middle third, upper portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
115A	10-25-91	7	93000	3290			GV
115B	10-25-91	7	99500	3520			GV
115C	11-15-91	28	125000	4420			GV
115D	11-15-91	28	127500	4510			GV
115E		HOLD					

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-15-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: N spillway retaining wall footing slab on grade, section 1,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 16671 — Measured Air Content, %: 2.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 82

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 39 min. — Sampled By: Mark Sherrod — Date: 10/18/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/17/91

Remarks: * middle third, lower portion

Note: Cylinders are 6 in x 12 in, area = 28.27 sq in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
114A	10-25-91	7	99000	3500			GV
114B	10-25-91	7	101500	3590			GV
114C	11-15-91	28	136000	4810			GV
114D	11-15-91	28	129000	4560			GV
114E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-14-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box culvert top deck, W third, center section

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 16677 — Measured Air Content, %: 4.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 87

Mix Identification: W418, 6.5 sack — Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 52 min. — Sampled By: Mark Sherrod — Date: 10/17/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/17/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
113A	10-24-91	7	88000	3110			GV
113B	10-24-91	7	89000	3150			GV
113C	11-14-91	28	116000	4100			GV
113D	11-14-91	28	116500	4120			GV
113E		HOLD					

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NOV 18 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-14-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box culvert, top deck, middle third, S end

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 16669 — Measured Air Content, %: 5.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 36 min. — Sampled By: Mark Sherrod — Date: 10/17/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/18/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
112A	10-24-91	7	96000	3400			GV
112B	10-24-91	7	84500	2990	Cone/Shear		GV
112C	11-14-91	28	120000	4240			GV
112D	11-14-91	28	126500	4470			GV
112E		HOLD					

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BLACK & VEATCH

NOV 18 1991

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LABORATORY REPORT

BLACK & VEATCH

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

NOV 15 1991
LAS VEGAS, NEVADA

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-13-91

Reviewed By GR

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream N retaining wall footing slab on grade, *

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/4

Ticket Number: 16602 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 89

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 98

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 33 min. — Sampled By: Mark Sherrod — Date: 10/16/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 10/17/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/15/91

Remarks
* section 4, upper third

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
111A	10-23-91	7	96000	3400			GV
111B	10-23-91	7	101500	3590			GV
111C	11-13-91	28	128500	4550			GV
111D	11-13-91	28	131500	4650			GV
111E		HOLD					

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LABORATORY REPORT

BLACK & VEATCH

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

NOV 15 1991

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119
LAS VEGAS, NEVADA

Job No. 4141K255

Date of Report 11-13-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Downstream N retaining wall footing slab on grade, *

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 3/4

Ticket Number 16590 — Measured Air Content, % 6.2

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 89

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 96

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 34 min. — Sampled By Mark Sherrod Date 10/16/91

Water Added on Job, gal. 5 — Submitted By Mark Sherrod Date 10/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 10/15/91

Remarks

* section 4, lower third

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
110A	10-23-91	7	92500	3270			GV
110B	10-23-91	7	91500	3240			GV
110C	11-13-91	28	122000	4320			GV
110D	11-13-91	28	123500	4370			GV
110E		HOLD					

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FORM #41
PDQ Printing (702) 876-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

(BLACK & VEATCH) NOV 1 5 1991 LAS VEGAS, NEVADA

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
7F East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-13-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway wall, section A7, upper third

Concrete Supplier WMK Transit Mix — Measured Slump, in. 7

Ticket Number 16566 — Measured Air Content, % 4.7

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 88

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 93

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer 1 hrs. 4 min. — Sampled By Mark Sherrod — Date 10/16/91

Water Added on Job, gal. 5 — Submitted By Mark Sherrod — Date 10/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 10/15/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
109A	10-23-91	7	107500	3800			GV
109B	10-23-91	7	103000	3640			GV
109C	11-13-91	28	129000	4560			GV
109D	11-13-91	28	133500	4720			GV
109E		HOLD					

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BLACK & VEATCH

NOV 15 1991

LAS VEGAS, NEVADA

WESTERN TECHNOLOGIES INC.

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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-13-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway wall, section D4, upper third

Concrete Supplier WMK Transit Mix — Measured Slump, in. 6 3/4

Ticket Number 16539 — Measured Air Content, % 5.2

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 86

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 89

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 56 min. — Sampled By Mark Sherrod — Date 10/16/91

Water Added on Job, gal. 10 — Submitted By Mark Sherrod — Date 10/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 10/15/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
108A	10-23-91	7	96500	3410			GV
108B	10-23-91	7	101000	3570			GV
108C	11-13-91	28	117500	4160			GV
108D	11-13-91	28	121500	4300			GV
108E		HOLD					

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NOV 15 1991

LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-13-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway wall, section E6, lower third

Concrete Supplier WMK Transit Mix — Measured Slump, in. 6 3/4

Ticket Number 16502 — Measured Air Content, % 5.0

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 82

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 72

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer 1 hrs. 28 min. — Sampled By Mark Sherrod Date 10/16/91

Water Added on Job, gal. 30 — Submitted By Mark Sherrod Date 10/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 10/15/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
107A	10-23-91	7	92000	3250			GV
107B	10-23-91	7	92000	3250			GV
107C	11-13-91	28	117000	4140			GV
107D	11-13-91	28	122500	4330			GV
107E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall, section D6, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 16377 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 89

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 95

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 49 min. — Sampled By: Mark Sherrod — Date: 10/14/91

Water Added on Job, gal.: 25 — Submitted By: Mark Sherrod — Date: 10/15/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
106A	10-21-91	7	98000	3470			GV
106B	10-21-91	7	94000	3330			GV
106C	11-11-91	28	124000	4390			ES
106D	11-11-91	28	129000	4560			ES
106E		HOLD					

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3611 West Tompkins Avenue
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, S retaining wall footing, section*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 16355 — Measured Air Content, %: 3.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 56 min. — Sampled By: Mark Sherrod — Date: 10/14/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/15/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/11/91

Remarks

*1, W third, upper portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
105A	10-21-91	7	92500	3270			GV
105B	10-21-91	7	95500	3380			GV
105C	11-11-91	28	128500	4550			ES
105D	11-11-91	28	125000	4420			ES
105E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-11-91

Reviewed By GV

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway S retaining wall footing slab on grade, Section 1,*

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 16323 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 71

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 14 min. — Sampled By: Mark Sherrod — Date: 10/14/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/15/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/11/91

Remarks

*E third, lower portion

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
103A	10-21-91	7	100500	3560			GV
103B	10-21-91	7	103000	3640			GV
103C	11-11-91	28	118500	4190			ES
103D	11-11-91	28	135500	4790			ES
103E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-07-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Labyrinth Leveling course at section G3

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/4

Ticket Number: 16098 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 91

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 95

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 58 min. — Sampled By: Mark Sherrod — Date: 10/10/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/11/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/09/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
102A	10-17-91	7	93000	3290			GV
102B	10-17-91	7	95000	3360			GV
102C	11-07-91	28	117000	4140			GV
102D	11-07-91	28	120000	4240			GV
102E		HOLD					

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BLACK & VEATCH
NOV 12 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-07-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section C4 and C6, upper thirds

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 16087 — Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 89

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 59 min. — Sampled By: Mark Sherrod — Date: 10/10/91

Water Added on Job, gal.: 30 — Submitted By: Mark Sherrod — Date: 10/11/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/09/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
101A	10-17-91	7	101000	3570			GV
101B	10-17-91	7	105500	3730			GV
101C	11-07-91	28	131000	4630			GV
101D	11-07-91	28	135000	4780			GV
101E		HOLD					

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BLACK & VEATCH.
NOV 12 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-07-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section C6, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/4

Ticket Number: 16060 — Measured Air Content, %: 2.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 75

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 7 min. — Sampled By: Mark Sherrod — Date: 10/10/91

Water Added on Job, gal.: 20 — Submitted By: Mark Sherrod — Date: 10/11/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/09/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
100A	10-17-91	7	103500	3660			GV
100B	10-17-91	7	103500	3660			GV
100C	11-07-91	28	129500	4580			GV
100D	11-07-91	28	136500	4830			GV
100E		HOLD					

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NOV 12 1991
LAS VEGAS, NEVADA

FORM #41
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-06-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box Culvert W wall, middle upper half

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 15893 — Measured Air Content, %: 8.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 83

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 30 min. — Sampled By: Mark Sherrod — Date: 10/09/91

Water Added on Job, gal.: 10 — Submitted By: Mark Sherrod — Date: 10/10/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/08/91

Remarks

Note: Cylinders are 6 in x 12 in, area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
99A	10-16-91	7	85000	3010			GV
99B	10-16-91	7	88500	3130			GV
99C	11-06-91	28	109500	3870**			GV
99D	11-06-91	28	110000	3890**			GV
99E		HOLD					

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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-05-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S Retaining wall footing slab on grade section 1, upper half

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 15755 — Measured Air Content, %: 5.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 87

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 11 min. — Sampled By: Mark Sherrod — Date: 10/08/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/09/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/07/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
98A	10-15-91	7	92000	3250			GV
98B	10-15-91	7	90500	3200			GV
98C	11-05-91	28	120500	4260			GV
98D	11-05-91	28	119000	4210			GV
98E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-05-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: S Retaining wall footing slab on grade section 1 (Center *

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3

Ticket Number: 15733 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 47 min. — Sampled By: Mark Sherrod — Date: 10/08/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/09/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/07/91

Remarks

*pour, lower third)

Note: Cylinders are 6 in x 12 in, area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
97A	10-15-91	7	104000	3680			GV
97B	10-15-91	7	102000	3610			GV
97C	11-05-91	28	120500	4260			GV
97D	11-05-91	28	132000	4670			GV
97E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-04-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream S spillway retaining wall footing section 3 E 3rd

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 15617 — Measured Air Content, %: 5.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 12 min. — Sampled By: Mark Sherrod — Date: 10/07/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/08/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/04/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
96A	10-14-91	7	75500	2670			GV
96B	10-14-91	7	81500	2880			GV
96C	11-04-91	28	108500	3840**			GV
96D	11-04-91	28	104500	3700**			GV
96E		HOLD					

Copies to:
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** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-04-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall leveling course section E&F, 5&6

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/2

Ticket Number: 15599 — Measured Air Content, %: 1.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 69

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 21 min. — Sampled By: Mark Sherrod — Date: 10/07/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/08/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/04/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
95A	10-14-91	7	96000	3400			GV
95B	10-14-91	7	102500	3630			GV
95C	11-04-91	28	123000	4350			GV
95D	11-04-91	28	128500	4550			GV
95E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-01-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Upstream S. retaining wall footing section #3 lower half

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 15505 — Measured Air Content, %: 5.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 90

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min. — Sampled By: Mark Sherrod — Date: 10/04/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
94A	10-11-91	7	87500	3100			GV
94B	10-11-91	7	86500	3060			GV
94C	11-01-91	28	117000	4140			GV
94D	11-01-91	28	115000	4070			GV
94E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-01-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 3/4

Ticket Number: 15461 — Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 85

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 21 min. — Sampled By: Mark Sherrod — Date: 10/04/91

Water Added on Job, gal.: 15 — *Submitted By*: Mark Sherrod — Date: 10/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/03/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		*Type Fracture* If Other Than Cone	*Defects in* Specimens/Caps If Any	Tested By
			Pounds Force	psi			
93A	10-11-91	7	99500	3520			GV
93B	10-11-91	7	96000	3400			GV
93C	11-01-91	28	126000	4460			GV
93D	11-01-91	28	113500	4010			GV
93E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-01-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway wall section B6, lower third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6

Ticket Number: 15438 — Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 75

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 15 min. — Sampled By: Mark Sherrod — Date: 10/04/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 10/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
92A	10-11-91	7	93000	3290			GV
92B	10-11-91	7	85000	3010			GV
92C	11-01-91	28	126500	4470			GV
92D	11-01-91	28	130000	4600			GV
92E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-01-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box Culvert East Wall, south end lower half

Concrete Supplier: WMK Ready Mix — Measured Slump, in.: 4 3/4

Ticket Number: 15330 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 87

Mix Identification: W-418, 6.5 sack — Ambient Air Temperature, °F: 91

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 58 min. — Sampled By: M. Sherrod — Date: 10/03/91

Water Added on Job, gal.: 5 — Submitted By: M. Sherrod — Date: 10/04/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/03/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
91A	10-10-91	7	97000	3430			GV
91B	10-10-91	7	88500	3130			GV
91C	10-31-91	28	111000	3930**			GV
91D	10-31-91	28	117000	4140			GV
91E	10-31-91	28	118000	4170			GV

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** Test failed to meet indicated design strength.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-31-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway Wall Section A-6 and A-3, middle third

Concrete Supplier WMK Ready Mix — Measured Slump, in. 7

Ticket Number 15290 — Measured Air Content, % 2.6

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 83

Mix Identification W-418, 6.5 sack — Ambient Air Temperature, °F 87

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 49 min. — Sampled By M. Sherrod — Date 10/03/91

Water Added on Job, gal. 10 — Submitted By M. Sherrod — Date 10/04/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 10/02/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
90A	10-10-91	7	103500	3660			GV
90B	10-10-91	7	100500	3560			GV
90C	10-31-91	28	126500	4470			GV
90D	10-31-91	28	126500	4470			GV
90E		HOLD					

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BLACK & VEATCH
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LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-31-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway Wall Section A-6, lower third

Concrete Supplier: WMK Ready Mix — Measured Slump, in.: 4 1/2

Ticket Number: 15243 — Measured Air Content, %: 1.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W-418, 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 24 min. — Sampled By: M. Sherrod — Date: 10/03/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 10/04/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/02/91

Remarks

Note: Cylinders are 6 in x 12 in, area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
89A	10-10-91	7	117500	4160			GV
89B	10-10-91	7	115000	4070			GV
89C	10-31-91	28	144500	5110			GV
89D	10-31-91	28	145000	5130			GV
89E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-31-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Upstream S retaining wall footing section #4 upper portion

Concrete Supplier: WMK Transit Mix

Ticket Number: 15125

Batch Size, cu.yds.: 10.0

Mix Identification: W418 6.5 sack

Design Strength, psi: 4000 / 28 days

Max. Size Aggregate, in.: 3/4

Time in Mixer: hrs. 56 min.

Water Added on Job, gal.: --

Test Procedure: ASTM C39- 84B

Measured Slump, in.: 5

Measured Air Content, %: 5.2

Concrete Temperature, °F: 82

Ambient Air Temperature, °F: 85

Plastic Unit Weight, pcf: --

No. of Cylinders Molded: 5

Sampled By: Mark Sherrod Date: 10/02/91

Submitted By: Mark Sherrod Date: 10/03/91

Authorized By: G. Sommerfeld Date: 10/01/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
88A	10-09-91	7	86500	3060			GV
88B	10-09-91	7	90000	3180			GV
88C	10-30-91	28	126500	4470			GV
88D	10-30-91	28	100500	3560**	Cone/Shear		GV
88E	10-30-91	28	116500	4120			GV

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** Test failed to meet indicated design strength.

WESTERN TECHNOLOGIES INC.
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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream S retaining wall footing section #4 upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 15099 — Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 80

Mix Identification: W418 6,5 sack — Ambient Air Temperature, °F: 72

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: Mark Sherrod — Date: 10/02/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/03/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/01/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
87A	10-09-91	7	103000	3640			GV
87B	10-09-91	7	101500	3590			GV
87C	10-30-91	28	126500	4470			GV
87D	10-30-91	28	126500	4470			GV
87E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream section #4 S retaining wall footing lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 15067 — Measured Air Content, %: 3.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 80

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 66

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 57 min. — Sampled By: Mark Sherrod — Date: 10/02/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/03/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/01/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
86A	10-09-91	7	98000	3470			GV
86B	10-09-91	7	92500	3270			GV
86C	10-30-91	28	128500	4550			GV
86D	10-30-91	28	121500	4300			GV
86E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section G8, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 14986 — Measured Air Content, %: 5.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 91

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 27 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
85A	10-08-91	7	88000	3110			GV
85B	10-08-91	7	89500	3170			GV
85C	10-29-91	28	119000	4210			GV
85D	10-29-91	28	113500	4010			GV
85E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section H7, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 14961 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 47 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
84A	10-08-91	7	86000	3040			GV
84B	10-08-91	7	86500	3060			GV
84C	10-29-91	28	111500	3940**			GV
84D	10-29-91	28	112000	3960**			GV
84E		HOLD					

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Wheeler Construction (1)

** Test failed to meet indicated design strength. Unless otherwise requested, the 'HOLD' specimen will be tested 56 days from the sampling date.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section G8, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 14945 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 80

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 36 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
83A	10-08-91	7	94500	3340			GV
83B	10-08-91	7	89000	3150			GV
83C	10-29-91	28	119500	4230			GV
83D	10-29-91	28	117500	4160			GV
83E		HOLD					

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WESTERN TECHNOLOGIES INC.
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By GV

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section G6, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 14922 — Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
82A	10-08-91	7	109000	3860			GV
82B	10-08-91	7	89000	3150	Cone/Shear		GV
82C	10-29-91	28	128000	4530			GV
82D	10-29-91	28	126000	4460			GV
82E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-30-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section G6, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 14894 — Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 53 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
81A	10-08-91	7	106000	3750			GV
81B	10-08-91	7	103500	3660			GV
81C	10-29-91	28	130000	4600			GV
81D	10-29-91	28	136000	4810			GV
81E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-28-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Upper 1/2 of H5

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4

Ticket Number: 14795

Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418

Ambient Air Temperature, °F: 86

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 40 min.

Sampled By: Crev Carrillo Date: 09/30/91

Water Added on Job, gal.: 5

Submitted By: Crev Carrillo Date: 10/01/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
80A	10-07-91	7	97000	3430			GV
80B	10-07-91	7	98000	3470			GV
80C	10-28-91	28	113500	4010			GV
80D	10-28-91	28	123000	4350			GV
80E		HOLD					

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OCT 31 1991
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-28-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Lower 1/2 of H5

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/4

Ticket Number: 14787

Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418

Ambient Air Temperature, °F: 80

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min.

Sampled By: Crev Carrillo Date: 09/30/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 10/01/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
79A	10-07-91	7	110500	3910			GV
79B	10-07-91	7	96500	3410			GV
79C	10-28-91	28	133000	4700			GV
79D	10-28-91	28	131500	4650			GV
79E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE ~~SPECIMENS~~

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-28-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Top 1/3 G4, H3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4

Ticket Number: 14767

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 81

Mix Identification: W418

Ambient Air Temperature, °F: 76

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 35 hrs. -- min.

Sampled By: Crev Carrillo Date: 09/30/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 10/01/91

Test Procedure: ASTM C39-84B

Authorized By: Client Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
78A	10-07-91	7	105000	3710			GV
78B	10-07-91	7	106500	3770			GV
78C	10-28-91	28	125000	4420			GV
78D	10-28-91	28	121500	4300			GV
78E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-28-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Center 1/3 G4, H3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/4

Ticket Number: 14756

Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 78

Mix Identification: W418

Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min.

Sampled By: Crev Carrillo Date: 09/30/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 10/01/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
77A	10-07-91	7	100000	3540			GV
77B	10-07-91	7	104500	3700			GV
77C	10-28-91	28	123000	4350			GV
77D	10-28-91	28	128000	4530			GV
77E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-28-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Lower 1/3 G4, H3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3

Ticket Number: 14738

Measured Air Content, %: --

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 82

Mix Identification: W418

Ambient Air Temperature, °F: 65

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: hrs. 45 min.

Sampled By: Crev Carrillo Date: 09/30/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 10/01/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 09/30/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
76A	10-07-91	7	105500	3730			GV
76B	10-07-91	7	110000	3890			GV
76C	10-28-91	28	133500	4720			GV
76D	10-28-91	28	132000	4670			GV
76E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: H8, Top 1/3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14665

Measured Air Content, %: --

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 87

Mix Identification: W418

Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 20 min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
75A	10-04-91	7	96500	3410			GV
75B	10-04-91	7	103500	3660			GV
75C	10-25-91	28	127000	4490			GV
75D	10-25-91	28	135500	4790			GV
75E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: H8, lower 1/3

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 3/4

Ticket Number: 14654

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 86

Mix Identification: W418

Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
74A	10-04-91	7	119000	4210			GV
74B	10-04-91	7	107500	3800			GV
74C	10-25-91	28	141500	5010			GV
74D	10-25-91	28	131500	4650			GV
74E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Center 1/3 of G7, Top of H6

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14640

Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 87

Mix Identification: W418

Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 30 min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
73A	10-04-91	7	103500	3660			GV
73B	10-04-91	7	103000	3640			GV
73C	10-25-91	28	137000	4850			GV
73D	10-25-91	28	129000	4560			GV
73E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Center 1/3 H6

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14627

Measured Air Content, %: --

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 87

Mix Identification: W418

Ambient Air Temperature, °F: --

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: hrs. 40 min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
72A	10-04-91	7	115000	4070			GV
72B	10-04-91	7	112500	3980			GV
72C	10-25-91	28	140000	4950			GV
72D	10-25-91	28	139500	4930			GV
72E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Lower 1/3 G7&H6

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14598

Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 87

Mix Identification: W418

Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. ____ min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
71A	10-04-91	7	114500	4050			GV
71B	10-04-91	7	113000	4000			GV
71C	10-25-91	28	138500	4900			GV
71D	10-25-91	28	143000	5060			GV
71E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-25-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Leveling course C&D

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14554

Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 86

Mix Identification: W418

Ambient Air Temperature, °F: 81

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 25 min.

Sampled By: Crev Carrillo Date: 09/27/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/28/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/27/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
70A	10-04-91	7	108000	3820			GV
70B	10-04-91	7	113500	4010			GV
70C	10-25-91	28	133000	4700			GV
70D	10-25-91	28	134000	4740			GV
70E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-24-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Top 1/3 of G-5

Concrete Supplier: WMK Transit Mix

Ticket Number: 14480

Batch Size, cu.yds.: 10.0

Mix Identification: W418

Design Strength, psi: 4000 / 28 days

Max. Size Aggregate, in.: 3/4

Time in Mixer: ____ hrs. 30 min.

Water Added on Job, gal.: --

Test Procedure: ASTM C39- 84B

Remarks

Measured Slump, in.: 4

Measured Air Content, %: 4.0

Concrete Temperature, °F: 87

Ambient Air Temperature, °F: 92

Plastic Unit Weight, pcf: --

No. of Cylinders Molded: 5

Sampled By: Crev Carrillo Date: 09/26/91

Submitted By: Crev Carrillo Date: 09/27/91

Authorized By: G. Sommerfeld Date: 09/26/91

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
69A	10-03-91	7	107500	3800			GV
69B	10-03-91	7	111500	3940			GV
69C	10-24-91	28	134500	4760			GV
69D	10-24-91	28	140500	4970			GV
		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-24-91

Reviewed By: [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Top 1/3 H-4 and center 1/3 G-5

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 14465

Measured Air Content, %: 4.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 87

Mix Identification: W418

Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. ____ min.

Sampled By: Crev Carrillo Date: 09/26/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/27/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
68A	10-03-91	7	100000	3540			GV
68B	10-03-91	7	99000	3500			GV
68C	10-24-91	28	120000	4240			GV
68D	10-24-91	28	114500	4050			GV
68E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-24-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Top 1/3 G3, Center 1/3 H4

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5

Ticket Number: 14426

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 86

Mix Identification: W418

Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min.

Sampled By: Crev Carrillo Date: 09/26/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/27/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
67A	10-03-91	7	108500	3840			GV
67B	10-03-91	7	100500	3560			GV
67C	10-24-91	28	125500	4440			GV
67D	10-24-91	28	126000	4460			GV
67E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-24-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Middle 1/3 of G3

Concrete Supplier: WMK Transit Mix

Ticket Number: 14418

Batch Size, cu.yds.: 10.0

Mix Identification: W418

Design Strength, psi: 4000 / 28 days

Max. Size Aggregate, in.: 3/4

Time in Mixer: ____ hrs. 40 min.

Water Added on Job, gal.: --

Test Procedure: ASTM C39- 84B

Remarks

Measured Slump, in.: 3 1/4

Measured Air Content, %: 4.5

Concrete Temperature, °F: 84

Ambient Air Temperature, °F: 85

Plastic Unit Weight, pcf: --

No. of Cylinders Molded: 5

Sampled By: Crev Carrillo Date: 09/26/91

Submitted By: Crev Carrillo Date: 09/27/91

Authorized By: G. Sommerfeld Date: 09/26/91

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
66A	10-03-91	7	108500	3840			GV
66B	10-03-91	7	112000	3960			GV
66C	10-24-91	28	148500	5250			GV
66D	10-24-91	28	145000	5130			GV
66E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-24-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Lower 1/3 of G3 & H4

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4

Ticket Number: 14394

Measured Air Content, %: 5.5

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418

Ambient Air Temperature, °F: 85

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/8

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 40 min.

Sampled By: Crev Carrillo Date: 09/26/91

Water Added on Job, gal.: --

Submitted By: Crev Carrillo Date: 09/27/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
65A	10-03-91	7	106000	3750			GV
65B	10-03-91	7	108000	3820			GV
65C	10-24-91	28	137500	4860			GV
65D	10-24-91	28	146000	5160			GV
65E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-22-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box culvert floor, North end of West third

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 14141 — Measured Air Content, %: 3.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 90

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 99

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 43 min. — Sampled By: Mark Sherrod — Date: 09/24/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/25/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
64A	10-01-91	7	97500	3450			GV
64B	10-01-91	7	101000	3570			GV
64C	10-22-91	28	123000	4350			GV
64D	10-22-91	28	136500	4830			GV
64E		HOLD					

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OCT 24 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-22-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Box culvert floor, middle of middle third

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14126

Measured Air Content, %: 3.3

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 88

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 97

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 37 min.

Sampled By: Mark Sherrod Date: 09/24/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/25/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
63A	10-01-91	7	100000	3540			GV
63B	10-01-91	7	111000	3930			GV
63C	10-22-91	28	118000	4170			GV
63D	10-22-91	28	126000	4460			GV
63E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-22-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Box culvert floor , middle of E. third (Hacienda X-ing)

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 14115 — Measured Air Content, %: 3.2

Batch Size, cu.yds.: 9.0 — Concrete Temperature, °F: 88

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 29 min. — Sampled By: Mark Sherrod — Date: 09/24/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/25/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
62A	10-01-91	7	100500	3560			GV
62B	10-01-91	7	98500	3480			GV
62C	10-22-91	28	123000	4350			GV
62D	10-22-91	28	127500	4510			GV
62E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-22-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E8, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4 1/4

Ticket Number: 14089

Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 32 min.

Sampled By: Mark Sherrod Date: 09/24/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/25/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
61A	10-01-91	7	95500	3380			GV
61B	10-01-91	7	94500	3340			GV
61C	10-22-91	28	113500	4010			GV
61D	10-22-91	28	120000	4240			GV
61E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-22-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section G7, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 14058

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 28 min.

Sampled By: Mark Sherrod Date: 09/24/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/25/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
60A	10-01-91	7	100000	3540			GV
60B	10-01-91	7	98000	3470			GV
60C	10-22-91	28	113500	4010			GV
60D	10-22-91	28	129500	4580			GV
60E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-22-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F7, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 14029 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 81

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min. — Sampled By: Mark Sherrod — Date: 09/24/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/25/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
59A	10-01-91	7	100500	3560			GV
59B	10-01-91	7	104500	3700			GV
59C	10-22-91	28	136000	4810			GV
59D	10-22-91	28	120500	4260			GV
59E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-22-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E6, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 3/4

Ticket Number: 14016

Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 27 min.

Sampled By: Mark Sherrod Date: 09/24/91

Water Added on Job, gal.: 3

Submitted By: Mark Sherrod Date: 09/25/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/23/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
58A	10-01-91	7	104000	3680			GV
58B	10-01-91	7	96000	3400			GV
58C	10-22-91	28	131500	4650			GV
58D	10-22-91	28	122500	4330			GV

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BLACK & VEATCH
OCT 24 1991
LAS VEGAS, NEVADA

FORM #41
PDQ Printing (702) 876-3236

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-22-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E6, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 13984 — Measured Air Content, %: 3.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 68

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 47 min. — Sampled By: Mark Sherrod — Date: 09/24/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/25/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/23/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
57A	10-01-91	7	106000	3750			GV
57B	10-01-91	7	108000	3820			GV
57C	10-22-91	28	126000	4460			GV
57D	10-22-91	28	130500	4620			GV
57E		HOLD					

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BLACK & VEATCH
OCT 24 1991
LAS VEGAS, NEVADA

FORM #41
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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-21-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F5, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 13905 — Measured Air Content, %: 2.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 87

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 94

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 29 min. — Sampled By: Mark Sherrod — Date: 09/23/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/20/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
56A	09-30-91	7	100500	3560			GV
56B	09-30-91	7	103500	3660			GV
56C	10-21-91	28	114000	4030			GV
56D	10-21-91	28	127000	4490			GV
56E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-21-91

Reviewed By GB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F5, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 13879 — Measured Air Content, %: 2.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 86

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: Mark Sherrod — Date: 09/23/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
55A	09-30-91	7	96000	3400			GV
55B	09-30-91	7	98500	3480			GV
55C	10-21-91	28	117500	4160			GV
55D	10-21-91	28	123000	4350			GV
55E		HOLD					

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-22-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E4, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 13866 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 85

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 34 min. — Sampled By: Mark Sherrod — Date: 09/23/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Avg. Strength at 28 days = 4190 psi

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
54A	09-30-91	7	97500	3450			GV
54B	09-30-91	7	83000	2940			GV
54C	10-21-91	28	110500	3910**			GV
54D	10-21-91	28	126000	4460			GV
54E	11-18-91	56					

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** Test failed to meet indicated design strength.

FORM #41
PDQ Printing (702) 876-3256

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-21-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F3, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 13841 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 78

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min. — Sampled By: Mark Sherrod — Date: 09/23/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/24/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
53A	09-30-91	7	97500	3450			GV
53B	09-30-91	7	99500	3520			GV
53C	10-21-91	28	128500	4550			GV
53D	10-21-91	28	113500	4010			GV
53E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-21-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section F3, lower portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 4 1/4

Ticket Number 13821 — Measured Air Content, % 2.5

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 83

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 75

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer ____ hrs. 37 min. — Sampled By Mark Sherrod Date 09/23/91

Water Added on Job, gal. 5 — Submitted By Mark Sherrod Date 09/24/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 09/20/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
52A	09-30-91	7	98500	3480			GV
52B	09-30-91	7	98000	3470			GV
52C	10-21-91	28	134000	4740			GV
52D	10-21-91	28	140500	4970			GV
52E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-18-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F8, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 13732

Measured Air Content, %: 3.3

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min.

Sampled By: Mark Sherrod Date: 09/20/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/21/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
51A	09-27-91	7	107500	3800			GV
51B	09-27-91	7	100000	3540			GV
51C	10-18-91	28	134000	4740			GV
51D	10-18-91	28	130000	4600			GV
51E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-18-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E7, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 13717

Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 86

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 36 min.

Sampled By: Mark Sherrod Date: 09/20/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/21/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
50A	09-27-91	7	101000	3570			GV
50B	09-27-91	7	104500	3700			GV
50C	10-18-91	28	114000	4030			GV
50D	10-18-91	28	126500	4470			GV
50E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-18-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E7, lower portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 13704

Measured Air Content, %: 3.2

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 25 min.

Sampled By: Mark Sherrod Date: 09/20/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/21/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
49A	09-27-91	7	105500	3730			GV
49B	09-27-91	7	104000	3680			GV
49C	10-18-91	28	143000	5060			GV
49D	10-18-91	28	134000	4740			GV
49E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-18-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F6, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4

Ticket Number: 13674

Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min.

Sampled By: Mark Sherrod Date: 09/20/91

Water Added on Job, gal.: 5

Submitted By: Mark Sherrod Date: 09/21/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
48A	09-27-91	7	108500	3840			GV
48B	09-27-91	7	107500	3800			GV
48C	10-18-91	28	141000	4990			GV
48D	10-18-91	28	140000	4950			GV
48E		HOLD					

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-18-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F6, lower portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/2

Ticket Number: 13655

Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 82

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 56 min.

Sampled By: Mark Sherrod Date: 09/20/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/21/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
47A	09-27-91	7	105500	3730			GV
47B	09-27-91	7	109000	3860			GV
47C	10-18-91	28	145000	5130			GV
47D	10-18-91	28	147000	5200			GV
47E		HOLD					

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E5, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 13599 — Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 90

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 37 min. — Sampled By: Mark Sherrod — Date: 09/19/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

NOTE: Test cylinders disturbed at jobsite.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
46A	09-26-91	7	102000	3610			GV
46B	09-26-91	7	104000	3680			GV
46C	10-17-91	28	135500	4790			GV
46D	10-17-91	28	132500	4690			GV

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Wheeler Construction (1)

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E5, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 3/4

Ticket Number: 13585 — Measured Air Content, %: 3.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 86

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 41 min. — Sampled By: Mark Sherrod — Date: 09/19/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

NOTE: Test cylinders disturbed at jobsite.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
45A	09-26-91	7	101500	3590			GV
45B	09-26-91	7	98500	3480			GV
45C	10-17-91	28	129000	4560			GV
45D	10-17-91	28	125000	4420			GV
45E		HOLD					

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WESTERN TECHNOLOGIES INC.
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Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section F4, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 13569 — Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 38 min. — Sampled By: Mark Sherrod — Date: 09/19/91

Water Added on Job, gal.: 3 — Submitted By: Mark Sherrod — Date: 09/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

NOTE: Test cylinders disturbed at jobsite.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
44A	09-26-91	7	115000	4070			GV
44B	09-26-91	7	112000	3960			GV
44C	10-17-91	28	143500	5080			GV
44D	10-17-91	28	145500	5150			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E3, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 13556 — Measured Air Content, %: 2.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 77

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 43 min. — Sampled By: Mark Sherrod — Date: 09/19/91

Water Added on Job, gal.: 7 — Submitted By: Mark Sherrod — Date: 09/20/91

Test Procedure: ASTM C39-84B — Authorized By: G. Sommerfeld — Date: 09/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

NOTE: Test cylinders disturbed at jobsite.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
43A	09-26-91	7	108000	3820			GV
43B	09-26-91	7	110000	3890			GV
43C	10-17-91	28	140500	4970			GV
43D	10-17-91	28	134500	4760			GV
43E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-17-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section E3, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 13544 — Measured Air Content, %: 2.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 72

Design Strength, psi: 4000 / 29 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 43 min. — Sampled By: Mark Sherrod — Date: 09/19/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

NOTE: Test cylinders disturbed on jobsite.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
42A	09-26-91	7	118500	4190			GV
42B	09-26-91	7	111500	3940			GV
42C	10-17-91	28	132000	4670			GV
42D	10-17-91	28	135000	4780			GV
42E		HOLD					

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-15-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C8, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/4

Ticket Number: 13312

Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 90

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: hrs. 37 min.

Sampled By: Mark Sherrod Date: 09/17/91

Water Added on Job, gal.: --

Submitted By: Mark Sherrod Date: 09/18/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
41A	09-24-91	7	95000	3360			GV
41B	09-24-91	7	102500	3630			GV
41C	10-15-91	28	121000	4280			GV
41D	10-15-91	28	129000	4560			GV

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OCT 17 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-15-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section D7, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 3 1/4

Ticket Number: 13289

Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5

Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 39 min.

Sampled By: Mark Sherrod Date: 09/17/91

Water Added on Job, gal.: 5

Submitted By: Mark Sherrod Date: 09/18/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
40A	09-24-91	7	101000	3570			GV
40B	09-24-91	7	98000	3470			GV
40C	10-15-91	28	123000	4350			GV
40D	10-15-91	28	127500	4510			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 10-15-91

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C8, lower portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/4

Ticket Number: 13272

Measured Air Content, %: 2.7

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 84

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 83

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 38 min.

Sampled By: Mark Sherrod Date: 09/17/91

Water Added on Job, gal.: 5

Submitted By: Mark Sherrod Date: 09/18/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
39A	09-24-91	7	95500	3380			GV
39B	09-24-91	7	104500	3700			GV
39C	10-15-91	28	120000	4240			GV
39D	10-15-91	28	121500	4300			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-15-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C6, upper portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 1 3/4

Ticket Number: 13259

Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 81

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 75

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 42 min.

Sampled By: Mark Sherrod Date: 09/17/91

Water Added on Job, gal.: 10

Submitted By: Mark Sherrod Date: 09/18/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/16/91

Remarks

Note: Cylinders are 6 in x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
38A	09-24-91	7	105000	3710			GV
38B	09-24-91	7	112000	3960			GV
38C	10-15-91	28	137000	4850			GV
38D	10-15-91	28	126000	4460			GV

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OCT 17 1991
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-15-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C6, lower portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 2 1/2

Ticket Number: 13234

Measured Air Content, %: 2.2

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 78

Mix Identification: W418 6.5 sack

Ambient Air Temperature, °F: 67

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 50 min.

Sampled By: Mark Sherrod Date: 09/17/91

Water Added on Job, gal.: 5

Submitted By: Mark Sherrod Date: 09/18/91

Test Procedure: ASTM C39- 84B

Authorized By: G. Sommerfeld Date: 09/16/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
37A	09-24-91	7	115500	4090			GV
37B	09-24-91	7	114500	4050			GV
37C	10-15-91	28	148000	5240			GV
37D	10-15-91	28	146500	5180			GV

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OCT 17 1991
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section D5, upper portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 1/4

Ticket Number 13177 — Measured Air Content, % 2.8

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 84

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 87

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 43 min. — Sampled By Mark Sherrod Date 09/16/91

Water Added on Job, gal. -- — Submitted By Mark Sherrod Date 09/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 09/13/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
36A	09-23-91	7	96000	3400			GV
36B	09-23-91	7	90000	3180			GV
36C	10-14-91	28	131000	4630			GV
36D	10-14-91	28	128000	4530			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section C4, upper portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3

Ticket Number 13153 — Measured Air Content, % 3.3

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 83

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 85

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 38 min. — Sampled By Mark Sherrod — Date 09/16/91

Water Added on Job, gal. -- — Submitted By Mark Sherrod — Date 09/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 09/13/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
35A	09-23-91	7	105000	3710			GV
35B	09-23-91	7	111500	3940			GV
35C	10-14-91	28	135000	4780			GV
35D	10-14-91	28	138500	4900			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C4, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 13145 — Measured Air Content, %: 3.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 79

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 32 min. — Sampled By: Mark Sherrod — Date: 09/16/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/17/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/13/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	*Compressive Strength* Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
34A	09-23-91	7	101000	3570			GV
34B	09-23-91	7	104500	3700			GV
34C	10-14-91	28	127500	4510			GV
34D	10-14-91	28	130500	4620			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section D3, upper portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 3/4

Ticket Number 13117 — Measured Air Content, % 3.3

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 79

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 67

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 44 min. — Sampled By Mark Sherrod Date 09/16/91

Water Added on Job, gal. -- — Submitted By Mark Sherrod Date 09/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 09/13/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
33A	09-23-91	7	96000	3400			GV
33B	09-23-91	7	97000	3430			GV
33C	10-14-91	28	123000	4350			GV
33D	10-14-91	28	127000	4490			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section D3, lower portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 3/4

Ticket Number 13102 — Measured Air Content, % 3.0

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 79

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 64

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 48 min. — Sampled By Mark Sherrod Date 09/16/91

Water Added on Job, gal. 3 — Submitted By Mark Sherrod Date 09/17/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 09/13/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
32A	09-23-91	7	100000	3540			GV
32B	09-23-91	7	101500	3590			GV
32C	10-14-91	28	128000	4530			GV
32D	10-14-91	28	121500	4300			GV

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WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
CC
LAS VEGAS, NEVADA

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade section D-8, upper portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 1/2

Ticket Number 13008 — Measured Air Content, % 2.4

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 86

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 85

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 45 min. — Sampled By Mark Sherrod Date 09/13/91

Water Added on Job, gal. 5 — Submitted By Mark Sherrod Date 09/14/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld Date 09/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
31A	09-20-91	7	91000	3220			GV
31B	09-20-91	7	93000	3290			GV
31C	10-11-91	28	126000	4460			GV
31D	10-11-91	28	132000	4670			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade section D8, lower portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 3 1/4

Ticket Number 12989 — Measured Air Content, % 2.5

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 83

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 86

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 41 min. — Sampled By Mark Sherrod — Date 09/13/91

Water Added on Job, gal. -- — Submitted By Mark Sherrod — Date 09/14/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 09/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
30A	09-20-91	7	96000	3400			GV
30B	09-20-91	7	91000	3220			GV
30C	10-11-91	28	133500	4720			GV
30D	10-11-91	28	123000	4350			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction

Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section D6, upper portion

Concrete Supplier WMK Transit Mix

Measured Slump, in. 4

Ticket Number 12963

Measured Air Content, % 2.5

Batch Size, cu.yds. 10.0

Concrete Temperature, °F 83

Mix Identification W418 6.5 sack

Ambient Air Temperature, °F 76

Design Strength, psi 4000 / 28 days

Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4

No. of Cylinders Molded 4

Time in Mixer ____ hrs. 34 min.

Sampled By Mark Sherrod Date 09/13/91

Water Added on Job, gal. 5

Submitted By Mark Sherrod Date 09/14/91

Test Procedure ASTM C39- 84B

Authorized By G. Sommerfeld Date 09/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
29A	09-20-91	7	87500	3100			GV
29B	09-20-91	7	97500	3450			GV
29C	10-11-91	28	118000	4170			GV
29D	10-11-91	28	128500	4550			GV

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LABORATORY REPORT

BLACK & VEATCH
OCT 16 1991
LAS VEGAS, NEVADA

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section D-6, lower portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 2 1/2

Ticket Number 12933 — Measured Air Content, % 3.3

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 78

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 73

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 41 min. — Sampled By Mark Sherrod — Date 09/13/91

Water Added on Job, gal. 10 — Submitted By Mark Sherrod — Date 09/14/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 09/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
28A	09-20-91	7	96000	3400			GV
28B	09-20-91	7	96500	3410			GV
28C	10-11-91	28	116500	4120	Cone/Shear		GV
28D	10-11-91	28	132000	4670			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-14-91

Reviewed By EB

BLACK & VEATCH

OCT 16 1991

LAS VEGAS, NEVADA

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction

Architect/Engineer Black & Veatch

Source of Sample Spillway slab on grade, section C7, lower portion

Concrete Supplier WMK Transit Mix

Measured Slump, in. 4

Ticket Number 12918

Measured Air Content, % 4.3

Batch Size, cu.yds. 10.0

Concrete Temperature, °F 78

Mix Identification W418 6.5 sack

Ambient Air Temperature, °F 74

Design Strength, psi 4000 / 28 days

Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4

No. of Cylinders Molded 4

Time in Mixer ____ hrs. 56 min.

Sampled By Mark Sherrod Date 09/13/91

Water Added on Job, gal. --

Submitted By Mark Sherrod Date 09/14/91

Test Procedure ASTM C39- 84B

Authorized By G. Sommerfeld Date 09/12/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
27A	09-20-91	7	86000	3040			GV
27B	09-20-91	7	79500	2810			GV
27C	10-11-91	28	117500	4160			GV
27D	10-11-91	28	114000	4030			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C-5, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 12826 — Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 92

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 37 min. — Sampled By: Mark Sherrod — Date: 09/12/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/13/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
26A	09-19-91	7	87000	3080			GV
26B	09-19-91	7	93500	3310			GV
26C	10-10-91	28	127000	4490			GV
26D	10-10-91	28	119000	4210			GV

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BLACK & VEATCH
OCT 15 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C-5, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/4

Ticket Number: 12796 — Measured Air Content, %: 2.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 90

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 47 min. — Sampled By: Mark Sherrod — Date: 09/12/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/13/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
25A	09-19-91	7	91000	3220			GV
25B	09-19-91	7	102000	3610			GV
25C	10-10-91	28	113000	4000			GV
25D	10-10-91	28	123000	4350			GV

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BLACK & VEATCH
OCT 15 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-11-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section D-4, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 2 1/4

Ticket Number: 12762 — Measured Air Content, %: 2.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 82

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 45 min. — Sampled By: Mark Sherrod — Date: 09/12/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/13/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
24A	09-19-91	7	102500	3630			GV
24B	09-19-91	7	100000	3540			GV
24C	10-10-91	28	126000	4460			GV
24D	10-10-91	28	130000	4600			GV

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BLACK & VEATCH
OCT 15 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C-3, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 12731 — Measured Air Content, %: 2.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 78

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 39 min. — Sampled By: Mark Sherrod — Date: 09/12/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/13/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
23A	09-19-91	7	99500	3520			GV
23B	09-19-91	7	95500	3380			GV
23C	10-10-91	28	131000	4630			GV
23D	10-10-91	28	127500	4510			GV

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OCT 15 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-11-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section C-3, lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 12691 — Measured Air Content, %: 2.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 78

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 65

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: 1 hrs. 21 min. — Sampled By: M. Sherrod — Date: 09/12/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 09/11/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfield — Date: 09/11/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
22A	09-19-91	7	101500	3590			GV
22B	09-19-91	7	99000	3500			GV
22C	10-10-91	28	120000	4240			GV
22D	10-10-91	28	127000	4490			GV

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BLACK & VEATCH
OCT 15 1991
LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-03-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 1-E upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 12231 — Measured Air Content, %: --

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 78

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 73

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 40 min. — Sampled By: Mark Sherrod — Date: 09/05/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/04/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
21A	09-12-91	7	109000	3860			GV
21B	09-12-91	7	93000	3290			GV
21C	10-03-91	28	129500	4580			GV
21D	10-03-91	28	120000	4240			GV

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BLACK & VEATCH

OCT 07 1991

LAS VEGAS, NEVADA

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-03-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 1-B (East) upper portion

Concrete Supplier: WMK Transit — Measured Slump, in.: 4 1/2

Ticket Number: 12221 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 76

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 78

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. ____ min. — Sampled By: Mark Sherrod — Date: 09/05/91

Water Added on Job, gal.: 3 — Submitted By: Mark Sherrod — Date: 09/06/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
20A	09-12-91	7	112000	3960			GV
20B	09-12-91	7	98500	3480			GV
20C	10-03-91	28	119500	4230			GV
20D	10-03-91	28	123500	4370			GV

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BLACK & VEATCH

OCT 07 1991

LAS VEGAS, NEVADA

FORM #41
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3611 West Tompkins Avenue
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-03-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 1-B (East) lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 12212 — Measured Air Content, %: 3.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 83

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 44 min. — Sampled By: Mark Sherrod — Date: 09/05/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/06/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
19A	09-12-91	7	102500	3630			GV
19B	09-12-91	7	109500	3870			GV
19C	10-03-91	28	129000	4560			GV
19D	10-03-91	28	119000	4210			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 2-H (East) lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 12156 — Measured Air Content, %: 3.9

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W-418 6.5 sack — Ambient Air Temperature, °F: 96

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 51 min. — Sampled By: MS & SH — Date: 09/04/91

Water Added on Job, gal.: 5 — Submitted By: MS & SH — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
18A	09-11-91	7	100000	3540			GV
18B	09-11-91	7	102000	3610			GV
18C	10-02-91	28	127000	4490			GV
18D	10-02-91	28	122000	4320			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 2-H upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 12142 — Measured Air Content, %: 3.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W-417 6.25 sack — Ambient Air Temperature, °F: 102

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 38 min. — Sampled By: Mark Sherrod — Date: 09/04/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
17A	09-11-91	7	99000	3500			GV
17B	09-11-91	7	103000	3640			GV
17C	10-02-91	28	105500	3730**			GV
17D	10-02-91	28	125500	4440			GV

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** Test failed to meet indicated design strength.

WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 1-B upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 12123 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W-417 6.25 sack — Ambient Air Temperature, °F: 95

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 33 min. — Sampled By: Mark Sherrod — Date: 09/04/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
16A	09-11-91	7	98500	3480			GV
16B	09-11-91	7	95000	3360			GV
16C	10-02-91	28	113000	4000			GV
16D	10-02-91	28	116500	4120			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 2-F upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 12097 — Measured Air Content, %: 4.6

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W-147 6.25 sack — Ambient Air Temperature, °F: 88

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 27 min. — Sampled By: Mark Sherrod — Date: 09/04/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated.

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
15A	09-11-91	7	90500	3200			GV
15B	09-11-91	7	92500	3270			GV
15C	10-02-91	28	111500	3940**			GV
15D	10-02-91	28	115500	4090			GV

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** Test failed to meet indicated design strength.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 1-B lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 12076 — Measured Air Content, %: 4.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W-417 6.25 sack — Ambient Air Temperature, °F: 83

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 44 min. — Sampled By: Mark Sherrod — Date: 09/04/91

Water Added on Job, gal.: 5 — Submitted By: Mark Sherrod — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
14A	09-11-91	7	87500	3100			GV
14B	09-11-91	7	87500	3100			GV
14C	10-02-91	28	112500	3980**			GV
14D	10-02-91	28	109500	3870**			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 10-02-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section 2-F lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5 1/4

Ticket Number: 12056 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W-417 6.25 sack — Ambient Air Temperature, °F: 74

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 50 min. — Sampled By: Mark Sherrod — Date: 09/04/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 09/05/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 09/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
13A	09-11-91	7	86500	3060			GV
13B	09-11-91	7	93000	3290			GV
13C	10-02-91	28	103000	3640**	Cone&Shear		GV
13D	10-02-91	28	101000	3570**			GV

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** Test failed to meet indicated design strength.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-27-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section "D" upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 11919 — Measured Air Content, %: 4.2

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 81

Mix Identification: W-418 — Ambient Air Temperature, °F: 94

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 45 min. — Sampled By: M. Sherrod — Date: 08/30/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 08/31/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
12A	09-06-91	7	95000	3360			GV
12B	09-06-91	7	96000	3400			GV
12C	09-27-91	28	110500	3910**			GV
12D	09-27-91	28	115500	4090			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-27-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section "IA" upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 1/2

Ticket Number: 11907 — Measured Air Content, %: 4.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 80

Mix Identification: W-418 — Ambient Air Temperature, °F: 89

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 45 min. — Sampled By: M. Sherrod — Date: 08/30/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 08/31/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
11A	09-06-91	7	100500	3560			GV
11B	09-06-91	7	105000	3710			GV
11C	09-27-91	28	113000	4000			GV
11D	09-27-91	28	110000	3890**			GV

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** Test failed to meet indicated design strength.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-27-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section "J" lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/4

Ticket Number: 11874 — Measured Air Content, %: 4.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 79

Mix Identification: W-418 — Ambient Air Temperature, °F: 85

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 51 min. — Sampled By: M. Sherrod — Date: 08/30/91

Water Added on Job, gal.: 2 — Submitted By: M. Sherrod — Date: 08/31/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
10A	09-06-91	7	98500	3480			GV
10B	09-06-91	7	102000	3610			GV
10C	09-27-91	28	116500	4120			GV
10D	09-27-91	28	121000	4280			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-27-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section "D" lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 11859 — Measured Air Content, %: 5.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 78

Mix Identification: W-418 — Ambient Air Temperature, °F: 78

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 49 min. — Sampled By: M. Sherrod — Date: 08/30/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 08/29/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
9A	09-06-91	7	103000	3640			GV
9B	09-06-91	7	96000	3400			GV
9C	09-27-91	28	124000	4390			GV
9D	09-27-91	28	123000	4350			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-27-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction

Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab section "I" lower portion

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 4 1/4

Ticket Number: 11839

Measured Air Content, %: 3.0

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 76

Mix Identification: W-418

Ambient Air Temperature, °F: 75

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 46 min.

Sampled By: M. Sherrod Date: 08/30/91

Water Added on Job, gal: --

Submitted By: M. Sherrod Date: 08/31/91

Test Procedure: ASTM C39- 84B

Authorized By: Client Date: 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
8A	09-06-91	7	107500	3800			GV
8B	09-06-91	7	112000	3960			GV
8C	09-27-91	28	125000	4420			GV
8D	09-27-91	28	132500	4690			GV

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BLACK & VEATCH
SEP 30 1991
LAS VEGAS, NEVADA

WESTERN TECHNOLOGIES INC.

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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-26-91

Reviewed By [signature]

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab S.W. section C upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 11771 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 82

Mix Identification: W-418 — Ambient Air Temperature, °F: 90

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 58 min. — Sampled By: MS & JS — Date: 08/29/91

Water Added on Job, gal.: -- — Submitted By: MS & JS — Date: 08/30/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/28/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
7A	09-05-91	7	95000	3360			GV
7B	09-05-91	7	93500	3310			GV
7C	09-26-91	28	117000	4140			GV
7D	09-26-91	28	130000	4600			GV

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BLACK & VEATCH
SEP 30 1991
LAS VEGAS, NEVADA

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-26-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge
Location: Tropicana Ave & Durango
Contractor: Tiberti Construction
Architect/Engineer: Black & Veatch
Source of Sample: Spillway slab S.W. section C lower portion
Concrete Supplier: WMK Transit Mix
Measured Slump, in.: 5
Ticket Number: 11746
Measured Air Content, %: 3.8
Batch Size, cu.yds.: 10.0
Concrete Temperature, °F: 79
Mix Identification: W-418 6.5 sack
Ambient Air Temperature, °F: 85
Design Strength, psi: 4000 / 28 days
Plastic Unit Weight, pcf: --
Max. Size Aggregate, in.: 3/4"
No. of Cylinders Molded: 4
Time in Mixer: hrs. 41 min.
Sampled By: MS & JS
Date: 08/29/91
Water Added on Job, gal.: --
Submitted By: J. Stark
Date: 08/30/91
Test Procedure: ASTM C39- 84B
Authorized By: Client
Date: 08/28/91
Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
6A	09-05-91	7	98500	3480			GV
6B	09-05-91	7	98500	3480			GV
6C	09-26-91	28	130000	4600			GV
6D	09-26-91	28	123000	4350			GV

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SEP 30 1991

LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-26-91

Reviewed By

Project Flamingo-Upper Wash Detention Basin & Discharge

Location Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab S.W. section A upper portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5 1/4

Ticket Number 11720 — Measured Air Content, % 3.7

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 79

Mix Identification W-418 6.5 sack — Ambient Air Temperature, °F 83

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 48 min. — Sampled By MS & JS — Date 08/29/91

Water Added on Job, gal. -- — Submitted By J. Stark — Date 08/30/91

Test Procedure ASTM C39- 84B — Authorized By Client — Date 08/28/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
5A	09-05-91	7	87500	3100			GV
5B	09-05-91	7	91000	3220			GV
5C	09-26-91	28	117000	4140			GV
5D	09-26-91	28	103500	3660**			GV

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LABORATORY REPORT

SEP 30 1991

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

LAS VEGAS, NEVADA

Client Black & Veatch
4141 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-26-91

Reviewed By

Project Flamingo-Upper Wash Detention Basin & Discharge

Location Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Spillway slab S.W. section G lower portion

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5 1/2

Ticket Number 11705 — Measured Air Content, % 3.5

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 76

Mix Identification W-418 6.5 sack — Ambient Air Temperature, °F 74

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 4

Time in Mixer ____ hrs. 35 min. — Sampled By M. Sherrod — Date 08/29/91

Water Added on Job, gal. -- — Submitted By J. Stark — Date 08/30/91

Test Procedure ASTM C39- 84B — Authorized By Client — Date 08/29/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
4A	09-05-91	7	94000	3330			GV
4B	09-05-91	7	102000	3610			GV
4C	09-26-91	28	133000	4700			GV
4D	09-26-91	28	135000	4780			GV

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LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-26-91

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab S.W. section A lower portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6

Ticket Number: 11687 — Measured Air Content, %: 3.7

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 75

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 67

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 44 min. — Sampled By: MS & JS — Date: 08/29/91

Water Added on Job, gal.: -- — Submitted By: J. Stark — Date: 08/30/91

Test Procedure: ASTM C39- 84B — Authorized By: Client — Date: 08/28/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
3A	09-05-91	7	98000	3470			GV
3B	09-05-91	7	97000	3430			GV
3C	09-26-91	28	126000	4460			GV
3D	09-26-91	28	118500	4190			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

BLACK & VEATCH
SEP 23 1991
LAS VEGAS, NEVADA

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-20-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway cut off wall for 3' slab

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 10593 — Measured Air Content, %: 5.4

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W-417 — Ambient Air Temperature, °F: 95

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 54 min. — Sampled By: M. Sherrod — Date: 08/15/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 08/16/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 08/15/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
2A	08-22-91	7	86000	3040			
2B	08-22-91	7	84500	2990			
2C	09-12-91	28	104500	3700**	Normal		GV
2D	09-18-91	34	107000	3780**	Normal		GV

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** Test failed to meet indicated design strength.

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 09-12-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway cut off wall for 3' slab end of S quarter

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4

Ticket Number: 10576 — Measured Air Content, %: 5.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 84

Mix Identification: W-417 — Ambient Air Temperature, °F: 93

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 4

Time in Mixer: ____ hrs. 46 min. — Sampled By: M. Sherrod — Date: 08/15/91

Water Added on Job, gal.: -- — Submitted By: M. Sherrod — Date: 08/16/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 08/15/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
1A	08-22-91	7	88500	3130			
1B	08-22-91	7	84000	2970			
1C	09-12-91	28	113000	4000			GV
1D	09-12-91	28	109000	3860**	Shear		GV

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BLACK & VEATCH
SEP 18 1991
LAS VEGAS, NEVADA

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CONCRETE 56 DAY STRENGTHS

WESTERN TECHNOLOGIES INC.
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Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 11-26-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Spillway slab on grade, section H7, upper portion

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 14961 — Measured Air Content, %: 3.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 87

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 47 min. — Sampled By: Mark Sherrod — Date: 10/01/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/02/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 09/30/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
84A	10-08-91	7	86000	3040			GV
84B	10-08-91	7	86500	3060			GV
84C	10-29-91	28	111500	3940**			GV
84D	10-29-91	28	112000	3960**			GV
84E	11-26-91	56	131500	4650			GV

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BLACK & VEATCH
DEC 2 1991
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-02-91

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream S spillway retaining wall footing section 3 E 3rd

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 15617 — Measured Air Content, %: 5.3

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 85

Mix Identification: W418 6.5 sack — Ambient Air Temperature, °F: 84

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 12 min. — Sampled By: Mark Sherrod — Date: 10/07/91

Water Added on Job, gal.: -- — Submitted By: Mark Sherrod — Date: 10/08/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 10/04/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
96A	10-14-91	7	75500	2670			GV
96B	10-14-91	7	81500	2880			GV
96C	11-04-91	28	108500	3840**			GV
96D	11-04-91	28	104500	3700**			GV
96E	12-02-91	56	115500	4090			GV

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BLACK & VEATCH

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LABORATORY REPORT

DEC 9 [illegible]

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

LAS VEGAS, NEVADA

Black & Veatch
7771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 12-04-91

Reviewed By [signature]

Project Flamingo-Upper Wash Detention Basin & Discharge

Location S/O Tropicana Ave & Durango

Contractor Tiberti Construction — Architect/Engineer Black & Veatch

Source of Sample Box Culvert W wall, middle upper half

Concrete Supplier WMK Transit Mix — Measured Slump, in. 5

Ticket Number 15893 — Measured Air Content, % 8.2

Batch Size, cu.yds. 10.0 — Concrete Temperature, °F 86

Mix Identification W418 6.5 sack — Ambient Air Temperature, °F 83

Design Strength, psi 4000 / 28 days — Plastic Unit Weight, pcf --

Max. Size Aggregate, in. 3/4 — No. of Cylinders Molded 5

Time in Mixer 1 hrs. 30 min. — Sampled By Mark Sherrod — Date 10/09/91

Water Added on Job, gal. 10 — Submitted By Mark Sherrod — Date 10/10/91

Test Procedure ASTM C39- 84B — Authorized By G. Sommerfeld — Date 10/08/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
99A	10-16-91	7	85000	3010			GV
99B	10-16-91	7	88500	3130			GV
99C	11-06-91	28	109500	3870**			GV
99D	11-06-91	28	110000	3890**			GV
99E	12-04-91	56	125000	4420			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-22-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: North retaining wall section 1B, level 2

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 6 1/2

Ticket Number: 20020 — Measured Air Content, %: 4.1

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 72

Mix Identification: W-418P — Ambient Air Temperature, °F: 64

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: 1 hrs. 1 min. — Sampled By: E. Townsend — Date: 11/27/91

Water Added on Job, gal.: -- — Submitted By: E. Townsend — Date: 11/28/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 11/26/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
159A	12-04-91	7	73000	2580			GV
159B	12-04-91	7	72500	2560			GV
159C	12-25-91	28	104000	3680**			GV
159D	12-25-91	28	106500	3770**			GV
159E	01-22-92	56	108000	3820**			GV

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BLACK & VEATCH
JAN 27 1992
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 01-29-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: J.A. Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Downstream Apron slabs A9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 20397 — Measured Air Content, %: 4.8

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 65

Mix Identification: W418 — Ambient Air Temperature, °F: 48

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min. — Sampled By: J. Usrey — Date: 12/04/91

Water Added on Job, gal.: 0 — Submitted By: J. Usrey — Date: 12/05/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/03/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
163A	12-11-91	7	80500	2850			GV
163B	12-11-91	7	83500	2950			GV
163C	01-01-92	28	113500	4010			GV
163D	01-01-92	28	112000	3960**			GV
163E	01-29-92	56	121500	4300			GV

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3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-12-92

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab on grade, section C11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 19150 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 50

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. ____ min. — Sampled By: M. Regay — Date: 12/17/91

Water Added on Job, gal.: -- — Submitted By: M. Regay — Date: 12/18/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Sommerfeld — Date: 12/17/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
177A	12-24-91	7	72500	2560			GV
177B	12-24-91	7	72500	2560			GV
177C	01-14-92	28	101000	3570**			GV
177D	01-14-92	28	100000	3540**			GV
177E	02-11-92	56	107500	3800**	Cone&Shear		GV

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Wheeler Construction (1)

BLACK & VEATCH
FEB 14 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength.

FORM #41
PDQ Printing (702) 876-3236

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-12-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Construction — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slab on grade, section G11

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 1/2

Ticket Number: 19250 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 60

Mix Identification: W-418 — Ambient Air Temperature, °F: 52

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 31 min. — Sampled By: M. Begay — Date: 12/18/91

Water Added on Job, gal.: 0 — Submitted By: M. Begay — Date: 12/19/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/18/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
179A	12-25-91	7	78000	2760			GV
179B	12-25-91	7	71500	2530			GV
179C	01-15-92	28	99000	3500**			GV
179D	01-15-92	28	96500	3410**			GV
179E	02-12-92	56	117000	4140			GV

Copies to:
Addressee - (2)
Wheeler Construction (1)

BLACK & VEATCH
FEB 14 1992
LAS VEGAS, NEVADA

** Test failed to meet indicated design strength.

FORM #41
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WESTERN TECHNOLOGIES INC.
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-13-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti Const — Architect/Engineer: Black & Veatch

Source of Sample: Downstream apron slabs, section F-9

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 13754 — Measured Air Content, %: 8.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 46

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 28 min. — Sampled By: M. Begay — Date: 12/19/91

Water Added on Job, gal.: 10 — Submitted By: M. Begay — Date: 12/20/91

Test Procedure: ASTM C39- 84B — Authorized By: G. Summerfield — Date: 12/19/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
181A	12-26-91	7	86000	3040			GV
181B	12-26-91	7	82500	2920			GV
181C	01-16-92	28	111500	3940**	Cone&Shear		GV
181D	01-16-92	28	108500	3840**	Cone&Shear		GV
181E	02-13-92	56	122000	4320			GV

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BLACK & VEATCH
FEB 13 1992
LAS VEGAS, NEVADA

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-27-92

Reviewed By

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low Flow Channel slab on grade

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 4 3/4

Ticket Number: 22574 — Measured Air Content, %: --

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 52

Mix Identification: W-418 — Ambient Air Temperature, °F: 33

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: hrs. 30 min. — Sampled By: P. Boedeker — Date: 01/02/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/03/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 12/31/91

Remarks

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	*psi*			
193A	01-09-92	7	63500	2250	LOW		GV
193B	01-09-92	7	63000	2230	LOW		GV
193C	01-30-92	28	92500	3270**			GV
193D	01-30-92	28	89500	3170**			GV
193E	02-27-92	56	107000	3780**	Cone&Shear		GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 02-28-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low flow channel slab

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 3 3/4

Ticket Number: 22676 — Measured Air Content, %: 11.0

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 56

Mix Identification: W-418 — Ambient Air Temperature, °F: 45

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 35 min. — Sampled By: P. Boedeker — Date: 01/03/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/02/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/02/92

Remarks

NOTE: HIGH AIR CONTENT
*LOW BREAK

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
* 196A	01-10-92	7	65000	2300			GV
* 196B	01-10-92	7	66500	2350			GV
196C	01-31-92	28	90500	3200**			GV
196D	01-31-92	28	94000	3330**			GV
196E	02-28-92	56	102000	3610**			GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No. 4141K255

Date of Report 03-02-92

Reviewed By EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: JA Tiberti — Architect/Engineer: Black & Veatch

Source of Sample: Low Flow channel slab

Concrete Supplier: WMK Transit Mix — Measured Slump, in.: 5

Ticket Number: 22795 — Measured Air Content, %: 9.5

Batch Size, cu.yds.: 10.0 — Concrete Temperature, °F: 54

Mix Identification: W-418 — Ambient Air Temperature, °F: 41

Design Strength, psi: 4000 / 28 days — Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4 — No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min. — Sampled By: P. Boedeker — Date: 01/06/92

Water Added on Job, gal.: -- — Submitted By: P. Boedeker — Date: 01/07/92

Test Procedure: ASTM C39- 84B — Authorized By: Gary — Date: 01/03/92

Remarks:

Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
197A	01-13-92	7	72000	2550			GV
197B	01-13-92	7	70000	2480			GV
197C	02-03-92	28	90500	3200**	Cone&Shear		GV
197D	02-03-92	28	88000	3110**	Cone&Shear		GV
197E	03-02-92	56	105000	3710**	Cone&Shear		GV

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LABORATORY REPORT

COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS

Client: Black & Veatch
1771 East Flamingo Road, Suite 104A
Las Vegas, NV 89119

Job No.: 4141K255

Date of Report: 03-05-92

Reviewed By: EB

Project: Flamingo-Upper Wash Detention Basin & Discharge

Location: S/O Tropicana Ave & Durango

Contractor: Tiberti

Architect/Engineer: Black & Veatch

Source of Sample: Channel basin @ Sta. 28+00

Concrete Supplier: WMK Transit Mix

Measured Slump, in.: 5 1/2

Ticket Number: 23128

Measured Air Content, %: 7.2

Batch Size, cu.yds.: 10.0

Concrete Temperature, °F: 52

Mix Identification: W418

Ambient Air Temperature, °F: 40

Design Strength, psi: 4000 / 28 days

Plastic Unit Weight, pcf: --

Max. Size Aggregate, in.: 3/4

No. of Cylinders Molded: 5

Time in Mixer: ____ hrs. 45 min.

Sampled By: S. Gilmour Date: 01/09/92

Water Added on Job, gal.: 0

Submitted By: S. Gilmour Date: 01/10/92

Test Procedure: ASTM C39- 84B

Authorized By: Gary S. Date: 01/09/92

Remarks

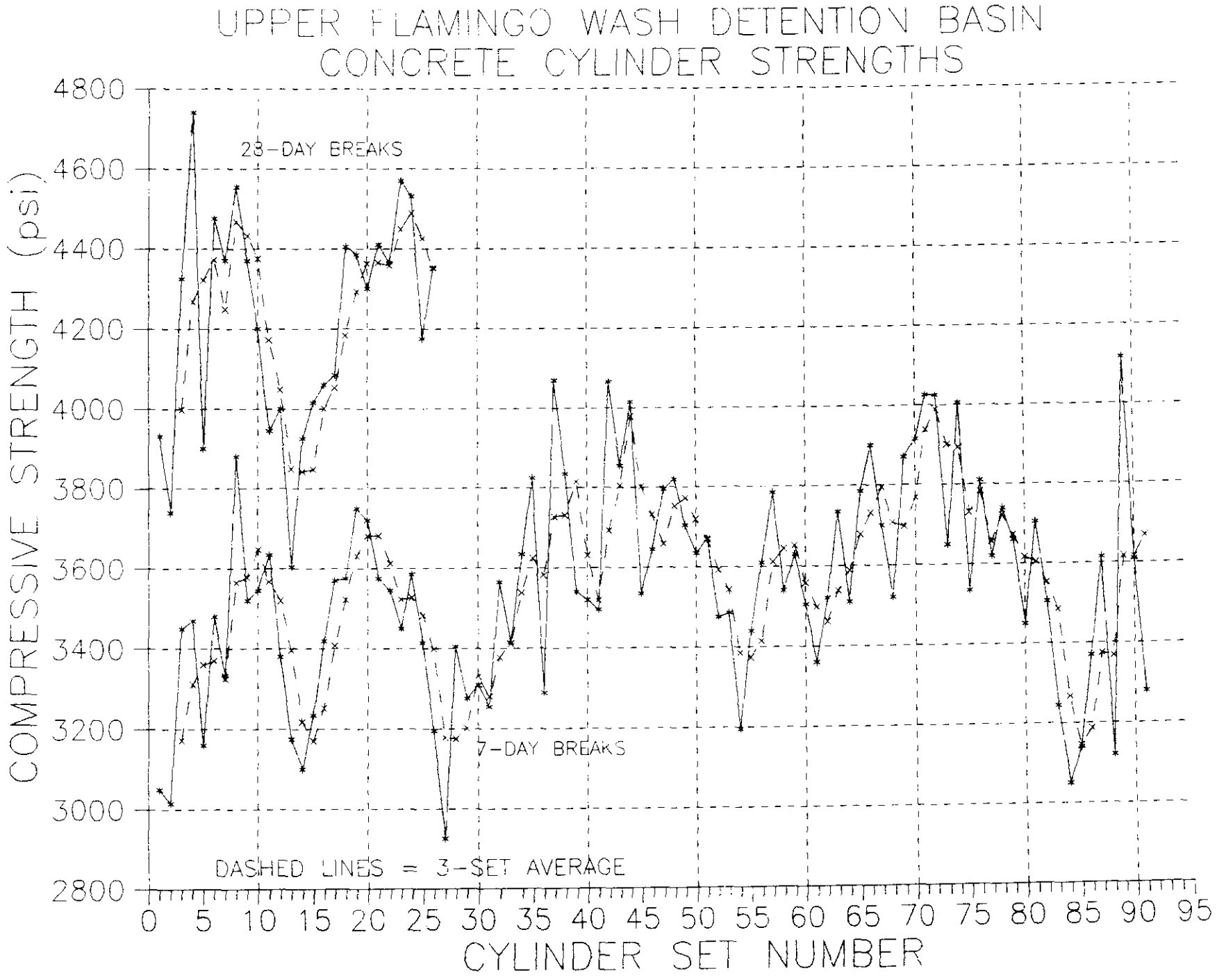
Note: Cylinders are 6 in. x 12 in., area = 28.27 sq. in. unless otherwise indicated

Specimen Marking If Any	Date Tested	Specimen Age in Days	Compressive Strength Maximum Load		Type Fracture If Other Than Cone	Defects in Specimens/Caps If Any	Tested By
			Pounds Force	psi			
204A	01-16-92	7	78000	2760			GV
204B	01-23-92	14	91000	3220			GV
204C	02-06-92	28	110500	3910**			GV
204D	02-06-92	28	112000	3960**			GV
204E	03-05-92	56	121500	4300			GV

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FORM #41
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UPPER FLAMINGO WASH DETENTION BASIN
CONCRETE CYLINDER STRENGTHS
COMPRESSIVE STRENGTH (psi)
4800
4600
4400
4200
4000
3800
3600
3400
3200
3000
2800
28-DAY BREAKS
7-DAY BREAKS
DASHED LINES = 3-SET AVERAGE
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
CYLINDER SET NUMBER

Upper Flamingo Wash Detention Basin

Letter of Map Revision

Volume 3
Appendices

Prepared By:

Black & Veatch
1900 East Flamingo Road, Suite 295
Las Vegas, NV 89119

Prepared For:

Clark County Regional Flood Control District
301 East Clark Avenue, Suite 301
Las Vegas, NV 89101

DO NOT WRITE IN THIS SPACE

PURPOSE: To list soil input parameters for slope stability analysis

REFERENCES:

(1) "Earth Dams & Reservoirs", SCS, TR-60, 1961
(2) STABL Slope Stability Program Users Manual
(3) PAK Calcs dated 10/31/89 Determination of Design S
(4) SCE Calcs dated [illegible] Total Stress vs Effective Stress Analysis
(5) PAK to CE Memo dated 11/8/88 - Saturated Unit Weight Testing
(6) U.S. Army C.O.E. "Earth & Rockfill Dams" EM 1110-2-1902, 19[illegible]

SCANNED

PROCEDURE:

1. List Design Requirements (See Ref #1 & #6)

Design Event	Factor of Safety Upstream Slope	Factor of Safety Downstream Slope
Seepage for PMF Event	—	1.5 (Ref #1)
Rapid Draw Down at PMF Pool Elev.	1.2 (Ref #1)	—
" " " " 10 yr " "	1.2 (Ref #1)	—
" " " " Partial " "	1.2 (Ref #1)	—
Earthquake (Empty Basin	1.1 (Ref #1)	1.1 (Ref #1)
End of Construction	1.3 (Ref #1)	1.3 (Ref #1)

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2. ANALYSIS METHOD - The slope stability program STABL is to be used as the method of analysis. (Ref 4-2) The program uses the simplified Janbu method of slices and the modified Bishop method of slices. The Janbu method generally gives more conservative results when compared to the Bishop method except for deep circular failure surfaces where the soil strength is defined mainly in terms of strength intercept (c or $\bar{c}$). It is recommend to use the Bishop method for circular failure surfaces (Ref 4-2, p 91, 100)

1. Circular Failure Surfaces - Use COMMAND CIRCL2 - Modified Bishop method of slices

2. Irregular or block/wedge surfaces - Use COMMAND CIRCLE - Simplified Janbu method of slices.

3. SOIL PARAMETERS

a) EMBANKMENT - (GENERAL FILL)

1. Angle of internal friction - ($\bar{\phi}$) -
The effective angle of internal friction as evaluated in Ref 3 & 4

$\bar{\phi} = 36°$

2. Design value unit weights selection ($\gamma_d, \gamma_m, \gamma_{sat}$) ASTM-D1557
The results from Client's moisture-density (Proctors) testing

	$\gamma_{dry\ MAX.}$ (lb/ft³)	w (%)
7+00	117.8	12.2
19+00	134	5.8
34+00	137	6.5

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From the above values select a maximum dry density of 135 lb/ft³

Choose a design value dry unit weight at 92% maximum

$$\gamma_d = 0.92(135) = 124.2 \Rightarrow \text{SELECT } \boxed{\gamma_d = 125 \text{ lb/ft}^3}$$

From the moisture-density relationships choose optimum moisture content of 6%

Select a design value moist unit weight

$$\gamma_m = 1.06(125) = 132.5 \Rightarrow \text{SELECT } \boxed{\gamma_m = 133 \text{ lb/ft}^3}$$

From REF #5 the results from laboratory testing

STATION	γ_{sat}	γ_{dry}
7+00	136.5 lb/ft³	117.5 lb/ft³
19+00	142.5 lb/ft³	133.5 lb/ft³
34+00	147 lb/ft³	133.5 lb/ft³

As noted in reference #5, the above values are not true saturated unit weights. The degree of saturation was less than 100% because the samples contained some amount of trapped air. The above values were determined by soaking proctor samples over a period of several days until there was no appreciable change in weight. There was no action taken to remove the trapped air.

Although this testing procedure was incorrect for determining saturated unit weight (entrained air not removed), it approximates field conditions fairly well.

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c) EMBANKMENT – (GENERAL FILL)

Select a design saturated unit weight from an average of Sta 19+00 & Sta. 34+00 percentage of weight increase

Sta. 19+00 $\%$ WT GAINED $= \frac{142.5 - 133.5}{133.5} = 6.74\%$

Sta. 34+00 $\%$ WT GAINED $= \frac{147 - 133.5}{133.5} = 10.11\%$

) AVG = 8.43%

With design dry weight $\Rightarrow \gamma_d = 125$ lb/ft^3

$\gamma_{sat} = 125(1.084) = 135.5 \Rightarrow$ Select $\boxed{\gamma_{sat} = 135 \text{ lb/ft}^3}$

In uniform soils such as certain types of SP and GP, $e_{max} - e_{min}$ is small and e_{min} is large; hence F is small, and the soil more difficult to compact. Table 7.3 lists compactibilities for a variety of soils.

Burmister (1948) showed that the relative density of noncohesive soils was a more significant parameter than dry density alone insofar as engineering properties of the soil are concerned. His work has been verified and extended by other investigators (D'Appolonia, 1970).

As indicated in Eqs. 7.3 and 7.4, determination of the relative density of a soil requires measuring its dry density in place, its dry density in the loosest state, and its dry density in the densest state (or the three corresponding void ratios). The density in place and minimum density (loosest state) present no particular difficulty, but a generally accepted method of determining the maximum density (densest state) of all cohesionless soils has not yet been found (see section 7.4).

TABLE 7.3. COMPACTIBILITY (F) OF COHESIONLESS SOILS (where $F = (e_{max} - e_{min})/e_{min}$).

Classification	γ_{min}	γ_{max}	e_{min}	e_{max}	Max. size	D_{10}	C_u	C_c	F
SP-SM	90	108	0.54	0.84	#16	.058	6.0	2.2	.555
SM	75	97	0.83	1.36	3/4"	.0065	31	5.5	.638
SP	92	112	0.48	0.80	#4	.15	3.0	.93	.667
SP	93	113	0.46	0.77	1 1/2"	.16	2.4	.92	.674
SP	95	116	0.43	0.74	#4	.30	3.7	1.0	.721
SP-SM	92	113	0.46	0.80	3/4"	.08	3.0	.88	.739
SP	85	107	0.54	0.94	#30	.10	2.3	1.3	.740
SP	97	118	0.40	0.70	1 1/2"	.11	3.2	1.2	.750
SP	99	120	0.38	0.67	1 1/2"	1.8	4.4	.76	.763
SM-ML	83	108	0.62	1.11	#4	.012	8.3	1.5	.790
SP-SM	79	103	0.60	1.08	#30	.09	2.4	1.5	.800
SP	103	124	0.33	0.60	3/8"	.17	5.0	.75	.818
SM	105	126	0.31	0.57	5"	.02	350	.30	.838
SP-SM	87	112	0.48	0.90	#4	.08	3.0	1.3	.875
SM	82	108	0.54	1.02	#16	.023	6.5	1.4	.889
SW-SM	95	119	0.39	0.74	3"	.05	10	1.4	.897
SP	98	122	0.36	0.69	#4	.37	5.1	1.2	.917
SW-SM	98	125	0.34	0.71	3"	.07	6.8	1.0	1.088
SP-SM	97	124	0.33	0.70	3/4"	.10	5.0	1.4	1.121
SP-SM	84	115	0.44	0.97	1 1/2"	.085	4.7	1.4	1.205
SP-SM	94	123	0.34	0.76	1 1/2"	.12	4.4	1.3	1.235
SM	99	128	0.31	0.70	3"	.02	240	1.8	1.258
SP-SM	80	114	0.44	1.06	#16	.07	3.7	1.6	1.409
SW-SM	80	116	0.42	1.07	1 1/2"	.074	6.6	2.4	1.547
SM	83	120	0.38	0.99	#4	.015	26	6.1	1.605
SM	102	134	0.23	0.62	3/4"	.01	120	1.9	1.695
GN-GM	113	127	0.31	0.47	3"	.14	86	1.2	.517
GP-GM	112	129	0.32	0.52	3"	.03	200	.50	.625
GW-GM	116	133	0.26	0.44	5"	.17	171	2.2	.692
GP-GM	110	128	0.30	0.51	3"	.11	191	15	.700
GP-GM	117	133	0.24	0.41	5"	.125	160	4.0	.708
GW-GP	111	130	0.27	0.49	3"	.20	105	7.5	.815
GP	116	134	0.23	0.43	5"	.27	111	6.2	.870
GW	119	139	0.24	0.45	3"	.51	45	2.2	.875
GW	120	139	0.20	0.39	3"	.45	51	1.6	.950
GW	119	139	0.21	0.41	3"	.18	94	1.1	.952
GW	111	132	0.25	0.49	3"	2.9	9.7	1.8	.960
GP	115	136	0.22	0.44	5"	.38	29	.61	1.000
GP	114	135	0.22	0.45	3"	2.0	11	.77	1.045
GW-GM	121	141	0.19	0.39	3"	.30	77	2.3	1.052
GM	122	141	0.17	0.36	1 1/2"	.025	381	3.0	1.118
GW-GM	114	137	0.21	0.45	3"	.60	16	1.2	1.143
GW	112	138	0.20	0.48	3"	2.0	12	1.3	1.400
GW	109	137	0.21	0.52	3"	2.0	14	2.6	1.476
GP	114	140	0.18	0.45	3"	1.7	10	.76	1.500
GM	101	132	0.25	0.64	1 1/2"	.03	260	12	1.560
GW-GM	111	139	0.19	0.49	3"	1.8	13	2.3	1.578
GP	115	142	0.17	0.44	3"	.31	87	8.2	1.588
GW	123	146	0.13	0.34	3"	.21	124	1.1	1.615
GW-GM	110	139	0.19	0.50	5"	.42	43	2.1	1.631
GW-GM	115	142	0.17	0.45	3"	.15	133	1.1	1.647
GP-GM	112	140	0.18	0.48	3"	.42	26	4.2	1.667
GW-GM	112	140	0.18	0.48	5"	.25	56	1.0	1.667
GW-GM	114	142	0.16	0.45	3"	1.2	15	1.7	1.812
GP	112	141	0.17	0.48	3"	1.4	7.1	.73	1.823
GW-GM	118	147	0.12	0.40	3"	1.3	19	1.1	2.333

SIMILAR MATERIAL

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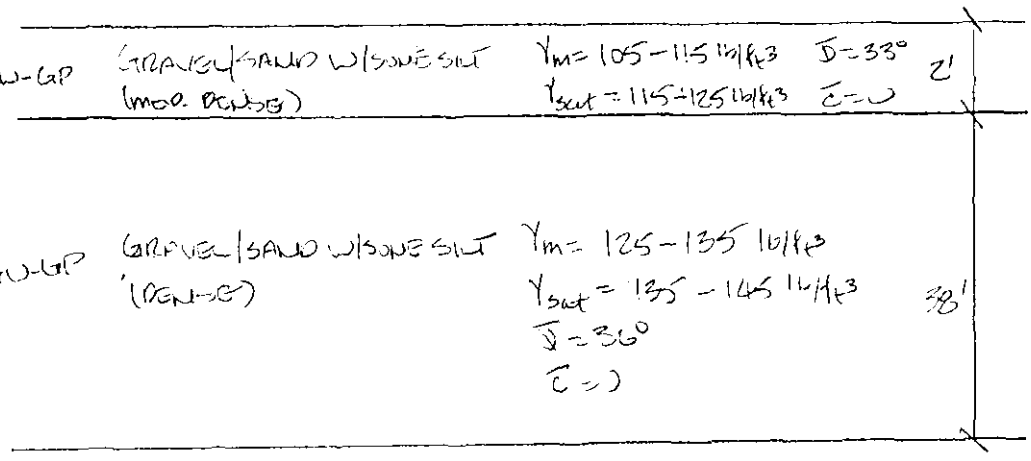
(b) FOUNDATION.

STA.	$\gamma_{dry\ field}$ (lb/ft³)	w (%)	DEPTH (ft)	$\gamma_{dry\ max}$ (ASTM D-1557) (lb/ft³)	DEPTH (ft)
7+00				117.8	surface
19+00				134	surface
21+00	104.2	1.9	surface		
25+00	? 167.2	0.4	surface		
28+00	153.2	1.0	4'		
	120	1.3	6'		
31+00	124.5	0.9	2'		
	134.2	1.1	3'-6"		
34+00	141.3	1.1	1'-6"	137	3'
	105.1	1.5	5'-0"		
37+00	140.1	1.3	3'-0"		
	147.9	1.5	6'-0"		

Evaluating the above tests, and trench and boring logs, two simplifying geological profiles will be used for the foundation in the slope stability analysis.

(b) FOUNDATION - simplified geological profiles

(1) NORTHERN EMBANKMENT AREA



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(b) FOUNDATION - SIMPLIFIED GEOLOGICAL PROFILES

(2) SOUTHERN EMBANKMENT AREA

	CEMENTED SAND & GRAVEL (MODERATE)	$\gamma_m = 165$ lb/ft^3 $\phi = 45°$ $\gamma_{sat} = 167$ lb/ft^3 $C = 3000$ psf	21'
GP	SAND & GRAVEL W/SOME SILT (DENSE)	$\gamma_m = 125 - 135$ lb/ft^3 $\gamma_{sat} = 135 - 145$ lb/ft^3 $\phi = 36°$	38'

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DO NOT WRITE IN THIS SPACE

(b) Foundation

2. Angle of internal friction ($\bar{\phi}$)

Select $\bar{\phi}$ equal to minimum $\bar{\phi}$ $\Rightarrow$ $\boxed{\bar{\phi} = 36^\circ}$

(c) CHIMNEY & BLANKET DRAINS - SELECT

$\gamma_d = 126$ lb/ft^3
$\gamma_m = 135$ lb/ft^3
$\bar{\phi} = 34^\circ$

SUMMARY TO DETERMINE THE SENSITIVITY OF ANALYSIS, THE SOIL PARAMETERS WILL BE VARIED AS FOLLOWS

GENERAL FILL

$\gamma_{max} = 126 - 133$ lb/ft^3, $\gamma_{sat} = 135$ lb/ft^3
$\bar{\phi} = 36^\circ - 32^\circ$, $\bar{c} = 0$

FILTER

$\gamma_m = 126$ lb/ft^3, $\gamma_{sat} = 135$ lb/ft^3
$\bar{\phi} = 34^\circ - 30^\circ$, $\bar{c} = 0$

NORTHERN FOUNDATION

SOIL #1 $\gamma_m = 105$ lb/ft^3, $\gamma_{sat} = 115$ lb/ft^3
$\bar{\phi} = 33^\circ - 30^\circ$, $\bar{c} = 0$

SOIL #2 $\gamma_m = 125$ lb/ft^3, $\gamma_{sat} = 135$ lb/ft^3
$\bar{\phi} = 36^\circ - 32^\circ$, $\bar{c} = 0$

SOUTHERN FOUNDATION

SOIL #1 $\gamma_m = 165$ lb/ft^3, $\gamma_s = 167$ lb/ft^3
$\bar{\phi} = 45^\circ - 41^\circ$, $\bar{c} = 2000$ lb

SOIL #2 $\gamma_m = 125$ lb/ft^3, $\gamma_s = 135$ lb/ft^3
$\bar{\phi} = 36^\circ - 32^\circ$, $\bar{c} = 0$

TABLE 5-2 REF #1

EMBANKMENT SLOPE STABILITY
MINIMUM FACTORS OR SAFETY 1/

Loading Condition	Structure Classification	Factor of Safety	
		W/O Seismic 2/ + Forces	W/Seismic Forces
End of Construction	(a), (b) and (c)	1.4 3/	Not Applicable
Steady Seepage, Reservoir Elev. @ Highest Principal Spwy. Crest	(a)	1.4	1.0
	(b)	1.5	1.1
	(c)	1.5	1.1
Sudden Drawdown, Complete and/or Partial	(a), (b) and (c)	1.3 4/	Not Applicable

1/ Factor of safety is to be evaluated by an appropriate method.

2/ Factor of safety for an infinite slope analysis is to exceed 1.0 for class (a) and 1.1 for classes (b) and (c).

3/ A factor of 1.3 may be used for embankments on strong foundation where the limiting potential failure surface is entirely within the embankment.

4/ A factor of 1.2 may be used where the limiting potential failure surface is entirely within the embankment.

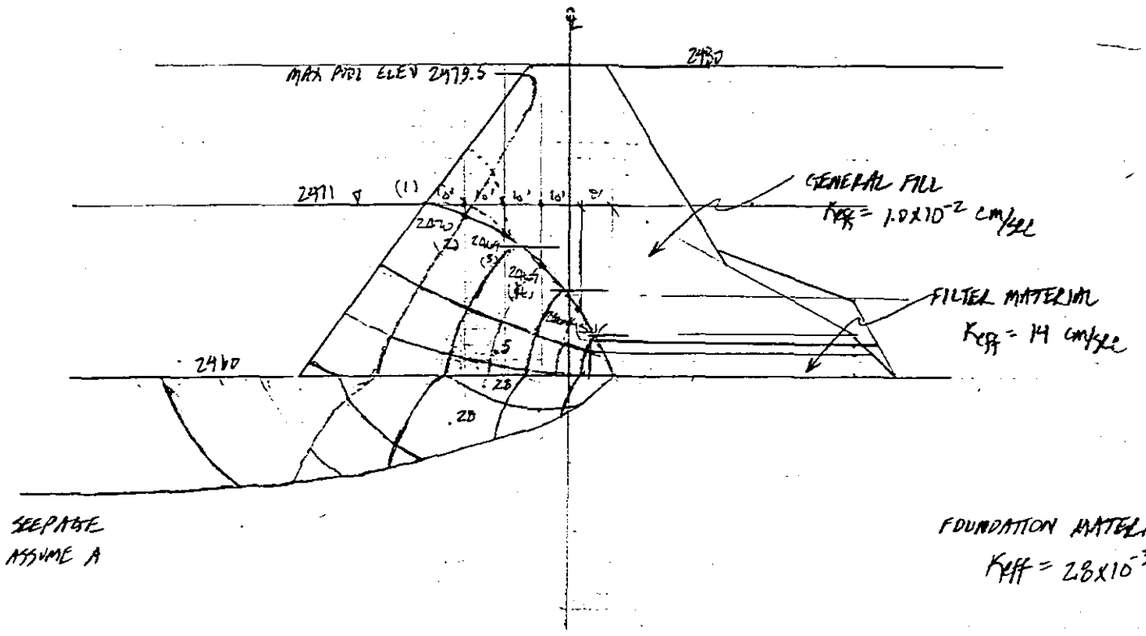
homogeneous earth dams and dams on thick deposits of fine-grained materials, whereas the wedge method is generally more applicable to rock-fill dams on firm foundations and to earth dams on foundations containing one or more weak layers. In addition, the infinite slope method is used to some extent to supplement the circular arc or wedge method. These methods provide a uniform basis for evaluating alternative designs and may be supplemented by other methods or alternative procedures at the discretion of the designer. The use of the modified Swedish method given in Appendix VI is optional. If desired, the forces on the vertical sides of slices may be ignored.

11. Design Conditions for Analysis. An embankment and its foundation are subjected to shear stresses imposed by the weight of the embankment and by pool fluctuations, seepage, or earthquake forces. The cases for which stability analyses shall be performed are designated (I) end of construction, (II) sudden drawdown from maximum pool, (III) sudden drawdown from spillway crest elevation, (IV) partial pool, (V) steady seepage with maximum storage pool, (VI) steady seepage with surcharge pool, and where applicable (VII) earthquake. Cases I and VII apply to both upstream and downstream slopes; Cases II, III, and IV apply to upstream slopes only; and Cases V and VI apply to downstream slopes.

a. Case I: End of Construction. In an embankment composed partially or entirely of impervious soils placed at water contents higher than those corresponding to ultimate water contents after complete consolidation under the imposed loading, pore pressure will be induced because the soil cannot consolidate readily during the construction period. Where this is indicated, applicable shear strengths are determined from Q tests on specimens compacted to anticipated field placement water contents and densities. The Q shear strength is also applicable to impervious foundation layers that are too thick to consolidate significantly during construction. The use of Q shear strengths implies that pore water pressures occurring in laboratory tests satisfactorily approximate field pore water pressures. Except for

CCDPW UPPER FLAMINGO WASH DET BASIN
14225-321

TRANSIENT FLOW NET CONSTRUCTED TO DETERMINE THE FLOWRATE OF SEEPAGE THROUGH THE 28' EMBANKMENT FOR THE TRANSIENT CONDITION OF THE PMF INFLOW HYDROGRAPH AT TIME = 11.7 HRS AND POOL ELEV = 2471. THIS FLOWRATE WILL BE USED TO SIZE THE HORIZONTAL DRAINAGE BLANKET.



DETERMINE LIMIT OF ADVANCEMENT OF THE SEEPAGE WITHIN THE EMBANKMENT FOUNDATION. ASSUME A AVERAGE PERCOLATION GRADIENT OF 1.5.

TIME	POOL EL	INCREMENTAL TIME	SEEPAGE VELOCITY	INCREMENTAL DISTANCE	TOTAL DISTANCE
27 HR	2460'				7.2
3.9	2479.5	7.8	.0133	1.0	6.2
11.7	2471	7.8	.0133	6.2	0

SEEPAGE VELOCITY (VERTICAL)

$$V_{SL} = \frac{Ki}{n}$$
$$= \frac{(2.72\times10^{-3})(1.5)}{0.4}$$
$$= .0133 \text{ ft/min}$$

TRANSFORMED SECTION
$K_{HE} = 16\, K_{VEF}$

FLOWRATE OF SEEPAGE

$$Q = K_{eff}\, h \left(\frac{N_F}{N_A}\right)$$
$$= (1.0\times10^{-2})(11)\left(\frac{1.78}{4}\right) \quad (50\times10^{-2} \text{ ft/min})$$
$$= 0.098 \text{ ft}^3/\text{min} / \text{ft of emb}$$

SEEPAGE IN FLOW CHANNEL IN FDN

$$Q_{FDN} = Q_{EMB}\left(\frac{K_{Fdn}}{K_{emb}}\right)$$
$$= Q_{EMB}\left(\frac{1.0\times10^{-2}}{2.8\times10^{-3}}\right)$$
$$= .28\, Q_{EMB}$$

$$\frac{\tan\beta}{\tan\alpha} = \frac{K_{emb}}{K_{Fdn}} = 3.57$$

$$c/d = \frac{K_{Fdn}}{K_{emb}} = .28$$

DOWNSTREAM SLOPE
DESIGN CASE

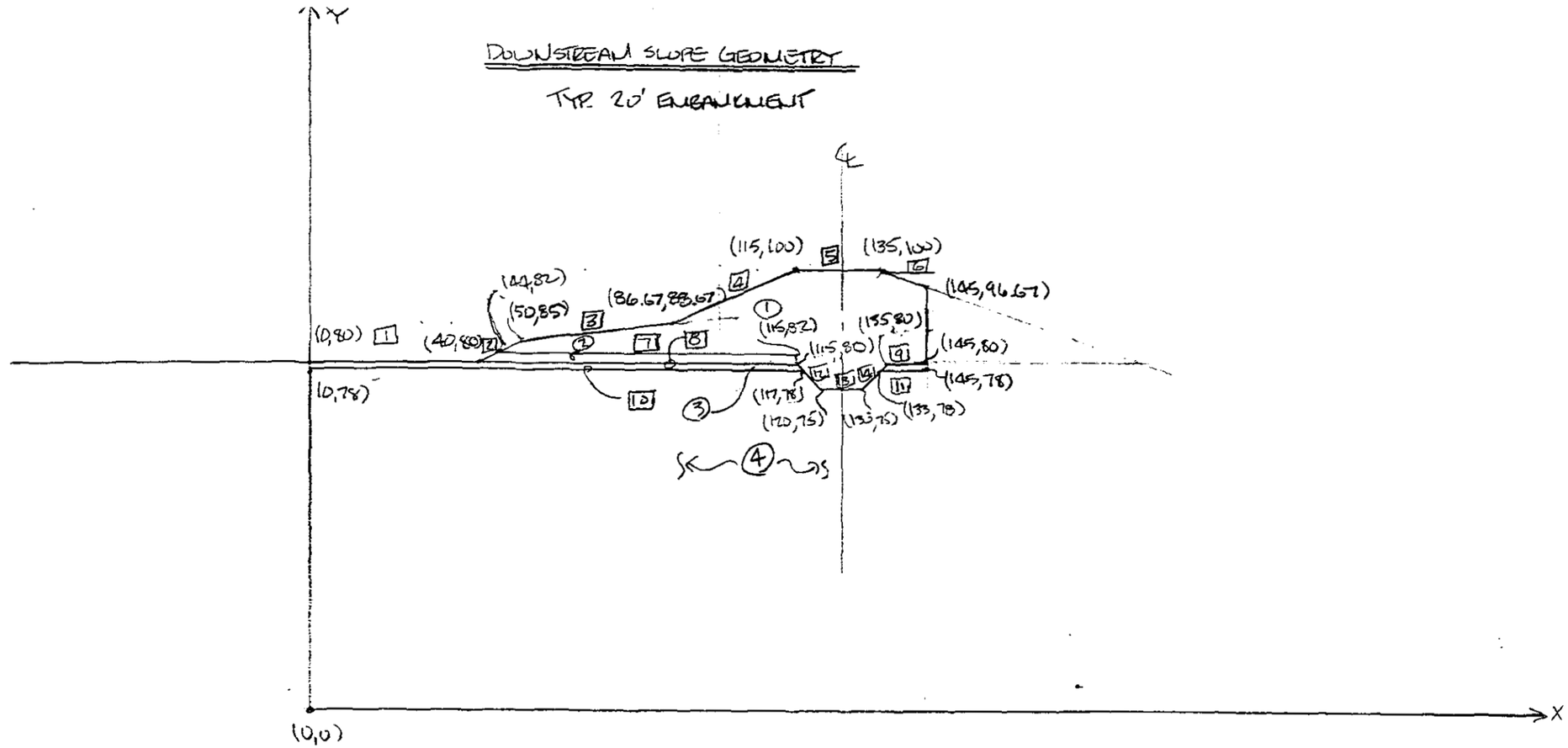
	SOIL PARAMETERS															ANALYSIS PROCEDURE		
	EMBANKMENT								FOUNDATION							CIRCULAR	IRREGULAR	BLOCK
	GENERAL FILL				FILTER				LAYER 1				LAYER 2			BISHOP	JANBU	JANBU
	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	F.S.	F.S.	F.S.
TYPICAL SECTION TRANSIENT SEEPAGE FLOWNET FOR RAP EVENT F.S. REQ'D ≥ 1.5 FILE: DWNSTRM2A.DAT	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.87–2.58		2.64–7.95
	126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.63–2.78		2.60–3.16

NOTES:-

DESIGN CONDITION

DOWNSTREAM SLOPE GEOMETRY

TYP. 20' EMBANKMENT



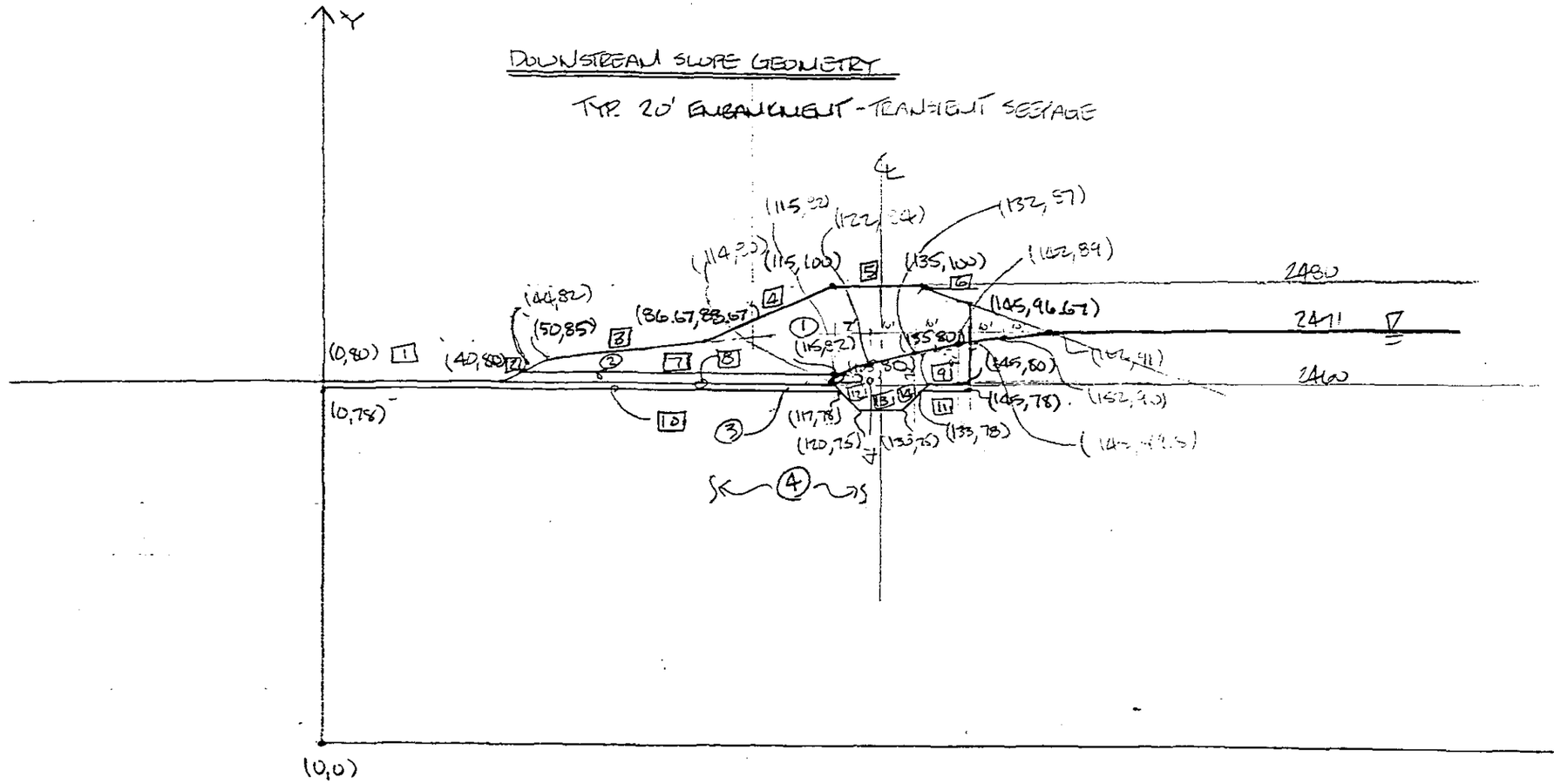
SOIL NUMBER	γ_{MOIST} (lb/ft³)	γ_{SAT} (lb/ft³)	$\bar{c}$ (lb/ft²)	$\bar{\phi}$
① EMBANKMENT				
② DRAINS				
③ FOUNDATION				
④ FOUNDATION				

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 14625
~~SLOPE~~ STABILITY
11/14/83

DESIGN CONDITION

DOWNSTREAM SLOPE GEOMETRY

TYP. 20' EMBANKMENT - TRANSIENT SEEPAGE



SOIL NUMBER	γ_{MOIST} (lb/ft³)	γ_{SAT} (lb/ft³)	$\bar{c}$ (lb/ft²)	$\bar{\phi}$
① EMBANKMENT				
② DRAINS				
③ FOUNDATION				
④ FOUNDATION				

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 14625
SLOPE STABILITY
11/14/83

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY DALLAS DENVER ORLANDO

SUBJECT CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
WORK SLOPE - STABILITY - EARTHQUAKE PARAMETERS

DATE 11/3 1980
SET UP BY PHK
COMPUTED BY
CHECKED BY
PAGE NO. 1 OF 3

PROJECT NO. 14075
FILE NO.

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F-GN-024-A

PURPOSE: Determine earthquake design criteria for the slope stability analysis

REFERENCE:

(1) 1985 EDITION OF UNIFIED BUILDING CODE

(2) "HANDBOOK OF CONCRETE ENGINEERING", FINTEL, 1985

PROCEDURE:

DETERMINE EARTHQUAKE INTENSITY FROM REF #1

ZONE 2, M.M.-VII

DETERMINE PEAK GROUND ACCELERATION FROM REF #2

FOR M.M. VII

a = 0.1 g

(Continued)

percent of the rack-rated capacity. Where the design and rack configurations are in accordance with this paragraph, the design provisions in U.B.C. Standard No. 27-11 do not apply

[3]For flexible and flexibly mounted equipment and machinery, the appropriate values of C_p shall be determined with consideration given to both the dynamic properties of the equipment and machinery and to the building or structure in which it is placed but shall be not less than the listed values. The design of the equipment and machinery and their anchorage is an integral part of the design and specification of such equipment and machinery.

For essential facilities and life safety systems, the design and detailing of equipment which must remain in place and be functional following a major earthquake shall consider drifts in accordance with Section 2312 (k).

[4]Ceiling weight shall include all light fixtures and other equipment which is laterally supported by the ceiling. For purposes of determining the lateral force, a ceiling weight of not less than 4 pounds per square foot shall be used.

[5]The force shall be resisted by positive anchorage and not by friction.

[6]See also Section 2309 (b) for minimum load and deflection criteria for interior partitions.

[7]Does not apply to ceilings constructed of lath and plaster or gypsum board screw or nail attached to suspended members that support a ceiling at one level extending from wall to wall.

[8]W_p for access floor systems shall be the dead load of the access floor system plus 25 percent of the floor live load and a 10 psf partition load.

TABLE NO. 23-K—VALUES FOR OCCUPANCY IMPORTANCE FACTOR I

TYPE OF OCCUPANCY	I
Essential facilities[1]	1.5
Any building where the primary occupancy is for assembly use for more than 300 persons (in one room)	1.25
All others	1.0

[1]See Section 2312 (k) for definition and additional requirements for essential facilities.

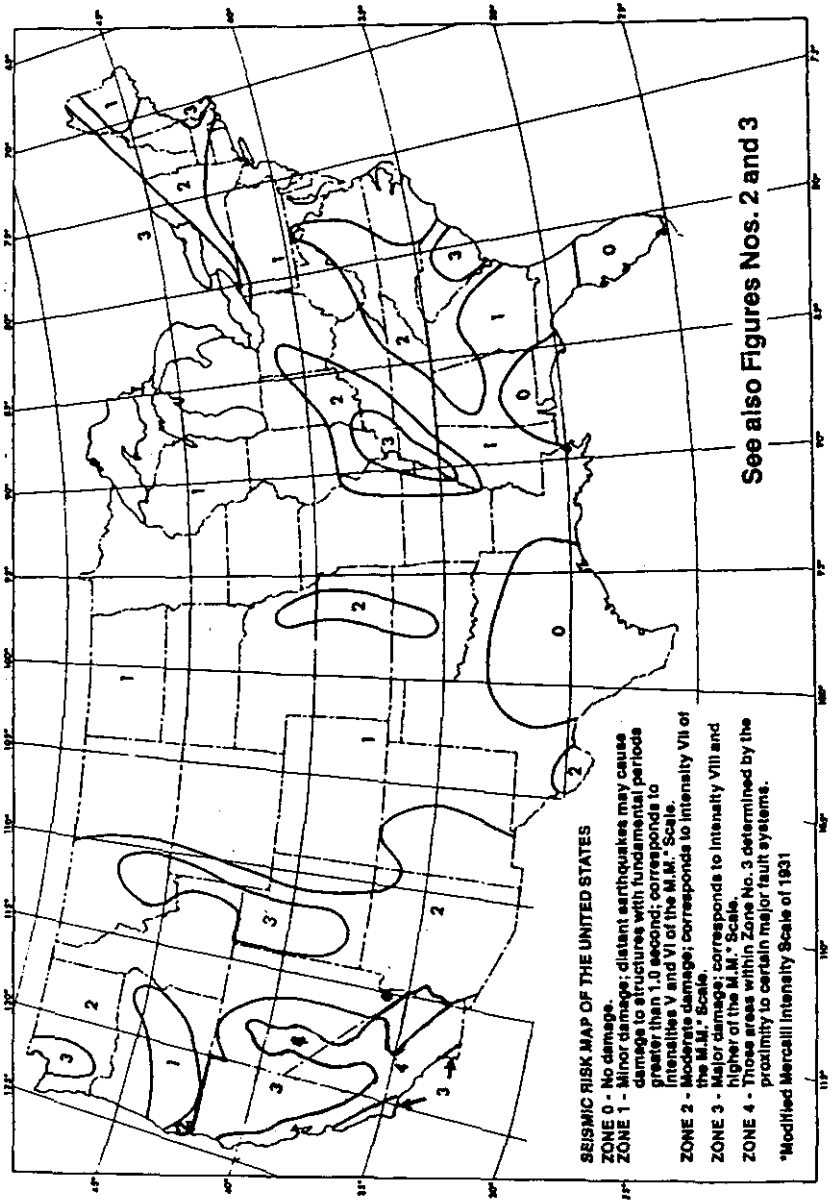
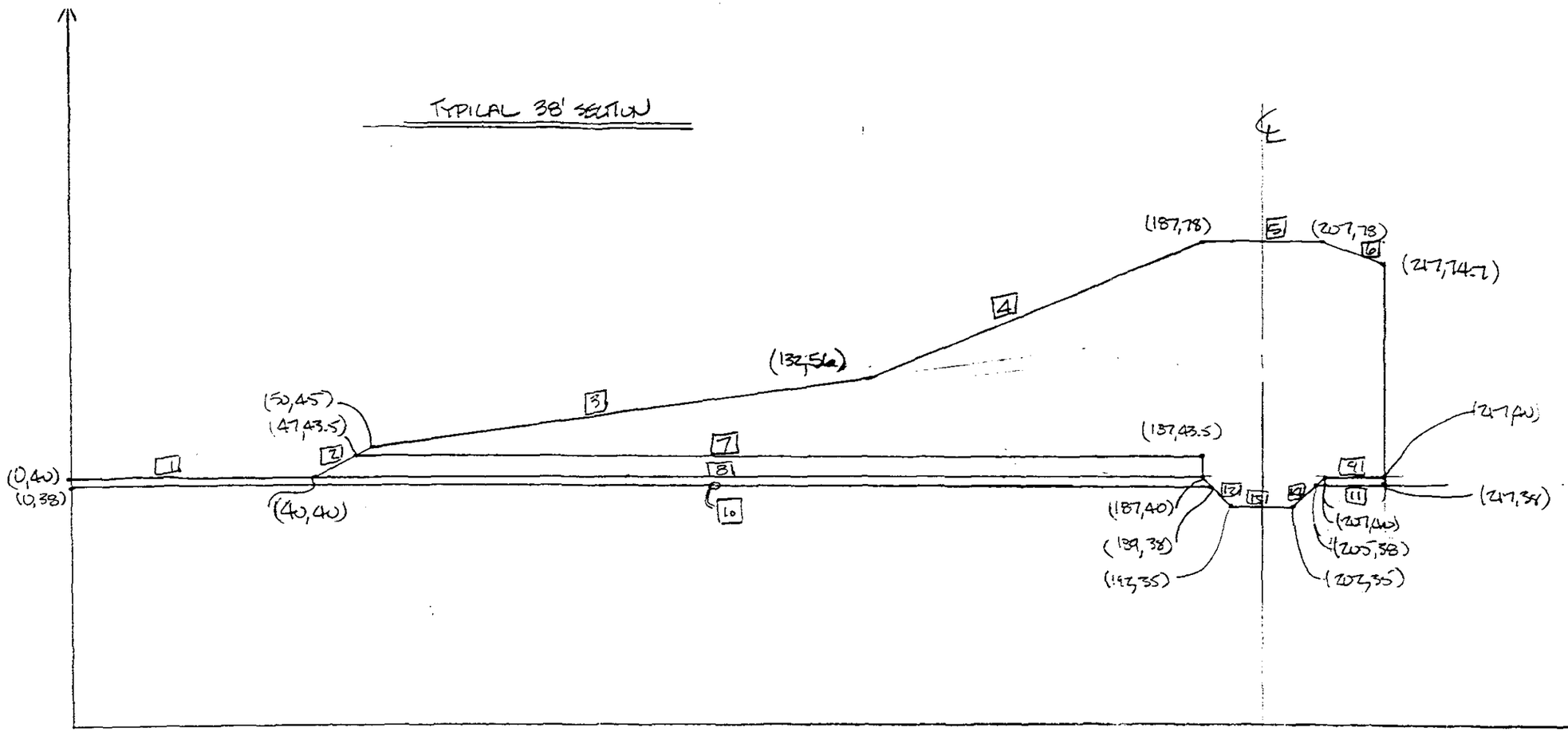


FIGURE NO. 1—SEISMIC ZONE MAP OF THE UNITED STATES
For areas outside of the United States, see Appendix Chapter 23

TABLE 12-1 The Modified Mercalli Intensity Scale and corresponding approximate ground accelerations.[12-8]

	Ground Acceleration a	
	cm/sec	a/g
I - Not felt except by a very few under especially favorable circumstances.		
II - Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.	2	
	3	
III - Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing truck. Duration estimated.	4	
	5	.005g
	6	
IV - During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	7	
	8	
	9	.01g
	10	
V - Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	20	
	30	
VI - Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	40	
	50	.05g
	60	
VII - Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	70	
	80	
	90	
	100	0.1g
VIII - Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.	200	
	300	
IX - Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	400	
	500	0.5g
	600	
X - Some well-built, wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed over banks.	700	
	800	
	900	
	1000	1g
XI - Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	2000	
	3000	
XII - Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.	4000	
	5000	5g
	6000	

TYPICAL 38' SECTION



SOILS

① EMBANKMENT
② BLANKET DRAIN
③ FOUNDATION
④ FOUNDATION

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 14625
DOWNSTREAM SLOPE-STABILITY
12/21/88

DOWNSTREAM SLOPE
DESIGN CASE

	SOIL PARAMETERS																ANALYSIS PROCEDURE		
	EMBANKMENT								FOUNDATION								CIRCULAR	IRREGULAR	BLOCK
	GENERAL FILL				FILTER				LAYER 1				LAYER 2				BISHOP	JANBU	JANBU
	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	F.S.	F.S.	F.S.
3- TYPICAL SECTION EARTHQUAKE-INDUCED SOIL HORT. a = 0.1 g FS RATIO ≥ 1.1 FILE: DWNSTRM3.DAT	126	135	0	36	126	135	0	34	105	115	0	33	125	135	0	36		1.67–2.02	
HORT. a = 0.2 g	126	135	0	36	126	135	0	34	105	115	0	33	125	135	0	36		1.18–1.54	
HORT. a = 0.1 g	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.35–1.79	1.23–1.65	
HORT. a = 0.2 g	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.19–1.31	1.02–1.35	
HORT. a = 0.1 g	126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.25–1.82	1.41–1.73	1.92–3.15
HORT. a = 0.2 g	126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.11–1.35	1.13–1.41	1.44–1.89

NOTES:-

CIRCULAR BOARD

BLOCK SANDER

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	80.00	40.00	80.00	3
2	40.00	80.00	50.00	85.00	1
3	50.00	85.00	86.67	88.67	1
4	86.67	88.67	115.00	100.00	1
5	115.00	100.00	135.00	100.00	1
6	135.00	100.00	145.00	96.67	1
7	44.00	82.00	115.00	82.00	2
8	40.00	80.00	115.00	80.00	3
9	135.00	80.00	145.00	80.00	3
10	0.00	78.00	117.00	78.00	4
11	133.00	78.00	145.00	78.00	4
12	117.00	78.00	120.00	75.00	4
13	120.00	75.00	130.00	75.00	4
14	130.00	75.00	133.00	78.00	4

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	100.00	90.18
3	109.08	94.37
4	113.56	99.42

CIRCLE CENTER AT X = 94.6 , Y = 113.9 AND RADIUS, 24.3

*** 1.439 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	90.00	87.83
3	99.91	89.17
4	109.51	91.98
5	118.57	96.20
6	124.27	100.00

CIRCLE CENTER AT X = 86.1 , Y = 153.9 AND RADIUS, 66.2

*** 1.514 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.68	92.51
3	109.30	95.23
4	118.86	98.16
5	124.41	100.00

CIRCLE CENTER AT X = -18.0 , Y = 527.2 AND RADIUS, 450.4

*** 1.536 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.85	88.29
3	109.72	89.92
4	118.49	94.73
5	123.24	100.00

CIRCLE CENTER AT X = 100.0 , Y = 118.1 AND RADIUS, 29.8

*** 1.763 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.85	88.28
3	109.76	89.64
4	118.77	93.97
5	125.14	100.00

CIRCLE CENTER AT X = 100.4 , Y = 120.6 AND RADIUS, 32.3

*** 1.807 ***

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.82	88.10
3	108.89	92.32
4	112.65	99.06

CIRCLE CENTER AT X = 97.8 , Y = 104.2 AND RADIUS, 16.2

*** 1.847 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.37	84.52
3	99.35	83.88
4	109.10	86.13
5	117.78	91.10
6	124.66	98.35
7	125.50	100.00

CIRCLE CENTER AT X = 96.5 , Y = 118.2 AND RADIUS, 34.4

*** 1.893 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	50.00	85.00
2	59.87	83.42
3	69.86	82.96
4	79.84	83.64
5	89.68	85.45
6	99.24	88.37
7	108.41	92.35
8	117.08	97.35
9	120.66	100.00

CIRCLE CENTER AT X = 68.9 , Y = 170.9 AND RADIUS, 88.0

*** 1.897 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.24	83.17
3	89.13	81.72
4	99.08	82.74
5	108.47	86.17
6	116.74	91.80
7	123.37	99.29
8	123.74	100.00

CIRCLE CENTER AT X = 90.0 , Y = 122.2 AND RADIUS, 40.5

*** 1.911 ***

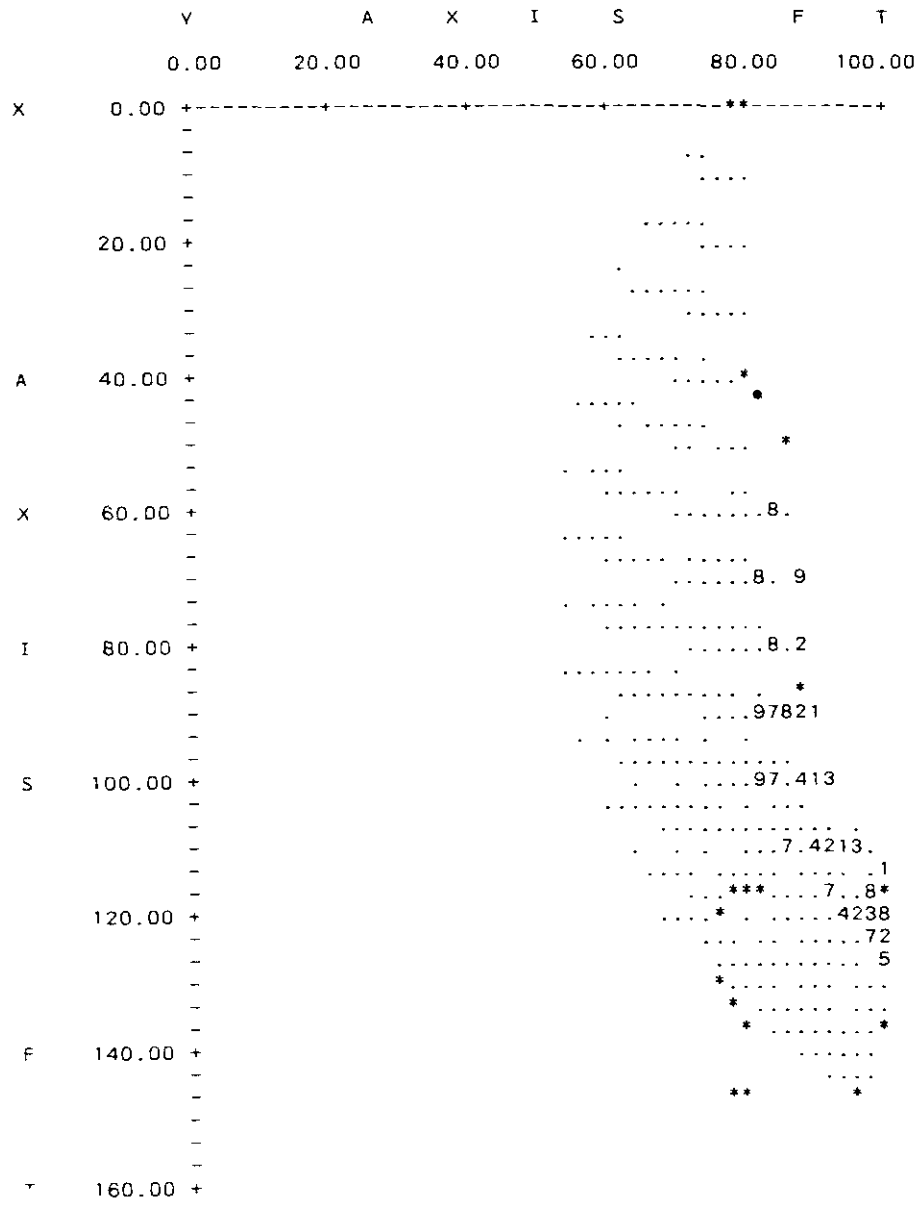
FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.19	83.06
3	89.08	81.56
4	99.02	82.61
5	108.38	86.13
6	116.55	91.91
7	122.99	99.55
8	123.20	100.00

CIRCLE CENTER AT X = 90.0 , Y = 120.8 AND RADIUS, 39.3

*** 1.916 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OFO.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OFO.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.66	92.58
3	109.32	95.17
4	118.98	97.78
5	127.16	100.00

CIRCLE CENTER AT X = ****** , Y = 6359.0 AND RADIUS, 6486.8

*** 1.260 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	90.00	87.95
3	99.94	89.01
4	109.71	91.17
5	119.17	94.40
6	128.22	98.66
7	130.39	100.00

CIRCLE CENTER AT X = 85.5 , Y = 177.7 AND RADIUS, 89.8

*** 1.297 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.84	84.20
3	79.83	84.00
4	89.73	85.42
5	99.27	88.41
6	108.21	92.91
7	116.30	98.78
8	117.51	100.00

CIRCLE CENTER AT X = 76.0 , Y = 145.7 AND RADIUS, 61.8

*** 1.375 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	40.00	80.00
2	49.94	81.12
3	59.83	82.56
4	69.68	84.32
5	79.46	86.39
6	89.17	88.78
7	98.80	91.48
8	108.34	94.48
9	117.77	97.80
10	123.46	100.00

CIRCLE CENTER AT X = 10.1 , Y = 389.3 AND RADIUS, 310.8

*** 1.383 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	40.00	80.00
2	49.91	78.64
3	59.90	78.17
4	69.89	78.60
5	79.80	79.93
6	89.55	82.14
7	99.06	85.22
8	108.26	89.15
9	117.07	93.88
10	125.41	99.39
11	126.18	100.00

CIRCLE CENTER AT X = 60.1 , Y = 189.3 AND RADIUS, 111.1

*** 1.407 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.77	83.88
3	79.75	83.14
4	89.72	83.80
5	99.51	85.85
6	108.92	89.24
7	117.76	93.91
8	125.87	99.77
9	126.11	100.00

CIRCLE CENTER AT X = 80.0 , Y = 154.6 AND RADIUS, 71.5

*** 1.407 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.99	85.45
3	79.95	86.25
4	89.72	88.38
5	99.12	91.80
6	107.97	96.45
7	110.36	98.14

CIRCLE CENTER AT X = 69.1 , Y = 159.8 AND RADIUS, 74.4

*** 1.416 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	40.00	80.00
2	49.99	79.53
3	59.99	79.64
4	69.97	80.32
5	79.89	81.59
6	89.72	83.42
7	99.42	85.82
8	108.98	88.77
9	118.34	92.28
10	127.49	96.31
11	134.69	100.00

CIRCLE CENTER AT X = 53.1 , Y = 252.4 AND RADIUS, 172.9

*** 1.427 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	40.00	80.00
2	49.95	78.99
3	59.94	78.67
4	69.94	79.04
5	79.88	80.10
6	89.73	81.85
7	99.43	84.27
8	108.94	87.35
9	118.22	91.08
10	127.22	95.44
11	135.12	99.96

CIRCLE CENTER AT X = 59.6 , Y = 223.6 AND RADIUS, 144.9

*** 1.430 ***

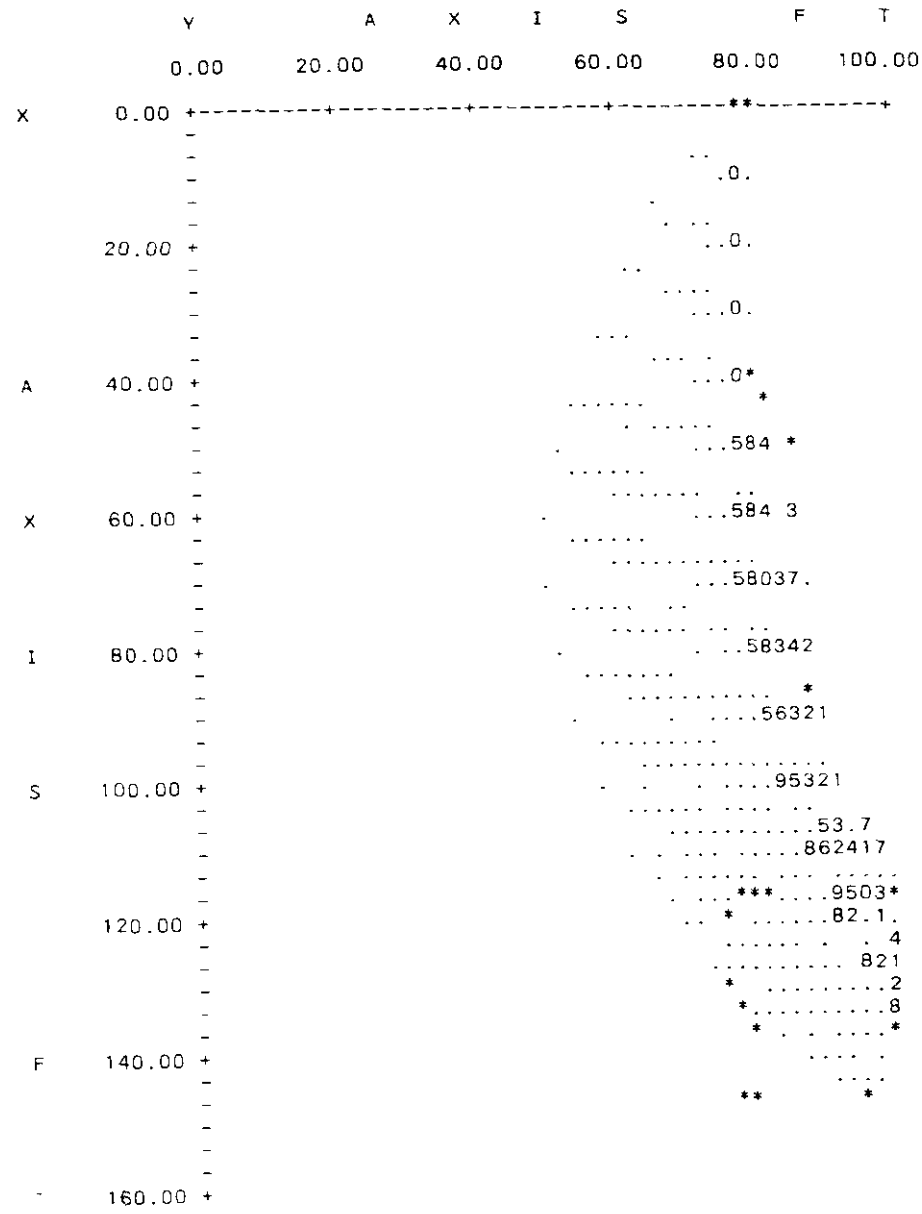
FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	80.00
2	9.94	78.90
3	19.92	78.24
4	29.92	78.02
5	39.91	78.24
6	49.89	78.90
7	59.83	80.00
8	69.71	81.54
9	79.51	83.51
10	89.22	85.91
11	98.81	88.74
12	108.27	91.99
13	117.58	95.65
14	126.71	99.72
15	127.26	100.00

CIRCLE CENTER AT X = 29.9 , Y = 304.7 AND RADIUS, 226.6

*** 1.439 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.93	85.78
3	89.92	86.21
4	99.70	88.26
5	109.03	91.88
6	117.63	96.98
7	121.23	100.00

CIRCLE CENTER AT X = 82.4 , Y = 146.7 AND RADIUS, 61.0

*** 1.573 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.82	86.11
3	99.81	86.50
4	109.46	89.14
5	118.25	93.91
6	125.12	100.00

CIRCLE CENTER AT X = 93.1 , Y = 129.8 AND RADIUS, 43.8

*** 1.667 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	100.00	89.72
3	109.84	91.50
4	119.10	95.27
5	126.12	100.00

CIRCLE CENTER AT X = 96.4 , Y = 137.9 AND RADIUS, 48.4

*** 1.676 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.95	85.95
3	89.94	86.16
4	99.84	87.62
5	109.47	90.31
6	118.68	94.20
7	127.34	99.21
8	128.38	100.00

CIRCLE CENTER AT X = 83.3 , Y = 165.3 AND RADIUS, 79.4

*** 1.690 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.81	85.08
3	89.80	84.58
4	99.76	85.51
5	109.48	87.84
6	118.77	91.54
7	127.45	96.52
8	131.89	100.00

CIRCLE CENTER AT X = 88.3 , Y = 154.6 AND RADIUS, 70.0

*** 1.837 ***

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.82	88.13
3	108.72	92.70
4	111.42	98.57

CIRCLE CENTER AT X = 97.6 , Y = 103.3 AND RADIUS, 15.3

*** 1.889 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.40	82.60
3	79.27	80.99
4	89.27	81.25
5	99.05	83.35
6	108.27	87.22
7	116.61	92.73
8	123.79	99.70
9	124.00	100.00

CIRCLE CENTER AT X = 82.9 , Y = 134.6 AND RADIUS, 53.8

*** 1.916 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.94	91.14
3	109.82	92.66
4	119.64	94.55
5	129.38	96.81
6	137.74	99.09

CIRCLE CENTER AT X = 64.8 , Y = 352.8 AND RADIUS, 264.0

*** 2.096 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.10	82.86
3	89.08	82.21
4	98.64	85.15
5	106.53	91.30
6	110.80	98.32

CIRCLE CENTER AT X = 85.8 , Y = 109.7 AND RADIUS, 27.7

*** 2.103 ***

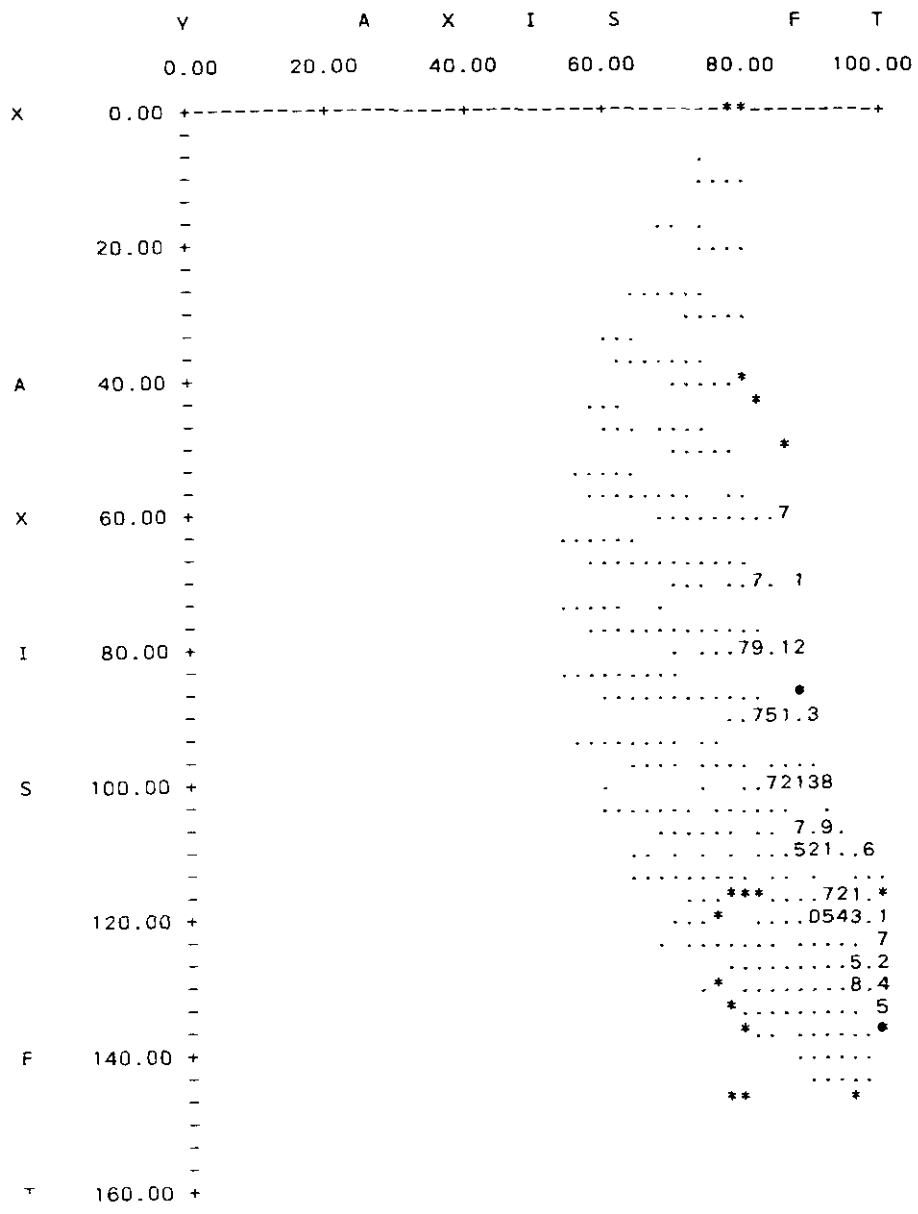
FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.59	87.15
3	109.59	87.19
4	119.15	90.11
5	127.46	95.67
6	131.02	100.00

CIRCLE CENTER AT X = 104.5 , Y = 121.1 AND RADIUS, 34.3

*** 2.174 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

• • * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.84	86.24
3	99.78	87.41
4	108.94	91.41
5	116.55	97.89
6	117.91	100.00

CIRCLE CENTER AT X = 90.9 , Y = 120.3 AND RADIUS, 34.1

*** 1.226 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.99	89.50
3	109.68	91.98
4	118.20	97.21
5	120.64	100.00

CIRCLE CENTER AT X = 96.7 , Y = 122.7 AND RADIUS, 33.4

*** 1.231 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	79.92	85.72
3	89.91	86.12
4	99.70	88.19
5	109.00	91.86
6	117.55	97.03
7	120.99	100.00

CIRCLE CENTER AT X = 82.5 , Y = 145.3 AND RADIUS, 59.6

*** 1.239 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.87	91.59
3	109.61	93.87
4	119.17	96.82
5	127.38	100.00

CIRCLE CENTER AT X = 72.1 , Y = 232.2 AND RADIUS, 143.3

*** 1.253 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.00	87.00
2	80.00	86.92
3	89.98	87.58
4	99.88	88.97
5	109.65	91.09
6	119.25	93.92
7	128.60	97.45
8	134.09	100.00

CIRCLE CENTER AT X = 76.1 , Y = 222.4 AND RADIUS, 135.6

*** 1.359 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.84	91.79
3	109.63	93.82
4	119.37	96.10
5	129.04	98.62
6	133.84	100.00

CIRCLE CENTER AT X = 23.9 , Y = 482.3 AND RADIUS, 397.8

*** 1.392 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.85	88.29
3	109.76	89.66
4	118.78	93.98
5	125.15	100.00

CIRCLE CENTER AT X = 100.4 , Y = 120.7 AND RADIUS, 32.4

*** 1.419 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	50.00	85.00
2	59.97	84.23
3	69.97	84.14
4	79.95	84.73
5	89.87	86.00
6	99.68	87.94
7	109.34	90.54
8	118.79	93.80
9	128.00	97.69
10	132.57	100.00

CIRCLE CENTER AT X = 66.3 , Y = 230.8 AND RADIUS, 146.8

*** 1.431 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	40.00	80.00
2	49.94	81.08
3	59.86	82.38
4	69.74	83.89
5	79.59	85.61
6	89.40	87.55
7	99.17	89.69
8	108.89	92.04
9	118.56	94.60
10	128.17	97.37
11	135.78	99.74

CIRCLE CENTER AT X = -5.5 , Y = 543.3 AND RADIUS, 465.6

*** 1.444 ***

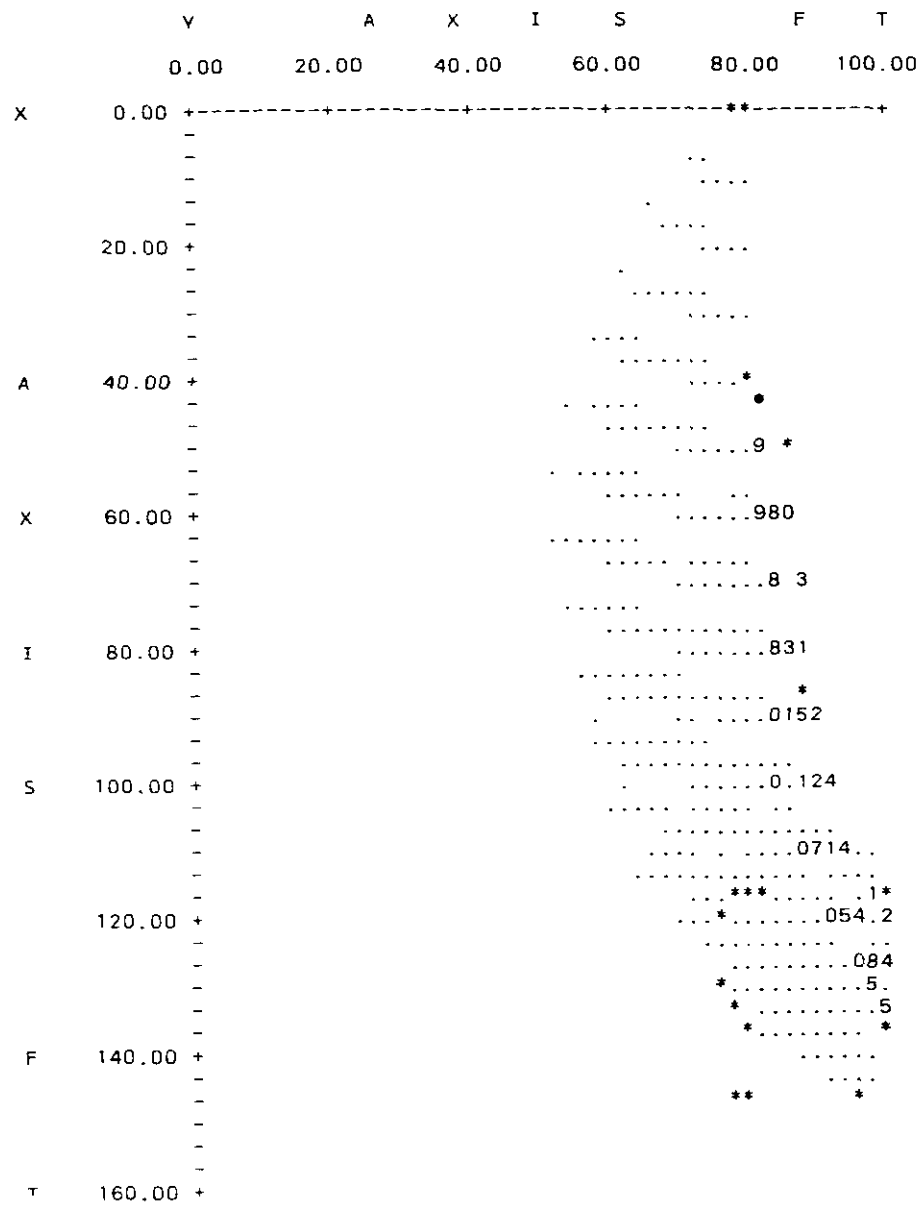
FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.79	83.94
3	79.75	83.05
4	89.74	83.34
5	99.63	84.81
6	109.28	87.43
7	118.55	91.18
8	127.32	96.00
9	132.92	100.00

CIRCLE CENTER AT X = 82.3 , Y = 167.5 AND RADIUS, 84.5

*** 1.465 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	40.00	40.00	3
2	40.00	40.00	50.00	45.00	2
3	50.00	45.00	132.00	56.00	1
4	132.00	56.00	187.00	78.00	1
5	187.00	78.00	207.00	78.00	1
6	207.00	78.00	217.00	74.70	1
7	47.00	43.50	187.00	43.50	2
8	40.00	40.00	187.00	40.00	3
9	207.00	40.00	217.00	40.00	3
10	0.00	38.00	189.00	38.00	4
11	205.00	38.00	217.00	38.00	4
12	189.00	38.00	192.00	35.00	4
13	192.00	35.00	202.00	35.00	4
14	202.00	35.00	205.00	38.00	4

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	59.38
3	159.69	61.85
4	168.55	66.49
5	176.10	73.05
6	176.70	73.88

CIRCLE CENTER AT X = 144.2 , Y = 102.1 AND RADIUS, 43.1

*** 1.348 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.68	61.71
3	159.33	64.33
4	168.95	67.07
5	178.53	69.92
6	188.08	72.89
7	197.60	75.97
8	203.61	78.00

CIRCLE CENTER AT X = -64.2 , Y = 867.8 AND RADIUS, 834.0

*** 1.513 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.49
3	159.84	57.89
4	169.52	60.41
5	178.45	64.91
6	186.22	71.20
7	191.69	78.00

CIRCLE CENTER AT X = 152.9 , Y = 104.4 AND RADIUS, 47.0

*** 1.515 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.48
3	159.85	57.74
4	169.59	59.98
5	178.70	64.11
6	186.80	69.97
7	193.59	77.32
8	194.00	78.00

CIRCLE CENTER AT X = 153.5 , Y = 107.5 AND RADIUS, 50.1

*** 1.534 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.82	57.30
3	159.67	59.03
4	168.25	64.16
5	174.45	72.01
6	174.79	73.12

CIRCLE CENTER AT X = 150.1 , Y = 84.9 AND RADIUS, 27.6

*** 1.595 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.04	52.16
3	143.94	50.80
4	153.94	50.94
5	163.81	52.58
6	173.31	55.68
7	182.25	60.17
8	190.41	65.95
9	197.61	72.89
10	201.52	78.00

CIRCLE CENTER AT X = 148.0 , Y = 117.2 AND RADIUS, 66.5

*** 1.663 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.22	46.64
2	72.22	46.64
3	82.22	46.96
4	92.20	47.58
5	102.15	48.51
6	112.08	49.75
7	121.96	51.30
8	131.78	53.15
9	141.55	55.31
10	151.24	57.76
11	160.86	60.52
12	170.38	63.57
13	179.80	66.92
14	189.12	70.55
15	198.32	74.47
16	205.93	78.00

CIRCLE CENTER AT X = 67.1 , Y = 369.6 AND RADIUS, 323.0

*** 1.694 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.27	49.42
3	128.12	47.73
4	138.12	47.89
5	147.92	49.89
6	157.18	53.66
7	165.59	59.08
8	172.85	65.95
9	178.72	74.05
10	179.09	74.84

CIRCLE CENTER AT X = 132.3 , Y = 101.6 AND RADIUS, 54.0

*** 1.740 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.74	47.41
3	112.47	45.13
4	122.41	43.99
5	132.41	44.03
6	142.34	45.22
7	152.06	47.57
8	161.44	51.04
9	170.35	55.58
10	178.67	61.12
11	186.29	67.60
12	193.10	74.92
13	195.36	78.00

CIRCLE CENTER AT X = 127.1 , Y = 129.5 AND RADIUS, 85.6

*** 1.776 ***

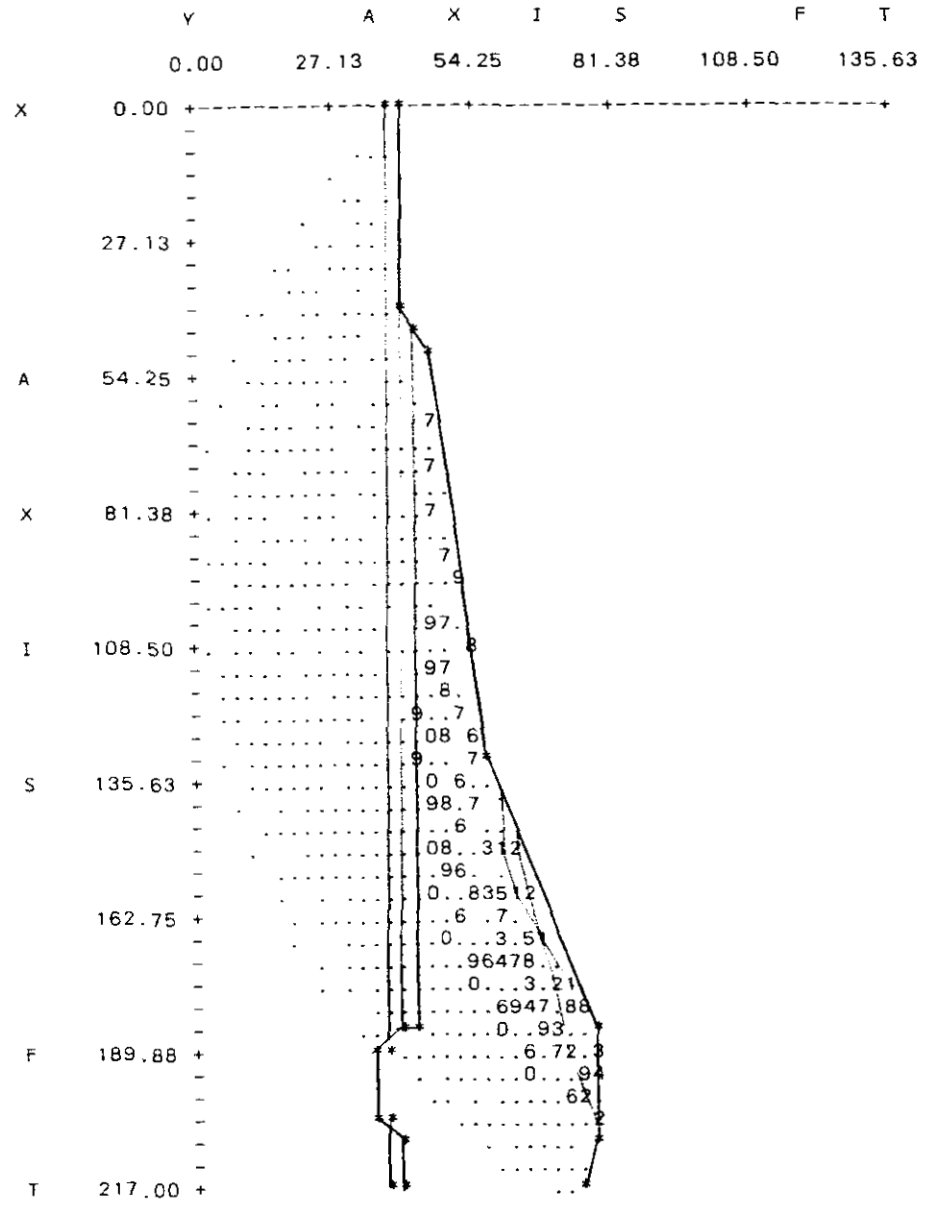
FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.16	49.15
3	127.85	46.67
4	137.78	45.49
5	147.78	45.64
6	157.67	47.12
7	167.27	49.90
8	176.42	53.94
9	184.96	59.15
10	192.72	65.45
11	199.58	72.72
12	203.37	78.00

CIRCLE CENTER AT X = 141.6 , Y = 120.5 AND RADIUS, 75.1

*** 1.792 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.79	51.53
3	128.79	51.11
4	138.77	51.65
5	148.66	53.14
6	158.36	55.57
7	167.78	58.92
8	176.84	63.15
9	185.46	68.23
10	193.55	74.11
11	197.94	78.00

CIRCLE CENTER AT X = 128.1 , Y = 155.6 AND RADIUS, 104.5

*** 1.189 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.13	52.51
3	144.12	51.92
4	154.03	53.26
5	163.50	56.47
6	172.18	61.44
7	179.75	67.97
8	185.93	75.83
9	187.04	78.00

CIRCLE CENTER AT X = 142.1 , Y = 103.9 AND RADIUS, 52.0

*** 1.231 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.66	61.78
3	159.32	64.37
4	168.98	66.97
5	178.63	69.58
6	188.28	72.21
7	197.92	74.85
8	207.57	77.50
9	208.08	77.64

CIRCLE CENTER AT X = ****** , Y = 7607.4 AND RADIUS, 7810.8

*** 1.254 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.80	51.58
3	128.79	51.04
4	138.78	51.28
5	148.73	52.32
6	158.57	54.12
7	168.23	56.70
8	177.66	60.03
9	186.80	64.08
10	195.59	68.85
11	203.98	74.29
12	208.28	77.58

CIRCLE CENTER AT X = 130.7 , Y = 178.2 AND RADIUS, 127.2

*** 1.263 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.90	57.78
3	159.58	60.29
4	167.55	66.32
5	170.52	71.41

CIRCLE CENTER AT X = 148.5 , Y = 83.2 AND RADIUS, 25.5

*** 1.269 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.80	57.23
3	159.80	57.15
4	169.64	58.98
5	178.95	62.63
6	187.39	67.98
7	194.67	74.84
8	196.95	78.00

CIRCLE CENTER AT X = 155.2 , Y = 109.4 AND RADIUS, 52.5

*** 1.280 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.21	49.26
3	113.20	48.70
4	123.19	49.14
5	133.08	50.59
6	142.78	53.01
7	152.19	56.40
8	161.22	60.70
9	169.77	65.89
10	177.75	71.91
11	182.30	76.12

CIRCLE CENTER AT X = 113.8 , Y = 148.5 AND RADIUS, 99.8

*** 1.287 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.33	50.57
3	113.32	51.13
4	123.23	52.47
5	133.00	54.59
6	142.57	57.48
7	151.88	61.12
8	160.88	65.49
9	169.50	70.55
10	171.00	71.60

CIRCLE CENTER AT X = 101.4 , Y = 176.7 AND RADIUS, 126.1

*** 1.296 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	48.73
2	87.77	48.31
3	97.77	48.29
4	107.76	48.67
5	117.73	49.45
6	127.66	50.63
7	137.54	52.21
8	147.34	54.18
9	157.06	56.54
10	166.67	59.28
11	176.17	62.41
12	185.54	65.92
13	194.75	69.80
14	203.81	74.05
15	209.71	77.11

CIRCLE CENTER AT X = 93.2 , Y = 298.1 AND RADIUS, 249.8

*** 1.299 ***

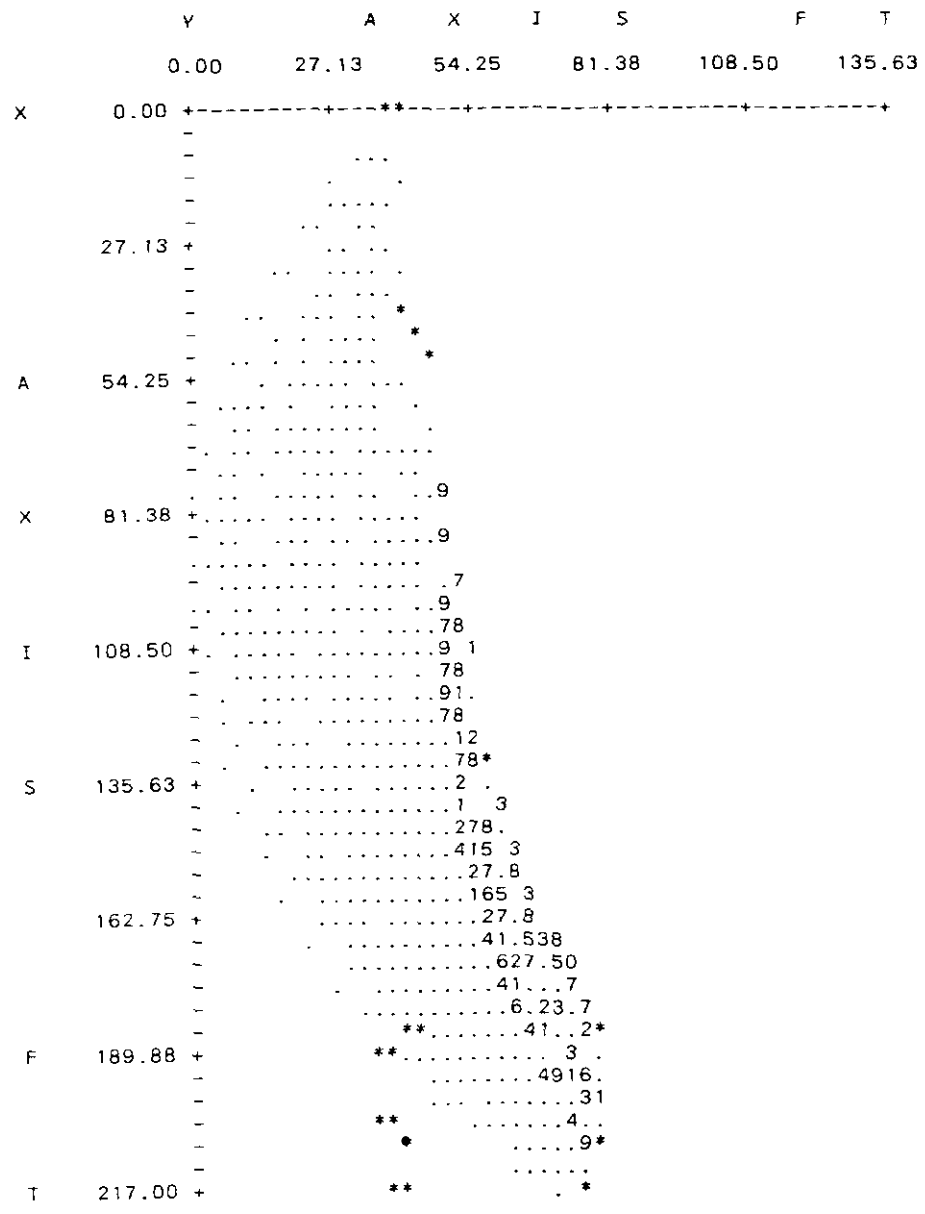
FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.82	57.30
3	159.62	59.29
4	167.91	64.87
5	172.88	72.35

CIRCLE CENTER AT X = 149.7 , Y = 83.0 AND RADIUS, 25.7

*** 1.313 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.84	61.01
3	159.24	64.40
4	167.97	69.29
5	170.69	71.48

CIRCLE CENTER AT X = 134.0 , Y = 119.7 AND RADIUS, 60.8

*** 1.251 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	58.92
3	159.94	59.99
4	169.65	62.39
5	178.94	66.09
6	187.65	71.00
7	195.61	77.05
8	196.57	78.00

CIRCLE CENTER AT X = 147.1 , Y = 132.7 AND RADIUS, 73.9

*** 1.442 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.21	49.25
3	113.18	48.47
4	123.18	48.47
5	133.15	49.26
6	143.02	50.83
7	152.75	53.18
8	162.25	56.28
9	171.48	60.12
10	180.39	64.68
11	188.90	69.92
12	196.98	75.82
13	199.53	78.00

CIRCLE CENTER AT X = 118.1 , Y = 175.4 AND RADIUS, 127.0

*** 1.602 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.94	60.34
3	159.81	61.89
4	169.62	63.85
5	179.34	66.21
6	188.95	68.97
7	198.44	72.13
8	207.79	75.67
9	210.52	76.84

CIRCLE CENTER AT X = 117.3 , Y = 300.3 AND RADIUS, 242.2

*** 1.695 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.89	52.91
3	128.88	53.34
4	138.85	54.17
5	148.77	55.40
6	158.63	57.05
7	168.42	59.09
8	178.12	61.54
9	187.71	64.38
10	197.17	67.61
11	206.49	71.22
12	215.57	75.17

CIRCLE CENTER AT X = 113.6 , Y = 297.1 AND RADIUS, 244.3

*** 1.751 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.80	47.58
3	112.58	45.51
4	122.54	44.63
5	132.54	44.96
6	142.42	46.47
7	152.05	49.17
8	161.29	53.00
9	170.00	57.91
10	178.06	63.84
11	185.34	70.69
12	191.46	78.00

CIRCLE CENTER AT X = 124.9 , Y = 127.7 AND RADIUS, 83.1

*** 1.757 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.64	51.07
3	143.57	49.84
4	153.45	51.42
5	162.50	55.66
6	170.03	62.24
7	175.45	70.64
8	176.39	73.75

CIRCLE CENTER AT X = 142.9 , Y = 85.6 AND RADIUS, 35.8

*** 1.765 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	48.73
2	87.78	48.62
3	97.78	48.81
4	107.76	49.31
5	117.73	50.09
6	127.67	51.18
7	137.58	52.56
8	147.44	54.23
9	157.24	56.20
10	166.98	58.46
11	176.65	61.01
12	186.24	63.84
13	195.74	66.96
14	205.15	70.36
15	214.45	74.04
16	216.42	74.89

CIRCLE CENTER AT X = 86.3 , Y = 384.4 AND RADIUS, 335.8

*** 1.821 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.79	48.34
3	127.35	45.42
4	137.28	44.21
5	147.27	44.77
6	157.00	47.06
7	166.18	51.02
8	174.53	56.53
9	181.78	63.42
10	187.71	71.47
11	190.94	78.00

CIRCLE CENTER AT X = 139.1 , Y = 101.0 AND RADIUS, 56.9

*** 1.854 ***

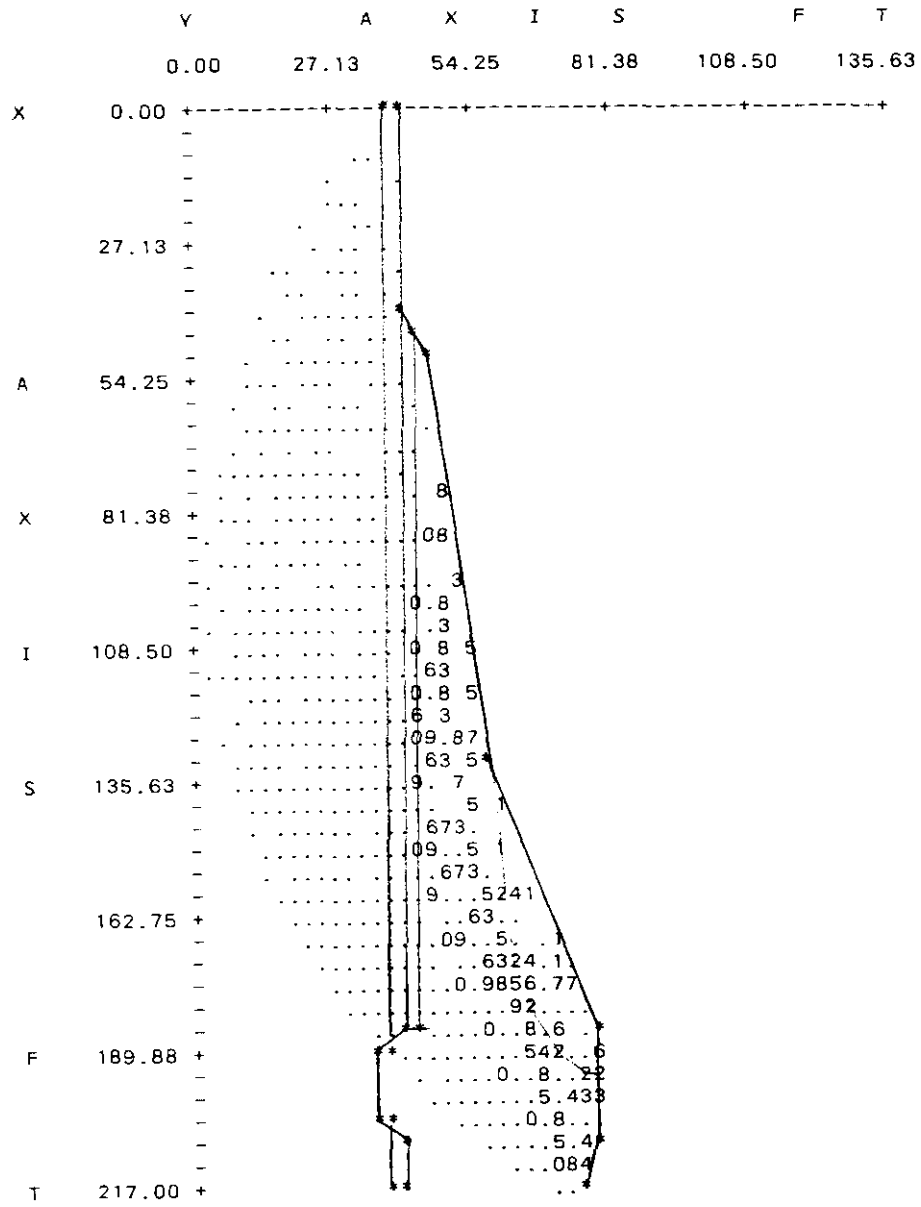
FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	48.73
2	87.43	46.10
3	97.23	44.12
4	107.14	42.80
5	117.12	42.15
6	127.12	42.17
7	137.10	42.85
8	147.01	44.20
9	156.80	46.21
10	166.44	48.87
11	175.88	52.17
12	185.08	56.09
13	194.00	60.62
14	202.59	65.73
15	210.83	71.40
16	215.58	75.17

CIRCLE CENTER AT X = 121.9 , Y = 191.6 AND RADIUS, 149.6

*** 1.883 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

>>>>> WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN STARTED.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	91.88	50.62
2	95.98	48.35
3	104.72	43.50
4	105.05	43.31
5	176.70	41.60
6	177.79	43.50
7	182.64	52.25
8	187.49	60.99
9	192.34	69.74
10	196.92	78.00

*** 1.917 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	69.09	47.56
2	76.42	43.50
3	76.87	43.24
4	178.45	42.61
5	178.96	43.50
6	183.81	52.25
7	188.66	60.99
8	193.51	69.74
9	198.08	78.00

*** 1.917 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	83.66	49.52
2	85.77	48.35
3	94.51	43.50
4	95.29	43.05
5	166.66	41.84
6	167.62	43.50
7	172.47	52.25
8	177.31	60.99
9	182.16	69.74
10	186.67	77.87

*** 1.920 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	72.82	48.06
2	81.05	43.50
3	85.74	40.79
4	176.94	40.95
5	178.41	43.50
6	183.26	52.25
7	188.11	60.99
8	192.95	69.74
9	197.53	78.00

*** 1.940 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	96.89	51.29
2	102.19	48.35
3	110.94	43.50
4	116.53	40.27
5	184.50	42.76
6	184.93	43.50
7	189.78	52.25
8	194.62	60.99
9	199.47	69.74
10	204.05	78.00

*** 1.973 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.27	47.72
2	77.88	43.50
3	83.70	40.14
4	184.11	42.02
5	184.97	43.50
6	189.82	52.25
7	194.66	60.99
8	199.51	69.74
9	204.09	78.00

*** 1.996 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	95.58	51.12
2	100.58	48.35
3	109.32	43.50
4	111.86	42.04
5	153.22	40.59
6	154.91	43.50
7	159.75	52.25
8	164.60	60.99
9	169.45	69.74
10	170.33	71.33

*** 2.127 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	86.65	49.92
2	89.48	48.35
3	98.23	43.50
4	99.39	42.83
5	145.77	40.39
6	147.57	43.50
7	152.42	52.25
8	157.27	60.99
9	160.91	67.56

*** 2.291 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	65.66	47.10
2	72.15	43.50
3	75.04	41.83
4	135.72	42.80
5	136.12	43.50
6	140.97	52.25
7	145.82	60.99
8	146.20	61.68

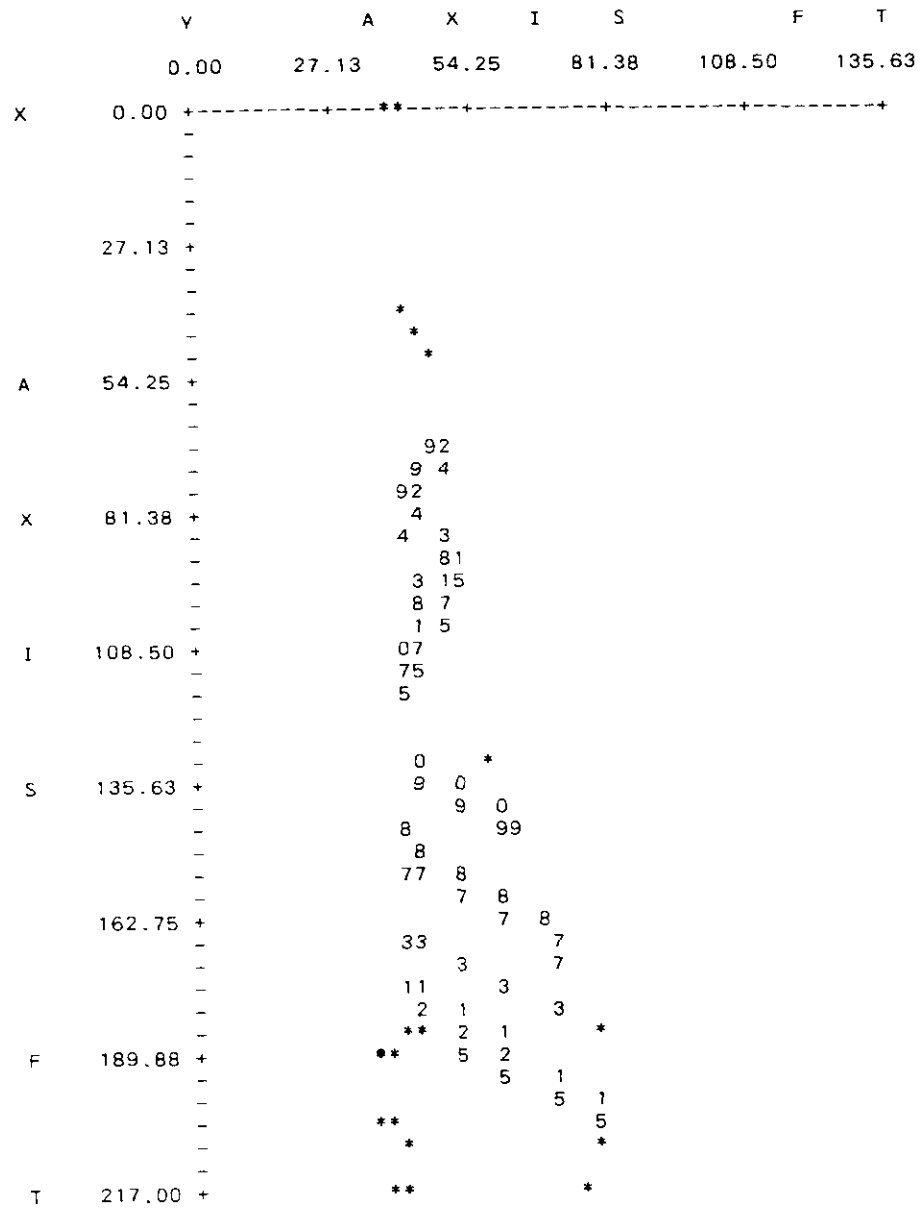
*** 2.570 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	91.69	50.59
2	95.74	48.35
3	104.49	43.50
4	107.06	42.02
5	131.03	42.14
6	131.82	43.50
7	136.67	52.25
8	140.67	59.47

*** 3.147 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	58.70
3	159.90	60.03
4	169.40	63.15
5	178.17	67.95
6	185.92	74.27
7	189.07	78.00

CIRCLE CENTER AT X = 147.7 , Y = 113.1 AND RADIUS, 54.5

*** 1.113 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.84	51.90
3	128.84	51.94
4	138.78	53.02
5	148.56	55.13
6	158.06	58.24
7	167.18	62.33
8	175.83	67.35
9	183.91	73.24
10	189.18	78.00

CIRCLE CENTER AT X = 123.5 , Y = 147.7 AND RADIUS, 95.9

*** 1.137 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.78	51.39
3	128.77	51.10
4	138.73	52.01
5	148.50	54.14
6	157.94	57.43
7	166.92	61.84
8	175.29	67.31
9	182.93	73.76
10	186.80	77.92

CIRCLE CENTER AT X = 126.2 , Y = 133.3 AND RADIUS, 82.2

*** 1.177 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.43	54.42
3	144.42	54.73
4	154.35	55.91
5	164.14	57.95
6	173.72	60.84
7	183.00	64.56
8	191.93	69.07
9	200.42	74.34
10	205.30	78.00

CIRCLE CENTER AT X = 135.9 , Y = 168.8 AND RADIUS, 114.4

*** 1.200 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.49
3	159.85	57.76
4	169.59	60.00
5	178.70	64.13
6	186.81	69.98
7	193.61	77.31
8	194.02	78.00

CIRCLE CENTER AT X = 153.5 , Y = 107.6 AND RADIUS, 50.3

*** 1.233 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.24	49.42
3	113.23	48.97
4	123.21	49.49
5	133.10	50.95
6	142.81	53.36
7	152.24	56.68
8	161.32	60.88
9	169.94	65.94
10	178.05	71.80
11	183.52	76.61

CIRCLE CENTER AT X = 112.9 , Y = 153.5 AND RADIUS, 104.5

*** 1.270 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	48.73
2	87.78	48.83
3	97.77	49.25
4	107.74	49.99
5	117.69	51.05
6	127.59	52.42
7	137.44	54.12
8	147.24	56.13
9	156.97	58.46
10	166.61	61.09
11	176.17	64.04
12	185.63	67.29
13	194.97	70.84
14	204.20	74.69
15	209.59	77.14

CIRCLE CENTER AT X = 79.7 , Y = 360.2 AND RADIUS, 311.5

*** 1.280 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.44	54.57
3	144.43	54.84
4	154.39	55.78
5	164.26	57.40
6	173.99	59.69
7	183.55	62.63
8	192.88	66.22
9	201.95	70.43
10	210.71	75.25
11	212.28	76.26

CIRCLE CENTER AT X = 135.5 , Y = 201.5 AND RADIUS, 147.0

*** 1.296 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.22	46.64
2	72.22	46.55
3	82.22	46.78
4	92.20	47.33
5	102.17	48.20
6	112.10	49.39
7	121.98	50.90
8	131.81	52.73
9	141.58	54.87
10	151.28	57.32
11	160.89	60.08
12	170.41	63.14
13	179.82	66.52
14	189.12	70.19
15	198.30	74.16
16	206.47	78.00

CIRCLE CENTER AT X = 70.0 , Y = 358.3 AND RADIUS, 311.8

*** 1.304 ***

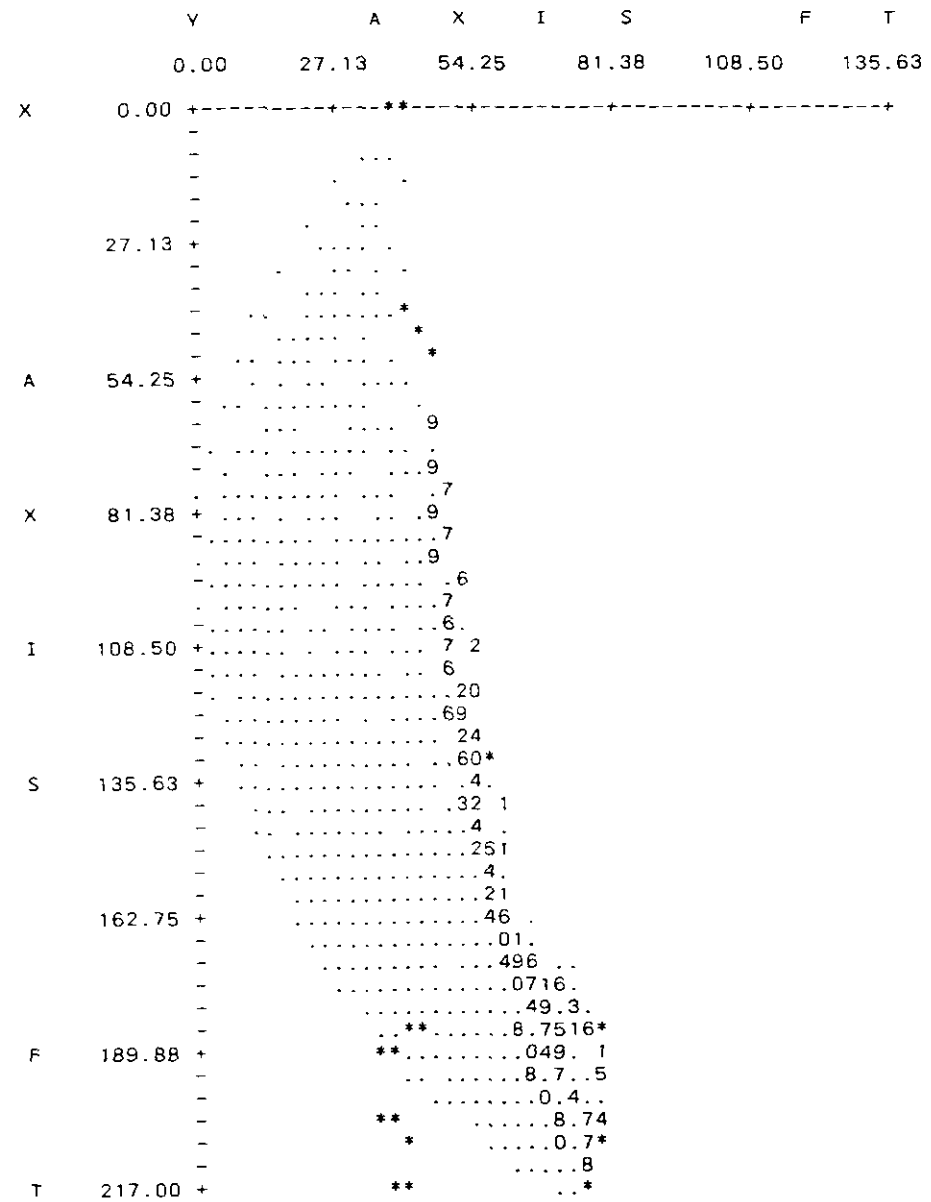
FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.89	53.17
3	128.87	53.80
4	138.82	54.76
5	148.73	56.08
6	158.59	57.74
7	168.39	59.74
8	178.11	62.08
9	187.75	64.75
10	197.29	67.76
11	206.71	71.11
12	216.01	74.77
13	216.35	74.92

CIRCLE CENTER AT X = 106.0 , Y = 340.3 AND RADIUS, 287.4

*** 1.352 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	82.34	49.34
2	84.12	48.35
3	92.87	43.50
4	93.20	43.31
5	174.04	41.25
6	175.34	43.50
7	180.19	52.25
8	185.04	60.99
9	189.89	69.74
10	194.46	78.00

*** 1.490 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	82.47	49.36
2	84.28	48.35
3	93.03	43.50
4	97.39	40.98
5	183.37	42.25
6	184.09	43.50
7	188.94	52.25
8	193.79	60.99
9	198.64	69.74
10	203.22	78.00

*** 1.522 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.70	46.57
2	67.24	43.50
3	69.23	42.35
4	154.07	42.09
5	154.89	43.50
6	159.74	52.25
7	164.58	60.99
8	169.43	69.74
9	170.31	71.32

*** 1.578 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	75.08	48.36
2	75.11	48.35
3	83.86	43.50
4	84.19	43.31
5	151.47	42.32
6	152.16	43.50
7	157.00	52.25
8	161.85	60.99
9	166.70	69.74
10	166.80	69.92

*** 1.610 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.10	45.95
2	61.53	43.50
3	65.93	40.96
4	150.95	40.88
5	152.46	43.50
6	157.31	52.25
7	162.15	60.99
8	167.00	69.74
9	167.19	70.08

*** 1.624 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	94.68	50.99
2	99.45	48.35
3	108.20	43.50
4	112.59	40.96
5	152.81	42.49
6	153.39	43.50
7	158.24	52.25
8	163.09	60.99
9	167.93	69.74
10	168.39	70.55

*** 1.640 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.25	46.37
2	65.43	43.50
3	67.22	42.47
4	144.53	43.33
5	144.63	43.50
6	149.47	52.25
7	154.32	60.99
8	157.12	66.05

*** 1.672 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	96.45	51.23
2	101.65	48.35
3	110.39	43.50
4	110.46	43.46
5	148.90	40.11
6	150.86	43.50
7	155.71	52.25
8	160.56	60.99
9	165.14	69.25

*** 1.723 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	96.93	51.30
2	102.25	48.35
3	111.00	43.50
4	111.39	43.28
5	140.42	43.45
6	140.45	43.50
7	145.30	52.25
8	150.15	60.99
9	151.76	63.90

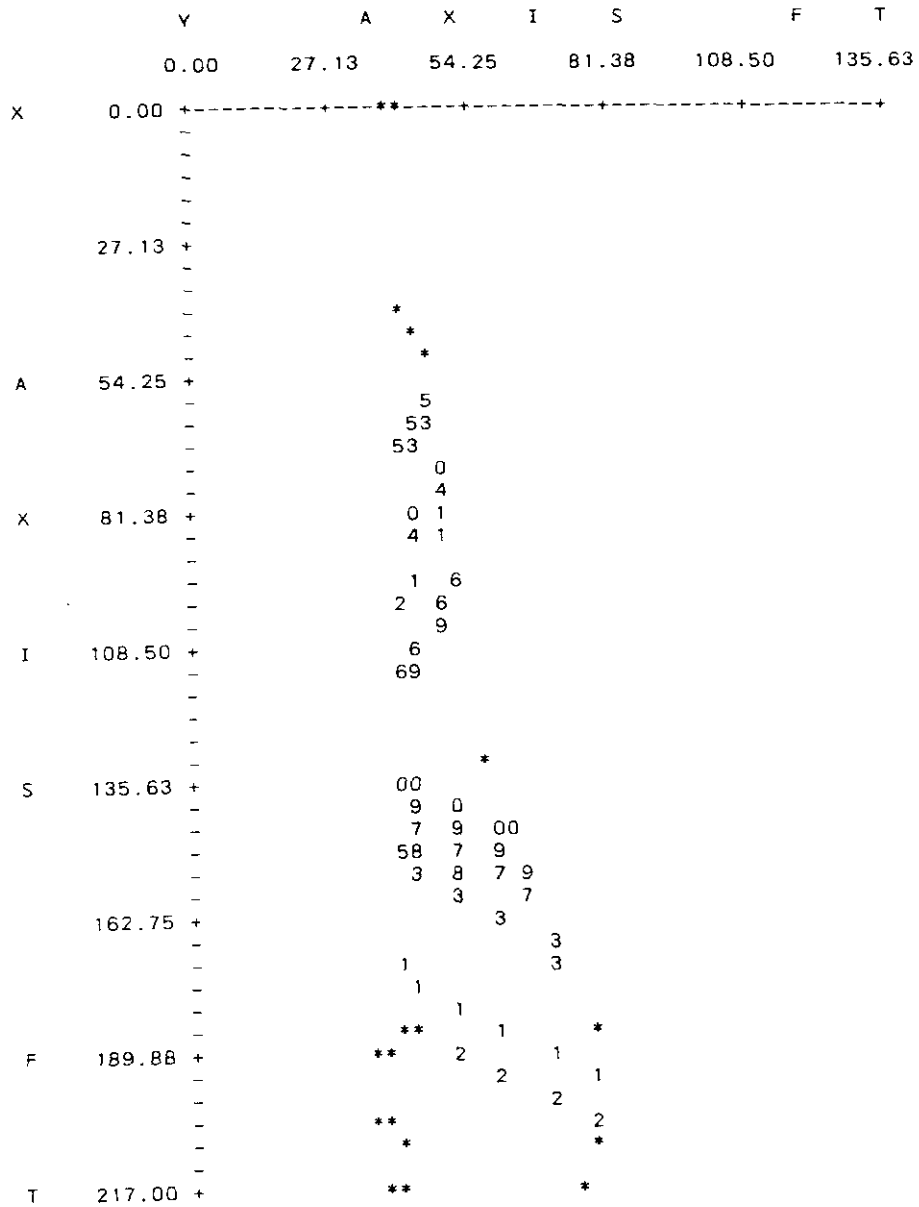
*** 1.862 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	72.10	47.96
2	80.15	43.50
3	80.87	43.08
4	135.53	41.51
5	136.68	43.50
6	141.53	52.25
7	146.38	60.99
8	146.92	61.97

*** 1.891 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

**** END OF FILE, ALL CARDS READ ****

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	80.00	40.00	80.00	3
2	40.00	80.00	50.00	85.00	1
3	50.00	85.00	86.67	88.67	1
4	86.67	88.67	115.00	100.00	1
5	115.00	100.00	135.00	100.00	1
6	135.00	100.00	145.00	96.67	1
7	44.00	82.00	115.00	82.00	2
8	40.00	80.00	115.00	80.00	3
9	135.00	80.00	145.00	80.00	3
10	0.00	78.00	117.00	78.00	4
11	133.00	78.00	145.00	78.00	4
12	117.00	78.00	120.00	75.00	4
13	120.00	75.00	130.00	75.00	4
14	130.00	75.00	133.00	78.00	4

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 5.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	81.00	80.00	81.00	2.00
2	95.00	81.00	115.00	81.00	2.00

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	69.54	86.96
2	69.73	86.85
3	74.11	84.42
4	78.48	82.00
5	79.85	81.21
6	110.80	81.58
7	111.05	82.00
8	113.47	86.37
9	115.90	90.75
10	118.32	95.12
11	120.74	99.49
12	121.03	100.00

*** 1.964 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.59	86.16
2	64.72	84.42
3	69.09	82.00
4	70.70	81.07
5	107.46	81.69
6	107.64	82.00
7	110.07	86.37
8	112.49	90.75
9	114.91	95.12
10	117.34	99.49
11	117.62	100.00

*** 1.973 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.01	86.20
2	65.22	84.42
3	69.59	82.00
4	71.32	81.00
5	106.53	81.90
6	106.59	82.00
7	109.01	86.37
8	111.44	90.75
9	113.86	95.12
10	116.28	99.49
11	116.57	100.00

*** 1.974 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.44	86.35
2	66.91	84.42
3	71.28	82.00
4	74.46	80.16
5	110.32	81.06
6	110.86	82.00
7	113.29	86.37
8	115.71	90.75
9	118.13	95.12
10	120.56	99.49
11	120.84	100.00

*** 2.006 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.99	85.80
2	60.47	84.42
3	64.84	82.00
4	67.66	80.37
5	110.70	81.18
6	111.18	82.00
7	113.60	86.37
8	116.02	90.75
9	118.45	95.12
10	120.87	99.49
11	121.15	100.00

*** 2.027 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.76	85.98
2	62.56	84.42
3	66.93	82.00
4	69.55	80.49
5	109.97	80.18
6	111.02	82.00
7	113.44	86.37
8	115.87	90.75
9	118.29	95.12
10	120.71	99.49
11	120.99	100.00

*** 2.042 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	54.95	85.50
2	56.88	84.42
3	61.25	82.00
4	62.13	81.50
5	102.80	81.90
6	102.86	82.00
7	105.29	86.37
8	107.71	90.75
9	110.14	95.12
10	112.23	98.89

*** 2.073 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.02	86.30
2	66.41	84.42
3	70.78	82.00
4	73.89	80.21
5	101.78	81.16
6	102.26	82.00
7	104.68	86.37
8	107.11	90.75
9	109.53	95.12
10	111.45	98.58

*** 2.109 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	53.98	85.40
2	55.74	84.42
3	60.11	82.00
4	61.57	81.16
5	101.87	81.59
6	102.11	82.00
7	104.53	86.37
8	106.95	90.75
9	109.38	95.12
10	111.25	98.50

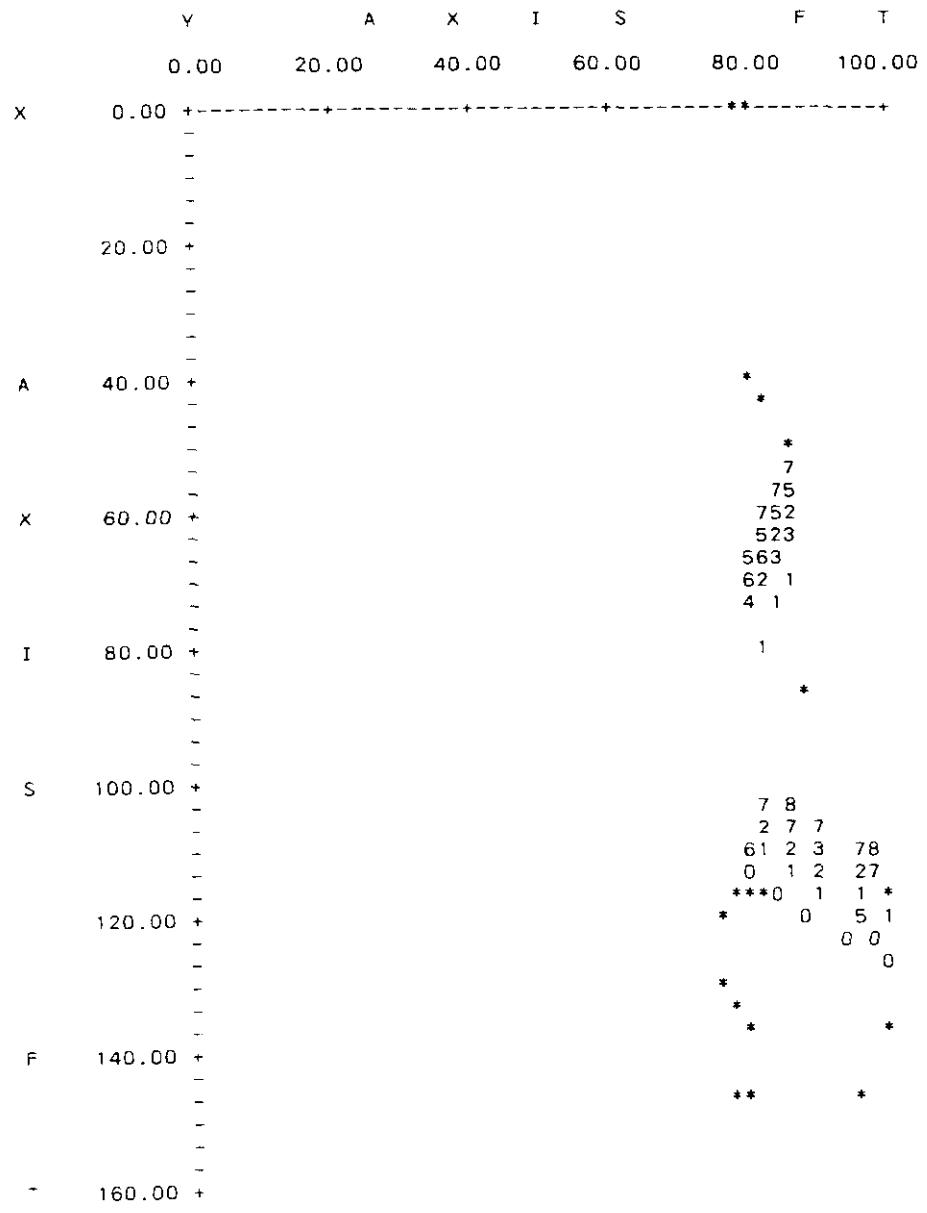
*** 2.116 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.89	85.99
2	62.71	84.42
3	67.08	82.00
4	68.84	80.99
5	114.17	80.07
6	116.67	84.40
7	119.17	88.73
8	121.67	93.06
9	124.17	97.39
10	125.68	100.00

*** 2.128 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 5.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	81.00	80.00	81.00	2.00
2	95.00	81.00	115.00	81.00	2.00

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	68.66	86.87
2	68.70	86.85
3	73.07	84.42
4	77.44	82.00
5	79.49	80.82
6	109.25	81.67
7	109.44	82.00
8	111.87	86.37
9	114.29	90.75
10	116.71	95.12
11	119.14	99.49
12	119.42	100.00

*** 1.524 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.68	86.37
2	67.19	84.42
3	71.56	82.00
4	71.61	81.97
5	112.97	81.67
6	113.16	82.00
7	115.59	86.37
8	118.01	90.75
9	120.44	95.12
10	122.86	99.49
11	123.14	100.00

*** 1.563 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.04	85.91
2	61.71	84.42
3	66.09	82.00
4	69.48	80.04
5	105.79	81.31
6	106.19	82.00
7	108.61	86.37
8	111.04	90.75
9	113.46	95.12
10	115.89	99.49
11	116.17	100.00

*** 1.564 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.40	86.04
2	63.32	84.42
3	67.69	82.00
4	68.68	81.43
5	106.63	80.28
6	107.63	82.00
7	110.05	86.37
8	112.47	90.75
9	114.90	95.12
10	117.32	99.49
11	117.60	100.00

*** 1.564 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	54.53	85.45
2	56.38	84.42
3	60.76	82.00
4	62.73	80.86
5	104.50	81.77
6	104.64	82.00
7	107.06	86.37
8	109.49	90.75
9	111.91	95.12
10	114.33	99.49
11	114.51	99.80

*** 1.568 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	58.59	85.86
2	61.18	84.42
3	65.55	82.00
4	67.95	80.62
5	106.46	80.26
6	107.47	82.00
7	109.89	86.37
8	112.32	90.75
9	114.74	95.12
10	117.17	99.49
11	117.45	100.00

*** 1.572 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.17	86.02
2	63.04	84.42
3	67.41	82.00
4	68.45	81.40
5	112.40	80.97
6	113.00	82.00
7	115.42	86.37
8	117.85	90.75
9	120.27	95.12
10	122.70	99.49
11	122.98	100.00

*** 1.576 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.42	86.04
2	63.34	84.42
3	67.72	82.00
4	69.07	81.22
5	112.49	80.15
6	113.56	82.00
7	115.98	86.37
8	118.41	90.75
9	120.83	95.12
10	123.25	99.49
11	123.53	100.00

*** 1.600 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.18	86.02
2	63.06	84.42
3	67.43	82.00
4	70.48	80.24
5	101.25	80.23
6	102.27	82.00
7	104.69	86.37
8	107.11	90.75
9	109.54	95.12
10	111.46	98.58

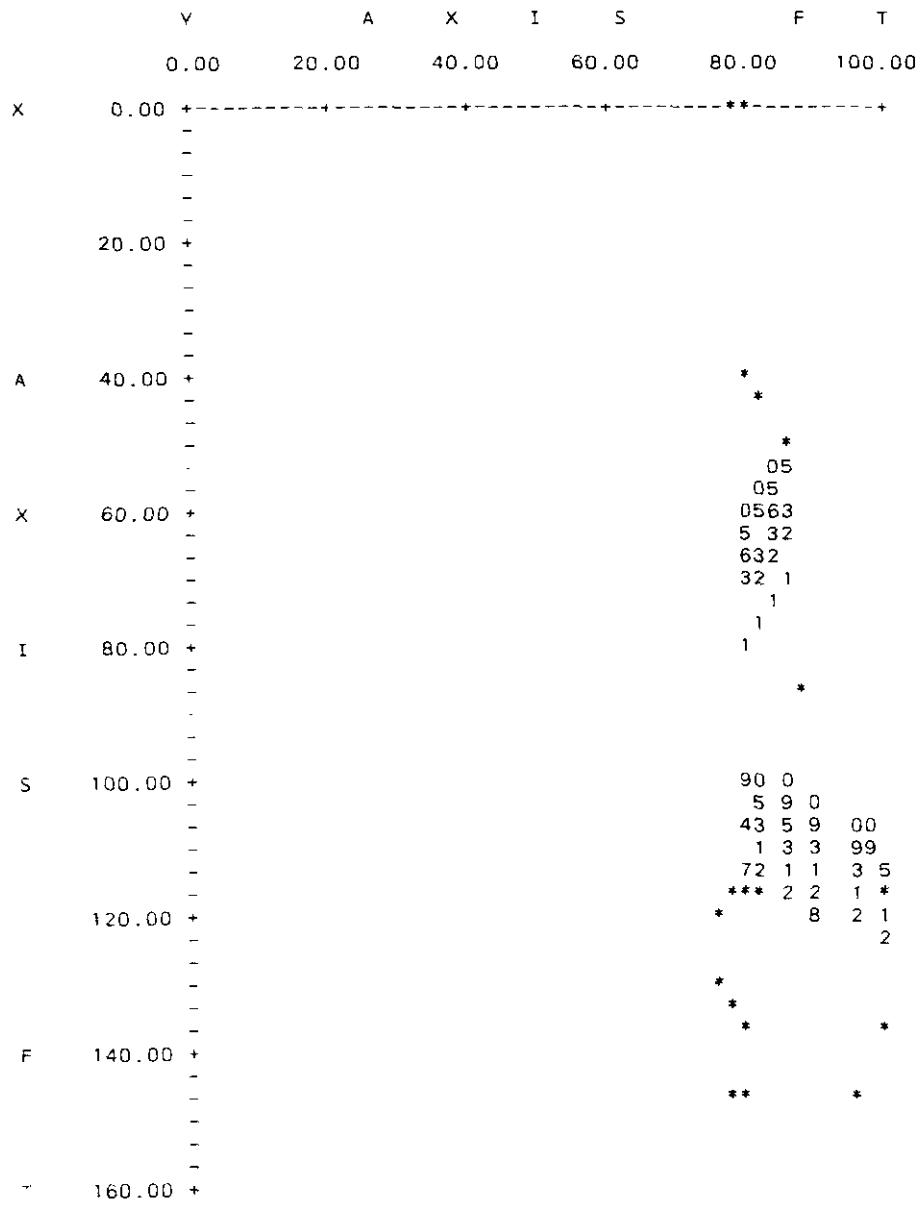
*** 1.654 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	52.21	85.22
2	53.64	84.42
3	58.02	82.00
4	60.77	80.41
5	99.04	81.65
6	99.24	82.00
7	101.67	86.37
8	104.09	90.75
9	106.51	95.12
10	107.57	97.03

*** 1.682 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, EARTHQUAKE, MOIST SOIL

**** END OF FILE, ALL CARDS READ ****

/RREGULAC JANBY

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	40.00	40.00	3
2	40.00	40.00	50.00	45.00	2
3	50.00	45.00	132.00	56.00	1
4	132.00	56.00	187.00	78.00	1
5	187.00	78.00	207.00	78.00	1
6	207.00	78.00	217.00	74.70	1
7	47.00	43.50	187.00	43.50	2
8	40.00	40.00	187.00	40.00	3
9	207.00	40.00	217.00	40.00	3
10	0.00	38.00	189.00	38.00	4
11	205.00	38.00	217.00	38.00	4
12	189.00	38.00	192.00	35.00	4
13	192.00	35.00	202.00	35.00	4
14	202.00	35.00	205.00	38.00	4

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	105.0	115.0	0.0	33.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF 0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF 0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.31	53.36
3	144.13	51.47
4	153.00	56.10
5	162.23	59.95
6	169.17	67.14
7	172.05	72.02

*** 1.670 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.89	57.72
3	159.80	56.36
4	169.21	59.73
5	178.47	63.50
6	186.89	68.89
7	192.43	77.22
8	192.59	78.00

*** 1.679 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.92	51.79
3	143.47	48.83
4	152.85	52.30
5	162.47	55.05
6	170.34	61.22
7	177.68	68.01
8	184.32	75.49
9	186.79	77.92

*** 1.685 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.95	58.15
3	159.78	56.33
4	168.16	61.78
5	176.83	66.77
6	182.78	74.80
7	183.72	76.69

*** 1.694 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.34	49.63
3	128.25	48.28
4	138.24	48.01
5	148.09	49.76
6	157.40	53.41
7	166.43	57.70
8	172.08	65.95
9	174.64	73.06

*** 1.865 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	148.31	53.63
3	158.11	51.64
4	167.76	54.27
5	175.77	60.26
6	183.40	66.72
7	186.19	76.32
8	186.22	77.69

*** 1.930 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.91	48.59
3	126.71	43.83
4	136.71	43.80
5	146.45	46.05
6	155.84	49.50
7	163.85	55.48
8	171.64	61.76
9	177.70	69.71
10	183.67	76.67

*** 1.943 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.13	50.03
3	143.00	48.45
4	152.88	46.87
5	161.19	52.43
6	168.82	58.89
7	175.47	66.36
8	176.53	73.81

*** 1.944 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.79	47.56
3	112.13	43.98
4	122.02	42.52
5	131.76	44.78
6	141.69	45.99
7	151.68	46.30
8	161.67	46.74
9	169.19	53.33
10	177.05	59.52
11	182.46	67.93
12	187.32	76.67
13	188.27	78.00

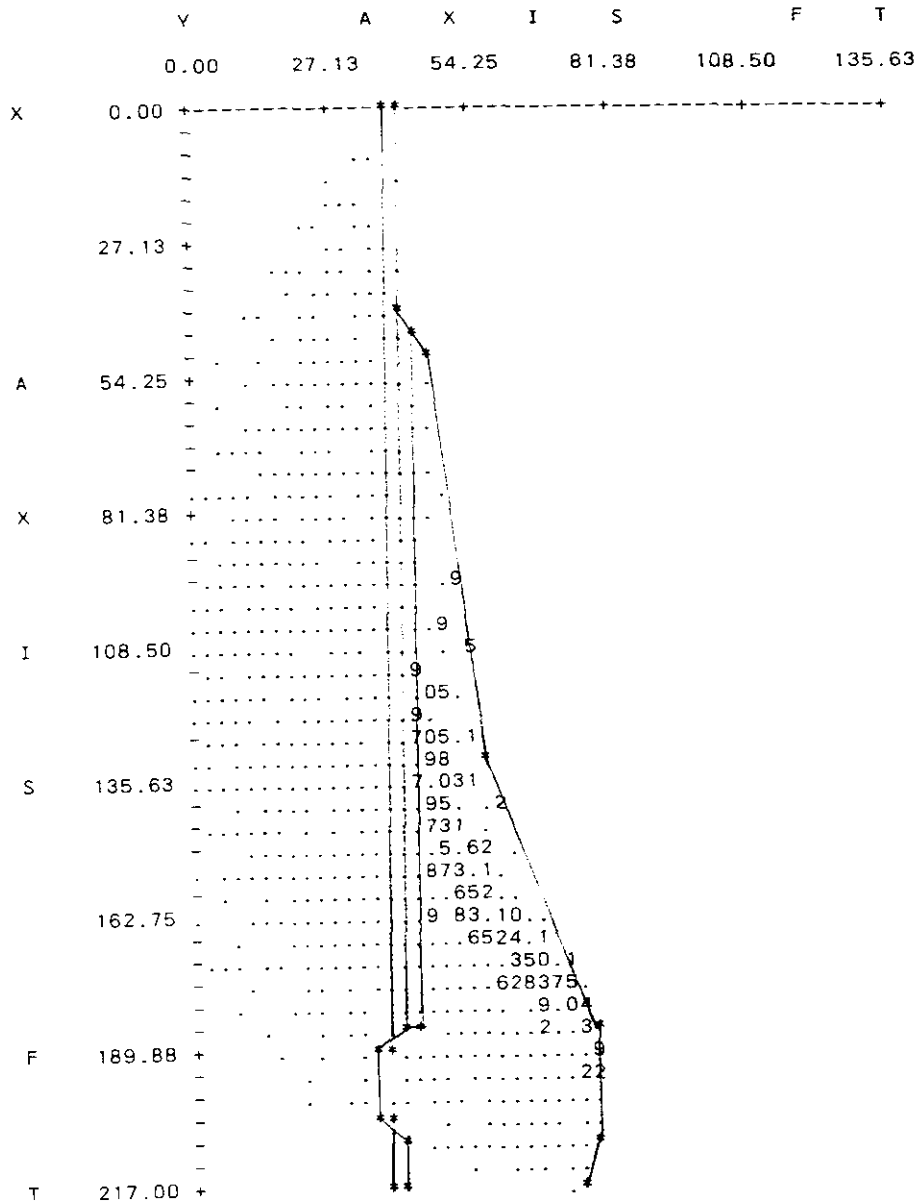
*** 2.012 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	116.36	46.25
3	126.36	46.25
4	135.97	48.99
5	145.28	52.65
6	154.56	56.37
7	162.95	61.81
8	171.29	67.33
9	178.97	73.74
10	180.70	75.48

*** 2.021 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.44	55.43
3	144.44	55.44
4	154.01	58.31
5	162.80	63.08
6	171.62	67.80
7	179.83	73.51
8	183.01	76.40

*** 1.183 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	59.10
3	159.96	60.03
4	168.69	64.91
5	177.04	70.40
6	183.81	76.72

*** 1.212 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	59.68
3	159.88	61.14
4	169.75	62.75
5	176.73	69.91
6	183.56	76.62

*** 1.265 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.41	55.81
3	159.14	58.12
4	168.85	60.51
5	178.76	61.83
6	186.31	68.38
7	192.93	75.88
8	196.18	78.00

*** 1.369 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.94	58.12
3	159.84	56.68
4	169.55	59.08
5	179.13	61.93
6	185.12	69.94
7	189.07	78.00

*** 1.396 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	148.74	54.34
3	158.49	56.56
4	168.22	58.88
5	177.03	63.61
6	183.72	71.04
7	184.57	77.03

*** 1.422 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.23	47.39
3	127.19	48.30
4	137.07	46.76
5	146.29	50.63
6	156.21	51.91
7	164.57	57.39
8	174.23	60.01
9	180.03	68.16
10	187.62	74.66
11	190.10	78.00

*** 1.484 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.19	49.23
3	127.76	52.11
4	137.34	54.98
5	147.33	55.47
6	156.68	59.03
7	166.10	62.37
8	170.55	71.32
9	170.70	71.48

*** 1.497 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.19	55.26
3	158.66	52.04
4	168.47	53.95
5	176.67	59.67
6	182.42	67.86
7	188.28	75.96
8	189.65	78.00

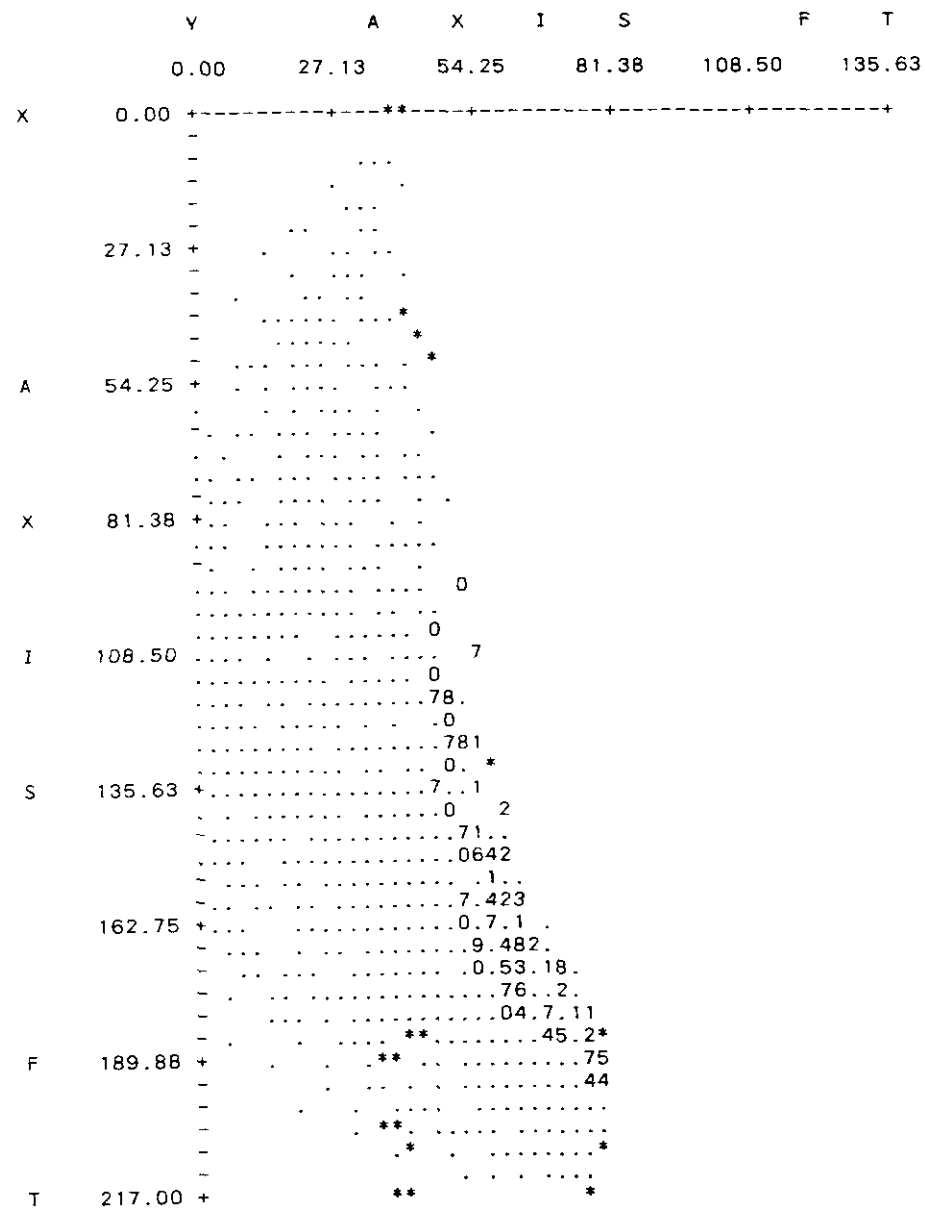
*** 1.541 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	101.79	45.48
3	111.61	47.35
4	121.32	49.76
5	131.31	50.15
6	141.29	49.50
7	151.01	51.85
8	161.01	51.75
9	170.58	54.66
10	179.86	58.39
11	185.08	66.92
12	189.29	75.99
13	190.86	78.00

*** 1.543 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FACTOR OF SAFETY CALCULATION HAS GONE THROUGH TEN ITERATIONS

THE TRIAL FAILURE SURFACE IN QUESTION IS DEFINED
BY THE FOLLOWING 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	147.32	52.38
3	154.69	45.63
4	162.34	39.18
5	171.90	36.25
6	181.76	37.91
7	188.55	45.26
8	188.75	55.25
9	189.08	65.25
10	189.39	75.24
11	189.53	78.00

FACTOR OF SAFETY FOR THE PRECEDING SPECIFIED SURFACE = 6.223

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.91	60.56
3	159.60	63.03
4	168.45	67.69
5	177.65	71.61
6	186.10	76.95
7	187.29	78.00

*** 1.228 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.93	57.98
3	158.74	62.70
4	167.13	68.15
5	175.66	73.36
6	176.19	73.68

*** 1.323 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.79	51.43
3	143.49	53.87
4	152.90	57.25
5	161.50	62.35
6	170.24	67.21
7	177.46	74.13
8	177.58	74.23

*** 1.361 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	131.76	48.17
3	141.47	45.78
4	150.43	50.23
5	159.36	54.72
6	167.89	59.94
7	176.36	65.27
8	183.71	72.04
9	191.77	77.95
10	191.82	78.00

*** 1.562 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.50	56.09
3	159.50	56.06
4	168.79	59.77
5	173.92	68.36
6	178.11	74.44

*** 1.563 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.33	50.70
3	113.25	51.99
4	123.23	52.68
5	133.23	52.63
6	143.21	52.16
7	151.84	57.21
8	160.73	61.80
9	169.78	66.05
10	179.18	69.45
11	188.82	72.11
12	198.63	74.04
13	203.10	78.00

*** 1.579 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	131.69	48.09
3	141.64	47.08
4	151.59	46.14
5	160.23	51.18
6	168.15	57.28
7	175.88	63.62
8	183.74	69.81
9	191.80	75.73
10	192.56	78.00

*** 1.590 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.33	53.45
3	143.94	50.70
4	153.88	51.84
5	163.88	51.64
6	171.64	57.94
7	177.08	66.33
8	181.30	75.40
9	181.37	75.75

*** 1.596 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	148.81	54.47
3	158.81	54.42
4	168.81	54.39
5	178.21	57.81
6	186.08	63.98
7	192.80	71.38
8	193.86	78.00

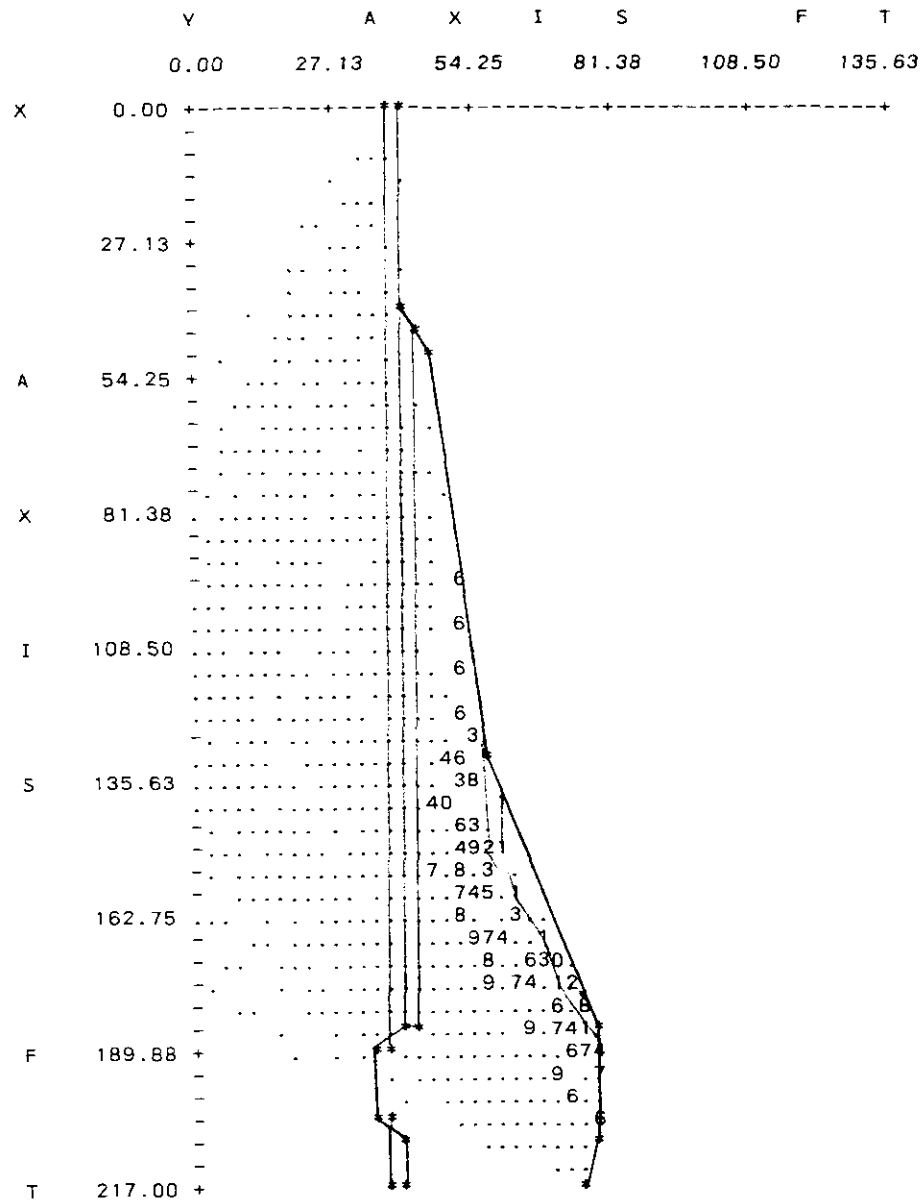
*** 1.626 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.20	48.67
3	142.15	49.67
4	151.02	54.28
5	158.10	61.35
6	166.27	67.11
7	170.54	71.42

*** 1.648 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

>>>>> WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN STARTED.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	60.91
3	159.81	61.83
4	168.57	66.66
5	177.39	71.36
6	186.34	75.82
7	191.69	78.00

*** 1.022 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.96	58.29
3	158.08	64.13
4	167.64	67.06
5	172.78	72.31

*** 1.093 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.95	60.16
3	159.85	61.61
4	169.65	63.58
5	179.42	65.73
6	187.98	70.90
7	196.57	76.02
8	197.20	78.00

*** 1.126 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.72	51.09
3	128.66	52.24
4	138.66	52.19
5	148.64	52.80
6	158.04	56.21
7	165.73	62.60
8	175.18	65.88
9	182.99	72.13
10	188.25	78.00

*** 1.132 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.33	53.50
3	144.24	52.17
4	154.24	52.58
5	164.06	54.47
6	172.51	59.81
7	180.79	65.42
8	185.07	74.46
9	185.71	77.48

*** 1.157 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.67	56.65
3	159.36	59.12
4	169.08	61.45
5	178.81	63.76
6	188.61	65.75
7	197.20	70.87
8	204.97	77.17
9	205.65	78.00

*** 1.253 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.33	48.83
3	142.27	47.74
4	151.01	52.59
5	160.83	54.50
6	170.37	57.48
7	178.15	63.77
8	187.81	66.33
9	193.51	74.55
10	197.01	78.00

*** 1.259 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.26	50.27
3	143.23	49.43
4	153.23	49.62
5	163.15	50.84
6	172.91	53.03
7	182.86	53.95
8	189.53	61.41
9	196.91	68.16
10	205.08	73.92
11	208.16	77.62

*** 1.315 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	131.56	47.96
3	141.49	46.76
4	151.23	49.02
5	161.04	50.96
6	168.53	57.59
7	175.31	64.94
8	181.23	73.00
9	183.59	76.64

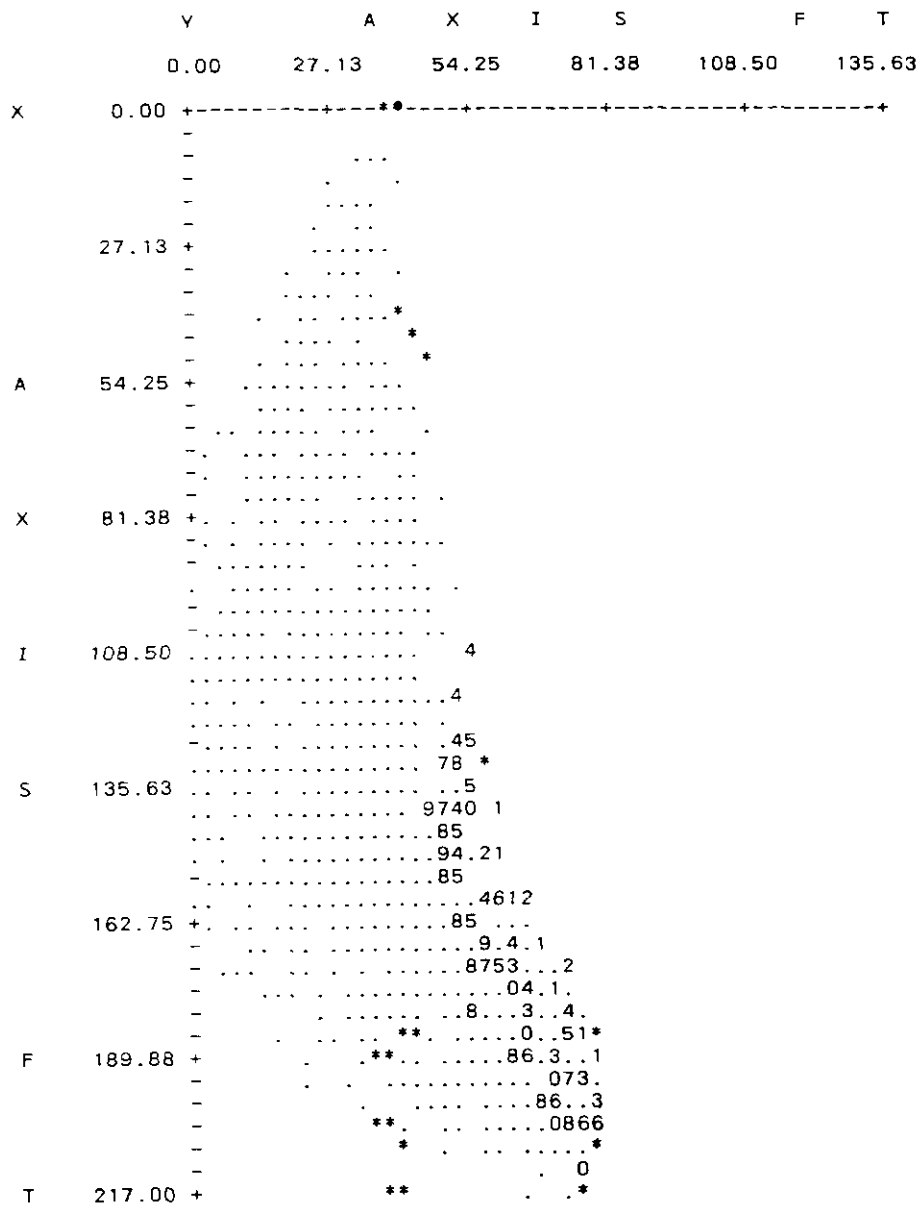
*** 1.328 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.78	51.44
3	128.77	50.94
4	138.53	53.11
5	147.88	56.66
6	157.88	56.78
7	166.33	62.12
8	176.26	63.34
9	185.96	65.77
10	195.06	69.92
11	204.96	71.27
12	214.09	75.35
13	214.90	75.39

*** 1.353 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.200 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.39	55.76
3	158.64	59.57
4	166.85	65.28
5	175.31	70.60
6	178.07	74.43

*** 1.411 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.28	55.46
3	159.15	57.06
4	168.04	61.63
5	173.22	70.19
6	176.80	73.92

*** 1.520 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	58.71
3	159.95	57.81
4	169.70	60.01
5	179.35	62.65
6	184.32	71.33
7	186.43	77.77

*** 1.524 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.23	48.71
3	142.09	47.03
4	151.42	50.63
5	161.34	51.87
6	168.60	58.75
7	176.38	65.04
8	185.02	70.07
9	194.05	74.37
10	197.26	78.00

*** 1.563 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.75	51.25
3	128.68	50.02
4	138.43	47.81
5	148.29	46.18
6	158.29	45.86
7	167.86	48.74
8	175.43	55.28
9	182.46	62.39
10	189.28	69.70
11	191.94	78.00

*** 1.615 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	116.25	46.13
3	126.25	46.21
4	136.25	46.37
5	146.05	48.33
6	154.97	52.86
7	163.91	57.33
8	172.45	62.54
9	180.94	67.83
10	187.71	75.19
11	187.96	78.00

*** 1.620 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.27	55.44
3	159.27	55.61
4	169.22	56.52
5	178.47	60.32
6	188.02	63.32
7	197.02	67.66
8	203.27	75.47
9	205.81	78.00

*** 1.664 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	131.75	48.15
3	141.65	46.74
4	151.64	46.98
5	161.63	47.49
6	171.32	49.97
7	180.32	54.33
8	188.09	60.62
9	195.05	67.81
10	196.64	77.68
11	196.65	78.00

*** 1.694 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.15	48.62
3	141.56	45.22
4	151.56	45.11
5	161.53	45.88
6	171.40	47.46
7	180.20	52.23
8	188.60	57.64
9	195.39	64.98
10	200.79	73.40
11	203.59	78.00

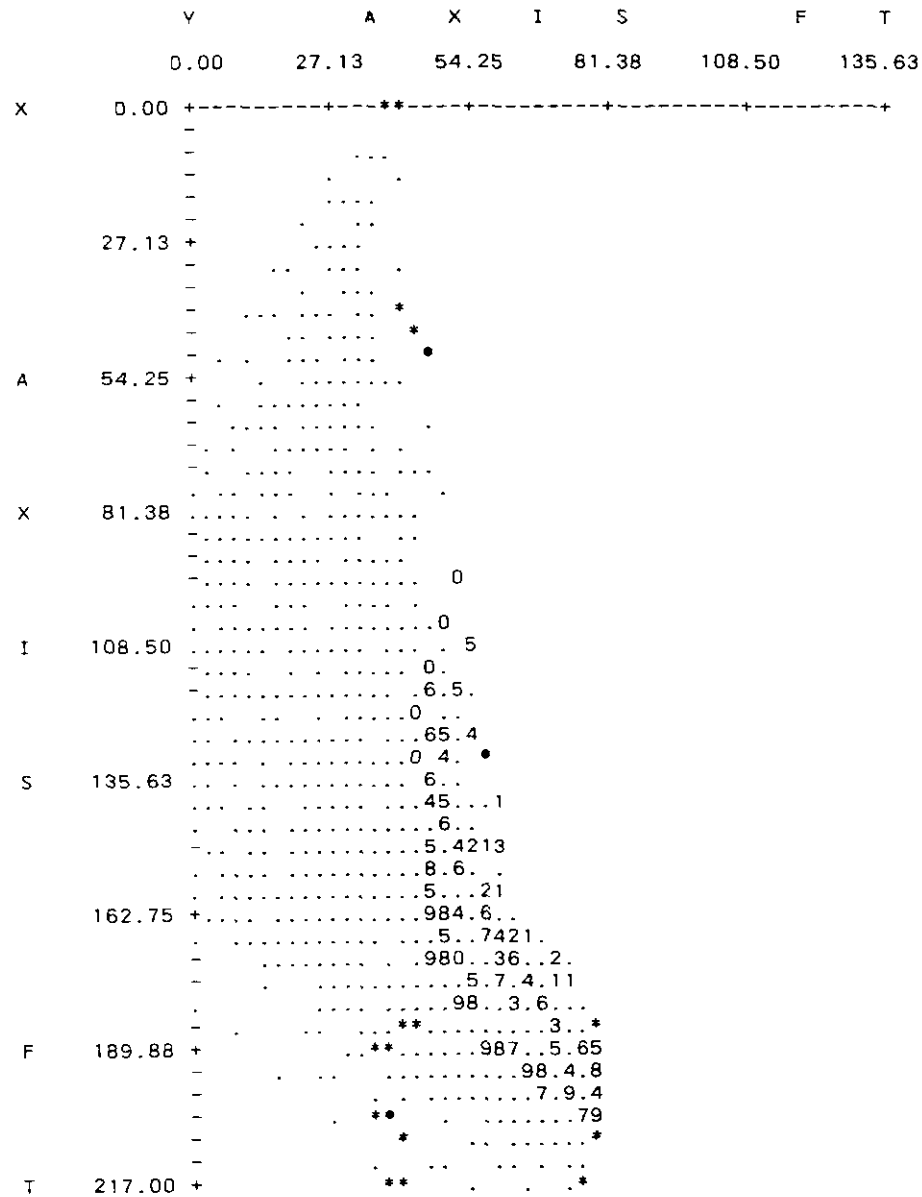
*** 1.706 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.78	47.54
3	112.41	44.83
4	122.32	43.47
5	132.26	44.55
6	142.25	44.90
7	152.25	44.95
8	162.07	46.86
9	171.12	51.10
10	176.76	59.36
11	182.29	67.70
12	188.28	75.71
13	188.68	78.00

*** 1.726 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING IRREGULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	59.56
3	159.81	61.48
4	169.65	63.27
5	178.86	67.16
6	188.06	71.07
7	197.26	74.99
8	199.26	78.00

*** 1.133 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.39	53.98
3	144.32	52.78
4	154.27	51.78
5	162.77	57.05
6	171.60	61.75
7	180.09	67.03
8	185.49	75.45
9	186.91	77.97

*** 1.144 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	59.04
3	160.00	59.13
4	168.46	64.46
5	173.53	72.61

*** 1.151 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.10	48.55
3	142.09	48.97
4	151.52	52.28
5	160.29	57.08
6	168.66	62.56
7	176.75	68.44
8	183.69	75.64
9	185.66	77.46

*** 1.230 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.35	53.62
3	144.14	55.66
4	154.03	57.15
5	164.02	56.88
6	173.93	55.48
7	183.01	59.65
8	188.83	67.79
9	194.44	76.06
10	196.28	78.00

*** 1.292 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.73	48.23
3	127.73	48.29
4	137.20	45.08
5	147.20	45.47
6	156.52	49.08
7	166.43	50.42
8	176.43	50.75
9	184.03	57.24
10	191.76	63.58
11	199.49	69.93
12	205.22	78.00

*** 1.339 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	147.57	52.66
3	157.56	52.22
4	166.68	56.33
5	174.04	63.10
6	182.33	68.69
7	186.69	77.69
8	186.89	77.95

*** 1.345 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.72	56.85
3	159.63	55.52
4	169.60	56.31
5	179.39	58.37
6	188.96	61.27
7	193.74	70.05
8	196.17	78.00

*** 1.375 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.33	50.82
3	113.15	48.93
4	122.99	47.11
5	132.43	43.81
6	142.23	45.78
7	152.12	47.29
8	159.99	53.45
9	166.73	60.85
10	171.81	69.46
11	173.38	72.55

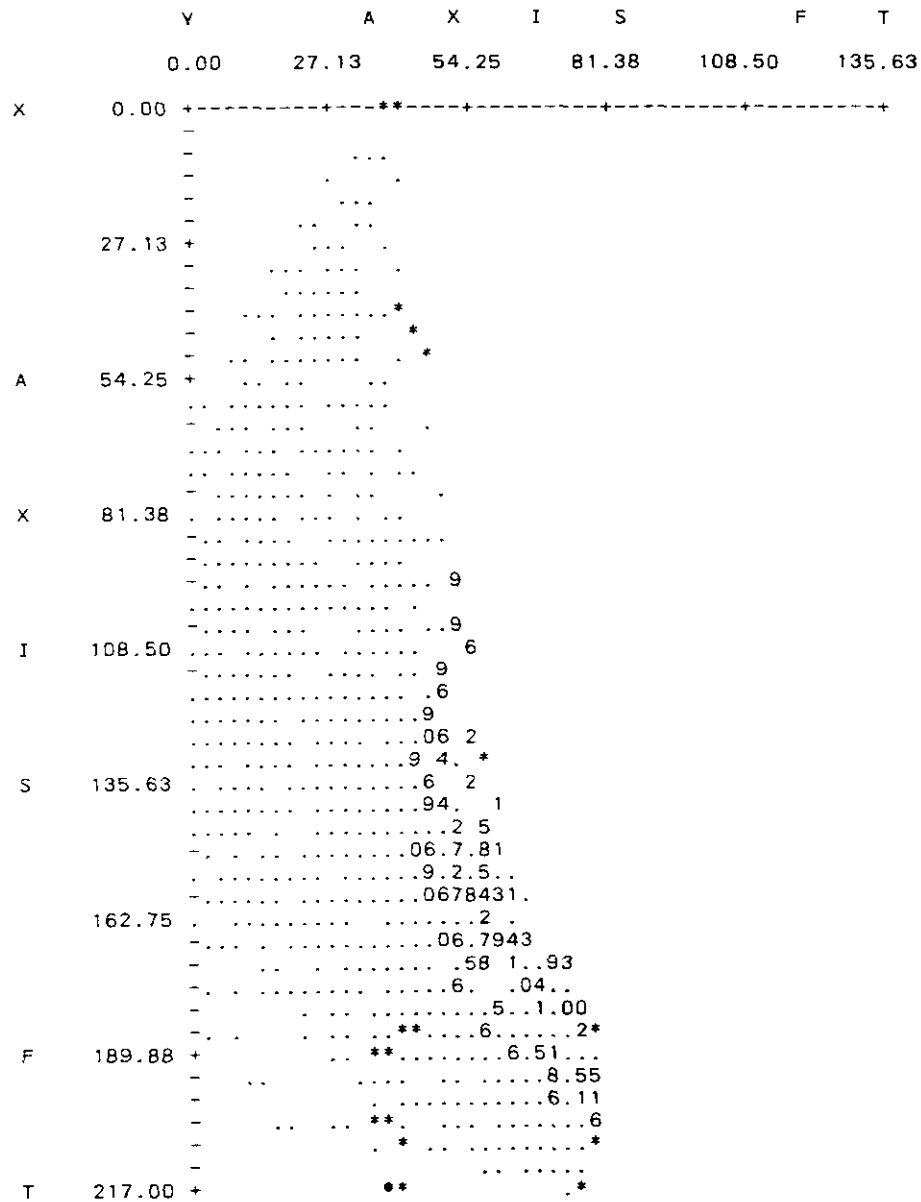
*** 1.394 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.07	48.94
3	127.89	47.05
4	137.75	45.39
5	147.34	42.56
6	156.93	45.41
7	166.37	48.69
8	173.61	55.60
9	177.62	64.75
10	180.94	74.19
11	181.75	75.90

*** 1.413 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, EARTHQUAKE, MOIST SOIL

**** END OF FILE, ALL CARDS READ ****

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY DALLAS DENVER ORLANDO

SUBJECT: CLARK COUNTY PUBLIC WORKS — UPPER FLAMINGO WASH DETENTION BASIN
WORK: EMBANKMENT STABILITY — SLIDING & OVERTURNING

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PROJECT NO. 14625 FILE NO.

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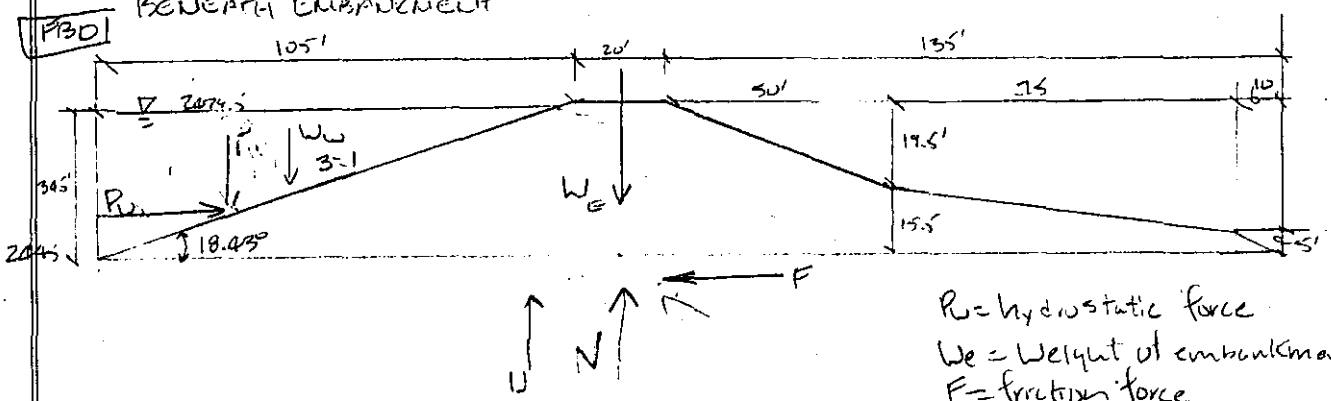
PURPOSE: Determine if the embankment section is stable against sliding ($F.S._{resis} \geq 1.5$), overturning ($F_{resis} > 1.5$ to 2)

REFERENCES

(1) "VECTOR MECHANICS FOR ENGINEERS—STATICS", BEER & JOHNSTON, 1977
(2) "PRINCIPLES OF FOUNDATION ENGINEERING", DAS, 1984
(3)

PROCEDURE:

TRY TYPICAL 35' SECTION WITH IMPERMEABLE CALICHE LAYER BENEATH EMBANKMENT



P_w = hydrostatic force
W_e = weight of embankment
F = friction force
N = normal force
U = uplift force
W_w = weight of water

$[\Sigma F_x = 0] \Rightarrow P_{wx} = F \Rightarrow P_{wx} = \mu N$

$[\Sigma F_y = 0]$ $P_{wy} + W_e + W_w = U + N$

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DETERMINE LOADS FOR UNIT LENGTH OF EMBANKMENT

$P_w = \frac{1}{2}(34.5\,ft)(34.5\,ft)(1\,ft)(62.4\,lb/ft^3) = 37.1\,k \rightarrow$ ✓

$W_w = (34.5\,ft)(10.5\,ft)(1\,ft)(1/2)(62.4\,lb/ft^3) = 113^k \downarrow$ ✓

W_e = (assume ave $\gamma = 130\,lb/ft^3$) ✓

$= (130\,lb/ft^3)(1\,ft)\left[(35\,ft)(10.5\,ft)(\tfrac{1}{2}) + (12\,ft)(39\,ft) + \left(\frac{3.5\,ft + 15.5\,ft}{2}\right)(50\,ft) + \left(\frac{15.5\,ft + 5\,ft}{2}\right)(75\,ft) + \tfrac{1}{2}(5\,ft)(10\,ft)\right] = 547.2^k \downarrow$ ✓

DETERMINE S.F. AGAINST SLIDING IF UPLIFT ASSUMED ZERO

$[\Sigma F_y = 0] \Rightarrow \quad W_e + W_w = N \Rightarrow \quad 547.2^k + 113^k \Rightarrow N = 710.3^k$ ✓

$[\Sigma F_x = 0] \quad P_w = \mu N \quad \left[S.F. = \frac{\mu N}{P_w}\right]$ ✓

REF #1 (Pg 306) Coefficient of static friction on dry surfaces

EARTH ON EARTH 0.40 – 0.70
$\phi = 25° \text{ to } 35°$

Let wet earth on concrete $\mu = 0.10$ $\phi = 6°$

$S.F._{\text{sliding}} = \frac{0.10\,(710.3^k)}{37.1^k} \Rightarrow$ **S.F. ≃ 1.9 sliding** ✓ assuming zero uplift forces

REF #2 – Coefficient of wall friction ranges ½ to ⅔ ϕ
for concrete to sandy soil
with $\phi = 36°$, friction angle $= \frac{1}{2}(36) = 18°$

$\mu = \tan(18°) = 0.32$ ✓

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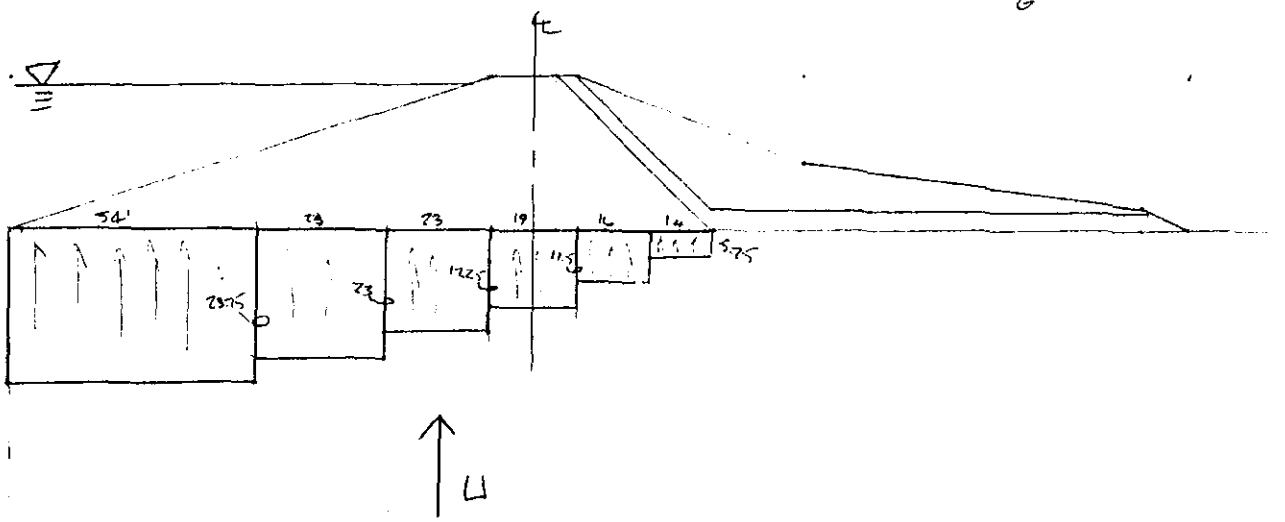
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$S.F._{\text{sliding}} = \dfrac{0.32(7103^k)}{37.1^k} \Rightarrow \boxed{S.F. = 6.1} > 1.5$ OK

DETERMINE S.F. AGAINST SLIDING IF UPLIFT CONSIDERED

Estimate uplift forces

There was no flownet drawn for a typical 35' section, but a good estimate can be made from the flownet constructed for a typical 40' section. $N_{drops} = 6$ $\Delta H = \frac{34.5}{6} = 5.75'$



$U = (62.4^{\#}/ft^3)(1ft)[34.5(54) + 21.75(24) + 23(23) + 17.25(19) + 11.5(16) + 5.75(14)]$

$U = 236.4^k$

$[\Sigma F_y = 0]$ $\quad W_c + W_w - U = N \Rightarrow$ $\quad 547.2^k + 113^k - 236.4^k = N$

$N = 423.8^k$

$[\Sigma F_x = 0]$ with $\mu = 0.32$ $\quad S.F. = \dfrac{423.8^k(0.32)}{37.1^k} = 4.1 > 1.5$ OK

with $\mu = 0.10$ $\quad S.F. = \dfrac{423.8^k(0.1)}{37.1^k} = 1.3 < 1.5$ close enough

P-GN-024-A

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY DALLAS DENVER ORLANDO

SUBJECT C.L.P.W. - LIFTNDIB
WORK EMBANKMENT - STABILITY - SLIDING OVERTURNING

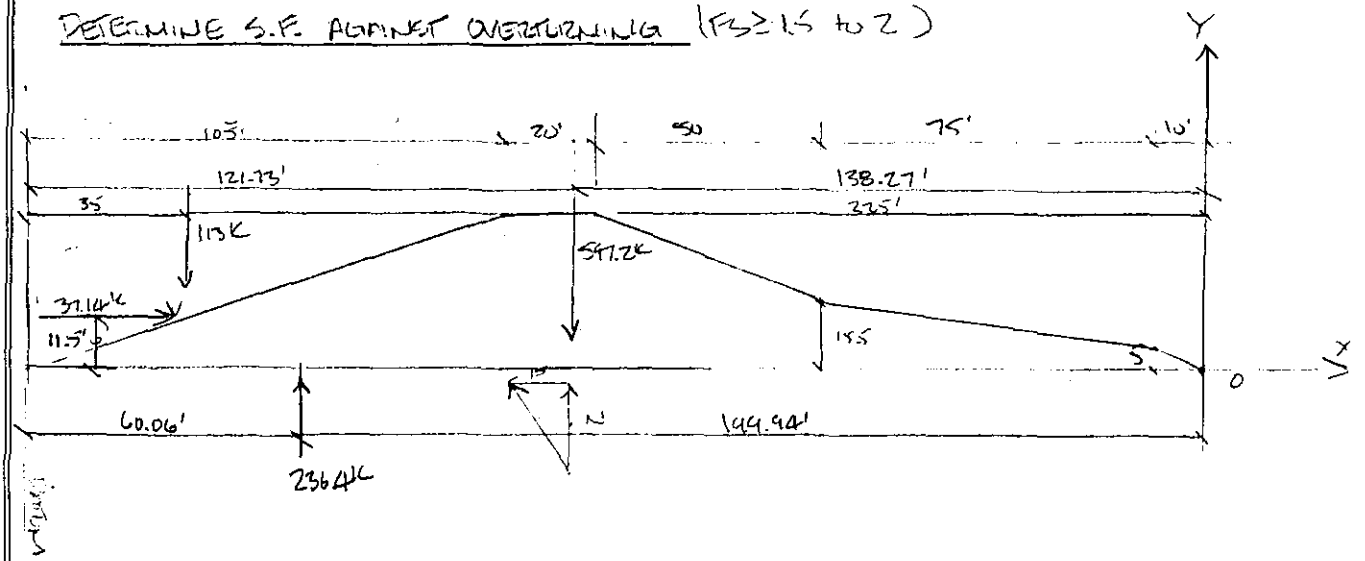
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DETERMINE S.F. AGAINST OVERTURNING (FS ≥ 1.5 to 2)



$[\Sigma M_0 = 0]$ ⇄ DETERMINE CENTOIDS

EMBANKMENT $\left[\bar{X} = \frac{\Sigma Ax}{\Sigma A}\right]$

$$\Sigma Ax = \tfrac{1}{2}(105)(35)(\tfrac{2}{3}(105)) + 20(35)(115) + 50\left(\frac{35+15.5}{2}\right)\left(125 + \left(50 - \frac{50(2(35)+15.5)}{3(35+15.5)}\right)\right)$$

$$+ (75)\left(\frac{15.5+5}{2}\right)\left(175 + \left(75 - \frac{75(2(15.5)+5)}{3(15.5+5)}\right)\right) + (250 + 10/3)\left(\tfrac{1}{2}\right)(5)(10)$$

(768.75; 206.09; 26.22)

$$= 559,214.76$$

$$\Sigma A = 1837.5 + 700 + 1262.5 + 768.75 + 25 = 4593.75$$

$$\bar{X} = \frac{559,214.76}{4593.75} = 121.73 \text{ ft}$$

UPLIFT (see page 3)

$$\Sigma \bar{X} A = 30.5(50)\left(\frac{50}{2}\right) + 28.75(28)(60) + 23(23)(93.5) + 11.25(19)(116.5) + 11.5(16)(132)$$

$$+ 5.75(10)(101) = 224,151.38$$

$$\Sigma A = 30.5(50) + 28.75(28) + 23(23) + 11.75(19) + 12.5(16) + 5.75(10) = 3748.75$$

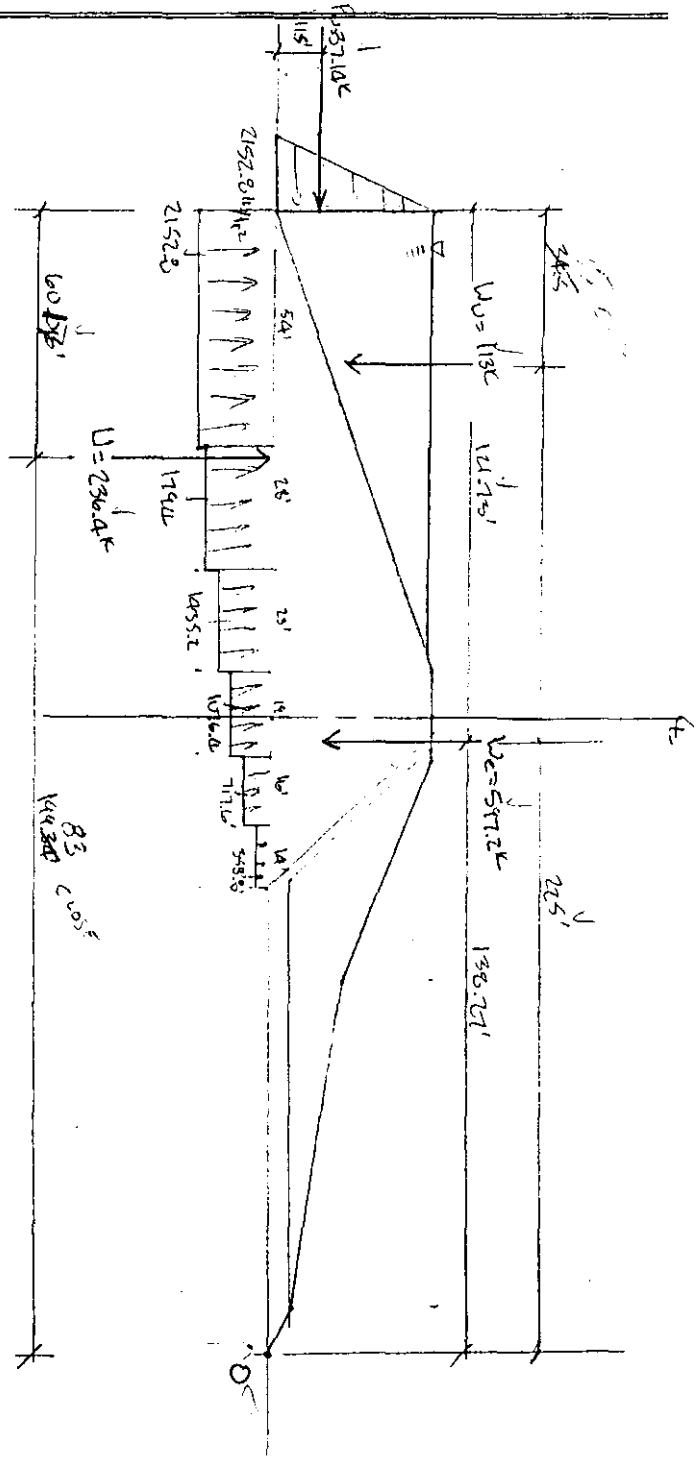
$$\bar{X} = 224,151.38 / 3748.75 = 60.07'$$

BLACK & VEATCH
ENGINEERS-ARCHITECTS

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Plant _____ Unit _____ Date _____ 19 ____
Project No. _____ File No. _____ Checked By _____
Title _____ Date _____ 19 ____
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$$[\Sigma M_O = 0] \circlearrowleft + \left[P_3 = \frac{\text{Moment Resisting}}{\text{Moment Driving}} \right]$$

$$\frac{113\text{K}(225\text{ft}) + 577.2\text{K}(138.27\text{ft})}{37.1\text{K}(115\text{ft}) + 236.4\text{K}(199.38\text{ft})} = 2.3$$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

SUMMARY – UPSTREAM SLOPE STABILITY ANALYSIS

The following is a brief summary of the upstream embankment slope stability analysis.

EMBANKMENT CROSS-SECTION

A typical 40' high embankment with 3:1 upstream side slopes was analyzed

DESIGN CASES

There were three design cases considered:

(1) Rapid drawdown

- CASE "A" – Max. PMF pool elevation (2474.5') to empty basin
- CASE "B" – Max. PMF pool elevation to emergency spillway crest elevation 2471'
- CASE "C" – MAX. PMF pool elevation to intermediate pool elevation 2460'

(2) End of construction

(3) Earthquake (Hor. + 0.1g M.M. VII, Zone 2, UBC-1985) with moist soil unit weights and empty basin

Analysis Method

The computer program STABL was used in the slope-stability analysis. The program calculates factors of safety for circular failure surfaces using the Modified Bishop method. Wide ranging limits were set for the critical failure surface search. Ten trial surface locations were equally spaced between the initiation and termination search limits and at each trial surface location, ten failure surfaces were generated.

Analysis Results

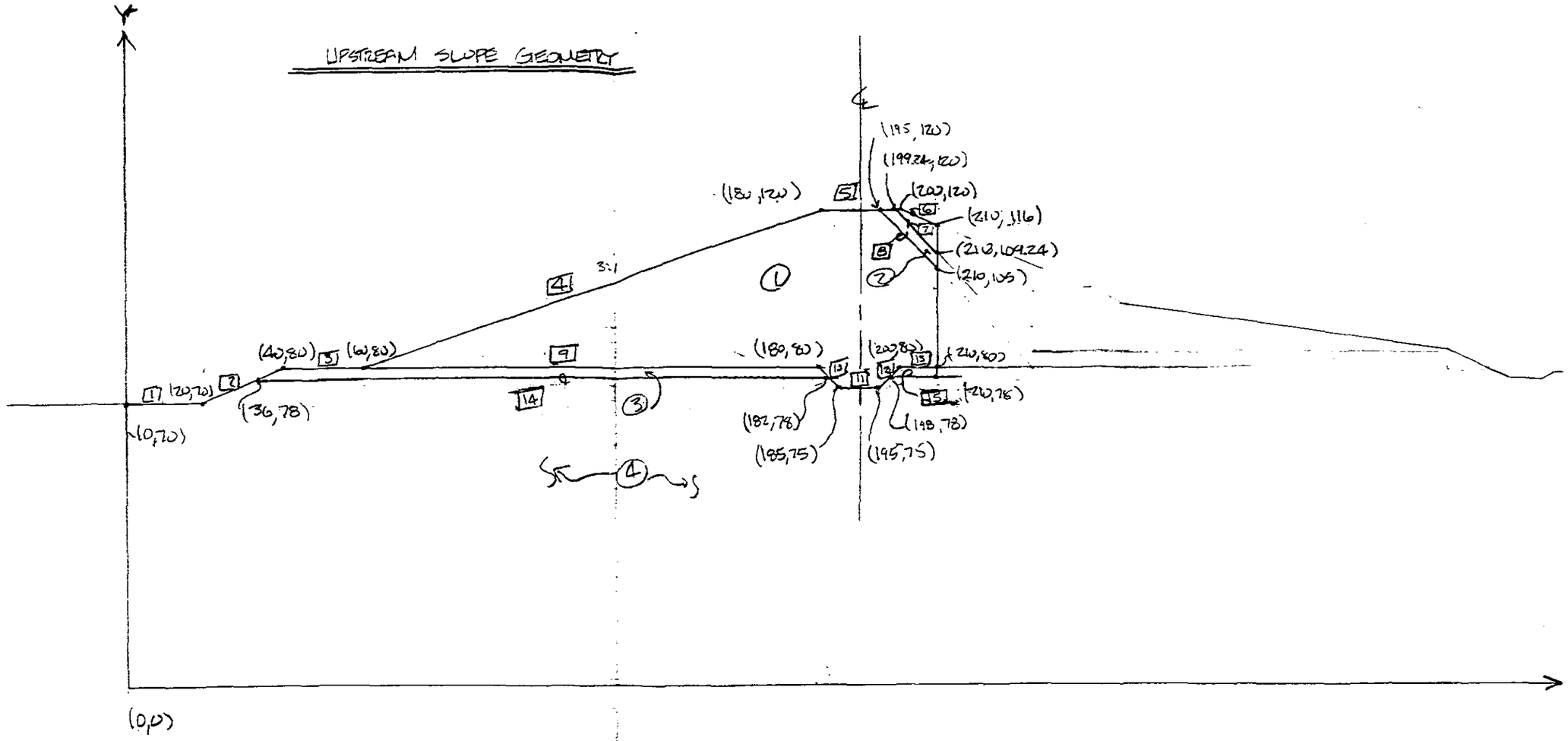
The upstream embankment slope proved to be stable against the rapid drawdown, end of construction, and earthquake design cases. The factor of safety all exceeded the required factors of safety as outlined in SCS's "Earth and Rockfill Dams", TR-60. (see the following summary sheets)

	SOIL PARAMETERS																ANALYSIS PROCEDURE		
	EMBANKMENT								FOUNDATION								CIRCULAR	IRREGULAR	BLOCK
	GENERAL FILL				FILTER				LAYER 1				LAYER 2				BISHOP	JANBU	JANBU
	γ_m	γ_{sat}	C	ϕ	γ_m	γ_{sat}	C	ϕ	γ_m	γ_{sat}	C	ϕ	γ_m	γ_{sat}	C	ϕ	F.S.	F.S.	F.S.
[illegible] 40' HIGH EMBANKMENT RAPID DRAWDOWN (CASE "A") FULL POOL - SLOPE STABILITY ANALYSIS F.S. ≥ 1.2 (ELEV [illegible]) FILE: UPSTREAM.DAT	126	135	0	36	126	135	0	36	105	[illegible]	0	33	125	135	0	36	1.77–1.95		
	126	135	0	32	125	135	0	32	105	115	0	29	125	135	0	32	1.55–1.66		
	126	135	0	32	126	135	0	30	105	115	2000	41	125	135	0	32	1.71–1.88		
ITALIAN 40' HIGH EMBANKMENT RAPID DRAWDOWN (CASE "B") FULL POOL - SPILLWAY CREST ELEV [illegible] F.S. ≥ 1.2 FILE: UPSTREAM.DAT	126	135	0	36	126	135	0	32	105	115	0	35	125	135	0	36	1.84–2.65		
	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.62–1.95		
	126	135	0	32	126	135	0	30	105	167	2000	41	125	135	0	32	1.76–2.12		
ITALIAN 40' HIGH EMBANKMENT RAPID DRAWDOWN (CASE "C") FULL POOL - INTK. ELEV 2460 FS. REQ'D ≥ 1.2 FILE: UPSTREAM.DAT	126	135	0	36	126	135	0	34	105	115	0	33	125	135	0	36	1.88–1.99		
	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.51–1.78		
	126	135	0	32	126	135	0	30	105	167	2000	41	125	135	0	32	1.55–1.84		

NOTES:-

DESIGN CASE	SOIL PARAMETERS																ANALYSIS PROCEDURE			NOTES:
	EMBANKMENT								FOUNDATION								CIRCULAR	IRREGULAR	BLOCK	
	GENERAL FILL				FILTER				LAYER 1				LAYER 2				BISHOP	JANBU	JANBU	
	γ_m	γ_{sat}	τ	ϕ	γ_m	γ_{sat}	τ	ϕ	γ_m	γ_{sat}	τ	ϕ	γ_m	γ_{sat}	τ	ϕ	F.S.	F.S.	F.S.	
TYPICAL 40' HIGH EMBANKMENT CONSTRUCTED F.S.min ≥ 1.1 FILE: 40FTEMB1.DAT	126	135	0	36	126	135	0	34	105	115	0	33	125	135	0	36	1.72–1.98			
	126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.52–1.66		1.63–1.95	
	133	135	0	32	133	135	0	30	105	115	0	29	125	135	0	32	1.42–1.665		1.51–1.75	
	126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.51–2.06		2.04–2.56	
TYPICAL 40' HIGH EMBANKMENT CUT CONSTRUCTED F.S.min ≥ 1.3 FILE: 40FTEMB1.DAT	126	135	0	36	126	135	0	34	165	167	2000	45	125	135	0	36	1.43–1.60			
	126	135	0	34	126	135	0	32	165	167	2000	43	125	135	0	34	1.32–1.60			
	126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.22–1.38			
	133	135	0	32	133	135	0	30	165	167	2000	41	125	135	0	32	1.31–1.43			

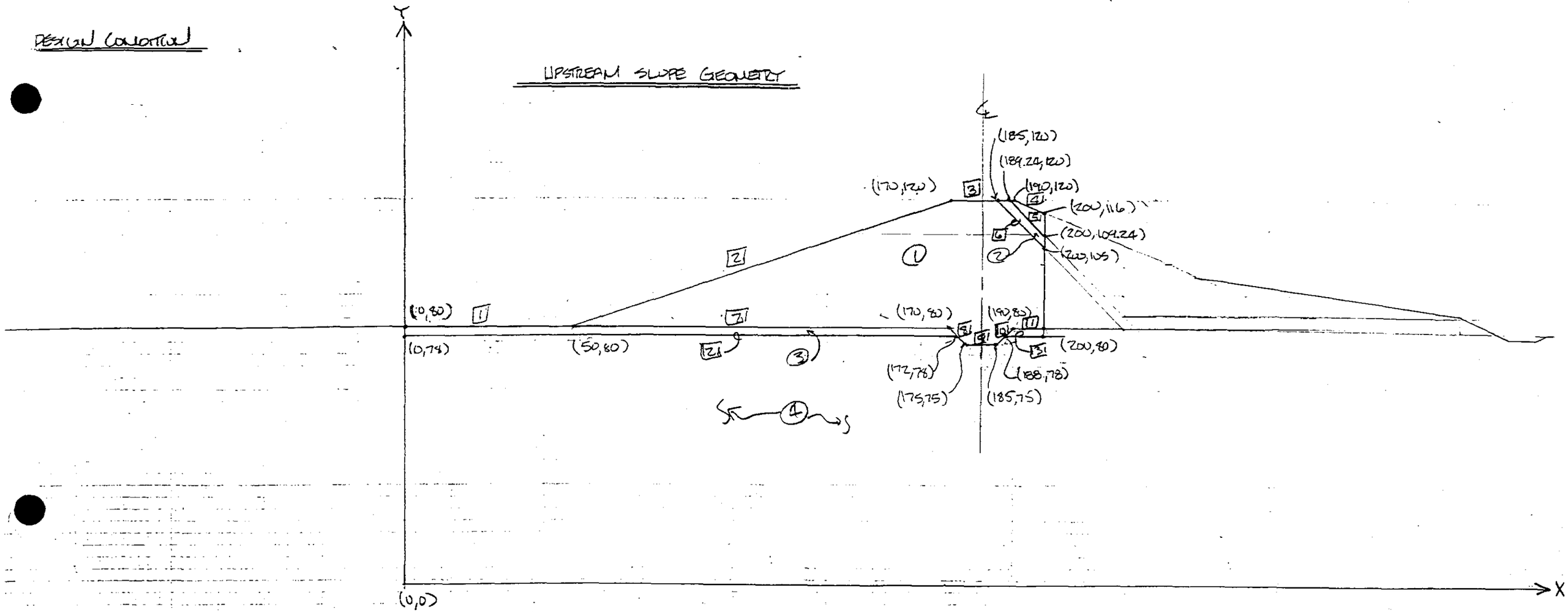
DESIGN CONDITION



CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 140225
SLOPE-STABILITY
11/15/18

DESIGN CONDITION

UPSTREAM SLOPE GEOMETRY



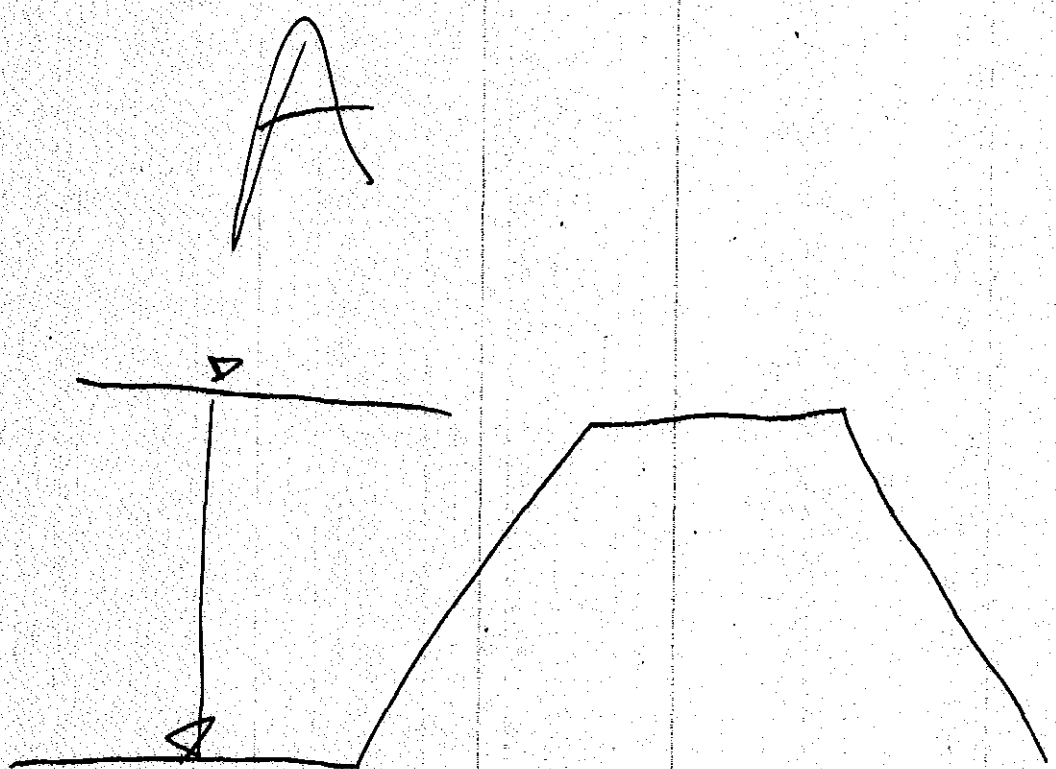
CLARK COUNTY PUBLIC WORKS

UPPER PLAINVIEW WASH RETENTION BASIN

B&N PROJECT 10625

SLOPE STABILITY

11/16/88


A

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN 'A'

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
15 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	70.00	20.00	70.00	4
2	20.00	70.00	40.00	80.00	4
3	40.00	80.00	60.00	80.00	3
4	60.00	80.00	180.00	120.00	1
5	180.00	120.00	200.00	120.00	1
6	200.00	120.00	210.00	116.00	1
7	199.24	120.00	210.00	109.24	2
8	195.00	120.00	210.00	105.00	1
9	60.00	80.00	180.00	80.00	3
10	180.00	80.00	185.00	75.00	4
11	185.00	75.00	195.00	75.00	4
12	195.00	75.00	200.00	80.00	4
13	200.00	80.00	210.00	80.00	3
14	36.00	78.00	182.00	78.00	4
15	198.00	78.00	210.00	78.00	4

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	105.0	115.0	0.0	33.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	80.00
2	60.00	80.00
3	70.00	82.00
4	80.00	84.00
5	90.00	86.50
6	100.00	89.00
7	110.00	91.00
8	120.00	93.50
9	130.00	96.00
10	140.00	97.00
11	150.00	98.50
12	160.00	99.50
13	170.00	100.50
14	180.00	101.00
15	190.00	101.00
16	200.00	100.50
17	210.00	99.50

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.46	77.09
3	68.25	75.07
4	78.19	73.97
5	88.19	73.78
6	98.16	74.52
7	108.02	76.17
8	117.69	78.73
9	127.08	82.16
10	136.12	86.44
11	144.72	91.54
12	152.82	97.41
13	160.34	104.00
14	167.23	111.25
15	172.02	117.34

CIRCLE CENTER AT X = 85.2 , Y = 182.2 AND RADIUS, 108.5

*** 1.768 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.61	77.65
3	68.48	76.04
4	78.44	75.18
5	88.44	75.08
6	98.42	75.74
7	108.32	77.15
8	118.08	79.31
9	127.66	82.20
10	136.98	85.80
11	146.01	90.11
12	154.69	95.08
13	162.96	100.70
14	170.78	106.92
15	178.11	113.73
16	183.92	120.00

CIRCLE CENTER AT X = 84.8 , Y = 207.0 AND RADIUS, 131.9

*** 1,777 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.67	78.33
2	46.04	74.84
3	55.66	72.13
4	65.48	70.22
5	75.42	69.14
6	85.42	68.87
7	95.40	69.44
8	105.30	70.82
9	115.06	73.02
10	124.60	76.02
11	133.86	79.79
12	142.78	84.32
13	151.29	89.57
14	159.34	95.50
15	166.87	102.08
16	173.83	109.26
17	180.18	116.99
18	182.26	120.00

CIRCLE CENTER AT X = 83.6 , Y = 189.8 AND RADIUS, 121.0

*** 1.835 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.90	78.33
3	80.82	77.03
4	90.80	76.49
5	100.80	76.71
6	110.75	77.67
7	120.60	79.39
8	130.30	81.85
9	139.78	85.03
10	148.99	88.92
11	157.88	93.50
12	166.40	98.73
13	174.50	104.60
14	182.14	111.06
15	189.26	118.07
16	190.94	120.00

CIRCLE CENTER AT X = 93.0 , Y = 208.7 AND RADIUS, 132.2

*** 1.860 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	57.98	75.83
3	67.45	72.63
4	77.21	70.42
5	87.14	69.24
6	97.13	69.09
7	107.09	69.98
8	116.91	71.90
9	126.47	74.83
10	135.68	78.73
11	144.43	83.57
12	152.63	89.29
13	160.20	95.82
14	167.05	103.11
15	173.11	111.07
16	178.17	119.39

CIRCLE CENTER AT X = 93.5 , Y = 165.3 AND RADIUS, 96.3

*** 1.866 ***

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.39	76.89
3	68.10	74.50
4	77.97	72.85
5	87.93	71.95
6	97.93	71.81
7	107.91	72.41
8	117.81	73.77
9	127.59	75.87
10	137.18	78.71
11	146.53	82.25
12	155.59	86.49
13	164.30	91.41
14	172.61	96.96
15	180.49	103.13
16	187.87	109.87
17	194.73	117.15
18	197.04	120.00

CIRCLE CENTER AT X = 94.9 , Y = 204.3 AND RADIUS, 132.6

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	70.00
2	9.95	69.03
3	19.93	68.40
4	29.93	68.12
5	39.93	68.18
6	49.92	68.59
7	59.89	69.35
8	69.83	70.45
9	79.73	71.90
10	89.57	73.69
11	99.34	75.81
12	109.03	78.28
13	118.63	81.08
14	128.13	84.21
15	137.51	87.66
16	146.77	91.44
17	155.89	95.54
18	164.86	99.95
19	173.68	104.67
20	182.33	109.69
21	190.80	115.01
22	198.16	120.00

CIRCLE CENTER AT X = 33.1 , Y = 356.8 AND RADIUS, 288.7

*** 1.915 ***

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	70.00
2	9.40	66.58
3	18.99	63.75
4	28.74	61.52
5	38.60	59.90
6	48.55	58.91
7	58.55	58.53
8	68.54	58.79
9	78.51	59.66
10	88.39	61.15
11	98.17	63.26
12	107.79	65.97
13	117.23	69.28
14	126.44	73.17
15	135.39	77.63
16	144.05	82.64

17	152.38	88.18
18	160.34	94.22
19	167.91	100.7
20	175.06	107.75
21	181.76	115.17
22	185.60	120.00

CIRCLE CENTER AT X = 59.5 , Y = 218.8 AND RADIUS, 160.2

*** 1.932 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.38	76.61
3	79.98	73.82
4	89.82	72.03
5	99.79	71.24
6	109.79	71.48
7	119.71	72.73
8	129.45	74.99
9	138.91	78.23
10	147.99	82.42
11	156.60	87.51
12	164.64	93.45
13	172.03	100.18
14	178.70	107.63
15	184.58	115.72
16	187.06	120.00

CIRCLE CENTER AT X = 102.5 , Y = 169.2 AND RADIUS, 98.0

*** 1.936 ***

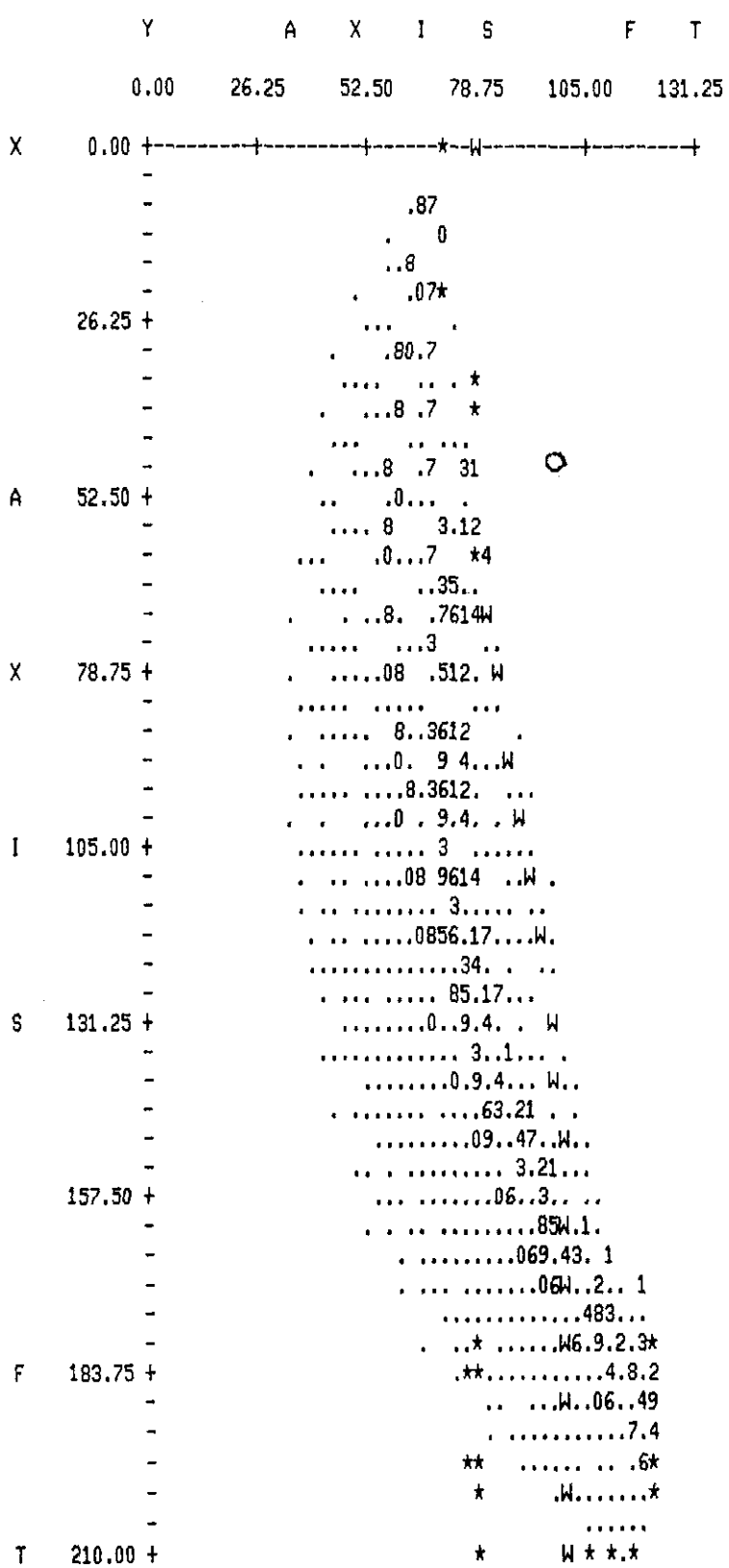
FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	12.22	70.00
2	21.60	66.52
3	31.18	63.65
4	40.92	61.39
5	50.78	59.75
6	60.73	58.75
7	70.73	58.37
8	80.72	58.63
9	90.68	59.53
10	100.56	61.06
11	110.33	63.21
12	119.94	65.98
13	129.35	69.35
14	138.54	73.31
15	147.45	77.85
16	156.05	82.95
17	164.32	88.58
18	172.20	94.72
19	179.69	101.35
20	186.74	108.45
21	193.32	115.98
22	196.41	120.00

CIRCLE CENTER AT X = 71.6 , Y = 215.8 AND RADIUS, 157.4

*** 1.952 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.59	77.57
3	68.45	75.88
4	78.40	74.96
5	88.40	74.80
6	98.38	75.41
7	108.29	76.78
8	118.06	78.90
9	127.64	81.77
10	136.97	85.37
11	146.00	89.67
12	154.67	94.64
13	162.94	100.27
14	170.75	106.52
15	178.06	113.34
16	184.17	120.00

CIRCLE CENTER AT X = 85.5 , Y = 205.2 AND RADIUS, 130.4

*** 1.530 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.10	76.11
3	67.67	73.21
4	77.50	71.34
5	87.46	70.52
6	97.46	70.76
7	107.38	72.05
8	117.10	74.38
9	126.52	77.73
10	135.54	82.05
11	144.05	87.30
12	151.96	93.43
13	159.17	100.35
14	165.62	108.00
15	171.22	116.28
16	171.73	117.24

CIRCLE CENTER AT X = 90.2 , Y = 165.0 AND RADIUS, 94.5

*** 1.574 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 20 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	12.22	70.00
2	22.08	68.31
3	32.01	67.14
4	41.99	66.50
5	51.99	66.38
6	61.98	66.79
7	71.94	67.73
8	81.83	69.20
9	91.63	71.18
10	101.31	73.68
11	110.85	76.68
12	120.22	80.19
13	129.38	84.18
14	138.33	88.65
15	147.02	93.59
16	155.45	98.98
17	163.57	104.81
18	171.38	111.06
19	178.85	117.71
20	181.16	120.00

CIRCLE CENTER AT X = 49.2 , Y = 255.8 AND RADIUS, 189.4

*** 1.576 ***

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	34.14	69.78
3	43.98	68.00
4	53.92	66.90
5	63.91	66.49
6	73.91	66.75
7	83.87	67.70
8	93.73	69.32
9	103.47	71.61
10	113.02	74.57
11	122.35	78.17
12	131.41	82.39
13	140.17	87.23
14	148.57	92.65
15	156.58	98.63
16	164.17	105.15
17	171.29	112.17
18	177.47	119.16

CIRCLE CENTER AT X = 65.0 , Y = 212.9 AND RADIUS, 146.4

*** 1.588 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.10	76.10
3	67.64	73.11
4	77.43	71.08
5	87.37	70.00
6	97.37	69.91
7	107.33	70.79
8	117.16	72.64
9	126.76	75.44
10	136.04	79.17
11	144.91	83.79
12	153.29	89.25
13	161.09	95.50
14	168.25	102.48
15	174.69	110.13
16	180.35	118.38
17	181.25	120.00

CIRCLE CENTER AT X = 93.3 , Y = 172.1 AND RADIUS, 102.2

*** 1.588 ***

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	34.44	72.10
3	44.44	72.37
4	54.42	73.03
5	64.36	74.08
6	74.26	75.52
7	84.09	77.34
8	93.84	79.56
9	103.50	82.15
10	113.05	85.12
11	122.47	88.46
12	131.76	92.17
13	140.90	96.24
14	149.86	100.67
15	158.65	105.44
16	167.24	110.56
17	175.63	116.01
18	181.27	120.00

CIRCLE CENTER AT X = 32.6 , Y = 326.9 AND RADIUS, 254.8

*** 1.615 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.12	76.15
3	67.65	73.14
4	77.42	71.00
5	87.35	69.76
6	97.34	69.41
7	107.32	69.97
8	117.22	71.42
9	126.94	73.77
10	136.41	76.97
11	145.56	81.02
12	154.30	85.88
13	162.56	91.50
14	170.29	97.85
15	177.42	104.87
16	183.88	112.50
17	189.14	120.00

CIRCLE CENTER AT X = 96.2 , Y = 180.2 AND RADIUS, 110.8

*** 1.615 ***

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	57.94	75.74
3	67.35	72.38
4	77.05	69.93
5	86.94	68.44
6	96.92	67.90
7	106.92	68.33
8	116.82	69.72
9	126.54	72.07
10	135.99	75.33
11	145.08	79.50
12	153.73	84.52
13	161.86	90.35
14	169.38	96.93
15	176.23	104.22
16	182.35	112.13
17	187.31	120.00

CIRCLE CENTER AT X = 97.5 , Y = 171.5 AND RADIUS, 103.6

*** 1.637 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	71.09	79.75
3	81.09	79.67
4	91.08	80.15
5	101.03	81.17
6	110.90	82.75
7	120.68	84.86
8	130.32	87.51
9	139.80	90.68
10	149.10	94.37
11	158.17	98.57
12	167.01	103.26
13	175.56	108.43
14	183.83	114.06
15	191.58	120.00

CIRCLE CENTER AT X = 77.4 , Y = 261.2 AND RADIUS, 181.6

*** 1.647 ***

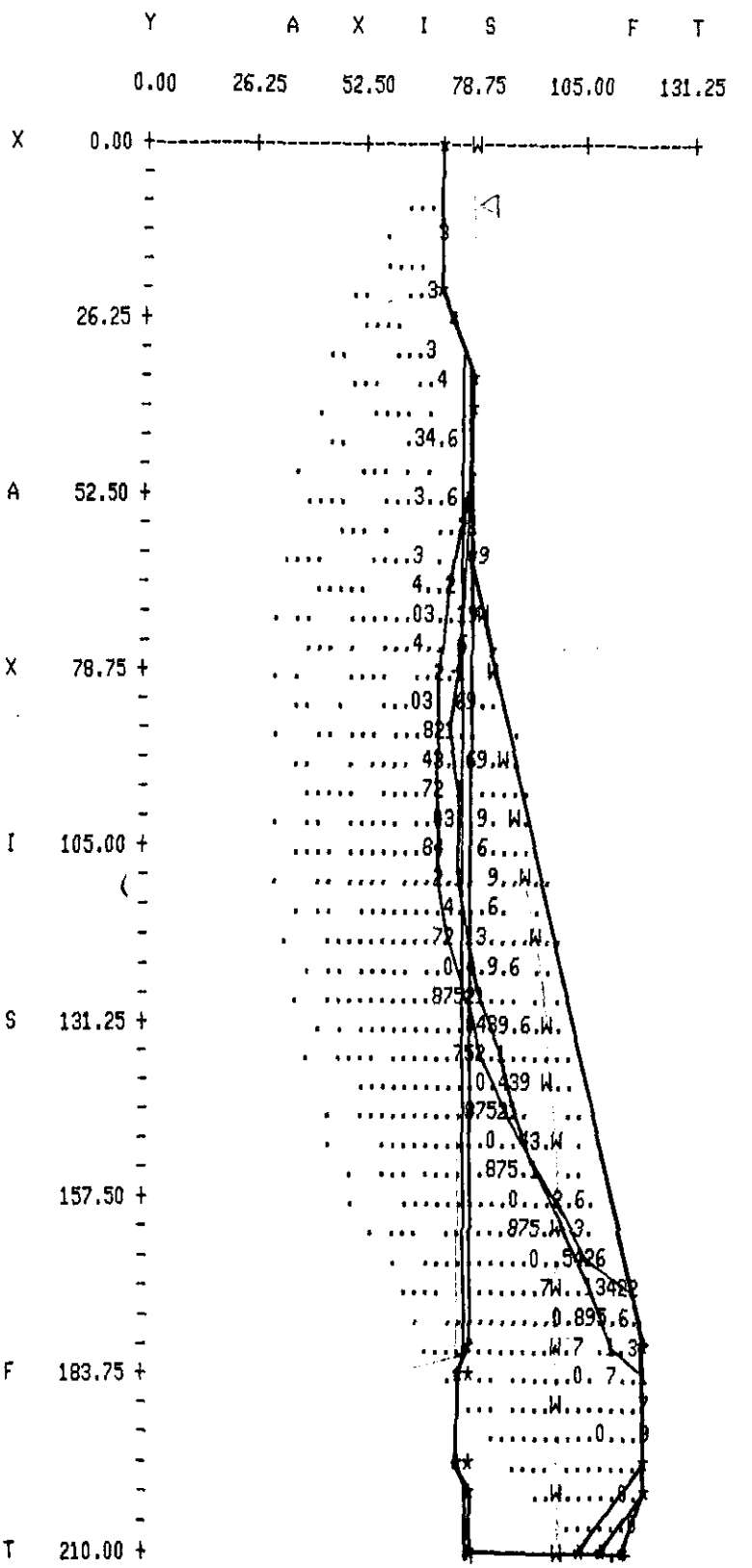
FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	12.22	70.00
2	22.07	68.26
3	31.98	66.94
4	41.94	66.06
5	51.93	65.61
6	61.93	65.60
7	71.92	66.02
8	81.89	66.87
9	91.80	68.16
10	101.66	69.87
11	111.42	72.02
12	121.09	74.58
13	130.63	77.57
14	140.04	80.96
15	149.29	84.76
16	158.36	88.96
17	167.25	93.55
18	175.93	98.52
19	184.38	103.87
20	192.59	109.58
21	200.54	115.63
22	203.91	118.44

CIRCLE CENTER AT X = 57.3 , Y = 295.5 AND RADIUS, 230.0

*** 1.661 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	80.00
2	60.00	80.00
3	70.00	82.00
4	80.00	84.00
5	90.00	86.50
6	100.00	89.00
7	110.00	91.00
8	120.00	93.50
9	130.00	96.00
10	140.00	97.00
11	150.00	98.50
12	160.00	99.50
13	170.00	100.50
14	180.00	101.00
15	190.00	101.00
16	200.00	100.50
17	210.00	99.50

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

** * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.*

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.03	81.98
3	92.92	80.55
4	102.91	80.16
5	112.89	80.83
6	122.74	82.54
7	132.36	85.27
8	141.64	89.01
9	150.48	93.69
10	158.77	99.28
11	166.43	105.71
12	173.37	112.90
13	178.52	119.51

CIRCLE CENTER AT X = 101.6 , Y = 175.2 AND RADIUS, 95.1

*** 1.713 ***

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	70.00
2	9.40	66.58
3	18.99	63.75
4	28.74	61.52
5	38.60	59.90
6	48.55	58.91
7	58.55	58.53
8	68.54	58.79
9	78.51	59.66
10	88.39	61.15
11	98.17	63.26
12	107.79	65.97
13	117.23	69.28
14	126.44	73.17
15	135.39	77.63
16	144.05	82.64
17	152.38	88.18
18	160.34	94.22
19	167.91	100.75
20	175.06	107.75
21	181.76	115.17

22 185.60 120.00

CIRCLE CENTER AT X = 59.5 , Y 218.8 AND RADIUS, 160.2

*** 1.768 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	12.22	70.00
2	21.60	66.52
3	31.18	63.65
4	40.92	61.39
5	50.78	59.75
6	60.73	58.75
7	70.73	58.37
8	80.72	58.63
9	90.68	59.53
10	100.56	61.06
11	110.33	63.21
12	119.94	65.98
13	129.35	69.35
14	138.54	73.31
15	147.45	77.85
16	156.05	82.95
17	164.32	88.58
18	172.20	94.72
19	179.69	101.35
20	186.74	108.45
21	193.32	115.98
22	196.41	120.00

CIRCLE CENTER AT X = 71.6 , Y = 215.8 AND RADIUS, 157.4

*** 1.781 ***

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	12.22	70.00
2	21.52	66.33
3	31.04	63.26
4	40.74	60.81
5	50.57	58.98
6	60.50	57.79
7	70.48	57.23
8	80.48	57.31
9	90.46	58.04
10	100.36	59.40
11	110.16	61.39
12	119.82	64.00
13	129.28	67.23
14	138.52	71.05
15	147.50	75.46
16	156.17	80.43

17	164.51	85.95
18	172.48	91.99
19	180.05	98.53
20	187.18	105.53
21	193.85	112.99
22	199.37	120.00

CIRCLE CENTER AT X = 74.2 , Y = 213.4 AND RADIUS, 156.2

*** 1.805 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.67	78.33
2	46.04	74.84
3	55.66	72.13
4	65.48	70.22
5	75.42	69.14
6	85.42	68.87
7	95.40	69.44
8	105.30	70.82
9	115.06	73.02
10	124.60	76.02
11	133.86	79.79
12	142.78	84.32
13	151.29	89.57
14	159.34	95.50
15	166.87	102.08
16	173.83	109.26
17	180.18	116.99
18	182.26	120.00

CIRCLE CENTER AT X = 83.6 , Y = 189.8 AND RADIUS, 121.0

*** 1.807 ***

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	33.68	68.38
3	43.21	65.37
4	52.97	63.19
5	62.89	61.88
6	72.88	61.44
7	82.87	61.87
8	92.78	63.17
9	102.55	65.33
10	112.09	68.33
11	121.33	72.16
12	130.20	76.77
13	138.63	82.15
14	146.56	88.24
15	153.93	94.99
16	160.69	102.37
17	166.77	110.30
18	171.04	117.01

CIRCLE CENTER AT X = 73.0 , Y = 175.9 AND RADIUS, 114.5

*** 1.821 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 21 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	33.46	67.90
3	42.79	64.30
4	52.38	61.46
5	62.16	59.38
6	72.08	58.08
7	82.06	57.57
8	92.06	57.86
9	102.00	58.93
10	111.83	60.79
11	121.47	63.43
12	130.88	66.81
13	139.99	70.94
14	148.75	75.77
15	157.10	81.27
16	164.98	87.43
17	172.35	94.18
18	179.16	101.50
19	185.38	109.34
20	190.95	117.65
21	192.27	120.00

CIRCLE CENTER AT X = 83.5 , Y = 183.7 AND RADIUS, 126.2

*** 1.842 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.16	85.72
3	105.00	83.97
4	114.98	83.31
5	124.97	83.73
6	134.86	85.24
7	144.52	87.81
8	153.85	91.41
9	162.73	96.00
10	171.06	101.54
11	178.74	107.94
12	185.68	115.14
13	189.44	120.00

CIRCLE CENTER AT X = 116.1 , Y = 175.3 AND RADIUS, 92.0

*** 1.681 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.11	85.57
3	104.94	83.71
4	114.91	82.96
5	124.90	83.33
6	134.79	84.83
7	144.45	87.42
8	153.75	91.08
9	162.59	95.76
10	170.85	101.40
11	178.42	107.93
12	185.21	115.27
13	188.69	120.00

CIRCLE CENTER AT X = 116.6 , Y = 172.0 AND RADIUS, 89.0

*** 1.882 ***

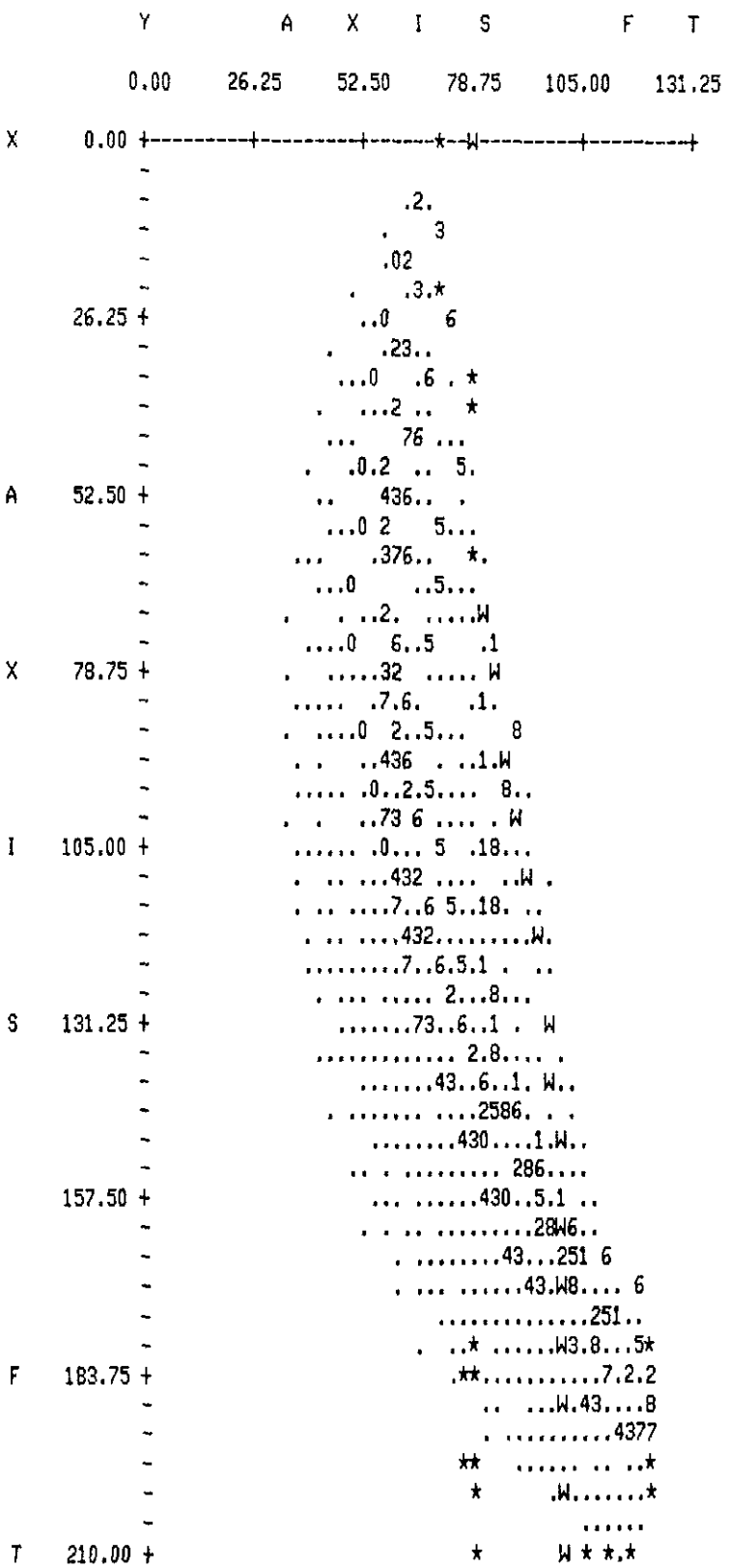
FAILURE SURFACE SPECIFIED BY 23 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	70.00
2	8.71	65.08
3	17.77	60.85
4	27.13	57.34
5	36.74	54.57
6	46.54	52.56
7	56.46	51.31
8	66.45	50.84
9	76.44	51.15
10	86.38	52.23
11	96.21	54.08
12	105.86	56.70
13	115.28	60.05
14	124.42	64.13
15	133.20	68.90
16	141.59	74.35
17	149.53	80.43
18	156.97	87.10
19	163.87	94.34
20	170.19	102.09
21	175.89	110.31
22	180.93	118.95
23	181.43	120.00

CIRCLE CENTER AT X = 67.5 , Y = 179.3 AND RADIUS, 128.5

*** 1.885 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "A"





UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
15 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	70.00	20.00	70.00	4
2	20.00	70.00	40.00	80.00	4
3	40.00	80.00	60.00	80.00	3
4	60.00	80.00	180.00	120.00	1
5	180.00	120.00	200.00	120.00	1
6	200.00	120.00	210.00	116.00	1
7	199.24	120.00	210.00	109.24	2
8	195.00	120.00	210.00	105.00	1
9	60.00	80.00	180.00	80.00	3
10	180.00	80.00	185.00	75.00	4
11	185.00	75.00	195.00	75.00	4
12	195.00	75.00	200.00	80.00	4
13	200.00	80.00	210.00	80.00	3
14	36.00	78.00	182.00	78.00	4
15	198.00	78.00	210.00	78.00	4

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	105.0	115.0	0.0	33.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	111.00
2	153.00	111.00
3	160.00	113.00
4	170.00	115.00
5	180.00	116.00
6	190.00	116.00
7	200.00	115.00
8	210.00	109.24

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	120.00	96.57
3	129.97	97.34
4	139.83	98.98
5	149.52	101.47
6	158.95	104.81
7	168.05	108.95
8	176.76	113.87
9	185.00	119.53
10	185.57	120.00

CIRCLE CENTER AT X = 116.1 , Y = 211.0 AND RADIUS, 114.5

*** 1.889 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.36	90.47
3	105.14	92.57
4	114.89	94.81
5	124.60	97.19
6	134.27	99.72
7	143.91	102.39
8	153.51	105.20
9	163.06	108.16
10	172.57	111.25
11	182.03	114.49
12	191.45	117.86
13	197.14	120.00

CIRCLE CENTER AT X = -41.7 , Y = 753.3 AND RADIUS, 676.9

*** 2.103 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.90	78.33
3	80.82	77.03
4	90.80	76.49
5	100.80	76.71
6	110.75	77.67
7	120.60	79.39
8	130.30	81.85
9	139.78	85.03
10	148.99	88.92
11	157.88	93.50
12	166.40	98.73
13	174.50	104.60
14	182.14	111.06
15	189.26	118.07
16	190.94	120.00

CIRCLE CENTER AT X = 93.0 , Y = 208.7 AND RADIUS, 132.2

*** 2.179 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.50	90.25
3	117.42	88.97
4	127.42	88.77
5	137.38	89.66
6	147.18	91.61
7	156.72	94.62
8	165.88	98.63
9	174.55	103.61
10	182.63	109.50
11	190.03	116.23
12	193.36	120.00

CIRCLE CENTER AT X = 124.2 , Y = 181.1 AND RADIUS, 92.4

*** 2.181 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	34.33	73.74
3	44.19	75.43
4	54.01	77.28
5	63.81	79.29
6	73.57	81.46
7	83.29	83.80
8	92.98	86.30
9	102.62	88.96
10	112.21	91.78
11	121.76	94.76
12	131.25	97.89
13	140.69	101.19
14	150.08	104.64
15	159.40	108.25
16	168.67	112.01
17	177.87	115.92
18	187.01	119.99
19	187.02	120.00

CIRCLE CENTER AT X = -61.9 , Y = 666.7 AND RADIUS, 600.7

*** 2.184 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.61	77.65
3	68.48	76.04
4	78.44	75.18
5	88.44	75.08
6	98.42	75.74
7	108.32	77.15
8	118.08	79.31
9	127.66	82.20
10	136.98	85.80
11	146.01	90.11
12	154.69	95.08
13	162.96	100.70
14	170.78	106.92
15	178.11	113.73
16	183.92	120.00

CIRCLE CENTER AT X = 84.8 , Y = 207.0 AND RADIUS, 131.9

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.67	78.33
2	46.60	77.21
3	56.58	76.51
4	66.58	76.25
5	76.57	76.41
6	86.56	77.01
7	96.50	78.03
8	106.40	79.49
9	116.22	81.37
10	125.95	83.66
11	135.58	86.38
12	145.07	89.51
13	154.43	93.04
14	163.62	96.98
15	172.64	101.31
16	181.46	106.02
17	190.07	111.10
18	198.45	116.56
19	202.10	119.16

CIRCLE CENTER AT X = 67.7 , Y = 308.3 AND RADIUS, 232.1

*** 2.208 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.63	90.86
3	117.59	89.98
4	127.59	89.96
5	137.55	90.80
6	147.41	92.49
7	157.08	95.02
8	166.51	98.37
9	175.60	102.52
10	184.31	107.44
11	192.57	113.08
12	200.31	119.41
13	200.65	119.74

CIRCLE CENTER AT X = 122.8 , Y = 206.2 AND RADIUS, 116.4

*** 2.214 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.98	78.75
3	80.93	77.71
4	90.91	77.26
5	100.91	77.39
6	110.89	78.11
7	120.80	79.41
8	130.62	81.29
9	140.32	83.75
10	149.85	86.77
11	159.19	90.34
12	168.31	94.45
13	177.16	99.10
14	185.73	104.25
15	193.99	109.90
16	201.89	116.02
17	204.43	118.23

CIRCLE CENTER AT X = 93.7 , Y = 247.7 AND RADIUS, 170.4

*** 2.249 ***

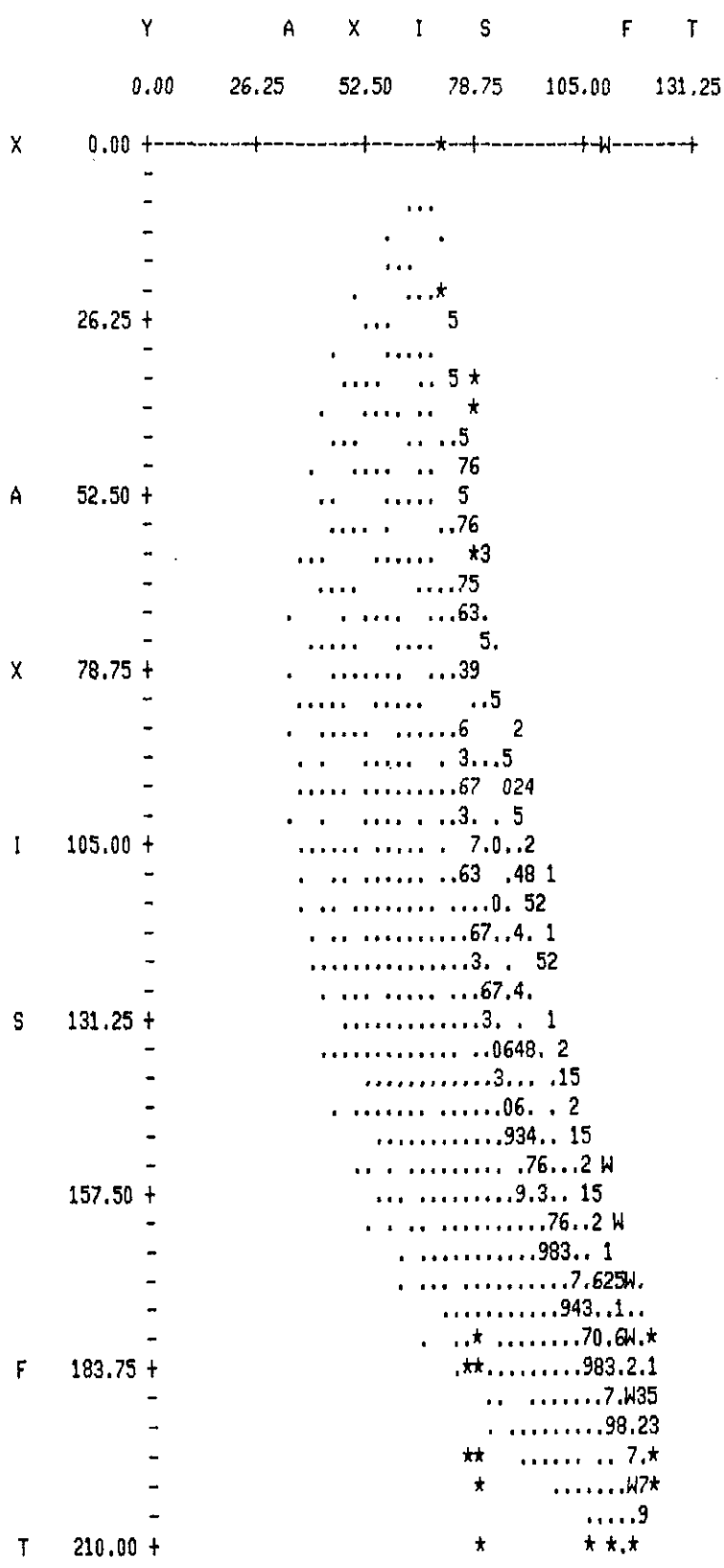
FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.16	85.72
3	105.00	83.97
4	114.98	83.31
5	124.97	83.73
6	134.86	85.24
7	144.52	87.81
8	153.85	91.41
9	162.73	96.00
10	171.06	101.54
11	178.74	107.94
12	185.68	115.14
13	189.44	120.00

CIRCLE CENTER AT X = 116.1 , Y = 175.3 AND RADIUS, 92.0

*** 2.265 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	111.00
2	153.00	111.00
3	160.00	113.00
4	170.00	115.00
5	180.00	116.00
6	190.00	116.00
7	200.00	115.00
8	210.00	109.24

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	120.00	96.57
3	129.97	97.34
4	139.83	98.98
5	149.52	101.47
6	158.95	104.81
7	168.05	108.95
8	176.76	113.87
9	185.00	119.53
10	185.57	120.00

CIRCLE CENTER AT X = 116.1 , Y = 211.0 AND RADIUS, 114.5

*** 1.624 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.36	90.47
3	105.14	92.57
4	114.89	94.81
5	124.60	97.19
6	134.27	99.72
7	143.91	102.39
8	153.51	105.20
9	163.06	108.16
10	172.57	111.25
11	182.03	114.49
12	191.45	117.86
13	197.14	120.00

CIRCLE CENTER AT X = -41.7 , Y = 753.3 AND RADIUS, 676.9

*** 1.809 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.90	78.33
3	80.82	77.03
4	90.80	76.49
5	100.80	76.71
6	110.75	77.67
7	120.60	79.39
8	130.30	81.85
9	139.78	85.03
10	148.99	88.92
11	157.88	93.50
12	166.40	98.73
13	174.50	104.60
14	182.14	111.06
15	189.26	118.07
16	190.94	120.00

CIRCLE CENTER AT X = 93.0 , Y = 208.7 AND RADIUS, 132.2

*** 1.872 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.50	90.25
3	117.42	88.97
4	127.42	88.77
5	137.38	89.66
6	147.18	91.61
7	156.72	94.62
8	165.88	98.63
9	174.55	103.61
10	182.63	109.50
11	190.03	116.23
12	193.36	120.00

CIRCLE CENTER AT X = 124.2 , Y = 181.1 AND RADIUS, 92.4

*** 1.875 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	34.33	73.74
3	44.19	75.43
4	54.01	77.28
5	63.81	79.29
6	73.57	81.46
7	83.29	83.80
8	92.98	86.30
9	102.62	88.96
10	112.21	91.78
11	121.76	94.76
12	131.25	97.89
13	140.69	101.19
14	150.08	104.64
15	159.40	108.25
16	168.67	112.01
17	177.87	115.92
18	187.01	119.99
19	187.02	120.00

CIRCLE CENTER AT X = -61.9 , Y = 666.7 AND RADIUS, 600.7

*** 1.877 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.61	77.65
3	68.48	76.04
4	78.44	75.18
5	88.44	75.08
6	98.42	75.74
7	108.32	77.15
8	118.08	79.31
9	127.66	82.20
10	136.98	85.80
11	146.01	90.11
12	154.69	95.08
13	162.96	100.70
14	170.78	106.92
15	178.11	113.73
16	183.92	120.00

CIRCLE CENTER AT X = 84.8 , Y = 207.0 AND RADIUS, 131.9

*** 1.896 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.67	78.33
2	46.60	77.21
3	56.58	76.51
4	66.58	76.25
5	76.57	76.41
6	86.56	77.01
7	96.50	78.03
8	106.40	79.49
9	116.22	81.37
10	125.95	83.66
11	135.58	86.38
12	145.07	89.51
13	154.43	93.04
14	163.62	96.98
15	172.64	101.31
16	181.46	106.02
17	190.07	111.10
18	198.45	116.56
19	202.10	119.16

CIRCLE CENTER AT X = 67.7 , Y = 308.3 AND RADIUS, 232.1

*** 1.897 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.63	90.86
3	117.59	89.98
4	127.59	89.96
5	137.55	90.80
6	147.41	92.49
7	157.08	95.02
8	166.51	98.37
9	175.60	102.52
10	184.31	107.44
11	192.57	113.08
12	200.31	119.41
13	200.65	119.74

CIRCLE CENTER AT X = 122.8 , Y = 206.2 AND RADIUS, 116.4

*** 1.904 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.98	78.75
3	80.93	77.71
4	90.91	77.26
5	100.91	77.39
6	110.89	78.11
7	120.80	79.41
8	130.62	81.29
9	140.32	83.75
10	149.85	86.77
11	159.19	90.34
12	168.31	94.45
13	177.16	99.10
14	185.73	104.25
15	193.99	109.90
16	201.89	116.02
17	204.43	118.23

CIRCLE CENTER AT X = 93.7 , Y = 247.7 AND RADIUS, 170.4

*** 1.932 ***

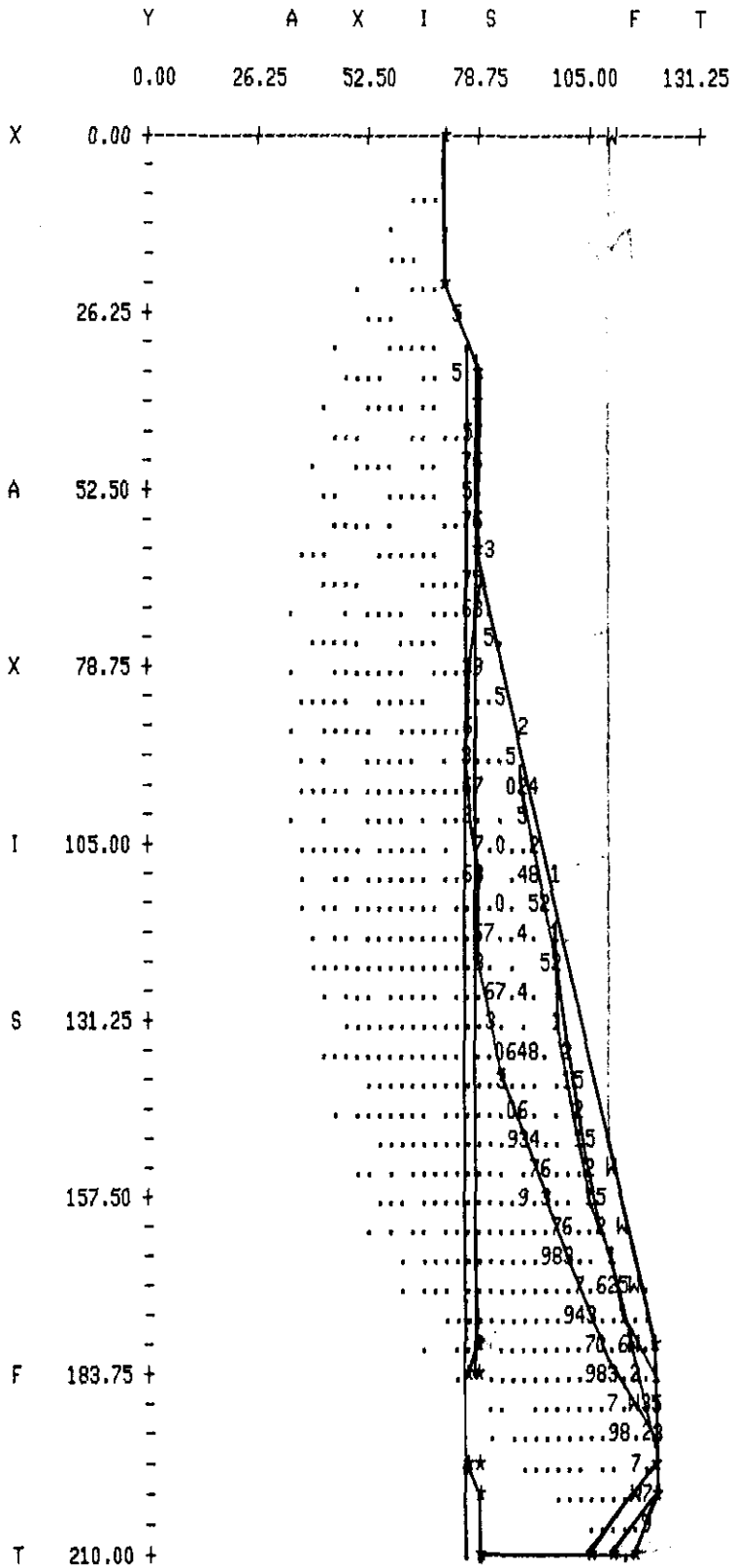
FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.16	85.72
3	105.00	83.97
4	114.98	83.31
5	124.97	83.73
6	134.86	85.24
7	144.52	87.81
8	153.85	91.41
9	162.73	96.00
10	171.06	101.54
11	178.74	107.94
12	185.68	115.14
13	189.44	120.00

CIRCLE CENTER AT X = 116.1 , Y = 175.3 AND RADIUS, 92.0

*** 1.948 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.75	91.87
3	117.75	92.16
4	127.66	93.45
5	137.40	95.73
6	146.86	98.98
7	155.94	103.17
8	164.55	108.25
9	172.61	114.17
10	178.51	119.50

CIRCLE CENTER AT X = 109.9 , Y = 191.0 AND RADIUS, 99.2

*** 1.755 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	119.74	94.38
3	129.67	93.21
4	139.67	93.15
5	149.61	94.21
6	159.37	96.39
7	168.83	99.64
8	177.86	103.93
9	186.35	109.21
10	194.20	115.40
11	198.84	120.00

CIRCLE CENTER AT X = 135.2 , Y = 182.1 AND RADIUS, 89.1

*** 1.909 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.33	84.13
3	93.33	84.26
4	103.31	84.83
5	113.26	85.84
6	123.16	87.29
7	132.98	89.17
8	142.70	91.49
9	152.32	94.23
10	161.81	97.39
11	171.15	100.97
12	180.32	104.96
13	189.30	109.35
14	198.09	114.12
15	204.71	118.12

CIRCLE CENTER AT X = 85.4 , Y = 310.8 AND RADIUS, 226.6

*** 1.928 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.55	94.70
3	117.31	96.89
4	127.05	99.18
5	136.76	101.55
6	146.45	104.02
7	156.12	106.58
8	165.76	109.23
9	175.38	111.97
10	184.97	114.80
11	194.53	117.71
12	200.79	119.69

CIRCLE CENTER AT X = -122.2 , Y = 1138.9 AND RADIUS, 1069.1

*** 1.933 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.36	90.47
3	105.15	92.53
4	114.91	94.69
5	124.65	96.96
6	134.37	99.33
7	144.06	101.80
8	153.72	104.38
9	163.35	107.06
10	172.96	109.84
11	182.54	112.72
12	192.08	115.70
13	201.59	118.79
14	202.37	119.05

CIRCLE CENTER AT X = -93.2 , Y = 1011.4 AND RADIUS, 940.0

*** 1.940 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.11	86.54
3	92.87	88.71
4	102.62	90.94
5	112.35	93.24
6	122.07	95.61
7	131.77	98.05
8	141.45	100.55
9	151.11	103.12
10	160.76	105.76
11	170.39	108.46
12	180.00	111.23
13	189.59	114.06
14	199.16	116.96
15	203.90	118.44

CIRCLE CENTER AT X = -225.4 , Y = 1499.9 AND RADIUS, 1446.7

*** 1.986 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.15	82.52
3	93.10	81.60
4	103.10	81.68
5	113.04	82.77
6	122.82	84.87
7	132.34	87.93
8	141.50	91.94
9	150.21	96.86
10	158.38	102.63
11	165.92	109.19
12	172.76	116.49
13	173.89	117.96

CIRCLE CENTER AT X = 97.3 , Y = 180.5 AND RADIUS, 99.0

*** 1.994 ***

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	71.08	81.14
3	81.03	82.13
4	90.96	83.34
5	100.86	84.77
6	110.72	86.42
7	120.55	88.28
8	130.33	90.36
9	140.06	92.65
10	149.74	95.16
11	159.37	97.87
12	168.93	100.80
13	178.42	103.94
14	187.84	107.29
15	197.19	110.84
16	206.46	114.60
17	209.84	116.06

CIRCLE CENTER AT X = 31.0 , Y = 533.8 AND RADIUS, 454.5

*** 2.070 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.67	91.10
3	117.63	90.31
4	127.63	90.21
5	137.62	90.81
6	147.53	92.10
7	157.33	94.09
8	166.97	96.75
9	176.40	100.09
10	185.57	104.07
11	194.44	108.68
12	202.97	113.91
13	207.38	117.05

CIRCLE CENTER AT X = 124.0 , Y = 233.2 AND RADIUS, 143.1

*** 2.101 ***

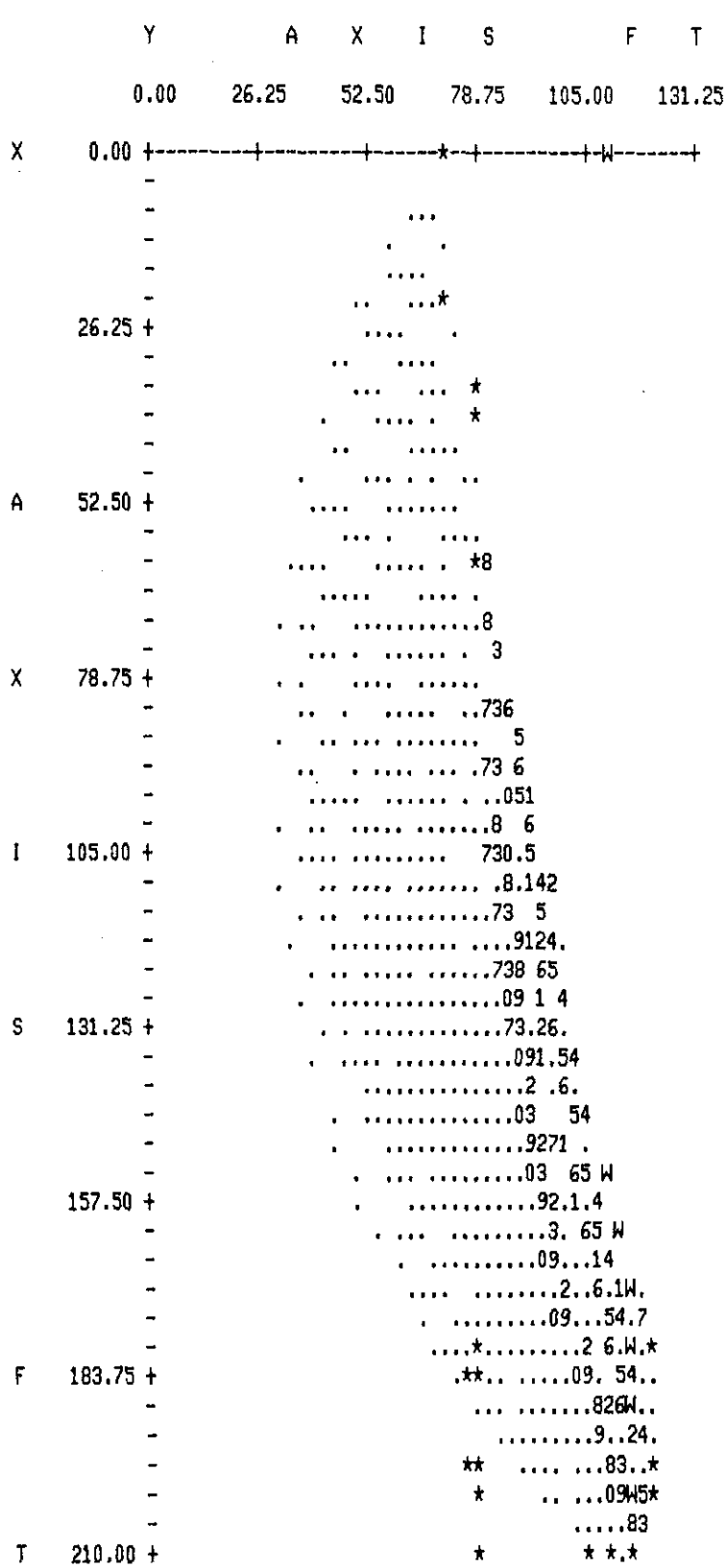
FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.49	87.35
3	105.47	86.75
4	115.47	86.71
5	125.46	87.23
6	135.40	88.32
7	145.26	89.96
8	155.02	92.16
9	164.63	94.91
10	174.08	98.20
11	183.32	102.01
12	192.33	106.34
13	201.09	111.17
14	209.26	116.30

CIRCLE CENTER AT X = 111.2 , Y = 263.8 AND RADIUS, 177.2

*** 2.124 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "B"



C

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
15 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	70.00	20.00	70.00	4
2	20.00	70.00	40.00	80.00	4
3	40.00	80.00	60.00	80.00	3
4	60.00	80.00	180.00	120.00	1
5	180.00	120.00	200.00	120.00	1
6	200.00	120.00	210.00	116.00	1
7	199.24	120.00	210.00	109.24	2
8	195.00	120.00	210.00	105.00	1
9	60.00	80.00	180.00	80.00	3
10	180.00	80.00	185.00	75.00	4
11	185.00	75.00	195.00	75.00	4
12	195.00	75.00	200.00	80.00	4
13	200.00	80.00	210.00	80.00	3
14	36.00	78.00	182.00	78.00	4
15	198.00	78.00	210.00	78.00	4

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	105.0	115.0	0.0	33.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	100.00
2	120.00	100.00
3	130.00	102.00
4	140.00	104.00
5	150.00	106.00
6	160.00	108.00
7	170.00	109.00
8	180.00	109.50
9	190.00	109.50
10	200.00	108.00
11	207.00	107.00
12	210.00	105.00

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	120.00	96.57
3	129.97	97.34
4	139.83	98.98
5	149.52	101.47
6	158.95	104.81
7	168.05	108.95
8	176.76	113.87
9	185.00	119.53
10	185.57	120.00

CIRCLE CENTER AT X = 116.1 , Y = 211.0 AND RADIUS, 114.5

*** 1.863 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.90	78.33
3	80.82	77.03
4	90.80	76.49
5	100.80	76.71
6	110.75	77.67
7	120.60	79.39
8	130.30	81.85
9	139.78	85.03
10	148.99	88.92
11	157.88	93.50
12	166.40	98.73
13	174.50	104.60
14	182.14	111.06
15	189.26	118.07
16	190.94	120.00

CIRCLE CENTER AT X = 93.0 , Y = 208.7 AND RADIUS, 132.2

*** 1.881 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.61	77.65
3	68.48	76.04
4	78.44	75.18
5	88.44	75.08
6	98.42	75.74
7	108.32	77.15
8	118.08	79.31
9	127.66	82.20
10	136.98	85.80
11	146.01	90.11
12	154.69	95.08
13	162.96	100.70
14	170.78	106.92
15	178.11	113.73
16	183.92	120.00

CIRCLE CENTER AT X = 84.8 , Y = 207.0 AND RADIUS, 131.9

*** 1.889 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.03	81.98
3	92.92	80.55
4	102.91	80.16
5	112.89	80.83
6	122.74	82.54
7	132.36	85.27
8	141.64	89.01
9	150.48	93.69
10	158.77	99.28
11	166.43	105.71
12	173.37	112.90
13	178.52	119.51

CIRCLE CENTER AT X = 101.6 , Y = 175.2 AND RADIUS, 95.1

*** 1.922 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.16	85.72
3	105.00	83.97
4	114.98	83.31
5	124.97	83.73
6	134.86	85.24
7	144.52	87.81
8	153.85	91.41
9	162.73	96.00
10	171.06	101.54
11	178.74	107.94
12	185.68	115.14
13	189.44	120.00

CIRCLE CENTER AT X = 116.1 , Y = 175.3 AND RADIUS, 92.0

*** 1.924 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.50	90.25
3	117.42	88.97
4	127.42	88.77
5	137.38	89.66
6	147.18	91.61
7	156.72	94.62
8	165.88	98.63
9	174.55	103.61
10	182.63	109.50
11	190.03	116.23
12	193.36	120.00

CIRCLE CENTER AT X = 124.2 , Y = 181.1 AND RADIUS, 92.4

*** 1.928 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.11	85.57
3	104.94	83.71
4	114.91	82.96
5	124.90	83.33
6	134.79	84.83
7	144.45	87.42
8	153.75	91.08
9	162.59	95.76
10	170.85	101.40
11	178.42	107.93
12	185.21	115.27
13	188.69	120.00

CIRCLE CENTER AT X = 116.6 , Y = 172.0 AND RADIUS, 89.0

*** 1.932 ***

FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.67	78.33
2	46.60	77.21
3	56.58	76.51
4	66.58	76.25
5	76.57	76.41
6	86.56	77.01
7	96.50	78.03
8	106.40	79.49
9	116.22	81.37
10	125.95	83.66
11	135.58	86.38
12	145.07	89.51
13	154.43	93.04
14	163.62	96.98
15	172.64	101.31
16	181.46	106.02
17	190.07	111.10
18	198.45	116.56
19	202.10	119.16

CIRCLE CENTER AT X = 67.7 , Y = 308.3 AND RADIUS, 232.1

*** 1.981 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.98	78.75
3	80.93	77.71
4	90.91	77.26
5	100.91	77.39
6	110.89	78.11
7	120.80	79.41
8	130.62	81.29
9	140.32	83.75
10	149.85	86.77
11	159.19	90.34
12	168.31	94.45
13	177.16	99.10
14	185.73	104.25
15	193.99	109.90
16	201.89	116.02
17	204.43	118.23

CIRCLE CENTER AT X = 93.7 , Y = 247.7 AND RADIUS, 170.4

*** 1.986 ***

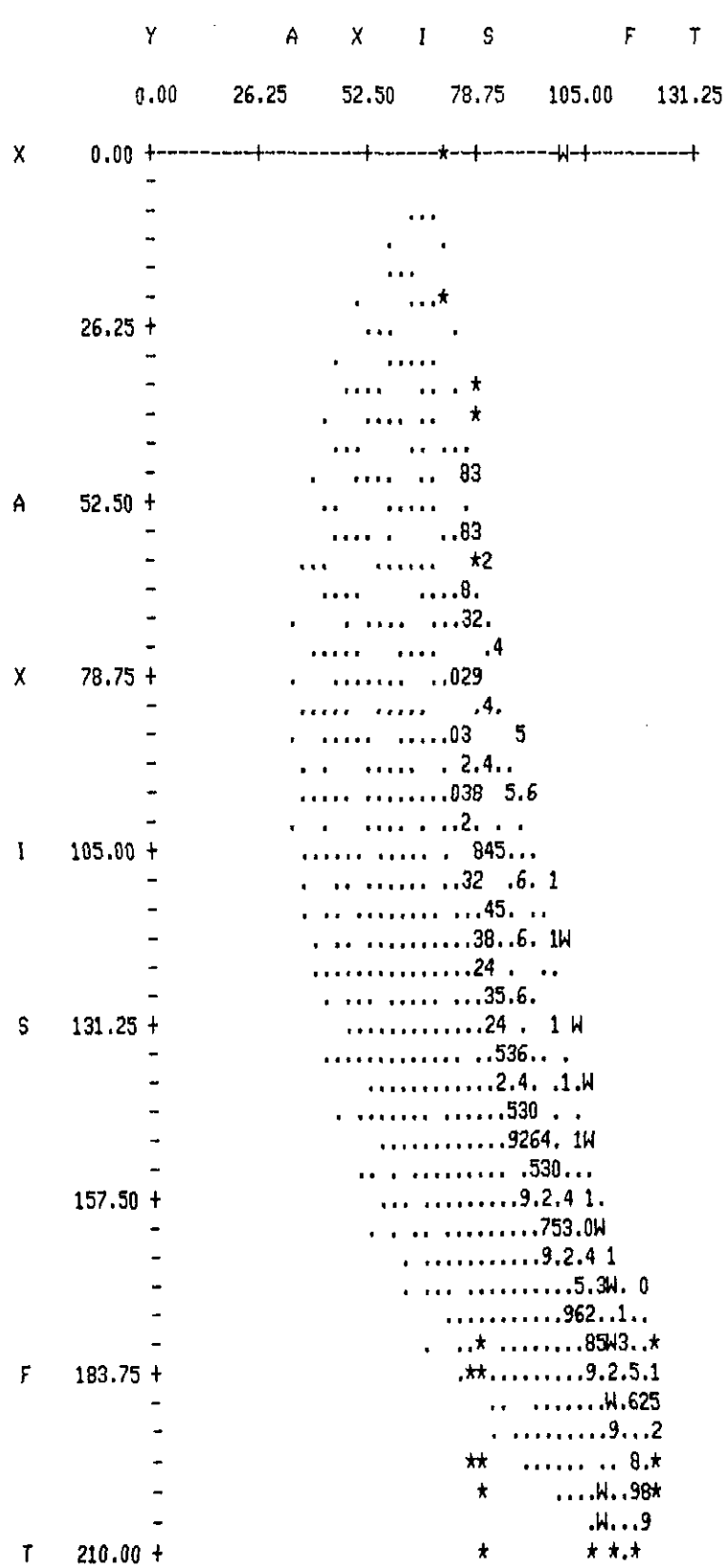
FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.46	77.09
3	68.25	75.07
4	78.19	73.97
5	88.19	73.78
6	98.16	74.52
7	108.02	76.17
8	117.69	78.73
9	127.08	82.16
10	136.12	86.44
11	144.72	91.54
12	152.82	97.41
13	160.34	104.00
14	167.23	111.25
15	172.02	117.34

CIRCLE CENTER AT X = 85.2 , Y = 182.2 AND RADIUS, 108.5

*** 1.994 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.75	91.87
3	117.75	92.16
4	127.66	93.45
5	137.40	95.73
6	146.86	98.98
7	155.94	103.17
8	164.55	108.25
9	172.61	114.17
10	178.51	119.50

CIRCLE CENTER AT X = 109.9 , Y = 191.0 AND RADIUS, 99.2

*** 1.510 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	71.09	79.75
3	81.09	79.67
4	91.08	80.15
5	101.03	81.17
6	110.90	82.75
7	120.68	84.86
8	130.32	87.51
9	139.80	90.68
10	149.10	94.37
11	158.17	98.57
12	167.01	103.26
13	175.56	108.43
14	183.83	114.06
15	191.58	120.00

CIRCLE CENTER AT X = 77.4 , Y = 261.2 AND RADIUS, 181.6

*** 1.591 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.15	82.52
3	93.10	81.60
4	103.10	81.68
5	113.04	82.77
6	122.82	84.87
7	132.34	87.93
8	141.50	91.94
9	150.21	96.86
10	158.38	102.63
11	165.92	109.19
12	172.76	116.49
13	173.89	117.96

CIRCLE CENTER AT X = 97.3 , Y = 180.5 AND RADIUS, 99.0

*** 1.629 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.59	77.57
3	68.45	75.88
4	78.40	74.96
5	88.40	74.80
6	98.38	75.41
7	108.29	76.78
8	118.06	78.90
9	127.64	81.77
10	136.97	85.37
11	146.00	89.67
12	154.67	94.64
13	162.94	100.27
14	170.75	106.52
15	178.06	113.34
16	184.17	120.00

CIRCLE CENTER AT X = 85.5 , Y = 205.2 AND RADIUS, 130.4

*** 1.630 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	82.81	81.25
3	92.60	79.19
4	102.55	78.28
5	112.55	78.54
6	122.45	79.97
7	132.11	82.54
8	141.41	86.22
9	150.21	90.96
10	158.41	96.70
11	165.87	103.35
12	172.51	110.83
13	178.23	119.03
14	178.48	119.49

CIRCLE CENTER AT X = 105.3 , Y = 163.8 AND RADIUS, 85.5

*** 1.637 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	106.88	88.45
3	116.54	85.88
4	126.50	84.94
5	136.47	85.66
6	146.19	88.03
7	155.38	91.97
8	163.79	97.37
9	171.19	104.10
10	177.38	111.96
11	181.77	120.00

CIRCLE CENTER AT X = 127.2 , Y = 145.1 AND RADIUS, 60.2

*** 1.734 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	119.06	92.43
3	128.84	90.34
4	138.84	90.51
5	148.54	92.92
6	157.45	97.46
7	165.11	103.89
8	171.13	111.87
9	173.83	117.94

CIRCLE CENTER AT X = 133.1 , Y = 134.3 AND RADIUS, 44.1

*** 1.752 ***

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	24.44	72.22
2	34.44	72.10
3	44.44	72.37
4	54.42	73.03
5	64.36	74.08
6	74.26	75.52
7	84.09	77.34
8	93.84	79.56
9	103.50	82.15
10	113.05	85.12
11	122.47	88.46
12	131.76	92.17
13	140.90	96.24
14	149.86	100.67
15	158.65	105.44
16	167.24	110.56
17	175.63	116.01
18	181.27	120.00

CIRCLE CENTER AT X = 32.6 , Y = 326.9 AND RADIUS, 254.8

*** 1.760 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.33	84.13
3	93.33	84.26
4	103.31	84.83
5	113.26	85.84
6	123.16	87.29
7	132.98	89.17
8	142.70	91.49
9	152.32	94.23
10	161.81	97.39
11	171.15	100.97
12	180.32	104.96
13	189.30	109.35
14	198.09	114.12
15	204.71	118.12

CIRCLE CENTER AT X = 85.4 , Y = 310.8 AND RADIUS, 226.6

*** 1.762 ***

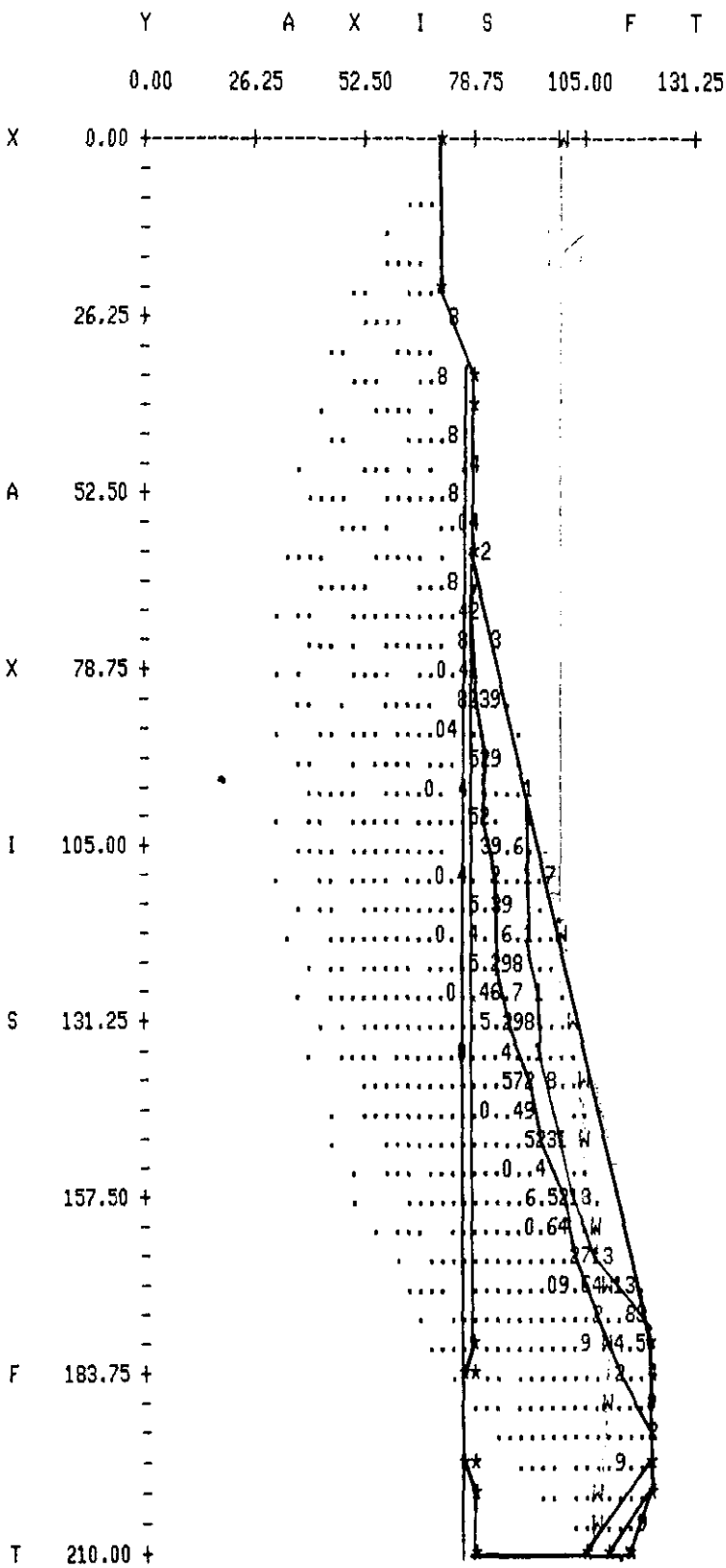
FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	48.89	80.00
2	58.12	76.15
3	67.65	73.14
4	77.42	71.00
5	87.35	69.76
6	97.34	69.41
7	107.32	69.97
8	117.22	71.42
9	126.94	73.77
10	136.41	76.97
11	145.56	81.02
12	154.30	85.88
13	162.56	91.50
14	170.29	97.85
15	177.42	104.87
16	183.88	112.50
17	189.14	120.00

CIRCLE CENTER AT X = 96.2 , Y = 180.2 AND RADIUS, 110.8

*** 1.776 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"



UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 110.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 210.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.33	84.44
2	83.33	84.14
3	93.32	84.50
4	103.27	85.51
5	113.13	87.17
6	122.86	89.48
7	132.42	92.43
8	141.76	95.99
9	150.85	100.16
10	159.64	104.93
11	168.10	110.26
12	176.20	116.13
13	180.85	120.00

CIRCLE CENTER AT X = 82.9 , Y = 236.1 AND RADIUS, 151.9

*** 1.551 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	119.76	94.47
3	129.74	93.96
4	139.67	95.15
5	149.26	98.00
6	158.22	102.44
7	166.30	108.33
8	173.27	115.50
9	175.28	118.43

CIRCLE CENTER AT X = 127.7 , Y = 152.8 AND RADIUS, 58.8

*** 1.565 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.54	89.14
3	105.48	90.24
4	115.35	91.81
5	125.14	93.85
6	134.82	96.36
7	144.37	99.32
8	153.77	102.73
9	163.00	106.59
10	172.03	110.88
11	180.85	115.59
12	188.23	120.00

CIRCLE CENTER AT X = 77.4 , Y = 298.5 AND RADIUS, 210.1

*** 1.589 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	97.78	92.59
2	107.78	92.35
3	117.77	92.76
4	127.71	93.82
5	137.56	95.52
6	147.28	97.87
7	156.83	100.85
8	166.16	104.44
9	175.24	108.63
10	184.02	113.41
11	192.48	118.76
12	194.19	120.00

CIRCLE CENTER AT X = 106.5 , Y = 245.4 AND RADIUS, 153.0

*** 1.647 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.55	88.24
3	105.55	88.49
4	115.52	89.27
5	125.43	90.58
6	135.26	92.42
7	144.98	94.78
8	154.56	97.66
9	163.97	101.04
10	173.18	104.92
11	182.18	109.29
12	190.93	114.13
13	199.41	119.43
14	200.15	119.94

CIRCLE CENTER AT X = 95.9 , Y = 275.7 AND RADIUS, 187.5

*** 1.689 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.02	85.30
3	104.86	83.49
4	114.85	83.12
5	124.79	84.21
6	134.47	86.73
7	143.68	90.63
8	152.22	95.82
9	159.92	102.20
10	166.62	109.63
11	171.68	117.23

CIRCLE CENTER AT X = 112.4 , Y = 151.8 AND RADIUS, 68.7

*** 1.694 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.56	88.52
2	95.52	89.36
3	105.45	90.55
4	115.33	92.10
5	125.15	94.00
6	134.89	96.26
7	144.55	98.86
8	154.10	101.80
9	163.55	105.08
10	172.87	108.70
11	182.06	112.65
12	191.09	116.93
13	197.02	120.00

CIRCLE CENTER AT X = 67.1 , Y = 367.2 AND RADIUS, 279.3

*** 1.710 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.11	80.37
2	70.88	82.50
3	80.63	84.75
4	90.34	87.12
5	100.03	89.61
6	109.68	92.22
7	119.30	94.94
8	128.89	97.78
9	138.44	100.74
10	147.96	103.82
11	157.43	107.01
12	166.87	110.32
13	176.27	113.74
14	185.62	117.28
15	192.55	120.00

CIRCLE CENTER AT X = -108.2 , Y = 880.1 AND RADIUS, 817.4

*** 1.779 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	119.98	95.97
3	129.98	96.05
4	139.94	96.91
5	149.81	98.54
6	159.52	100.92
7	169.02	104.05
8	178.24	107.91
9	187.14	112.47
10	195.66	117.70
11	198.82	120.00

CIRCLE CENTER AT X = 123.9 , Y = 224.9 AND RADIUS, 129.0

*** 1.801 ***

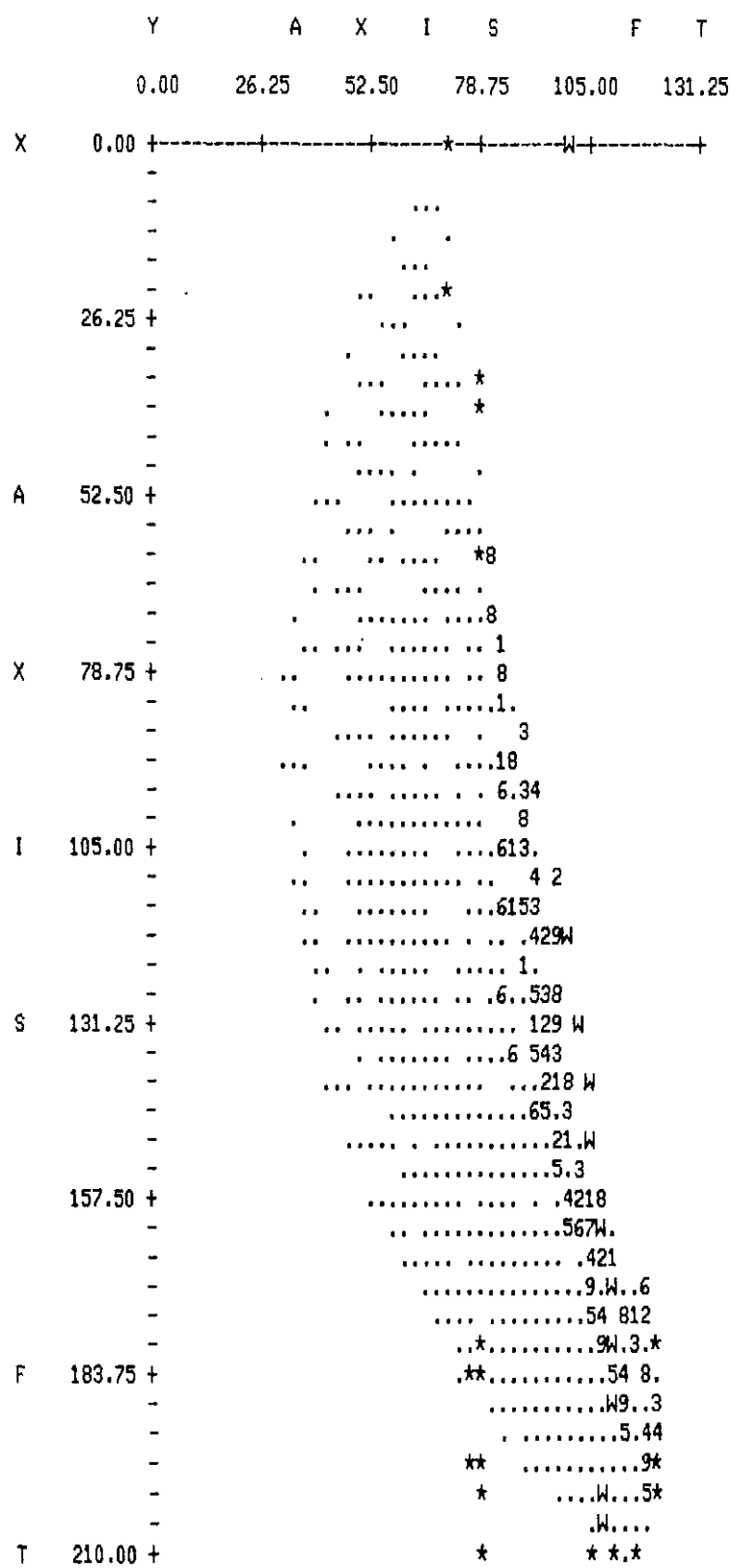
FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	110.00	96.67
2	120.00	96.53
3	129.99	97.04
4	139.92	98.19
5	149.76	99.97
6	159.46	102.39
7	168.99	105.43
8	178.30	109.08
9	187.36	113.32
10	196.12	118.13
11	199.06	120.00

CIRCLE CENTER AT X = 117.1 , Y = 251.6 AND RADIUS, 155.1

*** 1.835 ***

UPSTREAM SLOPE STABILITY, TYP. 40' HIGH EMBANKMENT SECTION, RAPID DRAWDOWN "C"



Upstream

Sensor

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

4 TOP BOUNDARIES
13 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	80.00	50.00	80.00	3
2	50.00	80.00	170.00	120.00	1
3	170.00	120.00	190.00	120.00	1
4	190.00	120.00	200.00	116.00	1
5	189.24	120.00	200.00	109.24	2
6	185.00	120.00	200.00	105.00	1
7	50.00	80.00	170.00	80.00	3
8	170.00	80.00	175.00	75.00	4
9	175.00	75.00	185.00	75.00	4
10	185.00	75.00	190.00	80.00	4
11	190.00	80.00	200.00	80.00	3
12	0.00	78.00	172.00	78.00	4
13	188.00	78.00	200.00	80.00	4

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZ SU
1	126.0	135.0	0.0	36.0	0.00	0.0	
2	126.0	135.0	0.0	34.0	0.00	0.0	
3	105.0	115.0	0.0	33.0	0.00	0.0	
4	125.0	135.0	0.0	36.0	0.00	0.0	

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 100.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 160.00 FT.
AND X = 200.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.56	81.85
2	65.55	82.00
3	75.53	82.65
4	85.47	83.80
5	95.33	85.45
6	105.10	87.59
7	114.75	90.21
8	124.26	93.31
9	133.60	96.89
10	142.74	100.92
11	151.68	105.41
12	160.38	110.34
13	168.82	115.70
14	174.89	120.00

CIRCLE CENTER AT X = 57.5 , Y = 281.6 AND RADIUS, 199.8

*** 1.716 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.00	96.67
2	110.00	96.57
3	119.97	97.34
4	129.83	98.98
5	139.52	101.47
6	148.95	104.81
7	158.05	108.95
8	166.76	113.87
9	175.00	119.53
10	175.57	120.00

CIRCLE CENTER AT X = 106.1 , Y = 211.0 AND RADIUS, 114.5

*** 1.760 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.70	94.92
3	108.47	97.03
4	118.21	99.30
5	127.91	101.73
6	137.57	104.31
7	147.19	107.06
8	156.76	109.96
9	166.28	113.01
10	175.75	116.22
11	185.17	119.59
12	186.26	120.00

CIRCLE CENTER AT X = -26.0 , Y = 695.7 AND RADIUS, 613.6

*** 1.618 ***

FAILURE SURFACE SPECIFIED BY 21 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	80.00
2	9.95	79.03
3	19.93	78.38
4	29.93	78.06
5	39.93	78.07
6	49.92	78.41
7	59.90	79.08
8	69.85	80.07
9	79.76	81.39
10	89.63	83.03
11	99.43	84.99
12	109.17	87.28
13	118.82	89.88
14	128.39	92.80
15	137.85	96.03
16	147.20	99.57
17	156.44	103.42
18	165.54	107.56
19	174.50	112.00
20	183.30	116.73
21	188.93	120.00

CIRCLE CENTER AT X = 34.6 , Y = 382.9 AND RADIUS, 304.9

*** 1.826 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	80.00
2	31.98	77.80
3	41.85	76.22
4	51.81	75.25
5	61.80	74.91
6	71.80	75.20
7	81.75	76.12
8	91.64	77.65
9	101.40	79.80
10	111.01	82.55
11	120.44	85.91
12	129.63	89.84
13	138.56	94.35
14	147.19	99.40
15	155.48	104.98
16	163.41	111.07
17	170.95	117.65
18	173.32	120.00

CIRCLE CENTER AT X = 62.2 , Y = 234.6 AND RADIUS, 159.7

*** 1.832 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.56	81.85
2	65.35	79.81
3	75.27	78.54
4	85.25	78.06
5	95.25	78.36
6	105.19	79.44
7	115.02	81.31
8	124.66	83.93
9	134.08	87.31
10	143.20	91.41
11	151.97	96.22
12	160.33	101.69
13	168.24	107.81
14	175.65	114.53
15	180.79	120.00

CIRCLE CENTER AT X = 86.4 , Y = 205.4 AND RADIUS, 127.4

*** 1.835 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	33.33	80.00
2	43.26	78.78
3	53.23	78.01
4	63.22	77.68
5	73.22	77.80
6	83.21	78.37
7	93.16	79.38
8	103.05	80.83
9	112.87	82.73
10	122.59	85.06
11	132.20	87.82
12	141.68	91.01
13	151.01	94.62
14	160.16	98.64
15	169.13	103.07
16	177.89	107.89
17	186.42	113.10
18	194.18	118.33

CIRCLE CENTER AT X = 65.6 , Y = 301.5 AND RADIUS, 223.9

*** 1.868 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	44.44	80.00
2	54.01	77.09
3	63.82	75.13
4	73.77	74.15
5	83.77	74.15
6	93.72	75.13
7	103.53	77.08
8	113.10	79.99
9	122.34	83.82
10	131.15	88.54
11	139.46	94.10
12	147.18	100.45
13	154.25	107.53
14	160.58	115.27
15	161.94	117.31

CIRCLE CENTER AT X = 78.8 , Y = 175.8 AND RADIUS, 101.7

*** 1.923 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.56	81.85
2	65.42	80.23
3	75.37	79.21
4	85.36	78.79
5	95.36	78.98
6	105.33	79.77
7	115.23	81.16
8	125.03	83.15
9	134.69	85.73
10	144.18	88.89
11	153.46	92.61
12	162.50	96.89
13	171.26	101.71
14	179.72	107.05
15	187.84	112.89
16	194.40	118.24

CIRCLE CENTER AT X = 87.3 , Y = 244.1 AND RADIUS, 165.3

*** 1.930 ***

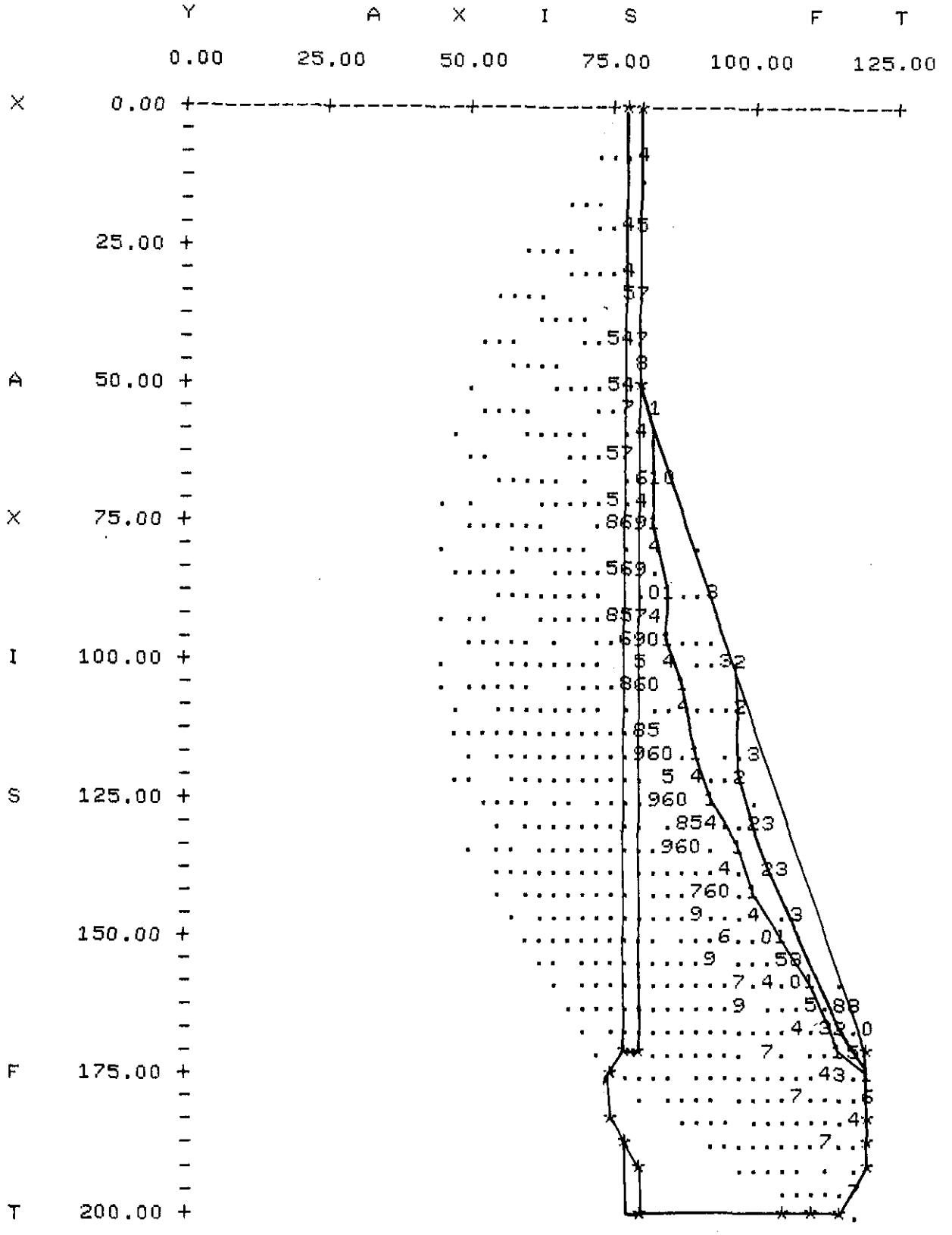
FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.67	85.56
2	76.36	83.09
3	86.26	81.70
4	96.26	81.39
5	106.23	82.17
6	116.05	84.03
7	125.61	86.95
8	134.80	90.90
9	143.51	95.82
10	151.63	101.66
11	159.06	108.35
12	165.72	115.81
13	168.31	119.44

CIRCLE CENTER AT X = 94.1 , Y = 173.1 AND RADIUS, 91.7

*** 1.945 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZ SU
1	126.0	135.0	0.0	32.0	0.00	0.0	
2	126.0	135.0	0.0	30.0	0.00	0.0	
3	105.0	115.0	0.0	29.0	0.00	0.0	
4	125.0	135.0	0.0	32.0	0.00	0.0	

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 100.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 160.00 FT.
AND X = 200.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *

FAILURE SURFACE SPECIFIED BY 18 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	80.00
2	32.08	78.31
3	42.02	77.19
4	52.00	76.64
5	62.00	76.67
6	71.98	77.27
7	81.91	78.45
8	91.76	80.20
9	101.49	82.51
10	111.07	85.38
11	120.47	88.79
12	129.65	92.74
13	138.60	97.21
14	147.27	102.19
15	155.64	107.66
16	163.69	113.60
17	171.37	120.00
18	171.37	120.00

CIRCLE CENTER AT X = 56.5 , Y = 250.2 AND RADIUS, 173.6

*** 1.525 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.86	92.24
3	108.86	92.54
4	118.77	93.87
5	128.50	96.20
6	137.93	99.51
7	146.98	103.78
8	155.54	108.94
9	163.52	114.96
10	168.37	119.46

CIRCLE CENTER AT X = 100.9 , Y = 189.8 AND RADIUS, 97.5

*** 1.530 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.56	81.85
2	65.54	81.23
3	75.54	81.17
4	85.52	81.69
5	95.46	82.78
6	105.33	84.43
7	115.08	86.65
8	124.69	89.42
9	134.12	92.73
10	143.35	96.57
11	152.35	100.94
12	161.08	105.82
13	169.52	111.18
14	177.64	117.02
15	181.32	120.00

CIRCLE CENTER AT X = 71.5 , Y = 256.1 AND RADIUS, 175.0

*** 1.545 ***

FAILURE SURFACE SPECIFIED BY 20 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	11.11	80.00
2	21.07	79.11
3	31.06	78.57
4	41.06	78.37
5	51.05	78.52
6	61.04	79.01
7	71.01	79.85
8	80.94	81.03
9	90.82	82.55
10	100.65	84.41
11	110.40	86.62
12	120.07	89.15
13	129.65	92.02
14	139.13	95.22
15	148.48	98.75
16	157.72	102.59
17	166.81	106.75
18	175.75	111.23
19	184.54	116.01
20	190.78	119.69

CIRCLE CENTER AT X = 41.8 , Y = 367.9 AND RADIUS, 289.5

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.56	81.85
2	65.31	79.63
3	75.22	78.31
4	85.21	77.89
5	95.20	78.37
6	105.10	79.76
7	114.84	82.04
8	124.33	85.19
9	133.49	89.19
10	142.26	94.00
11	150.55	99.59
12	158.31	105.90
13	165.46	112.89
14	171.51	120.00

CIRCLE CENTER AT X = 84.9 , Y = 188.1 AND RADIUS, 110.3

*** 1.568 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	44.44	80.00
2	54.14	77.57
3	64.01	75.93
4	73.98	75.10
5	83.98	75.09
6	93.94	75.90
7	103.81	77.52
8	113.51	79.93
9	122.99	83.13
10	132.17	87.09
11	141.00	91.79
12	149.41	97.19
13	157.36	103.26
14	164.79	109.96
15	171.64	117.25
16	173.84	120.00

CIRCLE CENTER AT X = 79.1 , Y = 197.5 AND RADIUS, 122.5

*** 1.606 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.67	85.56
2	76.48	83.63
3	86.44	82.74
4	96.44	82.91
5	106.37	84.11
6	116.11	86.36
7	125.57	89.60
8	134.63	93.83
9	143.21	98.98
10	151.19	104.99
11	158.51	111.81
12	163.83	117.94

CIRCLE CENTER AT X = 89.9 , Y = 178.0 AND RADIUS, 95.4

*** 1.621 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.67	95.07
3	108.42	97.26
4	118.16	99.55
5	127.87	101.93
6	137.56	104.41
7	147.22	106.97
8	156.86	109.63
9	166.48	112.38
10	176.07	115.22
11	185.63	118.15
12	190.64	119.74

CIRCLE CENTER AT X = -127.4 , Y = 1122.1 AND RADIUS, 1051.7

*** 1.640 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.59	91.21
3	97.37	93.27
4	107.13	95.44
5	116.87	97.70
6	126.59	100.07
7	136.28	102.55
8	145.94	105.13
9	155.57	107.81
10	165.18	110.59
11	174.75	113.48
12	184.30	116.47
13	192.32	119.07

CIRCLE CENTER AT X = -100.2 , Y = 1008.3 AND RADIUS, 936.1

*** 1.643 ***

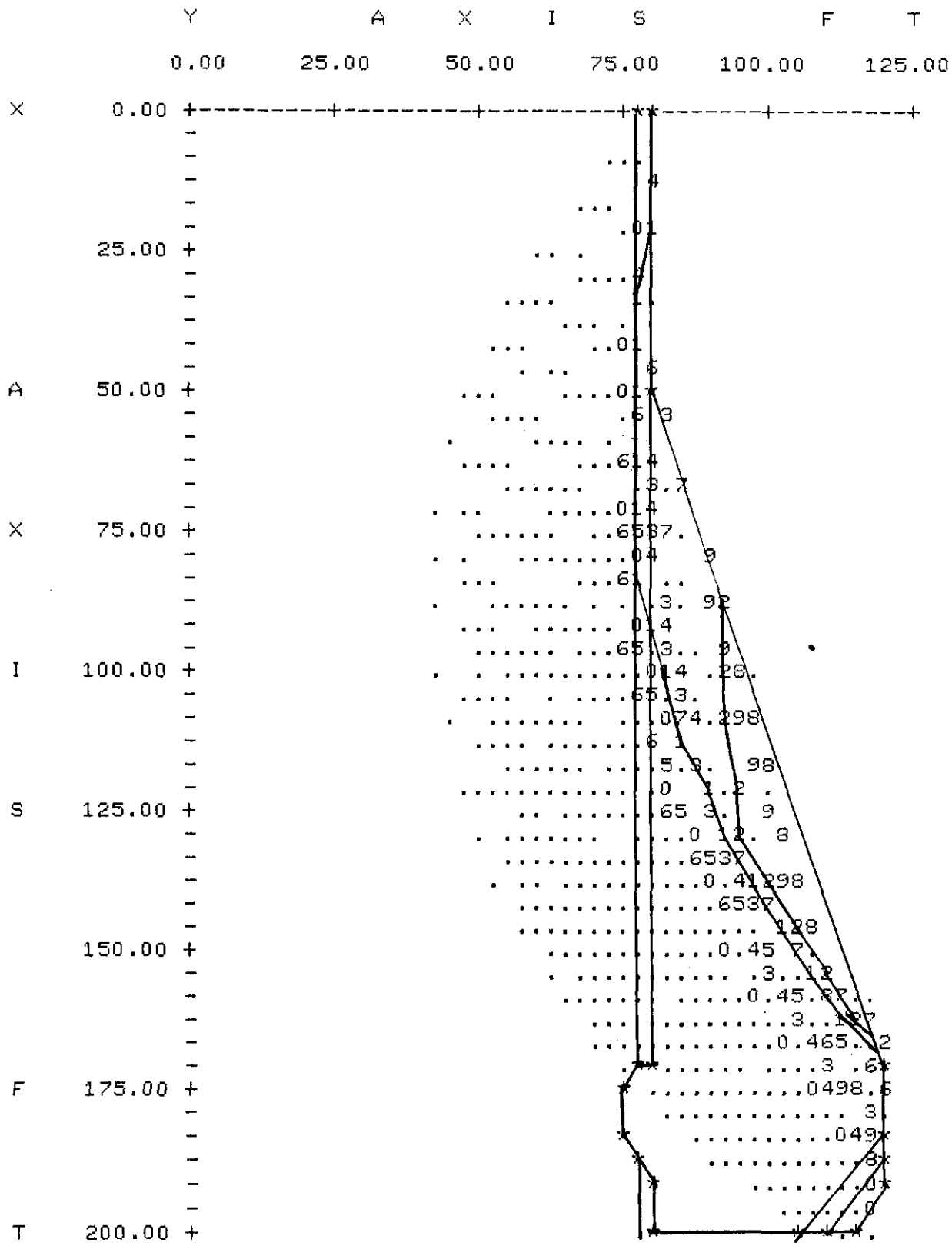
FAILURE SURFACE SPECIFIED BY 21 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	11.11	80.00
2	20.96	78.26
3	30.87	76.93
4	40.83	76.01
5	50.82	75.51
6	60.81	75.44
7	70.81	75.78
8	80.78	76.54
9	90.71	77.72
10	100.58	79.31
11	110.38	81.31
12	120.09	83.72
13	129.68	86.54
14	139.15	89.76
15	148.47	93.37
16	157.64	97.36
17	166.63	101.74
18	175.43	106.49
19	184.02	111.61
20	192.39	117.08
21	194.16	118.34

CIRCLE CENTER AT X = 57.7 , Y = 314.1 AND RADIUS, 238.7

*** 1.657 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

3 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	50.00	70.00	100.00	70.00	20.00
2	130.00	80.00	160.00	80.00	20.00
3	170.00	100.00	190.00	100.00	20.00

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	46.22	80.00
2	49.61	78.00
3	54.91	75.06
4	63.65	70.22
5	147.52	88.47
6	184.84	108.34
7	189.05	115.95
8	190.57	118.67
9	191.07	119.57

*** 1.634 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.31	83.10
2	64.91	80.00
3	68.30	78.00
4	76.08	73.69
5	137.39	79.36
6	171.34	100.50
7	176.19	109.24
8	181.03	117.99
9	182.15	120.00

*** 1.654 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	37.72	80.00
2	41.12	78.00
3	48.99	73.63
4	57.74	68.79
5	157.13	85.69
6	175.02	97.65
7	179.87	106.39
8	184.72	115.14
9	186.55	118.45
10	187.41	120.00

*** 1.701 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.85	85.62
2	68.23	84.85
3	76.98	80.00
4	80.37	78.00
5	85.30	75.27
6	158.99	89.42
7	176.90	108.75
8	181.75	117.50
9	183.14	120.00

*** 1.704 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.40	87.80
2	78.73	84.85
3	87.48	80.00
4	88.61	79.33
5	148.89	77.84
6	181.03	109.14
7	185.88	117.89
8	186.32	118.68
9	187.05	120.00

*** 1.752 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.81	82.60
2	62.50	80.00
3	65.90	78.00
4	67.96	76.86
5	146.66	81.87
6	186.65	95.83
7	191.50	104.58
8	194.68	110.32
9	196.24	113.00
10	198.28	116.69

*** 1.867 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	67.35	85.78
2	69.04	84.85
3	77.79	80.00
4	81.18	78.00
5	85.14	75.81
6	93.88	70.96
7	134.97	77.35
8	185.54	99.94
9	190.39	108.69
10	192.50	112.50
11	194.05	115.19
12	195.50	117.80

*** 1.867 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	56.72	82.24
2	60.76	80.00
3	64.15	78.00
4	65.45	77.28
5	74.19	72.43
6	82.94	67.59
7	91.69	62.74
8	138.99	82.10
9	187.63	102.17
10	192.48	110.92
11	193.05	111.95
12	194.60	114.64
13	196.20	117.52

*** 1.893 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.54	81.85
2	58.86	80.00
3	62.26	78.00
4	68.36	74.62
5	153.20	81.08
6	186.47	92.85
7	191.32	101.60
8	195.63	109.37
9	197.18	112.06
10	199.48	116.21

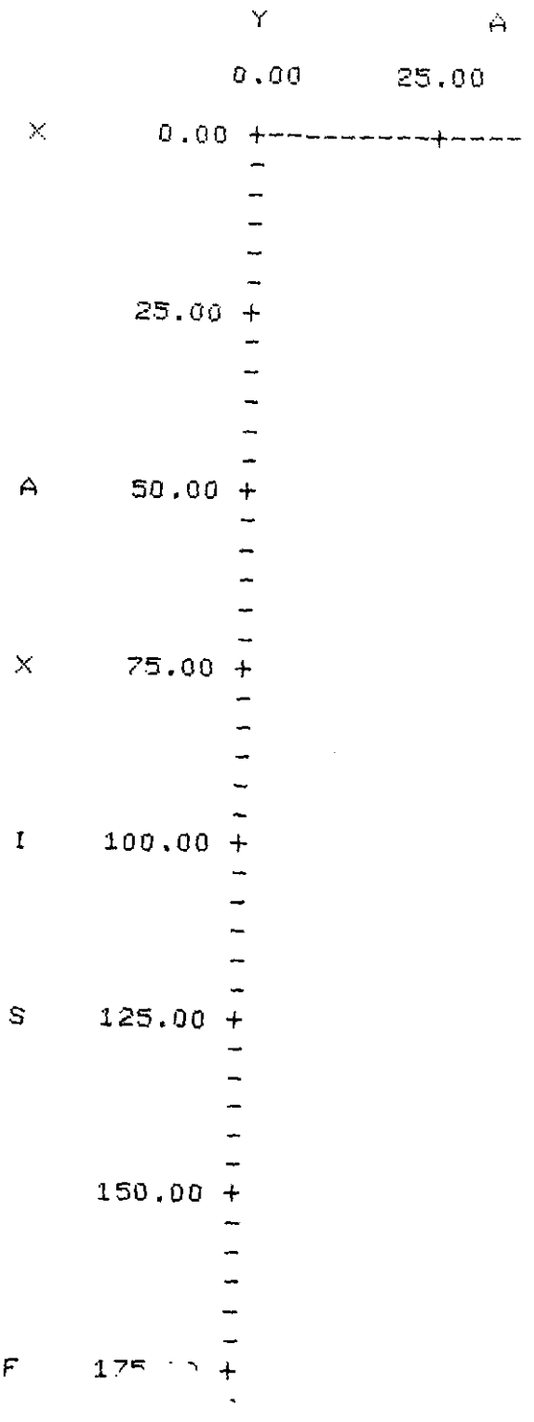
*** 1.908 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	65.61	85.20
2	66.25	84.85
3	74.99	80.00
4	78.39	78.00
5	82.31	75.83
6	157.54	75.13
7	182.20	99.24
8	187.05	107.98
9	190.60	114.40
10	192.16	117.08
11	193.09	118.76

*** 1.949 ***

UPSTREAM SL



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZ SU
1	133.0	135.0	0.0	32.0	0.00	0.0	
2	133.0	135.0	0.0	30.0	0.00	0.0	
3	105.0	115.0	0.0	29.0	0.00	0.0	
4	125.0	135.0	0.0	32.0	0.00	0.0	

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 100.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 160.00 FT.
AND X = 200.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

>>>> WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN ST

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.70	90.55
3	97.54	92.31
4	107.29	94.53
5	116.92	97.22
6	126.41	100.36
7	135.75	103.96
8	144.90	107.99
9	153.84	112.45
10	162.57	117.34
11	163.19	117.73

CIRCLE CENTER AT X = 55.7 , Y = 297.9 AND RADIUS, 209.8

*** 1.425 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.00	96.67
2	109.77	98.81
3	119.48	101.20
4	129.13	103.83
5	138.71	106.70
6	148.21	109.81
7	157.63	113.16
8	166.97	116.74
9	174.88	120.00

CIRCLE CENTER AT X = 19.2 , Y = 488.0 AND RADIUS, 399.6

*** 1.438 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.67	85.56
2	76.65	86.08
3	86.60	87.14
4	96.47	88.74
5	106.24	90.88
6	115.87	93.55
7	125.35	96.75
8	134.64	100.45
9	143.71	104.65
10	152.54	109.35
11	161.10	114.52
12	168.35	119.45

CIRCLE CENTER AT X = 62.1 , Y = 268.8 AND RADIUS, 183.3

*** 1.454 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.78	89.32
3	97.76	89.98
4	107.67	91.25
5	117.50	93.12
6	127.19	95.59
7	136.72	98.63
8	146.04	102.25
9	155.12	106.43
10	163.94	111.15
11	172.45	116.40
12	177.57	120.00

CIRCLE CENTER AT X = 81.8 , Y = 253.9 AND RADIUS, 164.7

*** 1.502 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.67	85.56
2	76.60	84.40
3	86.60	84.10
4	96.58	84.64
5	106.48	86.03
6	116.23	88.25
7	125.76	91.29
8	134.99	95.13
9	143.87	99.74
10	152.32	105.08
11	160.29	111.12
12	167.72	117.82
13	169.66	119.89

CIRCLE CENTER AT X = 85.2 , Y = 201.9 AND RADIUS, 117.8

*** 1.553 ***

FAILURE SURFACE SPECIFIED BY 21 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	80.00
2	9.90	78.62
3	19.85	77.62
4	29.83	76.99
5	39.83	76.73
6	49.83	76.86
7	59.82	77.36
8	69.78	78.24
9	79.70	79.49
10	89.57	81.12
11	99.37	83.11
12	109.08	85.48
13	118.70	88.21
14	128.21	91.30
15	137.60	94.75
16	146.85	98.54
17	155.95	102.69
18	164.89	107.17
19	173.65	111.99
20	182.23	117.13
21	186.62	120.00

CIRCLE CENTER AT X = 41.5 , Y = 341.9 AND RADIUS, 265.2

*** 1.586 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.69	94.97
3	108.46	97.10
4	118.20	99.35
5	127.91	101.72
6	137.60	104.22
7	147.25	106.84
8	156.87	109.58
9	166.45	112.44
10	175.99	115.42
11	185.50	118.52
12	189.85	120.00

CIRCLE CENTER AT X = -65.3 , Y = 871.3 AND RADIUS, 793.5

*** 1.614 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.00	96.67
2	110.00	96.43
3	119.99	96.93
4	129.91	98.15
5	139.72	100.10
6	149.36	102.75
7	158.78	106.11
8	167.93	110.14
9	176.76	114.83
10	184.98	120.00

CIRCLE CENTER AT X = 108.2 , Y = 233.2 AND RADIUS, 136.8

*** 1.617 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	0.00	80.00
2	9.89	78.50
3	19.82	77.36
4	29.79	76.58
5	39.78	76.15
6	49.78	76.08
7	59.78	76.38
8	69.76	77.03
9	79.71	78.03
10	89.61	79.40
11	99.46	81.12
12	109.25	83.19
13	118.95	85.61
14	128.56	88.38
15	138.06	91.49
16	147.45	94.94
17	156.70	98.73
18	165.82	102.84
19	174.78	107.28
20	183.57	112.04
21	192.19	117.11
22	194.13	118.35

CIRCLE CENTER AT X = 46.7 , Y = 354.6 AND RADIUS, 278.6

*** 1.653 ***

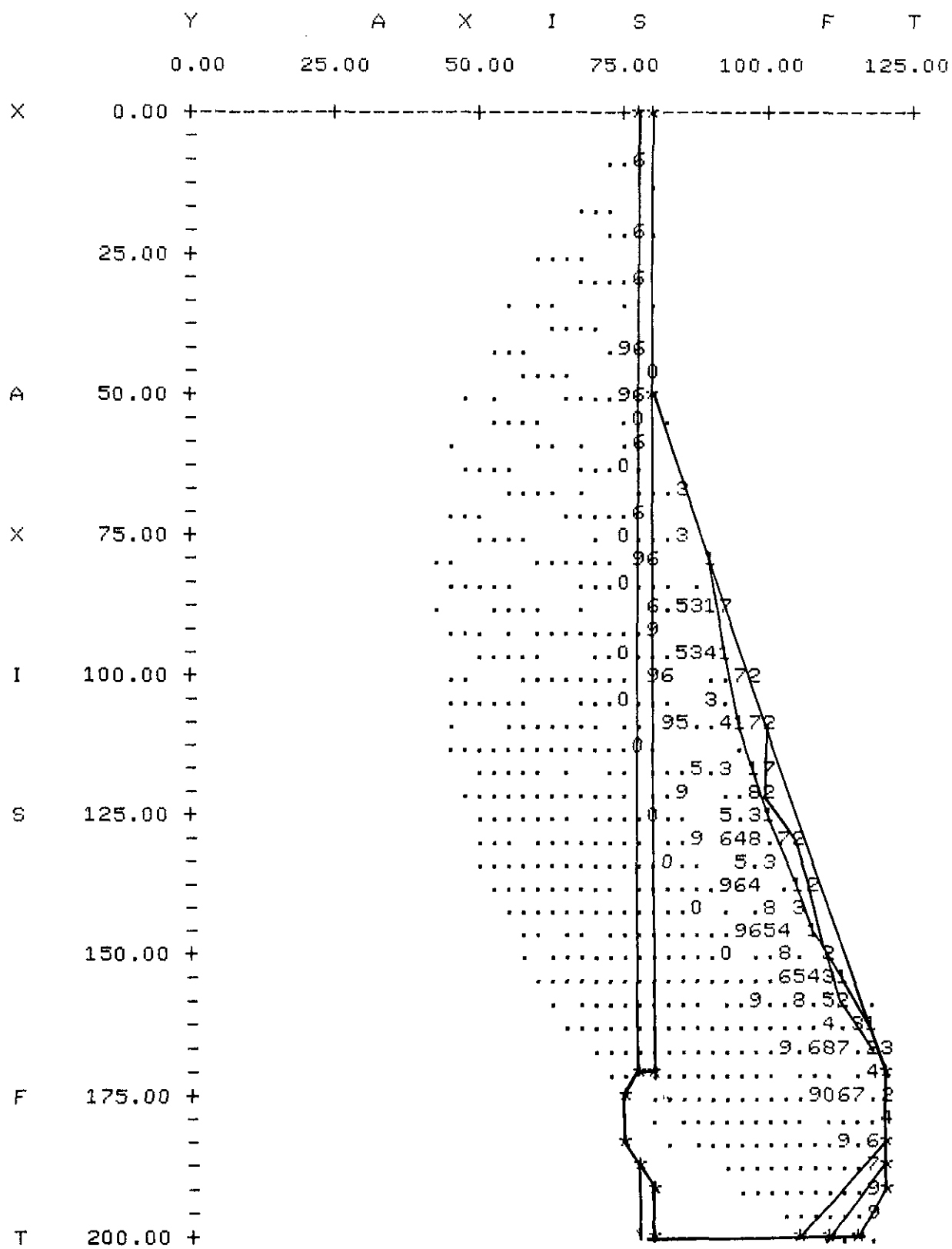
FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	44.44	80.00
2	54.11	77.45
3	63.95	75.62
4	73.88	74.51
5	83.88	74.15
6	93.87	74.51
7	103.81	75.61
8	113.64	77.44
9	123.31	79.99
10	132.77	83.24
11	141.96	87.18
12	150.84	91.78
13	159.35	97.03
14	167.46	102.89
15	175.11	109.32
16	182.27	116.31
17	185.53	120.00

CIRCLE CENTER AT X = 83.9 , Y = 210.0 AND RADIUS, 135.8

*** 1.653 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

3 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	50.00	70.00	100.00	70.00	20.00
2	130.00	80.00	160.00	80.00	20.00
3	170.00	100.00	190.00	100.00	20.00

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	46.95	80.00
2	50.34	78.00
3	53.80	76.08
4	131.97	79.29
5	170.64	98.04
6	175.49	106.79
7	180.34	115.54
8	182.81	120.00

*** 1.587 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	64.97	84.99
2	65.23	84.85
3	73.97	80.00
4	76.52	78.50
5	149.61	80.51
6	170.71	107.62
7	175.56	116.37
8	177.57	120.00

*** 1.708 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	36.13	80.00
2	39.52	78.00
3	47.92	73.35
4	56.67	68.50
5	151.47	83.48
6	177.22	95.98
7	182.06	104.72
8	186.91	113.47
9	188.56	116.44
10	190.07	119.17
11	190.44	119.83

*** 1.715 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	42.78	80.00
2	46.17	78.00
3	46.88	77.61
4	55.62	72.76
5	64.37	67.91
6	136.22	84.66
7	174.43	94.58
8	179.28	103.33
9	184.13	112.08
10	187.27	117.73
11	188.52	120.00

*** 1.724 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.92	83.31
2	65.89	80.00
3	69.28	78.00
4	75.88	74.34
5	84.63	69.49
6	135.42	87.22
7	187.78	109.01
8	190.71	114.29
9	192.26	116.98
10	193.22	118.71

*** 1.733 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	50.23	80.08
2	50.37	80.00
3	53.77	78.00
4	59.42	74.87
5	68.17	70.02
6	147.26	74.86
7	170.69	98.14
8	175.53	106.88
9	180.38	115.63
10	182.81	120.00

*** 1.749 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	47.23	80.00
2	50.62	78.00
3	58.43	73.67
4	147.18	74.75
5	174.41	109.07
6	179.26	117.82
7	180.47	120.00

*** 1.768 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.13	84.04
2	69.42	80.00
3	72.82	78.00
4	75.99	76.24
5	84.74	71.39
6	93.49	66.54
7	142.11	77.23
8	175.77	97.21
9	180.62	105.96
10	185.47	114.70
11	187.19	117.81
12	188.40	120.00

*** 1.819 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	54.49	81.50
2	57.19	80.00
3	60.58	78.00
4	61.93	77.25
5	70.68	72.41
6	79.42	67.56
7	88.17	62.71
8	159.75	80.59
9	180.51	100.93
10	185.36	109.68
11	188.91	116.09
12	190.43	118.81
13	190.89	119.65

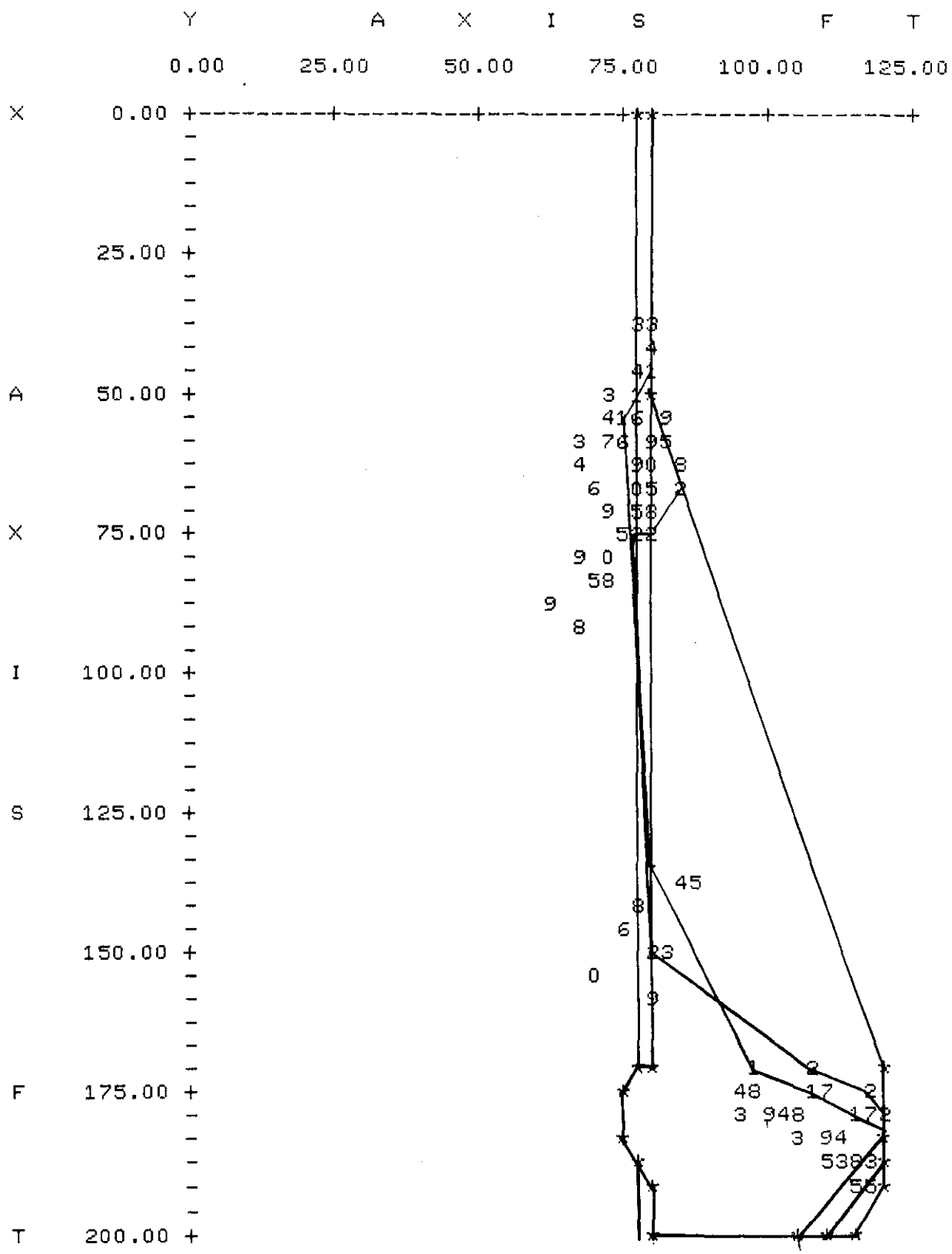
*** 1.824 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	58.90	82.97
2	64.25	80.00
3	67.65	78.00
4	68.50	77.53
5	77.25	72.68
6	154.67	70.58
7	180.14	101.50
8	184.99	110.25
9	188.47	116.53
10	189.98	119.26
11	190.32	119.87

*** 1.949 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZ SU
1	126.0	135.0	0.0	32.0	0.00	0.0	
2	126.0	135.0	0.0	30.0	0.00	0.0	
3	165.0	167.0	2000.0	41.0	0.00	0.0	
4	125.0	135.0	0.0	32.0	0.00	0.0	

A HORIZONTAL EARTHQUAKE LOADING COEFFICIENT
OF0.100 HAS BEEN ASSIGNED

A VERTICAL EARTHQUAKE LOADING COEFFICIENT
OF0.000 HAS BEEN ASSIGNED

CAVITATION PRESSURE = 2116.8 PSF

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 100.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 160.00 FT.
AND X = 200.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.88	92.59
3	108.86	93.21
4	118.73	94.82
5	128.39	97.40
6	137.75	100.93
7	146.71	105.37
8	155.18	110.68
9	163.09	116.81
10	164.53	118.18

CIRCLE CENTER AT X = 97.6 , Y = 193.1 AND RADIUS, 100.5

*** 1.508 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.76	88.62
3	97.75	88.94
4	107.67	90.22
5	117.42	92.44
6	126.91	95.59
7	136.05	99.64
8	144.77	104.55
9	152.97	110.27
10	160.58	116.75
11	160.75	116.92

CIRCLE CENTER AT X = 89.4 , Y = 192.6 AND RADIUS, 104.0

*** 1.523 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.63	91.00
3	97.44	92.94
4	107.21	95.07
5	116.93	97.39
6	126.61	99.91
7	136.24	102.61
8	145.81	105.51
9	155.32	108.60
10	164.77	111.87
11	174.15	115.33
12	183.46	118.98
13	185.92	120.00

CIRCLE CENTER AT X = -5.1 , Y = 586.5 AND RADIUS, 504.1

*** 1.532 ***

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	87.69	87.95
3	97.67	87.29
4	107.67	87.29
5	117.65	87.94
6	127.56	89.24
7	137.37	91.20
8	147.03	93.79
9	156.50	97.01
10	165.73	100.84
11	174.70	105.27
12	183.36	110.27
13	191.67	115.84
14	194.66	118.14

CIRCLE CENTER AT X = 102.7 , Y = 239.7 AND RADIUS, 152.5

*** 1.754 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.67	85.56
2	76.58	84.22
3	86.55	83.45
4	96.55	83.25
5	106.54	83.63
6	116.49	84.57
7	126.38	86.08
8	136.16	88.15
9	145.81	90.78
10	155.29	93.96
11	164.58	97.67
12	173.64	101.90
13	182.44	106.64
14	190.96	111.88
15	198.01	116.80

CIRCLE CENTER AT X = 95.0 , Y = 258.3 AND RADIUS, 175.1

*** 1.779 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.89	92.96
2	98.89	92.95
3	108.88	93.37
4	118.84	94.22
5	128.76	95.52
6	138.61	97.25
7	148.37	99.40
8	158.03	101.98
9	167.57	104.99
10	176.97	108.41
11	186.21	112.23
12	195.27	116.46
13	196.83	117.27

CIRCLE CENTER AT X = 94.3 , Y = 321.1 AND RADIUS, 228.2

*** 1.794 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.00	96.67
2	109.96	95.79
3	119.96	95.59
4	129.95	96.06
5	139.88	97.20
6	149.72	99.01
7	159.41	101.47
8	168.91	104.59
9	178.18	108.34
10	187.18	112.70
11	195.86	117.66

CIRCLE CENTER AT X = 118.0 , Y = 243.9 AND RADIUS, 148.3

*** 1.862 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.00	96.67
2	109.96	95.76
3	119.96	95.53
4	129.95	95.98
5	139.88	97.10
6	149.72	98.89
7	159.42	101.34
8	168.92	104.44
9	178.20	108.18
10	187.20	112.54
11	195.89	117.49
12	196.03	117.59

CIRCLE CENTER AT X = 118.3 , Y = 243.4 AND RADIUS, 147.8

*** 1.869 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	89.26
2	86.68	84.70
3	96.23	81.73
4	106.14	80.42
5	116.13	80.83
6	125.91	82.93
7	135.19	86.66
8	143.69	91.93
9	151.17	98.56
10	157.42	106.37
11	162.24	115.13
12	163.13	117.71

CIRCLE CENTER AT X = 108.8 , Y = 138.8 AND RADIUS, 58.5

*** 1.999 ***

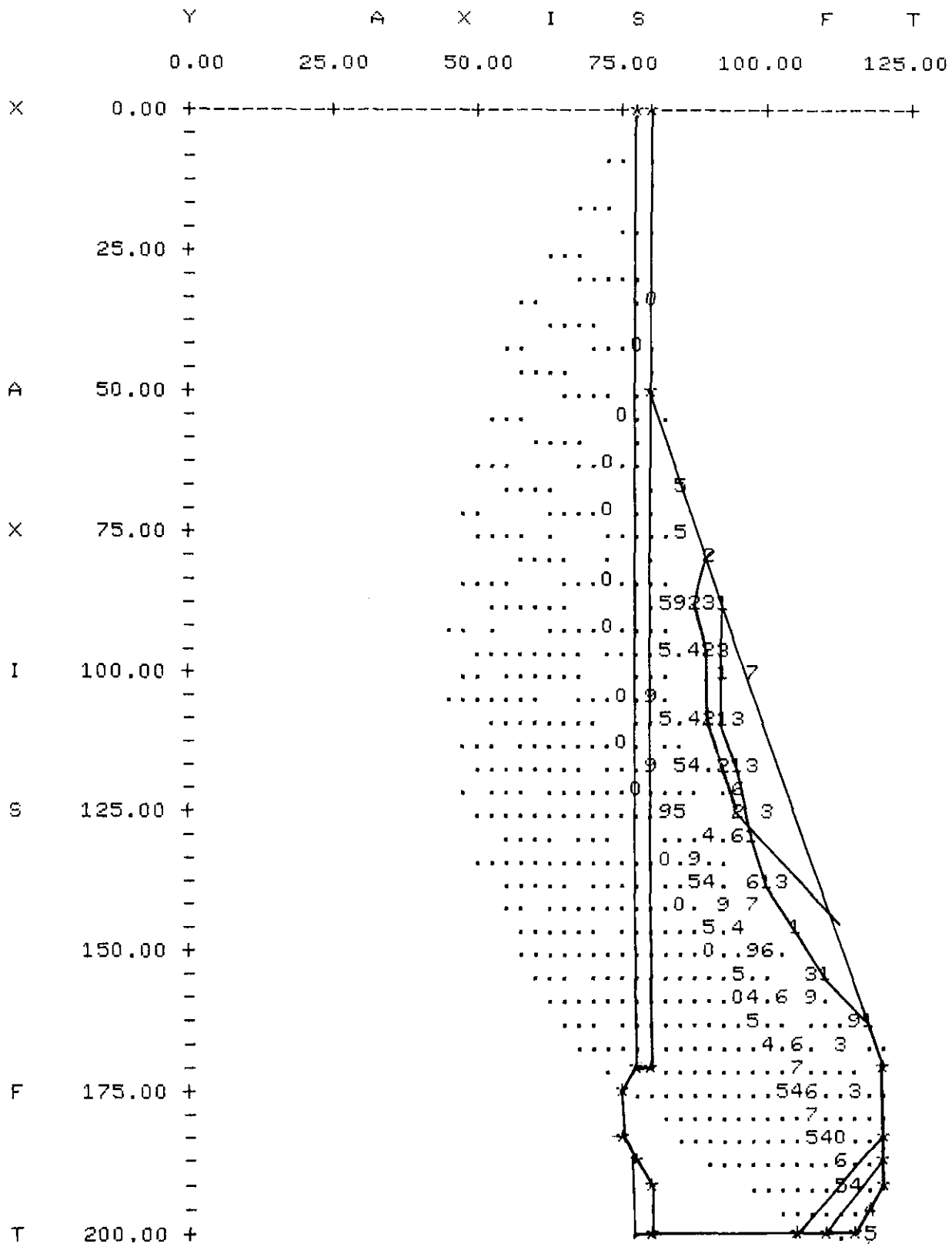
FAILURE SURFACE SPECIFIED BY 19 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	33.33	80.00
2	42.94	77.24
3	52.72	75.12
4	62.61	73.65
5	72.58	72.84
6	82.58	72.70
7	92.56	73.21
8	102.49	74.39
9	112.32	76.22
10	122.01	78.70
11	131.51	81.82
12	140.79	85.56
13	149.79	89.91
14	158.49	94.84
15	166.84	100.34
16	174.81	106.38
17	182.36	112.94
18	189.46	119.98
19	189.48	120.00

CIRCLE CENTER AT X = 79.8 , Y = 223.5 AND RADIUS, 150.8

*** 2.057 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

3 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	50.00	70.00	100.00	70.00	20.00
2	130.00	80.00	160.00	80.00	20.00
3	170.00	100.00	190.00	100.00	20.00

>>>>> WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN ST

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXA
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	21.57	80.00
2	25.96	78.00
3	26.11	77.92
4	34.86	73.07
5	43.60	68.22
6	52.35	63.37
7	136.87	83.28
8	181.99	109.20
9	186.84	117.95
10	186.91	118.09
11	187.97	120.00

*** 2.036 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	53.64	81.21
2	55.83	80.00
3	56.09	79.88
4	134.52	86.94
5	184.50	93.56
6	189.35	102.30
7	194.11	110.89
8	195.66	113.58
9	197.55	116.98

*** 2.070 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	18.42	80.00
2	22.81	78.00
3	25.96	76.26
4	34.70	71.41
5	43.45	66.56
6	52.20	61.71
7	151.15	85.42
8	171.95	93.93
9	176.80	102.67
10	181.65	111.42
11	185.90	119.10
12	186.40	120.00

*** 2.103 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.57	83.86
2	68.53	80.00
3	72.92	78.00
4	79.95	74.10
5	88.69	69.25
6	157.87	87.08
7	187.75	106.10
8	191.72	113.28
9	193.27	115.97
10	194.51	118.20

*** 2.108 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.69	82.56
2	62.32	80.00
3	66.70	78.00
4	71.54	75.32
5	156.90	73.22
6	173.50	97.11
7	178.35	105.85
8	183.20	114.60
9	185.77	119.23
10	186.19	120.00

*** 2.168 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.14	84.38
2	71.04	80.00
3	75.43	78.00
4	80.71	75.07
5	89.45	70.23
6	151.56	80.33
7	175.96	101.17
8	180.81	109.92
9	185.66	118.66
10	185.90	119.10
11	186.40	120.00

*** 2.210 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	53.66	81.22
2	55.86	80.00
3	60.25	78.00
4	64.30	75.75
5	148.30	84.85
6	171.17	102.42
7	176.02	111.16
8	180.87	119.91
9	180.92	120.00

*** 2.222 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	71.10	87.03
2	75.04	84.85
3	83.78	80.00
4	88.17	78.00
5	90.74	76.58
6	155.30	76.79
7	184.68	92.35
8	189.53	101.10
9	194.37	109.85
10	194.65	110.35
11	196.20	113.04
12	198.24	116.70

*** 2.291 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	42.25	80.00
2	46.64	78.00
3	53.02	74.47
4	131.52	82.25
5	178.53	93.94
6	183.38	102.69
7	188.22	111.44
8	190.13	114.87
9	191.68	117.56
10	192.48	119.01

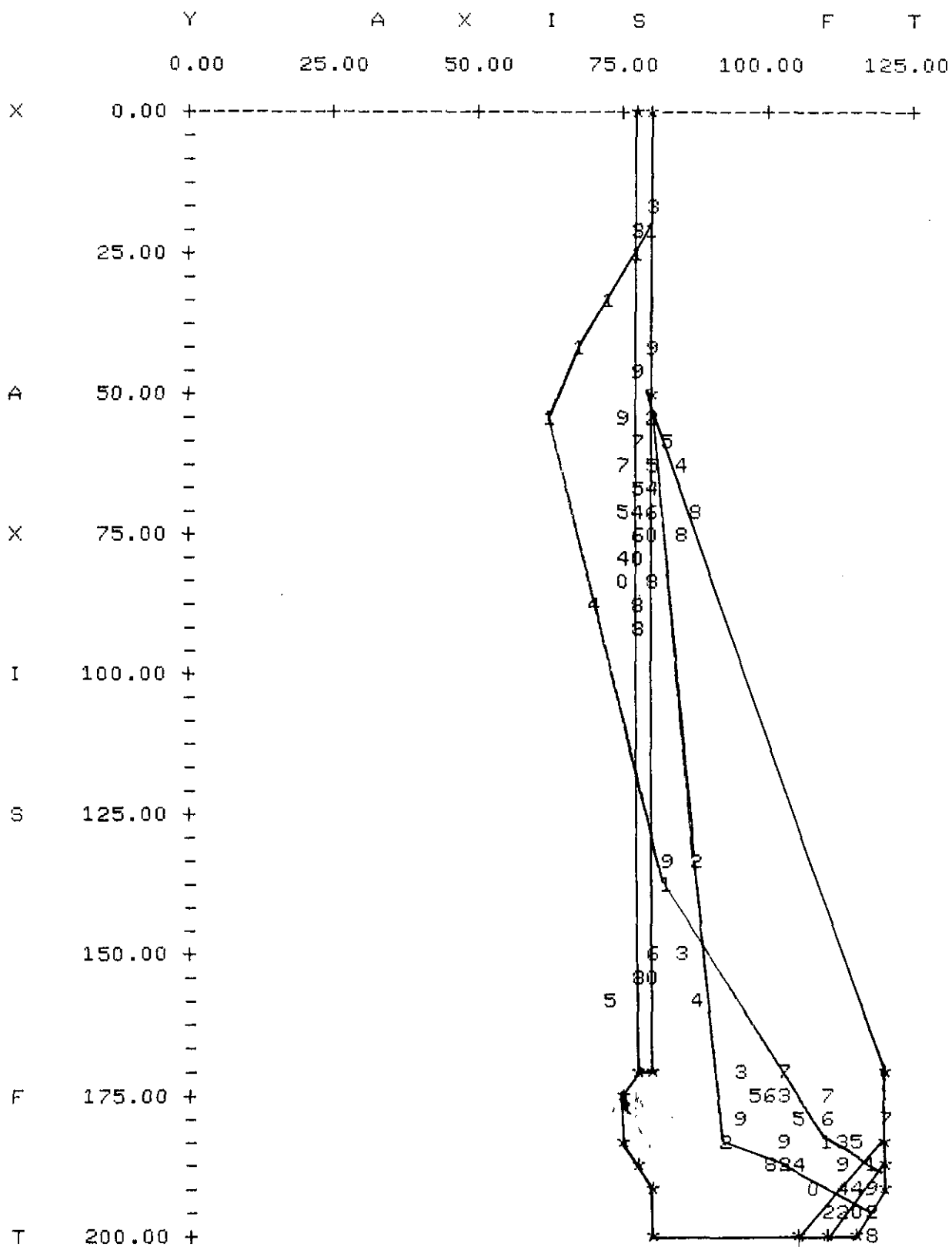
*** 2.355 ***

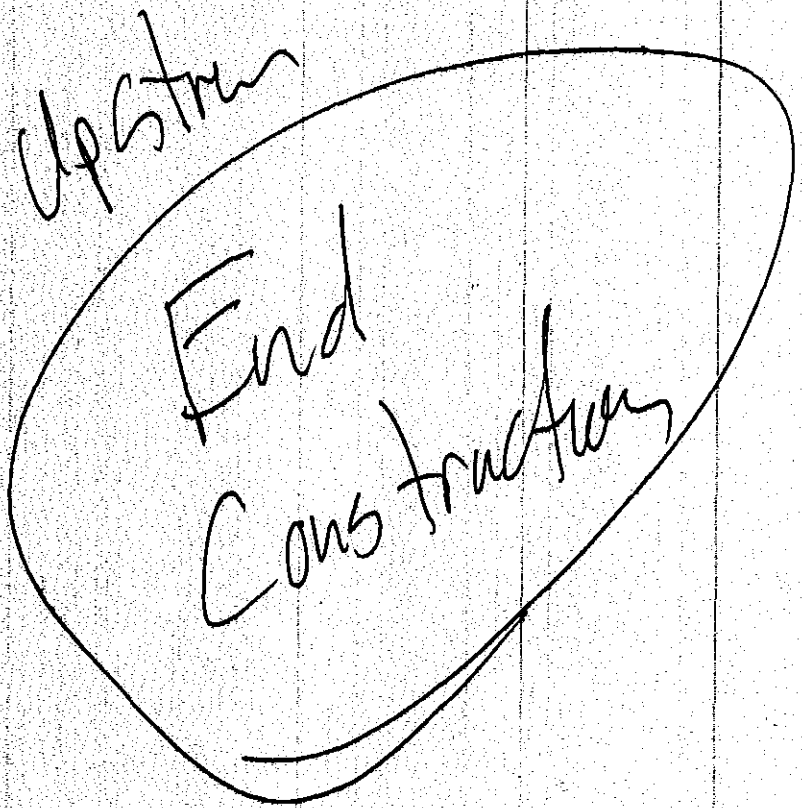
FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	64.48	84.83
2	73.19	80.00
3	77.58	78.00
4	83.14	74.91
5	154.09	80.34
6	189.77	106.85
7	192.76	112.24
8	194.31	114.93
9	195.83	117.67

*** 2.559 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SE




Upstream
End
Construction

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

4 TOP BOUNDARIES
13 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	20.00	40.00	3
2	20.00	40.00	120.00	80.00	1
3	120.00	80.00	140.00	80.00	1
4	140.00	80.00	150.00	76.00	1
5	139.24	80.00	150.00	69.24	2
6	135.00	80.00	150.00	65.00	1
7	20.00	40.00	120.00	40.00	2
8	120.00	40.00	125.00	35.00	4
9	125.00	35.00	135.00	35.00	4
10	135.00	35.00	140.00	40.00	4
11	140.00	40.00	150.00	40.00	3
12	0.00	38.00	122.00	38.00	4
13	138.00	38.00	150.00	38.00	4

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	40.00
2	20.00	40.00
3	29.00	43.00
4	120.00	70.00
5	135.00	70.00
6	150.00	65.00

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 40.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 100.00 FT.
AND X = 150.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.00	38.81
3	41.98	38.06
4	51.96	38.66
5	61.77	40.61
6	71.22	43.85
7	80.16	48.34
8	88.41	54.00
9	95.82	60.71
10	102.26	68.36
11	106.11	74.44

CIRCLE CENTER AT X = 42.5 , Y = 112.1 AND RADIUS, 74.1

*** 1.225 ***

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	31.82	38.07
3	41.67	36.37
4	51.66	35.82
5	61.64	36.41
6	71.48	38.16
7	81.07	41.02
8	90.25	44.97
9	98.92	49.95
10	106.97	55.90
11	114.27	62.73
12	120.74	70.35
13	126.29	78.67
14	126.96	80.00

CIRCLE CENTER AT X = 51.5 , Y = 122.6 AND RADIUS, 86.8

*** 1.290 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.01	38.85
3	41.95	37.72
4	51.95	37.49
5	61.92	38.17
6	71.80	39.75
7	81.49	42.23
8	90.91	45.57
9	99.99	49.76
10	108.65	54.75
11	116.83	60.52
12	124.44	67.00
13	131.44	74.14
14	136.22	80.00

CIRCLE CENTER AT X = 49.5 , Y = 147.4 AND RADIUS, 109.9

*** 1.291 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.43	40.50
3	46.40	39.73
4	56.38	40.37
5	66.17	42.40
6	75.58	45.78
7	84.42	50.46
8	92.52	56.33
9	99.71	63.28
10	105.85	71.17
11	108.21	75.29

CIRCLE CENTER AT X = 46.9 , Y = 110.7 AND RADIUS, 71.0

*** 1.292 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.90	42.41
3	50.86	41.47
4	60.86	41.64
5	70.78	42.91
6	80.49	45.27
7	89.89	48.68
8	98.85	53.12
9	107.27	58.52
10	115.04	64.81
11	122.07	71.93
12	128.27	79.77
13	128.41	80.00

CIRCLE CENTER AT X = 54.4 , Y = 131.8 AND RADIUS, 90.4

*** 1.338 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.79	41.92
3	50.71	40.67
4	60.71	40.70
5	70.62	42.03
6	80.28	44.62
7	89.52	48.43
8	98.20	53.41
9	106.16	59.46
10	113.27	66.49
11	119.41	74.38
12	122.72	80.00

CIRCLE CENTER AT X = 55.4 , Y = 117.9 AND RADIUS, 77.4

*** 1.344 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.74	41.76
3	50.65	40.39
4	60.65	40.35
5	70.57	41.65
6	80.22	44.26
7	89.44	48.14
8	98.05	53.21
9	105.92	59.39
10	112.89	66.56
11	118.83	74.60
12	121.81	80.00

CIRCLE CENTER AT X = 55.9 , Y = 114.9 AND RADIUS, 74.7

*** 1.351 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.05	39.20
3	45.83	37.11
4	55.81	36.46
5	65.77	37.24
6	75.53	39.45
7	84.86	43.04
8	93.58	47.93
9	101.51	54.03
10	108.48	61.20
11	114.35	69.30
12	118.99	78.15
13	119.58	79.83

CIRCLE CENTER AT X = 55.4 , Y = 105.8 AND RADIUS, 69.4

*** 1.352 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.50	37.66
3	37.43	36.50
4	47.43	36.54
5	57.36	37.78
6	67.06	40.21
7	76.40	43.78
8	85.24	48.44
9	93.46	54.14
10	100.94	60.78
11	107.57	68.27
12	113.25	76.50
13	113.78	77.51

CIRCLE CENTER AT X = 42.1 , Y = 119.5 AND RADIUS, 83.2

*** 1.354 ***

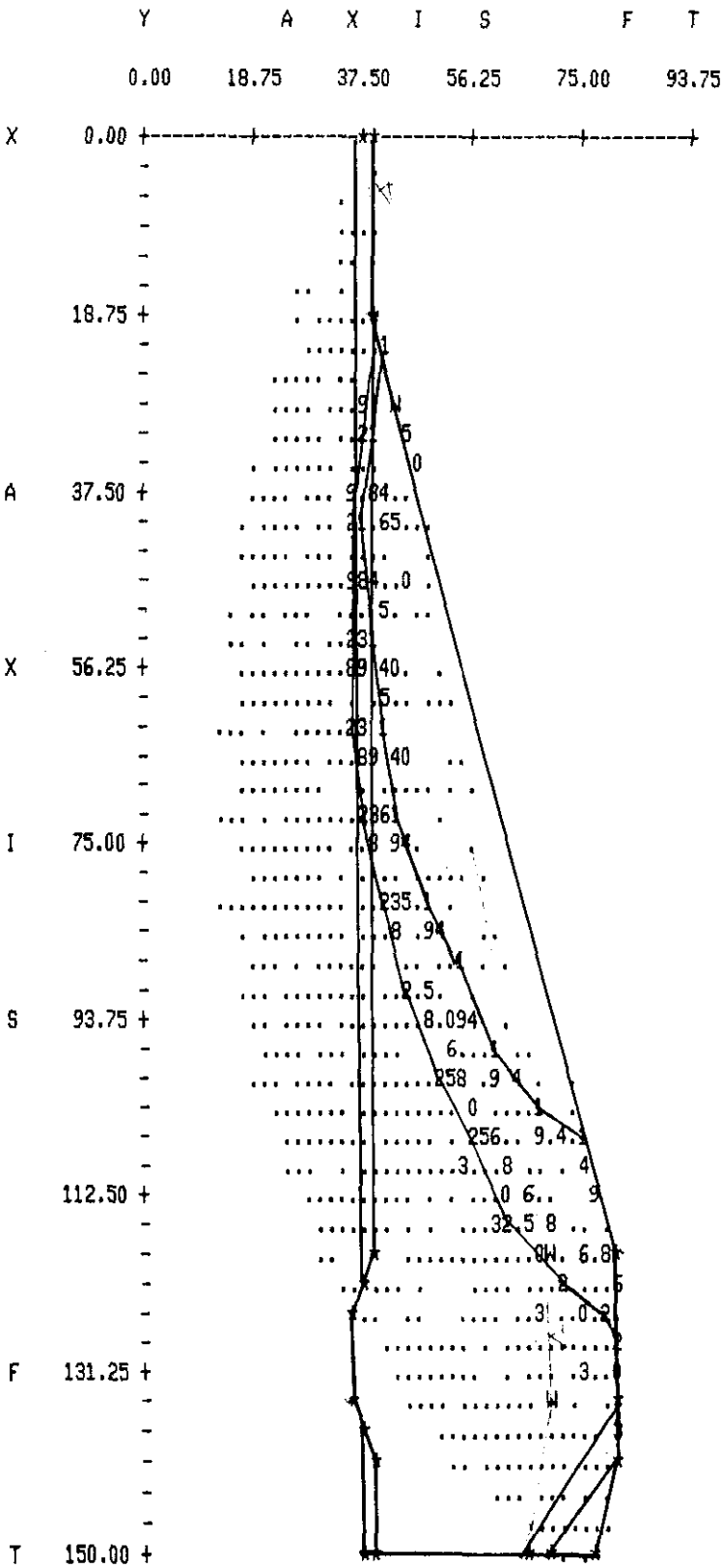
FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	35.56	46.22
2	45.41	44.51
3	55.39	43.86
4	65.38	44.29
5	75.27	45.78
6	84.94	48.33
7	94.28	51.90
8	103.18	56.46
9	111.54	61.94
10	119.27	68.28
11	126.27	75.42
12	129.88	80.00

CIRCLE CENTER AT X = 56.4 , Y = 136.9 AND RADIUS, 93.1

*** 1.375 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.



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UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

4 TOP BOUNDARIES
13 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	20.00	40.00	3
2	20.00	40.00	120.00	80.00	1
3	120.00	80.00	140.00	80.00	1
4	140.00	80.00	150.00	76.00	1
5	139.24	80.00	150.00	69.24	2
6	135.00	80.00	150.00	65.00	1
7	20.00	40.00	120.00	40.00	2
8	120.00	40.00	125.00	35.00	4
9	125.00	35.00	135.00	35.00	4
10	135.00	35.00	140.00	40.00	4
11	140.00	40.00	150.00	40.00	3
12	0.00	38.00	122.00	38.00	4
13	138.00	38.00	150.00	38.00	4

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	165.0	167.0	2000.0	45.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	40.00
2	20.00	40.00
3	29.00	43.00
4	120.00	70.00
5	135.00	70.00
6	150.00	65.00

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 40.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 100.00 FT.
AND X = 150.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.00	38.81
3	41.98	38.06
4	51.96	38.66
5	61.77	40.61
6	71.22	43.85
7	80.16	48.34
8	88.41	54.00
9	95.82	60.71
10	102.26	68.36
11	106.11	74.44

CIRCLE CENTER AT X = 42.5 , Y = 112.1 AND RADIUS, 74.1

*** 1.427 ***

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	31.82	38.07
3	41.67	36.37
4	51.66	35.82
5	61.64	36.41
6	71.48	38.16
7	81.07	41.02
8	90.25	44.97
9	98.92	49.95
10	106.97	55.90
11	114.27	62.73
12	120.74	70.35
13	126.29	78.67
14	126.96	80.00

CIRCLE CENTER AT X = 51.5 , Y = 122.6 AND RADIUS, 86.8

*** 1.500 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.01	38.85
3	41.95	37.72
4	51.95	37.49
5	61.92	38.17
6	71.80	39.75
7	81.49	42.23
8	90.91	45.57
9	99.99	49.76
10	108.65	54.75
11	116.83	60.52
12	124.44	67.00
13	131.44	74.14
14	136.22	80.00

CIRCLE CENTER AT X = 49.5 , Y = 147.4 AND RADIUS, 109.9

*** 1.502 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.43	40.50
3	46.40	39.73
4	56.38	40.37
5	66.17	42.40
6	75.58	45.78
7	84.42	50.46
8	92.52	56.33
9	99.71	63.28
10	105.85	71.17
11	108.21	75.29

CIRCLE CENTER AT X = 46.9 , Y = 110.7 AND RADIUS, 71.0

*** 1.502 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.90	42.41
3	50.86	41.47
4	60.86	41.64
5	70.78	42.91
6	80.49	45.27
7	89.89	48.68
8	98.85	53.12
9	107.27	58.52
10	115.04	64.81
11	122.07	71.93
12	128.27	79.77
13	128.41	80.00

CIRCLE CENTER AT X = 54.4 , Y = 131.8 AND RADIUS, 90.4

*** 1.555 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.50	37.66
3	37.43	36.50
4	47.43	36.54
5	57.36	37.78
6	67.06	40.21
7	76.40	43.78
8	85.24	48.44
9	93.46	54.14
10	100.94	60.78
11	107.57	68.27
12	113.25	76.50
13	113.78	77.51

CIRCLE CENTER AT X = 42.1 , Y = 119.5 AND RADIUS, 83.2

*** 1.555 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.79	41.92
3	50.71	40.67
4	60.71	40.70
5	70.62	42.03
6	80.28	44.62
7	89.52	48.43
8	98.20	53.41
9	106.16	59.46
10	113.27	66.49
11	119.41	74.38
12	122.72	80.00

CIRCLE CENTER AT X = 55.4 , Y = 117.9 AND RADIUS, 77.4

*** 1.562 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	40.74	41.76
3	50.65	40.39
4	60.65	40.35
5	70.57	41.65
6	80.22	44.26
7	89.44	48.14
8	98.05	53.21
9	105.92	59.39
10	112.89	66.56
11	118.83	74.60
12	121.81	80.00

CIRCLE CENTER AT X = 55.9 , Y = 114.9 AND RADIUS, 74.7

*** 1.571 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.05	39.20
3	45.83	37.11
4	55.81	36.46
5	65.77	37.24
6	75.53	39.45
7	84.86	43.04
8	93.58	47.93
9	101.51	54.03
10	108.48	61.20
11	114.35	69.30
12	118.99	78.15
13	119.58	79.83

CIRCLE CENTER AT X = 55.4 , Y = 105.8 AND RADIUS, 69.4

*** 1.572 ***

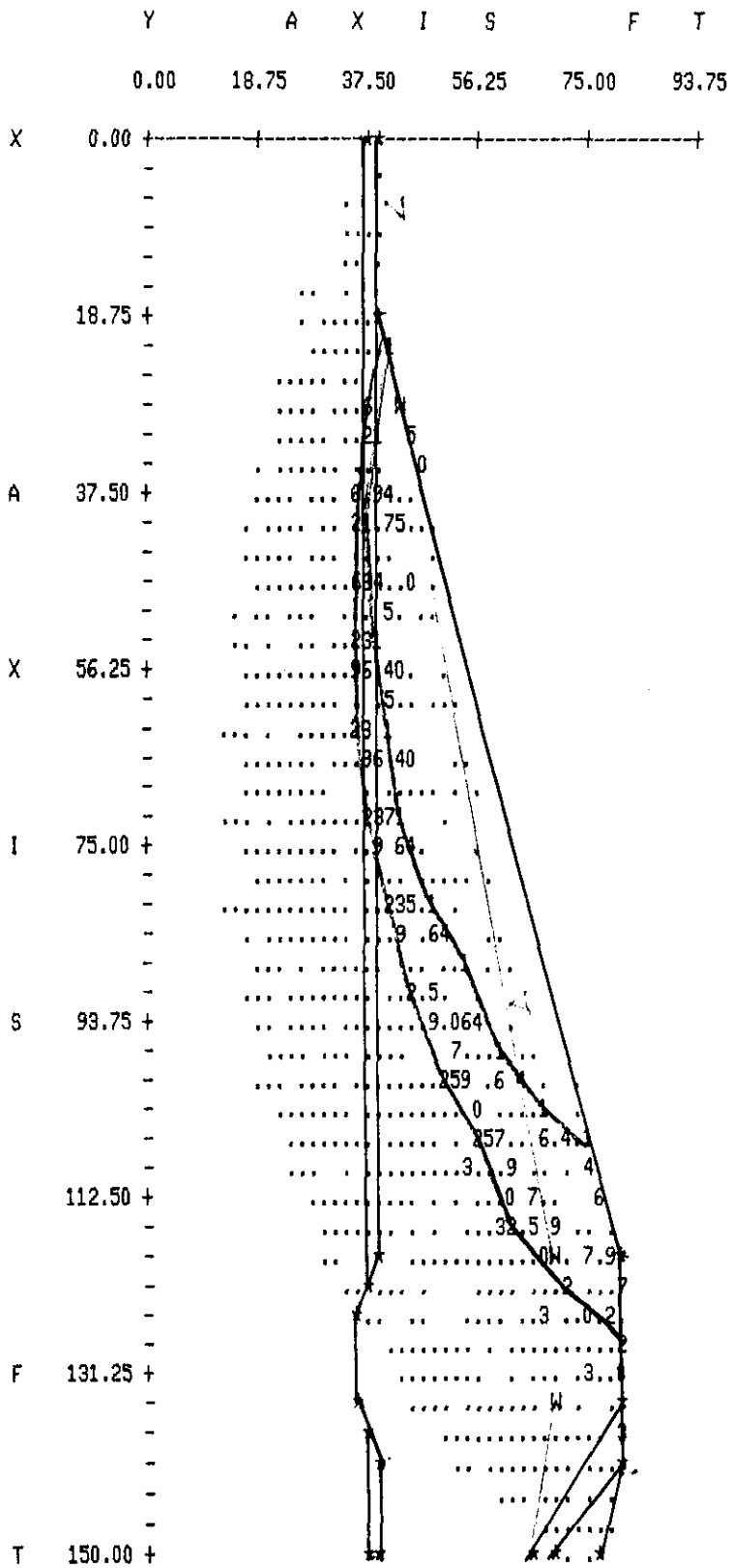
FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	35.56	46.22
2	45.41	44.51
3	55.39	43.86
4	65.38	44.29
5	75.27	45.78
6	84.94	48.33
7	94.28	51.90
8	103.18	56.46
9	111.54	61.94
10	119.27	68.28
11	126.27	75.42
12	129.88	80.00

CIRCLE CENTER AT X = 56.4 , Y = 136.9 AND RADIUS, 93.1

*** 1.598 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	34.0	0.00	0.0	1
2	126.0	135.0	0.0	32.0	0.00	0.0	1
3	165.0	167.0	2000.0	43.0	0.00	0.0	1
4	125.0	135.0	0.0	34.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 40.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 100.00 FT.
AND X = 150.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.10	39.30
3	42.09	39.00
4	52.04	39.98
5	61.78	42.24
6	71.15	45.74
7	79.99	50.42
8	88.15	56.19
9	95.51	62.97
10	101.92	70.64
11	103.74	73.50

CIRCLE CENTER AT X = 39.4 , Y = 116.4 AND RADIUS, 77.4

*** 1.317 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.22	40.68
3	42.21	41.21
4	52.13	42.48
5	61.93	44.47
6	71.55	47.18
7	80.95	50.60
8	90.07	54.70
9	98.86	59.46
10	107.28	64.86
11	115.28	70.86
12	122.81	77.44
13	125.33	80.00

CIRCLE CENTER AT X = 30.0 , Y = 176.0 AND RADIUS, 135.4

*** 1.357 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.66	42.98
3	46.60	44.11
4	56.40	46.07
5	66.02	48.83
6	75.37	52.38
7	84.39	56.69
8	93.02	61.73
9	101.21	67.47
10	108.90	73.87
11	111.80	76.72

CIRCLE CENTER AT X = 27.9 , Y = 163.3 AND RADIUS, 120.6

*** 1.416 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	41.07	43.53
3	51.07	43.62
4	61.01	44.71
5	70.79	46.81
6	80.31	49.87
7	89.47	53.88
8	98.18	58.79
9	106.36	64.55
10	113.91	71.10
11	120.76	78.38
12	122.01	80.00

CIRCLE CENTER AT X = 45.2 , Y = 142.7 AND RADIUS, 99.2

*** 1.417 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.36	37.13
3	37.18	35.27
4	47.15	34.44
5	57.15	34.64
6	67.07	35.87
7	76.81	38.13
8	86.27	41.38
9	95.34	45.59
10	103.92	50.72
11	111.93	56.71
12	119.27	63.50
13	125.87	71.01
14	131.66	79.17
15	132.13	80.00

CIRCLE CENTER AT X = 50.2 , Y = 130.9 AND RADIUS, 96.5

*** 1.477 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.70	38.79
3	37.69	38.22
4	47.69	38.30
5	57.66	39.02
6	67.57	40.39
7	77.37	42.39
8	87.01	45.02
9	96.47	48.26
10	105.70	52.11
11	114.67	56.55
12	123.32	61.55
13	131.64	67.10
14	139.58	73.18
15	145.07	77.97

CIRCLE CENTER AT X = 41.5 , Y = 193.1 AND RADIUS, 154.9

*** 1.520 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.32	40.05
3	46.17	38.33
4	56.14	37.52
5	66.14	37.62
6	76.08	38.65
7	85.90	40.57
8	95.49	43.40
9	104.78	47.08
10	113.70	51.61
11	122.17	56.93
12	130.11	63.01
13	137.46	69.79
14	144.16	77.21
15	144.81	78.08

CIRCLE CENTER AT X = 60.0 , Y = 146.4 AND RADIUS, 109.0

*** 1.545 ***

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	26.96	36.04
3	36.61	33.42
4	46.53	32.18
5	56.53	32.35
6	66.41	33.92
7	75.96	36.87
8	85.00	41.14
9	93.36	46.64
10	100.85	53.26
11	107.34	60.87
12	112.69	69.32
13	116.80	78.44
14	116.89	78.75

CIRCLE CENTER AT X = 50.3 , Y = 102.9 AND RADIUS, 70.8

*** 1.563 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	26.81	35.71
3	36.35	32.72
4	46.22	31.08
5	56.21	30.81
6	66.15	31.94
7	75.84	34.43
8	85.08	38.24
9	93.71	43.30
10	101.56	49.50
11	108.47	56.73
12	114.31	64.84
13	118.97	73.69
14	121.25	80.00

CIRCLE CENTER AT X = 53.1 , Y = 102.8 AND RADIUS, 72.0

*** 1.588 ***

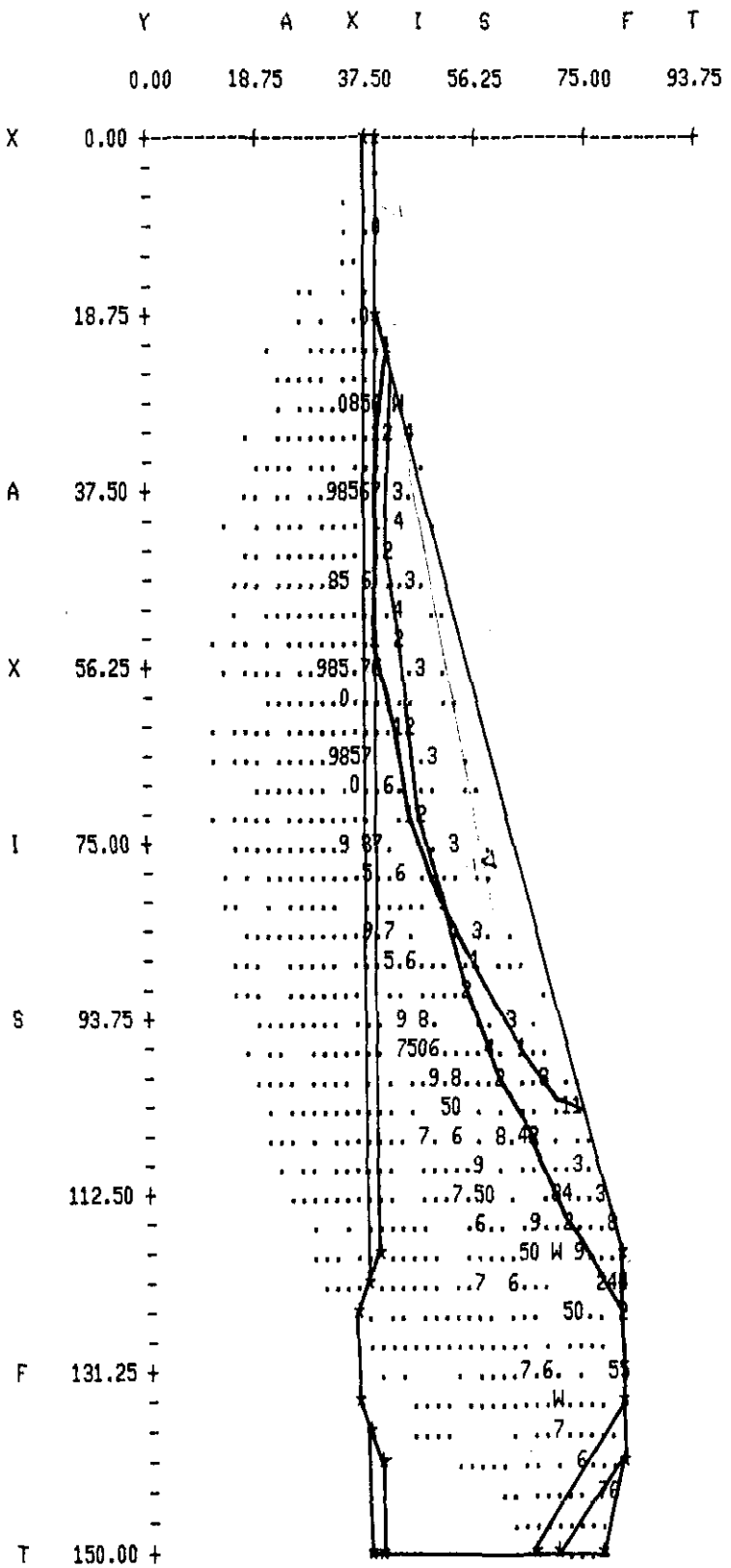
FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	8.89	40.00
2	18.37	36.83
3	28.12	34.61
4	38.05	33.37
5	48.04	33.10
6	58.02	33.83
7	67.87	35.53
8	77.51	38.20
9	86.84	41.80
10	95.77	46.30
11	104.21	51.67
12	112.08	57.84
13	119.30	64.75
14	125.81	72.34
15	131.16	80.00

CIRCLE CENTER AT X = 45.7 , Y = 134.4 AND RADIUS, 101.3

*** 1.604 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.



UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	133.0	135.0	0.0	32.0	0.00	0.0	1
2	133.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 40.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 100.00 FT.
AND X = 150.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.67	42.80
3	46.62	43.81
4	56.44	45.69
5	66.05	48.43
6	75.39	52.01
7	84.38	56.39
8	92.95	61.55
9	101.03	67.44
10	108.56	74.02
11	110.73	76.29

CIRCLE CENTER AT X = 30.2 , Y = 156.1 AND RADIUS, 113.5

*** 1.307 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.22	39.70
3	46.13	38.40
4	56.12	38.83
5	65.89	40.95
6	75.16	44.72
7	83.64	50.01
8	91.10	56.68
9	97.30	64.52
10	101.73	72.69

CIRCLE CENTER AT X = 48.7 , Y = 96.6 AND RADIUS, 58.2

*** 1.314 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.73	38.99
3	37.73	38.86
4	47.70	39.60
5	57.57	41.21
6	67.26	43.68
7	76.70	46.98
8	85.81	51.09
9	94.53	55.99
10	102.79	61.62
11	110.53	67.96
12	117.68	74.95
13	122.02	80.00

CIRCLE CENTER AT X = 34.2 , Y = 153.2 AND RADIUS, 114.4

*** 1.315 ***

FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	17.78	40.00
2	27.73	39.00
3	37.72	38.67
4	47.72	39.02
5	57.66	40.05
6	67.52	41.75
7	77.23	44.11
8	86.77	47.13
9	96.08	50.78
10	105.12	55.06
11	113.84	59.94
12	122.22	65.40
13	130.21	71.42
14	137.77	77.96
15	139.82	80.00

CIRCLE CENTER AT X = 37.5 , Y = 186.1 AND RADIUS, 147.5

*** 1.365 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.67	42.82
3	46.64	43.55
4	56.55	44.86
5	66.37	46.74
6	76.07	49.19
7	85.61	52.20
8	94.95	55.75
9	104.08	59.85
10	112.95	64.46
11	121.54	69.58
12	129.82	75.19
13	136.10	80.00

CIRCLE CENTER AT X = 29.0 , Y = 215.0 AND RADIUS, 172.3

*** 1.374 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	44.44
2	41.11	44.64
3	51.07	45.50
4	60.95	47.03
5	70.71	49.22
6	80.30	52.06
7	89.68	55.54
8	98.80	59.63
9	107.63	64.33
10	116.12	69.61
11	124.24	75.45
12	129.74	80.00

CIRCLE CENTER AT X = 33.2 , Y = 193.4 AND RADIUS, 149.0

*** 1.382 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	36.61	43.78
3	46.47	45.43
4	56.23	47.61
5	65.86	50.31
6	75.32	53.53
7	84.60	57.26
8	93.67	61.48
9	102.49	66.19
10	111.04	71.37
11	119.30	77.01
12	123.22	80.00

CIRCLE CENTER AT X = 11.1 , Y = 226.8 AND RADIUS, 184.8

*** 1.387 ***

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	26.67	42.67
2	35.88	38.77
3	45.53	36.15
4	55.44	34.85
5	65.44	34.89
6	75.34	36.28
7	84.97	38.99
8	94.14	42.97
9	102.70	48.15
10	110.48	54.44
11	117.34	61.71
12	123.16	69.84
13	127.83	78.68
14	128.32	80.00

CIRCLE CENTER AT X = 60.1 , Y = 108.8 AND RADIUS, 74.1

*** 1.404 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	35.56	46.22
2	45.14	43.37
3	55.08	42.23
4	65.06	42.84
5	74.78	45.18
6	83.95	49.17
7	92.28	54.70
8	99.53	61.60
9	105.46	69.65
10	108.26	75.31

CIRCLE CENTER AT X = 56.6 , Y = 99.4 AND RADIUS, 57.2

*** 1.427 ***

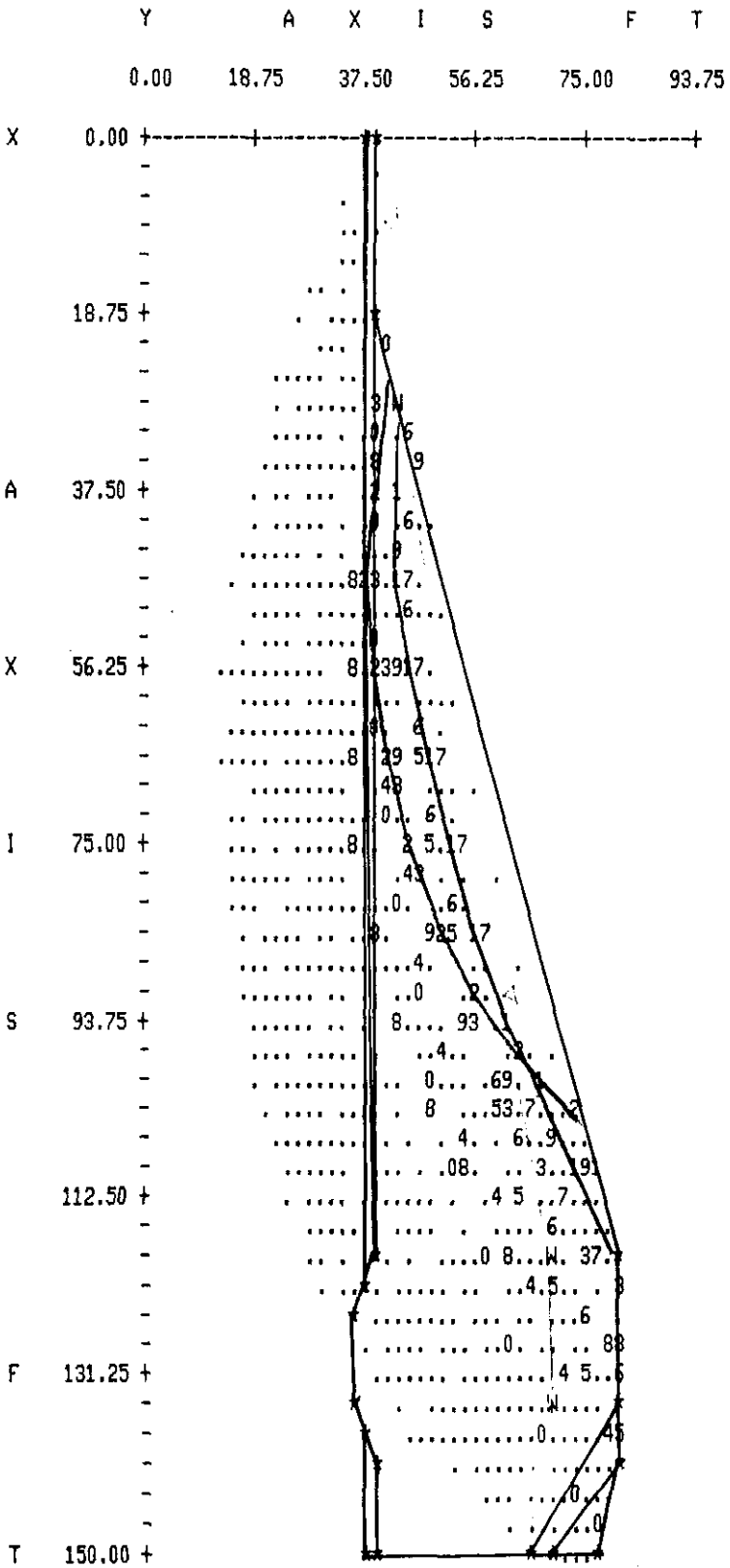
FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	22.22	40.89
2	32.16	39.78
3	42.15	39.28
4	52.15	39.40
5	62.12	40.15
6	72.03	41.50
7	81.83	43.47
8	91.50	46.04
9	100.98	49.21
10	110.25	52.95
11	119.28	57.26
12	128.02	62.12
13	136.44	67.52
14	144.51	73.42
15	148.39	76.64

CIRCLE CENTER AT X = 45.2 , Y = 200.8 AND RADIUS, 161.6

*** 1.434 ***

UPSTREAM SLOPE STABILITY, TYPICAL 40' HIGH EMBANKMENT SECTION, END CONSTRUCT.



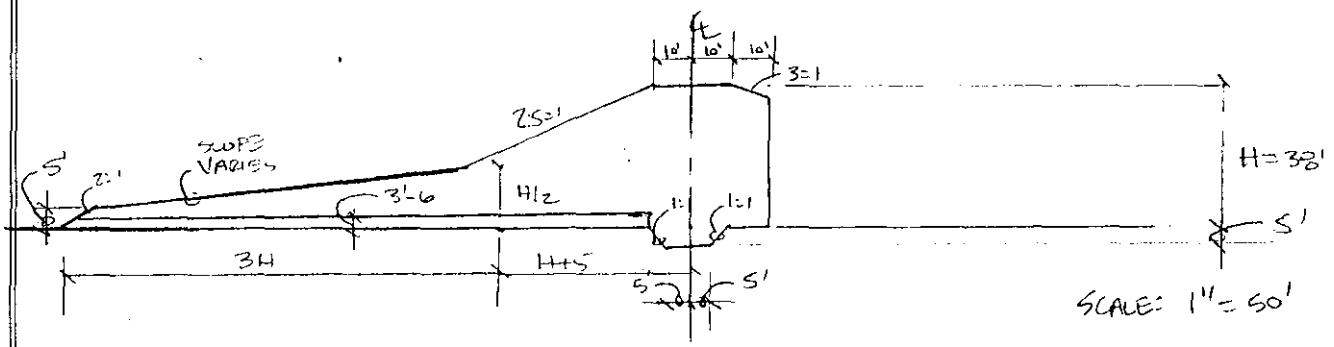
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PURPOSE: THE FOLLOWING IS A BRIEF SUMMARY OF THE DOWNSTREAM SLOPE-STABILITY ANALYSIS (FINAL

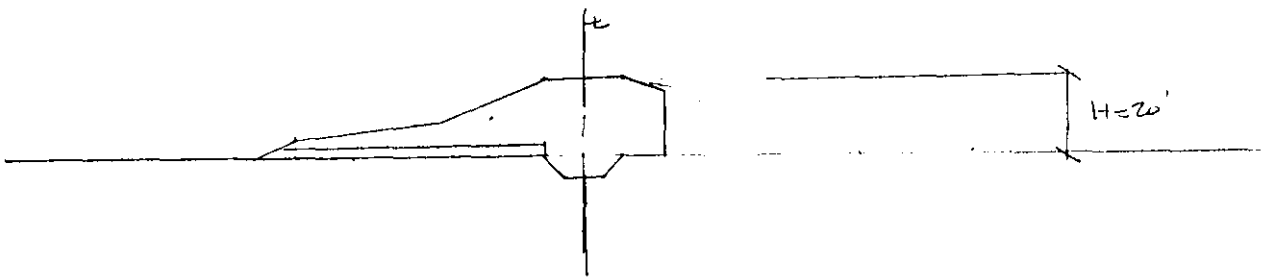
EMBANKMENT CROSS-SECTIONS

THERE WERE TWO EMBANKMENT CROSS-SECTIONS SELECTED FOR ANALYSIS

(1) A TYPICAL 38' HIGH EMBANKMENT SECTION WITH A 3'-6" THICK BLANKET DRAIN. GROUND SURFACE WAS ASSUMED TO BE LEVEL.



(2) A TYPICAL 20' HIGH EMBANKMENT SECTION WITH A 2'-0 THICK BLANKET DRAIN. GROUND SURFACE WAS ASSUMED TO BE LEVEL.



DESIGN LOADING CONDITIONS

THERE WERE THREE DESIGN LOADING CONDITIONS APPLICABLE FOR THE DOWNSTREAM SLOPE STABILITY.

(1) A TRANSIENT SEEPAGE ANALYSIS WAS PERFORMED FOR THE PMF EVENT. THIS ANALYSIS PROVIDED THE CONTINUOUS FLOWNETS FROM WHICH THE PHREATIC "LINE OF SEEPAGE" COULD BE DETERMINED. (SEE ADDITIONAL CALCULATIONS AND DISCUSSION IN THIS CALCULATION BOOK ON TRANSIENT SEEPAGE ANALYSIS)

DO NOT WRITE IN THIS SPACE

(1) THE DOWNSTREAM SLOPE STABILITY WAS NOT EVALUATED FOR SEEPAGE AT THE LOW RESERVOIR POOL ELEVATION SINCE THE PMF EVENT CLEARLY CONTROLS.

(2) PSEUDO-STATIC EARTHQUAKE LOADING WAS CONSIDERED. THE BASIN WAS ASSUMED TO BE EMPTY. (SEE ADDITIONAL CALCULATIONS AND DISCUSSION ON EARTHQUAKE LOADING DESIGN PARAMETERS IN THIS CALC. BOOK)

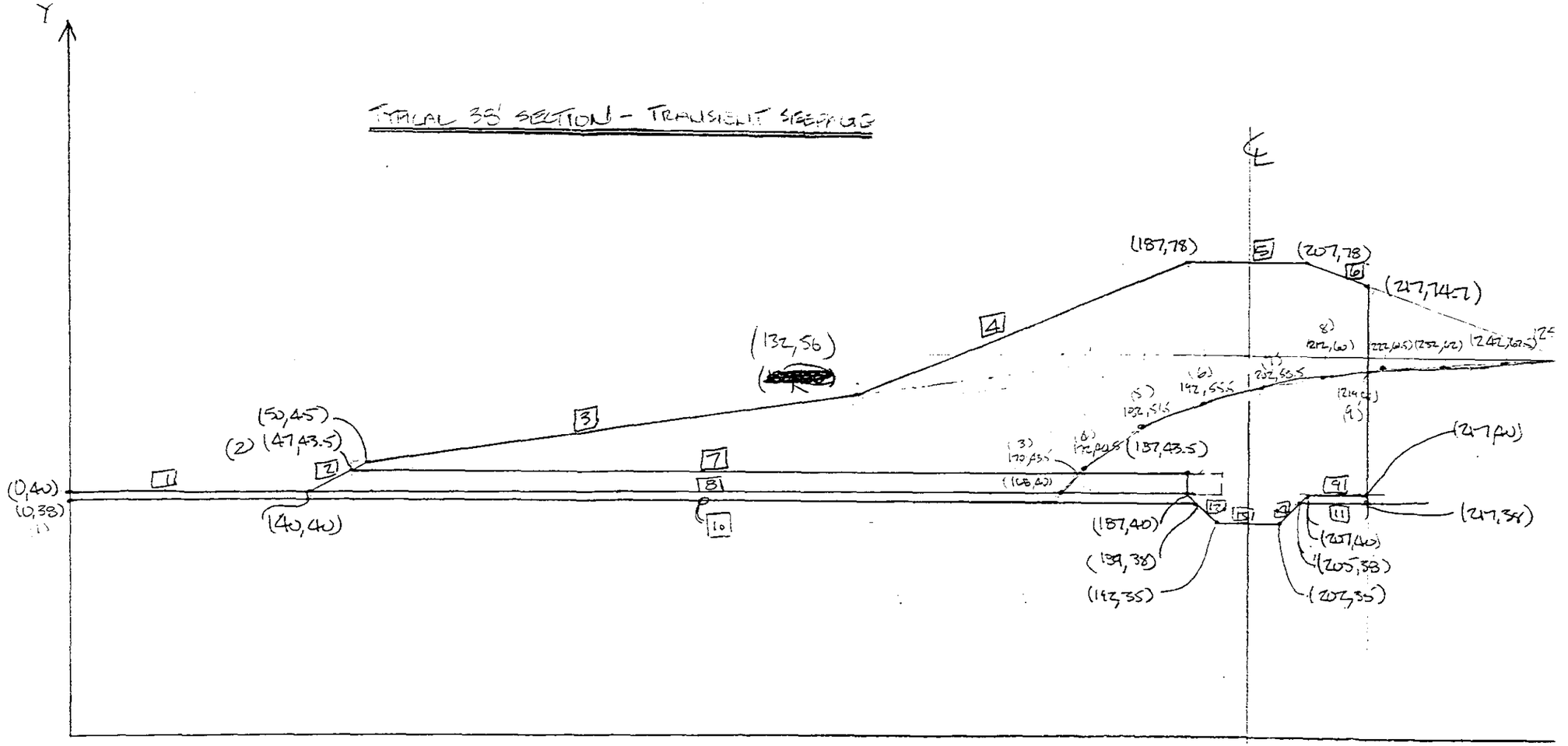
(3) END OF CONSTRUCTION (SEE CALC'S AND DISCUSSION IN THIS NOTEBOOK)

ANALYSIS METHODS

THE SLOPE STABILITY PROGRAM STABL WAS USED FOR ANALYSIS. VARIOUS FAILURE SURFACES WERE SELECTED: CIRCULAR, IRREGULAR, AND BLOCK. STABL CALCULATES S.F.'S FOR CIRCULAR FAILURE SURFACES BY USING THE MODIFIED BISHOP METHOD. IRREGULAR AND BLOCK FAILURE SURFACES S.F.'S, WERE CALCULATED USING THE SIMPLIFIED JANBU METHOD OF SLICES. SOIL PARAMETERS WERE VARIED IN THE ANALYSIS TO DETERMINE THE SENSITIVITY OF THE SLOPE STABILITY PROGRAM.

ANALYSIS RESULTS

TYPICAL 35' SECTION - TRANSIENT SEEPAGE

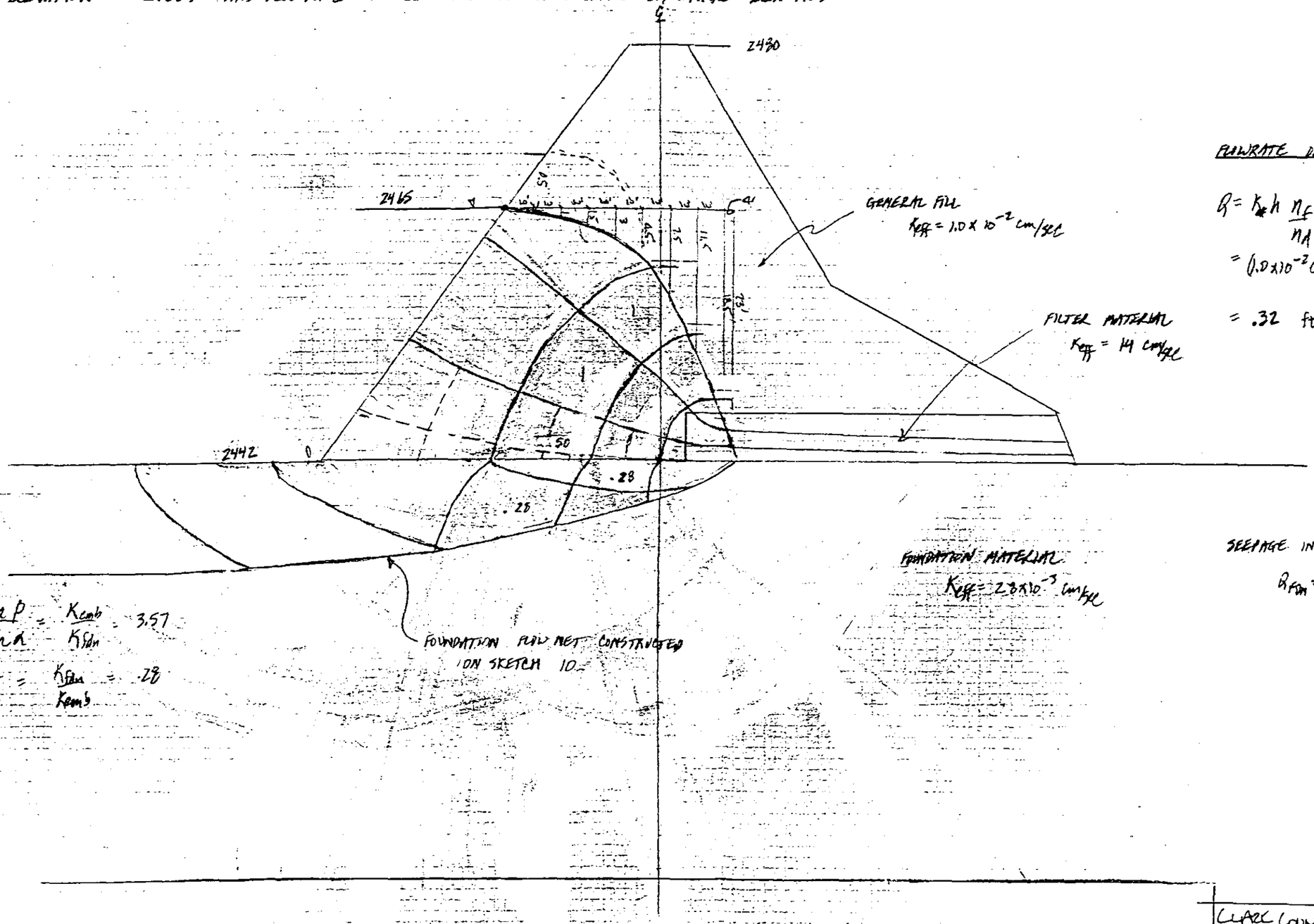


SOILS

① EMBANKMENT
② BLANKET DRAIN
③ FOUNDATION
④ FOUNDATION

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 14625
SLOPE STABILITY - DOWNSTREAM SLOPE
12/21/88

DETERMINE THE FLOWRATE OF SEEPAGE THROUGH THE MAXIMUM EMBANKMENT SECTION FOR THE TRANSIENT CONDITION OF THE PMF INFLOW HYDROGRAPH AT TIME = 14.85 HR AND POOL ELEVATION = 2465. THIS FLOWRATE WILL BE USED TO SIZE THE DRAINAGE BLANKET



FLOWRATE OF SEEPAGE

$$Q = K_{eff} h \frac{n_f}{n_d}$$

$$= (1.0 \times 10^{-2} \text{ cm/sec})(23 \text{ ft})\left(\frac{2.78}{4}\right) \quad (2.0 \times 10^{-2} \text{ ft/min})$$

$$= .32 \text{ ft}^3/\text{min} / \text{ft of dam}$$

$$\frac{\tan \beta}{\tan \alpha} = \frac{K_{comb}}{K_{fdn}} = 3.57$$

$$\frac{S}{d} = \frac{K_{fdn}}{K_{comb}} = .28$$

SEEPAGE IN FLOW CHANNEL IN FDN

$$Q_{FDN} = Q_{EMB}\left(\frac{K_{FDN}}{K_{EMB}}\right)$$

$$= Q_{EMB}\left(\frac{1.0 \times 10^{-2}}{2.8 \times 10^{-3}}\right)$$

$$= \frac{Q_{EMB}}{3.57}$$

$$= .28\, Q_{EMB}$$

TRANSFORMED SECTION

$K_{HR} = 16\, K_{NAT}$

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 10025
12/20/88

SKETCH 9

DOWNSTREAM SLOPE
DESIGN CASE

SOIL PARAMETERS																ANALYSIS PROCEDURE		
EMBANKMENT								FOUNDATION								CIRCULAR	IRREGULAR	BLOCK
GENERAL FILL				FILTER				LAYER 1				LAYER 2				BISHOP	JANBU	JANBU
γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	F.S.	F.S.	F.S.
126	135	0	36	126	135	0	34	105	115	0	33	125	135	0	36	2.03–2.74		
126	135	0	34	126	135	0	32	105	115	0	31	125	135	0	34	2.12–2.55		
126	135	0	32	126	135	0	30	105	115	0	29	125	135	0	32	1.62–2.44 (19)		2.47–3.05
126	135	0	32	126	135	0	30	165	167	1500	14	125	135	0	32	1.66–2.44 (11)		2.42–3.47

TYPICAL SECTION
TRANSIENT SEEPAGE FLOWNET
FOR RWF EVENT
F.S. REQ'D ≥ 1.5
FILE: DLINSTRMIA.DAT

NOTES:

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	40.00	40.00	3
2	40.00	40.00	50.00	45.00	2
3	50.00	45.00	132.00	56.00	1
4	132.00	56.00	187.00	78.00	1
5	187.00	78.00	207.00	78.00	1
6	207.00	78.00	217.00	74.70	1
7	47.00	43.50	187.00	43.50	2
8	40.00	40.00	187.00	40.00	3
9	207.00	40.00	217.00	40.00	3
10	0.00	36.00	189.00	38.00	4
11	205.00	38.00	217.00	38.00	4
12	189.00	38.00	192.00	35.00	4
13	192.00	35.00	202.00	35.00	4
14	202.00	35.00	205.00	38.00	4

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	40.00
2	40.00	40.00
3	47.00	43.50
4	170.00	43.50
5	172.00	44.50
6	182.00	51.50
7	192.00	55.50
8	202.00	58.50
9	212.00	60.00
10	219.00	61.00

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	105.0	115.0	0.0	33.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	59.38
3	159.69	61.85
4	168.55	66.49
5	176.10	73.05
6	176.70	73.88

CIRCLE CENTER AT X = 144.2 , Y = 102.1 AND RADIUS, 43.1

*** 2.030 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.49
3	159.84	57.89
4	169.52	60.41
5	178.45	64.91
6	186.22	71.20
7	191.69	78.00

CIRCLE CENTER AT X = 152.9 , Y = 104.4 AND RADIUS, 47.0

*** 2.283 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.48
3	159.85	57.74
4	169.59	59.98
5	178.70	64.11
6	186.80	69.97
7	193.59	77.32
8	194.00	78.00

CIRCLE CENTER AT X = 153.5 , Y = 107.5 AND RADIUS, 50.1

*** 2.324 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.82	57.30
3	159.67	59.03
4	168.25	64.16
5	174.45	72.01
6	174.79	73.12

CIRCLE CENTER AT X = 150.1 , Y = 84.9 AND RADIUS, 27.6

*** 2.392 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.68	61.71
3	159.33	64.33
4	168.95	67.07
5	178.53	69.92
6	188.08	72.89
7	197.60	75.97
8	203.61	78.00

CIRCLE CENTER AT X = -64.2 , Y = 867.8 AND RADIUS, 834.0

*** 2.415 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.04	52.16
3	143.94	50.80
4	153.94	50.94
5	163.81	52.58
6	173.31	55.68
7	182.25	60.17
8	190.41	65.95
9	197.61	72.89
10	201.52	78.00

CIRCLE CENTER AT X = 148.0 , Y = 117.2 AND RADIUS, 66.5

*** 2.550 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.27	49.42
3	128.12	47.73
4	138.12	47.89
5	147.92	49.89
6	157.18	53.66
7	165.59	59.08
8	172.85	65.95
9	178.72	74.05
10	179.09	74.84

CIRCLE CENTER AT X = 132.3 , Y = 101.6 AND RADIUS, 54.0

*** 2.685 ***

FAILURE SURFACE SPECIFIED BY 16 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.22	46.64
2	72.22	46.64
3	82.22	46.96
4	92.20	47.58
5	102.15	48.51
6	112.08	49.75
7	121.96	51.30
8	131.78	53.15
9	141.55	55.31
10	151.24	57.76
11	160.86	60.52
12	170.38	63.57
13	179.80	66.92
14	189.12	70.55
15	198.32	74.47
16	205.93	78.00

CIRCLE CENTER AT X = 67.1 , Y = 369.6 AND RADIUS, 323.0

*** 2.777 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.16	49.15
3	127.85	46.67
4	[illegible].78	45.49
5	147.78	45.64
6	157.67	47.12
7	167.27	49.90
8	176.42	53.94
9	184.96	59.15
10	192.72	65.45
11	199.58	72.72
12	203.37	78.00

CIRCLE CENTER AT X = 141.6 , Y = 120.5 AND RADIUS, 75.1

*** 2.782 ***

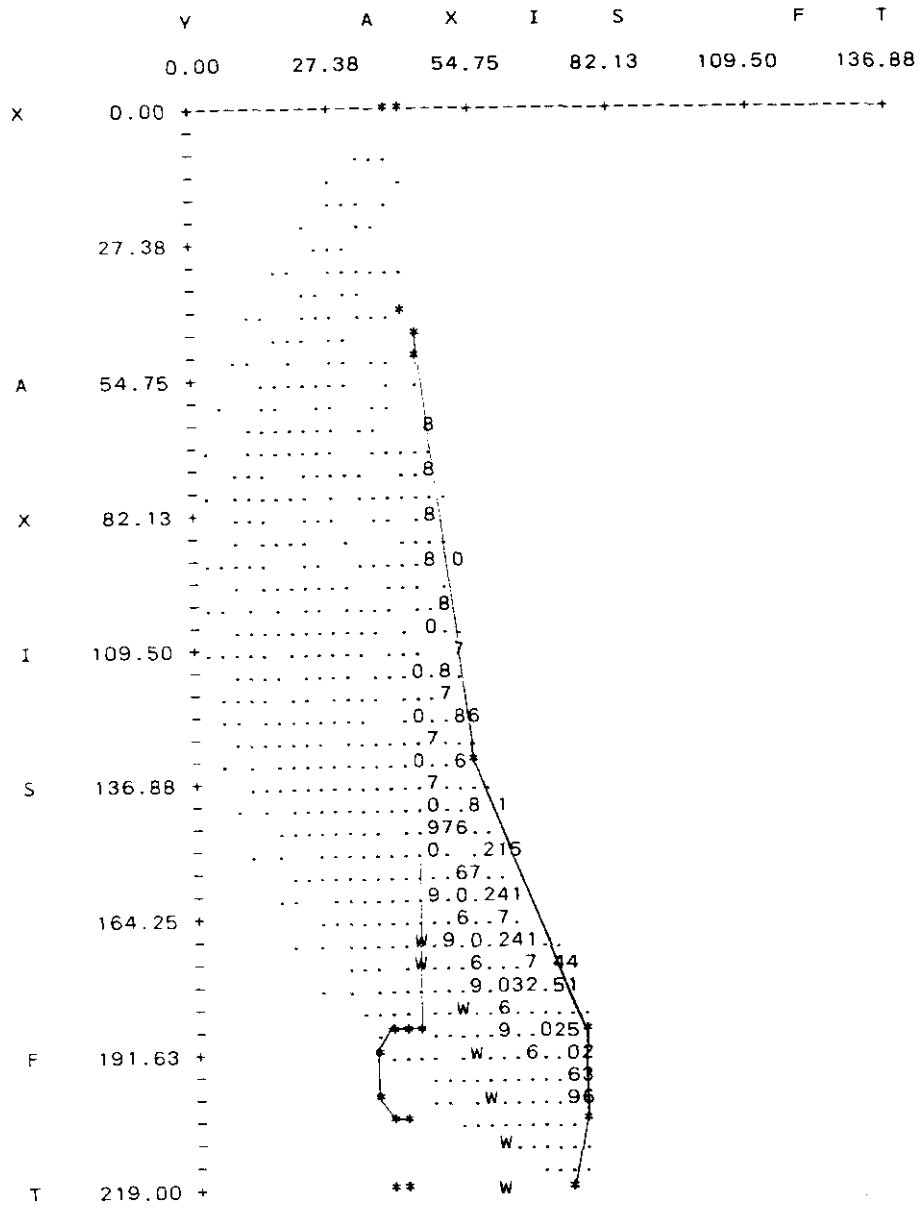
FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.74	47.41
3	112.47	45.13
4	122.41	43.99
5	132.41	44.03
6	142.34	45.22
7	152.06	47.57
8	161.44	51.04
9	170.35	55.58
10	178.67	61.12
11	186.29	67.60
12	193.10	74.92
13	195.36	78.00

CIRCLE CENTER AT X = 127.1 , Y = 129.5 AND RADIUS, 85.6

*** 2.788 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	34.0	0.00	0.0	1
2	126.0	135.0	0.0	32.0	0.00	0.0	1
3	105.0	115.0	0.0	31.0	0.00	0.0	1
4	125.0	135.0	0.0	34.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.13	52.51
3	144.12	51.92
4	154.03	53.26
5	163.50	56.47
6	172.18	61.44
7	179.75	67.97
8	185.93	75.83
9	187.04	78.00

CIRCLE CENTER AT X = 142.1 , Y = 103.9 AND RADIUS, 52.0

*** 2.125 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.79	51.53
3	128.79	51.11
4	138.77	51.65
5	148.66	53.14
6	158.36	55.57
7	167.78	58.92
8	176.84	63.15
9	185.46	68.23
10	193.55	74.11
11	197.94	78.00

CIRCLE CENTER AT X = 128.1 , Y = 155.6 AND RADIUS, 104.5

*** 2.155 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.90	57.78
3	159.58	60.29
4	167.55	66.32
5	170.52	71.41

CIRCLE CENTER AT X = 148.5 , Y = 83.2 AND RADIUS, 25.5

*** 2.192 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.82	57.30
3	159.62	59.29
4	167.91	64.87
5	172.88	72.35

CIRCLE CENTER AT X = 149.7 , Y = 83.0 AND RADIUS, 25.7

*** 2.262 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.80	57.23
3	159.80	57.15
4	169.64	58.98
5	178.95	62.63
6	187.39	67.98
7	194.67	74.84
8	196.95	78.00

CIRCLE CENTER AT X = 155.2 , Y = 109.4 AND RADIUS, 52.5

*** 2.266 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.80	51.58
3	128.79	51.04
4	138.78	51.28
5	148.73	52.32
6	158.57	54.12
7	168.23	56.70
8	177.66	60.03
9	186.80	64.08
10	195.59	68.85
11	203.98	74.29
12	208.28	77.58

CIRCLE CENTER AT X = 130.7 , Y = 178.2 AND RADIUS, 127.2

*** 2.370 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.21	49.26
3	113.20	48.70
4	123.19	49.14
5	133.08	50.59
6	142.78	53.01
7	152.19	56.40
8	161.22	60.70
9	169.77	65.89
10	177.75	71.91
11	182.30	76.12

CIRCLE CENTER AT X = 113.8 , Y = 148.5 AND RADIUS, 99.8

*** 2.436 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.54	50.29
3	128.51	49.51
4	138.45	50.59
5	148.02	53.49
6	156.89	58.12
7	164.74	64.31
8	171.15	71.66

CIRCLE CENTER AT X = 127.7 , Y = 103.2 AND RADIUS, 53.7

*** 2.450 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.66	61.78
3	159.32	64.37
4	168.98	66.97
5	178.63	69.58
6	188.28	72.21
7	197.92	74.85
8	207.57	77.50
9	208.08	77.64

CIRCLE CENTER AT X = ****** , Y = 7607.4 AND RADIUS, 7810.8

*** 2.484 ***

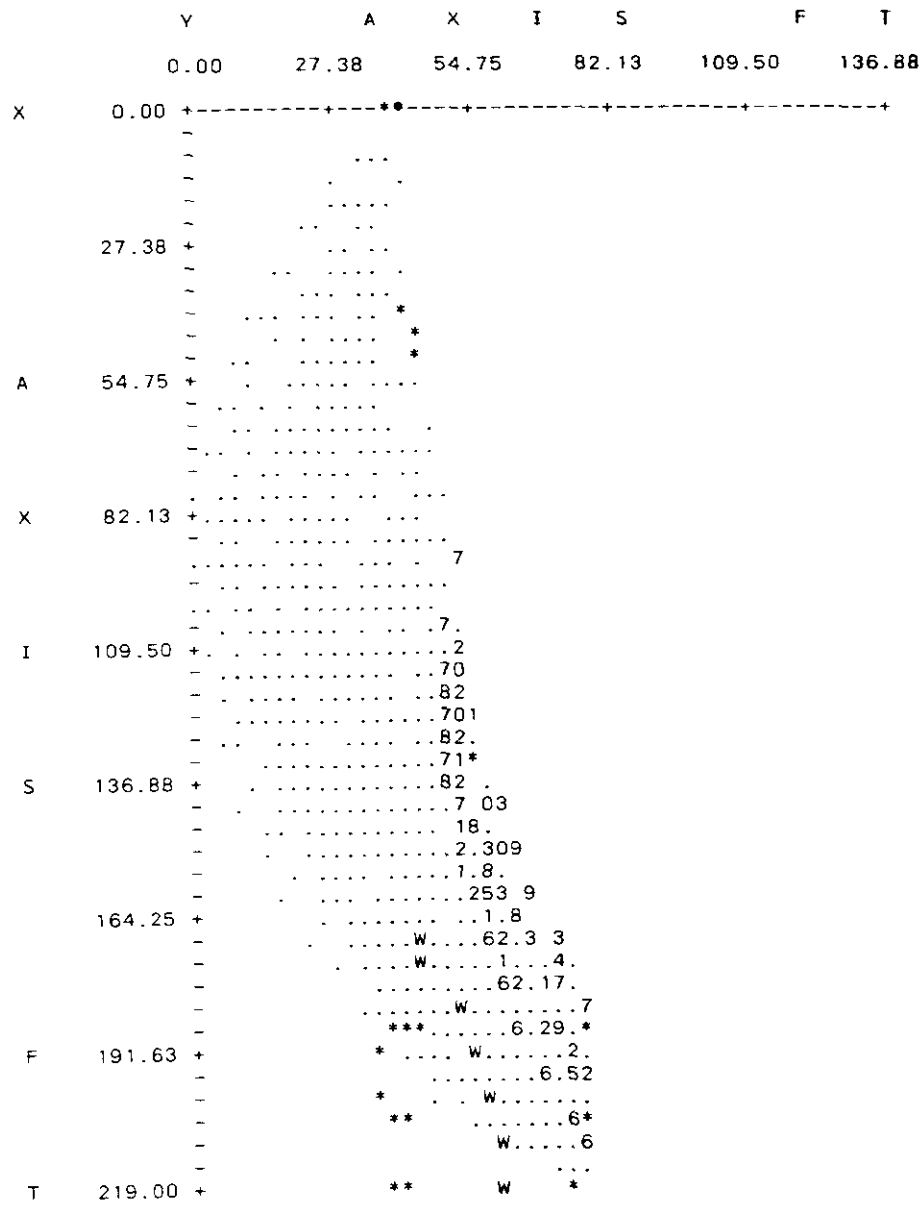
FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.33	50.57
3	113.32	51.13
4	123.23	52.47
5	133.00	54.59
6	142.57	57.48
7	151.88	61.12
8	160.88	65.49
9	169.50	70.55
10	171.00	71.60

CIRCLE CENTER AT X = 101.4 , Y = 176.7 AND RADIUS, 126.1

*** 2.550 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION *INTERCEPT* (PSF)	FRICTION *ANGLE* (DEG)	PORE *PRESSURE* PARAMETER	PRESSURE *CONSTANT* (PSF)	PIEZOMETRIC *SURFACE* NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.84	61.01
3	159.24	64.40
4	167.97	69.29
5	170.69	71.48

CIRCLE CENTER AT X = 134.0 , Y = 119.7 AND RADIUS, 60.8

*** 1.625 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	58.92
3	159.94	59.99
4	169.65	62.39
5	178.94	66.09
6	187.65	71.00
7	195.61	77.05
8	196.57	78.00

CIRCLE CENTER AT X = 147.1 , Y = 132.7 AND RADIUS, 73.9

*** 1.900 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.21	49.25
3	113.18	48.47
4	123.18	48.47
5	133.15	49.26
6	143.02	50.83
7	152.75	53.18
8	162.25	56.28
9	171.48	60.12
10	180.39	64.68
11	188.90	69.92
12	196.98	75.82
13	199.53	78.00

CIRCLE CENTER AT X = 118.1 , Y = 175.4 AND RADIUS, 127.0

*** 2.174 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.64	51.07
3	143.57	49.84
4	153.45	51.42
5	162.50	55.66
6	170.03	62.24
7	175.45	70.64
8	176.39	73.75

CIRCLE CENTER AT X = 142.9 , Y = 85.6 AND RADIUS, 35.8

*** 2.278 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.80	47.58
3	112.58	45.51
4	122.54	44.63
5	132.54	44.96
6	142.42	46.47
7	152.05	49.17
8	161.29	53.00
9	170.00	57.91
10	178.06	63.84
11	185.34	70.69
12	191.46	78.00

CIRCLE CENTER AT X = 124.9 , Y = 127.7 AND RADIUS, 83.1

*** 2.373 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.94	60.34
3	159.81	61.89
4	169.62	63.85
5	179.34	66.21
6	188.95	68.97
7	198.44	72.13
8	207.79	75.67
9	210.52	76.84

CIRCLE CENTER AT X = 117.3 , Y = 300.3 AND RADIUS, 242.2

*** 2.393 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.79	48.34
3	127.35	45.42
4	137.28	44.21
5	147.27	44.77
6	157.00	47.06
7	166.18	51.02
8	174.53	56.53
9	181.78	63.42
10	187.71	71.47
11	190.94	78.00

CIRCLE CENTER AT X = 139.1 , Y = 101.0 AND RADIUS, 56.9

*** 2.437 ***

FAILURE SURFACE SPECIFIED BY 22 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	15.56	40.00
2	25.41	38.29
3	35.32	36.96
4	45.28	36.02
5	55.26	35.45
6	65.26	35.27
7	75.26	35.47
8	85.24	36.05
9	95.19	37.02
10	105.10	38.37
11	114.95	40.10
12	124.73	42.20
13	134.41	44.68
14	144.00	47.52
15	153.47	50.74
16	162.81	54.31
17	172.01	58.24
18	181.05	62.52
19	189.91	67.14
20	198.60	72.10
21	207.08	77.38
22	207.67	77.78

CIRCLE CENTER AT X = 65.0 , Y = 296.0 AND RADIUS, 260.7

*** 2.440 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 20 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	31.11	40.00
2	40.70	37.15
3	50.43	34.85
4	60.28	33.11
5	70.21	31.95
6	80.19	31.35
7	90.19	31.34
8	100.17	31.90
9	110.11	33.03
10	119.96	34.73
11	129.70	37.00
12	139.30	39.82
13	148.71	43.19
14	157.92	47.10
15	166.88	51.53
16	175.58	56.47
17	183.97	61.90
18	192.04	67.81
19	199.76	74.17
20	203.90	78.00

CIRCLE CENTER AT X = 85.5 , Y = 205.0 AND RADIUS, 173.7

*** 2.443 ***

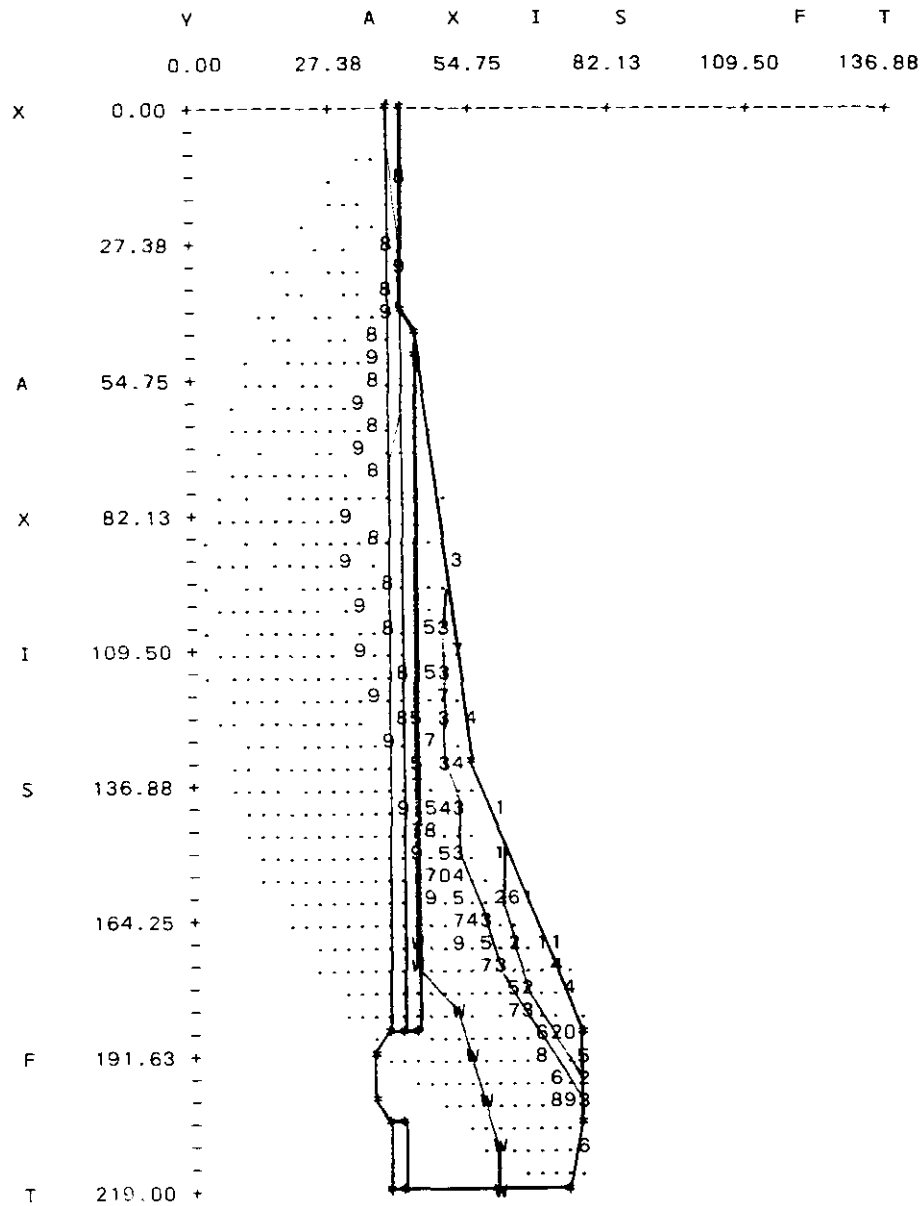
FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.74	48.25
3	127.31	45.36
4	137.26	44.34
5	147.22	45.24
6	156.83	48.02
7	165.73	52.57
8	173.61	58.73
9	180.17	66.27
10	185.18	74.93
11	186.12	77.65

CIRCLE CENTER AT X = 137.6 , Y = 96.7 AND RADIUS, 52.3

*** 2.486 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

>>>>> WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN STARTED.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.95	60.23
3	159.63	62.71
4	168.85	66.59
5	177.39	71.79
6	182.87	76.35

CIRCLE CENTER AT X = 138.0 , Y = 126.9 AND RADIUS, 67.7

*** 1.659 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	59.57
3	159.72	61.89
4	168.81	66.05
5	176.91	71.91
6	179.94	75.18

CIRCLE CENTER AT X = 143.1 , Y = 110.1 AND RADIUS, 51.0

*** 1.717 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.65	61.82
3	159.23	64.70
4	168.72	67.83
5	178.14	71.21
6	187.45	74.84
7	194.97	78.00

CIRCLE CENTER AT X = 45.5 , Y = 425.8 AND RADIUS, 378.6

*** 1.767 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.88	52.43
3	128.87	52.69
4	138.82	53.69
5	148.67	55.41
6	158.37	57.86
7	167.86	61.01
8	177.09	64.86
9	186.02	69.37
10	194.59	74.52
11	199.50	78.00

CIRCLE CENTER AT X = 120.3 , Y = 188.2 AND RADIUS, 135.8

*** 1.946 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.28	53.16
3	144.27	52.68
4	154.23	53.55
5	163.98	55.76
6	173.35	59.26
7	182.16	63.99
8	190.25	69.87
9	197.47	76.79
10	198.44	78.00

CIRCLE CENTER AT X = 142.8 , Y = 126.6 AND RADIUS, 74.0

*** 2.001 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.23	49.36
3	113.20	48.65
4	123.20	48.68
5	133.17	49.46
6	143.06	50.97
7	152.80	53.22
8	162.35	56.18
9	171.66	59.85
10	180.66	64.20
11	189.32	69.20
12	197.58	74.83
13	201.56	78.00

CIRCLE CENTER AT X = 117.8 , Y = 183.0 AND RADIUS, 134.4

*** 2.185 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.35	55.65
3	159.33	55.02
4	169.05	57.36
5	177.65	62.46
6	184.36	69.88
7	188.15	78.00

CIRCLE CENTER AT X = 156.4 , Y = 88.4 AND RADIUS, 33.5

*** 2.282 ***

FAILURE SURFACE SPECIFIED BY 17 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.22	46.64
2	72.22	46.96
3	82.20	47.54
4	92.17	48.36
5	102.11	49.43
6	112.02	50.75
7	121.90	52.31
8	131.73	54.12
9	141.52	56.17
10	151.26	58.47
11	160.93	61.00
12	170.53	63.78
13	180.07	66.79
14	189.53	70.04
15	198.90	73.53
16	208.18	77.25
17	208.66	77.45

CIRCLE CENTER AT X = 54.2 , Y = 448.5 AND RADIUS, 401.9

*** 2.406 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	77.78	48.73
2	87.14	45.21
3	96.81	42.66
4	106.69	41.10
5	116.67	40.55
6	126.66	41.01
7	136.55	42.48
8	146.24	44.94
9	155.64	48.37
10	164.63	52.74
11	173.14	57.99
12	181.08	64.08
13	188.35	70.94
14	194.47	78.00

CIRCLE CENTER AT X = 117.1 , Y = 139.2 AND RADIUS, 98.7

*** 2.472 ***

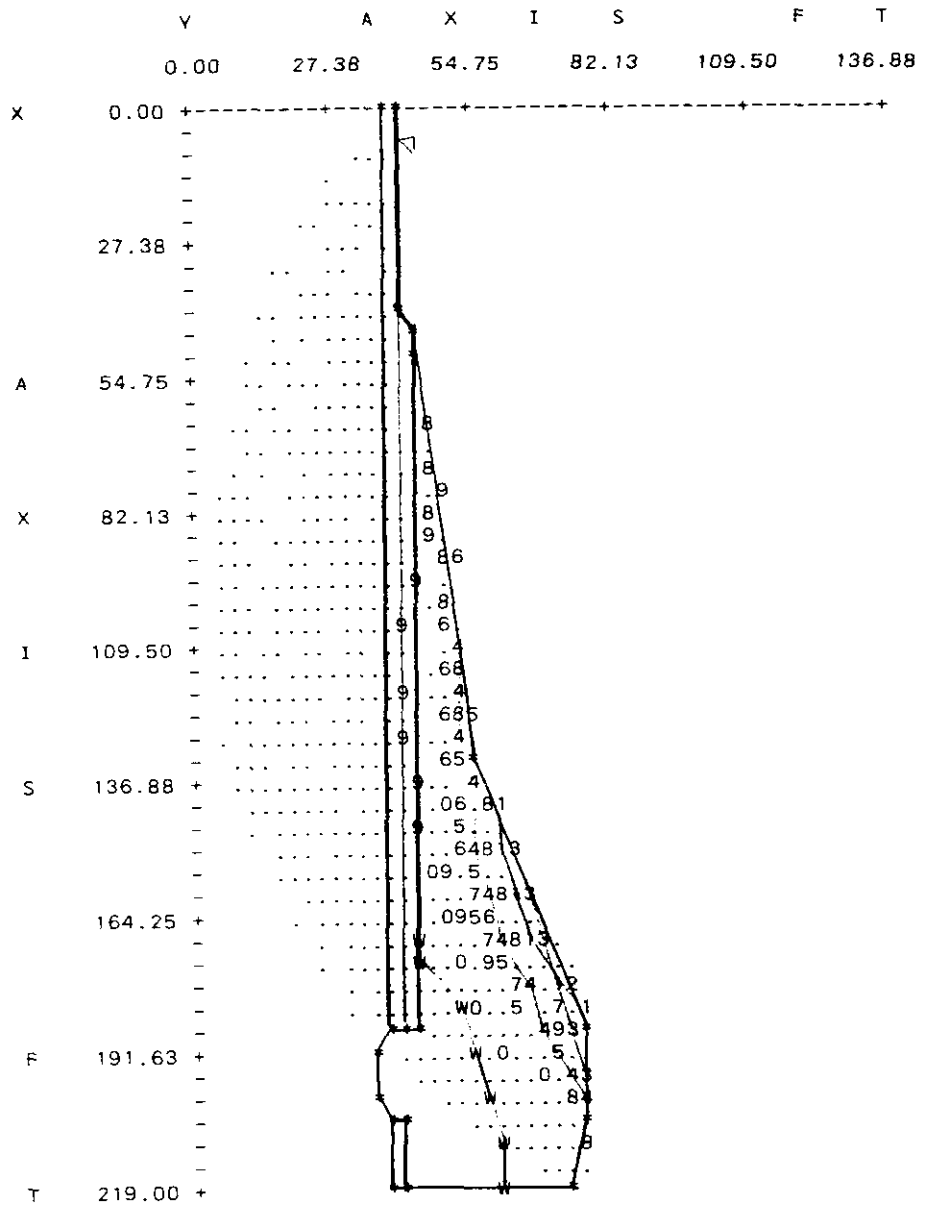
FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.46	50.66
3	143.11	48.02
4	153.07	47.14
5	163.03	48.06
6	172.66	50.74
7	181.66	55.10
8	189.74	61.00
9	196.63	68.24
10	202.11	76.60
11	202.71	78.00

CIRCLE CENTER AT X = 153.0 , Y = 102.9 AND RADIUS, 55.7

*** 2.487 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

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DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	40.00	40.00	3
2	40.00	40.00	50.00	45.00	2
3	50.00	45.00	132.00	56.00	1
4	132.00	56.00	187.00	78.00	1
5	187.00	78.00	207.00	78.00	1
6	207.00	78.00	217.00	74.70	1
7	47.00	43.50	187.00	43.50	2
8	40.00	40.00	187.00	40.00	3
9	207.00	40.00	217.00	40.00	3
10	0.00	38.00	189.00	38.00	4
11	205.00	38.00	217.00	38.00	4
12	189.00	38.00	192.00	35.00	4
13	192.00	35.00	202.00	35.00	4
14	202.00	35.00	205.00	38.00	4

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	40.00
2	40.00	40.00
3	47.00	43.50
4	170.00	43.50
5	172.00	44.50
6	182.00	51.50
7	192.00	55.50
8	202.00	58.50
9	212.00	60.00
10	219.00	61.00

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	70.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	101.95	51.97
2	108.48	48.35
3	117.23	43.50
4	119.63	42.11
5	173.46	42.76
6	173.89	43.50
7	178.74	52.25
8	183.58	60.99
9	188.43	69.74
10	193.01	78.00

*** 2.472 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	88.55	50.17
2	91.84	48.35
3	100.59	43.50
4	106.15	40.29
5	172.13	41.86
6	173.08	43.50
7	177.92	52.25
8	182.77	60.99
9	187.62	69.74
10	192.20	78.00

*** 2.497 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	79.46	48.95
2	80.55	48.35
3	89.29	43.50
4	93.88	40.85
5	171.16	40.32
6	173.00	43.50
7	177.85	52.25
8	182.69	60.99
9	187.54	69.74
10	192.12	78.00

*** 2.524 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	75.37	48.40
2	75.47	48.35
3	84.22	43.50
4	89.15	40.65
5	173.18	42.07
6	174.01	43.50
7	178.86	52.25
8	183.70	60.99
9	188.55	69.74
10	193.13	78.00

*** 2.526 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	79.24	48.9[illegible]
2	80.28	48.35
3	89.03	43.50
4	92.10	41.73
5	182.72	40.13
6	184.67	43.50
7	189.52	52.25
8	194.37	60.99
9	199.21	69.74
10	203.79	78.00

*** 2.595 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	83.19	49.45
2	85.18	48.35
3	93.93	43.50
4	96.75	41.87
5	164.28	42.96
6	164.59	43.50
7	169.44	52.25
8	174.28	60.99
9	179.13	69.74
10	182.77	76.31

*** 2.619 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	84.27	49.60
2	86.52	48.35
3	95.27	43.50
4	98.29	41.75
5	161.71	43.33
6	161.81	43.50
7	166.66	52.25
8	171.50	60.99
9	176.35	69.74
10	179.20	74.88

*** 2.669 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.98	47.28
2	73.79	43.50
3	75.31	42.62
4	151.46	43.32
5	151.56	43.50
6	156.41	52.25
7	161.26	60.99
8	166.04	69.62

*** 3.002 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	87.50	50.03
2	90.53	48.35
3	99.28	43.50
4	104.72	40.36
5	148.63	42.03
6	149.48	43.50
7	154.33	52.25
8	159.18	60.99
9	163.36	68.55

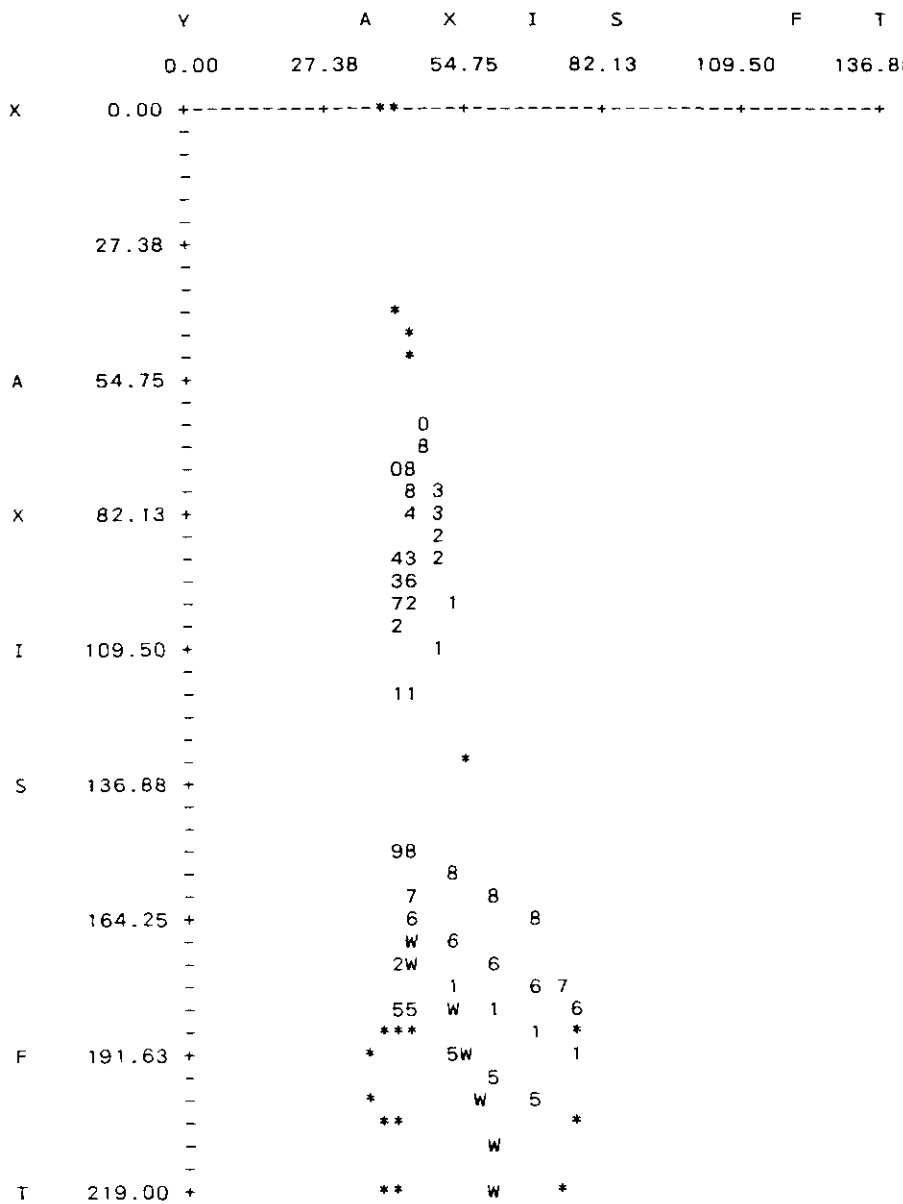
*** 3.041 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	65.03	47.02
2	71.38	43.50
3	73.93	42.03
4	148.88	42.78
5	149.30	43.50
6	154.15	52.25
7	159.00	60.99
8	163.13	68.45

*** 3.081 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	70.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.28	51.74
2	106.40	48.35
3	115.15	43.50
4	118.74	41.43
5	169.18	42.92
6	169.52	43.50
7	174.37	52.25
8	179.22	60.99
9	184.06	69.74
10	188.64	78.00

*** 2.482 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.27	49.06
2	81.56	48.35
3	90.31	43.50
4	92.67	42.13
5	178.09	40.26
6	179.96	43.50
7	184.81	52.25
8	189.66	60.99
9	194.51	69.74
10	199.09	78.00

*** 2.541 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	79.47	48.95
2	80.57	48.35
3	89.31	43.50
4	91.13	42.45
5	177.86	41.69
6	178.91	43.50
7	183.75	52.25
8	188.60	60.99
9	193.45	69.74
10	198.03	78.00

*** 2.546 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	87.22	49.99
2	90.19	48.35
3	98.94	43.50
4	99.03	43.45
5	179.42	42.92
6	179.76	43.50
7	184.61	52.25
8	189.45	60.99
9	194.30	69.74
10	198.88	78.00

*** 2.562 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.01	49.03
2	81.23	48.35
3	89.98	43.50
4	91.71	42.50
5	162.00	40.50
6	163.73	43.50
7	168.58	52.25
8	173.43	60.99
9	178.27	69.74
10	181.67	75.87

*** 2.652 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	76.54	48.56
2	76.93	48.35
3	85.67	43.50
4	89.87	41.08
5	161.52	40.45
6	163.28	43.50
7	168.13	52.25
8	172.98	60.99
9	177.83	69.74
10	181.10	75.64

*** 2.655 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	78.23	48.79
2	79.02	48.35
3	87.76	43.50
4	93.70	40.07
5	159.68	42.29
6	160.37	43.50
7	165.22	52.25
8	170.07	60.99
9	174.92	69.74
10	177.36	74.14

*** 2.705 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	66.64	47.23
2	73.37	43.50
3	76.83	41.50
4	156.14	43.09
5	156.37	43.50
6	161.22	52.25
7	166.07	60.99
8	170.91	69.74
9	172.22	72.09

*** 2.835 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.73	49.12
2	82.12	48.35
3	90.87	43.50
4	96.20	40.42
5	147.17	40.40
6	148.96	43.50
7	153.81	52.25
8	158.66	60.99
9	162.70	68.28

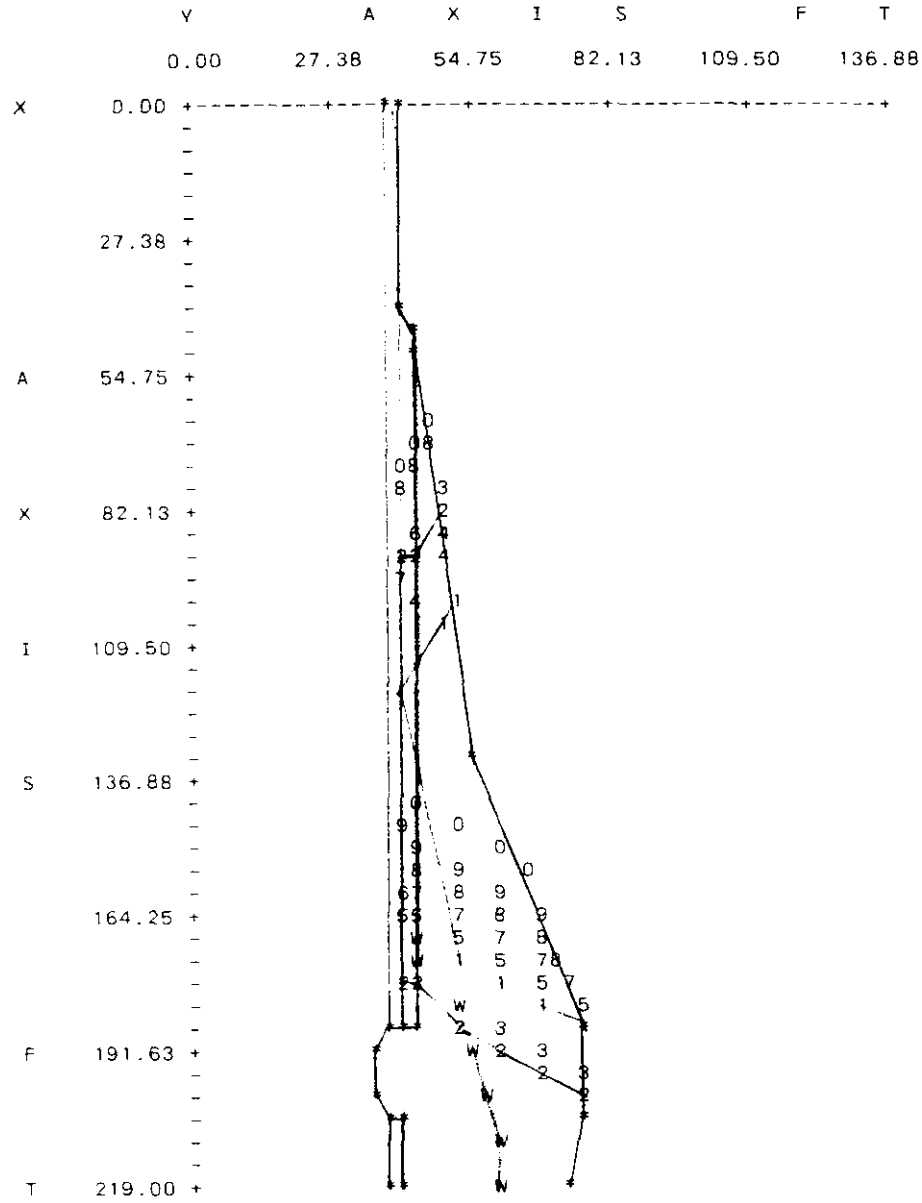
*** 3.086 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.60	46.56
2	67.11	43.50
3	71.94	40.71
4	141.11	42.88
5	141.46	43.50
6	146.31	52.25
7	151.16	60.99
8	153.06	64.43

*** 3.474 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

**** END OF FILE, ALL CARDS READ ****

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	80.00	40.00	80.00	3
2	40.00	80.00	50.00	85.00	1
3	50.00	85.00	86.67	88.67	1
4	86.67	88.67	115.00	100.00	1
5	115.00	100.00	135.00	100.00	1
6	135.00	100.00	145.00	96.67	1
7	44.00	82.00	115.00	82.00	2
8	40.00	80.00	115.00	80.00	3
9	135.00	80.00	145.00	80.00	3
10	0.00	78.00	117.00	78.00	4
11	133.00	78.00	145.00	78.00	4
12	117.00	78.00	120.00	75.00	4
13	120.00	75.00	130.00	75.00	4
14	130.00	75.00	133.00	78.00	4

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	80.00
2	40.00	80.00
3	44.00	82.00
4	115.00	82.00
5	122.00	84.00
6	132.00	87.00
7	142.00	89.00
8	145.00	89.50

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	100.00	90.18
3	109.08	94.37
4	113.56	99.42

CIRCLE CENTER AT X = 94.6 , Y = 113.9 AND RADIUS, 24.3

*** 1.869 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	90.00	87.83
3	99.91	89.17
4	109.51	91.98
5	118.57	96.20
6	124.27	100.00

CIRCLE CENTER AT X = 86.1 , Y = 153.9 AND RADIUS, 66.2

*** 2.038 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.68	92.51
3	109.30	95.23
4	118.86	98.16
5	124.41	100.00

CIRCLE CENTER AT X = -18.0 , Y = 527.2 AND RADIUS, 450.4

*** 2.118 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.85	88.29
3	109.72	89.92
4	118.49	94.73
5	123.24	100.00

CIRCLE CENTER AT X = 100.0 , Y = 118.1 AND RADIUS, 29.8

*** 2.363 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.82	88.10
3	108.89	92.32
4	112.65	99.06

CIRCLE CENTER AT X = 97.8 , Y = 104.2 AND RADIUS, 16.2

*** 2.410 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	20.00	80.00
2	29.76	77.80
3	39.66	76.45
4	49.65	75.97
5	59.65	76.34
6	69.57	77.58
7	79.35	79.67
8	88.91	82.60
9	98.18	86.34
10	107.10	90.87
11	115.59	96.16
12	120.72	100.00

CIRCLE CENTER AT X = 50.3 , Y = 191.6 AND RADIUS, 115.7

*** 2.439 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.85	88.28
3	109.76	89.64
4	118.77	93.97
5	125.14	100.00

CIRCLE CENTER AT X = 100.4 , Y = 120.6 AND RADIUS, 32.3

*** 2.449 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.37	84.52
3	99.35	83.88
4	109.10	86.13
5	117.78	91.10
6	124.66	98.35
7	125.50	100.00

CIRCLE CENTER AT X = 96.5 , Y = 118.2 AND RADIUS, 34.4

*** 2.534 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	30.00	80.00
2	39.09	75.82
3	48.68	72.99
4	58.58	71.57
5	68.58	71.59
6	78.47	73.05
7	88.05	75.92
8	97.12	80.13
9	105.49	85.61
10	112.98	92.23
11	119.44	99.86
12	119.53	100.00

CIRCLE CENTER AT X = 63.4 , Y = 140.7 AND RADIUS, 69.3

*** 2.570 ***

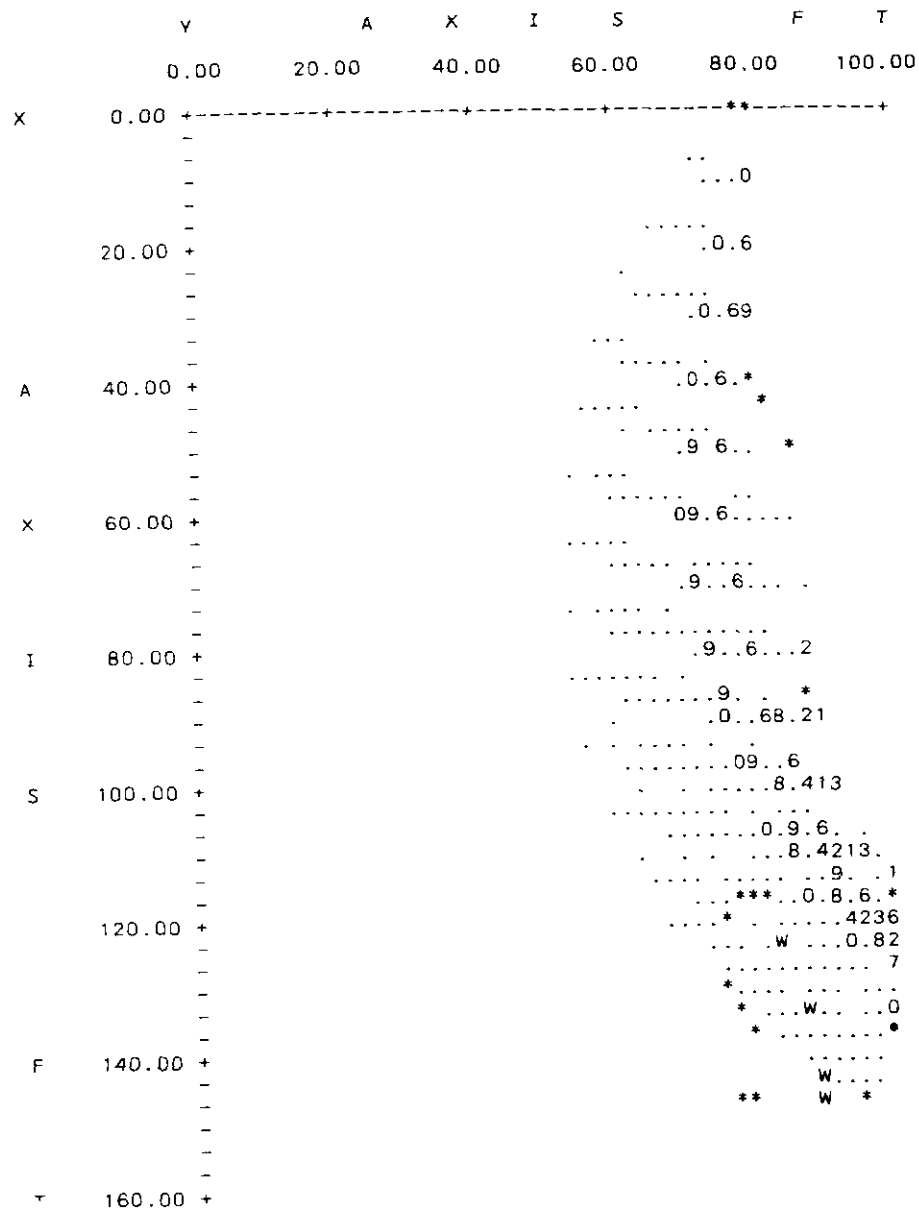
FAILURE SURFACE SPECIFIED BY 15 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	10.00	80.00
2	19.38	76.52
3	29.01	73.86
4	38.84	72.02
5	48.80	71.03
6	58.79	70.88
7	68.77	71.59
8	78.65	73.15
9	88.36	75.54
10	97.83	78.74
11	106.99	82.74
12	115.79	87.51
13	124.14	93.01
14	132.00	99.19
15	132.86	100.00

CIRCLE CENTER AT X = 55.5 , Y = 188.3 AND RADIUS, 117.4

*** 2.575 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 90.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 110.00 FT.
AND X = 145.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 4 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.75	92.20
3	108.65	96.78
4	110.01	98.01

CIRCLE CENTER AT X = 86.2 , Y = 129.4 AND RADIUS, 39.5

*** 1.632 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.99	87.46
3	99.76	89.56
4	108.64	94.17
5	114.92	99.97

CIRCLE CENTER AT X = 87.0 , Y = 124.9 AND RADIUS, 37.6

*** 1.812 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.94	86.86
3	99.83	88.27
4	109.05	92.15
5	116.99	98.23
6	118.37	100.00

CIRCLE CENTER AT X = 89.4 , Y = 126.0 AND RADIUS, 39.2

*** 1.914 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.91	86.68
3	99.82	88.06
4	108.98	92.06
5	116.74	98.37
6	117.90	100.00

CIRCLE CENTER AT X = 89.8 , Y = 123.6 AND RADIUS, 36.9

*** 1.929 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	89.99	87.60
3	99.92	88.82
4	109.52	91.62
5	118.54	95.94
6	124.36	100.00

CIRCLE CENTER AT X = 87.5 , Y = 149.3 AND RADIUS, 61.7

*** 2.057 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.69	87.55
3	109.32	90.26
4	116.30	97.42
5	116.96	100.00

CIRCLE CENTER AT X = 99.4 , Y = 106.9 AND RADIUS, 19.3

*** 2.349 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	69.74	83.74
3	79.73	83.30
4	89.64	84.69
5	99.12	87.85
6	107.87	92.70
7	115.59	99.05
8	116.39	100.00

CIRCLE CENTER AT X = 77.1 , Y = 137.9 AND RADIUS, 54.6

*** 2.598 ***

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.00	90.00
2	99.44	86.71
3	109.19	88.97
4	116.23	96.07
5	117.10	100.00

CIRCLE CENTER AT X = 100.4 , Y = 104.7 AND RADIUS, 18.0

*** 2.608 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.00	86.00
2	70.00	85.95
3	79.99	86.45
4	89.93	87.50
5	99.81	89.09
6	109.58	91.22
7	119.21	93.89
8	128.69	97.08
9	135.54	99.82

CIRCLE CENTER AT X = 65.9 , Y = 267.7 AND RADIUS, 181.8

*** 2.728 ***

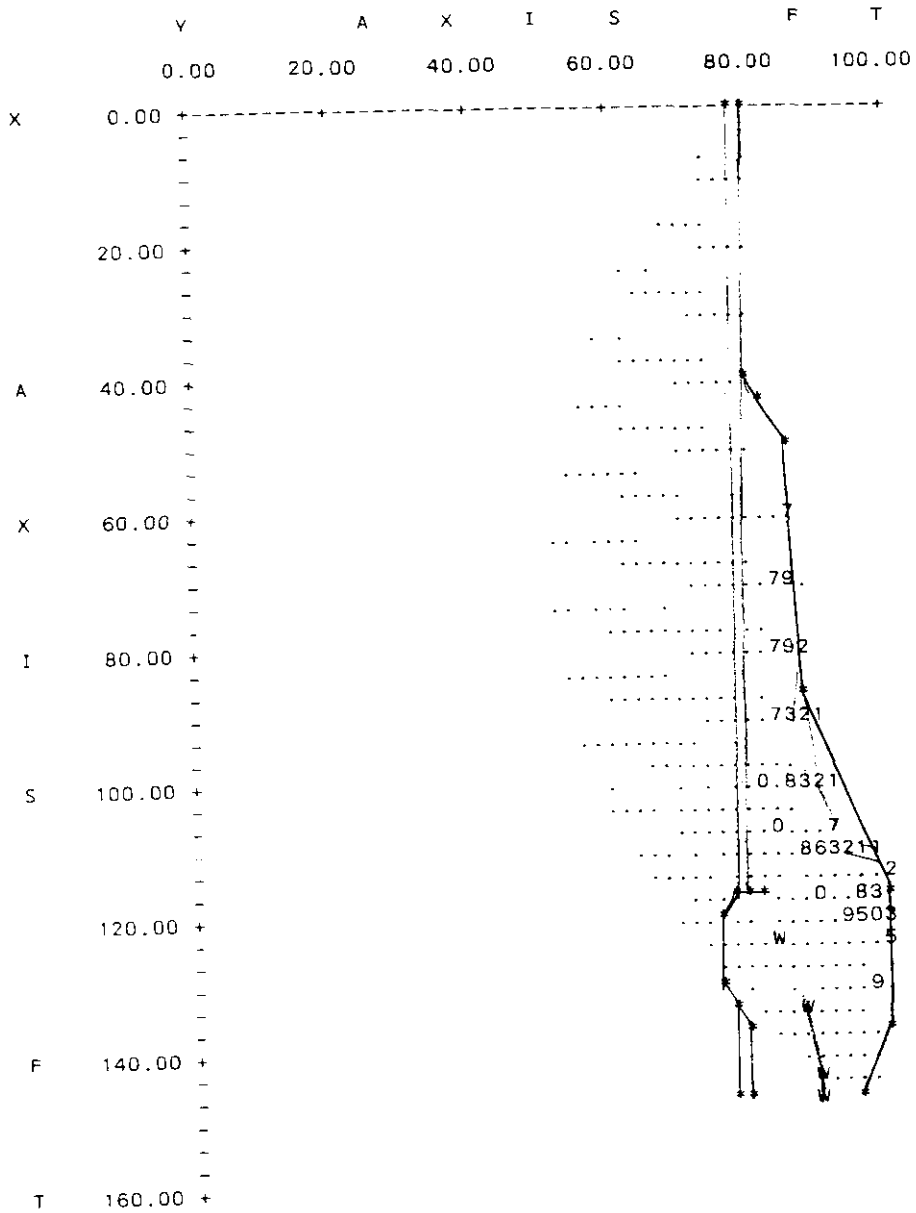
FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	80.00	88.00
2	88.71	83.09
3	98.63	81.78
4	108.31	84.27
5	116.37	90.18
6	121.65	98.68
7	121.88	100.00

CIRCLE CENTER AT X = 97.0 , Y = 108.1 AND RADIUS, 26.3

*** 2.780 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	80.00	40.00	80.00	3
2	40.00	80.00	50.00	85.00	1
3	50.00	85.00	86.67	88.67	1
4	86.67	88.67	115.00	100.00	1
5	115.00	100.00	135.00	100.00	1
6	135.00	100.00	145.00	96.67	1
7	44.00	82.00	115.00	82.00	2
8	40.00	80.00	115.00	80.00	3
9	135.00	80.00	145.00	80.00	3
10	0.00	78.00	117.00	78.00	4
11	133.00	78.00	145.00	78.00	4
12	117.00	78.00	120.00	75.00	4
13	120.00	75.00	130.00	75.00	4
14	130.00	75.00	133.00	78.00	4

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	80.00
2	40.00	80.00
3	44.00	82.00
4	115.00	82.00
5	122.00	84.00
6	132.00	87.00
7	142.00	89.00
8	145.00	89.50

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	105.0	115.0	0.0	29.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 5.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	81.00	80.00	81.00	2.00
2	95.00	81.00	115.00	81.00	2.00

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	69.54	86.96
2	69.73	86.85
3	74.11	84.42
4	78.48	82.00
5	79.85	81.21
6	110.80	81.58
7	111.05	82.00
8	113.47	86.37
9	115.90	90.75
10	118.32	95.12
11	120.74	99.49
12	121.03	100.00

*** 2.644 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	61.59	86.16
2	64.72	84.42
3	69.09	82.00
4	70.70	81.07
5	107.46	81.69
6	107.64	82.00
7	110.07	86.37
8	112.49	90.75
9	114.91	95.12
10	117.34	99.49
11	117.62	100.00

*** 2.673 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.01	86.20
2	65.22	84.42
3	69.59	82.00
4	71.32	81.00
5	106.53	81.90
6	106.59	82.00
7	109.01	86.37
8	111.44	90.75
9	113.86	95.12
10	116.28	99.49
11	116.57	100.00

*** 2.678 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.44	86.35
2	66.91	84.42
3	71.28	82.00
4	74.46	80.16
5	110.32	81.06
6	110.86	82.00
7	113.29	86.37
8	115.71	90.75
9	118.13	95.12
10	120.56	99.49
11	120.84	100.00

*** 2.680 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.76	85.98
2	62.56	84.42
3	66.93	82.00
4	69.55	80.49
5	109.97	80.18
6	111.02	82.00
7	113.44	86.37
8	115.87	90.75
9	118.29	95.12
10	120.71	99.49
11	120.99	100.00

*** 2.723 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.99	85.80
2	60.47	84.42
3	64.84	82.00
4	67.66	80.37
5	110.70	81.18
6	111.18	82.00
7	113.60	86.37
8	116.02	90.75
9	118.45	95.12
10	120.87	99.49
11	121.15	100.00

*** 2.744 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.02	86.30
2	66.41	84.42
3	70.78	82.00
4	73.89	80.21
5	101.78	81.16
6	102.26	82.00
7	104.68	86.37
8	107.11	90.75
9	109.53	95.12
10	111.45	98.58

*** 2.836 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	54.95	85.50
2	56.88	84.42
3	61.25	82.00
4	62.13	81.50
5	102.80	81.90
6	102.86	82.00
7	105.29	86.37
8	107.71	90.75
9	110.14	95.12
10	112.23	98.89

*** 2.903 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.89	85.99
2	62.71	84.42
3	67.08	82.00
4	68.84	80.99
5	114.17	80.07
6	116.67	84.40
7	119.17	88.73
8	121.67	93.06
9	124.17	97.39
10	125.68	100.00

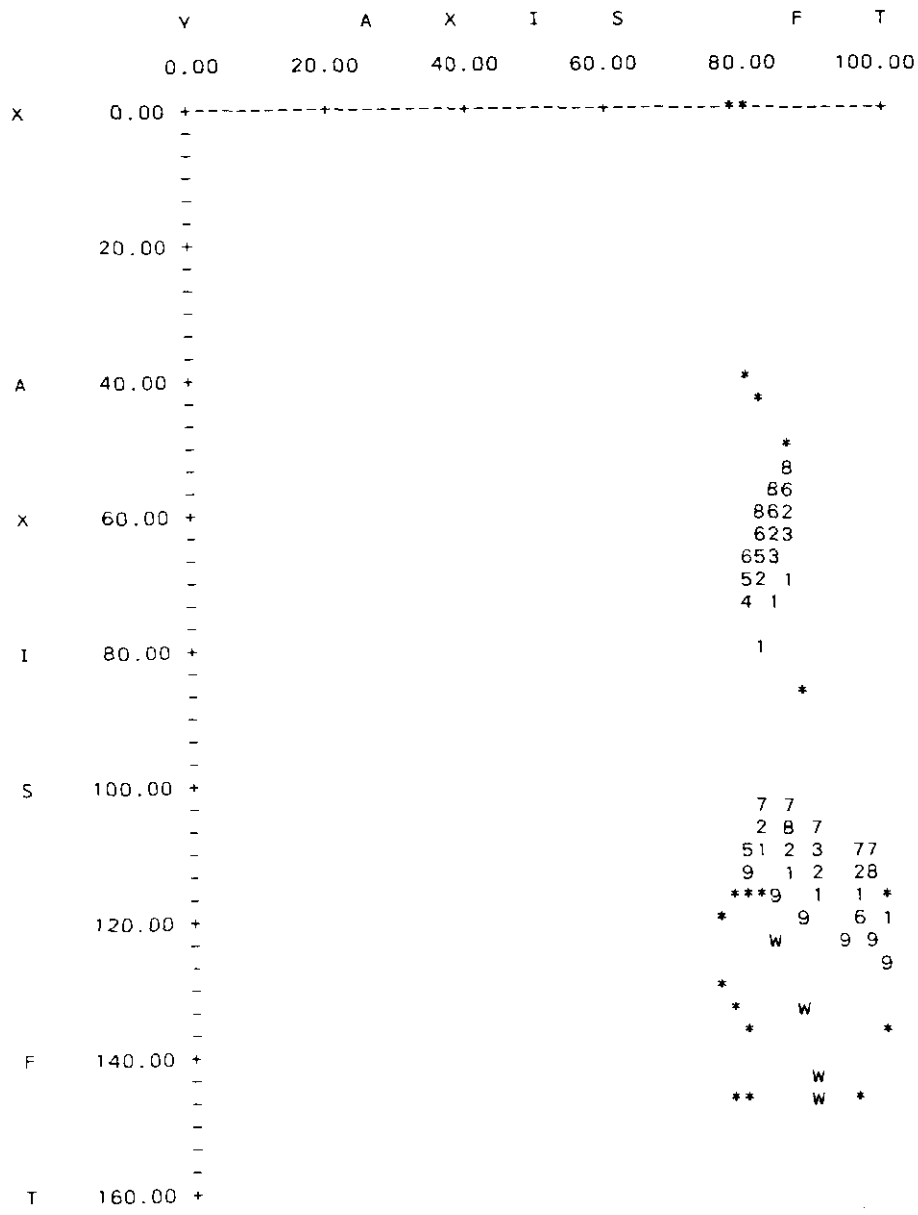
*** 2.918 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	53.98	85.40
2	55.74	84.42
3	60.11	82.00
4	61.57	81.16
5	101.87	81.59
6	102.11	82.00
7	104.53	86.37
8	106.95	90.75
9	109.38	95.12
10	111.25	98.50

*** 2.950 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 5.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	81.00	80.00	81.00	2.00
2	95.00	81.00	115.00	81.00	2.00

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	68.66	86.87
2	68.70	86.85
3	73.07	84.42
4	77.44	82.00
5	79.49	80.82
6	109.25	81.67
7	109.44	82.00
8	111.87	86.37
9	114.29	90.75
10	116.71	95.12
11	119.14	99.49
12	119.42	100.00

*** 2.600 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.40	86.04
2	63.32	84.42
3	67.69	82.00
4	68.68	81.43
5	106.63	80.28
6	107.63	82.00
7	110.05	86.37
8	112.47	90.75
9	114.90	95.12
10	117.32	99.49
11	117.60	100.00

*** 2.692 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	58.59	85.86
2	61.18	84.42
3	65.55	82.00
4	67.95	80.62
5	106.46	80.26
6	107.47	82.00
7	109.89	86.37
8	112.32	90.75
9	114.74	95.12
10	117.17	99.49
11	117.45	100.00

*** 2.699 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.04	85.91
2	61.71	84.42
3	66.09	82.00
4	69.48	80.04
5	105.79	81.31
6	106.19	82.00
7	108.61	86.37
8	111.04	90.75
9	113.46	95.12
10	115.89	99.49
11	116.17	100.00

*** 2.710 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	54.53	85.45
2	56.38	84.42
3	60.76	82.00
4	62.73	80.86
5	104.50	81.77
6	104.64	82.00
7	107.06	86.37
8	109.49	90.75
9	111.91	95.12
10	114.33	99.49
11	114.51	99.80

*** 2.816 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.17	86.02
2	63.04	84.42
3	67.41	82.00
4	68.45	81.40
5	112.40	80.97
6	113.00	82.00
7	115.42	86.37
8	117.85	90.75
9	120.27	95.12
10	122.70	99.49
11	122.98	100.00

*** 2.817 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.68	86.37
2	67.19	84.42
3	71.56	82.00
4	71.61	81.97
5	112.97	81.67
6	113.16	82.00
7	115.59	86.37
8	118.01	90.75
9	120.44	95.12
10	122.86	99.49
11	123.14	100.00

*** 2.823 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.42	86.04
2	63.34	84.42
3	67.72	82.00
4	69.07	81.22
5	112.49	80.15
6	113.56	82.00
7	115.98	86.37
8	118.41	90.75
9	120.83	95.12
10	123.25	99.49
11	123.53	100.00

*** 2.830 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	60.18	86.02
2	63.06	84.42
3	67.43	82.00
4	70.48	80.24
5	101.25	80.23
6	102.27	82.00
7	104.69	86.37
8	107.11	90.75
9	109.54	95.12
10	111.46	98.58

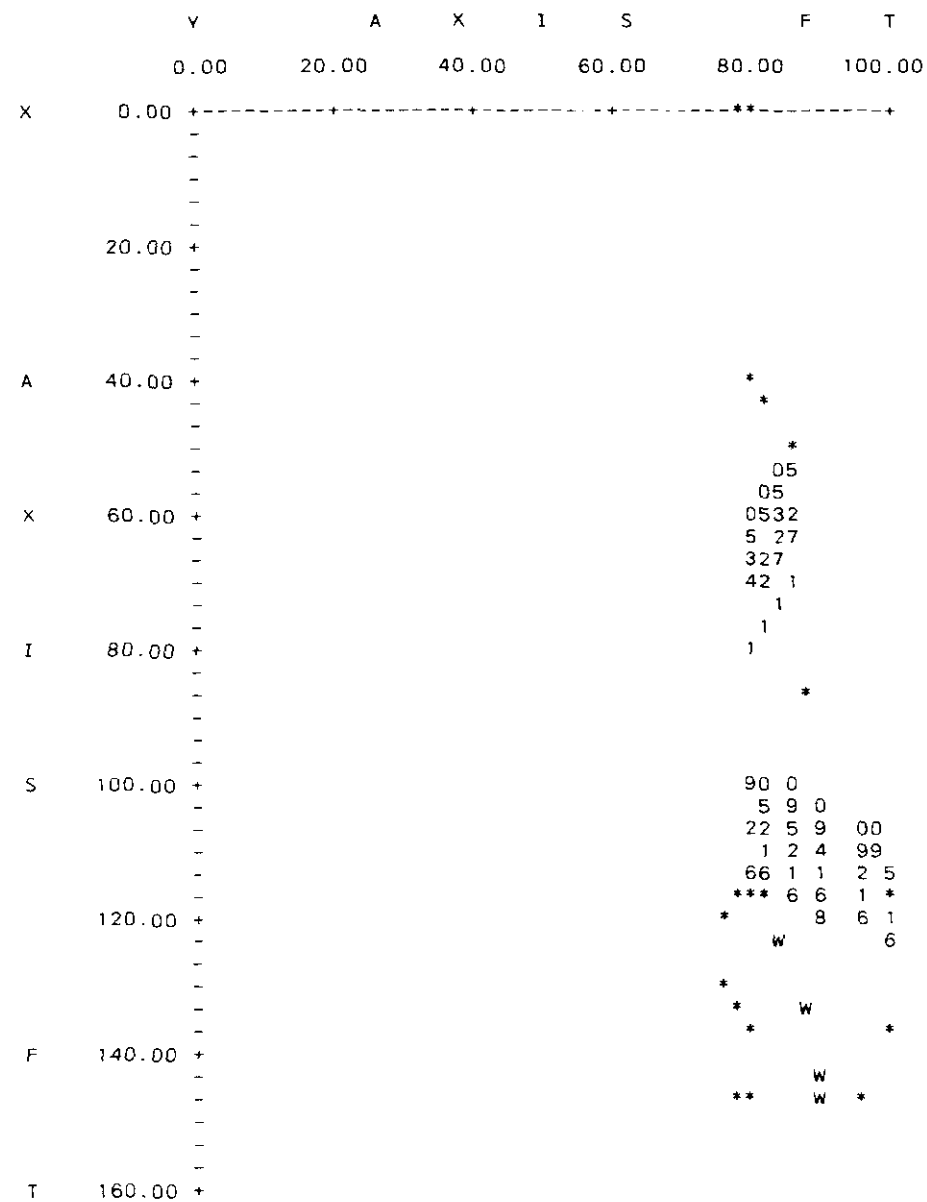
*** 2.878 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	52.21	85.22
2	53.64	84.42
3	58.02	82.00
4	60.77	80.41
5	99.04	81.65
6	99.24	82.00
7	101.67	86.37
8	104.09	90.75
9	106.51	95.12
10	107.57	97.03

*** 3.161 ***

DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION



DWSTRM SLOPE STABILITY, 20' TYP. SECTION, TRANSIENT SEEPAGE CONDITION

**** END OF FILE, ALL CARDS READ ****

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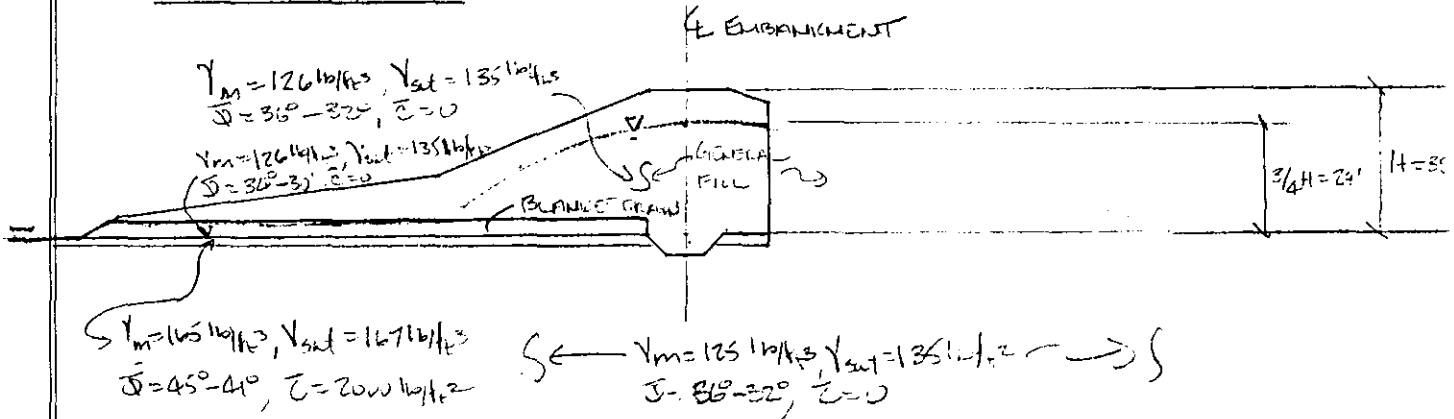
PURPOSE: DEFINE "END OF CONSTRUCTION" SLOPE-STABILITY DESIGN CRITERIA AND ANALYSIS PROCEDURES FOR THE DOWNSTREAM SLOPE.

REFERENCES:

(1) PHC CALC'S DATED 11/22/93 — END OF CONSTRUCTION UPSTREAM SLOPE STABILITY CRITERIA
(2) "SEEPAGE, DRAINAGE, AND FLOWNETS", CEDERGREN, WILEY & SONS, 1967

PROCEDURE:

CROSS-SECTION



TO EVALUATE THE SLOPE-STABILITY FOR THE END OF CONSTRUCTION LOAD CASE, THE PHREATIC SURFACE ("LINE OF SEEPAGE") HAD TO BE ESTIMATED (SEE REF#1 FOR EXPLANATION) AS SHOWN ABOVE.

ANALYSIS METHOD

THE SLOPE-STABILITY PROGRAM STABL WAS USED FOR ANALYSIS. BOTH CIRCULAR AND BLOCK FAILURE SURFACES WERE CONSIDERED. WIDE RANGING LIMITS WERE SET FOR BOTH CIRCULAR AND BLOCK FAILURE SURFACE SEARCHES (SEE REF#1 FOR ADDITIONAL ANALYSIS PROCEDURES)

GN-024-4

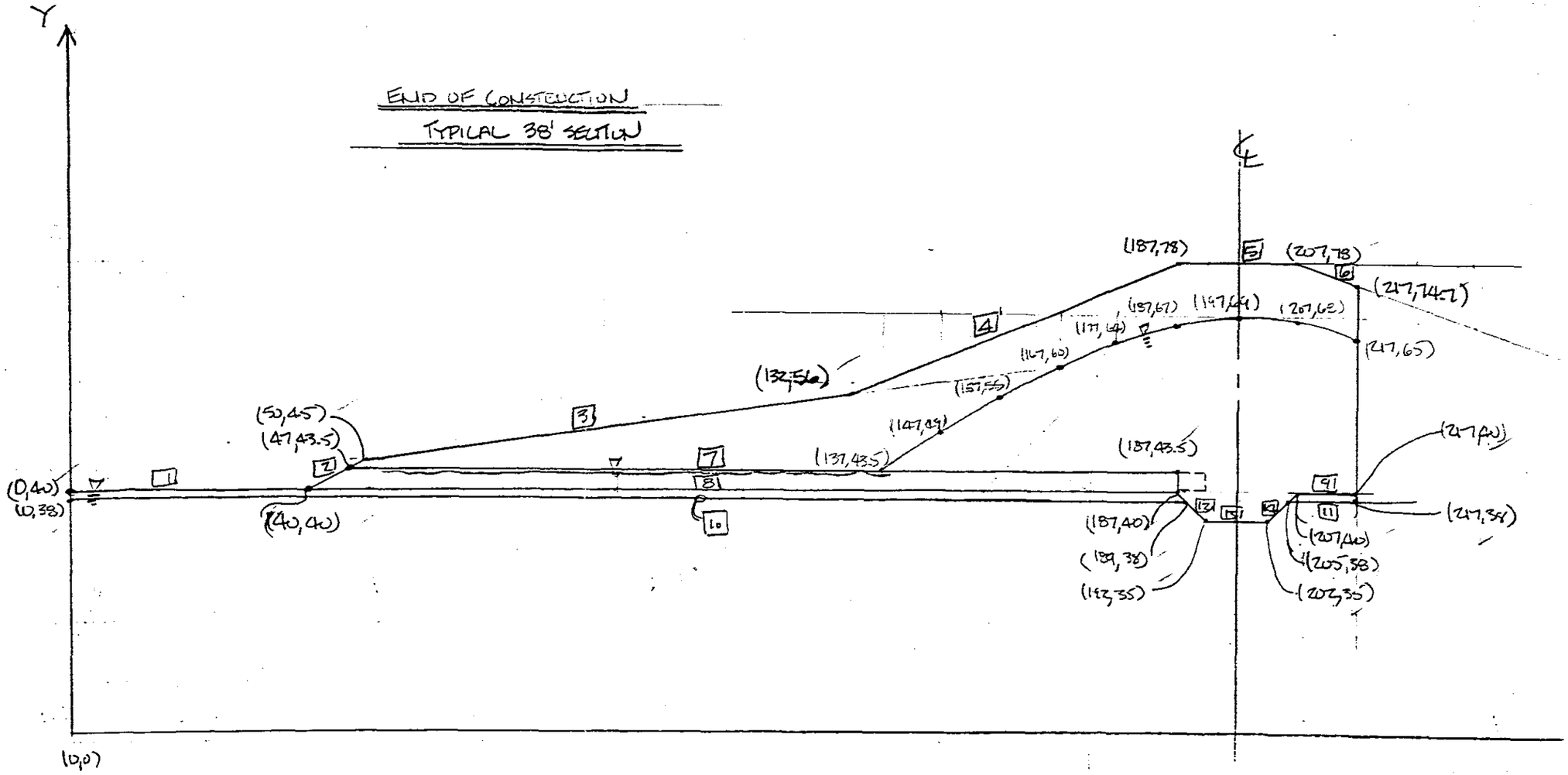
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SUMMARY OF RESULTS

THE DOWNSTREAM SLOPE PROVED TO BE STABLE FOR THE END OF CONSTRUCTION LOAD CASE. ALL FACTORS OF SAFETY EXCEEDED THE RECOMMEND F.S. = 1.3 (TR-60, SCS "EARTH AND ROCKFILL DAMS"). (SEE SLOPE-STABILITY SUMMARY SHEETS AND OUTPUT FILES)

PHREATIC SURFACE

POINT	X COORD	Y COORD
1	0	40
2	40	40
3	47	43.5
4	137	43.5
5	147	44
6	157	55
7	167	60
8	177	64
9	187	67
10	147	61
11	207	67
12	217	65



SOILS

① EMBANKMENT
② BLANKET DRAIN
③ FOUNDATION
④ FOUNDATION

NOTE: THE CRITICAL PHREATIC SURFACE WAS ASSUMED TO BE LOCATED AT 3/4th OF THE EMBANKMENT HEIGHT AT CENTERLINE. ✓

CLARK COUNTY PUBLIC WORKS
UPPER FLAMINGO WASH DETENTION BASIN
B&V PROJECT 14625
DOWNSTREAM SLOPE-STABILITY
12/21/88

DOWNSTREAM SLOPE

DESIGN CASE

TYPICAL SECTION
END OF CONSTRUCTION

F.S. REQ'D ≥ 1.3

FILE: DWNSTRM2.DAT

SOIL PARAMETERS																ANALYSIS PROCEDURE		
EMBANKMENT								FOUNDATION								CIRCULAR	IRREGULAR	BLOCK
GENERAL FILL				FILTER				LAYER 1				LAYER 2				BISHOP	JANBU	JANBU
γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	γ_m	γ_{sat}	$\bar{c}$	$\bar{\phi}$	F.S.	F.S.	F.S.
126	135	0	36	126	135	0	34	165	167	2000	45	125	135	0	36	2.03-2.45		2.38-5.45
126	135	0	34	126	135	0	32	165	167	2000	43	125	135	0	34	1.73-2.32		2.26-3.74
126	135	0	32	126	135	0	30	165	167	2000	41	125	135	0	32	1.72-2.12		2.08-4.78

NOTES:-

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

--SLOPE STABILITY ANALYSIS--
SIMPLIFIED JANBU METHOD OF SLICES
IRREGULAR FAILURE SURFACES

BOUNDARY COORDINATES

6 TOP BOUNDARIES
14 TOTAL BOUNDARIES

BOUNDARY NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	SOIL TYPE BELOW BND
1	0.00	40.00	40.00	40.00	3
2	40.00	40.00	50.00	45.00	2
3	50.00	45.00	132.00	56.00	1
4	132.00	56.00	187.00	78.00	1
5	187.00	78.00	207.00	78.00	1
6	207.00	78.00	217.00	74.70	1
7	47.00	43.50	187.00	43.50	2
8	40.00	40.00	187.00	40.00	3
9	207.00	40.00	217.00	40.00	3
10	0.00	38.00	189.00	38.00	4
11	205.00	38.00	217.00	38.00	4
12	189.00	38.00	192.00	35.00	4
13	192.00	35.00	202.00	35.00	4
14	202.00	35.00	205.00	38.00	4

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

UNITWEIGHT OF WATER = 62.40

PIEZOMETRIC SURFACE NO. 1 SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-WATER (FT)	Y-WATER (FT)
1	0.00	40.00
2	40.00	40.00
3	47.00	43.50
4	137.00	43.50
5	147.00	49.00
6	157.00	55.00
7	167.00	60.00
8	177.00	64.00
9	187.00	67.00
10	197.00	69.00
11	207.00	68.00
12	217.00	65.00

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	36.0	0.00	0.0	1
2	126.0	135.0	0.0	34.0	0.00	0.0	1
3	165.0	167.0	2000.0	45.0	0.00	0.0	1
4	125.0	135.0	0.0	36.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	150.00	59.38
3	159.69	61.85
4	168.55	66.49
5	176.10	73.05
6	176.70	73.88

CIRCLE CENTER AT X = 144.2 , Y = 102.1 AND RADIUS, 43.1

*** 2.030 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.04	52.16
3	143.94	50.80
4	153.94	50.94
5	163.81	52.58
6	173.31	55.68
7	182.25	60.17
8	190.41	65.95
9	197.61	72.89
10	201.52	78.00

CIRCLE CENTER AT X = 148.0 , Y = 117.2 AND RADIUS, 66.5

*** 2.239 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.49
3	159.84	57.89
4	169.52	60.41
5	178.45	64.91
6	186.22	71.20
7	191.69	78.00

CIRCLE CENTER AT X = 152.9 , Y = 104.4 AND RADIUS, 47.0

*** 2.273 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.85	57.48
3	159.85	57.74
4	169.59	59.98
5	178.70	64.11
6	186.80	69.97
7	193.59	77.32
8	194.00	78.00

CIRCLE CENTER AT X = 153.5 , Y = 107.5 AND RADIUS, 50.1

*** 2.292 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.16	49.15
3	127.85	46.67
4	137.78	45.49
5	147.78	45.64
6	157.67	47.12
7	167.27	49.90
8	176.42	53.94
9	184.96	59.15
10	192.72	65.45
11	199.58	72.72
12	203.37	78.00

CIRCLE CENTER AT X = 141.6 , Y = 120.5 AND RADIUS, 75.1

*** 2.341 ***

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.11	49.02
3	127.75	46.37
4	137.65	45.00
5	147.65	44.92
6	157.58	46.14
7	167.26	48.63
8	176.54	52.37
9	185.25	57.27
10	193.26	63.27
11	200.41	70.25
12	206.52	78.00

CIRCLE CENTER AT X = 143.3 , Y = 121.7 AND RADIUS, 76.9

*** 2.364 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.82	57.30
3	159.67	59.03
4	168.25	64.16
5	174.45	72.01
6	174.79	73.12

CIRCLE CENTER AT X = 150.1 , Y = 84.9 AND RADIUS, 27.6

*** 2.392 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.12	50.01
3	142.67	47.06
4	152.64	46.28
5	162.54	47.71
6	171.88	51.28
7	180.21	56.81
8	187.12	64.04
9	192.28	72.61
10	194.07	78.00

CIRCLE CENTER AT X = 151.2 , Y = 91.5 AND RADIUS, 45.3

*** 2.409 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.68	61.71
3	159.33	64.33
4	168.95	67.07
5	178.53	69.92
6	188.08	72.89
7	197.60	75.97
8	203.61	78.00

CIRCLE CENTER AT X = -64.2 , Y = 867.8 AND RADIUS, 834.0

*** 2.415 ***

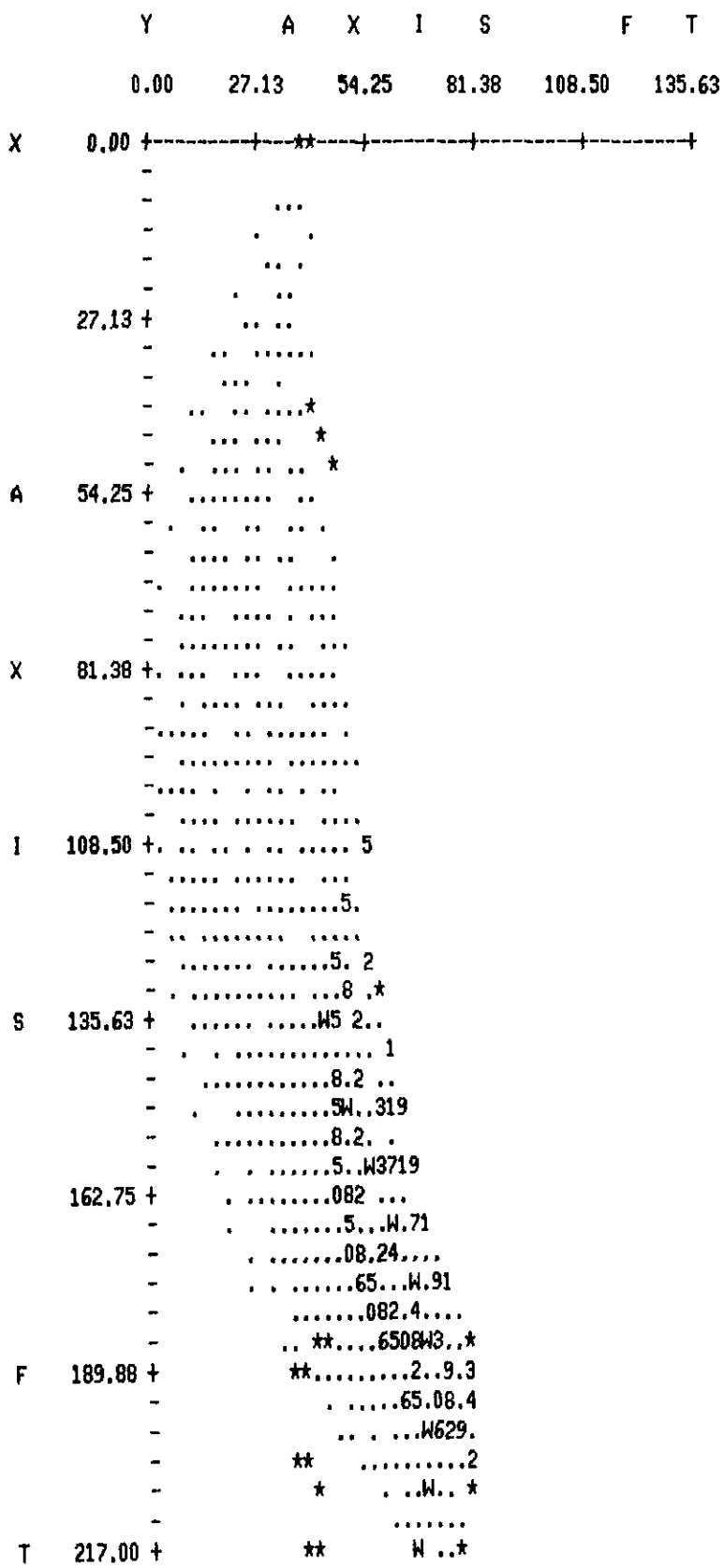
FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	132.98	49.77
3	142.45	46.57
4	152.40	45.52
5	162.33	46.70
6	171.75	50.04
7	180.21	55.37
8	187.29	62.43
9	192.64	70.88
10	195.18	78.00

CIRCLE CENTER AT X = 152.1 , Y = 90.6 AND RADIUS, 45.1

*** 2.447 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	90.32	50.41
2	94.97	48.04
3	103.88	43.50
4	107.47	41.59
5	174.86	43.11
6	175.07	43.50
7	179.61	52.41
8	184.15	61.32
9	188.69	70.23
10	192.65	78.00

*** 2.380 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	82.55	49.37
2	85.16	48.04
3	94.07	43.50
4	98.05	41.38
5	181.41	41.46
6	182.50	43.50
7	187.04	52.41
8	191.58	61.32
9	196.12	70.23
10	200.08	78.00

*** 2.430 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	83.44	49.49
2	86.28	48.04
3	95.19	43.50
4	97.27	42.40
5	181.64	43.06
6	181.88	43.50
7	186.42	52.41
8	190.96	61.32
9	195.50	70.23
10	199.45	78.00

*** 2.439 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	63.86	46.86
2	70.45	43.50
3	70.56	43.44
4	171.39	42.95
5	171.68	43.50
6	176.22	52.41
7	180.76	61.32
8	185.30	70.23
9	189.26	78.00

*** 2.520 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.24	49.73
2	88.55	48.04
3	97.46	43.50
4	98.94	42.71
5	158.02	40.17
6	159.79	43.50
7	164.33	52.41
8	168.87	61.32
9	173.41	70.23
10	174.90	73.16

*** 2.824 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	55.03	45.68
2	59.30	43.50
3	64.18	40.91
4	155.65	43.31
5	155.75	43.50
6	160.28	52.41
7	164.82	61.32
8	169.36	70.23
9	169.82	71.13

*** 3.103 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	83.05	49.43
2	85.79	48.04
3	94.70	43.50
4	99.22	41.10
5	152.98	41.30
6	154.14	43.50
7	158.68	52.41
8	163.22	61.32
9	167.76	70.23
10	167.81	70.32

*** 3.115 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.68	51.80
2	108.06	48.04
3	116.97	43.50
4	119.93	41.93
5	146.49	40.29
6	148.20	43.50
7	152.74	52.41
8	157.28	61.32
9	160.35	67.34

*** 3.518 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.65	50.85
2	99.17	48.04
3	108.08	43.50
4	114.40	40.14
5	136.89	42.93
6	137.19	43.50
7	141.73	52.41
8	146.27	61.32
9	146.52	61.81

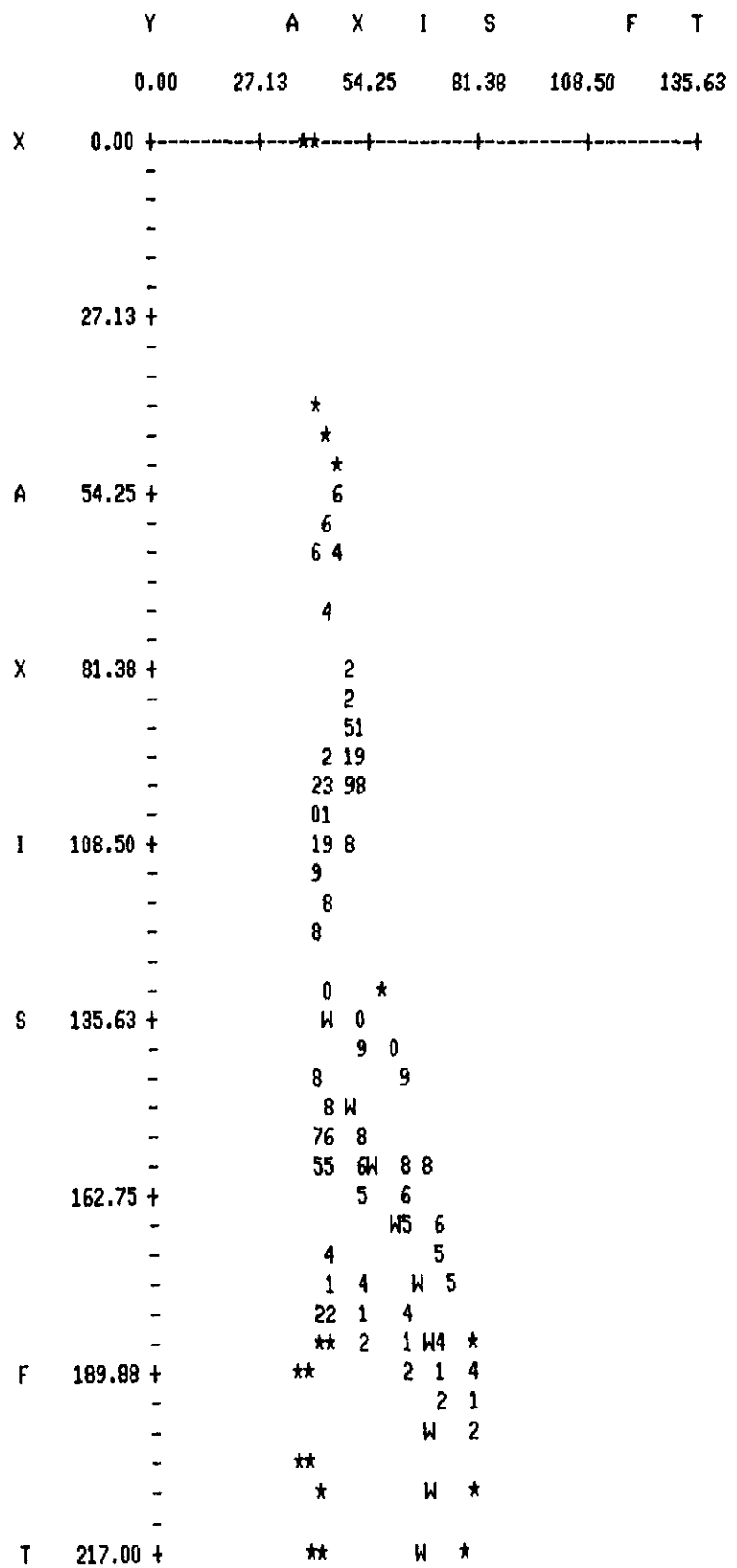
*** 4.834 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.29	49.73
2	88.61	48.04
3	97.52	43.50
4	103.26	40.45
5	132.92	43.18
6	133.09	43.50
7	137.63	52.41
8	141.37	59.75

*** 5.451 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	34.0	0.00	0.0	1
2	126.0	135.0	0.0	32.0	0.00	0.0	1
3	165.0	167.0	2000.0	43.0	0.00	0.0	1
4	125.0	135.0	0.0	34.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.75	61.40
3	159.13	64.87
4	167.97	69.55
5	170.63	71.45

CIRCLE CENTER AT X = 128.3 , Y = 133.8 AND RADIUS, 75.6

*** 1.729 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.39	53.93
3	144.37	54.51
4	154.13	56.69
5	163.41	60.43
6	171.95	65.62
7	179.54	72.13
8	183.20	76.48

CIRCLE CENTER AT X = 135.9 , Y = 115.4 AND RADIUS, 61.5

*** 1.942 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.34	53.54
3	144.34	53.37
4	154.28	54.47
5	163.99	56.84
6	173.33	60.42
7	182.14	65.16
8	190.27	70.98
9	197.59	77.79
10	197.76	78.00

CIRCLE CENTER AT X = 140.7 , Y = 131.6 AND RADIUS, 78.3

*** 2.029 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.05	52.19
3	143.96	50.90
4	153.96	51.16
5	163.80	52.94
6	173.25	56.22
7	182.08	60.91
8	190.08	66.91
9	197.07	74.06
10	199.87	78.00

CIRCLE CENTER AT X = 147.3 , Y = 115.7 AND RADIUS, 64.8

*** 2.065 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 12 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.34	49.63
3	128.13	47.57
4	138.09	46.75
5	148.08	47.18
6	157.94	48.86
7	167.51	51.76
8	176.65	55.83
9	185.20	61.01
10	193.04	67.22
11	200.04	74.37
12	202.80	78.00

CIRCLE CENTER AT X = 139.6 , Y = 126.6 AND RADIUS, 79.8

*** 2.150 ***

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.42	50.59
3	143.03	47.80
4	152.97	46.70
5	162.95	47.33
6	172.67	49.66
7	181.85	53.64
8	190.20	59.13
9	197.49	65.98
10	203.49	73.99
11	205.53	78.00

CIRCLE CENTER AT X = 154.3 , Y = 104.6 AND RADIUS, 57.9

*** 2.224 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 14 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	102.70	47.30
3	112.35	44.69
4	122.21	43.01
5	132.18	42.27
6	142.18	42.49
7	152.11	43.66
8	161.88	45.77
9	171.41	48.80
10	180.61	52.73
11	189.39	57.51
12	197.68	63.10
13	205.40	69.46
14	212.23	76.28

CIRCLE CENTER AT X = 134.9 , Y = 147.2 AND RADIUS, 105.0

*** 2.278 ***

FAILURE SURFACE SPECIFIED BY 6 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.69	56.75
3	159.66	57.56
4	168.83	61.55
5	176.21	68.30
6	180.00	75.20

CIRCLE CENTER AT X = 152.2 , Y = 87.1 AND RADIUS, 30.5

*** 2.287 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.41	54.14
3	144.41	54.07
4	154.38	54.77
5	164.27	56.24
6	174.02	58.48
7	183.57	61.46
8	192.85	65.18
9	201.82	69.61
10	210.41	74.71
11	212.50	76.18

CIRCLE CENTER AT X = 140.3 , Y = 182.9 AND RADIUS, 128.9

*** 2.317 ***

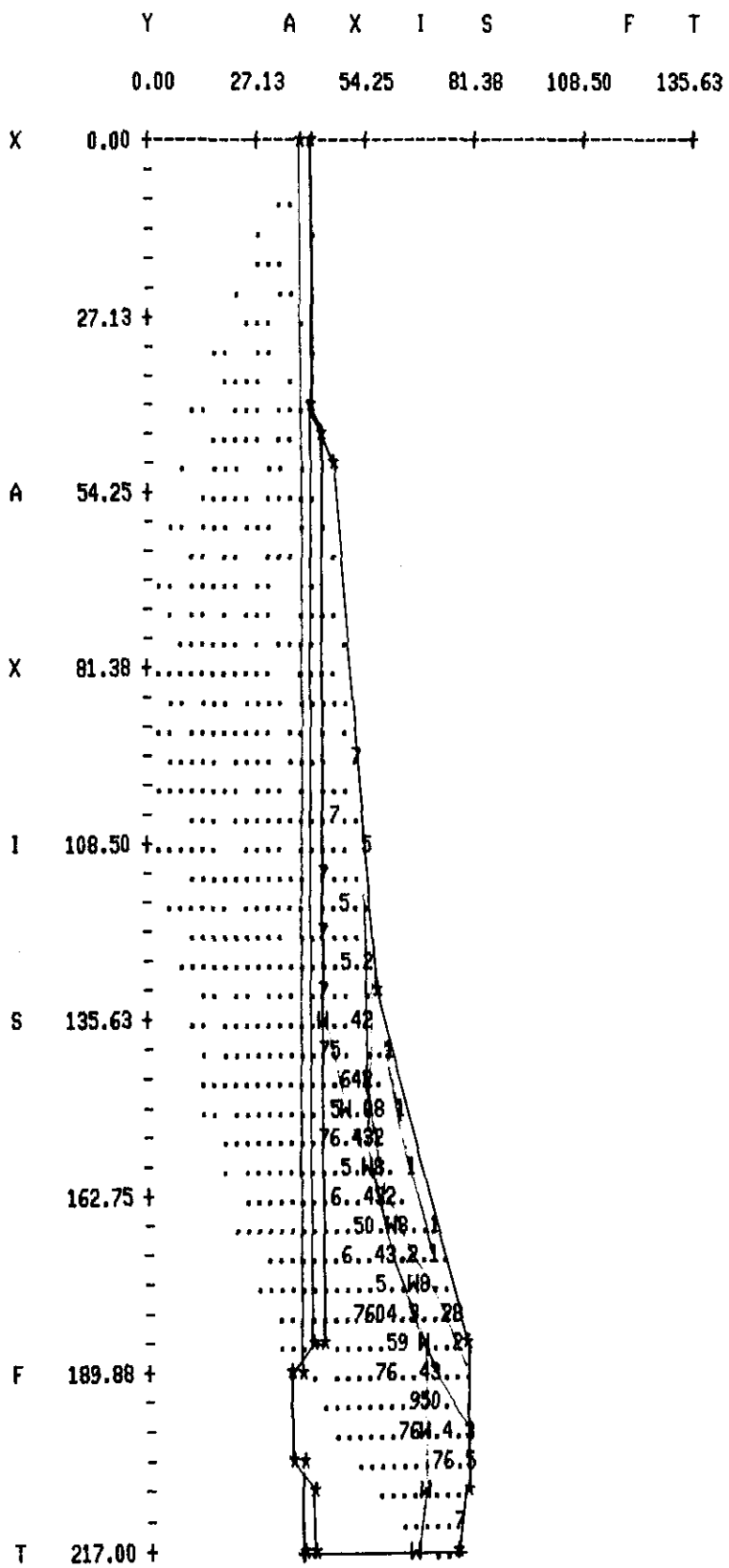
FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.27	55.46
3	159.17	54.00
4	169.12	54.92
5	178.59	58.16
6	187.02	63.53
7	193.94	70.75
8	198.17	78.00

CIRCLE CENTER AT X = 160.3 , Y = 96.1 AND RADIUS, 42.1

*** 2.321 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

)))))) WARNING: MORE THAN 6 PLOTS HAVE BEEN DRAWN. NEXT PLOT SHEET HAS BEEN STARTED.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	59.33	46.25
2	64.50	43.50
3	68.55	41.26
4	176.35	41.94
5	177.22	43.50
6	181.91	52.33
7	186.61	61.16
8	191.30	69.99
9	195.56	78.00

*** 2.265 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	87.12	49.98
2	90.47	48.19
3	99.30	43.50
4	102.87	41.52
5	165.72	40.12
6	167.59	43.50
7	172.28	52.33
8	176.98	61.16
9	181.67	69.99
10	185.64	77.46

*** 2.319 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	89.61	50.31
2	93.60	48.19
3	102.43	43.50
4	103.86	42.71
5	160.47	42.88
6	160.81	43.50
7	165.51	52.33
8	170.20	61.16
9	174.90	69.99
10	177.04	74.02

*** 2.528 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	75.87	48.47
2	76.39	48.19
3	85.22	43.50
4	91.34	40.11
5	153.39	40.13
6	155.25	43.50
7	159.95	52.33
8	164.64	61.16
9	169.34	69.99
10	169.98	71.19

*** 2.809 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	73.99	48.22
2	74.03	48.19
3	82.86	43.50
4	86.07	41.72
5	148.49	41.99
6	149.33	43.50
7	154.03	52.33
8	158.72	61.16
9	162.46	68.18

*** 3.174 ***

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	57.88	46.06
2	62.70	43.50
3	66.36	41.47
4	149.69	43.34
5	149.78	43.50
6	154.48	52.33
7	159.17	61.16
8	163.03	68.41

*** 3.176 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	83.32	49.47
2	85.72	48.19
3	94.55	43.50
4	95.60	42.91
5	146.03	43.37
6	146.10	43.50
7	150.80	52.33
8	155.49	61.16
9	158.35	66.54

*** 3.409 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	100.06	51.72
2	106.68	48.19
3	115.51	43.50
4	116.19	43.12
5	143.63	40.22
6	145.45	43.50
7	150.14	52.33
8	154.84	61.16
9	157.52	66.21

*** 3.471 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	76.07	48.50
2	76.64	48.19
3	85.47	43.50
4	85.83	43.30
5	144.02	41.17
6	145.31	43.50
7	150.00	52.33
8	154.70	61.16
9	157.35	66.14

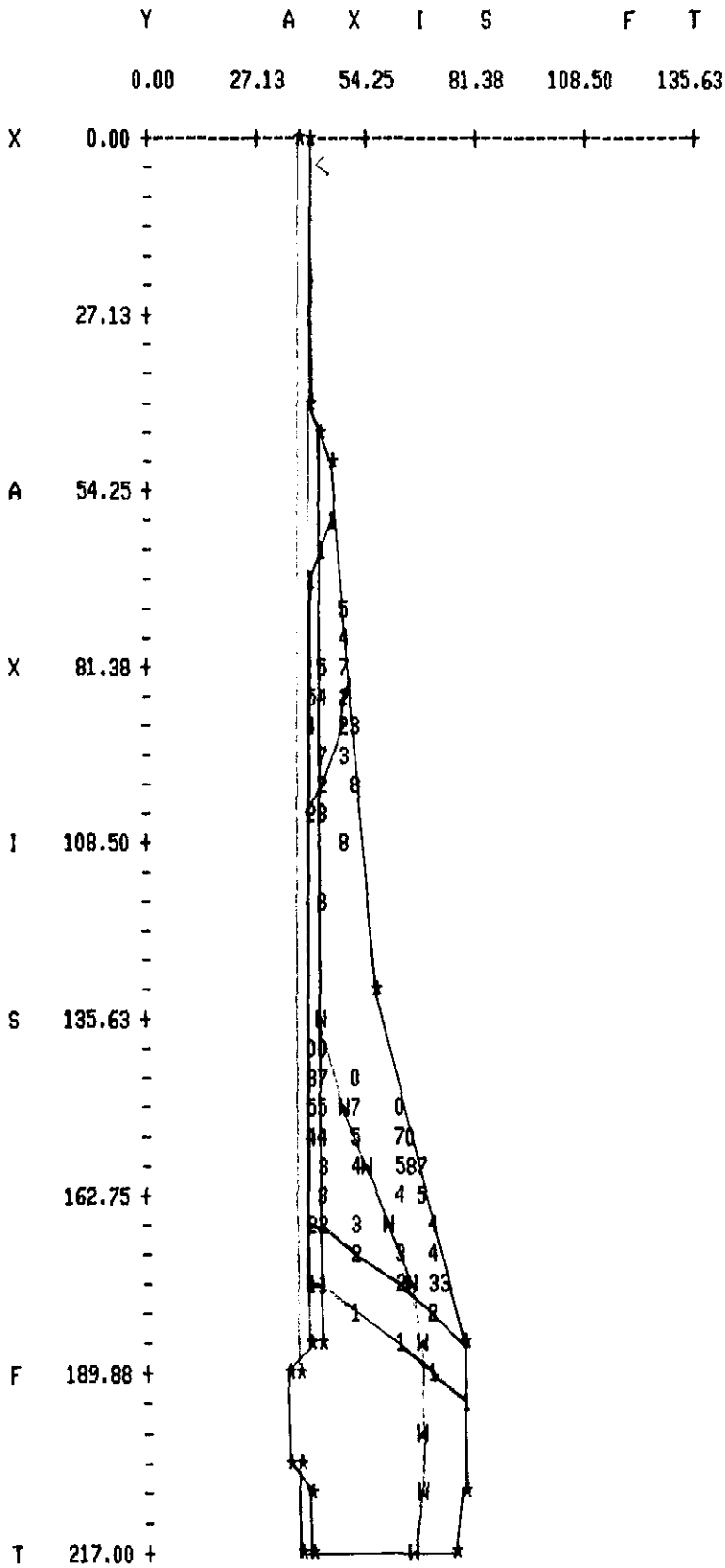
*** 3.490 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.15	49.72
2	88.01	48.19
3	96.84	43.50
4	98.14	42.78
5	140.89	41.58
6	141.95	43.50
7	146.65	52.33
8	151.34	61.16
9	153.08	64.43

*** 3.792 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

ISOTROPIC SOIL PARAMETERS

4 TYPE(S) OF SOIL

SOIL TYPE NO.	TOTAL UNIT WT. (PCF)	SATURATED UNIT WT. (PCF)	COHESION INTERCEPT (PSF)	FRICTION ANGLE (DEG)	PORE PRESSURE PARAMETER	PRESSURE CONSTANT (PSF)	PIEZOMETRIC SURFACE NO.
1	126.0	135.0	0.0	32.0	0.00	0.0	1
2	126.0	135.0	0.0	30.0	0.00	0.0	1
3	165.0	167.0	2000.0	41.0	0.00	0.0	1
4	125.0	135.0	0.0	32.0	0.00	0.0	1

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM
TECHNIQUE FOR GENERATING CIRCULAR SURFACES, HAS BEEN SPECIFIED.

100 TRIAL SURFACES HAVE BEEN GENERATED.

10 SURFACES INITIATE FROM EACH OF 10 POINTS EQUALLY SPACED
ALONG THE GROUND SURFACE BETWEEN X = 0.00 FT.
AND X = 140.00 FT.

EACH SURFACE TERMINATES BETWEEN X = 170.00 FT.
AND X = 217.00 FT.

UNLESS FURTHER LIMITATIONS WERE IMPOSED, THE MINIMUM ELEVATION
AT WHICH A SURFACE EXTENDS IS Y = 0.00 FT.

10.00 FT. LINE SEGMENTS DEFINE EACH TRIAL FAILURE SURFACE.

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED BISHOP METHOD* * *.

FAILURE SURFACE SPECIFIED BY 5 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.99	59.72
3	159.61	62.43
4	168.40	67.20
5	175.44	73.38

CIRCLE CENTER AT X = 142.7 , Y = 104.1 AND RADIUS, 45.0

*** 1.719 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.42	54.25
3	144.40	54.76
4	154.25	56.52
5	163.79	59.50
6	172.89	63.65
7	181.40	68.91
8	189.18	75.19
9	191.89	78.00

CIRCLE CENTER AT X = 135.3 , Y = 134.0 AND RADIUS, 79.7

*** 1.790 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.30	53.30
3	144.29	53.73
4	153.97	56.26
5	162.89	60.77
6	170.67	67.06
7	175.92	73.57

CIRCLE CENTER AT X = 137.3 , Y = 100.4 AND RADIUS, 47.2

*** 1.893 ***

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	134.44	54.65
3	144.42	55.24
4	154.30	56.77
5	164.00	59.21
6	173.43	62.55
7	182.50	66.75
8	191.14	71.79
9	199.27	77.61
10	199.72	78.00

CIRCLE CENTER AT X = 133.1 , Y = 161.5 AND RADIUS, 106.8

*** 1.897 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	140.00	59.20
2	149.61	56.42
3	159.60	56.11
4	169.36	58.30
5	178.27	62.83
6	185.78	69.44
7	191.42	77.70
8	191.53	78.00

CIRCLE CENTER AT X = 155.8 , Y = 95.9 AND RADIUS, 40.0

*** 2.036 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	117.65	48.07
3	127.02	44.59
4	136.81	42.53
5	146.79	41.93
6	156.75	42.80
7	166.47	45.14
8	175.75	48.88
9	184.37	53.95
10	192.14	60.24
11	198.91	67.60
12	204.52	75.88
13	205.54	78.00

CIRCLE CENTER AT X = 145.8 , Y = 109.6 AND RADIUS, 67.7

*** 2.043 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 11 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	93.33	50.81
2	103.32	50.39
3	113.32	50.69
4	123.27	51.72
5	133.11	53.47
6	142.81	55.92
7	152.30	59.07
8	161.54	62.90
9	170.47	67.39
10	179.06	72.51
11	186.78	77.91

CIRCLE CENTER AT X = 104.1 , Y = 188.3 AND RADIUS, 137.9

*** 2.067 ***

FAILURE SURFACE SPECIFIED BY 13 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.60	50.51
3	128.49	49.03
4	138.47	48.47
5	148.47	48.83
6	158.39	50.10
7	168.14	52.29
8	177.66	55.36
9	186.85	59.30
10	195.64	64.07
11	203.96	69.63
12	211.72	75.93
13	212.12	76.31

CIRCLE CENTER AT X = 139.6 , Y = 156.9 AND RADIUS, 108.4

*** 2.071 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	108.89	52.90
2	118.53	50.26
3	128.47	49.10
4	138.46	49.46
5	148.29	51.32
6	157.72	54.65
7	166.54	59.36
8	174.54	65.35
9	181.55	72.48
10	184.94	77.18

CIRCLE CENTER AT X = 131.1 , Y = 115.1 AND RADIUS, 66.0

*** 2.102 ***

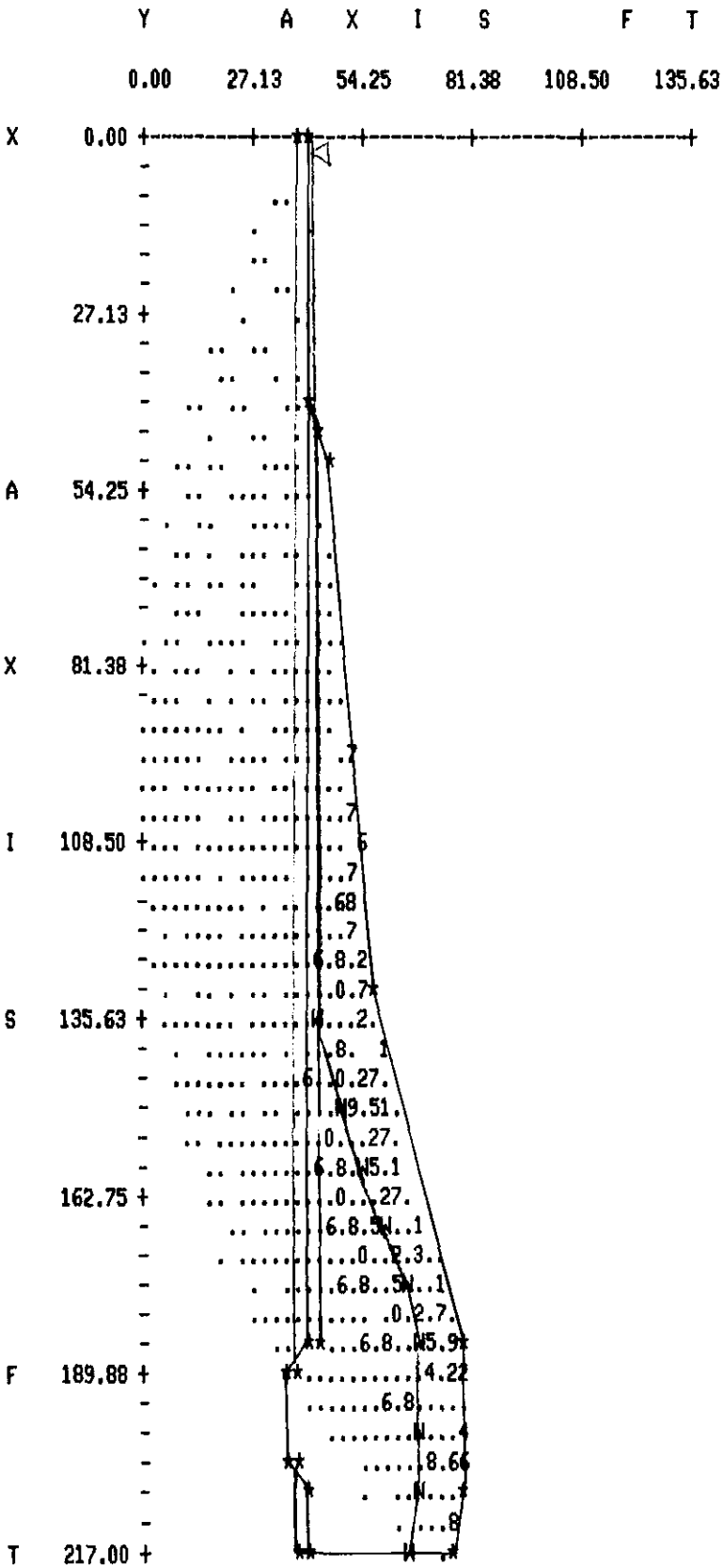
FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	124.44	54.99
2	133.17	50.10
3	142.83	47.52
4	152.83	47.41
5	162.55	49.78
6	171.38	54.47
7	178.78	61.20
8	184.28	69.55
9	187.21	78.00

CIRCLE CENTER AT X = 148.3 , Y = 87.3 AND RADIUS, 40.2

*** 2.125 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

A CRITICAL FAILURE SURFACE SEARCHING METHOD, USING A RANDOM TECHNIQUE FOR GENERATING SLIDING BLOCK SURFACES, HAS BEEN SPECIFIED.

THE ACTIVE AND PASSIVE PORTIONS OF THE SLIDING SURFACES ARE GENERATED ACCORDING TO THE RANKINE THEORY.

10 TRIAL SURFACES HAVE BEEN GENERATED.

2 BOXES SPECIFIED FOR GENERATION OF CENTRAL BLOCK BASE

LENGTH OF LINE SEGMENTS FOR ACTIVE AND PASSIVE PORTIONS OF SLIDING BLOCK IS 10.0

BOX NO.	X-LEFT (FT)	Y-LEFT (FT)	X-RIGHT (FT)	Y-RIGHT (FT)	WIDTH (FT)
1	60.00	41.75	120.00	41.75	3.50
2	130.00	41.75	185.00	41.75	3.50

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FOLLOWING ARE DISPLAYED THE TEN MOST CRITICAL OF THE TRIAL SURFACES EXAMINED.
THEY ARE ORDERED MOST CRITICAL FIRST.

* * * SAFETY FACTORS ARE CALCULATED BY THE MODIFIED JANBU METHOD* * *.

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	70.89	47.80
2	78.65	43.50
3	80.72	42.30
4	174.57	43.49
5	174.58	43.50
6	179.42	52.25
7	184.27	60.99
8	189.12	69.74
9	193.70	78.00

*** 2.084 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	71.11	47.83
2	78.93	43.50
3	83.74	40.73
4	170.32	40.78
5	171.89	43.50
6	176.74	52.25
7	181.59	60.99
8	186.43	69.74
9	191.01	78.00

*** 2.086 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 10 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	79.14	48.91
2	80.15	48.35
3	88.90	43.50
4	91.78	41.84
5	160.06	41.01
6	161.50	43.50
7	166.35	52.25
8	171.20	60.99
9	176.05	69.74
10	178.81	74.73

*** 2.317 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	62.71	46.71
2	68.50	43.50
3	73.75	40.47
4	153.37	42.51
5	153.94	43.50
6	158.79	52.25
7	163.64	60.99
8	168.49	69.74
9	169.10	70.84

*** 2.660 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	85.31	49.74
2	87.81	48.35
3	96.56	43.50
4	100.43	41.26
5	146.43	43.46
6	146.45	43.50
7	151.30	52.25
8	156.15	60.99
9	159.48	66.99

*** 3.076 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	78.00	48.76
2	78.73	48.35
3	87.48	43.50
4	90.05	42.01
5	143.37	40.12
6	145.32	43.50
7	150.17	52.25
8	155.02	60.99
9	158.02	66.41

*** 3.176 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	69.36	47.60
2	76.75	43.50
3	79.50	41.91
4	142.26	41.21
5	143.58	43.50
6	148.43	52.25
7	153.27	60.99
8	155.78	65.51

*** 3.301 ***

FAILURE SURFACE SPECIFIED BY 9 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	96.48	51.23
2	101.68	48.35
3	110.43	43.50
4	113.37	41.80
5	138.43	41.71
6	139.46	43.50
7	144.31	52.25
8	149.16	60.99
9	150.49	63.40

*** 3.751 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

FAILURE SURFACE SPECIFIED BY 8 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	74.37	48.27
2	82.97	43.50
3	84.41	42.67
4	137.45	43.47
5	137.47	43.50
6	142.31	52.25
7	147.16	60.99
8	147.93	62.37

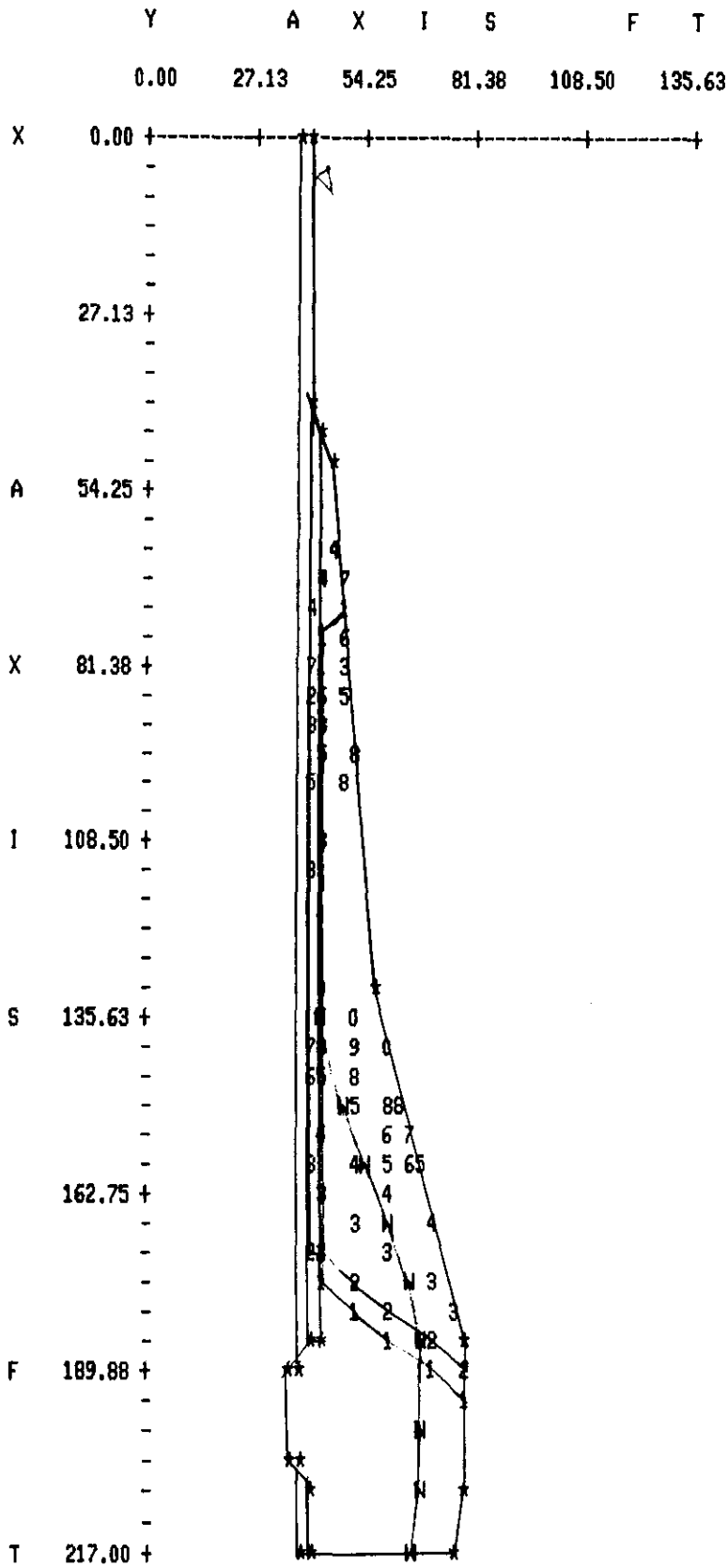
*** 3.872 ***

FAILURE SURFACE SPECIFIED BY 7 COORDINATE POINTS

POINT NO.	X-SURF (FT)	Y-SURF (FT)
1	74.84	48.33
2	83.56	43.50
3	86.02	42.08
4	130.46	42.12
5	131.26	43.50
6	136.11	52.25
7	139.95	59.18

*** 4.776 ***

DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION



DWSTRM SLOPE STABILITY, 38' TYP. SECTION, END OF CONSTRUCTION

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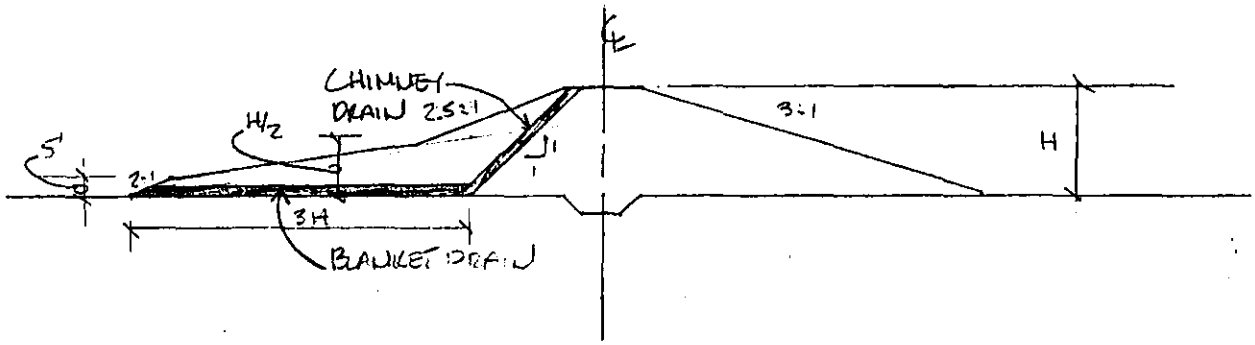
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THE SLOPE-STABILITY ANALYSIS WAS PERFORMED IN TWO PARTS:

(1) PRELIMINARY, (2) FINAL.

PRELIMINARY ANALYSIS

(1) PRELIMINARY SLOPE-STABILITY WAS PERFORMED ON THE FOLLOWING EMBANKMENT CROSS SECTION AND INTERNAL DRAIN SYSTEM



THIS CROSS SECTION WAS BASED ON RECOMMENDATIONS FROM THE U.S. BUREAU OF RECLAMATION, "DESIGN OF SMALL DAMS" FOR EMBANKMENTS ON PERVIOUS FOUNDATIONS. THE DRAINS WERE SIZED USING PMF STEADY-STATE SEEPAGE FLOWS. THE PRELIMINARY ANALYSIS INVOLVED:

DOWNSTREAM SLOPE

(1) TYPICAL 40' SECTION
   (a) STEADY-STATE SEEPAGE FOR THE PMF EVENT
   (b) EARTHQUAKE LOAD WITH EMPTY BASIN

(2) SECTION AT STA 26+00
   (a) STEADY-STATE SEEPAGE FOR THE PMF EVENT
   (b) EARTHQUAKE LOAD WITH EMPTY BASIN

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(3) TYPICAL 20' HIGH SECTION
- (a) STEADY-STATE SEEPAGE FOR THE PMF EVENT
- (b) EARTHQUAKE LOAD WITH EMPTY BASIN

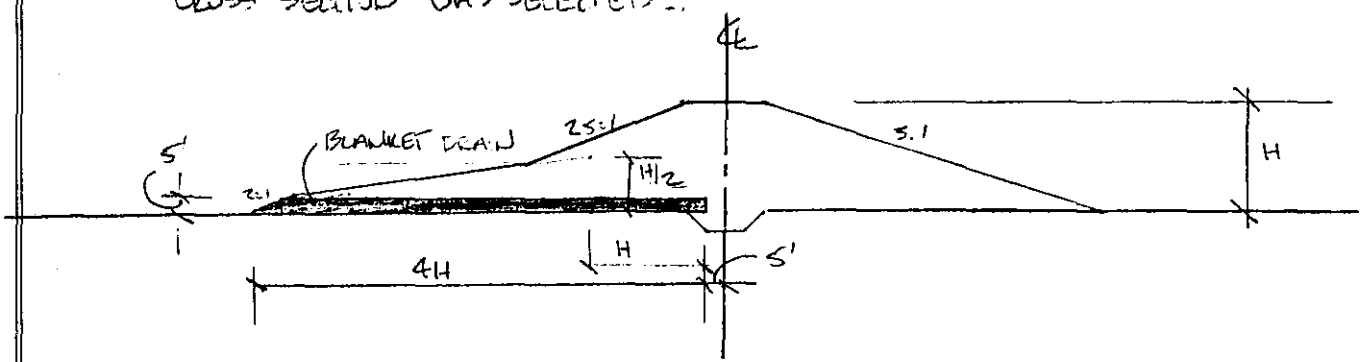
UPSTREAM SLOPE

(1) TYPICAL 40' SECTION
- (a) RAPID DRAWDOWN – PHREATIC SURFACE DROP FROM FULL PMF ELEV. TO EMPTY BASIN
- (b) RAPID DRAWDOWN – PHREATIC SURFACE DROP FROM FULL PMF ELEV. TO TOP OF SPILLWAY ELEV.
- (c) RAPID DRAWDOWN – PHREATIC SURFACE DROP FROM FULL PMF TO INTERMEDIATE POOL ELEV. 12460'
- (d) EARTHQUAKE LOAD WITH EMPTY BASIN
- (e) END OF CONSTRUCTION

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FINAL ANALYSIS

(2) UPON COMPLETION OF THE PRELIMINARY ANALYSIS, THE SEEPAGE FLOWS WERE REEVALUATED USING A TRANSIENT FLOWNET ANALYSIS VERSES A STEADY-STATE SEEPAGE ANALYSIS. THE INTERNAL DRAIN SYSTEM WAS THEN MODIFIED TO PROVIDE SEEPAGE CONTROL UNDER TRANSIENT CONDITIONS. THE CHIMNEY DRAIN WAS ELIMINATED, AND THE BLANKET DRAIN WAS RESIZED AND RELOCATED. THE BELOW CROSS SECTION WAS SELECTED.



THE FINAL SLOPE-STABILITY ANALYSIS INVOLVED:

DOWNSTREAM SLOPE

SINCE THE SEEPAGE THROUGH THE EMBANKMENT WAS REANALYZED AS TRANSIENT, THE PHREATIC SURFACE LOCATION WITHIN THE EMBANKMENT WAS REVISED FROM THE PRELIMINARY DOWNSTREAM SLOPE STABILITY ANALYSIS. THE PHREATIC SURFACE LOCATIONS WERE DETERMINED THROUGH GRAPHICAL MEANS (FLOWNETS).

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EMBANKMENT'S GEOMETRY WAS REVISED PER THE MODIFICATIONS IN THE INTERNAL DRAINAGE SYSTEM. THE SECTIONS AND

[redacted] FOR THE PMF EVENT
[redacted] AD WITH EMPTY BASIN
[redacted] STRUCTION
[redacted] EEPAGE FOR THE PMF EVENT
[redacted] AD WITH EMPTY BASIN

UPSTREAM SLOPE

ALTHOUGH THE SEEPAGE ANALYSIS METHOD AND INTERNAL DRAINAGE SYSTEM CHANGED FROM THE PRELIMINARY UPSTREAM SLOPE STABILITY ANALYSIS, THESE REVISIONS WERE CONSIDERED MINOR WITH RESPECT TO THE UPSTREAM SLOPE STABILITY, AND FURTHER ANALYSIS WAS DEEMED NOT NECESSARY. THE DESIGN LOAD CASES (RAPID DRAWDOWN, END OF CONSTRUCTION, & EARTHQUAKE) CONSIDERED IN THE PRELIMINARY ANALYSIS ARE CONSERVATIVE WHEN COMPARED TO THE MODIFICATIONS IN THE FINAL EMBANKMENT CROSS SECTION AND SEEPAGE ANALYSIS - FIRST, THE EFFECTS ON THE UPSTREAM SLOPE'S

PHREATIC SURFACE CAUSED BY THE ELIMINATION OF CHIMNEY DRAIN ARE MINOR, AND ADDITIONAL ANALYSIS NOT REQUIRED — SECONDLY, THE PHREATIC SURFACE DEVELOPEMENT UNDER STEADY-STATE SEEPAGE CONDITIONS (PRELIMINARY ANALYSIS) ARE CONSIDERABLY MORE CONSERVATIVE FOR SLOPE STABILITY, THAN TRANSIENT STATE SEEPAGE CONDITIONS.

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BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CLDPW
Plant Upper Hamburger Creek Detention Basin
Project No. 14625.320 File No.
Title Preliminary Counterfort retaining wall design

Computed By DCR
Date 7/12 19 89
Checked By
Date 19
Page 1 of

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PGN-172A

Purpose

Complete a preliminary retaining wall design for the counterfort walls at each end of the labyrinth spillway in order to define loading conditions for the structural engineer and verify soil parameters provided by the geotechnical engineer.

References

1. Foundation Engineering Handbook, Winterkorn + Fang
2. Foundation Analysis + Design, Bowles
3. Foundation Engineering, Peck, Hanson + Thornburn
4. Foundations + Earth Structures, DM 7.02 NAVFAC
5. Geotechnical Investigation, Proposed Flamingo Wash Detention Basin, Kleinfelder + Assoc.
6. Transient Seepage Analysis Calculations, DSV Project 14625.321, Obj DCR dated 12-20-87
7.

REVISED SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED,

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Procedure

Four loading conditions will be evaluated for the design of the counterfort retaining walls located on each end of the spillway for the Upper Flamengo Work Detention Basin

1. Condition 1. following construction, with damp backfill & compaction loading, not water on the front face of the wall and no established groundwater on the backside of the wall

2. Condition 2 severe condition following construction - following the PMF, partially saturated detention basin embankment - no water on the front face of the wall because it has already passed by. Use a 1.33 factor due to the frequency of the PMF

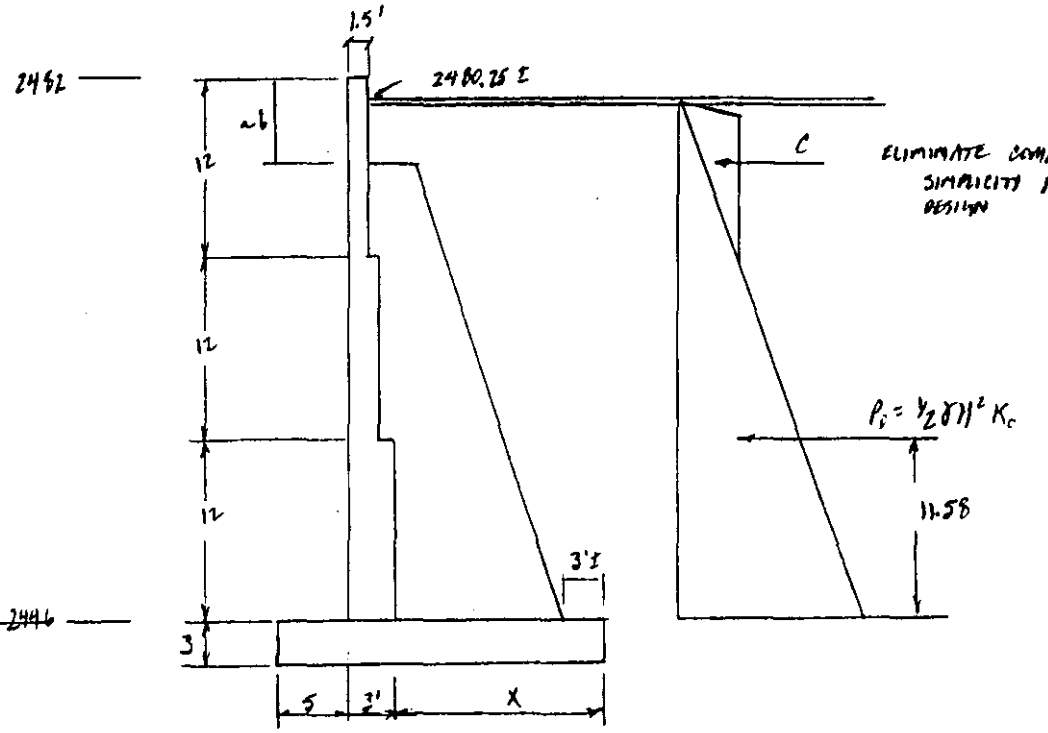
Condition 1 will be evaluated for the preliminary design. Develop a limit of saturation for the structural engineer so that he can evaluate condition 2 to determine which condition controls the wall design.

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED,

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See attached sheets for limit of saturation within the embankment.

Sketch Maximum Wall Section



ELIMINATE COMPACTION LOAD FOR SIMPLICITY FOR PRELIMINARY DESIGN

$c = 0$
$\phi = 36°$
$\gamma = 124$ pcf
$K_o = .41$

From Reference 5

$q_{ult} = 6000$ psf

$f_A = .40$ adhesion between soil and base of wall.

Soils parameters

Condition 1

$c = 0$
$\phi = 36°$
$K_o = 1 - \sin\phi$
$= .41$
$\gamma_{m1} = 124.7$

Condition 2

$C = 0$
$\phi = 36°$
$K_o = .41$
$\gamma_m = 124.7$
$\gamma_{SAT} =$
$\gamma_{BOUYANT}$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED,

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Condition 1 cont

Embankment full-moist
From Reference 5, the Proctor curves

~~112.3 @ 12.2~~
133.5 @ 5.8 } 135.5 @ 6%
137.8 @ 6.5 }

The above is at 100% of maximum density per ASTM 1557. The embankment fill shall be compacted to 92% of maximum density

$\gamma_{DESIGN} = 135.5\,(.92)$
$= 124.7$ pcf

Lateral load on wall

$p = K_o \gamma H$
$= .41(124.7)H$
$= 51H$

Condition 2 cont

Embankment fill saturated
From reference 5, $G = 2.61$

$\gamma_t = \left(\frac{1+w}{1+e}\right) G \gamma_w$

$135.5 = \left(\frac{1+.06}{1+e}\right)(2.61)\,62.4$

$e = .274$

$\gamma_d = \frac{\gamma_t}{1+w}$ $\quad w = \frac{W_w}{W_s}$

$= \frac{135.5}{1.06}$ $\quad = \frac{.274\,(62.4)}{.726\,(2.61)(62.4)}$

$= 127.8$ $\quad = .144$

$\gamma_{d\,92\%} = 127.8\,(.92)$
$= 117.6$ pcf

$\gamma_{SAT} = \left(\frac{1.14}{1.274}\right)(2.61)\,62.4$
$= 146.3$ pcf

$\gamma_{BOUNT} = \frac{(2.61-1)}{(1.274)}(62.4)$
$= 78.8$ pcf

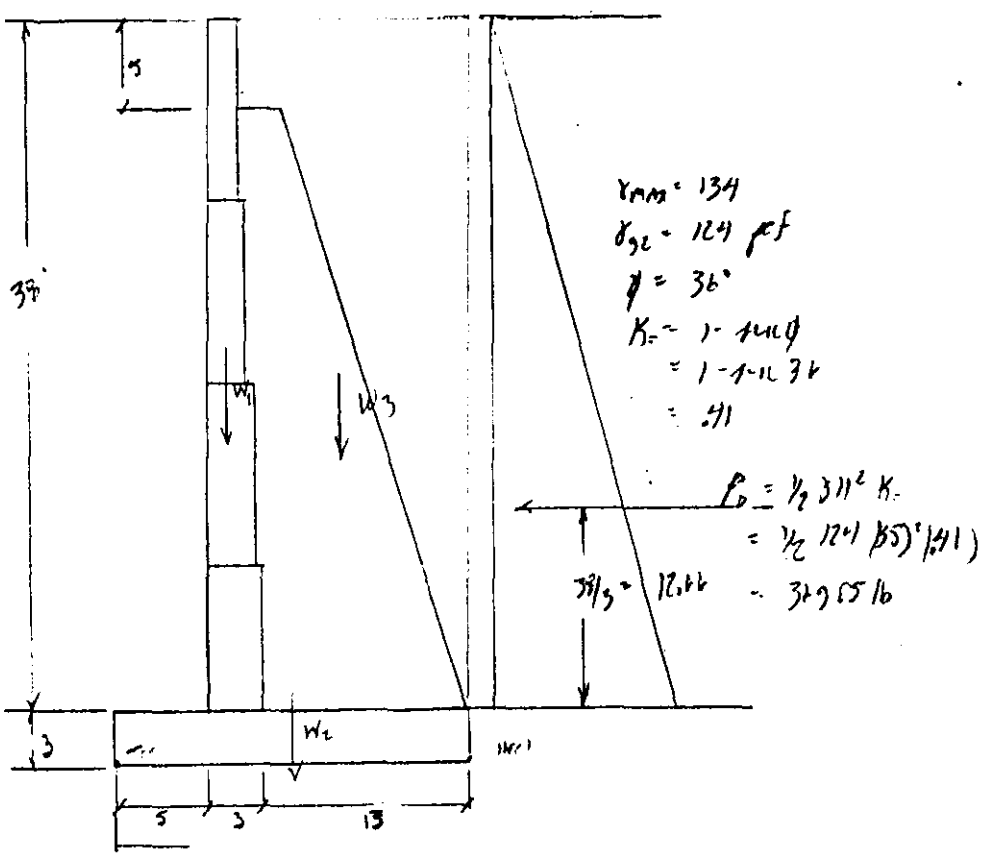
Lateral load on the wall if there is an established water table

$p = K_o \gamma_{BNT} + \gamma_w H_w$
$= .41(78.8)H + 62.4\,H_w$
$= 32.3H + 62.4\,H_w$

PGN-172A

DO NOT WRITE IN THIS SPACE

LOAD CASE 1



$\gamma_{RR} = 134$
$\gamma_{SL} = 124$ pcf
$\phi = 36°$
$K_a = 1 - \sin\phi$
$= 1 - \sin 36$
$= .41$

$P_a = \frac{1}{2} \gamma H^2 K_a$
$= \frac{1}{2} (124)(39)^2 (.41)$
$= 38,905$ lb

$39/3 = 12.66$

WEIGHT

$W_1 = 39\left(\frac{5+3}{2}\right)(150) = 12,825$

$W_2 = 21(3)(150) = 9450$

$W_3 = (13.75)(39)(124) = 64,790$

STABILITY DUE TO OVERTURNING

$FS = \frac{\Sigma M_{TOT}\ \text{RESISTING}}{\Sigma M_{TOT}\ \text{OVERTURNING}}$

$= \frac{(6.125)(12,825) + (9.5)(9450) + (19.125)(64,790)}{12.66\ (38,905)}$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

$= \frac{1083847}{467217}$

$= 2.32 \quad > 2 \quad \text{OR} \quad 1.5 \quad \text{OK}$

LOCATION OF RESULTANT

$\Sigma M_{TOE} = 0$

$6.125(12825) + 10.5(9450) + 14.125(64790) - 12.66(36905) - R(x) = 0$

$1083847 - 467217 - R(x) = 0$

$\Sigma F_y = 0$

$W_1 + W_2 + W_3 - R = 0$

$R = 87015 \text{ lb}$

$\therefore$

$616630 - 87015x = 0$

$x = 7.08$

The center 1/3 of the 21' footing is from $7 < x < 14$. The resultant is just within the center 1/3 of the footing

STABILITY FOR SLIDING

$FS = \frac{W \tan \delta}{P_H}$ ← CONCRETE POURED AGAINST GRAVEL NAVFAC DM 7

$= \frac{87015 (0.55)}{36905}$

$= 1.30 < 1.50 \quad \text{NG}$

ADD SHEAR KEY

DO NOT WRITE IN THIS SPACE

PGN-175A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

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RGN-175A

SOIL PRESSURE DISTRIBUTION BENEATH FOOTING

$$\sigma = \frac{P}{A} \pm \frac{Mc}{I}$$

$$= \frac{87065}{21} \pm \frac{87065\,(10.5 - 7.06)(10.5)}{\frac{(1)(21)^3}{12}}$$

$$= 4146 \pm \frac{29772(10.5)}{771.75}$$

$$= 4146 \pm 4051$$

$$= 8197 \text{ to } 95 \text{ psf}$$

DETERMINE THE ULTIMATE BEARING CAPACITY FOR AN ECCENTRICALLY LOADED STRIP FOOTING. SEE WINTERKORN + FANG, p 130

$$q_o = \frac{Q}{B'L'} = cN_c \xi_c \xi_{ci} + qN_q \xi_q \xi_{qi} + \tfrac{1}{2}\gamma B N_\gamma \xi_\gamma \xi_{\gamma i}$$

FOR A STRIP, ALL ξ FACTORS = 1.0

$$\therefore \quad q_o = qN_q \xi_{qi} + \tfrac{1}{2}\gamma B N_\gamma \xi_{\gamma i}$$

FOR $\phi = 36°$

$N_q = 50$

$N_\gamma = 55$

FOR THE FOOTING

STRIP $L' = L$

$B' = B - 2e$

$= 21 - 2(3.42)$

$= 14.16'$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

DO NOT WRITE IN THIS SPACE

RGN-175A

$$\zeta_{\gamma i} = \left(1 - \frac{P}{Q + B'L'c\cot\phi}\right)^2$$

FOR STRIP, DIVIDE BY L

$$= \left(1 - \frac{P/L}{Q/L + B'c\cot\phi^0}\right)^2$$

$$= \left(1 - \frac{36905}{87065 + 0}\right)^2$$

$$= .33$$

$$\zeta_{qi} = \left(1 - \frac{P}{Q + B'L'c\cot\phi}\right)^3$$

$$= .19$$

$$\therefore \quad q_a = 2(150)(50)(1)(.33) + \tfrac{1}{2}(124)(21)(55)(.19)$$

$$= 4950 + 13606$$

$$= 18556 \text{ psf}$$

$$q_{all} = \frac{q_a}{FS}$$

$$= \frac{18556}{2} \text{ OR } \frac{18556}{3}$$

$$= 9278 \text{ psf OR } 6185 \text{ psf}$$

THE ALLOWABLE BEARING CAPACITY MAY BE CONTROLLED BY SETTLEMENT. FROM PECK, HANSON, & THORNBURN, p 309,

FOR $\phi = 36°$, $N = 30$ (p 310)

FOR $D_f/D = .25$, $N = 30$, $B = 21$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

$q = 3.3$ TONS/ft^2

$= 6600$ psf FOR

THEREFORE, INCREASE THE WIDTH OF THE FOOTING TO 25'

$W_1 = 12825$ lb

$W_2 = 25(3)(150) = 11250$ lb

$W_3 = 17.75(38)(124) = 83638$ lb

STABILITY FOR OVERTURNING

$$FS = \frac{6.125(12825) + 12.5(11250) + 16.125(83638)}{12.66(36905)}$$

$$= \frac{1,567,841}{467,217}$$

$= 3.35 > 2$ OR 1.5

LOCATION OF RESULTANT

$\Sigma F_y = 0$

$R = W_1 + W_2 + W_3$

$= 107,713$ lb

$\Sigma M_{TOE} = 0$

$6.125(12825) + 12.5(11250) + 16.125(83638) - 12.66(36905) = R(x)$

$1,100,624 = 107,713(x)$

$x = 10.21'$

THE RESULTANT FALLS WITHIN THE CENTER 1/3 OF THE 25' FOOTING $8.33 < x < 16.66$

$e = 12.5 - 10.21$

$= 2.29'$

DO NOT WRITE IN THIS SPACE

RGN-175A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

DO NOT WRITE IN THIS SPACE

PGN-175A

STABILITY FOR SLIDING

$$FS = \frac{W \tan\delta}{P_H}$$

$$= \frac{107,713\,(.55)}{36905}$$

$$= 1.6 > 1.5 \quad OK$$

SOIL PRESSURE BENEATH FOOTING

$$\sigma = P/A \pm \frac{Mc}{I}$$

$$= \frac{107713}{25} \pm \frac{107713\,(2.29)\,(12.5)}{\frac{1}{12}(12.5)^3}$$

$$= 4308 \pm 2368$$

$$= 6676 \text{ OR } 1940 \text{ psf}$$

ALLOWABLE BEARING CAPACITY

$$\xi_{qi} = \left(1 - \frac{36905}{107713 + 0}\right)^2$$

$$= .43$$

$$\xi_{\gamma i} = .28$$

$$q_0 = 3(150)(50)(1)(43) + \tfrac{1}{2}(124)(85)(55)(1)(28)$$

$$= 9675 + 23870$$

$$= 33545 \text{ psf}$$

$$q_{all} = \frac{33545}{FS} = \frac{33545}{3} = 11182 \text{ psf}$$

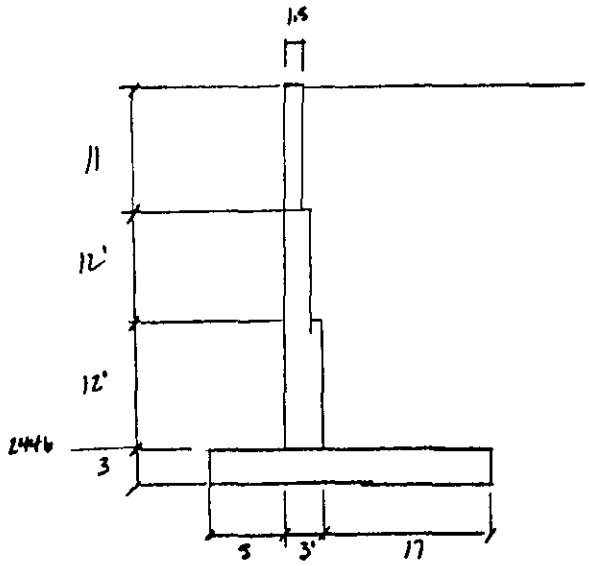
REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

q_{ALL} > q_{ALL} FOR SETTLEMENT

$q_{ALL_{ST}}$ = 6600 psf SAY OK

PROVIDE THE FOLLOWING SECTION FOR THE RETAINING WALL AT THE EMBANKMENT

2



DO NOT WRITE IN THIS SPACE

PGN-175A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

9-17-89
dcr

ON C ~ STA 23+84 SOUTH RETAINING WALL LOCATION
24+64 NORTH " " "

2980

2.5

F SATURATION
THIN EMBANKMENT

1

1

P III FOOTING (2446)

WP

SEE CROSS SECTIONS FOR OFF SET AND ELEV

HORIZONTAL BLANKET DRAIN

H_2

1
2

5'

10

10'

3M

CANTILEVER WALL LIMITS

u LIMITS

IN THIS SPACE

DO NOT WRITE

INTRODUCTION:

The retaining walls will be designed using moments and shears found from the reference below.

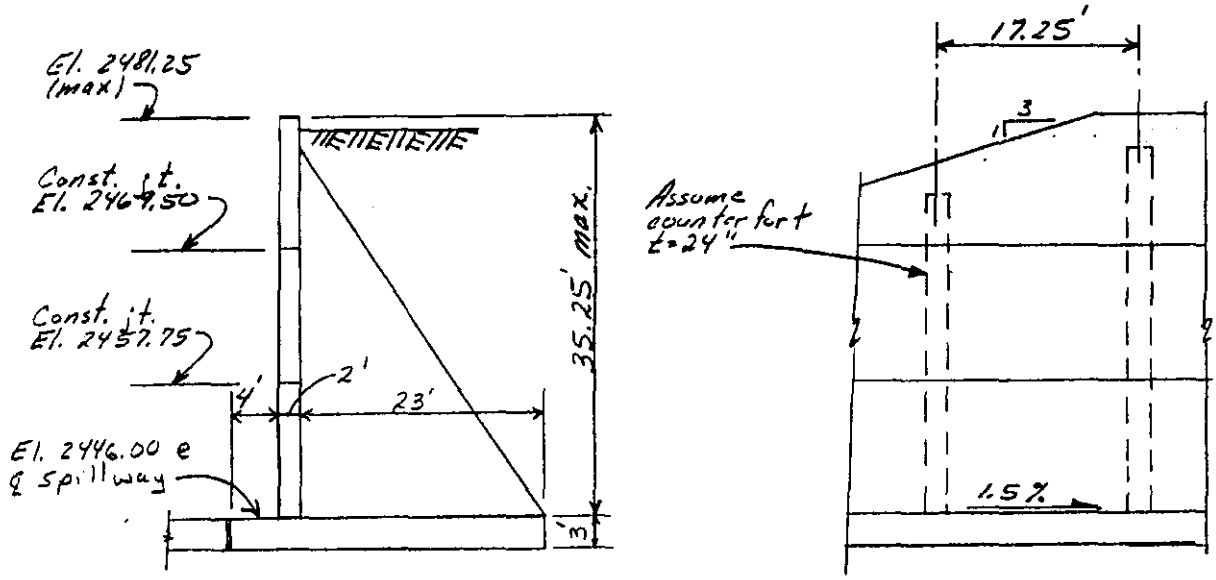
An allowable overstress of 1/3 will be used for stresses from loads which include water in the dam. This is considered appropriate since the facility will not be loaded until a 100 year flood event or greater.

Panels as shown on the following page will be designed for soil pressures previously calculated. Panels A & C will be designed for the same loads.

References:

1.) U.S. Bureau of Reclamation, "Moments and Reactions for Rectangular Plates", 1978.

A. R/C Design for Panel A:

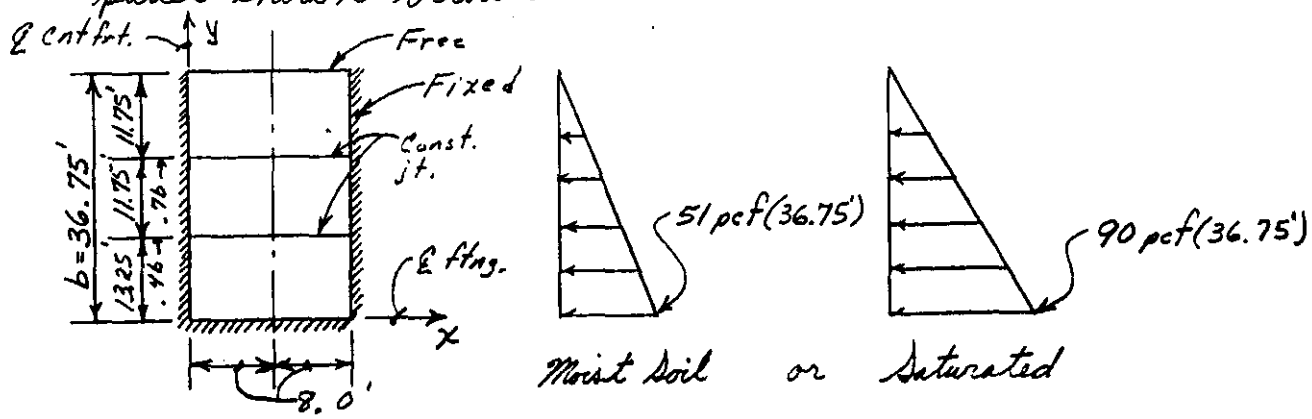


SECTION ELEVATION

DO NOT WRITE IN THIS SPACE

1. R/C Design of Wall:

The wall slab will be designed using the idealized panel shown below:



Moist Soil or Saturated

$a/b = 8.0'/36.75 = 0.22$ to $a/b = 8.0/(2481.25 - 29'/3) - 2446 = 0.30$

Use tables for $a/b = 0.25$

DO NOT WRITE IN THIS SPACE

Panel A - Wall Design Cont'd:

From figure 4 of the U.S. Bureau of Reclamation tables the following moments and reactions are found.

The ACI code allows moments at the face of supports to be used for design, this will be used. Since the support reaction does not introduce compression into the end region of the wall, shear @ d from the of the support is not allowed. ACI Commentary indicates that the shear at the face can be used, however the Tables in the U.S. Bureau of Reclamation do not show shear values other than at the support. Members will be designed for shear at the support.

Check to see if loads from moist soil or saturated soil will control:

$M_{n_{moist}} = \text{coeff.}\ (P)_{moist}(b^2)(1.7)/(0.9)$

$M_{n_{sat.}} = \text{coeff}\ (P_{sat})(b^2)(1.7)/0.9(1\frac{1}{3})$ ← allowable overstress

for $P_{moist} = 51\text{pcf}(b)$ & $P_{sat} = 90\text{pcf}(b)$

$M_{n_{moist}} = \text{coeff}\ (b^3)(51)(1.7)/0.9 = \text{coeff}\ (4,781, 328)$

$M_{n_{sat}} = \text{coeff}\ (b^3)(90)(1.7)/0.9(1\frac{1}{3}) = \text{coeff}\ (6, 328, 229)$

∴ Saturated conditions control.

a. From base to construction jt @ El 2457.75:

$y/b = 2457.75 - 2444.5/36.75' = 0.36$ use $y/b = 0.4$

for M_x at face of counterfort, $x/a = 1'/8.0 = 0.125$

for M_y at face of base slab, $y/b = 1.5'/36.75 = 0.04$

IN THIS SPACE

DO NOT WRITE

Panel A - Wall Design Cont'd:

$m = 6,328,229$

$M_{n_{x+}} = (0.0075)(36.75^3)(90)(1.7)/0.9(1\frac{1}{3})$
$= 47,462^{ft\text{-}lb}$ @ $x/a = 0.12$ & $y/b = 0.40$ (support)

$M_{n_{x-}} = (0.0057)\,m = 36,071^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = 0.40$ (midspan)

$M_{n_{y+}} = (0.0079)\,m = 50,246^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = 0.04$ (support)

$M_{n_{y-}} = (0.0031)\,m = 19,618^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = 0.2$

$m' = 182,326$

$R_{n_x} = V_{n_x} = (0.1514)(90)(36.75^2)(1.7)/0.85(1\frac{1}{3})$
$= 27,604^{lb}$ @ $x/a = 0$ & $y/b = 0.40$ (horiz. shear @ ℄ counterfort)

$R_{n_y} = V_{n_y} = (0.1950)\,m' = 35,554^{lb}$ @ $x/a = 1.0$ & $y/b = 0$ (vertical shear @ ℄ base slab)

For conc. design select:

$A_{s_{T\&S}} \geq 0.003\,A_g$ use this as $A_{s_{min}}$ in each dir.

$f_{max} = 0.007$ and $f'_c = 4,000$ psi, $f_y = 60,000$ psi

$\therefore K_n = 394.06$ psi & $a = 0.124d$ in

IN THIS SPACE

DO NOT WRITE

Panel A - Wall Design Cont'd:

$$d_{M_{max}} = \sqrt{\frac{47{,}462^{ft\text{-}lb}(12\frac{in}{ft})}{394.06\ (12in)}} = 11.0"$$

$$d_{V_{max}} = 35{,}554^{lb} / 2\sqrt{4{,}000}\ (12") = 23.4"$$

Select $t = 23.4" + 2"\text{ cover} + \frac{7}{8}"\text{ bar} = 26.28"$ use $27"$ ←
$d = 27" - 2" - \frac{7}{8}" = 24.13"$

Reinforcing req'd:

Temp & Shrinkage $= 0.003(27")(12")/2 = 0.49\ in^2$

use #6 @ 10" ($A_s = 0.53\ in^2$)

For M_{nx+}:

$$A_s = \frac{47{,}462^{ft\text{-}lb}(12\frac{in}{ft}) / \left[24.13" - \frac{0.124(24.13)}{2}\right]}{60{,}000\ psi} = 0.42\ in^2$$

(22.63)

$\rho = 0.42/24.13(12) = 0.0015 < \rho_{min} = 0.0033$, must use ρ_{min} or $(1/3)A_{s\,req'd}$, but $\geq$ min temp & shrinkage (ACI 10.5)

$1/3\,A_{s\,req'd}$ is min allowed, Use #7 @ 12" ($A_s = 0.60\ in^2$) / 10" (0.72)
℄ For continuity w/ next section of wall.

For M_{nx-} & M_{ny-}

$$A_s = \frac{36{,}011(12)(22.63)}{60{,}000} = 0.32\ in^2$$

Use #6 @ 10" min. = $A_{s_{T\&S}} = 0.53\ in^2$

For M_{ny+}:

$$A_s = \frac{50{,}246(12)/22.63}{60{,}000} = 0.44\ in^2$$

use #7 @ 12" min. = ~~$A_{s_{T\&S}} = 0.60\ in^2$~~
#6 @ 9" for continuity of reinf ($A_s = 0.59\ in^2$)

P-GN-025-A

DO NOT WRITE IN THIS SPACE

Panel A-Wall Design (cont'd):

b. From Const Jt @ El. 2457.75 to Const. Jt. @ El. 2469.50:

$y/b = 0.40$ to $y/b = 25.00/36.75 = 0.68$

$M_{nx+} = 47,462^{ft\text{-}lb}$ @ $x/a = 0.12$ & $y/b = 0.40$ (support)

$M_{nx-} = 36,071^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = 0.40$ (midspan)

$V_{nx} = 27,604$ @ $y/b = 0.40$ & $x/a = 0$ (@ of counterfort)

$M_{ny+} = (0.0023)(6,328,229) = 14,555^{ft\text{-}lb}$ @ $y/b = 0.4$ & $x/a = 0$

$M_{ny-} = (0.0021)(6,328,229) = 13,289^{ft\text{-}lb}$ @ $y/b = 0.4$ & $x/a = 1.0$

Thickness req'd:

$\rho = 0.007$ w/ $f'_c = 4,000$ psi and $f_y = 60,000$ psi
$K_n = 394.06$ psi and $a = 0.124\,d$

$d_{m_{max}} = 11.0$ in

$d_{v_{max}} = 27,604/2\sqrt{4,000}\,(12") = 18.19$ in

Select $t = 18.19 + 2" + 7/8" = 21.06"$ use $21"$ ←
$d = 18.12"$

Reinforcing req'd:

Temp & Shrinkage $= 0.003(21")(12")/2 = 0.38\,in^2$
use #5 @ 9" ($A_s = 0.41\,in^2$)

for M_{nx+}:

$$A_s = \frac{47,462^{ft\text{-}lb}(12^{in}/_{ft})}{60,000} \Big/ \left[18.12 - \frac{0.124(18.12)}{2}\right] = 0.53\,in^2$$

$\rho = 0.53/18.12(12) = 0.0024 < \rho_{min}$ ⇒ Use #7@10" ($A_s = 0.71\,in^2$)

DO NOT WRITE IN THIS SPACE

Panel A-Wall Design Cont'd:

For M_{nx-}:

$$A_s = \frac{36,071(12)/\left[18.12 - \frac{0.124(18.12)}{2}\right]}{60,000} = 0.42 \text{ in}^2$$

$\rho = 0.42/18.12(12) = 0.0019 > \rho_{min} \Rightarrow$ Use #7 @ 12" ($A_s = 0.60 \text{ in}^2$)

For M_{ny+} and M_{ny-}: $A_s < A_{s\,T's}$ use #5 @ 9"

c. From Const Jt @ El. 2469.50 to top:

$y/b = 0.7$ to $y/b = 1.0$

$M_{nx+} = (0.0044)(6,328,229) = 27,844$ ft-lb @ $y/b = 0.7$; $x/a = 0.12$

$M_{nx-} = (0.0033)(6,328,229) = 20,883$ ft-lb @ $y/b = 0.7$; $x/a = 1.0$

$M_{ny+} = (0.009)(6,328,229) = 5,569$ ft-lb @ $y/b = 0.7$; $x/a = 0.12$

$M_{ny-} = (0.0006)(6,328,229) = 3,797$ ft-lb @ y/b 0.7; x/a 1.0

$V_{nx} = 0.0769(182,326^{\#}) = 14,021^{\#}$ @ $y/b = 0.7$; $x/a = 0$

Thickness reqd:

$$d_m = \sqrt{\frac{27,844(12)}{394.06(12)}} = 8.4"$$

$$d_v = \frac{14,021}{2\sqrt{4,000}(12)} = 9.2"$$

Select $t = 10.2" + 2" + 7/8" = 13.1"$ use 14" ←

$d = 14" - 2" - 7/8" = 11.12"$

Reinforcing reqd:

Temp. & Shrinkage $= 0.003(14")(12")/2 = 0.25 \text{ in}^2$

use #4 @ 9" ($A_s = 0.26 \text{ in}^2$)

IN THIS SPACE

DO NOT WRITE

Panel A-Wall Design Cont'd:

For M_{nx+}:

$$A_s = \frac{27,844(12)/\left[11.12 - \frac{0.124(11.12)}{2}\right]}{60,000} = 0.53 \text{ in}^2$$

$\rho = 0.53/11.12(12) = 0.004 > \rho_{min} \Rightarrow$ #6@10" ($A_s = 0.53 \text{ in}^2$)

For M_{nx-}:

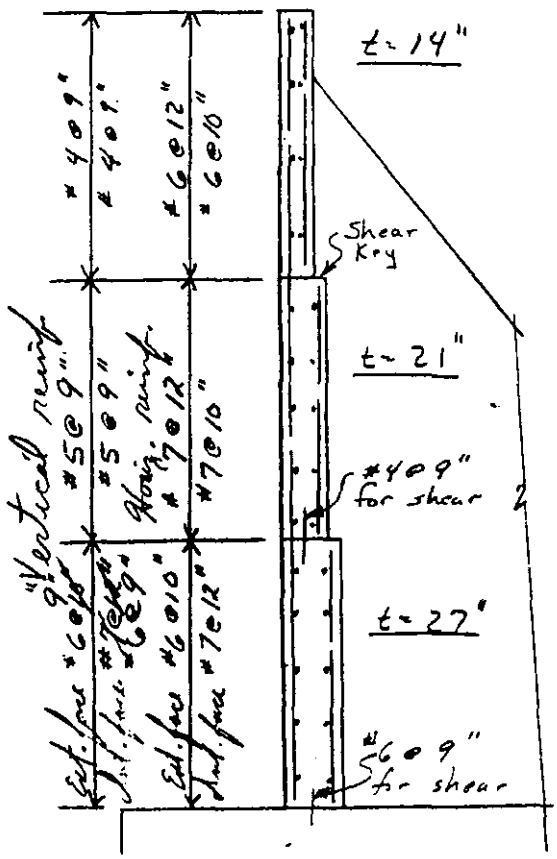
$$A_s = \frac{20,883(12)/\left[11.12 - \frac{0.124(11.12)}{2}\right]}{60,000} = 0.40 \text{ in}^2$$

$\rho = 0.40/11.12(12) = 0.003 < \rho_{min} \Rightarrow$ #6@12" ($A_s = 0.44 \text{ in}^2$)

For M_{ny+} & M_{ny-}:

$A_s < A_{s_{T\&S}}$ use #4@9"

Summary



For continuity of vertical reinf. change vertical bars from base to El. 2457.75 to #6@9" Ext. face & #6@9" Int face.

Use #7@10" for Horiz reinf to const. jt @ El. 2469.50 for continuity.

P.GN.025-A

IN THIS SPACE

DO NOT WRITE

Panel A - Wall Design Cont'd:

c. Check shear @ const jt.:

Shear values at locations other than the base of the wall are not tabulated in the U.S. Bureau of Reclamation manual. Shear values will be assumed as 40% of the values found for a cantilever wall. The value of 40% is the ratio of shear at the base using the plate design values versus a cantilevered wall:

$$V_{Base\ for\ cantilever} = 90\ pcf\,(1')(36.75^2)/2 = 60,775^{\#}$$

$$V_{Base\ for\ plate} = 35,554^{\#}(0.85)(1\tfrac{1}{3})/1.7 = 23,703^{\#}$$

$$\therefore \frac{23,703}{60,775} = 0.39 \quad \text{use } 40\%.$$

Shear at El. 2457.75:

$$V = 0.40\,\frac{(90)(36.75^2)}{2}\left(\frac{23.5^2}{36.75^2}\right) = 9,941^{\#}\ w/t = 21"$$

Shear at El. 2469.50:

$$V = 0.40\,\frac{(90)(36.75^2)}{2}\left(\frac{11.75^2}{36.75^2}\right) = 2,485^{\#}\ w/t = 14"$$

Check jt. @ El. 2457.75:



$$V_n = 9,941(1.7)/0.85(1\tfrac{1}{3}) = 14,912^{\#}$$

$$\Rightarrow V_c = 2\sqrt{f'_c}\,bd = 2\sqrt{4,000}\,(12")\left(\tfrac{21"}{3}\right) = 10,625^{\#}$$

Since $V_c > V_n$ regd use shear friction:

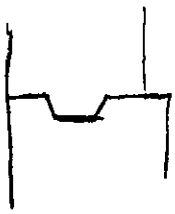
$$A_{vf} = 14,912^{\#}/60,000(1.0) = 0.25\ in^2$$

Use #4 @ 9" $A_s = 0.26\ in^2$ ←

DO NOT WRITE IN THIS SPACE

Panel A - Wall Design Cont'd:

Check jt @ El. 2469.50



$V_n = 2,485(1.7) / 0.85(1\frac{1}{2}) = 3,728^{lb}$

$\Rightarrow V_c = 2\sqrt{4,000}(12)(\frac{14}{3}) = 7,084^{lb} > 3,728^{lb}$.

$\therefore$ Use shear key no reinf. ←

Check jt at base of wall:

$V_{n_y} = 35,554^{lb}$

$V_c = 2\sqrt{4,000}(12)(\frac{27}{3}) = 13,661^{lb} < 35,554$

$\therefore$ Add reinf. for shear.

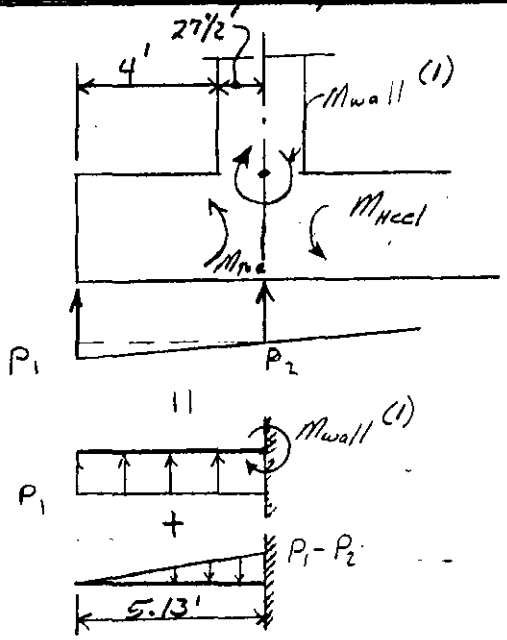
$A_{v_f} = 35,554 / 60,000(1.0) = 0.59 in^2$

Use #6 @ 9" ($A_s = 0.59 in^2$) ←

IN THIS SPACE
DO NOT WRITE

A. R/C Design for Panel A Cont'd:

2. R/C Design of Toe:



For moist soil:

$P_{1_{max}} = 7,055$ psf

$P_{2_{max}} = 1,434 + [(7,055-1,434)(\frac{29-5.13}{29})]$

$= 6,061$ psf

For saturated soil

$P_{1_{max}} = 8,811$ psf

$P_{2_{max}} = 8,811(\frac{29-5.13}{29})$

$= 7,252$ psf

For moist soil moment & shears are:

For shear assume $d = 36" - 3" - \frac{7}{8}" = 32.12"$ (2.67')

$V_{@d} = 7,055(5.13'-2.67') - \frac{(7055-6,061)5.13'}{2}\left[\frac{(5.13-2.67)^2}{5.13^2}\right]$

$= 16,769$ lb.

$M_{@\text{Face of wall}} = \frac{7,055(4^2)}{2} - \frac{(7055-6,061)5.13}{2}\left[\frac{4^3}{3(5.13)^2}\right]$

$= 54,373$ ft-lb

$V_n = 16,769(1.7)/0.85 = 33,538$ lb

$M_n = 54,373(1.7)/0.9 = 102,705$ ft-lb.

(1) Moment due to pressure on toe exceeds the max. moment at the base of the wall. Ideally $M_{Toe} + M_{Hool} - M_{wall} \simeq 0$.

IN THIS SPACE
DO NOT WRITE

Panel A- Toe Design Cont'd:

For saturated soil:

$$V_{@d} = 8,811(5.13'-2.67') - \frac{(8,811-7,252)5.13'}{2}\left[\frac{(5.13-2.67)^2}{5.13^2}\right]$$
$$= 20,755^{\#}$$

$$M_{@face\ of\ wall} = \frac{8,811(4^2)}{2} - \frac{(8,811-7,252)5.13}{2}\left[\frac{4^3}{3(5.13^2)}\right]$$
$$= 67,246^{ft-\#}$$

← allowable overstress

$$V_n = 20,755(1.7)/0.85(1\tfrac{1}{3}) = 31,133^{ft-\#}$$
$$M_n = 67,246(1.7)/0.9(1\tfrac{1}{3}) = 95,266^{ft-\#}$$

Thickness req'd:

Select $\rho = 0.007$ w/ $f'_c = 4000$ psi & $f_y = 60,000$ psi

$K_n = 394.06$ psi and $a = 0.124d$

$$d_m = \sqrt{\frac{102,705(12)}{394.06(12)}} = 16.1"$$

$$d_v = 33,538/2\sqrt{4,000}(12) = 22.10"$$

Req'd $t = 22.10" + 3" + \frac{7}{8}" = 25.9"$

Use $t = 36"$ as in foundation analysis.

$d = 36" - 3" - .5" = 32.5"$

Reinforcing req'd: assume $\rho = 0.002$

$$A_s = \frac{102,705^{ft-\#}(12\frac{in}{ft})/\left[32.5" - \frac{1.15}{2}\right]}{60,000} = 0.64$$

$\rho = 0.64/32.5(12) = 0.0016 < \rho_{min} \Rightarrow A_s = 1\frac{1}{3}(.64) = .85\,in^2$

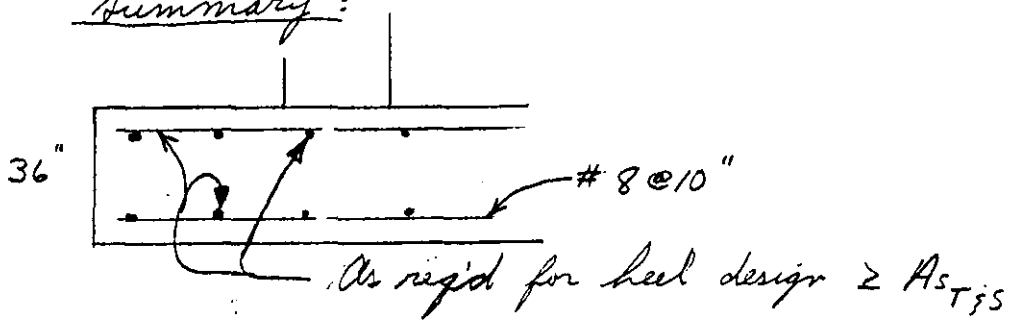
Use # 8 @ 10"

Panel A - Toe Design cont'd:

Temp. & Shrinkage = $0.003(36")(12")/2 = 0.65 in^2$

Use #7 @ 10"

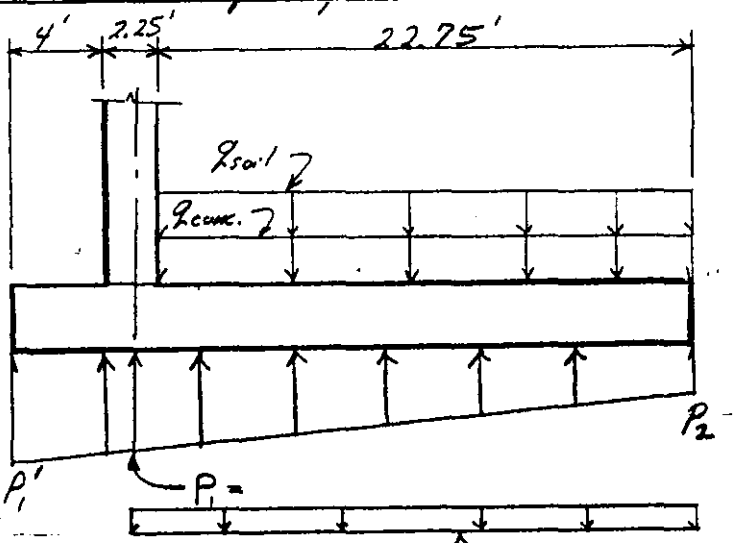
Summary:



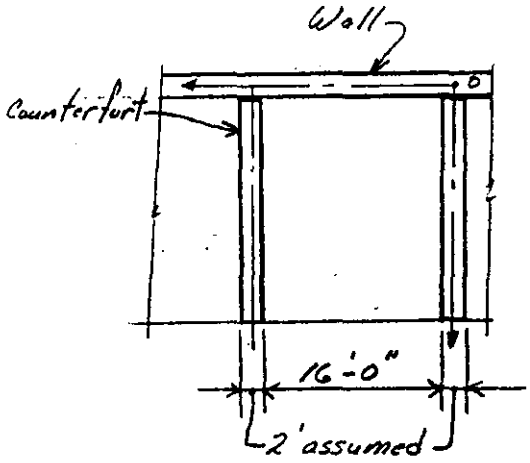
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3. R/C Design of Heel:



SECTION



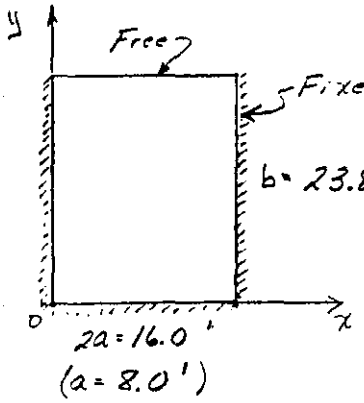
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Panel A - Heel Design Cont'd:

Heel slab will be designed as a plate fixed on three sides:



$a/b = \frac{8.0}{23.88} = 0.34$ use U.S. Bureau of Reclamation tables for $a/b = 3/8$

Design heel for saturated soil condition since maximum pressure beneath footing is greatest. Design for Panel A, Condition 4. Use for Panel C also.

$q_{soil} = 34.33'(125 pcf) = 4,292 psf$

$q_{conc.} = 3'(150 pcf) = 450 psf$

$P_1 = 7,252 psf = \frac{8,811}{29}\left(29' - 4' - \frac{27^k}{2(12)}\right)$

$P_2 = 0 psf$

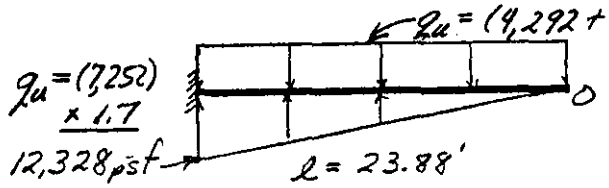
$q_{M_{Toe}} = \frac{W'}{b} = \frac{2/3\, w' b}{b} = \frac{(2/3)\left(\frac{2.4 M_T}{b^2}\right)(b)}{b} = \frac{1.6 M_T}{b^2}$

$M_{Toe} = 7,252(5.13')^2/2 = 95,425^{ft\text{-}lb}$

$q_{M_{Toe}} = 1.6(95,425)/23.88^2 = 268 psf$

Load on plate:

$q_u = (4,292 + 268)(1.7) + (450)(1.4) = 8,382 psf$



P.GN.025.A

DO NOT WRITE IN THIS SPACE

Panel A - Wall Design:

M_{nx} @ face of counterfort, $x/a = 1\frac{1}{8}' = .125$
M_{ny} @ face of base slab, $y/b = 1.5/23.88' = 0.06$

$M_{nx+} = [(0.0315)(8,382)(23.88)^2 - (0.0050)(12,328)(23.88^2)] / .9(1\frac{1}{3})$
$= 96,180$ ft-lb @ $x/a = .125$; $y/b = 1.0$

$M_{nx-} = [(0.0247)(8,382)(23.88^2) - (0.0045)(12,328)(23.88^2)] / .9(1\frac{1}{3})$
$= 72,023$ ft-lb @ $x/a = 1.0$; $y/b = 1.0$

$M_{ny+} = [(0.0061)(8,382) - (0.0016)(12,328)] 23.88^2 / .9(1\frac{1}{3})$
$= 14,901$ ft-lb @ $x/a = .125$; $y/b = 1.0$

$M_{ny+} = [(0.0079)(8,382) - (0.0106)(12,328)] 23.88^2 / .9(1\frac{1}{3}) = -30,561$ ft-lb @ $y/b = .06$

$M_{ny-} = [(0.0043)(8,382) - (0.007)(12,328)] (23.88^2) / .9(1\frac{1}{3})$
$= -23,881$ ft-lb @ $y/b = 0.2$; $x/a = 1.0$

$V_{nx} = [(0.3711)(8,382) - (0.0189)(12,328)] (23.88) / .85(1\frac{1}{3})$
$= 60,632$ lb @ $y/b = 1.0$; ℓ of counterfort.

$V_{ny} = [(0.1666)(8,382) - (0.1488)(12,328)] (23.88) / .85(1\frac{1}{3})$
$= -9,228$ lb @ $x/a = 0.4$, ℓ of wall.

Select thickness:

$d_{max} = \sqrt{\frac{96,180(12)}{394.06(12)}} = 15.6"$

$d_v = 60,632^{lb} / 21\sqrt{4,000}(12) = 39.9"$

Shear at the face of the counterfort is allowed by by ACI code. Since $t > 36"$ if ℓ shear are used, reduce shear to approximate value @ face of counterfort by subtracting 75% of the uniform load x 12".

11.1.2 of the ACI Commentary, Eqn. 11.1.2.c.



$V_{nx\ @\ face} = 60,632^{lb} - [(0.75)(8,382)(\frac{12'}{12}) / 0.85(1\frac{1}{3})]$
$= 55,085$ lb

↳ Assume counterfort is 24" thick.

DO NOT WRITE IN THIS SPACE

Panel A - Heel Design Cont'd:

$d_{v_d} = 55,085 / 2\sqrt{4,000}(12) = 36.29"$

$t = 36.29" + 3" + 7/16" = 39.72$ use $t = 40"$

Since the shear is much less at all locations other than at $x/a = 1.0$ & $y/b = 0$ (edge of heel & counterfort pt); reduce depth 24" from face:

$V_n = 60,632^{lb} - [0.75(8,382)(\frac{36"}{12"}) / 0.85(1\frac{1}{3})] = 43,991^{lb}$ (12"+18" = 30")

$d_v = 43,991 / 2\sqrt{4,000}(12) = 28.9"$ use 36" slab, $d = 32.12"$

For $M_{n_{x+}}$ @ $x/a = .125 \Rightarrow d = 40" - 2" - 9/16" = 37.4"$, assume $f = .002$

$$A_s = \frac{96,180^{ft\text{-}lb}(12\frac{in}{ft}) / [37.4 - \frac{1.32}{2}]}{60,000} = 0.52 in^2$$

$f = 0.52 / 37.4(12) = 0.0012 < f_{min}$

$A_s = 0.52(1\frac{1}{3}) = 0.70 in^2$ use #7@10" ($A_s = 0.72 in^2$)

For $M_{n_{x-}}$, $M_{n_{y+}}$ & $M_{n_{y-}}$:

$d = 36" - 3" - 7/16 = 32.6"$, assume $f = 0.002$

$$A_s = \frac{72,023(12) / [32.6 - \frac{1.15}{2}]}{60,000} = 0.45 in^2 < f_{min}$$

$A_s = 0.45(1\frac{1}{3}) = 0.60 in^2 < A_{s_{T\&S}}$.

Use # 7@10"

Check $M_{n_{x+}}$ @ 36" from ℄ of counterfort $@ x/b = 1.0$

$x/a = 3'/8.62' = 0.35$

$M_{n_{x+}} = [(0.0067)5010 - (0.0016)7252](23.82^2)(1.7) / 0.9(1\frac{1}{3})$

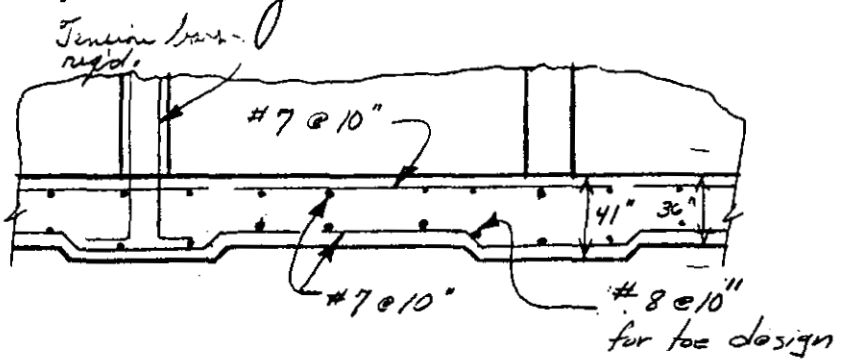
$= 17,743.7^{ft\text{-}lb} < M_{n_{x-}}$ #7@10" okay.

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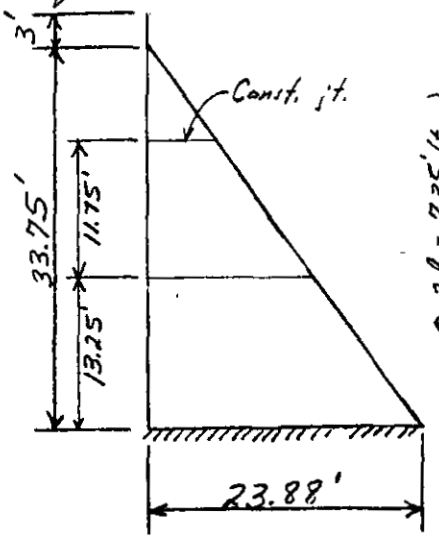
Panel A - Wall Design Cont'd:

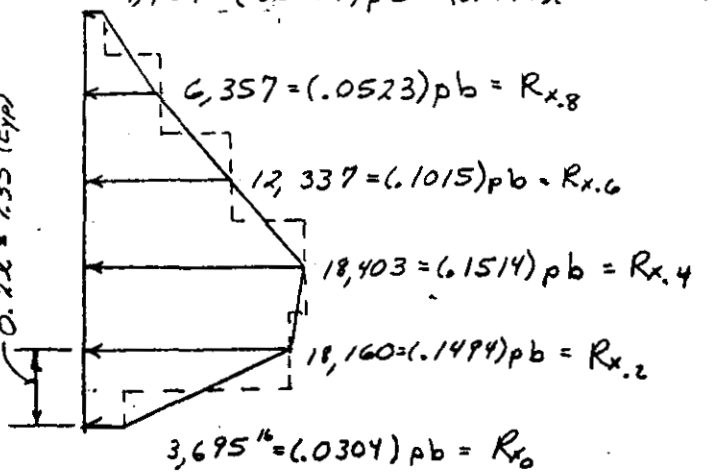
Summary:



4. R/C Design of Counterfort:

Counterforts will be designed as cantilevered beams from base:

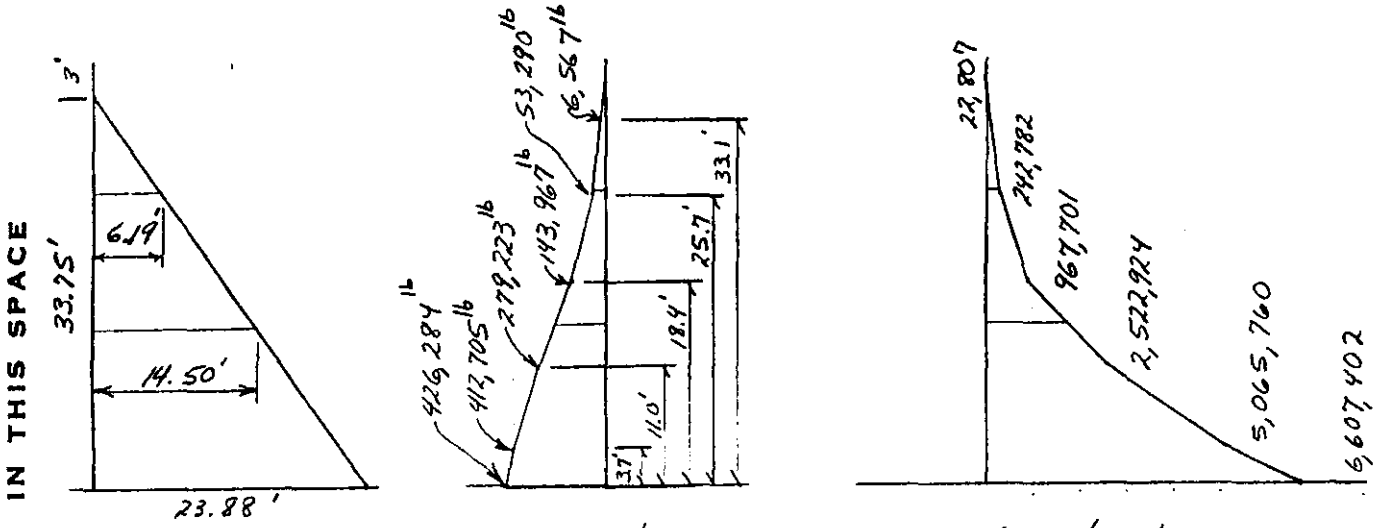




Reactions from wall design, $\bar{R}_x(0.2\ell)$ = load on wall.

DO NOT WRITE

Panel A - Counterfort Design:



Shear diagram Moment diagram

DO NOT WRITE IN THIS SPACE

Requirements at the base:

$M_n = 6,000,000\ (1.7)/0.9(1\frac{1}{3}) = 8,500,000^{ft\text{-}lb}$ @ face of slab.

$V_n = 421,000\ (1.7)/0.85(1\frac{1}{3}) = 631,500^{lb}$ @ face of slab

Select $b = 24"$, assume $\rho = 0.001$, $K_n = 59.5$

$$d_{m_n} = \sqrt{\frac{8,500,000\ (12)}{59.5\ \ (24)}} = 267.3"$$

$$d_{V_n} = 631,500 / 2\sqrt{4000}\ (24) = 208"$$

$$d_{ACTUAL} = 23.88'(12") - \approx 12" = 275" > 267.7 \quad \text{ok}$$

$$A_{s_{m_n}} = \frac{8,500,000(12)\ /\left[275 - \frac{4.85}{2}\right]}{60,000} = 6.24\ in^2$$

$$\rho = 6.24/275(24) = 0.0009 < \rho_{min} \Rightarrow A_{s_{min}} = 1\frac{1}{3}(6.24\ in^2) = 8.32\ in^2$$

Use 1 row - 4-#9 + 1 row 5-#9, $A_s = 9.0\ in^2$.

DO NOT WRITE IN THIS SPACE

Panel A - Counterfort Design Cont'd:

Shear / Tension bars rigid at counterfort / base slab joint:

For shear: $A_{v_f} = 639{,}426^{\#} / (1.0)(60{,}000)(23.88') = 0.45 in^2/ft$

For direct tension: $A_{s_T} = 60{,}632^{\#} / 60{,}000 psi = 1.01 in^2/ft.$

Max. R_x from heel design, load goes from 61,627 at edge of heel to a neg. value at ℄ wall.

$A_{v_f} + A_{s_T} = 1.46 in^2/ft$

Use #6 ⊓ @12" w/ #7@12"
$A_s = 2(0.44) + 0.60 = 1.48 in^2$

Tension bars rigid at counterfort / wall joint:

$A_{s_T} = 18{,}403^{\#} / 60{,}000 psi = 0.31 in^2/ft.$

Check temp. & shrinkage req. on a 24"x12" section:

$A_{s_{T,S}} = 0.003(24 \times 12)/2 = 0.43 in^2 EF/ft.$

Use #4 @ 12", $A_s = 0.20 \times 2 = 0.40 in^2/ft.$

Check requirements at construction joint @ El. 2457.75:

$M_n = 1{,}900{,}000^{ft\text{-}\#}(1.7)/0.9(1\tfrac{1}{3}) = 2{,}550{,}000^{ft\text{-}\#}$

$V_n = 250{,}000^{\#}(1.7)/0.85(1\tfrac{1}{3}) = 375{,}000^{\#}$

$d_{V_n} = 3750{,}000/2\sqrt{4000}(24) = 123.5"$

$d_{actual} = 174" - 6" = 168"$

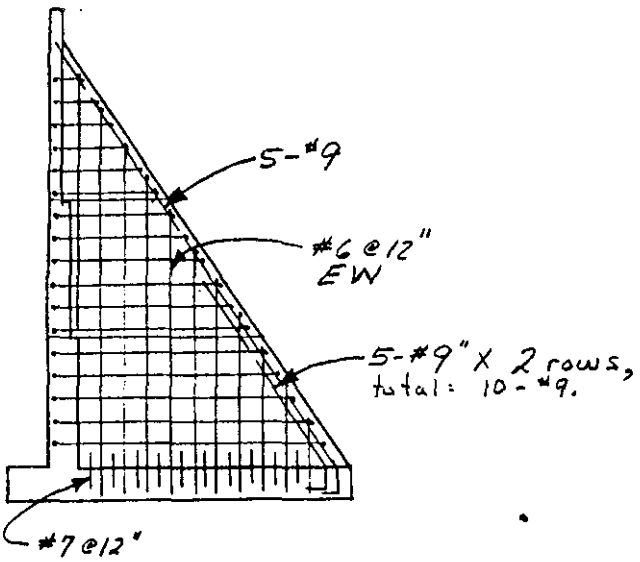
$A_{s_{min}} = 3.24 in^2 \Rightarrow$ Use 1 row of 4-#9, $A_s = 4.00 in^2$

$A_{v_f} = 375{,}000/(1.0)(60{,}000)(14.5') = 0.43 in^2/ft$, Use #6 @ 12" U or @ ℄

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Panel A - Counterfort Design:

Summary:



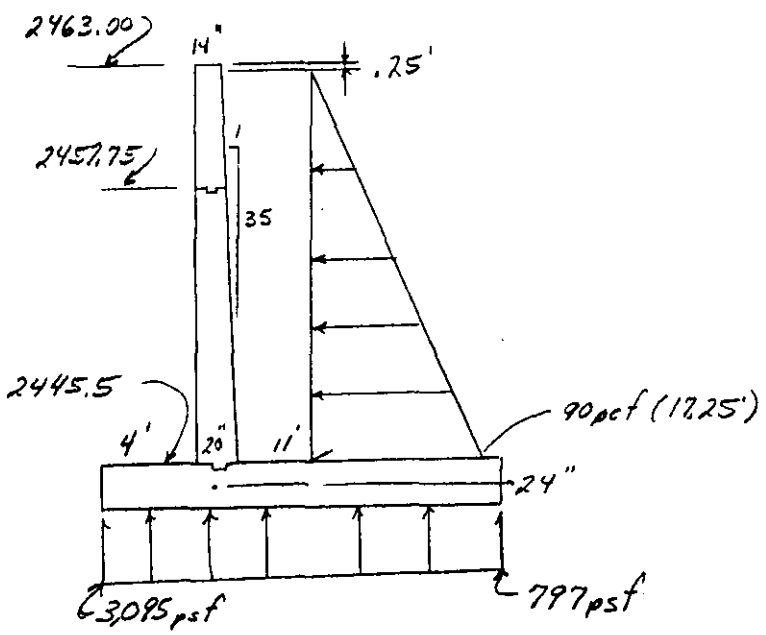
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B. R/C Design for Panel B:

Panel B is a cantilever retaining. Wall will be designed for the three cases checked to determine footing dimensions.

1. For wall height of 17.5':



Wall Design:

$$M_{u\ @\ face\ of\ slab} = \frac{90(18.5^2)\frac{1}{2}(17.25)^3}{3(18.5^2)}(1.7)/.9(1\tfrac{1}{3}) = 109,075^{ft\text{-}lb}$$

$$V_{u\ d} = \frac{90(18.5^2)\frac{1}{2}(16.0)^2}{18.5^2}(1.7)/.85(1\tfrac{1}{3}) = 17,280^{lb}$$

For $\rho = 0.007$

$$d_{m_u} = \sqrt{\frac{109,075(12)}{394.06(12)}} = 16.6"$$

DO NOT WRITE IN THIS SPACE

B. Panel B - Wall Design Cont'd:

$d_{V_n} = 17{,}280 / 2\sqrt{4000}(12) = 11.4"$

$t_{req'd} = 16.6" + 2" + \frac{9}{16} = 19.1"$ use $20"$, $d = 17.5"$

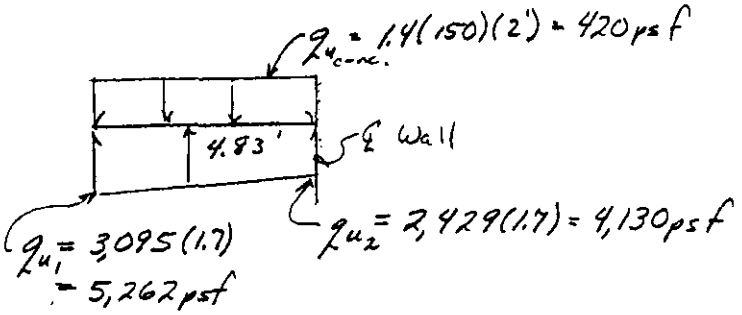
$A_{s_{M_n}} = \frac{109{,}075(12) / (17.5" - \frac{2.17}{2})}{60{,}000} = 1.33 in^2$

$\rho = 139/17.5(12) = 0.0066 > \rho_{min.}$

Use "9 @ 9" $A_s = 1.33 in^2$ ←

$A_{s_{T\&S}} = 0.003(20")(12")\frac{1}{2} = 0.36 in^2$ use #5 @ 12" $A_s = 0.31 in$ ←

Toe Design:



$M_n = \left[\frac{5{,}262(4^2)}{2} - \frac{(5262-4{,}130)4.83(\frac{1}{2})}{3(4.83)^2}(4^3) - \frac{420(4^3)}{2}\right] / .9(1\frac{1}{3})$

$= 30{,}197$ ft-lb.

$V_{n_{face}} = \left[5262(4) - \frac{(5{,}262-4{,}130)4.83(\frac{1}{2})(4^2)}{4.83^2} - 420(4)\right] / .85(1\frac{1}{3}) = 15{,}435^{lb}$

Assume $\rho = 0.002$; $K_n = 115.8$

$d_{M_n} = \sqrt{\frac{30{,}197(12)}{115.8(12)}} = 16.1"$

$d_{V_n} = 15{,}435 / 2\sqrt{4{,}000}(12) = 10.2"$

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B. Panel B. - Toe Design Control:

for $t = 24"$, $d = 20" - 3" - \frac{1}{2}" = 16.5"$

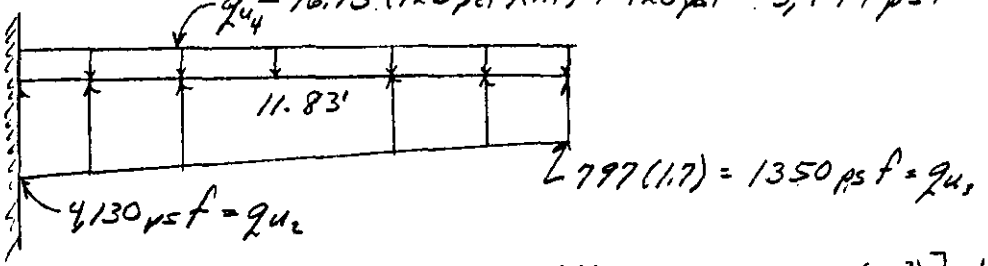
$$A_{s_{min}} = \frac{30,197(12)/(16.5 - \frac{0.58}{2})}{60,000} = 0.37 \text{ in}^2$$

$\rho = 0.37/16.5(12) = 0.0019 < \rho_{min} \Rightarrow A_s = 1\frac{1}{3}(0.37) = 0.49 \text{ in}^2$

$A_{s_{TSS}} = 0.003(24')(12")\frac{1}{2} = 0.43 \text{ in}^2$

Use #6 @ 12"

For Heel:



$$M_n = \left[\frac{1,350(11^2)}{2} + \frac{2,780(11.83)\frac{1}{2}}{3(11.83)^2}(11^3) - \frac{3,979(11^2)}{2}\right]/.9(1\frac{1}{3})$$

$= -89,104 \text{ ft-lb}$

$$V_u = \left[1350(11) + \frac{2,780(11.83)\frac{1}{2}}{11.83^2}(11^2) - 3,979(11)\right]/.85(1\frac{1}{3})$$

$= -12,972 \text{ lb.}$

Assume $\rho = 0.007$

$d_{M_n} = 15.04"$

$d_{V_n} = 8.5"$

$d_{actual} = 16.5"$

B. Panel B - Heel Design Contid:

$$A_{s_{m_n}} = \frac{89{,}104(12)/(16.5 - \frac{2.04}{2})}{60{,}000} = 1.15 \text{ in}^2$$

$\rho = 0.006 > \rho_{min}$

Use #9 @ 10" ←

Check shear @ base:

$V_c = 2\sqrt{f'_c}\ bd = 2\sqrt{4000}(12")(\frac{20"}{3}) = 10{,}120^{\#}$

$V_n = 90(17.25')^2 \frac{1}{2}(1.7)/.85(1\frac{1}{3}) = 20{,}085^{\#}$

$A_{v_f} = {}^{20{,}085^{\#}}/_{1.0(60{,}000)} = 0.33 \text{ in}^2/\text{ft}.$

Use #5 @ 12", $A_s = 0.31$ in² say ok since design is for max. ht.

Check shear @ const ft:

$V_n = 20{,}085\left(\frac{5.25^2}{17.25^2}\right) = 1{,}860^{\#}$

$t = 14.9"$

$V_c = 2\sqrt{4{,}000}(12)(\frac{14.9}{3}) = 7{,}539^{\#} > 1{,}860$ ok

IN THIS SPACE

DO NOT WRITE

IN THIS SPACE

DO NOT WRITE

B. Panel B. - Design Cont'd:

2. For wall heights of 12.94' & 8.04'

For methods & equations see design for wall height of 17.5':

Wall design:

Height	$M_{n_{face}}$	V_{nod}	t/d	Assumed ρ	d_{min}/d_{v_n}
12.94'+1.0'	43,425 ft-lb	8,714 lb	18.44"/15.94"	0.0033	14.96"/5.74"
8.04'+1.0'	10,045 ft-lb	3,169 lb	16.76"/14.26"	0.0010	13.0"/2.09"

	$A_{s_{min}}$	ρ	$A_{s_{req'd}}$	Reinf.	Shear @ base/ $A_{v_{req'd}}$ if req'd.
12.94'+1.0'	0.56 in²	0.0029	0.63 in²	#6@8"	11,302.44/use
8.04'+1.0'	0.14 in²	0.0008	0.19 in²	#5@12" = $A_{s_{TIS}}$	#5@12" min. 4,363/Vc = 8,480.

Toe design:

Height	q_{u_1}	q_{u_2}	$M_{n_{face}}$	$V_{n_{face}}$	t/d
12.94'	3,260 psf	2,793 psf	18,074 ft-lb	10,587 lb	24"/16.5"
8.04'	—	—	—	—	—
Assumed	d_{min}/d_{v_n}	$A_{s_{min}}$	ρ	$A_{s_{req'd}}$	Reinf.
0.0015	14.5"/7.0"	0.23 in²	0.0012	0.31 in²	#6@12" = $A_{s_{TIS}}$
—	—	—	—	—	#6@12" = $A_{s_{TIS}}$

P-GN-025-A

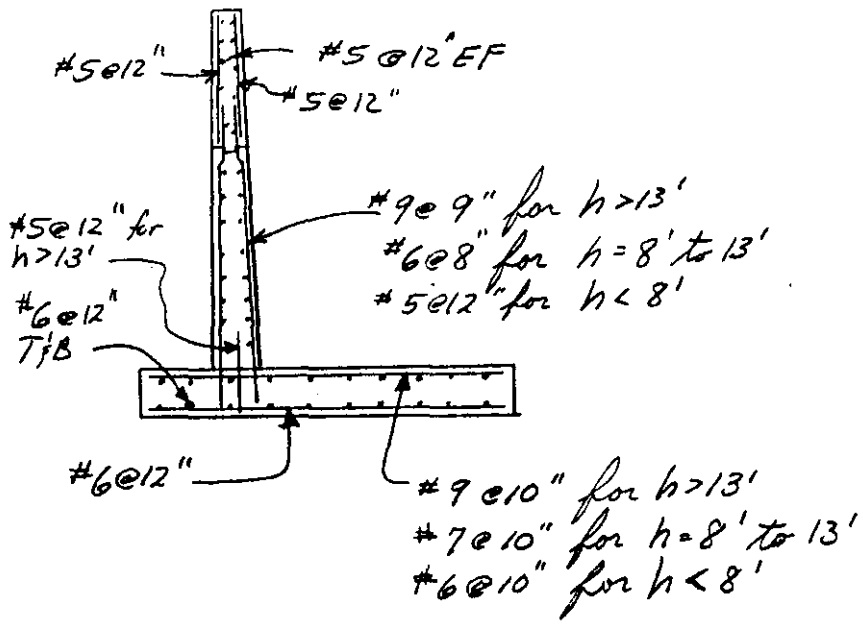
B. Panel B - Design Cont'd:

Heel Design:

Height	q_{u_2}	q_{u_3}/q_{u_4}	$M_{n_{FACE}}$	$V_{n_{FACE}}$	t/d
12.94'	2,793 psf	1,647 psf / 3,117 psf	$-56,186^{A-16}$	$-9,096^{16}$	24"/16.5"
8.04'	1,615 psf	1615 psf / 2,075	$-27,853^{A-16}$	$-5,060^{16}$	24"/16.5"
Assumed	d_{m_n}/d_{v_n}	$A_{s_{mn}}$	ρ	$A_{s_{req'd}}$	Reinf.
0.004	15.6"/6.0"	0.71 in²	0.0036	0.71 in²	#7@10", $A_s = 0.72$ in²
0.002	15.4"/3.4"	0.35 in²	0.0018	0.47 in²	#6@10" $A_s = 0.53$ in²

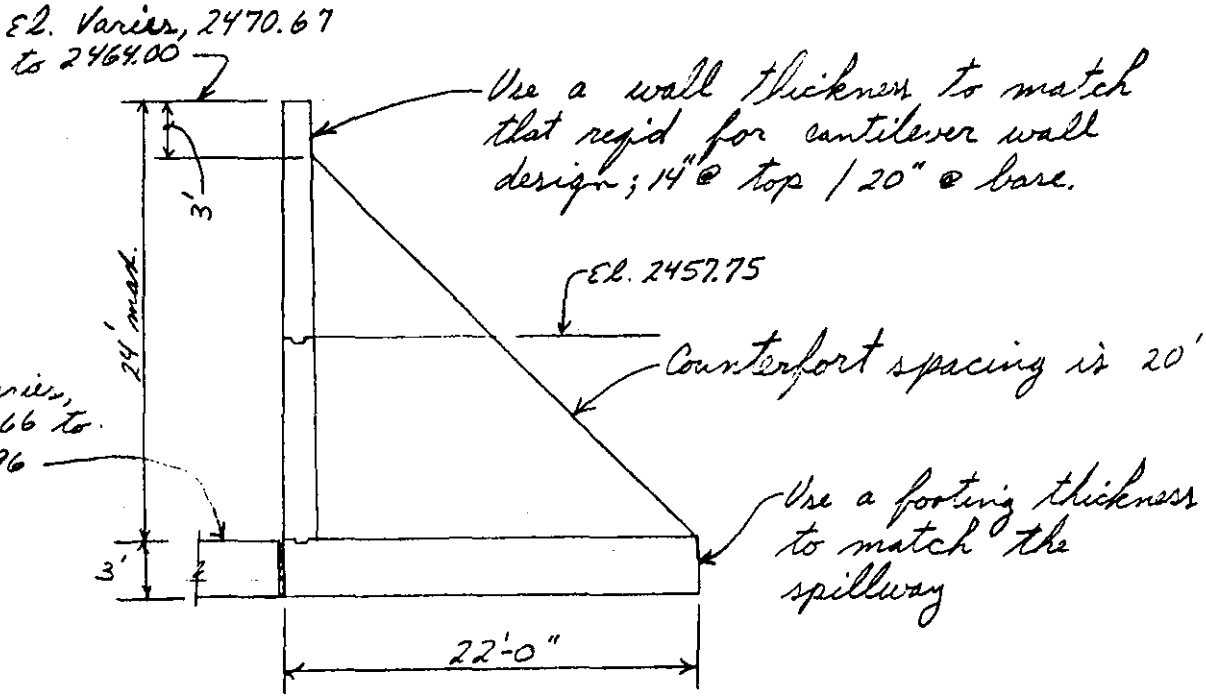
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Summary:

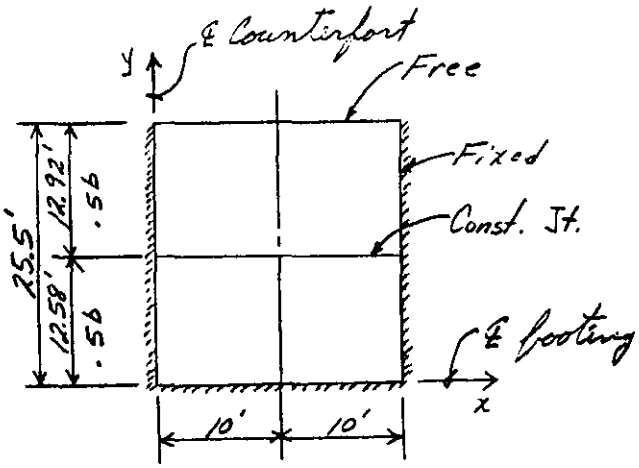


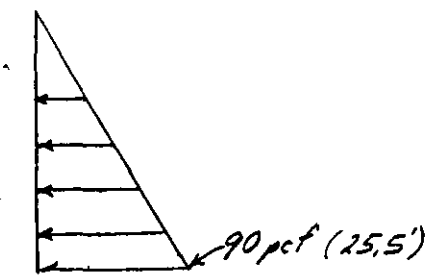
DO NOT WRITE

C. R/C Design for Panel D:



1. R/C Design of Wall:





Saturated soil

$a/b = 10'/25.5' = 0.39$

use tables for 3/8 = .375

DO NOT WRITE IN THIS SPACE

P-GN-025-A

DO NOT WRITE IN THIS SPACE

Panel D - Wall Design Cont'd:

a. From base to construction jt.:

For M_x at face of counterfort $x/a = 1'/10' = 0.10$

For M_y at face of base slab $y/b = 1.5'/25.5' = 0.06$

$M_{n_{x+}} = (0.0144)\underbrace{(25.5)^3(90)(1.7)/0.9(1\frac{1}{3})}_{2,114,125} = 30,338^{ft\text{-}lb}$ @ $x/a = .1$; $y/b = .4$

$M_{n_{x-}} = (0.0099)(2,114,125) = 20,930^{ft\text{-}lb}$ @ $x/a = 1.0$; $y/b = .4$

$M_{n_{y+}} = (0.0125)(2,114,125) = 26,363^{ft\text{-}lb}$ @ $x/b = 1.0$; $y/b = 0.06$

$M_{n_{y-}} = (0.0061)(2,114,125) = 12,896^{ft\text{-}lb}$ @ $x/a = 1.0$; $y/b = 0.4$

$R_{n_x} = V_{n_x} = (0.2107)\underbrace{(90)(25.5^2)(1.7)}_{87,784}/.85(1\frac{1}{3}) = 18,496^{lb}$ @ $x/a = 0$; $y/b = .4$

$R_{n_y} = V_{n_y} = (.2645)(87,784) = 23,219^{lb}$ @ $x/a = 1.0$; $y/b = 0$

For conc. design select:

$A_{s_{T\&S}} \geq 0.003 A_g \geq A_{s_{min.}}$

$\rho_{max} = 0.007$ and $f_c' = 4,000_{psi}$, $f_y = 60,000_{psi}$

$\uparrow K_n = 394.06_{psi}$; $a = 0.124d$.

$d_m = \sqrt{\frac{30,338(12)}{394.06(12)}} = 8.8"$

$d_V = 23,219/2\sqrt{4,000}(12) = 15.3"$

$t_{req'd} = 15.3" + 2" + .5" = 17.8"$ @ base

$t_{base} = 20"$ used to match cantilever wall,

$d_{actual\ base} = 20" - 2" - .5" = 17.5"$

IN THIS SPACE

DO NOT WRITE

Panel D - Wall Design Cont'd:

For temp. & shrinkage reinf.:

$A_{s_{T\&S}} \geq 0.003(20")(12") \tfrac{1}{2} = 0.36\ in^2$ use #6 @ 12" (A_s=0.44)

For $M_{n_{x+}}$:

Assume $\rho = 0.003$,

t @ $y/b = .4 = 14 + \frac{6}{24}(15.3') = 17.8$, $d = 17.8" - 2" - \frac{7}{8}" - \frac{9}{16}" = 14.7"$

$a = 0.778$

$A_s = \dfrac{30,338(12)/\left[14.7 - \frac{.778}{2}\right]}{60,000} = 0.42\ in^2$

$\rho = .42/14.7(12) = 0.0024 < \rho_{min}$, use 1⅓ freq's.

$A_{s_{min}} = 1\tfrac{1}{3}(0.35) = 0.57$, $\rho = 0.0033$

Use #6 @ 9" (A_s=0.59 in^2); Check d_m: $\rho = 0.0033 \Rightarrow K_n = 190.87$.

$d_m \geq \sqrt{\frac{30,338}{190.87}} = 12.6 < 14.5$ ok.

For $M_{n_{x-}}$, $M_{n_{y+}}$ & $M_{n_{y-}}$:

Assume $\rho = .44/17.6(12) = 0.0021 \Rightarrow a = 0.647$

$A_s = \dfrac{26,363(12)/\left[17.6 - \frac{.647}{2}\right]}{} = 0.31\ in^2$

$A_{s_{min}} = 1\tfrac{1}{3}(0.31) = 0.41\ in^2$ $\rho = 0.0020$

Use #6 @ 12" as for $A_{s_{T\&S}}$ ←

b. From const. jt. to top:

$y/b = .5$ to $y/b = 1.0$

$M_{n_{x+}} = (0.0135)(2,114,125) = 28,435^{ft\text{-}lb}$ @ $x/a = .1$ & $y/b = .5$

$M_{n_{x-}} = (0.0094)(2,114,125) = 19,767^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = .5$

$M_{n_{y+}} = (0.0025)(2,114,125) = 5,232^{ft\text{-}lb}$ @ $x/a = .1$ & $y/b = .5$

$M_{n_{y-}} (0.0047)(2,114,125) = 9,831^{ft\text{-}lb}$ @ $x/a = 1.0$ & $y/b = .5$

$R_{n_x} = V_{n_x} = (0.0192)(25.5^2)(90)1.7/.85(1\tfrac{1}{3}) = 1,685^{lb}$ @ $x/a = 0$, $y/b = .5$

DO NOT WRITE IN THIS SPACE

Panel D-Wall Design Cont'd:

$t @ 1/16 = .5 = 17"$, $d = 14.5"$

$A_{s_{T\&S}} = 0.003(17)(12)\,1/2 = 0.31 in^2$ use #5@12"

for M_{nx+}:

Assume $\rho = .0023$, $a = 0.589"$

$$A_s = \frac{28,435(12)/\left[14.5 - \frac{.589}{2}\right]}{60,000} = 0.40 in^2$$

$\rho = 0.40/14.5(12) = 0.0023 < \rho_{min}$

$A_{s_{min}} = 0.40(1\,1/3) = 0.53 in^2$, Use #6@10"

Check d_m: $\rho = 0.003 \Rightarrow K_n = 177.85 \Rightarrow d_m \geq \sqrt{\frac{28,435}{177.85}} = 12.6"$

for M_{nx-}:

Assume $\rho = 0.31/14.5(12) = 0.0018$, $a = 0.456$

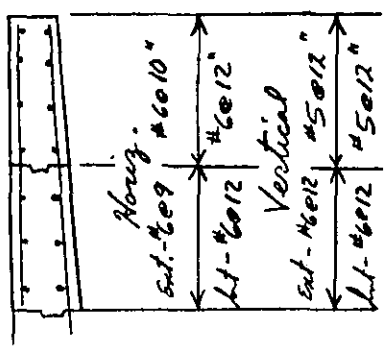
$$A_s \geq \frac{19,767(12)/\left[14.5 - \frac{.456}{2}\right]}{60,000} = 0.27 in^2 < \rho_{min}$$

$A_{s_{min}} = 1\,1/3(.27) = 0.37 in^2$, Use #6@12" ($A_s = 0.44 in^2$)

for M_{ny+} & M_{ny-}:

$A_{s_{req'd}} < A_{s_{T\&S}} \Rightarrow$ Use #5@12"

Summary:



P-GN-025-A

DO NOT WRITE IN THIS SPACE

Panel D - Wall Design Cont'd:

c. Check shear at the base:

$V_{n_y} = 23,219^{\#}$

$V_c = 2\sqrt{4,000}\,(12)\left(\frac{20"}{3}\right) = 10,119^{\#} < 23,219^{\#}$

∴ Must add reinf. for shear

$A_{v_f} = 23,219 / (1.0)(60,000) = 0.38 in^2/ft.$

Use # 5 @ 9" ($A_s = 0.41 in^2$)

d. Check shear at the const. jt.:

As for Panel A, shear (V_n) will be taken as 40% of the shear in a cantilever wall. For reasoning see page 9 of these calcs.

$V_n = .40\,\frac{(90)(25.5^2)}{2}\left(\frac{12.92^2}{25.5^2}\right) = 3,005^{\#}$

$t = 14" + \frac{6"}{24'}(12.92') = 17.2"$

$V_c = 2\sqrt{4,000}\,(12)\left(\frac{17.2}{3}\right) = 8,703^{\#} > 3,005^{\#}$

∴ Shear key is okay w/o reinf.

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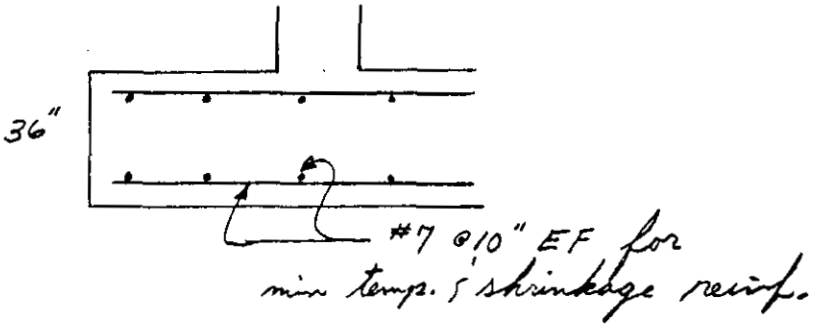
C. R/C Design for Panel D Cont'd:

2. R/C Design of Toe:

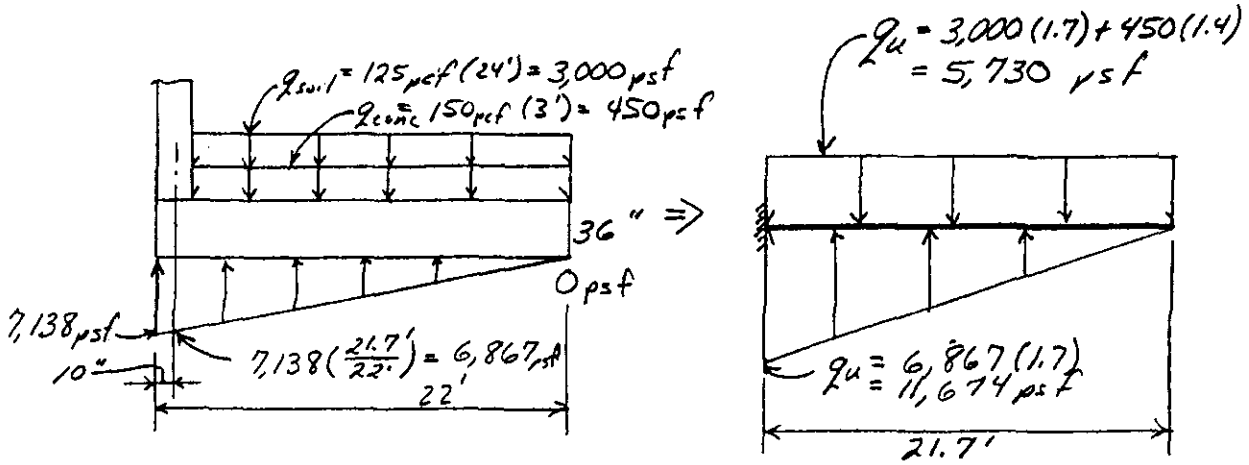
Panel D only has a toe for part of its length.

The toe pressure for Panel D is $\frac{3,298}{8,811} \times 100 = 37\%$ of that for Panel A. The toe reinf. reqid for Panel A was 0.68 in² (1⅓), min temp & shrinkage reinf. was 0.65 in².

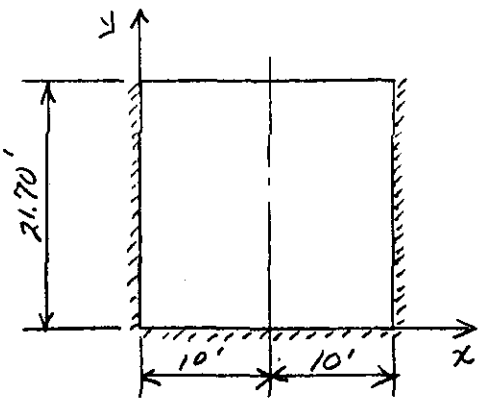
Reinf. toe in Panel D with min. temp & shrinkage reinf. since Panel A & D have the same base slab Thickness.



C. Panel D - Heel Design:



Design heel slab as for Panel A using a plate fixed on three sides:



$a/b = 10/21.7 = 0.46$ use tables for $a/b = 1/2$.

For M_x at face of counterfort, $x/a = 1'/10' = 0.10$
For M_y at face of the base slab, $y/b = .83/21.7 = .04$

$$M_{nx+} = [(0.0618)(5{,}730) - (0.0120)(11{,}674)](21.7^2)/.9(1')$$
$$= 83{,}986^{\text{ ft-lb}} \quad @ \; x/a = .1 \; ; \; y/b = 1.0$$

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P-GN-025-A

DO NOT WRITE IN THIS SPACE

C. Panel D - Heel Design Cont'd:

$M_{n_{x-}} = [(0.0432)(5730) - (0.0097)(11,674)](21.7^2)/.9(1\frac{1}{3})$
$= 52,700$ ft-lb @ $x/a = 1.0$; $y/b = 1.0$

$M_{n_{y+}} = [(0.0426)(5,730) - (0.0253)(11,674)](21.7^2)/.9(1\frac{1}{3})$
$= -20,157$ ft-lb (↑soil pressure controls) @ $x/a = 0$; $y/b = 1.0$

$M_{n_{y+}} = [(0.0115)(5730) - (0.0032)(11,674)](21.7^2)/.9(1\frac{1}{3})$
$= 11,315$ ft-lb. @ $x/a = .1$; $y/b = 1.0$

$M_{n_{y-}} = [(0.0135)(5730) - (0.0104)(11,674)](21.7^2)/.9(1\frac{1}{3})$
$= -17,287$ ft-lb (↑soil pressure controls) @ $x/a = 1.0$; $y/b = .4$

$M_{n_{y-}} = [(0.0086)(5730) - (0.0022)(11,674)](21.7^2)/.9(1\frac{1}{3})$
$= 14,390$ ft-lb @ $x/a = 1.0$; $y/b = 1.0$

$R_{n_x} = V_{n_x} = [(0.5101)(5,730) - (0.0326)(11,674)](21.7)/.85(1\frac{1}{3})$
$= 48,678$ lb @ $x/a = 0$; $y/b = 1.0$

$R_{n_x} = V_{n_x} = [(0.4148)(5,730) - (0.2421)(11,674)](21.7)/.85(1\frac{1}{3})$
$= -8,606$ lb @ $x/a = 0$; $y/b = .4$

$R_{n_y} = V_{n_y} = [(0.4572)(5,730) - (0.3236)(11,674)](21.7)/.85(1\frac{1}{3})$
$= -22,171$ lb @ $x/a = 1.0$; $y/b = 0$.

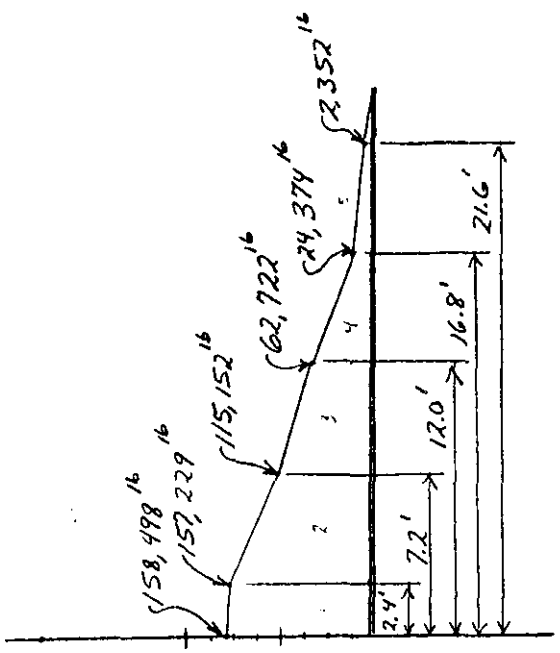
Check thickness of 36":

$d_{m_{max}} = \sqrt{\frac{52,700}{394.06}} = 11.6"$ okay

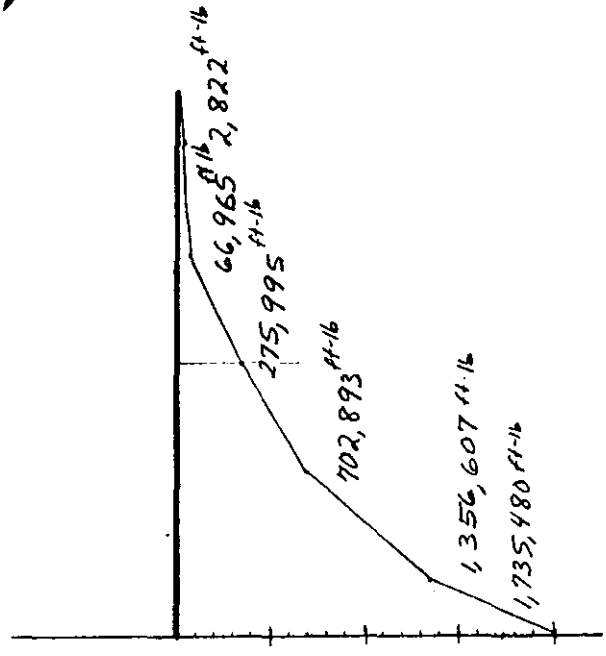
$d_{V_{max}} = 48,678/2\sqrt{4,000}(12) = 32.1"$

$d_{ACTUAL} = 36" - 3" - .5" = 32.5" > 32.1"$ okay.

c. Panel D - Counterfort Design Cont'd:



Shear diagram



Moment diagram

IN THIS SPACE

DO NOT WRITE

Requirements at the base:

$M_n = 1,735,480^{ft\text{-}\#}(1.7)/.9(1\frac{1}{3}) = 2,460,000^{ft\text{-}\#}$

$V_n = 158,498^{ft\text{-}\#}(1.7)/.85(1\frac{1}{3}) = 237,750^{\#}$

$d_{V_n} = 237,750/2\sqrt{4,000}\,(24) = 78.3"$

Assume $\rho = 0.0010$, $K_n = 58.9$

$d_{M_n} = \sqrt{\frac{2460,000\,(12)}{58.9\,(24")}} = 144.5"$

$d_{V_n} = 237,750/2\sqrt{4,000}\,(24) = 78.3"$

$d_{actual} = 21.7' - 6" = 254.4"$

IN THIS SPACE

DO NOT WRITE

c. Panel D - Counterfort Design Cont'd:

Based on the $d_{req'd}$ << d_{actual} try reducing the counterfort width from 24" to 18".

$d_{m_n} = 166.8"$, $d_{v_n} = 104.4"$ ∴ $d_{actual} = 254.4"$

$a = 4.49 in^2$

for $f = 0.001$:

$$A_{s_{m_n}} = \frac{2,460,000(12)/(254.4 - \frac{4.49}{2})}{60,000} = 1.95 in^2$$

$\rho = 1.95/(254.4)(18) = 0.0004 > A_s = 1\frac{1}{3}(1.96) = 2.60 in^2$

Select 5 - #7 bars ($A_s = 3.01 in^2$) ←

$t_{req'd} = 2" + 2" + 4(\frac{3}{4}") + 5(\frac{7}{8}") + \sim 4(2") = 18.9"$

(t_{ties}, t_{spaces})

∴ Leave width @ 24" same as panel A. ←

For shear/tension bars req'd at the counterfort/base slab joint:

Shear: $A_{v_f} = 157,700/(1.0)(60,000)(21.7') = 0.12 in^2$

Tension: $A_{s_T} = 48,678/60,000 = 0.81 in^2$

↑ Max Rx from heel design, load goes from 48,678 at heel to neg.

$A_{v_f} + A_{s_T} = 0.93 in^2/ft.$

Use #6 @ 12" ⊓ ($A_s = 0.88 in^2$) say ok since A_{s_T} is not req'd throughout entire length.

Panel D: Counterfort Design Cont'd:

Tension bars regid at counterfort / wall jt.

$A_{sT} = 10,923^{lb} / 60,000 = 0.18 in^2$

Use #4 @ 12" ▭ , $A_s = 2 \times 20 in^2 = 0.40 in^2$ as a min ←

DO NOT WRITE IN THIS SPACE

			M_x						M_y					
	y/b	R_x \ x/a	0	0.2	0.4	0.6	0.8	1.0	0	0.2	0.4	0.6	0.8	1.0
$a/b = 1/8$	1.0	+ .0082	+ .0004	+ .0002	+ .0000	− .0001	− .0002	− .0002	0	0	0	0	0	0
	0.8	+ .0251	+ .0011	+ .0005	+ .0000	− .0003	− .0005	− .0005	+ .0002	+ .0001	+ .0000	− .0000	− .0001	− .0001
	0.6	+ .0496	+ .0021	+ .0009	+ .0001	− .0006	− .0009	− .0011	+ .0004	+ .0002	+ .0000	− .0001	− .0002	− .0002
	0.4	+ .0751	+ .0031	+ .0014	+ .0001	− .0008	− .0014	− .0016	+ .0006	+ .0003	+ .0000	− .0002	− .0003	− .0003
	0.2	+ .0942	+ .0038	+ .0016	+ .0000	− .0010	− .0017	− .0019	+ .0008	+ .0003	− .0000	− .0003	− .0005	− .0005
	0	+ .0460	0	+ .0001	+ .0003	+ .0005	+ .0006	+ .0006	0	+ .0005	+ .0014	+ .0023	+ .0028	+ .0030
		R_x \ R_y	+ .0460	+ .0136	+ .0543	+ .0839	+ .1004	+ .1056						
$a/b = 1/4$	1.0	+ .0147	+ .0022	+ .0012	+ .0002	− .0006	− .0012	− .0014	0	0	0	0	0	0
	0.8	+ .0523	+ .0046	+ .0022	+ .0002	− .0012	− .0021	− .0024	+ .0009	+ .0005	+ .0002	− .0000	− .0002	− .0002
	0.6	+ .1015	+ .0083	+ .0037	+ .0002	− .0023	− .0038	− .0042	+ .0017	+ .0007	− .0000	− .0005	− .0009	− .0010
	0.4	+ .1514	+ .0114	+ .0049	+ .0001	− .0032	− .0051	− .0057	+ .0023	+ .0008	− .0004	− .0013	− .0019	− .0021
	0.2	+ .1494	+ .0102	+ .0037	− .0004	− .0030	− .0043	− .0047	+ .0020	+ .0004	− .0011	− .0022	− .0029	− .0031
	0	+ .0304	0	+ .0004	+ .0010	+ .0016	+ .0020	+ .0021	0	+ .0020	+ .0052	+ .0081	+ .0100	+ .0107
		R_x \ R_y	+ .0304	+ .0309	+ .1052	+ .1563	+ .1856	+ .1950						
$a/b = 3/8$	1.0	+ .0189	+ .0066	+ .0040	+ .0008	− .0020	− .0039	− .0045	0	0	0	0	0	0
	0.8	+ .0885	+ .0117	+ .0056	+ .0006	− .0031	− .0054	− .0062	+ .0023	+ .0012	+ .0004	− .0002	− .0005	− .0007
	0.6	+ .1541	+ .0176	+ .0075	+ .0001	− .0049	− .0079	− .0088	+ .0035	+ .0013	− .0006	− .0020	− .0029	− .0032
	0.4	+ .2107	+ .0208	+ .0079	− .0007	− .0061	− .0090	− .0099	+ .0042	+ .0009	− .0019	− .0042	− .0056	− .0061
	0.2	+ .1691	+ .0145	+ .0045	− .0012	− .0042	− .0057	− .0061	+ .0029	+ .0001	− .0022	− .0039	− .0048	− .0051
	0	+ .0102	0	+ .0008	+ .0020	+ .0030	+ .0038	+ .0040	0	+ .0039	+ .0099	+ .0152	+ .0188	+ .0200
		R_x \ R_y	+ .0102	+ .0474	+ .1488	+ .2154	+ .2526	+ .2645						
$a/b = 1/2$	1.0	+ .0326	+ .0151	+ .0088	+ .0015	− .0046	− .0084	− .0097	0	0	0	0	0	0
	0.8	+ .1315	+ .0216	+ .0099	+ .0007	− .0059	− .0099	− .0112	+ .0043	+ .0020	+ .0002	− .0011	− .0019	− .0022
	0.6	+ .1972	+ .0273	+ .0108	− .0005	− .0079	− .0119	− .0132	+ .0055	+ .0015	− .0020	− .0047	− .0064	− .0070
	0.4	+ .2421	+ .0277	+ .0092	− .0019	− .0082	− .0115	− .0125	+ .0055	+ .0004	− .0042	− .0076	− .0097	− .0104
	0.2	+ .1607	+ .0160	+ .0041	− .0017	− .0044	− .0055	− .0058	+ .0032	− .0002	− .0026	− .0039	− .0044	− .0046
	0	− .0045	0	+ .0014	+ .0033	+ .0050	+ .0061	+ .0065	0	+ .0068	+ .0167	+ .0252	+ .0307	+ .0325
		R_x \ R_y	− .0045	+ .0744	+ .1942	+ .2699	+ .3108	+ .3236						
$a/b = 3/4$	1.0	+ .1061	+ .0406	+ .0196	+ .0013	− .0115	− .0190	− .0214	0	0	0	0	0	0
	0.8	+ .2077	+ .0433	+ .0177	− .0003	− .0119	− .0184	− .0205	+ .0087	+ .0031	− .0012	− .0042	− .0061	− .0067
	0.6	+ .2408	+ .0426	+ .0145	− .0026	− .0124	− .0174	− .0189	+ .0085	+ .0010	− .0055	− .0102	− .0130	− .0139
	0.4	+ .2542	+ .0349	+ .0091	− .0039	− .0102	− .0130	− .0138	+ .0070	− .0011	− .0075	− .0115	− .0137	− .0143
	0.2	+ .1337	+ .0163	+ .0031	− .0017	− .0031	− .0033	− .0033	+ .0033	+ .0001	− .0000	+ .0014	+ .0029	+ .0035
	0	− .0196	0	+ .0028	+ .0064	+ .0093	+ .0111	+ .0117	0	+ .0139	+ .0320	+ .0465	+ .0554	+ .0584
		R_x \ R_y	− .0196	+ .1256	+ .2666	+ .3496	+ .3923	+ .4055						
$a/b = 1$	1.0	+ .1985	+ .0644	+ .0253	− .0013	− .0172	− .0252	− .0276	0	0	0	0	0	0
	0.8	+ .2564	+ .0601	+ .0210	− .0028	− .0161	− .0226	− .0245	+ .0120	+ .0034	− .0026	− .0065	− .0088	− .0095
	0.6	+ .2485	+ .0515	+ .0149	− .0047	− .0145	− .0189	− .0201	+ .0103	+ .0003	− .0075	− .0125	− .0151	− .0159
	0.4	+ .2411	+ .0372	+ .0078	− .0049	− .0100	− .0118	− .0122	+ .0074	− .0021	− .0076	− .0099	− .0106	− .0107
	0.2	+ .1108	+ .0154	+ .0025	− .0006	− .0006	− .0000	+ .0003	+ .0031	+ .0018	+ .0060	+ .0116	+ .0160	+ .0175
	0	− .0241	0	+ .0044	+ .0096	+ .0137	+ .0161	+ .0169	0	+ .0220	+ .0482	+ .0683	+ .0804	+ .0845
		R_x \ R_y	− .0241	+ .1691	+ .3199	+ .4038	+ .4457	+ .4584						
$a/b = 3/2$	1.0	+ .3127	+ .0857	+ .0207	− .0087	− .0199	− .0232	− .0238	0	0	0	0	0	0
	0.8	+ .2929	+ .0730	+ .0158	− .0086	− .0172	− .0194	− .0198	+ .0146	+ .0023	− .0042	− .0072	− .0082	− .0085
	0.6	+ .2352	+ .0560	+ .0094	− .0083	− .0134	− .0142	− .0141	+ .0112	− .0013	− .0077	− .0096	− .0096	− .0094
	0.4	+ .2148	+ .0359	+ .0036	− .0053	− .0065	− .0057	− .0053	+ .0072	− .0021	− .0023	+ .0012	+ .0046	+ .0059
	0.2	+ .0897	+ .0132	+ .0021	+ .0025	+ .0050	+ .0069	+ .0076	+ .0026	+ .0077	+ .0220	+ .0356	+ .0444	+ .0474
	0	− .0204	0	+ .0079	+ .0158	+ .0212	+ .0245	+ .0252	0	+ .0396	+ .0791	+ .1062	+ .1214	+ .1282
		R_y	− .0204	+ .2452	+ .3964	+ .4668	+ .4966	+ .5047						

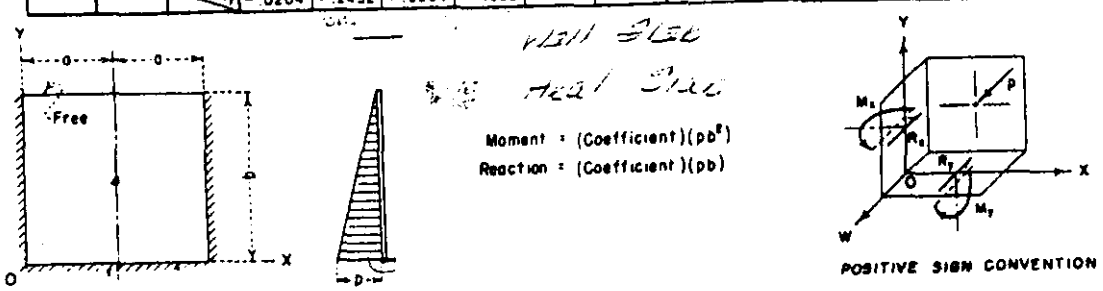
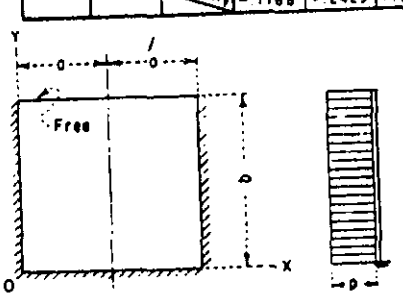


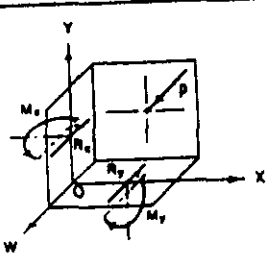
FIGURE 4.—*Plate fixed along three edges, moment and reaction coefficients, Load IV, uniformly varying load.*

			M_x						M_y					
	y/b	R_x \ x/a	0	0.2	0.4	0.6	0.8	1.0	0	0.2	0.4	0.6	0.8	1.0
a/b = 1/8	1.0	+.1249	+.0052	+.0024	+.0002	-.0014	-.0024	-.0027	0	0	0	0	0	0
	0.8	+.1248	+.0051	+.0023	+.0002	-.0014	-.0023	-.0026	+.0010	+.0005	+.0000	-.0003	-.0005	-.0005
	0.6	+.1247	+.0052	+.0023	+.0002	-.0014	-.0023	-.0027	+.0010	+.0005	+.0000	-.0003	-.0005	-.0005
	0.4	+.1250	+.0051	+.0023	+.0001	-.0014	-.0023	-.0027	+.0010	+.0005	+.0000	-.0003	-.0005	-.0006
	0.2	+.1185	+.0048	+.0021	+.0001	-.0013	-.0021	-.0024	+.0010	+.0004	-.0001	-.0004	-.0006	-.0007
	0	+.0504	0	+.0001	+.0003	+.0005	+.0006	+.0007	0	+.0006	+.0016	+.0025	+.0031	+.0033
		R_x \ R_y	+.0504	+.0116	+.0568	+.0893	+.1084	+.1141						
a/b = 1/4	1.0	+.2483	+.0209	+.0096	+.0007	-.0057	-.0096	-.0109	0	0	0	0	0	0
	0.8	+.2523	+.0206	+.0093	+.0006	-.0056	-.0093	-.0105	+.0041	+.0019	+.0002	-.0009	-.0018	-.0019
	0.6	+.2513	+.0205	+.0093	+.0006	-.0056	-.0093	-.0105	+.0041	+.0018	+.0000	-.0013	-.0021	-.0023
	0.4	+.2512	+.0196	+.0085	+.0003	-.0054	-.0088	-.0099	+.0039	+.0016	-.0004	-.0018	-.0027	-.0030
	0.2	+.1905	+.0137	+.0053	-.0003	-.0039	-.0059	-.0065	+.0027	+.0007	-.0011	-.0024	-.0032	-.0034
	0	+.0295	0	+.0005	+.0013	+.0020	+.0025	+.0027	0	+.0023	+.0063	+.0101	+.0126	+.0135
		R_x \ R_y	+.0295	+.0236	+.1131	+.1786	+.2174	+.2301						
a/b = 3/8	1.0	+.3711	+.0476	+.0219	+.0016	-.0130	-.0218	-.0247	0	0	0	0	0	0
	0.8	+.3896	+.0466	+.0208	+.0012	-.0126	-.0208	-.0235	+.0093	+.0042	+.0004	-.0022	-.0038	-.0043
	0.6	+.3757	+.0442	+.0193	+.0007	-.0122	-.0198	-.0223	+.0088	+.0036	-.0007	-.0039	-.0059	-.0065
	0.4	+.3541	+.0379	+.0155	-.0003	-.0107	-.0167	-.0186	+.0076	+.0024	-.0021	-.0054	-.0075	-.0082
	0.2	+.2133	+.0210	+.0075	-.0009	-.0059	-.0085	-.0093	+.0042	+.0009	-.0017	-.0034	-.0044	-.0047
	0	-.0015	0	+.0010	+.0027	+.0043	+.0054	+.0058	0	+.0050	+.0135	+.0215	+.0269	+.0288
		R_x \ R_y	-.0015	+.0303	+.1666	+.2644	+.3220	+.3410						
a/b = 1/2	1.0	+.5101	+.0852	+.0384	+.0022	-.0233	-.0383	-.0432	0	0	0	0	0	0
	0.8	+.5331	+.0807	+.0349	+.0013	-.0218	-.0353	-.0397	+.0161	+.0068	-.0001	-.0049	-.0077	-.0086
	0.6	+.4805	+.0712	+.0298	-.0000	-.0199	-.0313	-.0350	+.0142	+.0051	-.0026	-.0084	-.0120	-.0132
	0.4	+.4148	+.0545	+.0209	-.0014	-.0156	-.0233	-.0258	+.0109	+.0026	-.0043	-.0094	-.0125	-.0135
	0.2	+.1928	+.0250	+.0087	-.0009	-.0063	-.0089	-.0096	+.0050	+.0015	-.0003	-.0008	-.0008	-.0007
	0	-.0294	0	+.0019	+.0050	+.0080	+.0100	+.0107	0	+.0094	+.0252	+.0399	+.0499	+.0534
		R_x \ R_y	-.0294	+.0482	+.2263	+.3559	+.4322	+.4572						
a/b = 3/4	1.0	+.8592	+.1788	+.0716	-.0010	-.0471	-.0726	-.0807	0	0	0	0	0	0
	0.8	+.7864	+.1552	+.0607	-.0020	-.0414	-.0630	-.0698	+.0310	+.0112	-.0027	-.0119	-.0172	-.0190
	0.6	+.5989	+.1207	+.0460	-.0033	-.0336	-.0498	-.0549	+.0241	+.0071	-.0067	-.0166	-.0225	-.0245
	0.4	+.4378	+.0786	+.0280	-.0033	-.0214	-.0306	-.0333	+.0157	+.0036	-.0049	-.0100	-.0127	-.0135
	0.2	+.1185	+.0289	+.0109	+.0009	-.0034	-.0049	-.0053	+.0058	+.0060	+.0115	+.0186	+.0241	+.0262
	0	-.0694	0	+.0042	+.0115	+.0182	+.0227	+.0242	0	+.0212	+.0576	+.0911	+.1135	+.1212
		R_x \ R_y	-.0694	+.0806	+.3383	+.5271	+.6368	+.6725						
a/b = 1	1.0	+1.2115	+.2613	+.0883	-.0105	-.0654	-.0927	-.1008	0	0	0	0	0	0
	0.8	+.9558	+.2146	+.0727	-.0097	-.0551	-.0774	-.0840	+.0429	+.0134	-.0051	-.0164	-.0224	-.0243
	0.6	+.6250	+.1547	+.0525	-.0083	-.0411	-.0566	-.0611	+.0309	+.0090	-.0069	-.0169	-.0222	-.0238
	0.4	+.3984	+.0916	+.0305	-.0043	-.0216	-.0290	-.0310	+.0183	+.0069	+.0029	+.0030	+.0045	+.0053
	0.2	+.0434	+.0303	+.0127	+.0047	+.0033	+.0042	+.0048	+.0061	+.0149	+.0339	+.0542	+.0689	+.0742
	0	-.0939	0	+.0074	+.0199	+.0311	+.0384	+.0409	0	+.0369	+.0996	+.1556	+.1919	+.2043
		R_x \ R_y	-.0939	+.1167	+.4453	+.6760	+.8043	+.8450						
a/b = 3/2	1.0	+1.6267	+.3304	+.0700	-.0345	-.0730	-.0844	-.0865	0	0	0	0	0	0
	0.8	+1.0875	+.2609	+.0565	-.0286	-.0589	-.0670	-.0683	+.0522	+.0116	-.0069	-.0143	-.0165	-.0169
	0.6	+.5876	+.1778	+.0399	-.0195	-.0385	-.0422	-.0422	+.0356	+.0115	+.0017	+.0011	+.0035	+.0049
	0.4	+.3166	+.0981	+.0239	-.0056	-.0116	-.0101	-.0090	+.0196	+.0177	+.0315	+.0495	+.0634	+.0685
	0.2	-.0540	+.0302	+.0140	+.0140	+.0211	+.0273	+.0296	+.0060	+.0389	+.0912	+.1388	+.1699	+.1805
	0	-.1168	0	+.0159	+.0388	+.0565	+.0668	+.0702	0	+.0796	+.1939	+.2823	+.3340	+.3508
		R_y	-.1168	+.2429	+.6510	+.8793	+.9852	+1.0123						



Moment = (Coefficient) (pb^2)

Reaction = (Coefficient) (pb)

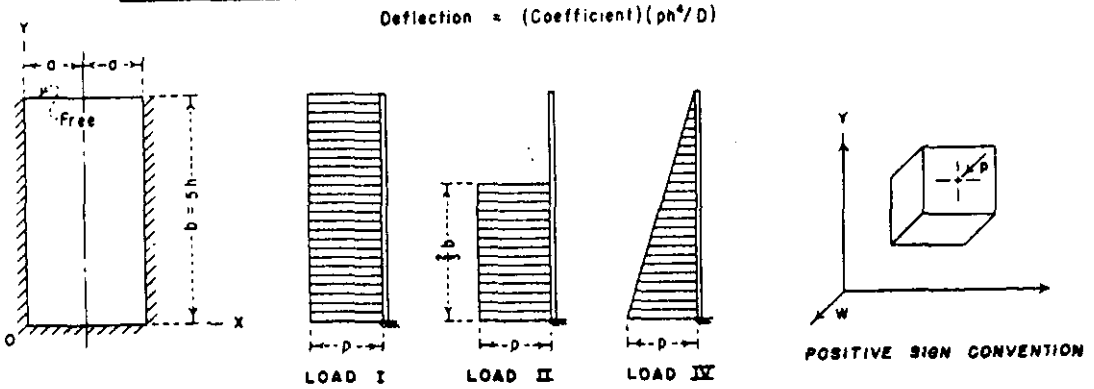


POSITIVE SIGN CONVENTION

FIGURE 1.—*Plate fixed along three edges, moment and reaction coefficients, Load I, uniform load.*

	x/a / y/b	DEFLECTION COEFFICIENTS — 30 EQUATIONS				
		0.2	0.4	0.6	0.8	1.0
LOAD I	1.0	+ .017022	+ .049680	+ .083466	+ .107935	+ .116792
	0.8	+ .016122	+ .046840	+ .078499	+ .101377	+ .109650
	0.6	+ .016030	+ .046526	+ .077914	+ .100572	+ .108761
	0.4	+ .015353 *	+ .044177 *	+ .073597 *	+ .094719 *	+ .102331 *
	0.2	+ .011196 *	+ .031304 *	+ .051265 *	+ .065339 *	+ .070366 *
	0.1	+ .005859 *	+ .015907 *	+ .025588 *	+ .032283 *	+ .034651 *
LOAD II	1.0	+ .000426	+ .001800	+ .003572	+ .005018	+ .005570
	0.8	+ .003026	+ .009459	+ .016489	+ .021746	+ .023678
	0.6	+ .011081	+ .031691	+ .052629	+ .067621	+ .073018
	0.4	+ .014484 *	+ .041246 *	+ .068290 *	+ .087579 *	+ .094508 *
	0.2	+ .011123 *	+ .030992 *	+ .050636 *	+ .064448 *	+ .069374 *
	0.1	+ .005866 *	+ .015887 *	+ .025515 *	+ .032518 *	+ .034506 *
LOAD IV	1.0	+ .001780	+ .005582	+ .009748	+ .012870	+ .014019
	0.8	+ .003614	+ .010653	+ .018006	+ .023367	+ .025313
	0.6	+ .006462	+ .018748	+ .031388	+ .040509	+ .043804
	0.4	+ .008999 *	+ .025735 *	+ .042710 *	+ .054845 *	+ .059210 *
	0.2	+ .008349 *	+ .023051 *	+ .037455 *	+ .047522 *	+ .051102 *
	0.1	+ .004804 *	+ .012753 *	+ .020243 *	+ .025348 *	+ .027141 *

Deflection = (Coefficient)(ph^4/D)



	x/a / y/b	DEFLECTION COEFFICIENTS — 20 EQUATIONS				
		0.2	0.4	0.6	0.8	1.0
LOAD I	0.4	+ .015283	+ .043935	+ .073156	+ .094124	+ .101678
	0.2	+ .010730	+ .029914	+ .048903	+ .062267	+ .067035
	0.1	+ .004899	+ .013281	+ .021325	+ .026868	+ .028824
	0.05	+ .001835	+ .004944	+ .007860	+ .009833	+ .010522
LOAD II	0.4	+ .014414	+ .041004	+ .067848	+ .086983	+ .093855
	0.2	+ .010657	+ .029598	+ .048268	+ .061367	+ .066034
	0.1	+ .004900	+ .013246	+ .021229	+ .026715	+ .028649
	0.05	+ .001840	+ .004945	+ .007847	+ .009805	+ .010489
LOAD IV	0.4	+ .008937	+ .025523	+ .042324	+ .054326	+ .058641
	0.2	+ .007946	+ .021849	+ .035416	+ .044873	+ .048232
	0.1	+ .003980	+ .010505	+ .016603	+ .020734	+ .022181
	0.05	+ .001579	+ .004080	+ .006341	+ .007838	+ .008356

Deflection = (Coefficient)(ph^4/D)

NOTE
Starred values computed from 30 equations are discarded when the corresponding improved value is obtained from the 20 equations.

FIGURE 67.—*Plate fixed along three edges, deflection coefficients.* $a/b = 1/4$. *Various loadings.*

TABLE 6-2 Young's Modulus of Elasticity at Various Temperatures*

Series No.	Aggregate	Cement Content, bags per cu yd	Resonance Modulus, 10^4 psi					
			75 F	35 F	0 F	-75 F	-150 F	-250 F
2	Sand and Gravel	7.0	6.6	6.6	7.0	8.0	9.0	9.0
5 (Moist)	"	5.5	5.5	5.8	6.6	7.6	8.4	8.5
8 (50%)	"	5.5	5.0	5.1	5.1	5.1	5.3	5.4
10 (Dry)	"	5.5	4.3	4.3	4.3	4.3	4.3	4.3
12	"	4.0	5.2	5.2	6.2	6.7	8.2	8.3
15	Expanded Shale	6.0	3.0	3.0	3.3	3.8	4.2	4.3

*From: Monfore, G. E. and Lentz, A. E., "Physical Properties of Concrete at Very Low Temperatures," Portland Cement Association Research Bulletin 145, Portland Cement Association, Skokie, 1962.

higher the modulus of elasticity after dehydration. The effects of aggregate type are not clearly defined but appear to be small providing the aggregate does not melt or decompose. If the concrete is subjected to cyclic temperatures, the decrease in modulus is even more severe, probably as a result of thermal stresses.

6.4.5 Effect of Low Temperature Exposure

Data on modulus of elasticity by the resonance frequency method (ASTM C215) on concretes cooled from room temperature to -250°F are listed in Table 6-2. The modulus of sand and gravel concretes in a moist condition increases about 50% as the temperature is decreased to -250°F. The 5.5-bag sand and gravel mix, in equilibrium with an atmosphere of 50% relative humidity, increases only 8% for this same temperature range; and an oven dried specimen exhibits a constant modulus as the temperature decreases.

6.4.6 Repetitive Loading

The stress-strain relationship for concrete subjected to repeated compressive loads is cycle dependent while the relationship for reinforcing steel is cycle independent. During the first cycle the stress-strain curve for concrete is the same as that obtained in static tests, but after a few cycles the curve becomes almost linear. As the number of repetitions of load increases, the lines representing the stress-strain curve become concave upward. There also is a general trend towards a decrease in secant modulus (Fig. 6-24) and an increase in non-elastic strain with an increase in the number of loading cycles, presumably due to the development of microcracks in the concrete. Changes in modulus are also accompanied by a reduction in natural frequency.

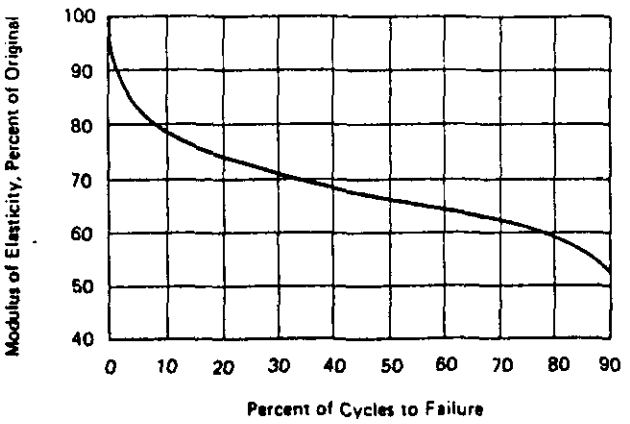


Fig. 6-24 Reduction in secant modulus of elasticity as the result of repeated loads. (From: Linger, D. A., and Gillespie, H. A., "A Study of the Mechanism of Concrete Fatigue and Fracture," *Highway Research News, No. 22*, 40-51. Highway Research Board, Feb. 1966.)

6.5 POISSON'S RATIO

Poisson's ratio is the ratio of transverse (lateral) strain to the corresponding axial (longitudinal) strain resulting from uniformly distributed axial stress. Values of Poisson's ratio, μ, like modulus of elasticity, vary with the Poisson's ratio of the aggregate, the cement paste, and the relative proportions of the two. It also varies with moisture condition and age of the concrete. Values generally range between 0.11 and 0.27. For elastic strains under normal working stresses, Poisson's ratio is taken as 0.20. It is approximately the same for structural lightweight and normal weight concretes. With an increase in strength, age, or aggregate content, Poisson's ratio tends to decrease.

At room temperature, lower values of Poisson's ratio are obtained for higher strength concrete. Results at higher temperatures are erratic and no general trend for the effect of temperature on Poisson's ratio is indicated. Poisson's ratios, calculated from longitudinal and torsional resonant frequency tests remain essentially constant as the temperature of the concrete is lowered from 75 to -250°F.

Dynamic determinations of Poisson's ratio are consistently higher than the corresponding static values, especially at early ages. For saturated concretes, the dynamic values are 0.02 higher for lightweight and 0.03 higher for normal weight concretes, with the difference becoming negligible for dry concretes.

6.6 SHEAR AND TORSION

The resistance of concrete to pure shearing stress has never been directly determined. In addition, the case of pure shear acting on a plane is seldom, if ever, encountered in actual structures. Whenever a state of pure shearing stress is produced in a specimen, it follows from the laws of mechanics that principal tensile stresses, equal in magnitude to the shearing stresses, must also exist on another plane. Since the strength of concrete in tension is less than its strength in shear, failure inevitably occurs as a result of tensile stresses before the strength in shear is reached. Thus, a pure shear test is of no value for determining shearing strength.

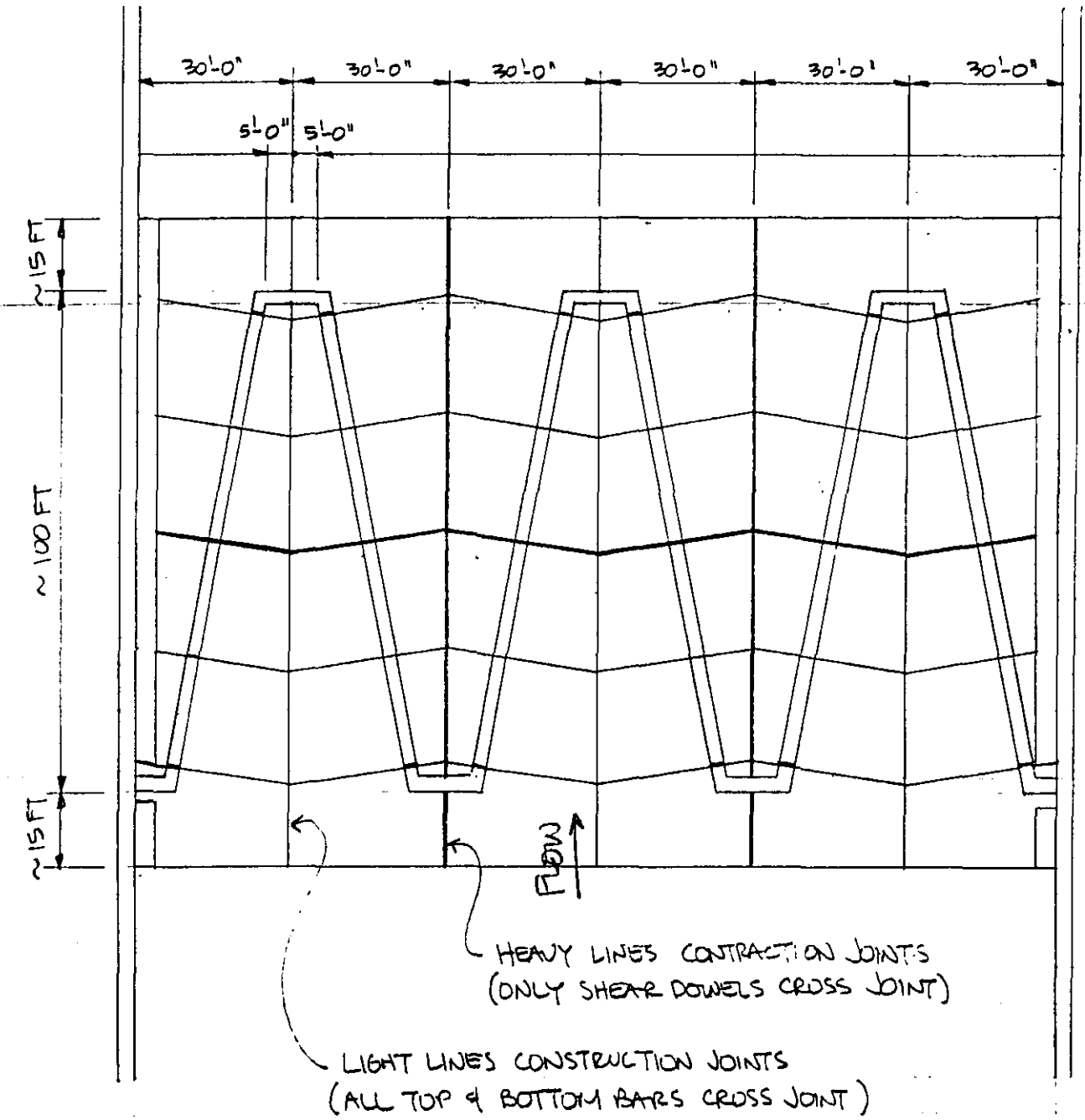
A reliable indication of the strength of concrete in pure shear can be obtained only from tests under combined stresses. The most widely used and accepted method of

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Plant UPPER FLAMINGO WASH DB Unit
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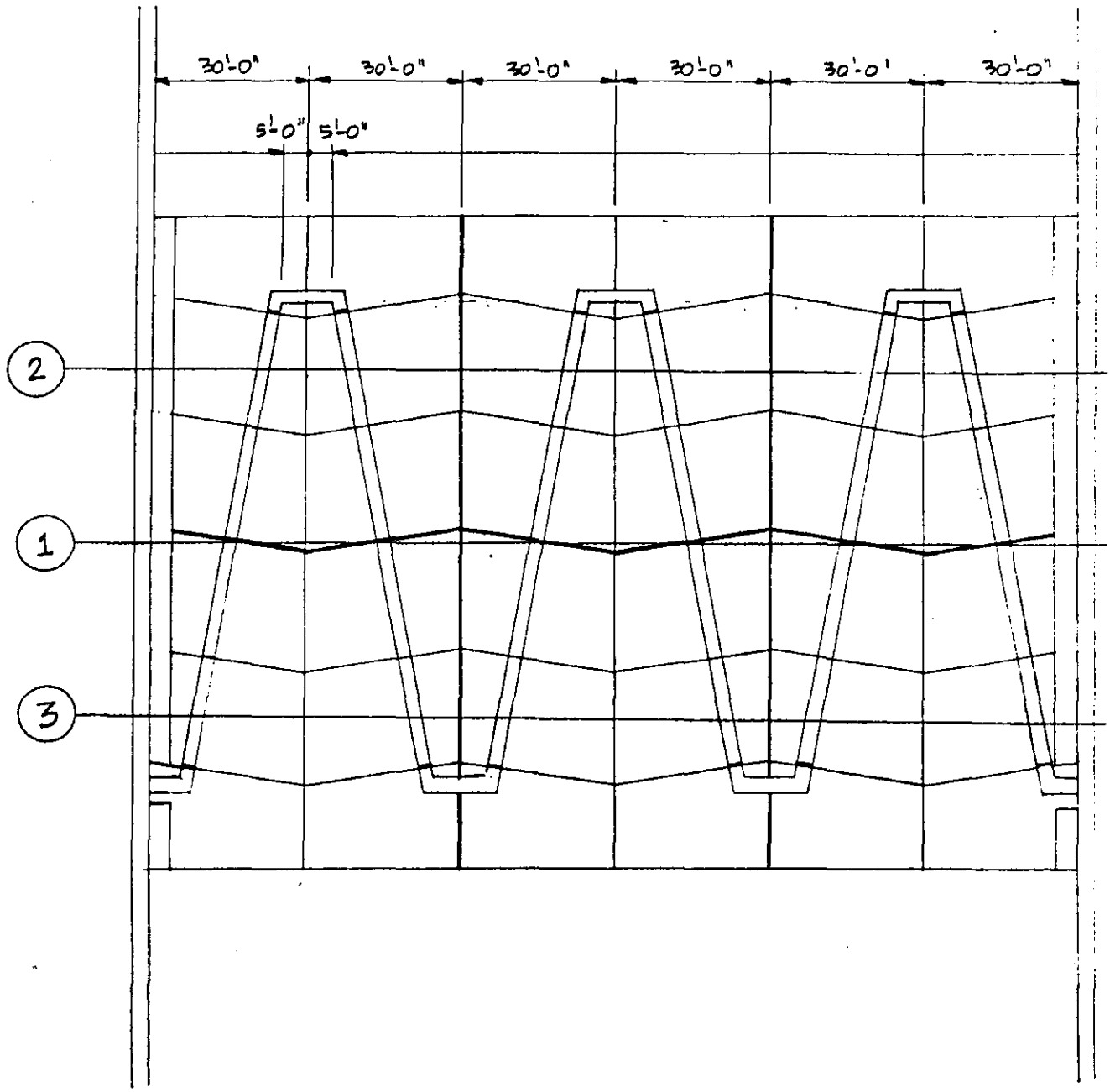
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DESIGN FOOTING AS A CONTINUOUS BEAM ON AN ELASTIC FOUNDATION USING STRESS II.

SEVERAL VALUES FOR SUBGRADE REACTION WERE USED.

BASED ON RECOMMENDATIONS FROM THE BOYLE TEXT, VALUES OF 400 + 800 KCF WERE CALCULATED.

BASED ON MEASURED FIELD DATA, 97 KCF WAS USED.

COMPARING THE COMPUTER RUNS AT EACH KCF VALUE, OUR DESIGN TEAM DECIDED THAT A K_s VALUE OF 200 KCF WAS MOST APPROPRIATE.

ONLY COMPUTER RUNS WITH $K_s = 200$ ARE SUPPLIED.

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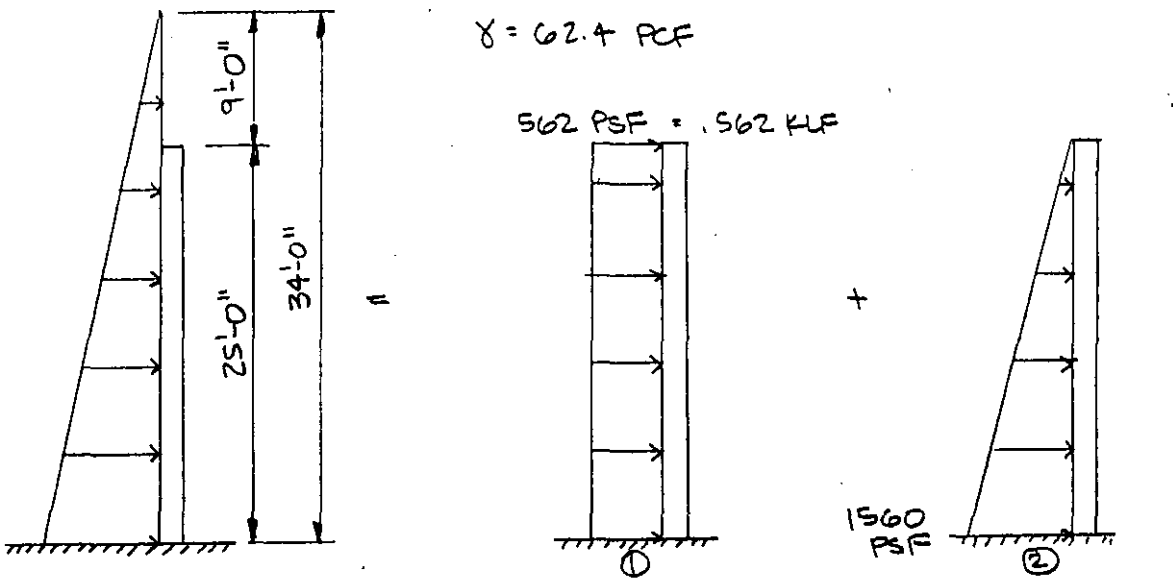
SIZE TYPICAL WALL SECTION

TOP OF WALL EL 2470.50

BASE OF WALL EL 2446.00 - (37.67 FT)(0.015) = 2445.43

DESIGN FOR A OVERTOPPING DEPTH OF 9 FT

NEGLECT ANY HYDROSTATIC FORCE FROM BACKWATER DUE TO UNPREDICTABLE DEPTH AND TURBULENT AERATED CONDITION OF WATER



$$M_T = M_1 + M_2 = \frac{w\ell^2}{2} + \frac{W\ell}{3} = \frac{(.562\ KLF)(25\ FT)^2}{2} + \frac{(19.5^K)(25\ FT)}{3}$$

$$= \underline{338\ K\cdot FT}$$

$$V_T = V_1 + V_2 = wx + W = (.562\ KLF)(25\ FT) + 19.5^K = \underline{34^K}$$

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

PER EM-710 REDUCE LOADS BY 25% BECAUSE LOADS OCCUR FROM INFREQUENT FLOOD LEVELS OF SHORT DURATION.

$M_u = (1.7)(.75)(338\ K\cdot FT) = 431\ K\cdot FT$

$M_n = \frac{431\ K\cdot FT}{.9} = \underline{479\ K\cdot FT}$

$V_u = (1.7)(.75)(34^K) = 43.35^K$

$V_n = \frac{43.35^K}{.85} = \underline{51^K}$

$\rho = .007 \quad K_u = 385.41 \quad a = .165d \quad 2\sqrt{f'_c} = 109.54$

$d_v = \frac{(51^K)(1000)}{(109.54)(12)} = 38.80"$

$d_M = \sqrt{\frac{(479\ K\cdot FT)(1000)(12)}{(385.41)(12)}} = 35.25"$

CHECK SHEAR @ X = 25 - 3 = 22 FT WITH HP 41

$V@X = 22\ FT = (27.45^K)\frac{(1.7)(.75)}{.85} = 41.18^K$

$d_v = \frac{(41^K)(1000)}{(109.54)(12)} = 31.19"$ ✓

$d_{ACTUAL} = 38" - 2" - .5 = 35.5"$

$a = (.165)(35.5") = 5.86"$

$z = d - a/2 = 35.5" - \frac{5.86"}{2} = 32.57"$

$T = \frac{M_n}{z} = \frac{(479\ K\cdot FT)(12)(1000)}{32.57"} = 176481\ LB$

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REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CCDPW
Plant UPPER FLAMINGO WASH DB Unit
Project No. File No.
Title LABYRINTH WALL DESIGN

Computed By RJB
Date 5/8 19 89
Checked By
Date 19
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$A_s = \frac{176491 \text{ LB}}{60\,000 \text{ PSI}} = 2.94 \text{ IN}^2$

* 9 BARS @ 4"	= 3.00 IN²
* 9 BARS @ 6"	= 2.00 IN²
* 9 BARS @ 8"	= 1.50 IN²
* 9 BARS @ 9"	= 1.33 IN²
* 9 BARS @ 12"	= 1.00 IN²

@ X = 12.5 FT FROM FOOTING

M_n = 177.40 K·FT ρ = .007 a = .165d

d_{ACTUAL} = 21.96"

a = (.165)(21.96") = 3.623"

$z = d - a/2 = 21.96" - \frac{3.62}{2} = 20.15"$

$T = \frac{(177.40 \text{ K·FT})(12)(1000)}{20.15"} = 105648 \text{ LB}$

$A_s = \frac{105648 \text{ LB}}{60{,}000 \text{ PSI}} = 1.76 \text{ IN}^2$

USE * 7 BARS @ 4" = 1.80 IN²

PLACE MIN BENDING STEEL IN OPPOSITE FACE

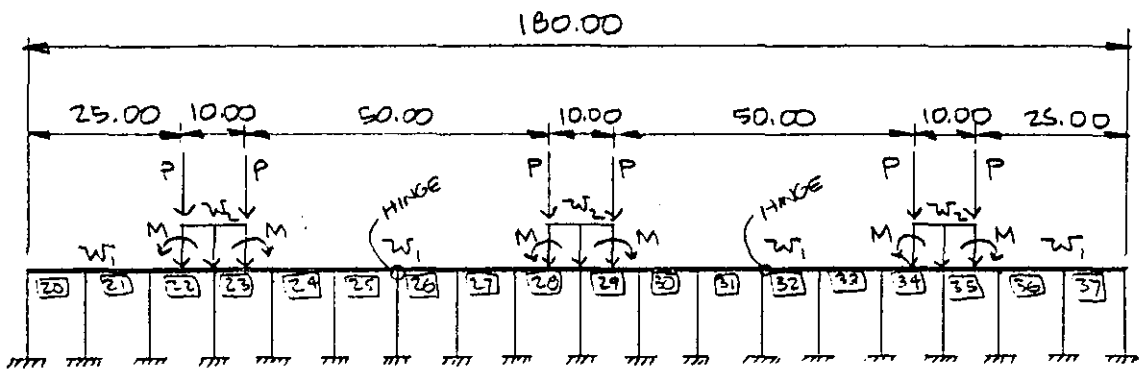
LOWER 1/2 = (.0033)(32.5)(12) = 1.29 IN² USE * 9 @ 8" A_s = 1.50 IN²

UPPER 1/2 = (.0033)(21.96)(12) = .87 IN² USE * 7 @ 8" A_s = .90 IN²

PGN-172A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

CROSS SECTION (2) (2 MAT)



P = 7.82 K

w_1 = .45 KLF

w_2 = 2.57 KLF

M = 338 K·FT

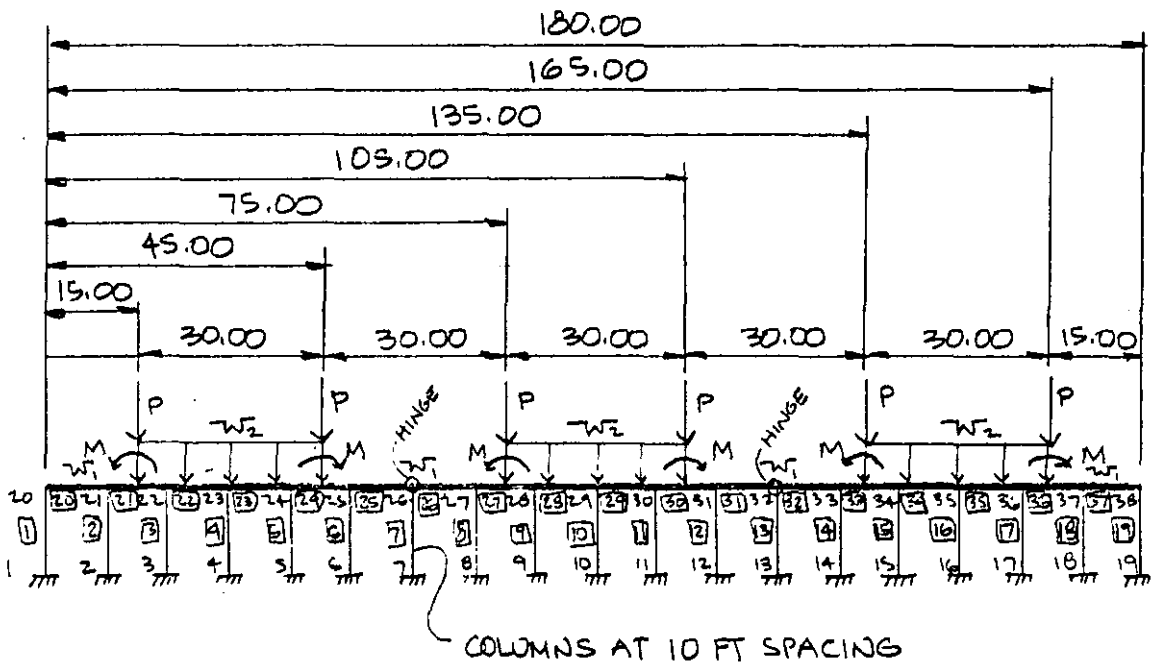
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CROSS SECTION (1) (1 MAT)



$P = (25\,FT)\left(1 + \frac{3.17\,FT}{2}\right)(1\,FT)(150\,PCF) = 7819\,LB = 7.82\,K$

$W = (34\,FT)(62.4\,PCF)(1\,FT) = 2123\,PLF = 2.12\,KLF$

SLAB WEIGHT $= (3\,FT)(150\,PCF)(1\,FT) = 450\,PLF = .45\,KLF$

$2.12 + .45 = 2.57$

$W_1 = .45\,KLF$

$W_2 = .45\,KLF + 2.12\,KLF = 2.57\,KLF$

$M = 338\,K\cdot FT$

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MODEL ELASTIC FOUNDATION AS A SERIES OF SOIL COLUMNS TRANSFORMED INTO A CONCRETE SECTION

LENGTH OF COLUMN = 10 FT

E (CONCRETE) = 460 800 KSF

DESIGN FOR A RANGE OF SUBGRADE REACTIONS (K)
USE K_s = 400-800 KCF

324 FOUNDATION ANALYSIS AND DESIGN

Table 9-1 Range of values of modulus of subgrade reaction k_s

Use values as guide and for comparison when using approximate equations

Soil	k_s, kcf	k_s, kN/m³
Loose sand	30–100	4800–16 000
Medium dense sand	60–500	9600–80 000
Dense sand	400–800	64 000–128 000
Clayey medium dense sand	200–500	32 000–80 000
Silty medium dense sand	150–300	24 000–48 000
Clayey soil:		
$q_u \leq$ 200 kPa (4 ksf)	75–150	12 000–24 000
200 < $q_u \leq$ 400 kPa	150–300	24 000–48 000
q_u > 800 kPa	> 300	> 48 000

← FOUNDATION ANALYSIS & DESIGN (BOWLES)

K_s = 400 KCF

(TRIB SOIL AREA)(K_s) = $\frac{AE}{\ell}$ ← OF TRANSFORMED CONCRETE SECTION; ← LENGTH OF THEORETICAL COLUMN

$(10\text{ FT})(1\text{ FT})(400\text{ KCF}) = A\left(\frac{460\,800\text{ KSF}}{10\text{ FT}}\right)$

A = .087 FT² OR A 3 1/2" SQUARE CONCRETE COLUMN

CALCULATION OF I FOR COLUMNS NOT NECESSARY DUE TO PINNED END COLUMN TOPS IN MODEL

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CHANGE SUBGRADE REACTION TO 800 KCF

$$(\text{TRIB SOIL AREA})(K_s) = \frac{AE}{\ell}$$

$$(10\,FT)(1\,FT)(800\,KCF) = A\left(\frac{460\,800\,KSF}{10\,FT}\right)$$

$A = .174\ FT^2$ OR A 5" SQUARE CONCRETE COLUMN

COLUMN PROPERTIES

$A_X = .174\ FT^2$

$A_Y = 4.17\ FT^2$

$I_z = 1.0\ FT^4$ NOT CALCULATED

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CHANGE SUBGRADE REACTION TO MATCH FIELD DATA

IN THE SOILS REPORT PREPARED BY KLEINFELDER INC. FOR THIS PROJECT, THEY ESTIMATE THE TOTAL ANTICIPATED SETTLEMENT UNDER FOOTINGS TO BE 1/2" OR LESS WITH AN ALLOWABLE SOIL PRESSURE DETERMINED BY

$q_{ALL} = 1000\,B + 1300\,D$ PSF OR 6000 PSF MAX

(B: FOOTING WIDTH; D: DEPTH OF EMBEDMENT)

USING SOIL RELATIONSHIPS (EQUATION 9-7) IN FOUNDATION ANALYSIS & DESIGN (PG 322)

$$K_s = \frac{q_b}{\Delta H} = \frac{6000 \text{ PSF}}{.0412 \text{ FT}} = 145631 \text{ PCF} = 146 \text{ KCF}$$

(.0412 FT ↔ 1/2")

TO BE CONSERVATIVE REDUCE THIS VALUE BY A SAFETY FACTOR OF 1.5

$$K_s = \frac{146}{1.5} = 97 \text{ KCF}$$

$$(10 \text{ FT})(1 \text{ FT})(97 \text{ KCF}) = A\left(\frac{460\,800 \text{ KCF}}{10 \text{ FT}}\right)$$

$A = .021 \text{ FT}^2$ OR A 1.7" SQUARE CONCRETE COLUMN

COLUMN PROPERTIES

$A_X = .021 \text{ FT}^2$

$A_Y = 1.45 \text{ FT}^2$

$I_z = 1.0 \text{ FT}^2$ NOT CALCULATED

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SLAB PROPERTIES (FOR ENTRY INTO STRESS II)

1 FT WIDTH SLAB IS 3 FT THICK

$$I_{SLAB} = \frac{(1\,FT)(3\,FT)^3}{12} = 2.25\ FT^4$$

$$A_{SLAB} = (1\,FT)(3\,FT) = 3\ FT^2$$

$$E_{CONC} = \left(3.2 \times 10^6 \frac{LB}{IN^2}\right)\left(\frac{12\,IN}{FT}\right)^2 = 460\,800\,000\ PSF$$

$$= 460\,800\ KSF$$

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PGN-172A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

CCDPW
Upper Flamingo Wash DB
5/9/89
RJB

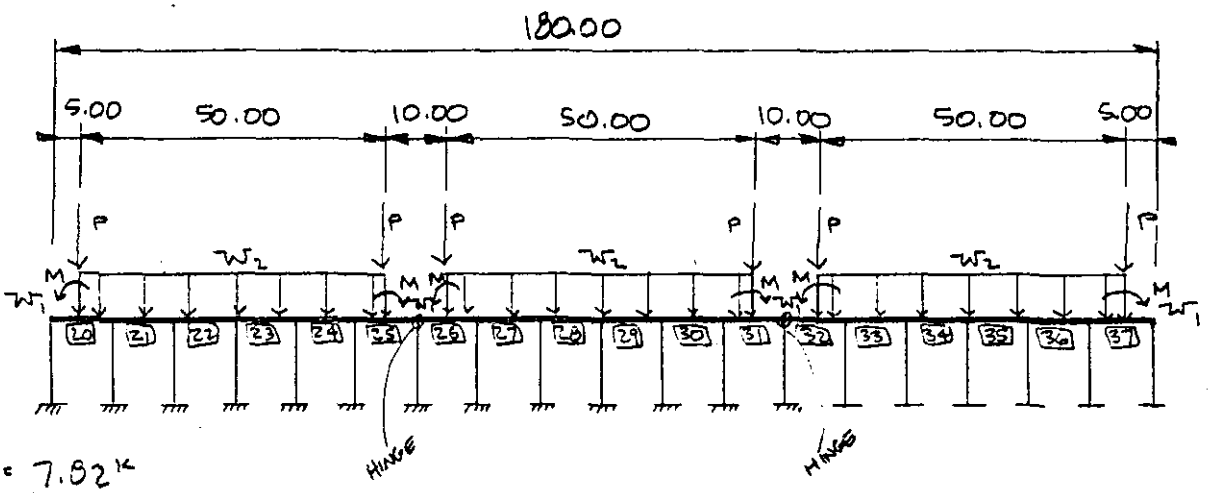
COMPARISON OF TAPERED WALL SECTION TO APPLIED MOMENTS AND SHEARS

Given Information
w = 562 psf = .562 klf
W = 19.5 k
L = 25 ft
M1 = w*L*L/2 V1 = w*x
M2 = WL/3 V2 = (W*x*x)/(L*L)
Mt = M1+M2 Vt = V1+V2
Mu = 1.7*.75*Mt Vu = 1.7*.75*Vt
Mn = Mu/0.9 Vn = Vu/0.85

X (ft)	B (in)	d (in)	M1	M2	Mt	Mu	Mn	da	V1	V2	Vt	Vu	Vn	dv
1.00	12.00	9.50	0.28	6.50	6.78	8.65	9.61	4.99	0.56	0.03	0.59	0.76	0.89	0.68
2.00	13.08	10.58	1.12	13.00	14.12	18.01	20.01	7.21	1.12	0.12	1.25	1.59	1.87	1.43
3.00	14.16	11.66	2.53	19.50	22.03	28.09	31.21	9.00	1.69	0.28	1.97	2.51	2.95	2.24
4.00	15.25	12.75	4.50	26.00	30.50	38.88	43.20	10.59	2.25	0.50	2.75	3.50	4.12	3.13
5.00	16.33	13.83	7.03	32.50	39.53	50.39	55.99	12.05	2.81	0.78	3.59	4.58	5.39	4.10
6.00	17.42	14.92	10.12	39.00	49.12	62.62	69.58	13.44	3.37	1.12	4.50	5.73	6.74	5.13
7.00	18.50	16.00	13.77	45.50	59.27	75.57	83.96	14.76	3.93	1.53	5.46	6.97	8.19	6.23
8.00	19.58	17.08	17.98	52.00	69.98	89.23	99.14	16.04	4.50	2.00	6.49	8.28	9.74	7.41
9.00	20.67	18.17	22.76	58.50	81.26	103.61	115.12	17.28	5.06	2.53	7.59	9.67	11.38	8.66
10.00	21.75	19.25	28.10	65.00	93.10	118.70	131.89	18.50	5.62	3.12	8.74	11.14	13.11	9.97
11.00	22.83	20.33	34.00	71.50	105.50	134.51	149.46	19.69	6.18	3.78	9.96	12.70	14.94	11.36
12.00	23.92	21.42	40.46	78.00	118.46	151.04	167.82	20.87	6.74	4.49	11.24	14.33	16.86	12.82
13.00	25.00	22.50	47.49	84.50	131.99	168.29	186.99	22.03	7.31	5.27	12.58	16.04	18.87	14.35
14.00	26.08	23.58	55.08	91.00	146.08	186.25	206.94	23.17	7.87	6.12	13.98	17.83	20.97	15.96
15.00	27.17	24.67	63.23	97.50	160.73	204.92	227.69	24.31	8.43	7.02	15.45	19.70	23.18	17.63
16.00	28.25	25.75	71.94	104.00	175.94	224.32	249.24	25.43	8.99	7.99	16.98	21.65	25.47	19.38
17.00	29.33	26.83	81.21	110.50	191.71	244.43	271.59	26.55	9.55	9.02	18.57	23.68	27.86	21.19
18.00	30.42	27.92	91.04	117.00	208.04	265.26	294.73	27.65	10.12	10.11	20.22	25.79	30.34	23.08
19.00	31.50	29.00	101.44	123.50	224.94	286.80	318.67	28.75	10.68	11.26	21.94	27.98	32.91	25.04
20.00	32.58	30.08	112.40	130.00	242.40	309.06	343.40	29.85	11.24	12.48	23.72	30.24	35.58	27.07
21.00	33.67	31.17	123.92	136.50	260.42	332.04	368.93	30.94	11.80	13.76	25.56	32.59	38.34	29.17
22.00	34.75	32.25	136.00	143.00	279.00	355.73	395.26	32.02	12.36	15.10	27.46	35.02	41.20	31.34
23.00	35.83	33.33	148.65	149.50	298.15	380.14	422.38	33.10	12.93	16.50	29.43	37.52	44.15	33.58
24.00	36.92	34.42	161.86	156.00	317.86	405.27	450.30	34.18	13.49	17.97	31.46	40.11	47.19	35.90
25.00	38.00	35.50	175.63	162.50	338.13	431.11	479.01	35.25	14.05	19.50	33.55	42.78	50.33	38.29

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CROSS SECTION (3) (3 MAT)



P = 7.82 K

W_1 = .45 KLF

W_2 = 2.57 KLF

M = 338 K·FT

P-GN-172A

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CHANGE SUBGRADE REACTION TO 200 KCF

ACTUAL SOIL BEARING W/O S.F. = (6000 PSF)(2) ← ASSUMED = 12000 PSF

$K_s = \frac{q}{\Delta H} = \frac{12000 \text{ PSF}}{.0417 \text{ FT}} = 288\,000 \text{ PCF} = 288 \text{ KCF}$

USE A 1.5 SF $K_s = \frac{(288 \text{ KCF})}{1.5} = 192 \text{ KCF}$ ✓

$(10 \text{ FT})(1 \text{ FT})(200 \text{ KCF}) = A \left(\frac{460\,800 \text{ KCF}}{10 \text{ FT}}\right)$

$A_x = .043 \text{ FT}^2$

$A_y = 2.08 \text{ FT}^2$

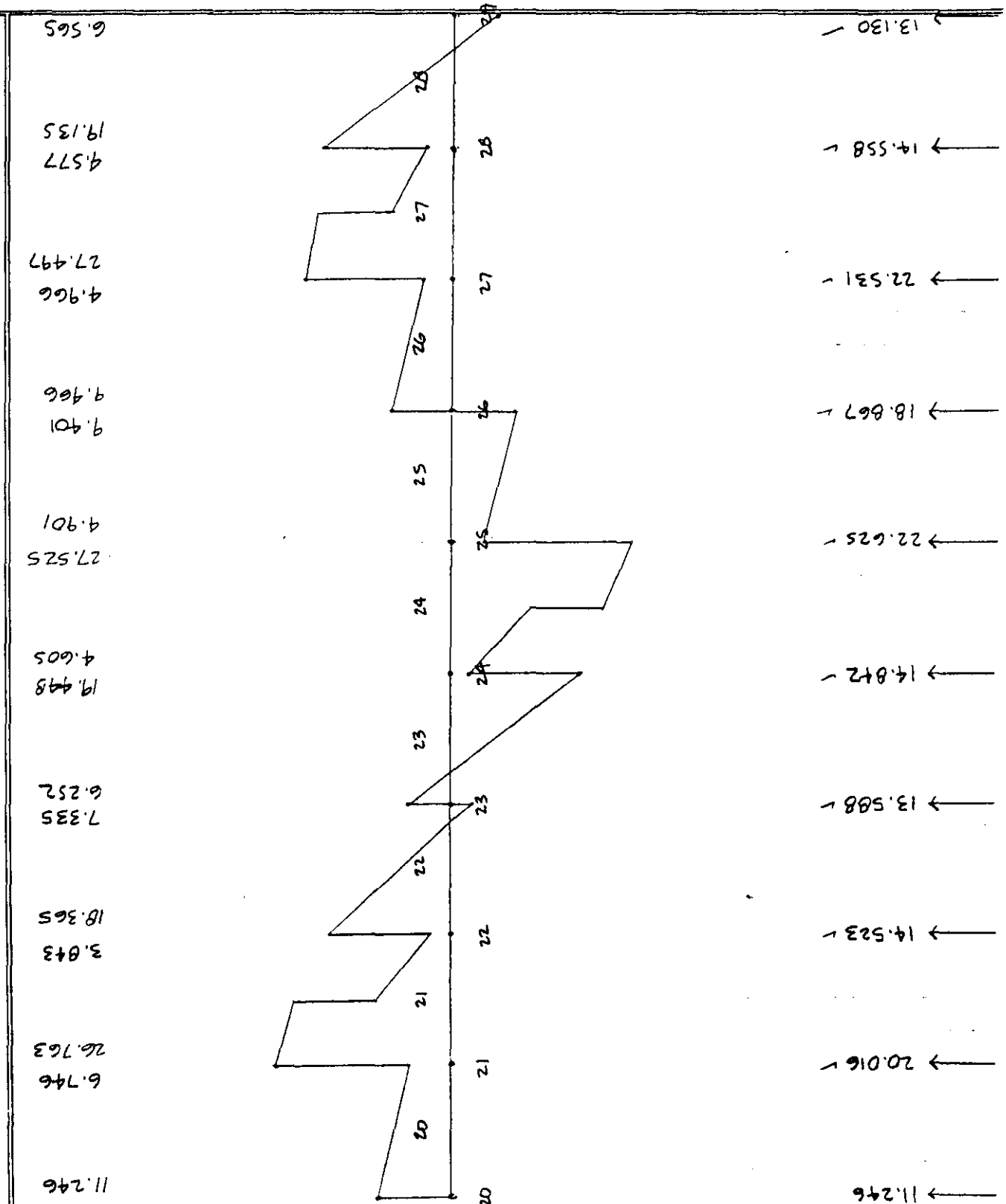
$I_z = 1.0 \text{ FT}^2$ NOT CALCULATED

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BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CCD PW
Plant UPPER FLAMINGO WASH DB Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 1 SHEAR DIAGRAM

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BLACK & VEATCH
ENGINEERS-ARCHITECTS

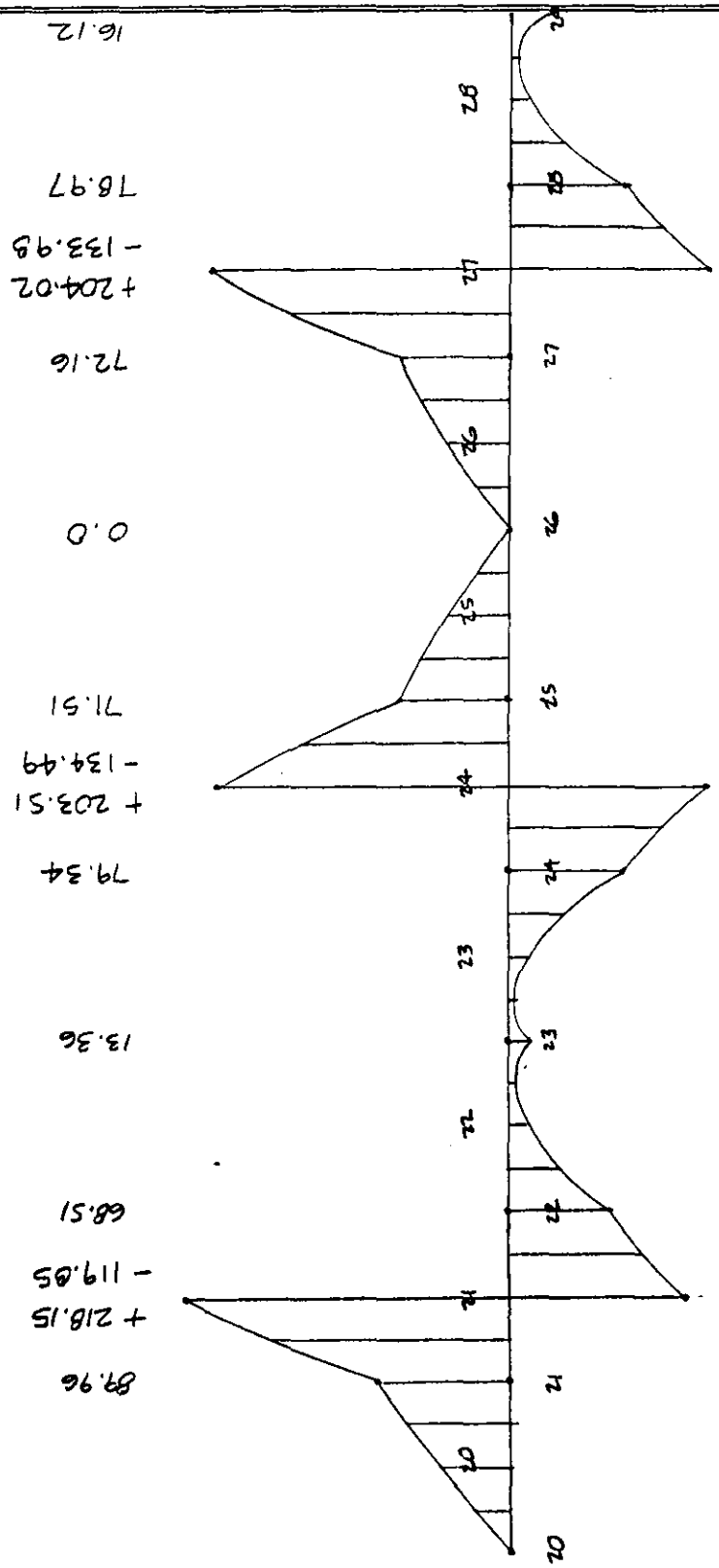
Owner CCDPW
Plant FLAMINGO WASH DB Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 1 MOMENT DIAGRAM

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Date 19
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EACH SQUARE = 30 K-FT



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```
  1.  STRUCTURE
  2.  $ MAT FOUNDATION MODEL
  3.  $ SECTION 1
  4.  $ SUBGRADE REACTION Ks = 200 KCF
  5.  $ FILE NAME 1MAT200.DAT
  6.  TYPE PLANE FRAME
  7.  NUMBER OF JOINTS 38
  8.  NUMBER OF SUPPORTS 19
  9.  NUMBER OF MEMBERS 37
 10.  NUMBER OF LOADINGS 1
 11.  JOINT COORDINATES
 12.  1    0.0   0.0 SUPPORT
 13.  2   10.0   0.0 SUPPORT
 14.  3   20.0   0.0 SUPPORT
 15.  4   30.0   0.0 SUPPORT
 16.  5   40.0   0.0 SUPPORT
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 18.  7   60.0   0.0 SUPPORT
 19.  8   70.0   0.0 SUPPORT
 20.  9   80.0   0.0 SUPPORT
 21.  10  90.0   0.0 SUPPORT
 22.  11 100.0   0.0 SUPPORT
 23.  12 110.0   0.0 SUPPORT
 24.  13 120.0   0.0 SUPPORT
 25.  14 130.0   0.0 SUPPORT
 26.  15 140.0   0.0 SUPPORT
 27.  16 150.0   0.0 SUPPORT
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 29.  18 170.0   0.0 SUPPORT
 30.  19 180.0   0.0 SUPPORT
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 38.  27  70.0  10.0
 39.  28  80.0  10.0
 40.  29  90.0  10.0
 41.  30 100.0  10.0
 42.  31 110.0  10.0
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 46.  35 150.0  10.0
 47.  36 160.0  10.0
 48.  37 170.0  10.0
 49.  38 180.0  10.0
 50.  MEMBER INCIDENCES
 51.  1 1 20
 52.  2 2 21
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 53.   3 3 22
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 86.   36 36 37
 87.   37 37 38
 88.   MEMBER RELEASES
 89.   1    END MOMENT Z
 90.   2    END MOMENT Z
 91.   3    END MOMENT Z
 92.   4    END MOMENT Z
 93.   5    END MOMENT Z
 94.   6    END MOMENT Z
 95.   8    END MOMENT Z
 96.   9    END MOMENT Z
 97.   10   END MOMENT Z
 98.   11   END MOMENT Z
 99.   12   END MOMENT Z
100.   14   END MOMENT Z
101.   15   END MOMENT Z
102.   16   END MOMENT Z
103.   17   END MOMENT Z
104.   18   END MOMENT Z
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 105.  19  END MOMENT Z
 106.  25  END MOMENT Z
 107.  26  START MOMENT Z
 108.  31  END MOMENT Z
 109.  32  START MOMENT Z
 110.  MEMBER PROPERTIES
 111.  1 THRU 19 PRISMATIC AX 0.043 AY 2.08 IZ 1.0
 112.  20 THRU 37 PRISMATIC AX 3.0 AY 10.0 IZ 2.25
 113.  CONSTANTS E 460800 ALL
 114.  LOADING
 115.  MEMBER LOADS $ ALL LOADS UNFACTORED
 116.  20 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 117.  21 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 118.  21 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
 119.  21 FORCE Y CONCENTRATED    P -7.82  L 5.0
 120.  21 MOMENT Z CONCENTRATED   P  338.0  L 5.0
 121.  22 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 122.  23 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 123.  24 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 124.  24 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 125.  24 FORCE Y CONCENTRATED    P -7.82  L 5.0
 126.  24 MOMENT Z CONCENTRATED   P -338.0  L 5.0
 127.  25 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 128.  26 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 129.  27 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 130.  27 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
 131.  27 FORCE Y CONCENTRATED    P -7.82  L 5.0
 132.  27 MOMENT Z CONCENTRATED   P  338.0  L 5.0
 133.  28 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 134.  29 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 135.  30 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 136.  30 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 137.  30 FORCE Y CONCENTRATED    P -7.82  L 5.0
 138.  30 MOMENT Z CONCENTRATED   P -338.0  L 5.0
 139.  31 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 140.  32 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 141.  33 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 142.  33 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
 143.  33 FORCE Y CONCENTRATED    P -7.82  L 5.0
 144.  33 MOMENT Z CONCENTRATED   P  338.0  L 5.0
 145.  34 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 146.  35 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 147.  36 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 148.  36 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 149.  36 FORCE Y CONCENTRATED    P -7.82  L 5.0
 150.  36 MOMENT Z CONCENTRATED   P -338.0  L 5.0
 151.  37 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
 152.  TABULATE ALL
 153.  TRACE
 154.  SOLVE
PROBLEM CORRECTLY SPECIFIED, EXECUTION TO PROCEED
```

STRESS-11: General Structural Analysis STR/01-0

STRUCTURE

LOADING

*** MEMBER FORCES ***

MEMBER	JOINT	AXIAL FORCE	SHEAR FORCE	MOMENT
1	1	11.246	0.000	0.00
1	20	-11.246	0.000	0.00
2	2	20.016	0.000	0.00
2	21	-20.016	0.000	0.00
3	3	14.523	0.000	0.00
3	22	-14.523	0.000	0.00
4	4	13.588	0.000	0.00
4	23	-13.588	0.000	0.00
5	5	14.842	0.000	0.00
5	24	-14.842	0.000	0.00
6	6	22.625	0.000	0.00
6	25	-22.625	0.000	0.00
7	7	18.867	0.000	0.00
7	26	-18.867	0.000	0.00
8	8	22.531	0.000	0.00
8	27	-22.531	0.000	0.00
9	9	14.558	0.000	0.00
9	28	-14.558	0.000	0.00
10	10	13.130	0.000	0.00
10	29	-13.130	0.000	0.00
11	11	14.558	0.000	0.00
11	30	-14.558	0.000	0.00
12	12	22.531	0.000	0.00
12	31	-22.531	0.000	0.00
13	13	18.867	0.000	0.00
13	32	-18.867	0.000	0.00
14	14	22.625	0.000	0.00
14	33	-22.625	0.000	0.00
15	15	14.842	0.000	0.00
15	34	-14.842	0.000	0.00
16	16	13.588	0.000	0.00
16	35	-13.588	0.000	0.00
17	17	14.523	0.000	0.00
17	36	-14.523	0.000	0.00

18	18	20.016	0.000	0.00
18	37	-20.016	0.000	0.00
19	19	11.246	0.000	0.00
19	38	-11.246	0.000	0.00
20	20	0.000	11.246	0.00
20	21	0.000	-6.746	89.96
21	21	0.000	26.762	-89.96
21	22	0.000	-3.842	-68.51
22	22	0.000	18.365	68.51
22	23	0.000	7.335	-13.36
23	23	0.000	6.253	13.36
23	24	0.000	19.447	-79.34
24	24	0.000	-4.605	79.34
24	25	0.000	27.525	71.51
25	25	0.000	-4.901	-71.51
25	26	0.000	9.401	0.00
26	26	0.000	9.466	0.00
26	27	0.000	-4.966	72.16
27	27	0.000	27.497	-72.16
27	28	0.000	-4.577	-78.97
28	28	0.000	19.135	78.97
28	29	0.000	6.565	-16.12
29	29	0.000	6.565	16.12
29	30	0.000	19.135	-78.97
30	30	0.000	-4.577	78.97
30	31	0.000	27.497	72.16
31	31	0.000	-4.966	-72.16
31	32	0.000	9.466	0.00
32	32	0.000	9.401	0.00
32	33	0.000	-4.901	71.51
33	33	0.000	27.525	-71.51
33	34	0.000	-4.605	-79.34
34	34	0.000	19.447	79.34
34	35	0.000	6.253	-13.36
35	35	0.000	7.335	13.36
35	36	0.000	18.365	-68.51
36	36	0.000	-3.842	68.51
36	37	0.000	26.762	89.96
37	37	0.000	-6.746	-89.96
37	38	0.000	11.246	0.00

*** APPLIED JOINT LOADS - FREE JOINTS ***

JOINT	FORCE X	FORCE Y	MOMENT Z
20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.000	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	0.000	0.000
30	0.000	0.000	0.000
31	0.000	0.000	0.000
32	0.000	0.000	0.000
33	0.000	0.000	0.000
34	0.000	0.000	0.000
35	0.000	0.000	0.000
36	0.000	0.000	0.000
37	0.000	0.000	0.000
38	0.000	0.000	0.000

*** REACTIONS, APPLIED LOADS - SUPPORT JOINTS ***

JOINT	FORCE X	FORCE Y	MOMENT Z
1	0.000	11.246 ✓	0.000
2	0.000	20.016 ✓	0.000
3	0.000	14.523 ✓	0.000
4	0.000	13.588 ✓	0.000
5	0.000	14.842 ✓	0.000
6	0.000	22.625 ✓	0.000
7	0.000	18.867 ✓	0.000
8	0.000	22.531 ✓	0.000
9	0.000	14.558 ✓	0.000
10	0.000	13.130 ✓	0.000
11	0.000	14.558	0.000
12	0.000	22.531	0.000
13	0.000	18.867	0.000
14	0.000	22.625	0.000
15	0.000	14.842	0.000
16	0.000	13.588	0.000
17	0.000	14.523	0.000
18	0.000	20.016	0.000
19	0.000	11.246	0.000

*** FREE JOINT DISPLACEMENTS ***

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
20	0.0000	-0.0057	-0.0006
21	0.0000	-0.0101	-0.0001
22	0.0000	-0.0073	0.0002
23	0.0000	-0.0069	0.0000
24	0.0000	-0.0075	-0.0002
25	0.0000	-0.0114	-0.0001
26	0.0000	-0.0095	0.0000
27	0.0000	-0.0114	0.0001
28	0.0000	-0.0073	0.0003
29	0.0000	-0.0066	0.0000
30	0.0000	-0.0073	-0.0003
31	0.0000	-0.0114	-0.0001
32	0.0000	-0.0095	0.0000
33	0.0000	-0.0114	0.0001
34	0.0000	-0.0075	0.0002
35	0.0000	-0.0069	0.0000
36	0.0000	-0.0073	-0.0002
37	0.0000	-0.0101	0.0001
38	0.0000	-0.0057	0.0006

*** SUPPORT JOINT DISPLACEMENTS ***

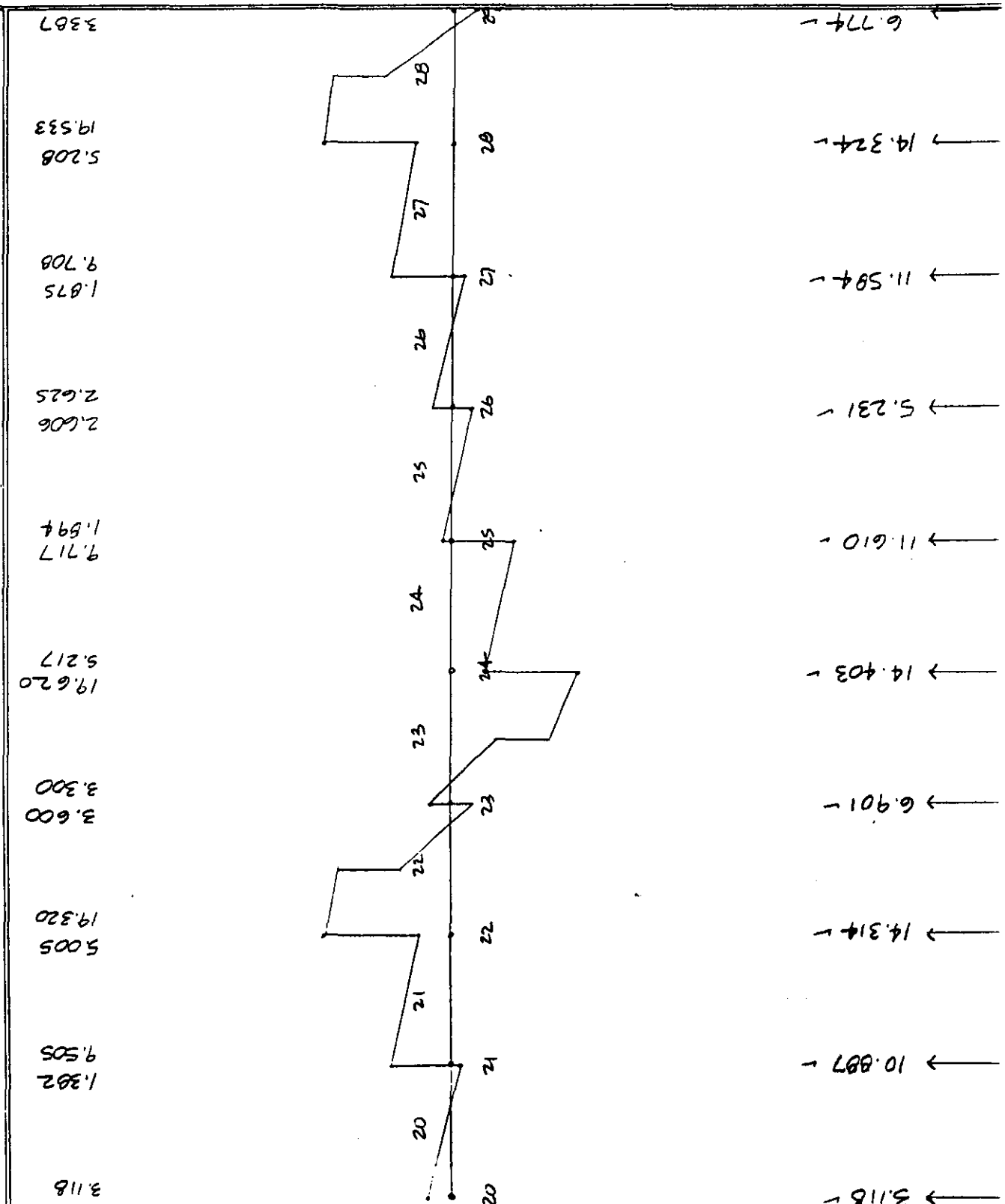
JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000

BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CCDPW
Plant UPPER FLAMINGO WASH D.B. Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 2 SHEAR DIAGRAM

Computed By RJB
Date 5/15 19 89
Checked By
Date 19
Page of

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RGN-172A

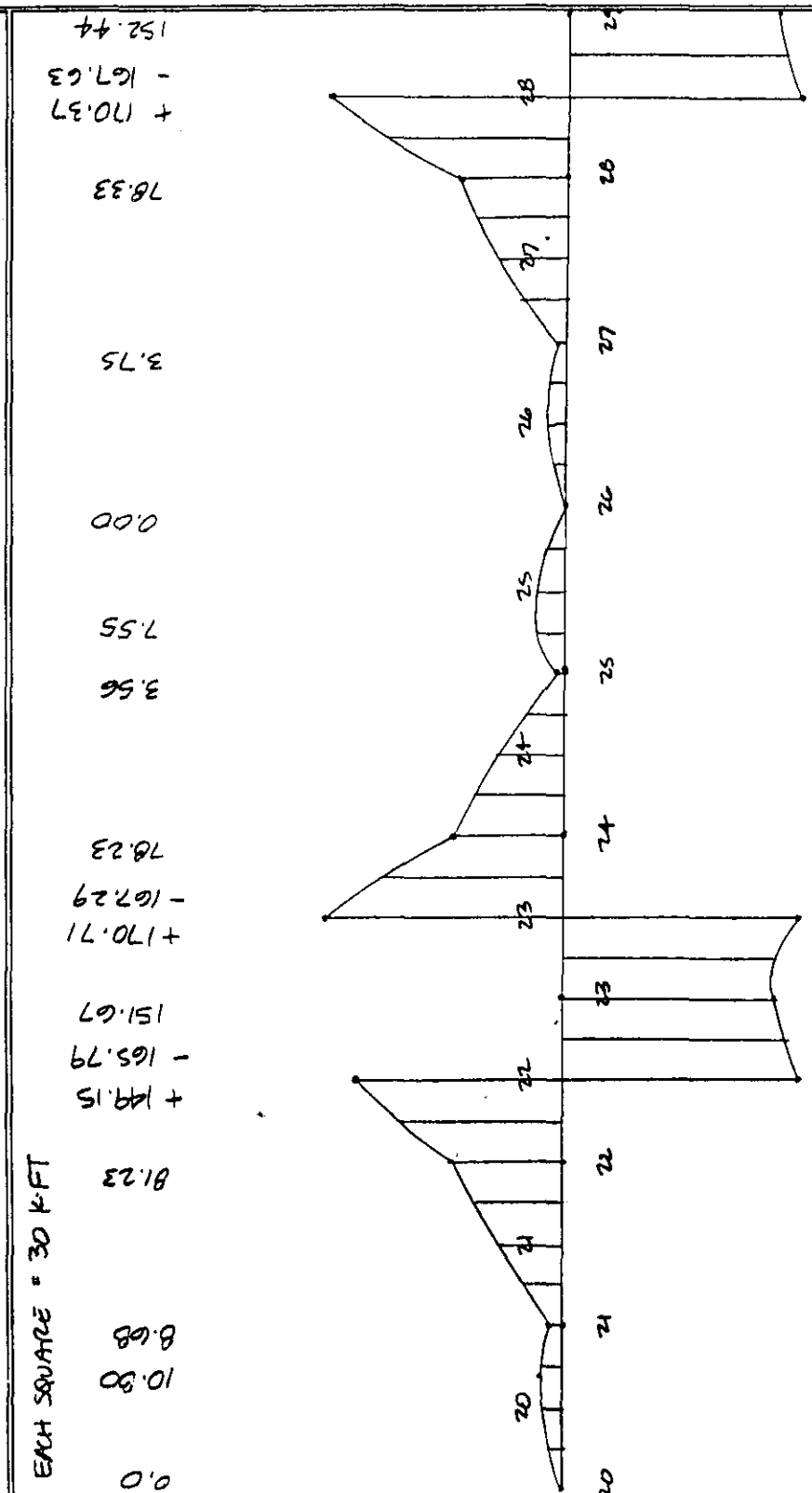
BLACK & VEATCH
ENGINEERS-ARCHITECTS

Owner CCD PW
Plant UPPER FLAMINGO WASH DB Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 2 MOMENT DIAGRAM

Computed By RJB
Date 5/15 19 89
Checked By
Date 19
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REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL

```
  1.  STRUCTURE
  2.  $ MAT FOUNDATION MODEL
  3.  $ SECTION 2
  4.  $ SUBGRADE REACTION Ks = 200 KCF
  5.  $ FILE NAME 2MAT200.DAT
  6.  TYPE PLANE FRAME
  8.  NUMBER OF JOINTS 38
  9.  NUMBER OF MEMBERS 37
 10.  NUMBER OF LOADINGS 1
 11.  JOINT COORDINATES
 12.  1    0.0   0.0 SUPPORT
 13.  2   10.0   0.0 SUPPORT
 14.  3   20.0   0.0 SUPPORT
 15.  4   30.0   0.0 SUPPORT
 16.  5   40.0   0.0 SUPPORT
 17.  6   50.0   0.0 SUPPORT
 18.  7   60.0   0.0 SUPPORT
 19.  8   70.0   0.0 SUPPORT
 20.  9   80.0   0.0 SUPPORT
 21.  10  90.0   0.0 SUPPORT
 22.  11 100.0   0.0 SUPPORT
 23.  12 110.0   0.0 SUPPORT
 24.  13 120.0   0.0 SUPPORT
 25.  14 130.0   0.0 SUPPORT
 26.  15 140.0   0.0 SUPPORT
 27.  16 150.0   0.0 SUPPORT
 28.  17 160.0   0.0 SUPPORT
 29.  18 170.0   0.0 SUPPORT
 30.  19 180.0   0.0 SUPPORT
 31.  20   0.0  10.0
 32.  21  10.0  10.0
 33.  22  20.0  10.0
 34.  23  30.0  10.0
 35.  24  40.0  10.0
 36.  25  50.0  10.0
 37.  26  60.0  10.0
 38.  27  70.0  10.0
 39.  28  80.0  10.0
 40.  29  90.0  10.0
 41.  30 100.0  10.0
 42.  31 110.0  10.0
 43.  32 120.0  10.0
 44.  33 130.0  10.0
 45.  34 140.0  10.0
 46.  35 150.0  10.0
 47.  36 160.0  10.0
 48.  37 170.0  10.0
 49.  38 180.0  10.0
 50.  MEMBER INCIDENCES
 51.  1 1 20
 52.  2 2 21
```

```
 53.  3 3 22
 54.  4 4 23
 55.  5 5 24
 56.  6 6 25
 57.  7 7 26
 58.  8 8 27
 59.  9 9 28
 60.  10 10 29
 61.  11 11 30
 62.  12 12 31
 63.  13 13 32
 64.  14 14 33
 65.  15 15 34
 66.  16 16 35
 67.  17 17 36
 68.  18 18 37
 69.  19 19 38
 70.  20 20 21
 71.  21 21 22
 72.  22 22 23
 73.  23 23 24
 74.  24 24 25
 75.  25 25 26
 76.  26 26 27
 77.  27 27 28
 78.  28 28 29
 79.  29 29 30
 80.  30 30 31
 81.  31 31 32
 82.  32 32 33
 83.  33 33 34
 84.  34 34 35
 85.  35 35 36
 86.  36 36 37
 87.  37 37 38
 88.  MEMBER RELEASES
 89.  1    END MOMENT Z
 90.  2    END MOMENT Z
 91.  3    END MOMENT Z
 92.  4    END MOMENT Z
 93.  5    END MOMENT Z
 94.  6    END MOMENT Z
 95.  8    END MOMENT Z
 96.  9    END MOMENT Z
 97.  10   END MOMENT Z
 98.  11   END MOMENT Z
 99.  12   END MOMENT Z
100.  14   END MOMENT Z
101.  15   END MOMENT Z
102.  16   END MOMENT Z
103.  17   END MOMENT Z
104.  18   END MOMENT Z
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105.  19  END MOMENT Z
106.  25  END MOMENT Z
107.  26  START MOMENT Z
 08.  31 END MOMENT Z
109.  32 START MOMENT Z
110.  MEMBER PROPERTIES
111.  1 THRU 19 PRISMATIC AX 0.043 AY 2.08 IZ 1.0
112.  20 THRU 37 PRISMATIC AX 3.0 AY 10.0 IZ 2.25
113.  CONSTANTS E 460800 ALL
114.  LOADING
115.  MEMBER LOADS $ ALL LOADS UNFACTORED
116.  20 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
117.  22 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
118.  22 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
119.  22 FORCE Y CONCENTRATED    P -7.82  L 5.0
120.  22 MOMENT Z CONCENTRATED   P  338.0 L 5.0
121.  21 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
122.  24 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
123.  23 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
124.  23 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
125.  23 FORCE Y CONCENTRATED    P -7.82  L 5.0
126.  23 MOMENT Z CONCENTRATED   P -338.0 L 5.0
127.  25 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
128.  26 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
129.  28 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
130.  28 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
131.  28 FORCE Y CONCENTRATED    P -7.82  L 5.0
132.  28 MOMENT Z CONCENTRATED   P  338.0 L 5.0
 33.  27 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
_34.  30 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
135.  29 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
136.  29 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
137.  29 FORCE Y CONCENTRATED    P -7.82  L 5.0
138.  29 MOMENT Z CONCENTRATED   P -338.0 L 5.0
139.  31 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
140.  32 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
141.  34 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
142.  34 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
143.  34 FORCE Y CONCENTRATED    P -7.82  L 5.0
144.  34 MOMENT Z CONCENTRATED   P  338.0 L 5.0
145.  33 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
146.  36 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
147.  35 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
148.  35 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
149.  35 FORCE Y CONCENTRATED    P -7.82  L 5.0
150.  35 MOMENT Z CONCENTRATED   P -338.0 L 5.0
151.  37 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 10.0
152.  TABULATE ALL
153.  TRACE
154.  SOLVE
PROBLEM CORRECTLY SPECIFIED, EXECUTION TO PROCEED
```

STRUCTURE
==========

LOADING
==========

*** MEMBER FORCES ***

MEMBER	JOINT	AXIAL FORCE	SHEAR FORCE	MOMENT
1	1	3.118	0.000	0.00
1	20	-3.118	0.000	0.00
2	2	10.887	0.000	0.00
2	21	-10.887	0.000	0.00
3	3	14.314	0.000	0.00
3	22	-14.314	0.000	0.00
4	4	6.901	0.000	0.00
4	23	-6.901	0.000	0.00
5	5	14.403	0.000	0.00
5	24	-14.403	0.000	0.00
6	6	11.610	0.000	0.00
6	25	-11.610	0.000	0.00
7	7	5.231	0.000	0.00
7	26	-5.231	0.000	0.00
8	8	11.584	0.000	0.00
8	27	-11.584	0.000	0.00
9	9	14.324	0.000	0.00
9	28	-14.324	0.000	0.00
10	10	6.774	0.000	0.00
10	29	-6.774	0.000	0.00
11	11	14.324	0.000	0.00
11	30	-14.324	0.000	0.00
12	12	11.584	0.000	0.00
12	31	-11.584	0.000	0.00
13	13	5.231	0.000	0.00
13	32	-5.231	0.000	0.00
14	14	11.610	0.000	0.00
14	33	-11.610	0.000	0.00
15	15	14.403	0.000	0.00
15	34	-14.403	0.000	0.00
16	16	6.901	0.000	0.00
16	35	-6.901	0.000	0.00
17	17	14.314	0.000	0.00
17	36	-14.314	0.000	0.00

18	18	10.887	0.000	0.00
18	37	-10.887	0.000	0.00
19	19	3.118	0.000	0.00
19	38	-3.118	0.000	0.00
20	20	0.000	3.118	0.00
20	21	0.000	1.382	8.68
21	21	0.000	9.505	-8.68
21	22	0.000	-5.005	81.23
22	22	0.000	19.319	-81.23
22	23	0.000	3.601	-151.67
23	23	0.000	3.301	151.67
23	24	0.000	19.619	78.23
24	24	0.000	-5.217	-78.23
24	25	0.000	9.717	3.56
25	25	0.000	1.894	-3.56
25	26	0.000	2.606	0.00
26	26	0.000	2.625	0.00
26	27	0.000	1.875	3.75
27	27	0.000	9.709	-3.75
27	28	0.000	-5.209	78.33
28	28	0.000	19.533	-78.33
28	29	0.000	3.387	-152.44
29	29	0.000	3.387	152.44
29	30	0.000	19.533	78.33
30	30	0.000	-5.209	-78.33
30	31	0.000	9.709	3.75
31	31	0.000	1.875	-3.75
31	32	0.000	2.625	0.00
32	32	0.000	2.606	0.00
32	33	0.000	1.894	3.56
33	33	0.000	9.717	-3.56
33	34	0.000	-5.217	78.23
34	34	0.000	19.619	-78.23
34	35	0.000	3.301	-151.67
35	35	0.000	3.601	151.67
35	36	0.000	19.319	81.23
36	36	0.000	-5.005	-81.23
36	37	0.000	9.505	8.68
37	37	0.000	1.382	-8.68
37	38	0.000	3.118	0.00

*** APPLIED JOINT LOADS - CASE ---

21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.000	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	0.000	0.000
30	0.000	0.000	0.000
31	0.000	0.000	0.000
32	0.000	0.000	0.000
33	0.000	0.000	0.000
34	0.000	0.000	0.000
35	0.000	0.000	0.000
36	0.000	0.000	0.000
37	0.000	0.000	0.000
38	0.000	0.000	0.000

*** REACTIONS, APPLIED LOADS - SUPPORT JOINTS ***

JOINT	FORCE X	FORCE Y	MOMENT Z
1	0.000	3.118	0.000
2	0.000	10.887	0.000
3	0.000	14.314	0.000
4	0.000	6.901	0.000
5	0.000	14.403	0.000
6	0.000	11.610	0.000
7	0.000	5.231	0.000
8	0.000	11.584	0.000
9	0.000	14.324	0.000
10	0.000	6.774	0.000
11	0.000	14.324	0.000
12	0.000	11.584	0.000
13	0.000	5.231	0.000
14	0.000	11.610	0.000
15	0.000	14.403	0.000
16	0.000	6.901	0.000
17	0.000	14.314	0.000
18	0.000	10.887	0.000
19	0.000	3.118	0.000

*** FREE JOINT DISPLACEMENTS ***

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION

22	0.0000	-0.0072	0.0001
23	0.0000	-0.0035	0.0000
24	0.0000	-0.0073	-0.0001
25	0.0000	-0.0059	0.0003
26	0.0000	-0.0026	0.0000
27	0.0000	-0.0058	-0.0003
28	0.0000	-0.0072	0.0001
29	0.0000	-0.0034	0.0000
30	0.0000	-0.0072	-0.0001
31	0.0000	-0.0058	0.0003
32	0.0000	-0.0026	0.0000
33	0.0000	-0.0059	-0.0003
34	0.0000	-0.0073	0.0001
35	0.0000	-0.0035	0.0000
36	0.0000	-0.0072	-0.0001
37	0.0000	-0.0055	0.0003
38	0.0000	-0.0016	0.0004

*** SUPPORT JOINT DISPLACEMENTS ***

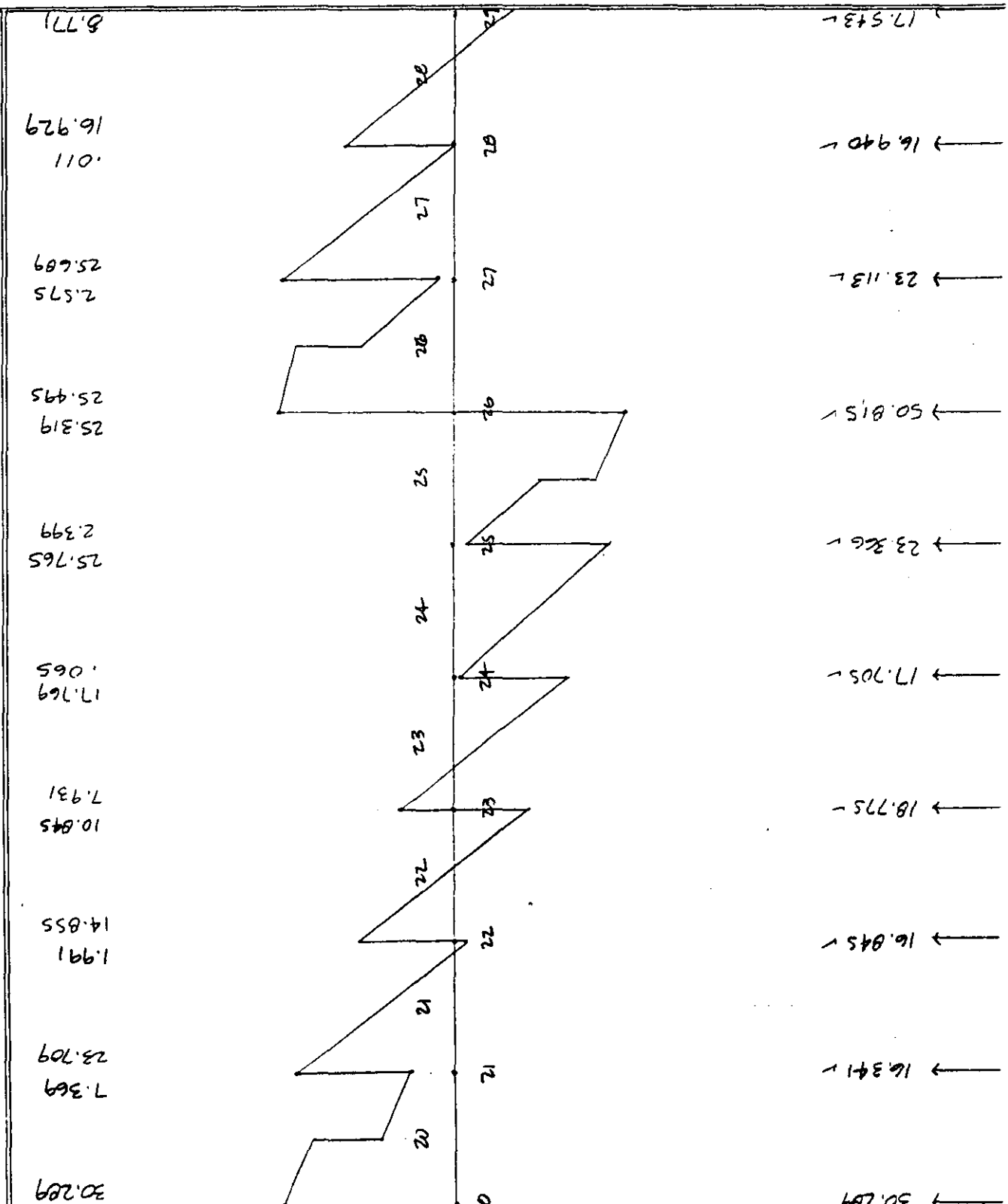
JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000

BLACK & VEATCH
ENGINEERS-ARCHITECTS

Owner CCDPW
Plant UPPER FLAMINGO WASH DB Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 3 SHEAR DIAGRAM

Computed By RJB
Date 5/15 19 89
Checked By
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P-GN-172A

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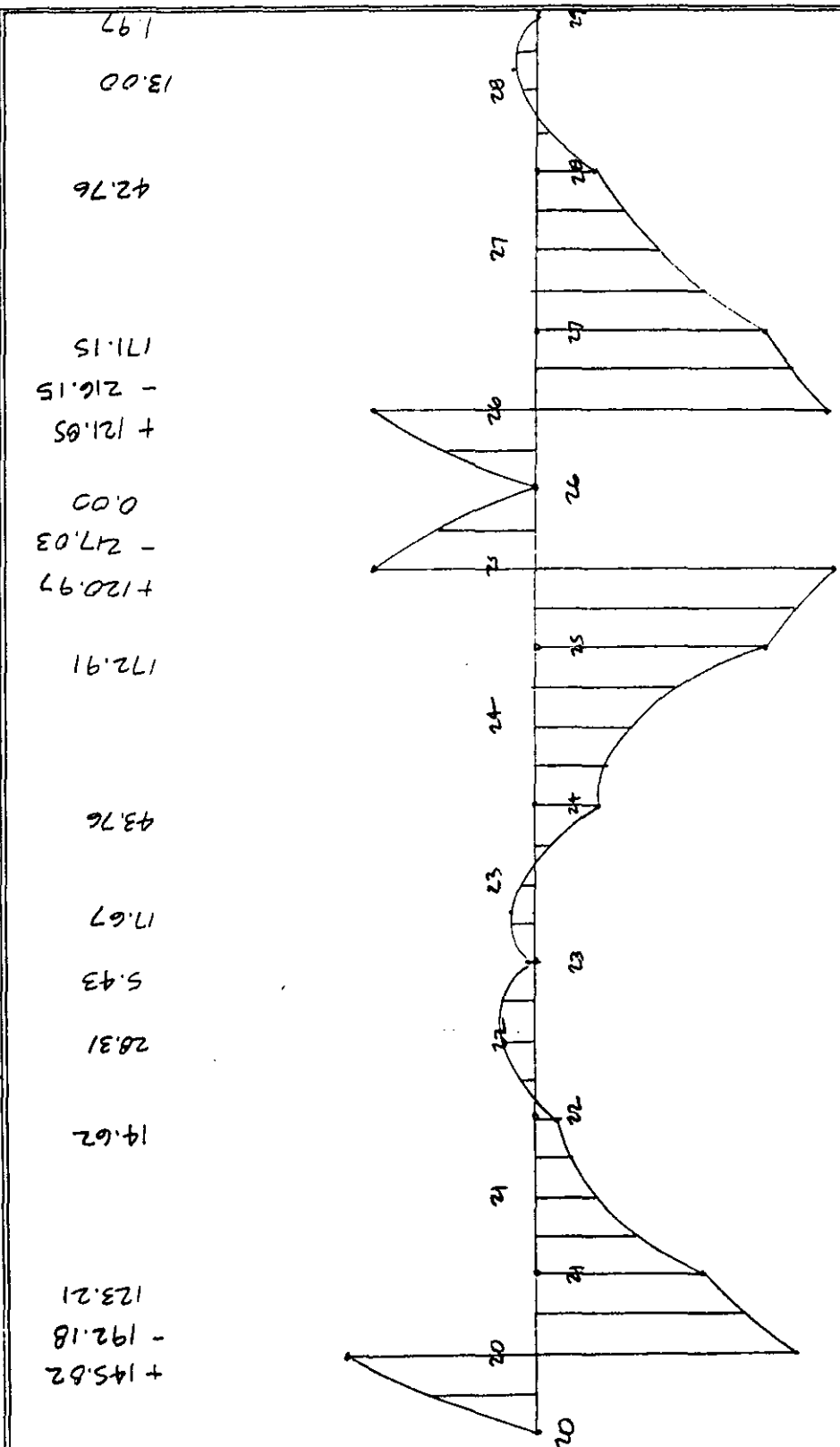
BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CCDPW
Plant UPPER FAN.INGO WASH D.B Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
K_s = 200 KCF SECTION 3 MOMENT DIAGRAM

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STRESS-11: General Structural Analysis STR/01-0

```
  1.  STRUCTURE
  2.  $ MAT FOUNDATION MODEL
  3.  $ SECTION 3
  4.  $ SUBGRADE REACTION Ks = 200 KCF
  5.  $ FILE NAME 3MAT200.DAT
  6.  TYPE PLANE FRAME
  7.  NUMBER OF JOINTS 38
  8.  NUMBER OF SUPPORTS 19
  9.  NUMBER OF MEMBERS 37
 10.  NUMBER OF LOADINGS 1
 11.  JOINT COORDINATES
 12.  1     0.0    0.0 SUPPORT
 13.  2    10.0    0.0 SUPPORT
 14.  3    20.0    0.0 SUPPORT
 15.  4    30.0    0.0 SUPPORT
 16.  5    40.0    0.0 SUPPORT
 17.  6    50.0    0.0 SUPPORT
 18.  7    60.0    0.0 SUPPORT
 19.  8    70.0    0.0 SUPPORT
 20.  9    80.0    0.0 SUPPORT
 21.  10   90.0    0.0 SUPPORT
 22.  11  100.0    0.0 SUPPORT
 23.  12  110.0    0.0 SUPPORT
 24.  13  120.0    0.0 SUPPORT
 25.  14  130.0    0.0 SUPPORT
 26.  15  140.0    0.0 SUPPORT
 27.  16  150.0    0.0 SUPPORT
 28.  17  160.0    0.0 SUPPORT
 29.  18  170.0    0.0 SUPPORT
 30.  19  180.0    0.0 SUPPORT
 31.  20    0.0   10.0
 32.  21   10.0   10.0
 33.  22   20.0   10.0
 34.  23   30.0   10.0
 35.  24   40.0   10.0
 36.  25   50.0   10.0
 37.  26   60.0   10.0
 38.  27   70.0   10.0
 39.  28   80.0   10.0
 40.  29   90.0   10.0
 41.  30  100.0   10.0
 42.  31  110.0   10.0
 43.  32  120.0   10.0
 44.  33  130.0   10.0
 45.  34  140.0   10.0
 46.  35  150.0   10.0
 47.  36  160.0   10.0
 48.  37  170.0   10.0
 49.  38  180.0   10.0
 50.  MEMBER INCIDENCES
 51.  1 1 20
 52.  2 2 21
```

```
 53.   3 3 22
 54.   4 4 23
 55.   5 5 24
 56.   6 6 25
 57.   7 7 26
 58.   8 8 27
 59.   9 9 28
 60.   10 10 29
 61.   11 11 30
 62.   12 12 31
 63.   13 13 32
 64.   14 14 33
 65.   15 15 34
 66.   16 16 35
 67.   17 17 36
 68.   18 18 37
 69.   19 19 38
 70.   20 20 21
 71.   21 21 22
 72.   22 22 23
 73.   23 23 24
 74.   24 24 25
 75.   25 25 26
 76.   26 26 27
 77.   27 27 28
 78.   28 28 29
 79.   29 29 30
 80.   30 30 31
 81.   31 31 32
 82.   32 32 33
 83.   33 33 34
 84.   34 34 35
 85.   35 35 36
 86.   36 36 37
 87.   37 37 38
 88.  MEMBER RELEASES
 89.   1    END MOMENT Z
 90.   2    END MOMENT Z
 91.   3    END MOMENT Z
 92.   4    END MOMENT Z
 93.   5    END MOMENT Z
 94.   6    END MOMENT Z
 95.   8    END MOMENT Z
 96.   9    END MOMENT Z
 97.   10   END MOMENT Z
 98.   11   END MOMENT Z
 99.   12   END MOMENT Z
100.   14   END MOMENT Z
101.   15   END MOMENT Z
102.   16   END MOMENT Z
103.   17   END MOMENT Z
104.   18   END MOMENT Z
```

```
 105.  19  END MOMENT Z
 106.  25 END MOMENT Z
 107.  26 START MOMENT Z
 108.  31 END MOMENT Z
 109.  32 START MOMENT Z
 110.  MEMBER PROPERTIES
 111.  1 THRU 19 PRISMATIC AX 0.043 AY 2.08 IZ 1.0
 112.  20 THRU 37 PRISMATIC AX 3.0 AY 10.0 IZ 2.25
 113.  CONSTANTS E 460800 ALL
 114.  LOADING
 115.  MEMBER LOADS $ ALL LOADS UNFACTORED
 116.  21 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 117.  20 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 118.  20 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
 119.  20 FORCE Y CONCENTRATED    P -7.82  L 5.0
 120.  20 MOMENT Z CONCENTRATED   P  338.0 L 5.0
 121.  22 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 122.  23 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 123.  25 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 124.  25 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 125.  25 FORCE Y CONCENTRATED    P -7.82  L 5.0
 126.  25 MOMENT Z CONCENTRATED   P -338.0 L 5.0
 127.  24 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 128.  27 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 129.  26 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 130.  26 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
  31.  26 FORCE Y CONCENTRATED    P -7.82  L 5.0
 132.  26 MOMENT Z CONCENTRATED   P  338.0 L 5.0
 133.  28 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 134.  29 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 135.  31 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 136.  31 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 137.  31 FORCE Y CONCENTRATED    P -7.82  L 5.0
 138.  31 MOMENT Z CONCENTRATED   P -338.0 L 5.0
 139.  30 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 140.  33 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 141.  32 FORCE Y UNIFORM          W -0.45  LA 0.0 LB 5.0
 142.  32 FORCE Y UNIFORM          W -2.57  LA 5.0 LB 10.0
 143.  32 FORCE Y CONCENTRATED    P -7.82  L 5.0
 144.  32 MOMENT Z CONCENTRATED   P  338.0 L 5.0
 145.  34 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 146.  35 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 147.  37 FORCE Y UNIFORM          W -0.45  LA 5.0 LB 10.0
 148.  37 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 5.0
 149.  37 FORCE Y CONCENTRATED    P -7.82  L 5.0
 150.  37 MOMENT Z CONCENTRATED   P -338.0 L 5.0
 151.  36 FORCE Y UNIFORM          W -2.57  LA 0.0 LB 10.0
 152.  TABULATE ALL
 153.  TRACE
 154.  SOLVE
PROBLEM CORRECTLY SPECIFIED, EXECUTION TO PROCEED
```

STRUCTURE

LOADING

*** MEMBER FORCES ***

MEMBER	JOINT	AXIAL FORCE	SHEAR FORCE	MOMENT
1	1	30.289	0.000	0.00
1	20	-30.289	0.000	0.00
2	2	16.341	0.000	0.00
2	21	-16.341	0.000	0.00
3	3	16.845	0.000	0.00
3	22	-16.845	0.000	0.00
4	4	18.775	0.000	0.00
4	23	-18.775	0.000	0.00
5	5	17.705	0.000	0.00
5	24	-17.705	0.000	0.00
6	6	23.366	0.000	0.00
6	25	-23.366	0.000	0.00
7	7	50.815	0.000	0.00
7	26	-50.815	0.000	0.00
8	8	23.113	0.000	0.00
8	27	-23.113	0.000	0.00
9	9	16.940	0.000	0.00
9	28	-16.940	0.000	0.00
10	10	17.543	0.000	0.00
10	29	-17.543	0.000	0.00
11	11	16.940	0.000	0.00
11	30	-16.940	0.000	0.00
12	12	23.113	0.000	0.00
12	31	-23.113	0.000	0.00
13	13	50.815	0.000	0.00
13	32	-50.815	0.000	0.00
14	14	23.366	0.000	0.00
14	33	-23.366	0.000	0.00
15	15	17.705	0.000	0.00
15	34	-17.705	0.000	0.00
16	16	18.775	0.000	0.00
16	35	-18.775	0.000	0.00
17	17	16.845	0.000	0.00
17	36	-16.845	0.000	0.00

18	18	16.341	0.000	0.00
18	37	-16.341	0.000	0.00
19	19	30.289	0.000	0.00
19	38	-30.289	0.000	0.00
20	20	0.000	30.289	0.00
20	21	0.000	-7.369	-123.21
21	21	0.000	23.710	123.21
21	22	0.000	1.990	-14.62
22	22	0.000	14.855	14.62
22	23	0.000	10.845	5.43
23	23	0.000	7.930	-5.43
23	24	0.000	17.770	-43.76
24	24	0.000	-0.065	43.76
24	25	0.000	25.765	-172.91
25	25	0.000	-2.399	172.91
25	26	0.000	25.319	0.00
26	26	0.000	25.495	0.00
26	27	0.000	-2.575	-171.15
27	27	0.000	25.688	171.15
27	28	0.000	0.012	-42.76
28	28	0.000	16.929	42.76
28	29	0.000	8.771	-1.97
29	29	0.000	8.771	1.97
29	30	0.000	16.929	-42.76
30	30	0.000	0.012	42.76
30	31	0.000	25.688	-171.15
31	31	0.000	-2.575	171.15
31	32	0.000	25.495	0.00
32	32	0.000	25.319	0.00
32	33	0.000	-2.399	-172.91
33	33	0.000	25.765	172.91
33	34	0.000	-0.065	-43.76
34	34	0.000	17.770	43.76
34	35	0.000	7.930	5.43
35	35	0.000	10.845	-5.43
35	36	0.000	14.855	-14.62
36	36	0.000	1.990	14.62
36	37	0.000	23.710	-123.21
37	37	0.000	-7.369	123.21
37	38	0.000	30.289	0.00

*** APPLIED JOINT LOADS - FREE JOINTS ***

20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.000	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	0.000	0.000
30	0.000	0.000	0.000
31	0.000	0.000	0.000
32	0.000	0.000	0.000
33	0.000	0.000	0.000
34	0.000	0.000	0.000
35	0.000	0.000	0.000
36	0.000	0.000	0.000
37	0.000	0.000	0.000
38	0.000	0.000	0.000

*** REACTIONS, APPLIED LOADS - SUPPORT JOINTS ***

JOINT	FORCE X	FORCE Y	MOMENT Z
1	0.000	30.289	0.000
2	0.000	16.341	0.000
3	0.000	16.845	0.000
4	0.000	18.775	0.000
5	0.000	17.705	0.000
6	0.000	23.366	0.000
7	0.000	50.815	0.000
8	0.000	23.113	0.000
9	0.000	16.940	0.000
10	0.000	17.543	0.000
11	0.000	16.940	0.000
12	0.000	23.113	0.000
13	0.000	50.815	0.000
14	0.000	23.366	0.000
15	0.000	17.705	0.000
16	0.000	18.775	0.000
17	0.000	16.845	0.000
18	0.000	16.341	0.000
19	0.000	30.289	0.000

*** FREE JOINT DISPLACEMENTS ***

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
20	0.0000	-0.0153	0.0007
21	0.0000	-0.0082	0.0003
22	0.0000	-0.0085	-0.0002
23	0.0000	-0.0095	0.0000

25	0.0000	-0.0118	-0.0008
26	0.0000	-0.0256	0.0000
27	0.0000	-0.0117	0.0008
28	0.0000	-0.0085	0.0000
29	0.0000	-0.0089	0.0000
30	0.0000	-0.0085	0.0000
31	0.0000	-0.0117	-0.0008
32	0.0000	-0.0256	0.0000
33	0.0000	-0.0118	0.0008
34	0.0000	-0.0089	0.0000
35	0.0000	-0.0095	0.0000
36	0.0000	-0.0085	0.0002
37	0.0000	-0.0082	-0.0003
38	0.0000	-0.0153	-0.0007

*** SUPPORT JOINT DISPLACEMENTS ***

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000

BLACK & VEATCH
ENGINEERS-ARCHITECTS

Owner CCDPW
Plant UPPER FLAMINGO WASH DB Unit
Project No. File No.
Title SPILLWAY FOOTING DESIGN
COMPUTER SUMMARY

Computed By RJB
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	SECTION 1	SECTION 2	SECTION 3
MAX SHEAR	27.52 K	19.62 K	30.28 K
MAX + MOMENT	218.15 K·FT	170.71 K·FT	145.92 K·FT
MAX − MOMENT	134.49 K·FT	167.63 K·FT	217.03 K·FT

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BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner CCDPW | Computed By RJB
Plant UPPER FLAMINGO WASH D.B Unit | Date 5/15 19 99
Project No. File No. | Checked By
Title SPILLWAY FOOTING DESIGN | Date 19
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MOMENTS ARE A MIXTURE OF LIVE & DEAD LOADS USE A FACTOR OF 1.6

PER EM-710 LOADS CAN BE REDUCED BY 25%. REDUCE BY 15% IN THIS CASE BECAUSE LOADING IS MIXED.

$M_u = (1.6)(.85)(218.15\ K\cdot FT) = 296.68\ K\cdot FT$

$M_n = \frac{(296.68\ K\cdot FT)}{.9} = \underline{329.64\ K\cdot FT}$

$V_u = (1.6)(.85)(30.28K) = 41.18K$

$V_n = \frac{41.18^K}{.85} = \underline{48.45^K}$

$\rho = .007 \quad K_n = 385.41 \quad a = .165d \quad 2\sqrt{\frac{f'_c}{2}} = 109.54$

$d_v = \frac{(48.45^K)(1000)}{(109.54)(12)} = 36.86"$

$d_M = \sqrt{\frac{(329.64\ K\cdot FT)(12)(1000)}{(385.41)(12)}} = 29.24"$

DUE TO THE TYPE OF ANALYSIS CHOSEN TO FIND SHEARS & MOMENT 32.5" OF d WILL BE CONSIDERED ADEQUATE

$d_{ACTUAL} = 36" - 3" - .5" = 32.5"$

$a = .165d = (.165)(32.5") = 5.36"$

$z = d - a/2 = 32.5" - \frac{5.36"}{2} = 29.82"$

$T = \frac{M_u}{z} = \frac{(329.64\ K\cdot FT)(1000)(12)}{29.82"} = 132652\ LB$

$A_s = \frac{132652\ LB}{60000\ PSI} = 2.21\ IN^2$

USE #8 BARS @ 4"
$A_s = 2.36\ IN^2$

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PANELS ARE APPROXIMATELY 65 FT LONG PERPENDICULAR TO BENDING STEEL.

SIZE TEMP STEEL FOR $\ell = .003$ PER EM-730.10

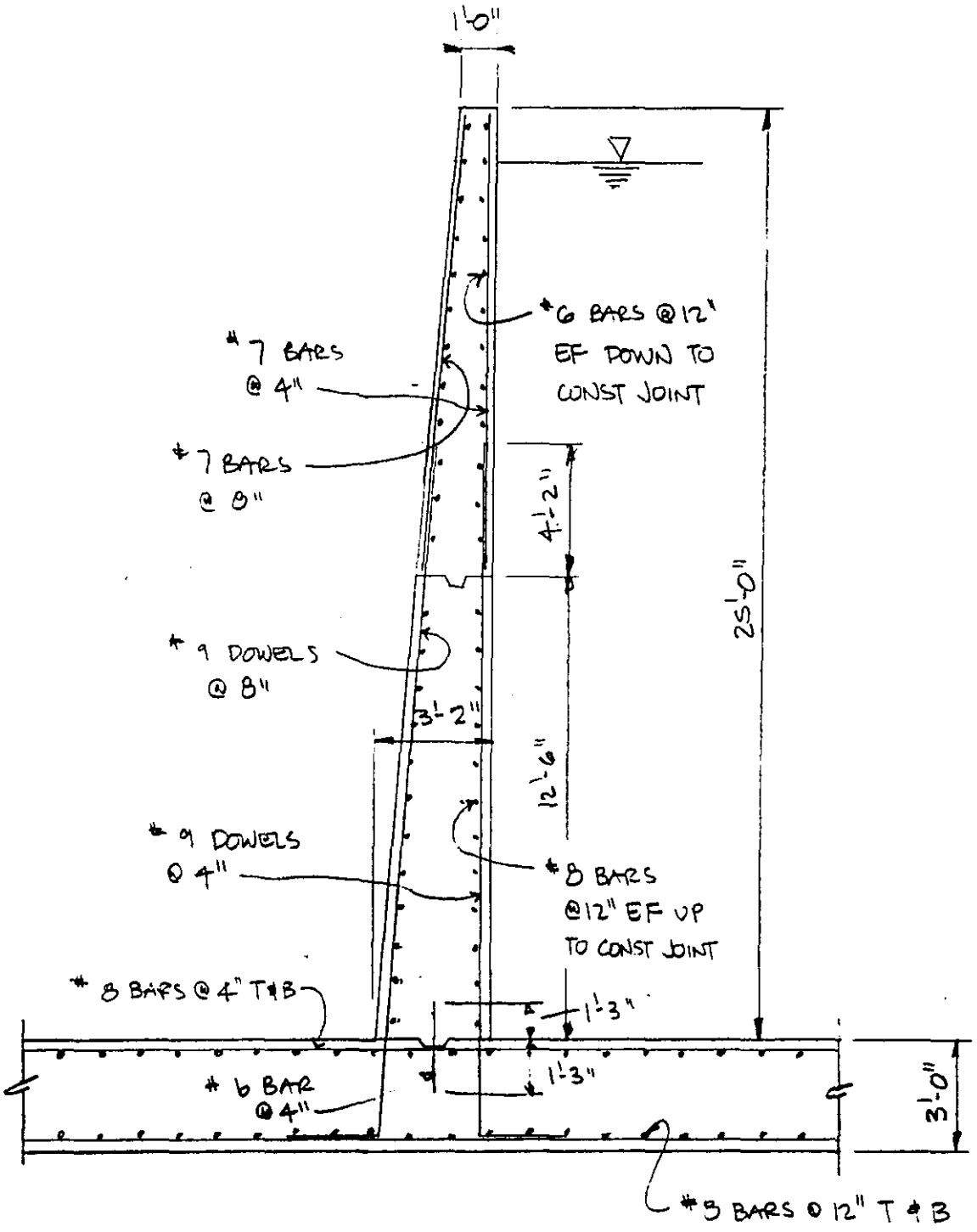
$A_s = (36")(12")(.003) = 1.30\ IN^2$

A_s PER BAR $= \frac{1.30}{2}\ IN^2 = .65\ IN^2$ USE # 8 BARS @ 12"

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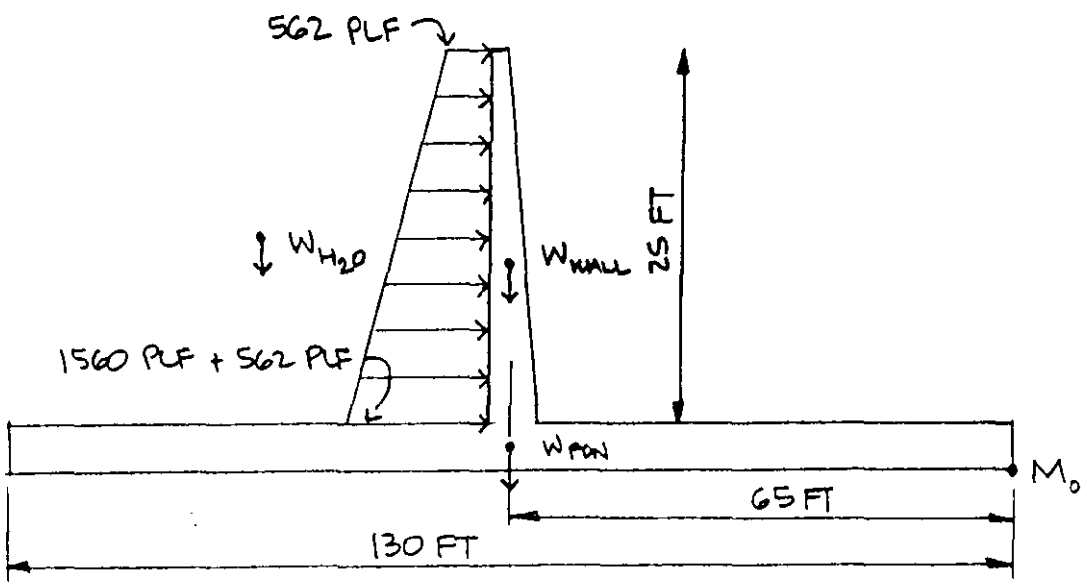
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RGN-1724

CHECK WALL/SLAB COMBINATION FOR OVERTURNING



OVERTURNING MOMENT = $\frac{(562\ PLF)(25FT)}{1000}(15.5\ FT) =$ 218 K·FT

$\frac{(1560\ PCF)(25\ FT)}{(2)(1000)}\left[\frac{25FT}{3}+3\right] =$ 221 K·FT

439 K·FT

RESISTING MOMENT = $\frac{(2.08\ FT)(25FT)}{1000}(1FT)(150\ PCF)(65\ FT) =$ 507 K·FT

$\frac{(130\ FT)(3\ FT)}{1000}(1\ FT)(150\ PCF)(65\ FT) =$ 3803 K·FT

$\frac{(65\ FT)(35FT)}{1000}(1FT)(62.4\ PCF)(98\ FT) =$ 13912 K·FT

18222 K·FT

NO OVERTURNING FOR STRUCTURE AS A WHOLE

FOOTING IS ON 12' OF GRANULAR FILL, DESIGN SHEAR DOWELS BETWEEN FOOTING & COUNTERFORT WALLS TO HANDLE SLIDING.

$$F = \left(562 + \frac{2122}{2}\ PLF\right)\left(\frac{25\ FT}{1000}\right)(180\ FT) = 6039\ K$$

LENGTH OF WALL PARALLEL TO FLOW = (2)(130 FT) = 260 FT

$$\frac{6039\ K}{260\ FT} = 23\ K/FT$$

CHECK 3/4" ϕ A36 BARS @ 12"

$$A = \frac{\pi d^2}{4} = \frac{\pi (.75)^2}{4} = .44\ IN^2$$

$$f_v = \frac{23\ K}{.44\ IN^2} = 52\ KSI$$

$$F_v = (.40)(36\ KSI) = 14.40\ KSI$$

PLACE BARS AT 3" CTRS

$$\frac{52\ KSI}{4} = 13\ KSI$$

USE 3/4" ϕ BARS @ 3" CTRS

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PGN-1724

CHECK SHEAR FRICTION AT BASE OF WALL

$V_n = 51^K$ $\quad V_n = A_{vf} f_y / \mu$ $\quad \mu = 0.6\lambda$ (NOT INTENTIONALLY ROUGHENED)

$\lambda = 1.0$ FOR NORMAL WEIGHT CONCRETE

REDUCE V_n BY PERMANENT NET COMPRESSION OF WALL

$V_n' = 51^K - 7.82^K = 43.18^K$

$A_{vf}\,(REQD) = \dfrac{(43.18^K)(1000)}{(60000\,PSI)(.6)} = 1.20\ IN^2$

ADD A #6 BAR @ 4"
$A_s = 1.32\ IN^2$

CHECK SHEAR FRICTION AT CONST JOINT IN WALL

$V_n = 17.87^K$

$V_n' = 17.87^K - \left(\dfrac{29.46" + 12"}{(12)(2)}\right)(1\,FT)\dfrac{(12.5\,FT)(150\,PCF)}{1000} = 15.02^K$

$A_{vf}\,(REQD) = \dfrac{(15.02^K)(1000)}{(60000\,PSI)(.6)} = .42"$

A_s (BENDING REQD) = $1.76\ IN^2$ BUT #9 @ 4" CROSS JOINT $A_s = 3.00\ IN^2$

$3.00 - 1.76\ IN^2 = 1.24$ SPARE $\therefore$ NO ADDL REINF REQ'D

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PGN-172A

WALL SECTIONS ARE APPROXIMATELY 65 FT BETWEEN CONTRACTION JOINTS. SIZE TEMP STEEL FOR $\rho = .003$ PER EM 750.10

LOWER 1/2 $(38")(12")(.003) = 1.37\ IN^2$

A_S PER BAR = $\frac{1.37\ IN^2}{2} = .69\ IN^2$ USE # 8 BARS @ 12"

UPPER 1/2 $(25")(12")(.003) = .90\ IN^2$

A_S PER BAR = $\frac{.90\ IN^2}{2} = .45\ IN^2$ USE # 6 BARS @ 12"

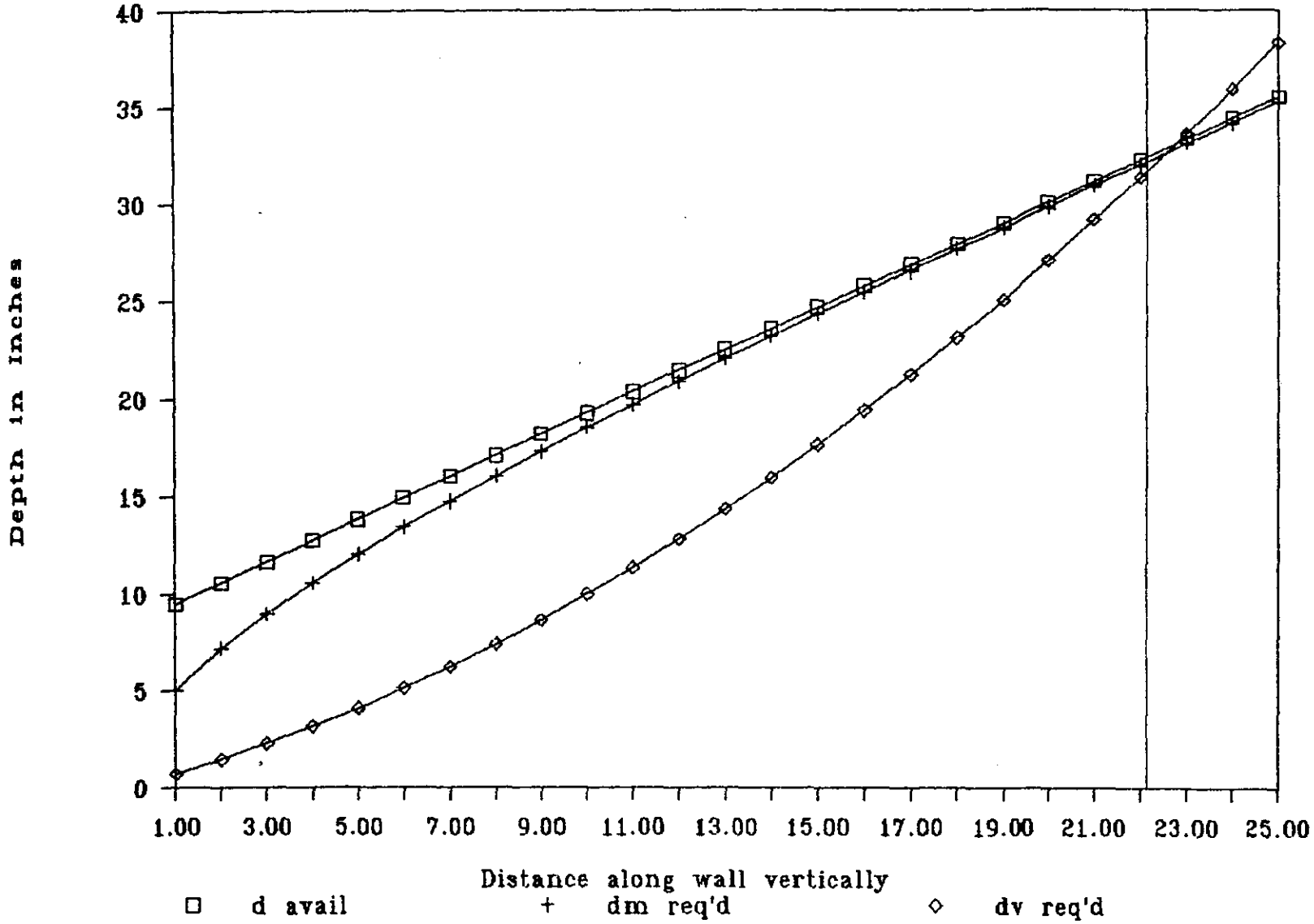
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P-GN-172A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED,

COMPARISON OF WALL DEPTH AVAIL/REQ'D

Tapered Labyrinth Spillway Wall



Black & Veatch

TELEPHONE MEMORANDUM

Client CCDPW
Project VFWDB
Subject Soil parameters for counterfort retaining wall design

B&V Project 14625
B&V File 321
Date 4-18-89
Time 12:15 PM

To/From: BILL SIEGEL
Company: KLEINFELDER
Phone No.: 702-736-2936
Recorded by: CKA

Last Thursday I called Mr Siegel regarding the soil parameters in Kleinfelder GEOTECHNICAL INVESTIGATION - PROPOSED FLAMINGO WASH DETENTION BASIN. I had completed a preliminary design of the counterfort retaining walls for the emergency spillway and determined that a base width greater than 25' was required for the 36' counterfort wall. I asked Bill about the component of friction between soil and concrete, and was informed that Kleinfelder had already reduced the ultimate friction values by a F.S. I informed Mr Siegel that B&V typically uses ultimate friction values, and then applies a F.S for sliding of 1.5 or 2 for retaining walls, depending on whether passive pressure off the toe is considered. Mr Siegel stated that Kleinfelder will send B&V a letter as an addendum to the report stating ultimate friction values, and how the allowable friction values in the report were calculated.

I also asked Mr Siegel about the allowable bearing capacity of 2000 psf listed in the report.

cc:

N-277A FOR HANDWRITTEN MEMORANDA ONLY

Black & Veatch

2/2

TELEPHONE MEMORANDUM

Client CCDPW
Project UFWDB
Subject Soil properties

B&V Project
B&V File
Date 4/18/89
Time

To/From: Bill Siegel
Company: Klienfelder
Phone No.: 736-2936
Recorded by: ACR

I completed a calculation using the procedures outlined in Winterkorn + Fang, Chapter 3, for an eccentrically loaded footing, and obtained an ultimate bearing capacity of 33,500 psf for the 25' wide footing. Depending on the selection of FS, q_{all} = 11164 psf or 16750 psf. With these high values, the allowable bearing pressure may be controlled by maximum tolerable settlement. From Peck, Hanson, + Thornburn, Chapter 19, I obtained a value of 4 TSF (Using ϕ_{avg} = 36°, N = 37 blows/ft ⇒ q_{all} = 4 TSF) Mr Siegel indicated that Kleinfelder rarely recommended q_{all} > 6000 psf, but he would talk to Larry Peterson.

Bill called today, and indicated that Kleinfelder would recommend q_{all} = 8000 psf for the counterfort retaining wall design. He stated that this value would yield a total settlement of 3/4" to 1" and a differential settlement of approximately 1/2". I indicated that this appeared satisfactory for a retaining wall.

cc:

N-21A FOR HANDWRITTEN MEMORANDA ONLY

Black & Veatch

TELEPHONE MEMORANDUM

Client Clark County
Project Upper Flamingo Wash
Subject Geotech values

B&V Project 14625.321
B&V File Calc.
Date 4/20/89
Time p.m.

To (From): Steve Roberts
Company: B&V - Las Vegas
Phone No.: 702-732-0448
Recorded by: Wayne Saeed

Steve has discussed soil values stated in Geotech report with Bill Siegel & Kleinfelder.

Max allowable soil bearing value for counterfort walls can be taken as 8,000 psf w/ total settlement of 3/4" to 1" and approximate differential settlement of 1/2". Steve wants max. soil bearing of 7,000 psf used.

Coefficient of friction stated in geotech report has a factor of safety already applied to it. Steve wants to design retaining walls with a coefficient of friction between 0.55 and 0.60 (0.58 selected) with a factor of safety of 1.5.

Steve requested that allowable soil bearing & coefficient of friction values be increased by 1/3 for saturated soil conditions. Steves reasoning is that the frequency of the flood which causes saturation is greater than once in 100 years.

cc:

FOR HANDWRITTEN MEMORANDA ONLY

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Soil values to be used for the retaining walls have been taken from the geotech. report as follows:

1. Using stated value for G_{max} and $\gamma_{d\,max}$:

$\gamma_{d\,max} = 134$ pcf

$G_{max} = 2.61$

$\therefore e = \left(G \frac{\gamma_w}{\gamma_d} - 1\right) = \left(2.61 \frac{62.4}{134}\right) - 1 = 0.21 \quad (21.5\%)$

Embankment is to be compacted to 92% of maximum dry density.

$\gamma_{d\,in\,place} = 0.92\,(134) = 123.3$ pcf

Assuming that the in place material will have a moisture content of 6% (from proctors)

$\gamma_{t\,in\,place} = \gamma_d\,(1+w) = 123.3\,(1+0.06) = 130.7$ pcf

$\gamma_b = 130.7$ pcf $- 62.4$ pcf $= 68.3$ pcf

For lateral pressure, using $\phi = 36°$ from shear test results:

$p_{a\,6\%,\,92\%} = 130.7\,(1 - \sin\phi) = 53.9$ pcf

$p_{a\,sub.} = 68.3\,(1 - \sin\phi) + \text{water} = 28.2 + \text{water}$

} Counterfort (at rest)

$p_{a\,6\%,\,92\%} = 130.7\left(\frac{1-\sin\phi}{1+\sin\phi}\right) = 33.9$ pcf

$p_{a\,sub} = 68.3\left(\frac{1-\sin\phi}{1+\sin\phi}\right) + \text{water} = 17.7 + \text{water}$

} Cantilever (active)

2. Using stated values in soils report:

$p_a = 32$ pcf active.

$p_a = 48$ pcf at rest.

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3. Using results of proctor curves:

$\gamma_{t_{max}}$ = 135.5 pcf @ 6% moisture content

$\gamma_{t_{in\ place}}$ = 0.92 (135.5) = 124.7 pcf

γ_b = 124.7 − 62.4 = 62.3 pcf

$p_{a_{6\%,\ 92\%}}$ = 124.7 $(1 - \sin \overleftarrow{36^\circ})$ = 51.4 pcf
p_{a_b} = 62.3 $(1 - \sin\phi)$ + water = 25.7 + water
} at rest

$p_{a_{6\%,\ 92\%}}$ = 124.7 $\left(\frac{1-\sin\phi}{1+\sin\phi}\right)$ = 32.4 pcf
p_{a_b} = 62.3 $\left(\frac{1-\sin\phi}{1-\sin\phi}\right)$ + water = 16.2 + water
} active

Values selected for design of walls: ←

Counterfort (at rest):

p_a = 51 pcf with γ_t = 125

p_{a_b} = 27.0 pcf + water = 89.4 pcf use 90 pcf w/ $\gamma_b + \gamma_w$ = 125 pcf

Cantilever (active):

p_a = 32.5 pcf with γ_t = 125

p_{a_b} = 17.0 + water = 79.4 pcf use 80 pcf w/ $\gamma_b + \gamma_w$ = 125 pcf

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY DALLAS DENVER ORLANDO

SUBJECT Upper Flamingo Work
WORK Retaining Walls - Introduction to calc.
PROJECT NO. 14625.321
FILE NO.

DATE May 1, 19 89
SET UP BY
COMPUTED BY W.W. Hosch
CHECKED BY
PAGE NO. 1 OF 1

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Retaining walls will be placed at NE and SW sides of the spillway to retain the earthen dam. An elevation of the retaining wall is shown in Figure 1.

Based on past experience, counterfort retaining walls have been selected for wall heights greater than 15 feet. Counterforts will also serve as cutoff walls for seepage.

Horizontal and vertical joints are shown on Figure 1.

Counterfort retaining walls will be designed according to the procedures outlined in the following references 2, 3 with the exception that moments and shears for R/C design will be determined from the U.S. Bureau of Reclamation tables.

References:

1. Soil values - Calculations by W.W. Hosch dated 4/25/89, and phone memo between Steve Roberts and W.W. Hosch dated 4/20/89.
2. Winterkorn, H.F. and Fang, H-Y, "Foundation Engineering Handbook", Van Nostrand Reinhold Company, New York, 1975.
3. Bowles, J.E, "Foundation Analysis and Design", McGraw-Hill Book Company, New York, 1982.
4. U.S. Bureau of Reclamation, "Moments and Reactions for Rectangular Plates", 1978.

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From: Winterkorn, H.F. and Fang, H-Y., 1975 Van Nostrand Reinhold Company.

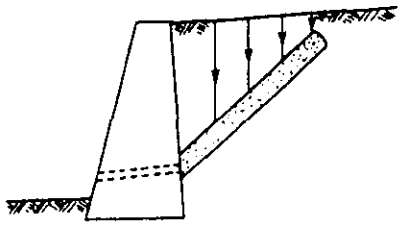


Fig. 12.23 Inclined drain.

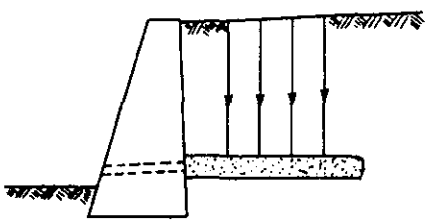


Fig. 12.24 Horizontal drain.

In addition to their effectiveness in drainage, inclined and horizontal drains eliminate the problem of frost heave as they prevent movement of water into the backfill by capillary action.

12.7 LOADS ON RETAINING WALLS

After the loads on the retaining structure have been determined, one may proceed to the structural design. While there are almost unlimited structural arrangements that may serve as retaining walls, we consider only the types most commonly used. These are usually of reinforced or plain concrete. The mechanics of reinforced concrete design are adequately presented in many books. In this chapter we devote attention primarily to the computation of the loads on the various components of the structure.

1. Gravity Walls

Gravity walls are commonly constructed of plain concrete although light reinforcements are sometimes used. The proportions of gravity walls are usually made so that the B to H ratio (Fig. 12.2a) is between $\frac{1}{2}$ and $\frac{2}{3}$. It is required that there be no tensile stress in the concrete.

Since gravity walls usually have a sloping back, the resultant earth pressure (P_a in Fig. 12.15) may be computed by Coulomb's theory. The most critical section as far as stresses are concerned is the section $a'b'$. To ensure that no tensile stress exists at b' it is desirable that the resultant force on this section be within the middle third of the section as illustrated in Fig. 12.15. The forces are the earth pressure P_a and the weight of the wall W. The location of the resultant R may be determined by summation of moments about b', or

$$x_R = \frac{P_x y' + Wx}{W + P_y} \tag{12.24}$$

2. Cantilever Walls

Cantilever walls are constructed so that the wall acts as a cantilever beam (Fig. 12.2b). The ratio B to H is usually between $\frac{1}{2}$ to $\frac{2}{3}$ and the toe B' is about $\frac{1}{3}$ of B. Cantilever walls should be designed so that the wall and the footing can withstand the bending stresses. The loads to be considered are described in the succeeding paragraphs.

Wall The bending moment in the wall is caused by the earth pressure on the back. If we consider the section ab at the base of the wall, the forces that act on the wall include the earth pressure, the weight of the wall and the weight of the soil in bde (Fig. 12.25a). The earth pressure P_a on the back of the wall may be taken to be the same as the earth pressure on the vertical plane $c'f$. The line bc' is parallel to the ground surface. Rankine's theory (Eq. 12.5) may be used for this case.

The bending moment at section ab may be computed by summation of the moments due to P_a, W_1, and W_2. The shear on this section is equal to the horizontal component of P_a.

Toe Projection The forces that act on section aa' are shown in Fig. 12.25b. They are the soil pressure p on the footing, the weight of the toe projection W_3, and the weight of the soil above the footing W_4. These three contribute to the bending moment on section aa'. Of somewhat lesser importance is the passive earth pressure p_p on the side of the footing and the shear stress between the footing and the soil. These two contribute to the normal stress on section aa' but under most conditions their effect is relatively small. The shear across section aa' is the difference between the soil pressure p and the weights W_3 and W_4.

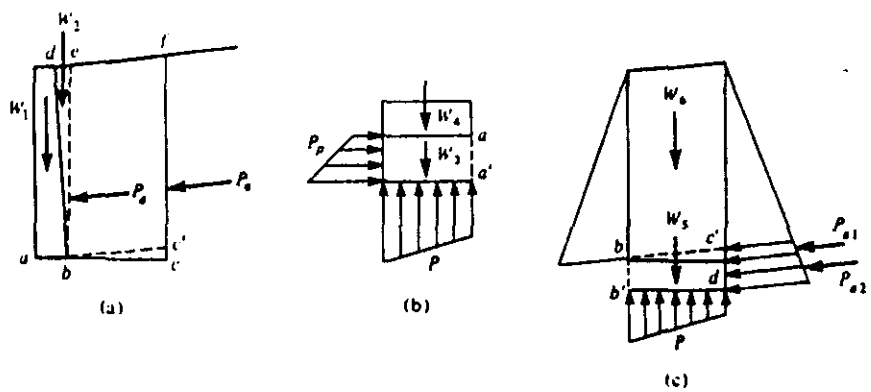


Fig. 12.25 Loads on cantilever walls.

Heel Projection Figure 12.25c shows the forces that act on the heel slab. We consider first the soil mass $c'bef$. It is assumed that the earth pressures on $c'f$ and be are equal. Hence only the active earth pressure $P_{a1} + P_{a2}$ on $c'd$ is left to be considered. The vertical component of this pressure produces a bending moment on section bb'. In addition there are the bending moments produced by the weight of the footing W_5, the weight of the soil above the footing W_6, and the soil pressure p on the base of the footing. These same forces also produce shear on section bb'. The *normal stress* on section bb' includes the horizontal component of the earth pressure $P_{a1} + P_{a2}$ and the shear stress between the soil and footing.

3. Counterfort Walls

The following proportions are commonly used for counterfort walls. The ratio of B to H is between $1/2$ to $2/3$. The spacing L between counterforts ranges from $1/3$ to $1/2$ of H. The earth pressures that act on the counterfort wall may be taken to be the same as that on the cantilever wall.

Wall Slab The wall slab in the counterfort wall is supported by the vertical counterforts and by the footing at the bottom. Thus it acts as a two-way slab and is commonly reinforced in both vertical and horizontal directions. The design of the slab is separated into the design of horizontal beams that span between the counterforts and vertical cantilever beams fixed to the footing.

Figure 12.26a shows the horizontal component of the earth pressure on the wall. The moments in a slab supported along three edges and subjected to such a distributed load has been analyzed (Portland Cement Assn., 1951). Figure 12.26c shows the variation of the moments in the horizontal and vertical directions along a line midway between two counterforts (aa' in Fig. 12.27a). The horizontal beams are continuous over the counterforts and are designed as if there is no shear between adjacent beams. The vertical beams should be designed to resist the pressure abf (Fig. 12.26b).

The negative bending moment at the bottom is taken to be

$$M_b = -0.03pHL \qquad (12.25)$$

where p is the pressure af in Fig. 12.26b. The maximum positive bending moment near the lower ¼-point of the wall is taken to be $M_b/4$. The positive moment may be taken to to be zero at the upper ¼-point.

Toe Slab The design of the toe slab is the same as that for cantilever walls (section 12.6.2).

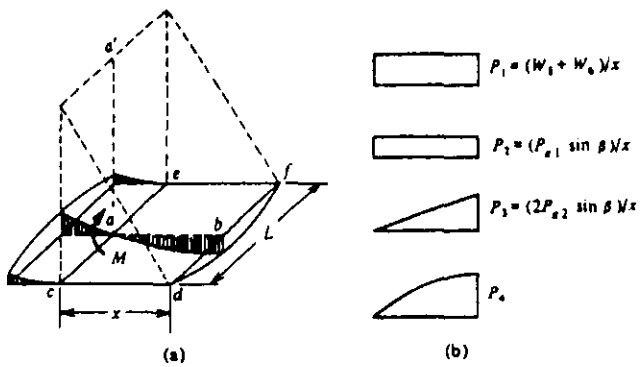


Fig. 12.27 Loads on heel slab of counterfort walls.

Heel Slab The heel slab ($cdfe$ in Fig. 12.27a) is supported by the bottom of the counterforts and the bottom of the wall slab. However, in current practice, the slab is designed as a one-way slab supported by the counterforts. The loads that act on the heel slab include the weight of the soil in $bcfe$ (Fig. 12.25c), W_6, the weight W_5 of the slab, the vertical components P_{a1} and P_{a2} of the earth pressure, and the soil pressure p on the bottom of the slab. These loads are shown in Fig. 12.27b.

In addition Huntington (1957) has pointed out that it is necessary to consider the slab deformation caused by the bending of the toe projection (Fig. 12.27a). The deflection at b midway between counterforts is related to the bending moment M in the toe. Huntington (1957) has recommended that this effect be considered as an additional vertical load on the slab. The distribution of this load is assumed to be parabolic across the width of the slab ab (Fig. 12.27a) with a maximum p_4 at b. The value of p_4 is given by

$$p_4 = 2.4\frac{M}{x}\chi^2 \qquad (12.26)$$

The net load on the heel slab is illustrated in Fig. 12.28c. The net vertical load at b is

$$q = p_1 + p_2 + p_3 + p_4 - p_b \qquad (12.27)$$

The slab is designed as beams running between the counterforts. The beams are assumed to carry a uniformly distributed load which is equal to q for the beam dbf (Fig. 12.27a). The load decreases linearly to zero for the beam cae.

Counterforts The counterforts are designed to resist the earth pressure P_a (Fig. 12.25a) that acts on the wall. The

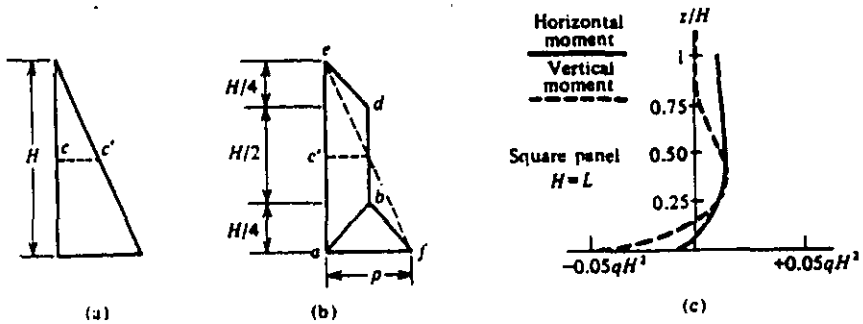


Fig. 12.28 Loads on counterfort walls.

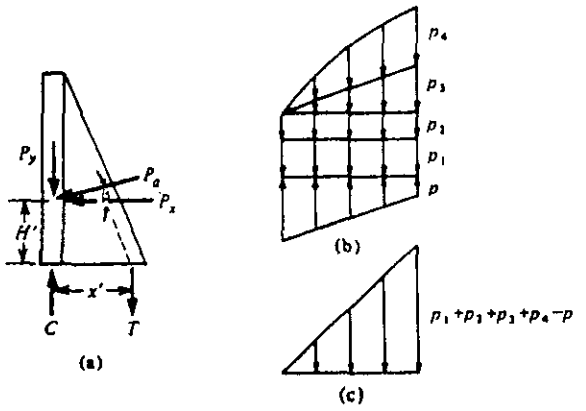


Fig. 12.28 Loads on counterfort walls.

bending moments produced by the earth pressure and the resisting moments are shown in Fig. 12.28. The compression C is assumed to be a concentrated force acting at the center of the wall and T is the tensile force in the reinforcing steel. Thus, we have

$$C = -T = \frac{H'P_a \cos \beta}{x'} \qquad (12.28)$$

Numerical example: The procedures outlined in the preceding sections are illustrated by the subsequent calculations for a wall 25 ft high. The trial dimensions are shown in Fig. 12.29a. The counterfort spacing is taken as 10 ft. The backfill consists of dry cohesionless sand with a unit weight of 120 pcf and an angle of internal friction of 30°.

The earth pressure on $c'f$ is computed with Eq. 12.5. At c'

$$p_a = 120 \times 23 \cos 10° \frac{\cos 10° - (\cos^2 10° - \cos^2 30°)^{1/2}}{\cos 10° + (\cos^2 10° - \cos^2 30°)^{1/2}}$$

$$= 120 \times 23 \times (.354) = 965 \text{ psf}$$

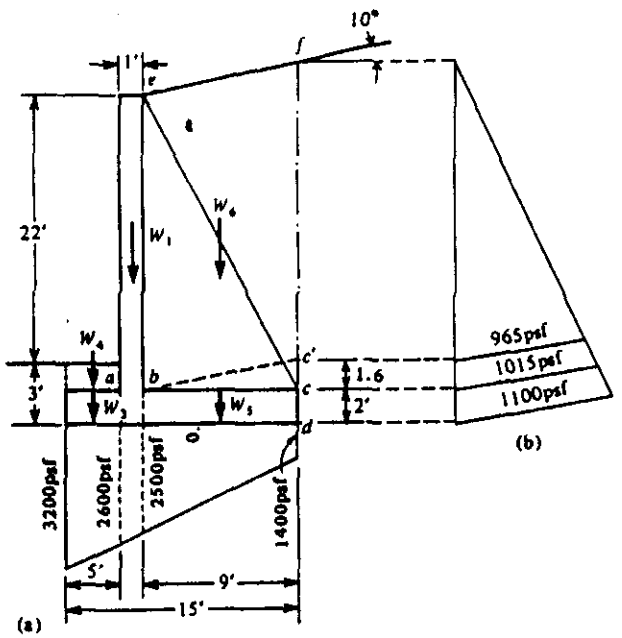


Fig. 12.29 Design of counterfort wall.

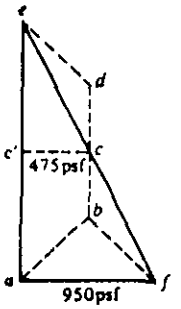


Fig. 12.30 Earth pressure on counterfort wall.

Similarly, the pressures at c and d are 1030 and 1120 psf. The earth pressure distribution is shown in Fig. 12.29b.

The soil pressures on the foundation may be calculated by summation of moments about the centerline of the foundation. The weights and resultant earth pressure are

$$W_1 = 150 \times 1 \times 25 = 3750 \text{ lb}$$
$$W_3 = 150 \times 2 \times 5 = 1500 \text{ lb}$$
$$W_4 = 120 \times 1 \times 5 = 600 \text{ lb}$$
$$W_5 = 150 \times 2 \times 9 = 2700 \text{ lb}$$
$$W_6 = 120 \times 23.5 \times 9 = 25{,}700 \text{ lb}$$
$$P_{ax} = \tfrac{1}{2} \times 1100 \times 25 \cos 10° = 13\,500 \text{ lb}$$
$$P_{ay} = \tfrac{1}{2} \times 1100 \times 25 \sin 10° = 2380 \text{ lb}$$
$$\Sigma M_o = 3750 \times 2.0 + (1500 + 600)\,5.0 - (25\,700 + 2700)\,3.0 + 13\,500 \times \tfrac{26.6}{3} - 2380 \times 7.5 = 34{,}600$$

From Eq. 12.16 we compute the pressures

$$p = \frac{34{,}430}{15} \pm \frac{6 \times 34{,}600}{15^2} = 3{,}200 \text{ and } 1{,}400 \text{ psf}$$

at the toe and heel, respectively. The distribution of soil pressure is shown in Fig. 12.29a.

To compute the horizontal bending moment in the wall, we use the earth pressure distribution shown in Fig. 12.30. The pressure af is equal to the horizontal component of the pressure at c' (Fig. 12.29) or 950 psf. Hence the horizontal reinforcement should be designed for a uniformly distributed load of 475 psf (cc' in Fig. 12.30). The vertical moments in the wall are computed by Eq. 12.25 and are equal to

$M = -0.03 \times 950 \times 23 \times 10 = -6550$ ft-lb at the bottom and

$M = \frac{1}{4} \times 6550 = 1640$ ft-lb at 5.7 ft from the bottom.

These values apply to the design of vertical reinforcements in the wall midway between counterforts and represent the maximum required in the wall. At locations close to the counterforts, the moments would be much smaller and the reinforcement may be reduced. Details of this have been given by Huntington (1957, p. 501).

The moment in the toe slab is (see Fig. 12.25b)

$$M_a = -(1500 + 600)\,2.5 + 2790 \times 5 \times 2.5 + \tfrac{1}{2} \times 960 \times 5 \times \tfrac{2}{3} \times 5 = 37\,300$$

The loads on the heel slab are:

$$p_1 = (2 \times 9 \times 150 + 23.8 \times 9 \times 120)\,(1/9) = 3120 \text{ psf}$$
$$p_2 = \tfrac{1}{2}(965 + 1030) \times 0.9 \sin 10° \times (1/9) = 30 \text{ psf}$$

$$p_3 = 2\left(\frac{(1030 + 1120)}{2}\right) 2.0 \times \sin 10^\circ (1/9) = 80 \text{ psf}$$

$$p_4 = 2.4 \times \frac{37{,}300}{9} = 10{,}000 \text{ psf}$$

$$q = 3120 + 30 + 80 + 10{,}000 - 1120 = 12{,}110 \text{ psf}$$

$$M_b = \tfrac{1}{12} \times 12{,}110 \times 10^2 = 100{,}000$$

4. Foundation Walls and Restrained Abutments

Foundation walls of reinforced concrete are commonly used around basements. These walls are supported at the top and bottom as shown in Fig. 12.3a. The wall then acts as a simply supported beam with a span H. The footing serves only to support the weight of the wall and the vertical loads on H. Such walls are not free to move. Hence the earth pressure would be close to the at-rest pressure

$$p_o = K_o \gamma y$$

as shown in Fig. 12.3b. Typical values of K_o are given in Table 12.3. However, the choice of the design earth pressure requires consideration of the construction sequence. If the wall supports a natural deposit, an excavation is usually made after which the retaining wall is constructed. The space left between the wall and the soil is then backfilled. The excavation allows the soil to expand laterally and consequently the horizontal stress in the natural soil deposit is reduced. Observations in tunnel construction (Peck, 1969) indicate that K would be close to 1.0 under these conditions. However, if the backfill is well compacted, the at-rest earth pressures in the backfill may be very large (Table 12.3) and this pressure would govern the design.

The case of a bridge abutment that is restrained at the top is similar. However, bridge abutments are usually not restrained by the floor slab at the footing level, and some displacements may occur at the bottom. Such displacements are rarely large enough to change significantly the earth pressure distribution. Thus the design earth pressure may be taken as equal to those given in the preceding paragraph.

5. Crib Walls

Crib walls (Fig. 12.31a) may be built of timber, precast concrete, or steel members. Many types of precast concrete and prefabricated steel are available from manufacturers. The inside of the cribs are filled with soil and the whole unit acts as a gravity wall.

In the design of crib walls stringers are considered to act as simply supported beams that span the space between the ties. The stringers that constitute the face are subjected to the pressure of the soil inside the crib, while those that make up the back must resist the difference between the earth pressure exerted by the backfill and that of the soil inside. The earth pressure exerted by the backfill on the wall may be computed in the same manner as for gravity walls. The soil inside the crib is usually placed in well-compacted layers and the inside pressure would be close to the at-rest earth pressure given in Table 12.3.

The computation of the safety with respect to overturning and sliding are the same as for concrete gravity walls. However, not all the weight of the soil in the crib can be counted on to resist the overturning moment. If the wall tilts forward the soil inside may not move as an integral part of the wall. Rather, it may move downward with respect to the wall, and shear stresses would develop between the soil and the wall. These shear stresses act vertically downward and contribute to the resistance against overturning. The stresses may be computed by means of the arching theory (Terzaghi, 1943). If the angle of friction between the soil and wall is δ, the average horizontal stress on the wall at depth y is

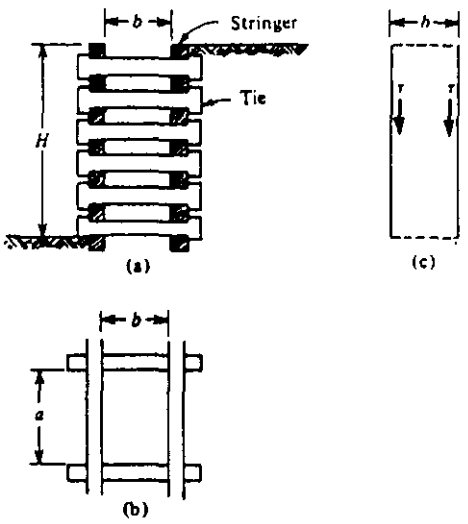


Fig. 12.31 Crib walls.

$$\sigma = \frac{ab}{2(a+b)} \frac{\gamma K_o}{\tan \delta} \left\{1 - \exp\left[-\frac{2yK_o(a+b)}{ab} \tan \delta\right]\right\} \quad (12.29)$$

The shear stress between soil and wall is (Fig. 12.31b)

$$\tau = \sigma_x \tan \delta$$

and the total vertical force transmitted by friction is

$$F = ab\gamma \left\{H - \frac{ab}{2(a+b)\tan \delta K_o} \left[1 - \exp\left(-\frac{2(a+b)}{ab} H \tan \delta K_o\right)\right]\right\} \quad (12.30)$$

The force F plus the weight of the crib constitutes the weight W to be used in Eq. 12.17. The stringers should be designed to resist σ_x. Since stringers are usually of the same size in a given crib wall, the value of y in Eq. 12.29 should be set equal to H.

6. Tieback Wall

Retaining walls are sometimes supported by tiebacks anchored in firm material as shown in Fig. 12.4a. Basement walls may be designed to support the sides of excavations during construction. Construction usually begins with installation of the columns, or soldier beams. These are supported by the anchor ties. The wall between the columns may consist of reinforced concrete, precast concrete panels, fabricated metal pieces, or wooden lagging. The ties are stressed to support the columns.

The wall deflection is naturally dependent on the tension in the tie and may range from almost zero to 3 inches at the top for walls 50 ft in height (Shannon and Strazer, 1970). If the bottom of the column is not driven into stiff soils, considerable movement may take place at the bottom. Model tests of tieback walls in sand (Hanna and Matallana,

Bowles, J. E., "Foundation Analysis and Design", M'Graw-Hill Book Company, New York, 1982.

easier to construct the shear and moment diagram by use of the differential equations for shear and moment as shown in the figure.

The use of the differential equation enables rapid computation of the cutoff points for the reinforcing steel, since it is uneconomical to use a constant amount of reinforcing for the entire wall height.

From Fig. 12-11*b* the weight of the base slab is deducted from the gross-soil-pressure diagram before computing the shear and moment diagrams. The eccentricity is computed by Eqs. (*c*) and (*d*). It is also convenient to use the differential equations for computing the shears and moments of the base slab if the shape of the curve is desired or if numerical values are to be evaluated at points other than the ends.

Counterfort Walls

Counterfort walls are indeterminate problems which can be solved using plate theory, at the expense of considerable labor. Simplified methods are commonly used to solve the problem, which generally will result in a wall somewhat overdesigned. The weight of the counterfort is usually neglected in the computations.

Figure 12-12 indicates a simplified and conservative solution to a counterfort-wall problem. The face slab of the wall is taken as a continuous slab

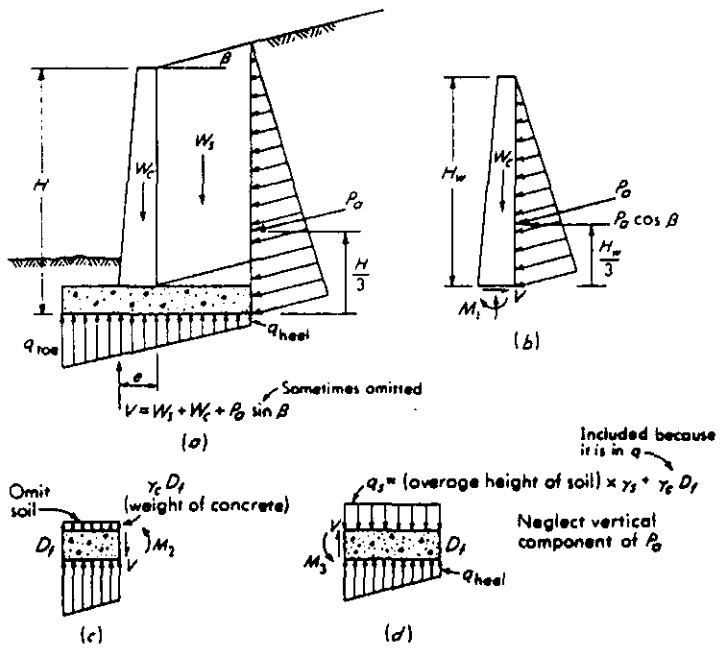
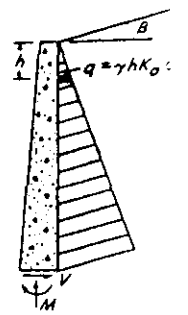


Figure 12-10 Forces on cantilever wall. (*a*) Entire unit; free bodies for; (*b*) stem; (*c*) toe; (*d*) heel. Note that $M_1 + M_2 + M_3 \cong 0.0$.



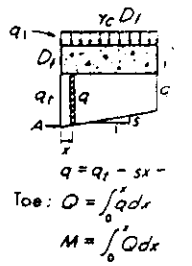


Figure 12-11 Cal
moments.

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being made,
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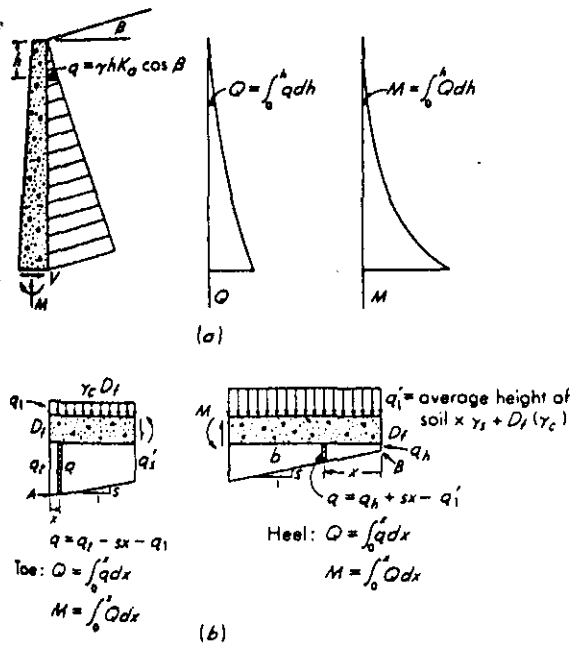


Figure 12-11 Cantilever retaining wall. (*a*) Stem shear and moments; (*b*) toe and heel shears and moments.

made up of a series of equivalent-unit-width beams. Since the pressure distribution is triangular, the equivalent beams should be analyzed for strips at the junction of the wall and base, and at two or three intermediate locations between the top of the wall and the base, so that adjustments in reinforcing-steel requirements can be made as the pressure decreases. Moment distribution may be employed for finding the bending moments; however, because of approximations being made, continuous-beam coefficients may be used. Values of $wl^2/12$ or $wl^2/14$ may be used for the lower strips, because of the lower edge being fastened to the base, and $wl^2/9$ or $wl^2/10$ for the upper strips. For a conservative solution the same coefficients for both positive and negative moments may be used, although smaller values for the positive moments may be used, as the designer considers appropriate. The toe of the base is treated as a cantilever beam and the heel as a continuous beam, similar to the treatment of the face slab. The ACI Code requirements for shrinkage steel should be satisfied in the directions not analyzed in this manner. The counterfort member can be treated as a wedge-shaped T beam, which includes the applicable portion of the wall stem as the flange, but these beams are so massive that the concrete stresses will be so low that an analysis is usually not required. Tensile steel will be required at the junction of the base (heel) and the counterfort to resist the moment, tending to tip the wall over, and the quantity can be conservatively computed, treating the

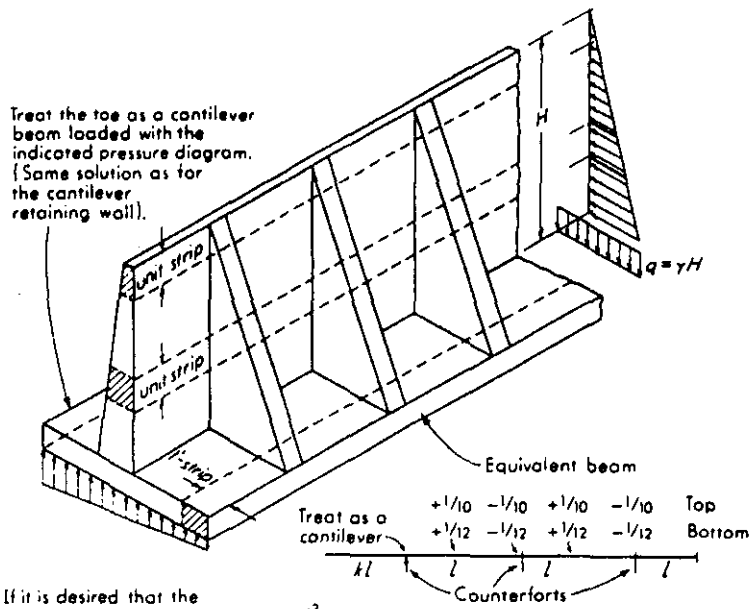
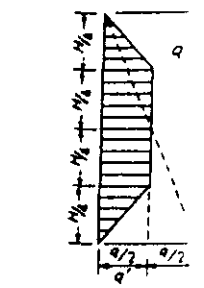


Figure 12-12 Reduction of the complex analysis of a counterfort retaining wall to a system of simple beams for rapid design.

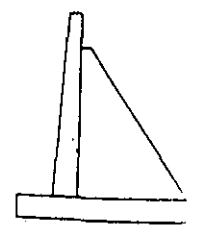
counterfort alone as a beam. Tensile steel will also be required running horizontally from the counterfort into the stem to tie the wall and counterfort together. The slope of the counterfort member may be controlled by the bond-stress requirements of this reinforcement.

Huntington (1957) presented a solution for the counterfort-wall problem, as shown in Figs. 12-13 to 12-15. Huntington also recommended a value for Q_{xx} in the middle half of the wall, at the base of $0.2qH$, to be used as long as the ratio of counterfort spacing to the wall height l/H is not greater than 0.5.

Figure 12-14 Distribution of vertical moments in a counterfort wall stem for Huntington's procedure. (a) Distribution of shear and moment vertically in stem; values should only be used if $H/l \leq 2$; (b) distribution of moment horizontally in stem. Assume that both positive and negative moments vary linearly as shown.

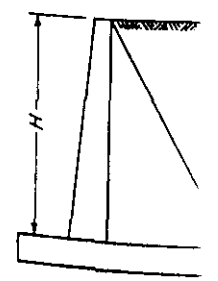


Use this pressure for positive mome computations

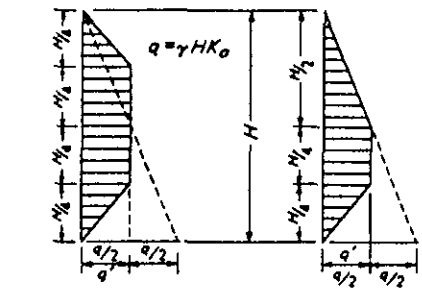


Use q' from coefficients and near bc

Figure 12-13 Comp
[After Huntington (



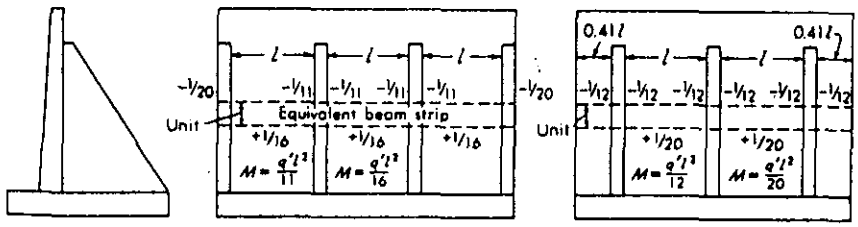




Use this pressure diagram for positive moment computations

Use this diagram for negative moment computations

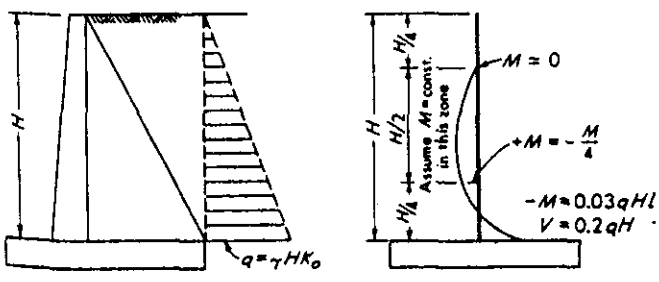
(a)



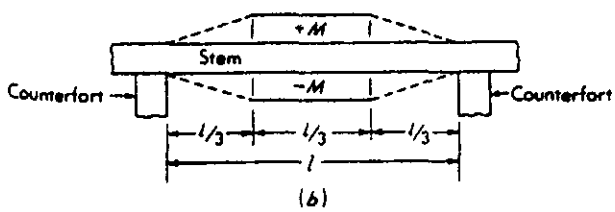
Use q' from the shaded portions of the pressure diagrams in (a). Moment coefficients are shown. Compute moments for several strips near top, midheight and near bottom.

(b)

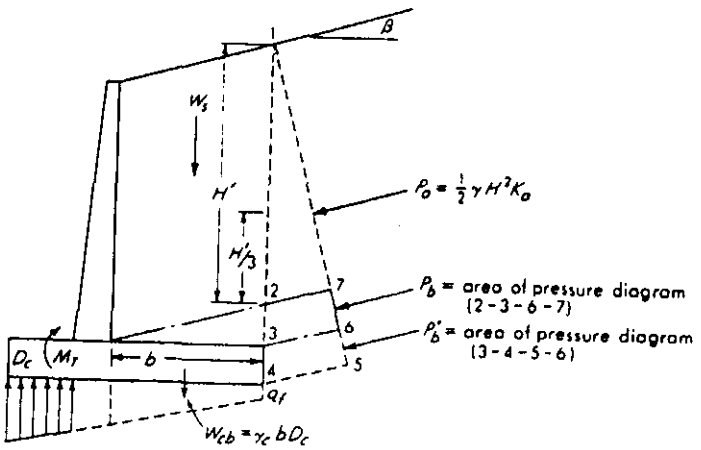
Figure 12-13 Computation of bending moments in the horizontal direction for the counterfort stem. [*After Huntington (1957).*]



(a)



(b)



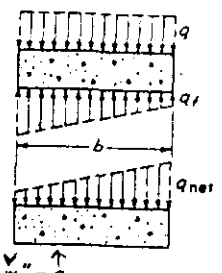
$q_s = \frac{W_s + W_{cb}}{b}$

$q_b = \frac{P_b \sin\beta}{b}$

$q_b' = \frac{P_b' \sin\beta}{b}$

$q = w'' + q_s + q_b + q_b'$

$q_{net} = q_s + q_b' + q_b + w'' - q_f$



The increase in heel pressure due to the toe moment is:

$w' = \frac{2.4 M_t}{b^2}$ $W' = \frac{2}{3} w' b$

M_t = toe moment value at front face of wall

Note that w' is parabolic but may be approximated as a uniform pressure w''

$w'' = W'/b$

Assume pressures q_b', q_b, and q are constant and uniformly distributed across b.

If $\beta = 0$, there is only q and w'' to consider.

Since w'', q_b, and q_b' are small the design will usually be sufficiently accurate to neglect these pressures.

Figure 12-15 Forces on the heel slab of a counterfort wall as proposed by Huntington (1957).

Example 12-1 Analyze the retaining wall shown in Fig. E12-1*a* for overturning and sliding stability. Note that this wall is backfilled in a limited zone with a cohesive soil. The batter is on the back face of the wall as used by some transportation departments. Most of the output is obtained from running this wall with a computer program. Dimensions shown were optimized by the computer to satisfy stability and strength requirements. The load factor for USD was taken as 1.8 (1) to allow somewhat for cohesive soil and water in tension crack and (2) because of the uncertainty of the earth pressure, since any "Rankine" zone will be partly in fill and partly in original soil.

SOLUTION

Step 1 Find the ϕ' angle for an equivalent cohesionless soil (see Fig. E12-1*b*):

$$q = \gamma H K_a - 2c\sqrt{K_a} = \gamma H K_a'$$

Rankine $K_a = 0.361$ for $\phi = 28°$

$$q = 17.95(6.7)(0.361) - 2(19.12)(0.60)$$

$$= 43.42 - 22.97 = 20.45$$

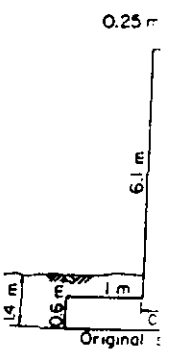


Figure E12-1*a*

This value of

Step 2 Com

$P_a = (0.5$

$= [0.5$

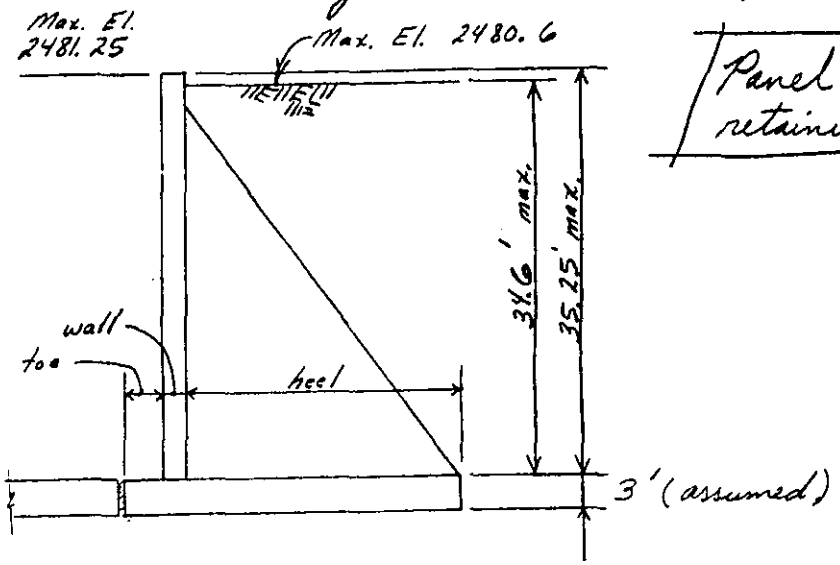
$= 96.2$

Step 3 Comp

Part	Wt of p
1	1.5(23.9)
2	23.56(0.2
3	0.13[(6.1
4	23.56(0.6
P_{abut}	

The location c

A. Determine retaining wall dimensions for Panel A:



Panel A is highest retaining wall portion

The retaining wall will be checked for four conditions:

1. No hydrostatic load (basin empty), moist soil backfill, surcharge load of 400 psf for compaction of soil behind wall, no increase in allowable soil bearing pressure or coefficient of friction. (Detention Basin Dry w/ compac. equip. load.)

2. Saturated soil - not buoyant, water surface El. 2470.5 in embankment, no water downstream of spillway - no tailwater, 1/3 increase in allowable soil bearing pressure and coefficient of friction. (100 Year Event, dam saturated.)

3. Saturated soil - not buoyant, water surface El. 2480.6 in embankment, water surface El. 2456 downstream of spillway, 1/3 increase in allowable soil bearing pressure or coefficient of friction. (PMF, Dam saturated.)

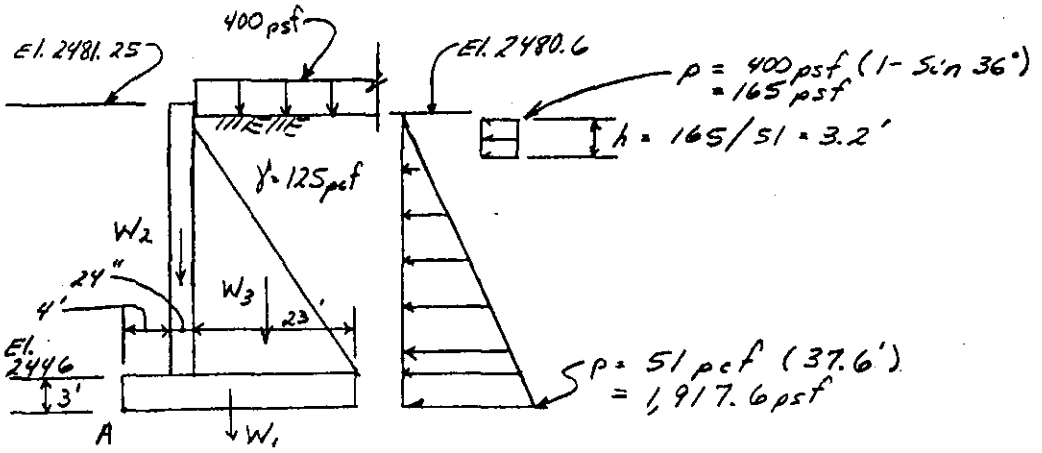
4. Saturated soil - not buoyant, water surface El. 2480.6 in embankment, no water downstream of spillway - no tailwater, 1/3 increase in allowable soil bearing pressure or coefficient of friction. (After PMF, dam saturated.)

DO NOT WRITE IN THIS SPACE

P-GN-025-A

DO NOT WRITE IN THIS SPACE

Condition 1:



$W_1 = 150\,pcf\,(3')(29') = 13,050^{\#}$ @ 14.5' from A
$W_2 = 150\,pcf\,(2')(35.25') = 10,575^{\#}$ @ 5' from A
$W_3 = 125\,pcf\,(23')(34.6) = 99,475^{\#}$ @ 17.5' from A
Surcharge $\rightarrow = 400\,psf\,(23') = 9,200^{\#}$ @ 17.5' from A
Surcharge $\leftarrow = 165\,psf\,(3.2') = 528^{\#}$ @ 36.0' from A
Soil $\leftarrow = 1917.6\,psf\,(37.6')(\tfrac{1}{2}) = 36,051^{\#}$ @ 12.5' from A

Σ Vertical load $= 13,050 + 10,575 + 99,475 + 9,200 = 132,300^{\#}$

$\Sigma M_A\circlearrowright = 13,050(14.5) + 10,575(5) + 99,475(17.5) + 9,200(17.5) = 2,143,913^{ft\text{-}\#}$

$\Sigma M_A\circlearrowleft = 528(36.0) + 36,051(12.5) = 469,646$

Check for resultant in middle third:

$e = 2,143,913 - 469,646 / 132,300 = 12.7'$ from A or 1.80' from ℄

$e_{allowable} = 29/6 = 4.8' \geq 1.80'$ ok

Check for overturning:

$F.S._{OT} = 2,143,913 / 469,646 = 4.6 \geq 1.5\text{-}2.0$ ok

Check for sliding:

$F.S._{SLIDING} = 0.58(132,300) / (528 + 36,051) = 2.1 > 1.5$ ok

Condition 1 Cont'd:

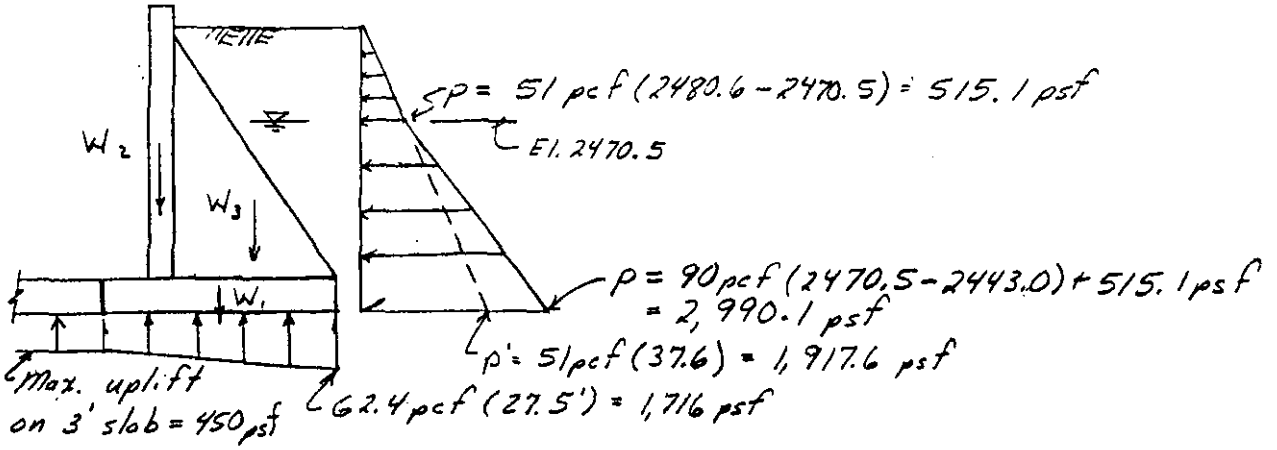
Find soil bearing pressures:

$$q = \frac{132,300}{29'}\left(1 \pm \frac{6(1.85')}{29}\right) = 6,303\ psf \ (\geq 7,000\ psf) \quad \& \quad 2,821\ psf \ (\leq 0) \ ok$$

IN THIS SPACE

Condition 2: (Calc. revised to reflect design w/o uplift from water)

For dimensions see Condition 1



DO NOT WRITE

For W_1, W_2, and W_3 see Condition 1.

Soil ← = 1917.6 (37.6)(½) = 36,051 lb @ 12.5' from A

\+

1,072.5 psf (27.5)(½) = 14,747 lb @ 9.2' from A

Water ↑ = 450 psf (29') = 13,050 lb @ 14.5' from A

\+ 1,266 psf (29)(½) = 18,357 lb @ 19.33' from A

Σ Vertical = 13,050 + 10,575 + 99,475 − ~~31,407~~ = ~~91,693~~ 123,100 lb

ΣM_A ↻ = 13,050(14.5) + 10,575(5) + 99,475(17.5) = 1,982,913 ft-lb

ΣM_A ↺ = 36,051(12.5) + 14,747(9.2) + 13,050(14.5) + 18,357(19.3)
= ~~1,130,376~~ ft-lb. 586,310

Check for resultant in middle third:

$e = 1,982,913 - \frac{586,310}{123,100} = \frac{11.3}{3.2}$ ~~9.3'~~ from A or $\frac{3.2}{5}/2$ from ℄

$e_{allowable} = 29/6 = 4.8' \lesssim 5.2$ 3.2 ok ? say ok

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IN THIS SPACE

DO NOT WRITE

Condition 2 Cont'd:

Check for overturning:

$F.S._{OT} = 1,982,913 / 586,310 = 3.4 / 1,130,376 = 1.8$ ok

Check for sliding:

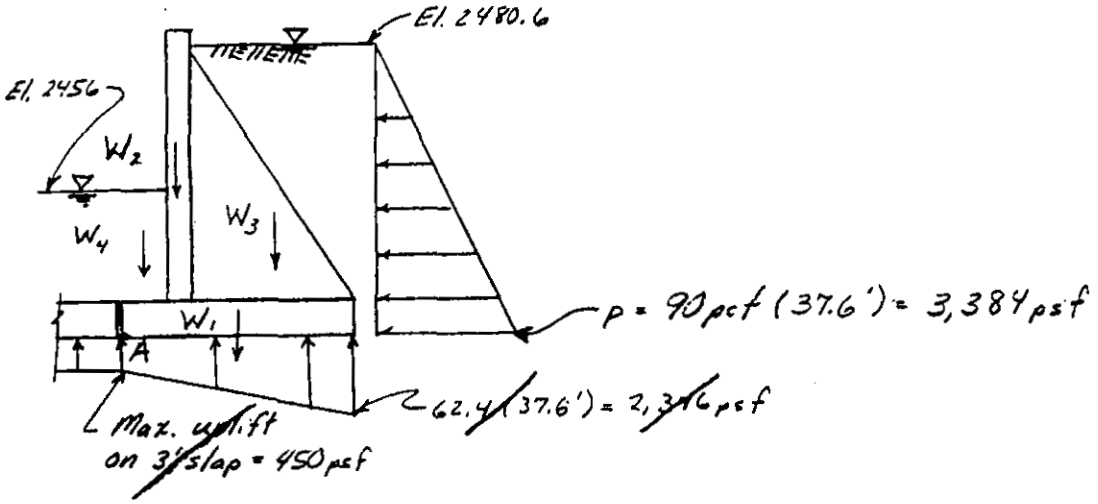
$F.S._{SLIDING} = 0.58(1\frac{1}{3})(\frac{91,693}{123,100}) / (36,051 + 14,747) = 1.9 / 1.4$ say ok

Find soil bearing pressures:

$q = \frac{123,100}{29}(1 \pm \frac{6(\frac{3.2}{5.21})}{29}) = 6,564$ psf & 0 ok
$7,055$ psf & $1,434$ psf ok

Condition 3:

For dimensions see Condition 1.



For W_1, W_2, and W_3 see Condition 1.

Soil ← = 3,384(37.6)(½) = 63,619 # @ 12.5' from A.
W_4 ↓ = 62.4 pcf (10')(4') = 2,496 # @ 2' from A
Water ↑ = 450 psf (29') = 13,050 # @ 14.5 from A
+ 1,896 (29)(½) = 27,492 # } 40,542 # @ 19.3' from A

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DO NOT WRITE IN THIS SPACE

Condition 3 Cont'd: (Calc. revised to reflect design w/o uplift from water)

Σ Vertical = 13,050 + 10,575 + 99,475 - ~~40,592~~[16] + 2,496[16]
= ~~85,054~~[16] (125,596)

ΣM_A = 13,050 (14.5) + 10,575 (5) + 99,475 (17.5) + 2,496 (2)
= 1,987,905 ft-lb

ΣM_A = 63,619 (12.5') + 13,050 (14.5) + ~~27,492~~ (19.3)
= ~~1,515,058~~ ft-lb (795,238)

Check for resultant ~~in~~ middle third:

$e = 1,987,905 - 1,\overset{795,238}{\cancel{515,058}} / \underset{85,054}{125,596} = \overset{9.5'}{\cancel{5.6'}}$ from A or $\overset{5.0'}{\cancel{8.9'}}$ from C

$e_{allowable} = 29/6 = 4.8' << \underset{5.0}{\cancel{8.9'}}$ NG
Say ok

Check for overturning:

$F.S._{OT} = 1,987,905 / \overset{795,238}{1,\cancel{515,058}} = \cancel{1.3} \; 2.5 >> 1.5$ ok NG

Check for sliding:

$F.S._{SLIDING} = 0.58(1\tfrac{1}{3})(\underset{125,596}{85,054}) / 63,619 = \cancel{1.0} \; 1.5 << 1.5$ ok NG

The foundation selected will not work for condition 3 if the uplift force from water beneath the footing is as assumed in the previous calculations.

At the time of these calculations a seepage analysis had not been preformed by the design engineer for the dam, Steve Roberts. I discussed the affect water pressure under the retaining wall had on the footing size regid. We decided to provide a drain beneath the footing to relieve water which would seep into the area beneath the footing and a cutoff wall ~10' deep upstream of the spillway. Since water is only temporarily impounded, ~~in this dam~~ these measures seem reasonable to eliminate uplift from water on the retaining wall for panel A.

DO NOT WRITE IN THIS SPACE

Condition 3 Cont'd:

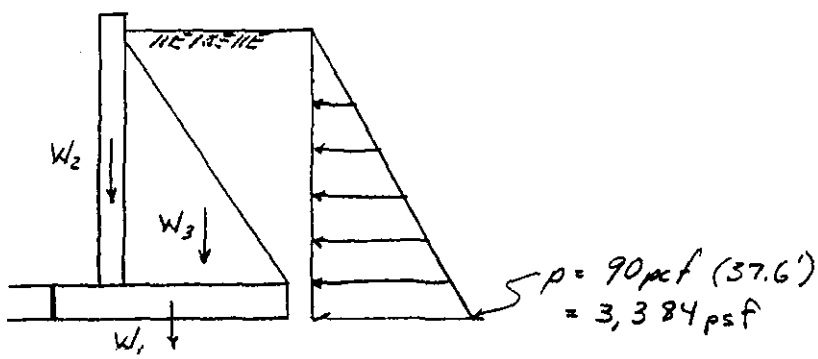
Find soil bearing pressure w/o uplift from water.

$$q = \frac{125,596}{29}\left(1 \pm \frac{6(5.0)}{29}\right) = 8,811 \text{ psf} \gtrless 0$$

$(\leq (1\frac{1}{3})7000 \text{ psf} = 9,333 \text{ psf})$ ok

Condition 4:

For dimensions see Condition 1.



For W_1, W_2, and W_3 see Condition 1.

Soil $\leftarrow$ = 63,619 ^{lb} @ 12.5' from A see Condition 3.

Σ Vertical = 13,050 + 10,575 + 99,475 = 123,100 ^{lb}.

ΣM_A ↻ = 13,050(14.5) + 10,575(5') + 99,475(17.5') = 1,982,913 $^{ft\text{-}lb}$

ΣM_A ↺ = 63,619 ^{lb} (12.5') = 795,238 $^{ft\text{-}lb}$.

Check for resultant in middle third:

$e = 1,982,913 - 795,238 / 123,100 = 9.6'$ from A or 4.9' from ℄

$e_{allowable} = 29/6 = 4.8' \approx 4.9'$ say ok

Check for overturning:

$F.S._{OT} = 1,982,913 / 795,238 = 2.5$ ok

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IN THIS SPACE

DO NOT WRITE

Condition 4 Cont'd:

Check for sliding:

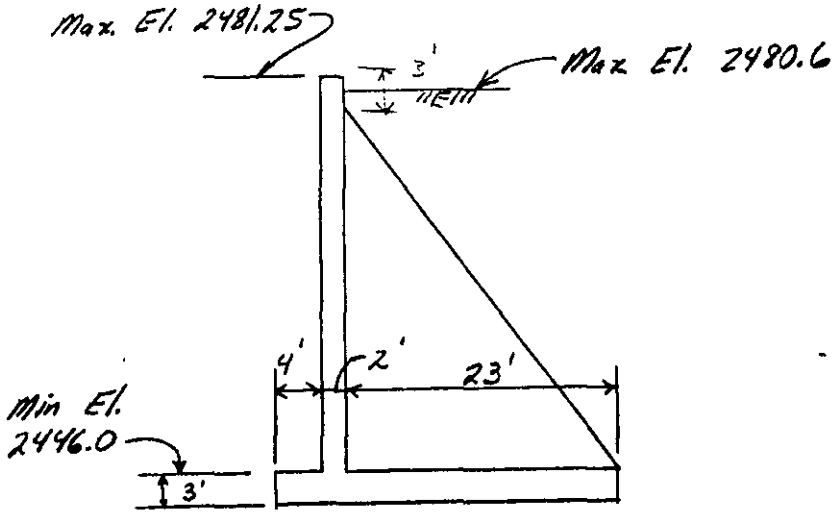
$F.S._{SLIDING} = \frac{0.58(1\frac{2}{3})\,123{,}100^{\#}}{63{,}619^{\#}} = 1.5$ ok

find soil bearing pressures:

$q = \frac{123{,}100}{29}\left(1 \pm \frac{6(4.9)}{29}\right) = 8{,}548\,psf \;\&\; 0$

$(\leq (1\frac{2}{3})7000\,psf = 9{,}333\,psf)$ ok

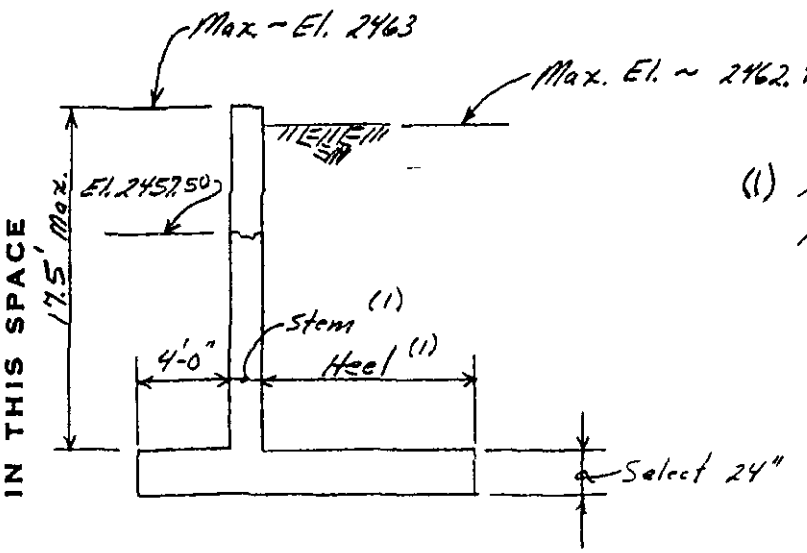
∴ Footing selected for Panel A as shown below is acceptable. ←



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B. Determine retaining wall dimensions for Panel B:

Panel B is cantilever retaining wall.

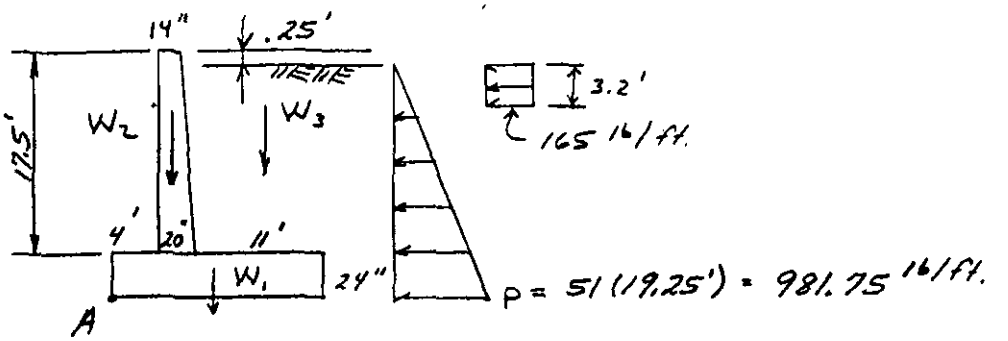


(1) Stem and heel widths vary see following page.

Retaining wall will be checked at the three location shown on the following page. Based on results of panel A, only load Condition 1 and 4 will be checked, reference page 1 for description of load conditions.

B.1 For stem height = 17.50'

Condition 1:



$W_1 = 150_{pcf}\,(16.67')(2') = 5{,}001^{\#}$ @ 8.34' from A

$W_2 = 150_{pcf}\,(17.5')\left(\frac{20+14}{2}(12)\right) = 3{,}719^{\#}$ @ 4.71' from A

$W_3 = 125_{pcf}\,(17.25')(11.0') = 23{,}719$ @ 11.17' from A.

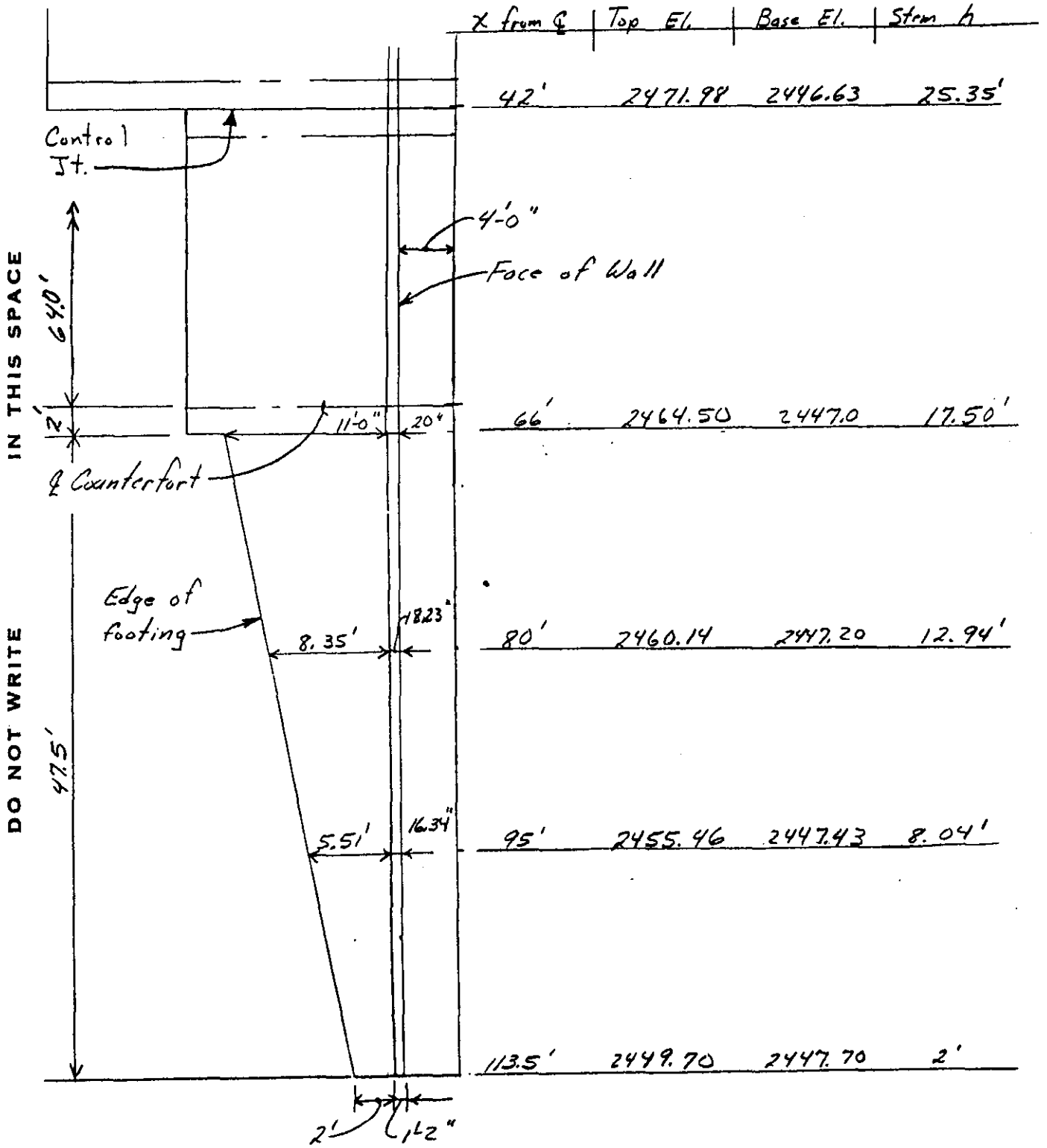
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BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY DALLAS DENVER ORLANDO

SUBJECT Upper Flamingo Wash
WORK Retaining Wall
PROJECT NO. 14625.321
FILE NO. Calc.

DATE May 14 19 89
SET UP BY
COMPUTED BY W W Stark
CHECKED BY
PAGE NO. 9 OF 18



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Panel B-1-Condition 1 Cont'd:

Surcharge ↓ = 400 psf (11.5') = 4,600 ^{lb} @ ~ 10.92' from A
Surcharge ← = 165 psf (3.2') = 528 ^{lb} @ 17.65' from A
Soil ← = 98 l.8 (19.25')½ = 9,449 ^{lb} @ 6.42' from A.

Σ Vertical loads = 32,439 ^{lb}
Σ Horiz. loads = 9,977 ^{lb}
$\Sigma M_{A\circlearrowright} = 324,166$ $^{ft\text{-}lb}$
$\Sigma M_{A\circlearrowleft} = 69,982$ $^{ft\text{-}lb}$

Check for resultant in middle third:
$e = 324,166 - 69,982 / 32,439 = 7.84'$ from A or 0.5' from ℄
$e_{allowable}$ 2.8' ok

Check for Overturning:
$F.S._{OT} = 324,166 / 69,982 = 4.6$

Check for Sliding:
$F.S._{sliding} = 0.58(32,439) / 9,977 = 1.9$

Find soil bearing pressure:
$$q = \frac{32,439}{16.67'}\left(1 \pm \frac{0.50'(6)}{16.67}\right) = 2,296 psf \text{ \& } 1596 psf$$

Condition 4:

W_1, W_2, W_3 are the same as for Condition 1.
Soil ← = 90 pcf (19.25')²/2 = 16,675 ^{lb} @ 6.42' from A.
Σ Vertical = 32,439 ^{lb}
Σ Horiz. = 16,675 ^{lb}
$\Sigma M_{A\circlearrowright} = 324,166$ $^{ft\text{-}lb}$ & $\Sigma M_{A\circlearrowleft} = 107,056$ $^{ft\text{-}lb}$

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Panel B.1 - Condition 4 Cont'd:

$e = 324,166 - 107,056 / 32,439 = 6.69$ from A or 1.64 from ℄

$e_{allowable} = 2.8'$ ok.

$F.S._{OT} = 324,166 / 107,056 = 3.0$

$F.S._{sliding} = 0.77(32,439) / 16,675 = 1.50$

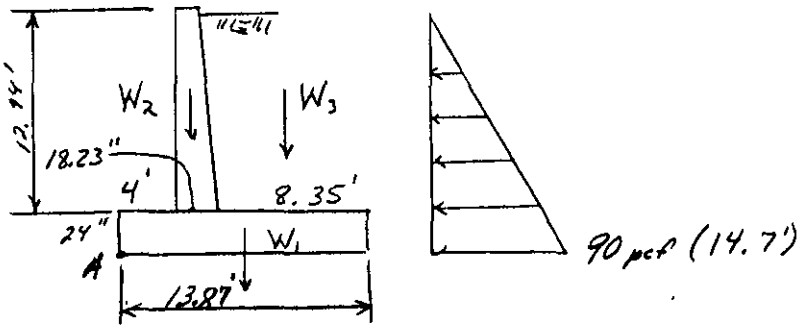
$q = \frac{32,439}{16.67}\left(1 \pm \frac{1.64(6)}{16.67}\right) = 3,095\ psf$ & $797\ psf$.

∴ Footing selected for stem height = 17.5' is ok ←

B.2 For stem height = 12.94'

Check footing for Condition 4 only:

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$W_1 = 150_{pcf}(2')(13.87') = 4,161^{\#}$ @ 6.94' from A

$W_2 = 150_{pcf}(12.94')\left(\frac{14+18.23}{2(12)}\right) = 2607^{\#}$ @ ~5.34' from A

$W_3 = 125_{pcf}(12.7')(8.35') = 13,256^{\#}$ @ ~9.69' from A

$Soil \leftarrow = 90_{pcf}(14.7^2)(\frac{1}{2}) = 9,724^{\#}$ @ 4.9' from A.

Σ Vertical $= 20,024^{\#}$

Σ Horiz $= 9,724^{\#}$

$\Sigma M_{A)} = 171,249^{ft\text{-}\#}$

$\Sigma M_{A\uparrow} = 47,648^{ft\text{-}\#}$

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Panel B.2-Condition 4 Cont'd:

$e = 171,249 - 47,648 / 20,024 = 6.17'$ from A or 0.76 from ℄

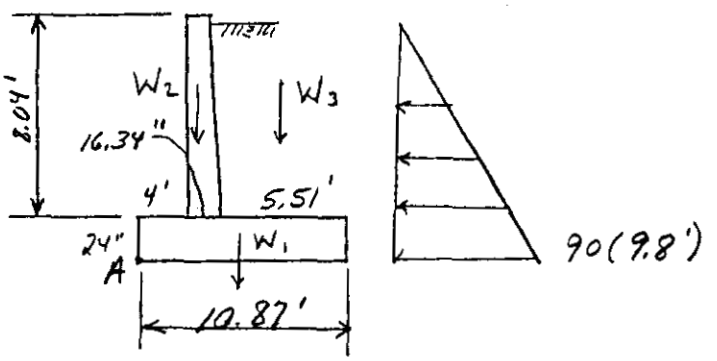
$e_{allowable} = 13.87'/6 = 2.3'$

$F.S._{OT} = 171,249/47,648 = 3.6$

$F.S._{sliding} = 0.77(20,024)/9,724 = 1.59$

$q = \frac{20,024}{13.87'}\left(1 \pm \frac{0.76(6)}{13.87}\right) = 1,918\ psf,\ 969\ psf.$

B.3 For Stem Height = 8.04'



$W_1 = 150_{pcf}(2')(10.87') = 3,262^{\#}$ @ 5.44' from A.

$W_2 = 150_{pcf}(8.04')\left(\frac{14+16.34}{2(12)}\right) = 1,525^{\#}$ @ 5.26' from A

$W_3 = 125_{pcf}(8.04')(5.51') = 5,538^{\#}$ @ 8.12' from A

$Soil \leftarrow = 90(9.8^2)(1/2) = 4,322^{\#}$ @ 3.27' from A

$\Sigma Vertical = 10,325^{\#}$

$\Sigma Horiz. = 4,322^{\#}$

$\Sigma M_A \circlearrowright = 70,735^{ft-\#}$

$\Sigma M_A \circlearrowleft = 14,133^{ft-\#}$

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Panel B.3 - Condition 4 Cont'd:

$e = 70,735 - 14,133 / 10,325 = 5.48'$ from A or $-0.05'$ from E.

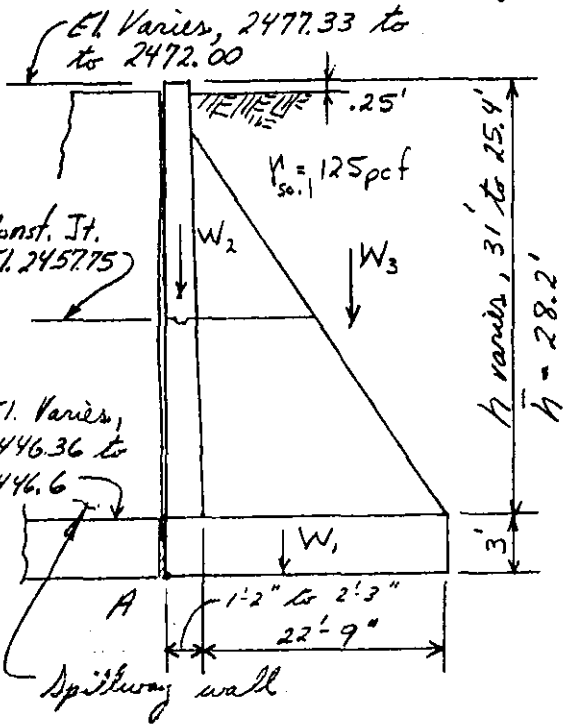
$F.S._{OT} = 70,735 / 14,133 = 5.0$

$F.S._{Sliding} = 0.77(10,325) / 4,322 = 1.84$

$q = \frac{10,325}{10.87'}\left(1 \pm \frac{.05(6)}{10.87}\right)^{2.0} = 950$ psf.

C. Determine retaining wall dimensions for Panel C:

Panel C is counterfort retaining wall with a much reduced height than Panel A. and no toe.



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Based on the results for Panels A & B, check Panel C for load Condition 4. See page 1 for description of load Conditions. Use h for wall height.

Condition 4:

$W_1 = 150_{pcf}(3')(25') = 11,250^{\#}$ @ 12.5' from A

$W_2 = 150_{pcf}(28.2')\left(\frac{14''+27''}{2(12)}\right) = 7,226^{\#}$ @ ~ 1.71' from A

$W_3 = 125_{pcf}(28.2')(22.75') = 80,194^{\#}$ @ 13.63' from A

Soil $\leftarrow = 90_{pcf}(31.2')^2 \frac{1}{2} = 43,805^{\#}$ @ 10.4 from A

Σ Vertical = $98,670^{\#}$

Σ Horiz. = $43,805^{\#}$

$\Sigma M_{A\,\circlearrowright} = 1,246,026^{ft\text{-}\#}$

$\Sigma M_{A\,\circlearrowleft} = 455,570^{ft\text{-}\#}$

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Panel C - Condition 4:

$e = 1,246,026 - 455,570 / 98,670 = 8.01'$ from A or 4.5' from ℄

$e_{allowable} = 25'/6 = 4.2'$ say ok.

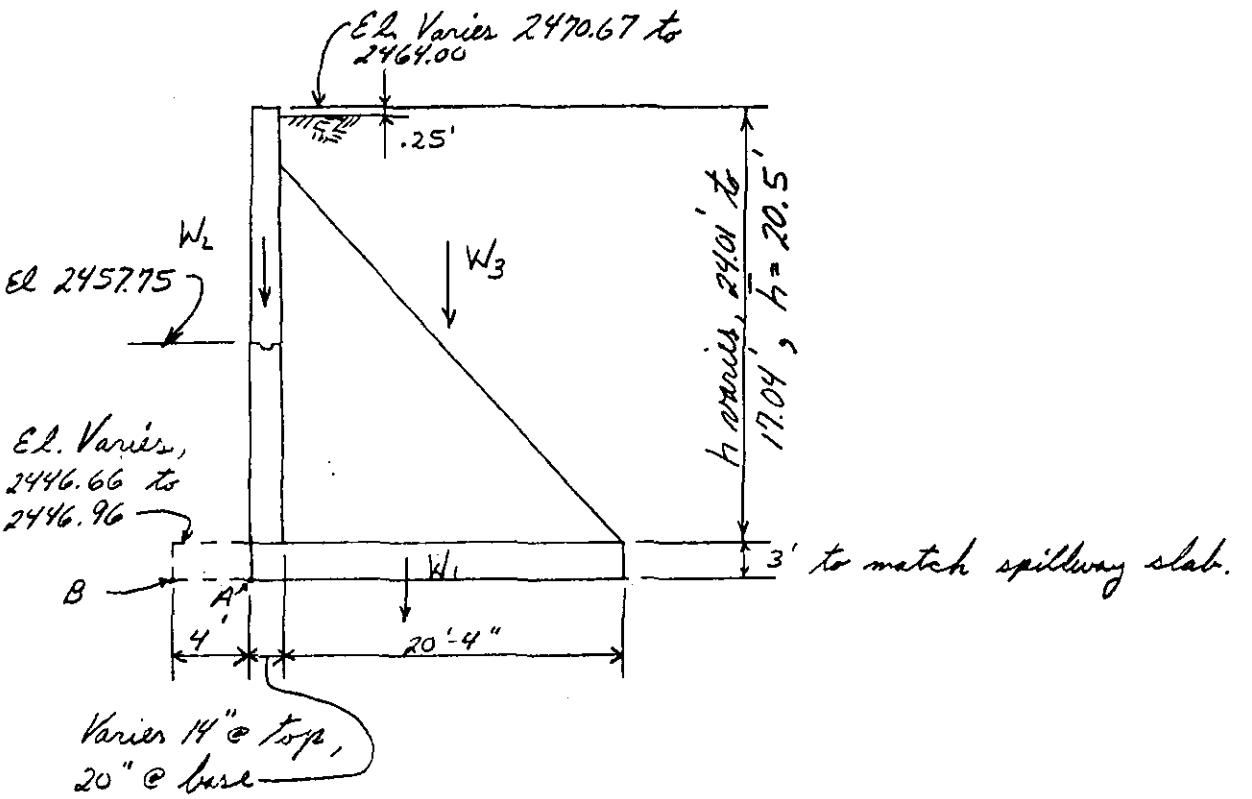
$F.S._{OT} = 1,246,026 / 455,570 = 2.74$

$F.S._{Sliding} = 0.77(98,670) / 43,805 = 1.73$

$q = \frac{98,670}{25}\left(1 \pm \frac{4.5\,(6)}{25}\right) = 8,199$ psf ; 0 psf ok.

Soil bearing pressure at edge of footing of the spillway is ~ 3,000 psf. The spillway slab and retaining wall toe abut each other. Both pressures are ≤ 7,000 (1⅓) = 9,333 psf and thus footings are adequate

D. Determine retaining wall dimensions for Panel D:



Toe of Panel D starts 14'-6" from the upstream counterfort. Select a heel width to keep the soil bearing pressure at the wall less than allowable, then check footing pressures with toe.

Based on the results for Panel A & B, check Panel D for load Condition 4 only. See page 1 for a description of the load conditions.

Panel D w/o the toe will be sized for the maximum height, 24', Panel D w/ toe will be checked for a height of 20.5'.

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Panel D - Condition 4 Cont'd:

Panel D w/o toe:

$W_1 = 150\,pcf(3')(22') = 9,900^{\#}$ @ 11' from A

$W_2 = 150\,pcf(24')\left(\frac{14+20}{2(12)}\right) = 5,100^{\#}$ @ 0.71' from A = $\frac{14+20}{2(12)}(1/2)$

$W_3 = 125\,pcf(24')(20.33') = 61,000^{\#}$ @ 11.83' from A

$Soil \leftarrow = 90\,pcf(27')^2 1/2 = 32,805^{\#}$ @ 9.00' from A

$\Sigma Vertical = 76,000^{\#}$

$\Sigma Horiz = 32,805^{\#}$

$\Sigma M_R = 834,151^{ft\text{-}\#}$

$\Sigma M_{A\circlearrowright} = 295,245^{ft\text{-}\#}$

$e = 834,151 - 295,245 / 76,000 = 7.09'$ from A or $3.91'$ from E

$e_{allowable} = 22'/6 = 3.67'$ say ok since $FS_{OT} > 2$.

$F.S._{OT} = 839,151 / 295,245 = 2.83$

$F.S._{sliding} = 0.77(76,000) / 32,805 = 1.78$

$q = \frac{76,000}{22}\left(1 \pm \frac{3.91(6)}{22}\right) = 7,138\,psf, 0\,psf.$

∴ Eccentricity controls, use a footing w/ a 20:4" heel (22' overall).

Panel D - Condition 4 Cont'd:

Panel D w/ toe:

$W_1 = 150\,pcf\,(3')(26') = 11{,}700^{lb}$ @ 13' from B

$W_2 = 150\,pcf\,(20.5')\left(\frac{14+20}{2(12)}\right) = 4{,}356^{lb}$ @ 4.71' from B = $4' + \left[\left(\frac{14+20}{2(12)}\right)\frac{1}{2}\right]$

$W_3 = 125\,pcf\,(20.25')(20.33') = 51{,}469^{lb}$ @ 15.83' from B

$Soil \leftarrow = 90\,pcf\,(23.25)^2(\frac{1}{2}) = 24{,}325^{lb}$ @ 7.75' from B

$\Sigma Vertical = 67{,}525^{lb}$

$\Sigma Horiz = 24{,}325^{lb}$

$\Sigma M_{B\circlearrowright} = 987{,}371\ ft\text{-}lb$

$\Sigma M_{B\circlearrowleft} = 188{,}521\ ft\text{-}lb$

$e = 987{,}371 - 188{,}371 / 67{,}525 = 11.83'$ from B or $1.17'$

$e_{allowable} = 4.33$

$F.S._{OT} = 987{,}371 / 188{,}521 = 5.24$

$F.S._{sliding} = 0.77(67{,}525)/24{,}325 = 2.14$

$q = \frac{67{,}525}{26}\left(1 \pm \frac{1.17(6)}{26}\right) = 3{,}298\,psf,\ 1{,}896\,psf$

∴ Footing selected is okay.

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