Request for Letter of Map Revision

for Flamingo Wash, Spanish Trail Country Club

Clark County, Nevada



Submitted to:

Clark County
Regional Flood Control District

REGIONAL FLOOD CONTROL DISTRICT

Submitted by:

The Louis Berger Group, Inc.
Las Vegas, Nevada

October 2006

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I. INTRODUCTION

This submittal package provides hydrologic and hydraulic data in support of the Request for a Letter of Map Revision (LOMR) for the Flamingo Wash at Spanish Trail Country Club Community in Clark County, Nevada (see Figure 1). This LOMR request was prepared by The Louis Berger Group, Inc. on behalf of the Clark County Regional Flood Control District (CCRFCD).

Three CCRFCD Master Planned drainage projects comprise the basis of this LOMR request. These regional drainage projects are located in the upper Flamingo Wash watershed and include (see Figure 6):

1) The Upper Flamingo Detention Basin and the Upper Flamingo Diversion Channel between Upper Flamingo Detention Basin and Buffalo Drive;

2) Buffalo Drive Channel Improvements; and,

3) The Lakes Detention Basin and Associated Collection and Outfall Facilities.

The Upper Flamingo Detention Basin and the Upper Flamingo Diversion Channel was designed and constructed by the U.S. Army Corps of Engineers (USACOE). The Buffalo Drive Channel Improvements were constructed by a private developer. The Lakes Detention Basin System projects were designed and constructed by Clark County Public Works. Record drawings for the project improvements are provided in Appendices F through H, respectively.

There are three study areas affected by the above flood control projects that are specifically addressed in this LOMR request:

Study Area #1: The Upper Flamingo Diversion Channel, between the Upper Flamingo Detention Basin and Buffalo Drive;

Study Area #2: The Flamingo Wash at the Spanish Trail Country Club Golf Course and Community; and,

Study Area #3: The Buffalo Drive Channel from the Spanish Trail Golf Course and Community to 2000 feet north of Tropicana Avenue.

The three study areas are currently designated as Special Flood Hazard Area (SFHA) Zone A on Flood Insurance Rate Map Panels 32003C2535E and 32003C2551E (see Figures 2 and 3).

II. PREVIOUS STUDIES

The source(s) of the data used to delineate the Zone A flood zones shown on the FIRM panels for all three study areas is unknown. However, hydrologic information relevant to Study Areas #1 and #2 is provided in the Flamingo Wash Flood Insurance Study (FIS) Restudy prepared in 1997 by G. C. Wallace, Inc. for the CCRFCD (FEMA Case No. 98-09-225P). In addition, information relevant to Study Areas #2 and #3 is provided in the Lakes Detention Basin System studies prepared by PBS&J for Clark County Public Works in 1999. A discussion of these previous studies as they relate to this LOMR request is provided below.

Flamingo Wash FIS Restudy

The Flamingo Wash FIS Restudy presents hydrologic and hydraulic analyses for various reaches of the Lower Flamingo Wash from Rainbow Boulevard to Las Vegas Wash. The upper limit of the FIS hydraulic modeling at Rainbow Boulevard is the downstream limit of Study Area #2.

While the FIS hydraulic modeling begins downstream of Study Area #2, the FIS hydrologic model encompasses the entire Flamingo Wash watershed, and represents the most current "effective" hydrology for the Upper Flamingo Diversion Channel (Study Area #1) and Flamingo Wash at Spanish Trail (Study Area #2). Excerpts of the Flamingo Wash FIS, including the HEC-1 hydrologic model and hydrologic basin map, are provided in Appendix E and on the CD enclosed in Appendix I.

Figure S-4 in Appendix E is a reproduction of the FIS hydrologic basin map showing the Flamingo Wash Watershed upstream of Study Areas #1 and #2 outlined in green. The following relevant concentration points and 100-year peak flow rates are reported in the Flamingo Wash FIS:

Node F5: Located at the downstream outfall of the Upper Flamingo Detention Basin, shows the 100-year flow rate in the Upper Flamingo Diversion Channel, Study Area #1, to be 3761 cfs; and,

Node F8: Located at the Flamingo Wash and Rainbow Boulevard; shows the 100-year peak flow rate to be 3,940 cfs (adopted as 3900 cfs) at the downstream end of the Spanish Trail Golf Course, Study Area #2.

Lakes Detention Basin System

The Lakes Detention Basin System was designed by PBS&J for Clark County Public Works in 1999. The Lakes Detention Basin system drains via the Buffalo Channel (Study Area #3) into the Flamingo Wash at Spanish Trail (Study Area #2). This system was constructed under multiple contracts:

Buffalo Outfall/Collection System from Peace Way to Tropicana Avenue
Buffalo Drive, Sahara Avenue to Tropicana Avenue
Buffalo Outfall/Collection System Phase 2, from Desert Inn Road to Peace Way
Lakes Detention Basin & Associated Collection Facilities, Phase 3
Lakes Detention Basin & Associated Collection Facilities, Phase 3B
Spring Mountain Road, Phase 2, Durango to Buffalo

Supporting design calculations, hydrologic analysis, and hydraulic data were prepared under a single document provided in Appendix H. Full digital copies of the referenced material are included on data CD in Appendix I. The Lakes Detention Basin System hydrologic analysis was used as the basis of the hydraulic modeling for Study Areas #1 and #2.

III. HYDROLOGIC ANALYSIS

Study Area #1: A new hydrologic analysis was not prepared for Study Area #1 as part of this LOMR request. Letters of certification for the Upper Flamingo Detention Basin and the Upper Flamingo Diversion Channel from the USACOE are provided in Appendix F.

Study Area #2: The Upper Flamingo Diversion Channel diverts all flow away from the Flamingo Wash at Spanish Trail. The only source of flow through Study Area #2 enters from the Lakes Detention Basin System via the Buffalo Channel (see Figure 6).

A hydrologic analysis was prepared as part of this LOMR request for Study Area #2. The Lakes Detention Basin System model, which did not include the Spanish Trail Golf Course Community, was expanded for the purpose of this LOMR request package to include basins ST1, ST2, ST3 and HA1 on Figure 6. The hydrologic analysis was prepared using the HEC-1 hydrologic model and criteria specified in the CCRFCD's "Hydrologic Criteria and Drainage Design

Manual" (Updated 2000). The analysis resulted in 100-year peak flow rates through Study Area #2 of 1,494 cubic feet per second (cfs) at Tropicana Avenue to 1,577 cfs at Rainbow Boulevard. The highest expected 100-year, 6-hour peak flow rate of 1,577 was utilized for the hydraulic analysis throughout the golf course area. The computer output and other pertinent information regarding the hydrologic analysis are provided in Appendix C.

It should be noted that the Lakes Detention Basin System drainage area on Figure 6 (excluding Spanish Trail Golf Course basins) was more recently diverted into the Flamingo Wash watershed and was not included in the effective Lower Flamingo Wash FIS study. For comparison purposes, the proposed Study Area #2 drainage area is shown on Figure S-4 in Appendix E.

Study Area #3: For the Buffalo Drive Channel, the 100-year peak flow rate of 1,417 cfs from the hydrologic model for Study Area #2 was used. This flow rate was originally developed by PBS&J as part of the Lakes Detention Basin System.

IV. HYDRAULIC ANALYSIS

Study Area #1: The Upper Flamingo Wash Diversion Channel is a concrete-lined channel, extending easterly several miles from the Upper Flamingo Wash Detention Basin. The channel diverts the flow from the Upper Flamingo Detention Basin that historically impacted Study Area #2 into the Tropicana Wash watershed. A hydraulic analysis was not prepared for the Study Area #1 as part of the LOMR request. A letter of certification for the Upper Flamingo Diversion Channel from the USACOE is provided in Appendix F and Record Drawings are provided in Appendix F.

Study Area #2: Hydraulic calculations using the HEC-RAS computer model were conducted to develop water surface elevations for the proposed 100-year peak flow rate of 1,577 cfs through the golf course. The HECRAS model is provided in Appendix D as well as on the CD included in Appendix I.

The HECRAS model for Study Area #2 was developed using topographic mapping a recent survey prepared for the owners of the community/golf course by Stewart Technologies in 2006.

The channel alignment curves gently as it runs mainly within a meticulously-maintained grassed golf course waterway. Within the golf course fairway areas, the configuration of the channel is generally an extended U-shape, having longitudinal slopes of less than 0.4 percent to around 1.0 percent. There are other reaches of the channel that consist of a trapezoidal shape, having a gravel cart path as the bottom section and grassed side slopes of about 3 to 1. Some reaches have existing bushes and also gabion protection along the sides of the channel. Several reaches also have gravel landscape rock along the sides of the channel. A field review was performed to best establish roughness and other channel characteristics for all reaches studied. Photographs, shown on Figures 9 through 16, have field locations referenced on Figure 8. Grassed and gravel areas were modeled using a Manning's n value of 0.025, while areas of shrubbery or other major obstructions were modeled using a Manning's n value of 0.10.

There are several cart-path crossings along the course of the channel, which consist of multiple, small-barrel culverts under a 10-foot concrete pathway. These crossings were modeled as culverts in the analysis.

The model includes three bridge crossings, one at Rainbow Boulevard, one at Spanish Trail Lane, and one at Spanish Gate Drive. Each of these structures was measured in the field and additional information was taken from the topographic map for input to the hydraulic model.

Runoff flow that enters the Spanish Trail Community at Tropicana Avenue was found to flow in the sub-critical flow regime, and according to the model, the flow in the lower reaches of the channel flows at or near the critical depth of about 3.5 feet. The 100-year peak flow rate was found to stay within the golf course areas throughout the study reaches, with average velocities of about 8 feet per second. Results of the hydraulic modeling and the revised flood zone boundaries are shown on Figure 8.

No attempt was made to tie-in the water surface elevations proposed in this LOMR with the effective water surface elevations from the Lower Flamingo Wash FIS at Rainbow Boulevard because the proposed flow rate of 1,577 cfs is much less than the effective rate of 3,900 cfs.

Study Area #3: Study Area #3 has two reaches of hydraulic analysis. For the Buffalo Drive Channel at the downstream end, from Tropicana Avenue to about 1300 feet upstream, a HEC-RAS model was prepared in this submittal package. This reach is the outlet for the Lakes Detention Basin Outfall System, and was constructed by a private developer around 1989. The Buffalo Drive Channel in this reach consists of a concrete-lined trapezoidal channel, having a 10-foot bottom width and 1.5 to 1 side slopes. The channel has a generally straight alignment and a longitudinal slope of 0.40 percent. The discharge point of the channel is a reinforced concrete box (RCB) that passes under Tropicana Avenue, and discharges flow into Study Area 2. The channel and RCB were field-measured and record drawings for the facilities are provided in Appendix G. The 100-year peak flow rate of 1417 cfs was found to be contained within the channel through out the reach.

The second reach of the Buffalo Drive Channel was constructed by Clark County as a portion of the Lakes Detention Basin Outfall System, (Buffalo Outfall / Collection System) analyzed by PBS&J in the Lakes Detention Basin System study. The 100-year peak flow rate was found to be contained in the channel. Reference material is included in Appendix H.

V. CONCLUSIONS

The purpose of the LOMR request is to revise the FIRM maps for the Flamingo Wash at Spanish Trail Country Club, Flamingo Diversion Channel, and Buffalo Drive Channel based on drainage improvements to the Upper Flamingo Diversion Channel, Lakes Detention Basin System, and Buffalo Drive Channel. Record drawings of the improvements, hydrologic and hydraulic analyses are provided herein in support of this request. The analyses and supporting documentation provided herein demonstrate that:

1) The 100-year peak flow rate of 1,577 cfs is contained fully in the golf course area and no habitable structures within the Spanish Trail Country Club Community will be inundated.

2) The 100-year peak flow rate of 1,417 cfs will be fully contained within the Buffalo Drive Channel.

3) The 100-year peak flow rate certified by the USACOE for the Upper Flamingo Diversion Channel will be fully contained within the channel improvements.

THE Louis Berger Group, INC.

APPENDIX A

FEMA Forms

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☐ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☒ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
32003	Unincorporated Clark County	NV	32003C	2535E	09/03/04
32003	Unincorporated Clark County	NV	32003C	2551E	09/27/02

2. Flooding Source: Flamingo Wash

3. Project Name/Identifier: Flamingo Wash at Spanish Trail Country Club

4. FEMA zone designations affected: Zone A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☐ Physical Change ☒ Improved Methodology/Data

☐ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☒ Channelization	☐ Levee/Floodwall	☐ Bridge/Culvert
	☐ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $_____

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are 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: Barbara M. Brown	Company: The Louis Berger Group, Inc.	
Mailing Address: 500 Amigo Court Suite 100 Las Vegas, NV 89119	Daytime Telephone No.: 702-736-6632	Fax No.: 702-736-0704
	E-Mail Address: bbrown@louisberger.com	
Signature of Requester (required): Barbara M. Brown		Date: 7-31-06

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: David Betley, P.E.,		Telephone No.: 702-455-4808
Community Name: Clark County Nevada	Community Official's Signature (required):	Date: 9/14/06

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are 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.

Certifier's Name: Barbara M. Brown	License No.: 9909	Expiration Date: 12-31-06
Company Name: The Louis Berger Group, Inc.	Telephone No.: 702-736-6632	Fax No.: 702-736-0704
Signature: Barbara M. Brown		Date: 7-31-06

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☐ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Flamingo Wash
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section 2) ☐ No existing analysis ☒ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☒ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)
Flamingo Wash Bridge at Rainbow Blvd.	varies	3900	1577
Buffalo Channel	Varies	Unknown	1417

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model HEC-1 [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	Flamingo Wash Bridge at Rainbow Boulevard	9939.9	2348.2	2344.7
Upstream Limit	Buffalo Channel	19506.9	Not known	2431.3

2. Hydraulic Method Used HEC-RAS

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Existing or Pre-Project Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	_____
Revised or Post-Project Conditions Model	File Name: FWSPTR.prjn	Plan Name: 1	File Name:	Plan Name:	NAVD 88
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	_____

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

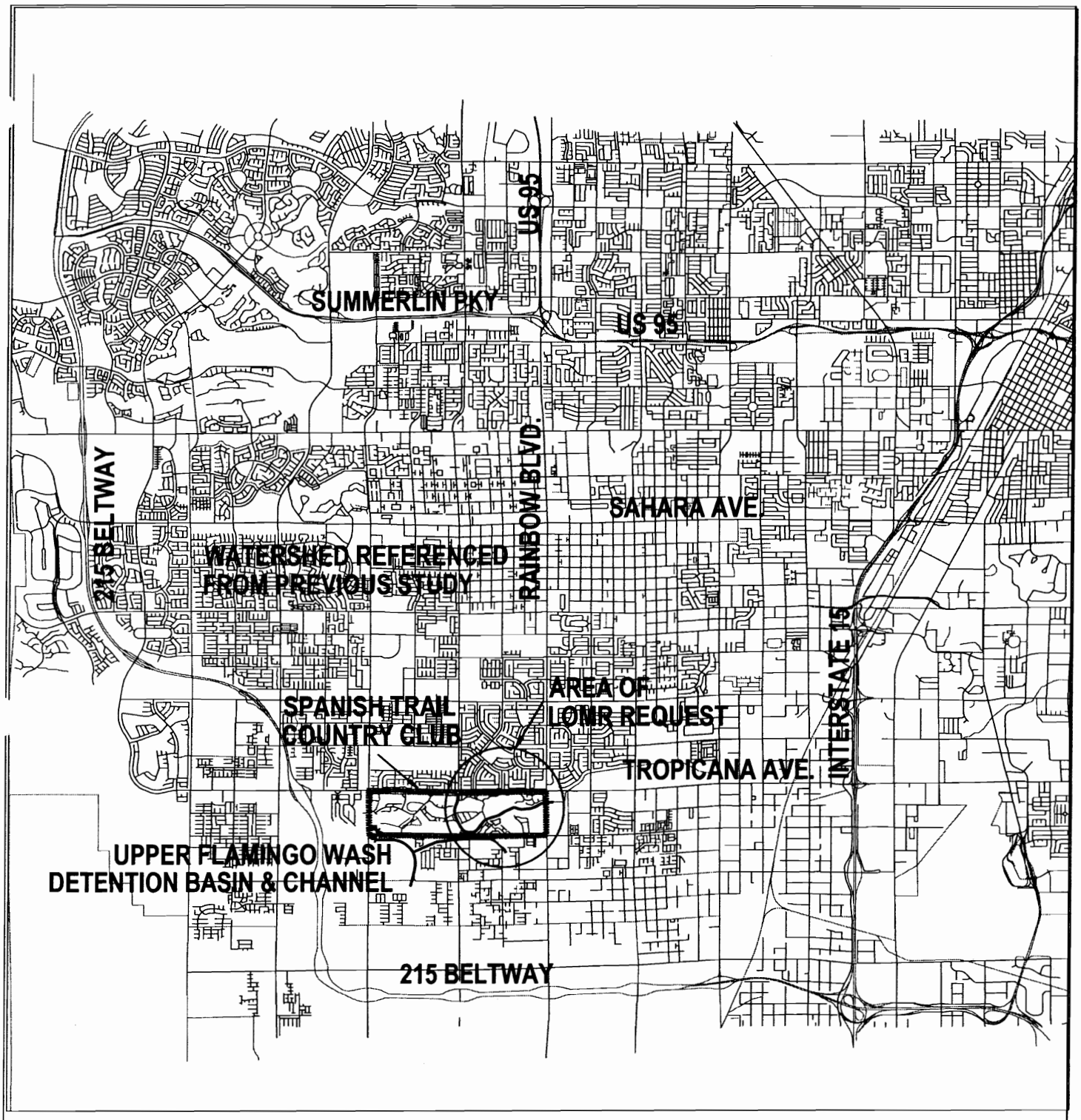
If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

THE Louis Berger Group, INC.

APPENDIX B

Figures



N

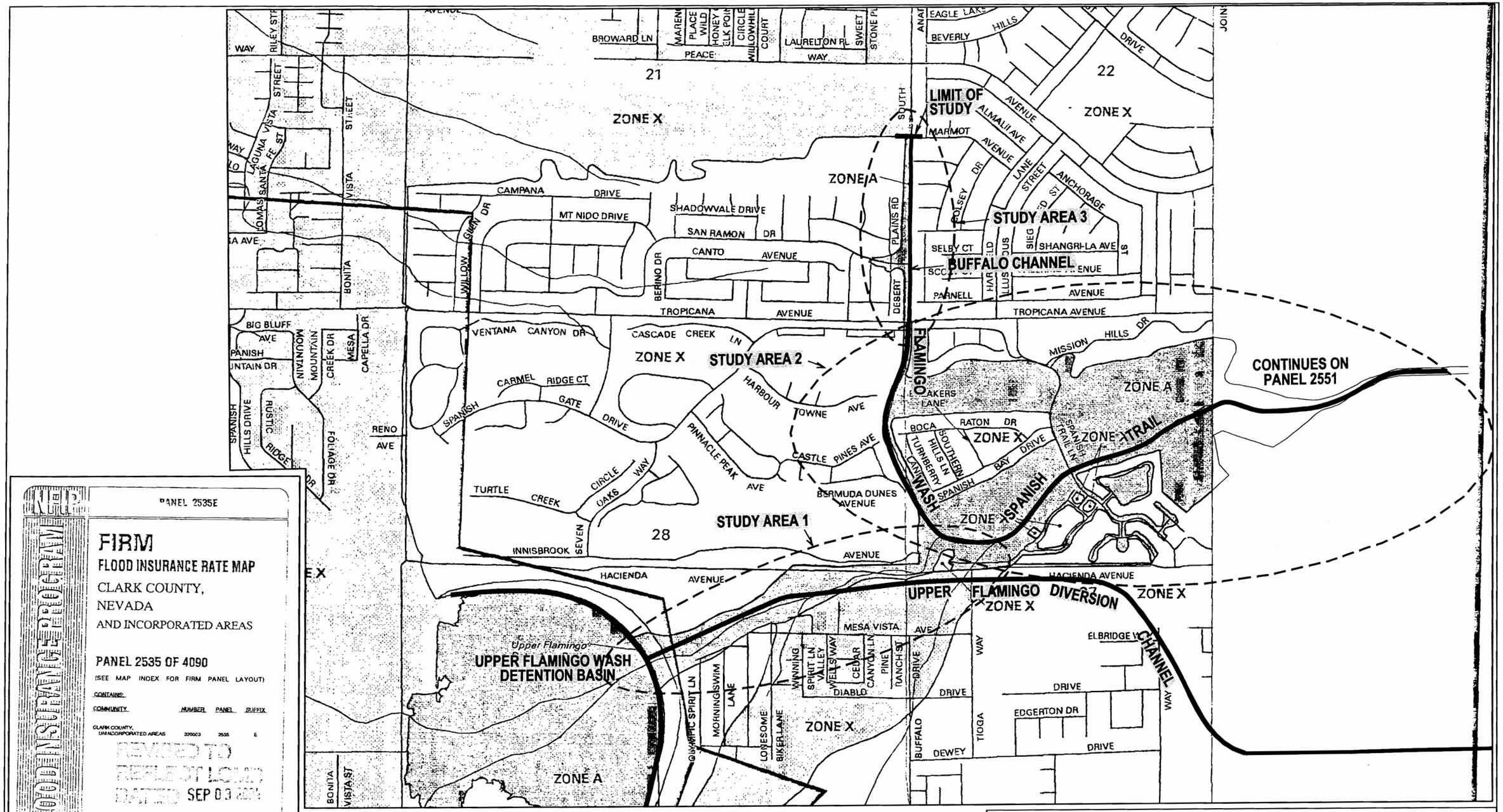
NOT TO SCALE

VICINITY MAP

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FIGURE 1

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA



PANEL 2535E

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA
AND INCORPORATED AREAS

PANEL 2535 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320003	2535	E

REVISED TO REFLECT LOMR DATED SEP 03 2004

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C2535E

MAP REVISED:

NATIONAL FLOOD INSURANCE PROGRAM

FIGURE 2 – FEMA FLOOD ZONE MAP

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FIRM PANEL # 32003C2535E

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

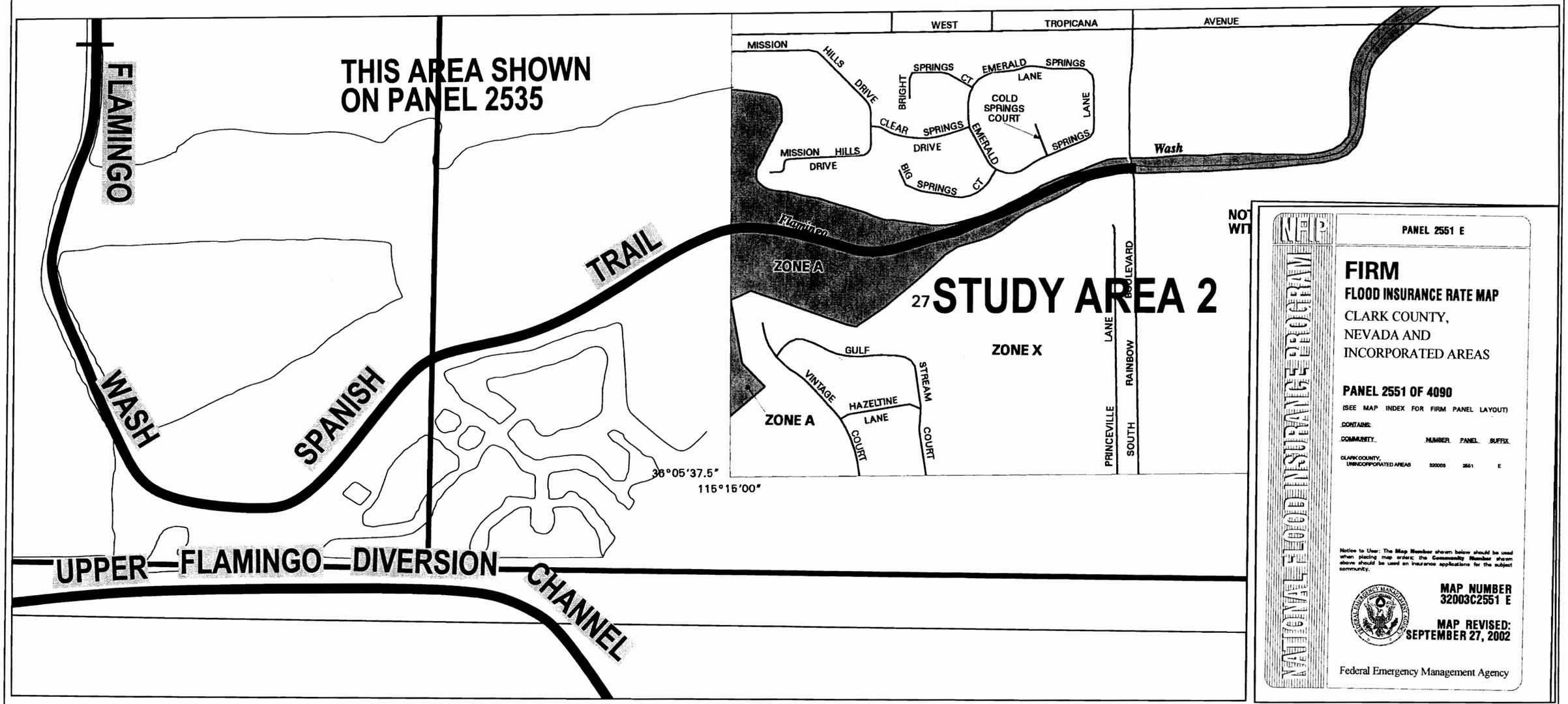
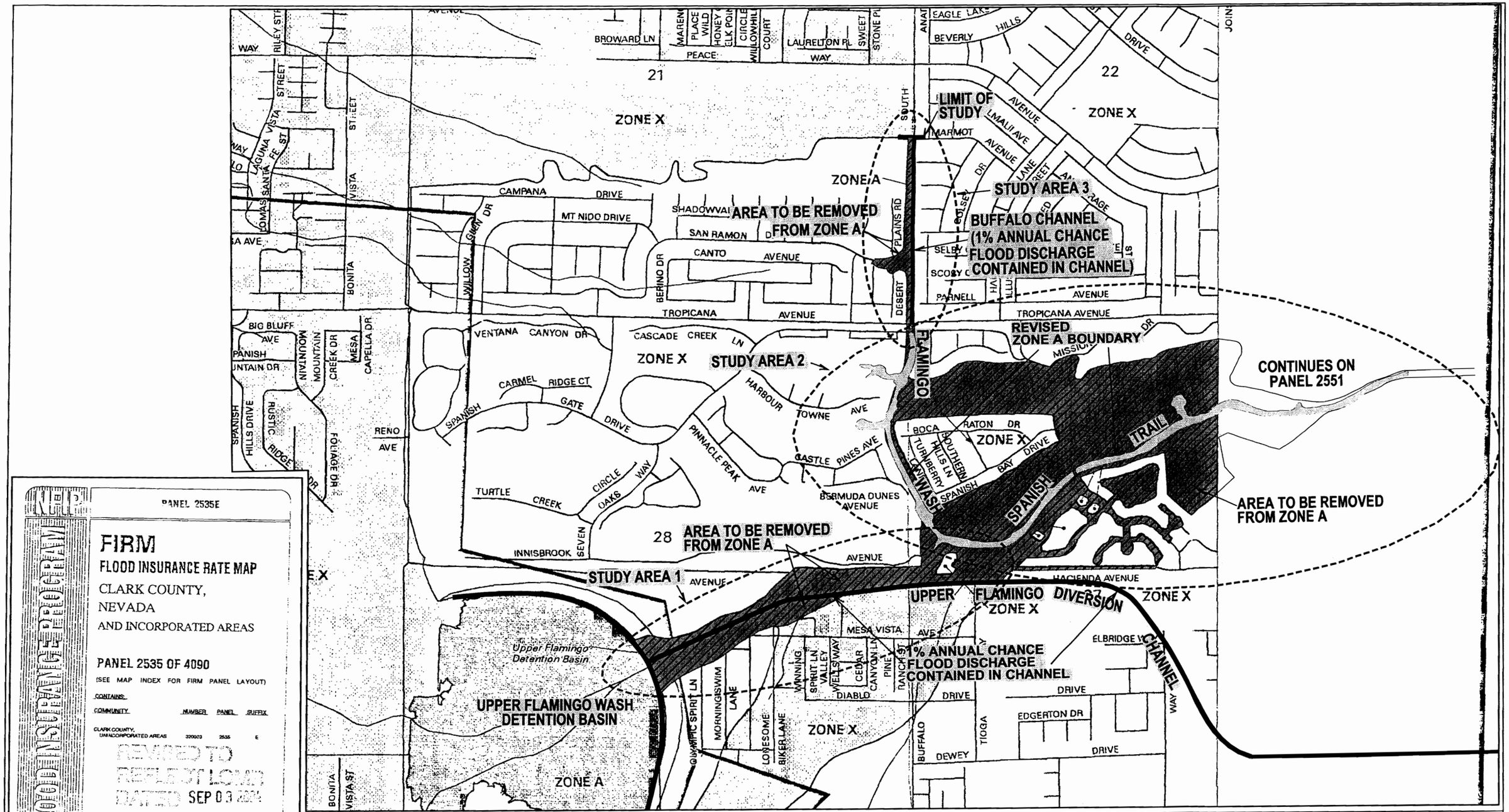


FIGURE 3 – FEMA FLOOD ZONE MAP

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FROM FIRM PANEL # 32003C2551E

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA



PANEL 2535E

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA
AND INCORPORATED AREAS

PANEL 2535 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320003	2535	E

REVISED TO REFLECT LOMR DATED SEP 03 2004

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C2535E

MAP REVISED:

MAP SCALE 1" = 1000'

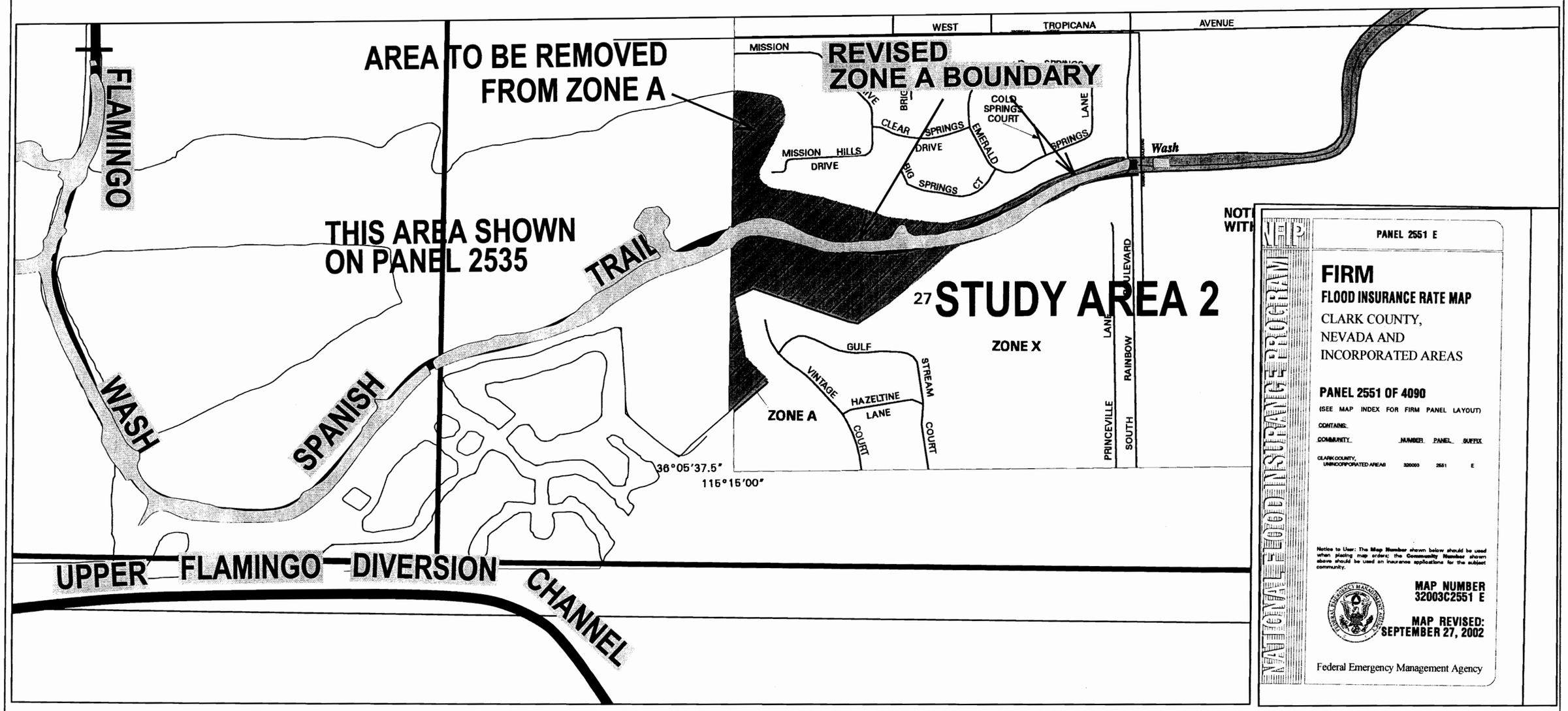
500 0 1000 2000 FEET

FIGURE 4 – ANNOTATED FLOOD ZONE MAP

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FIRM PANEL # 32003C2535E

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA



MAP SCALE 1" = 500'

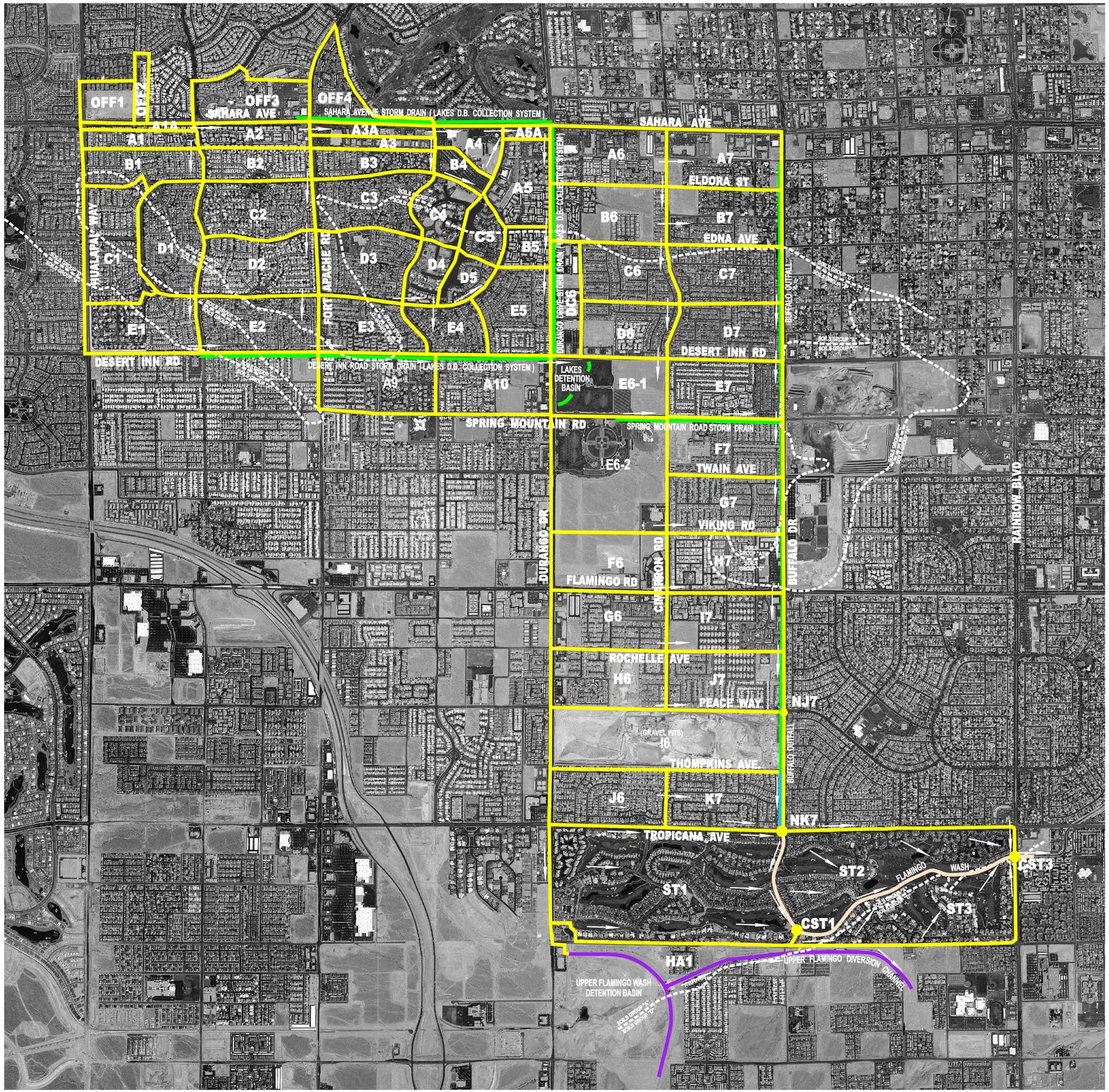
250 0 500 1000 FEET

FIGURE 5 – ANNOTATED FLOOD ZONE MAP

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FROM FIRM PANEL # 32003C2551E

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA



- DRAINAGE BASIN BOUNDRY
- FLAMINGO WASH @ SPANISH TRAIL
- LAKES COLLECTION SYSTEM (SEE APPENDIX H)
- BUFFALO DR CHANNEL (SEE APPENDIX G)
- UPPER FLAMINGO DETENTION BASIN AND DIVERSION CHANNEL (SEE APPENDIX F)

N

600 300 0 600 1200 2400

1 INCH = 1200 FEET

SUMMARY OF PEAK FLOW RATES	
CONCENTRATION POINT	100 YEAR PEAK FLOW RATE (CFS)
NJ7	1363
NK7	1494
CST1	1577
CST3	1577

Hydrologic Basins Map
FIGURE 6

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

LOMR FOR FLAMINGO WASH SPANISH TRAIL COUNTRY CLUB



LEGEND

9939.90	- HEC-RAS River Station	- 100-yr floodplain
WSE=2344.7	- 100-yr Water Surface Elevation, feet	1 - Photograph Locations
VEL.=9.3	- 100-yr Flow Velocity, feet per second	

50 25 0 50 100 200

1 INCH = 100 FEET
CONTOUR INTERVAL = 5 FEET
PHOTOGRAPHIC IMAGE IS APPROXIMATE ONLY

N

CORRELATION OF STATIONING BUFFALO CHANNEL

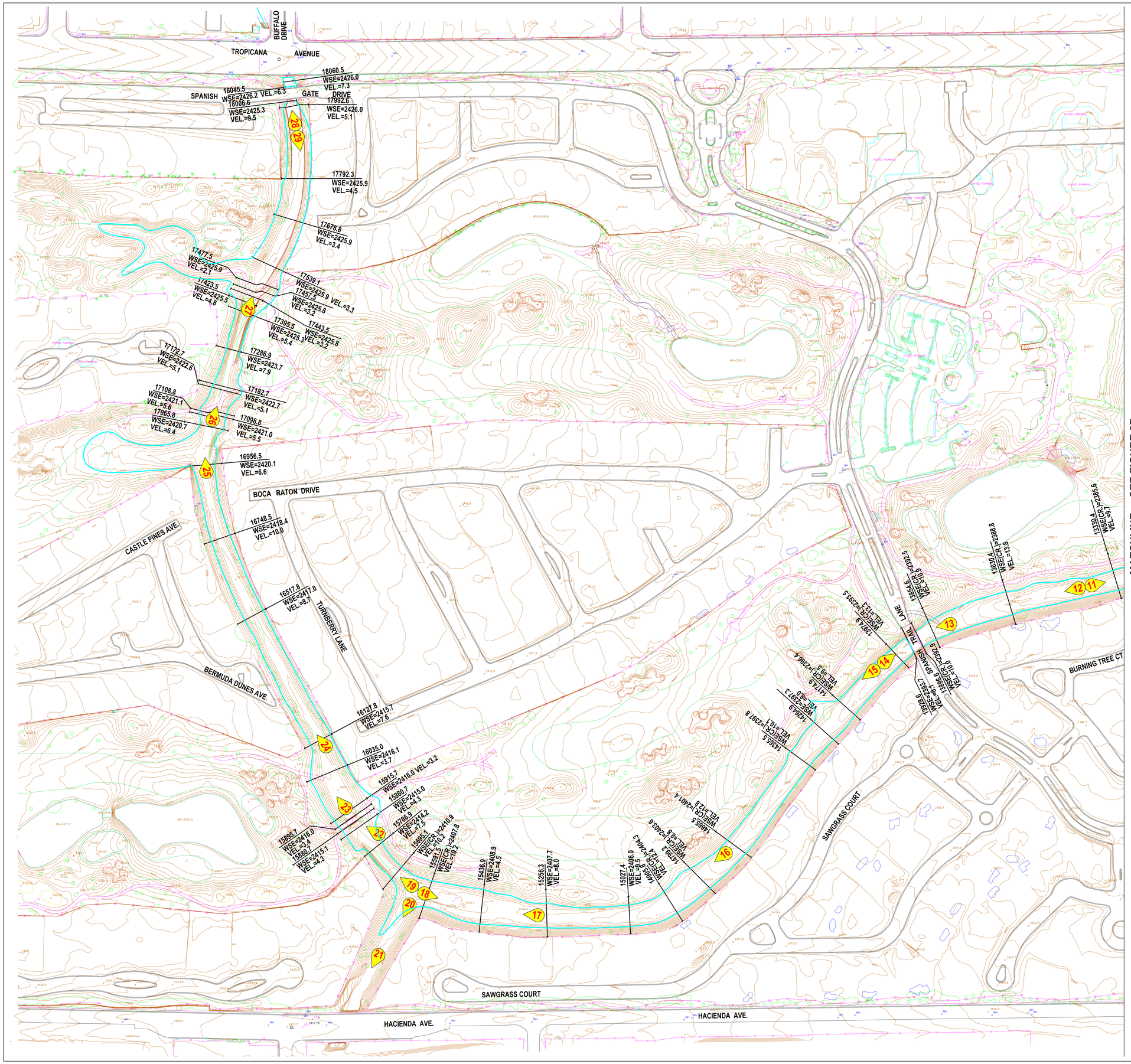
RECORD DWG. STATION	HEC-RAS STATION
59+00.0	182+20.9
58+70.2	182+50.7
56+12.0	185+08.9
53+67.0	187+53.9
46+14.0	195+06.9

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

Hydraulic Cross Section Map - Buffalo Channel

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

FIGURE 7



N

1 INCH = 100 FEET
CONTOUR INTERVAL = 1 FOOT
VERTICAL DATUM = NAVD 88

LEGEND

9939.90 - HEC-RAS River Station
WSE=2344.7 - 100-yr Water Surface Elevation, feet
VEL.=9.3 - 100-yr Flow Velocity, feet per second
- 100-yr floodplain
1 - Photograph Locations

Hydraulic Cross Sections Map-Spanish Trail Country Club

FIGURE 8A

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

LOMR FOR FLAMINGO WASH SPANISH TRAIL COUNTRY CLUB

MATCHLINE - SEE FIGURE 8A

MATCHLINE - SEE FIGURE 8C

BIG SPRINGS CT.

BOULEVARD

RAINBOW

N

1 INCH = 100 FEET
CONTOUR INTERVAL = 1 FOOT
SURVEY PROVIDED BY STEWART GEOTECHNOLOGIES, INC. - 01-12-2006
VERTICAL DATUM = NAVD 88

LEGEND

9939.90 - HEC-RAS River Station

WSE=2344.7 - 100-yr Water Surface Elevation, feet

VEL.=9.3 - 100-yr Flow Velocity, feet per second

- 100-yr floodplain

- Photograph Locations

Hydraulic Cross Sections Map-Spanish Trail Country Club

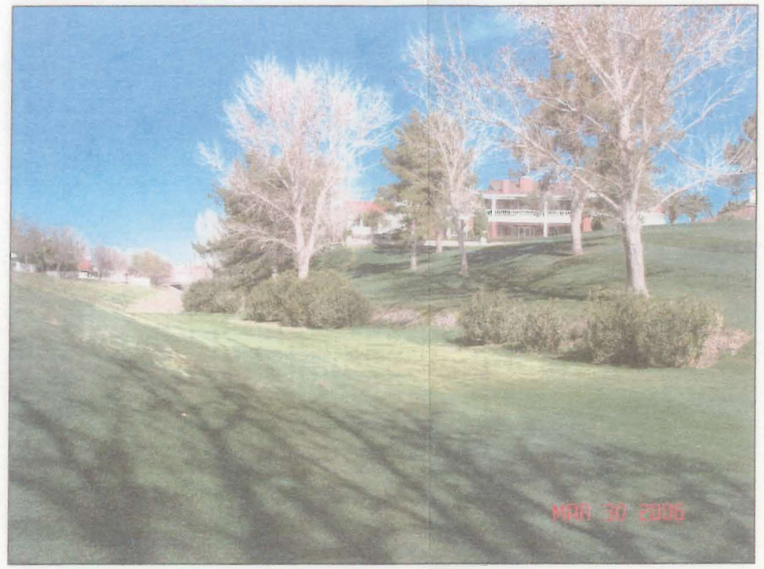
FIGURE 8B

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

LOMR FOR FLAMINGO WASH SPANISH TRAIL COUNTRY CLUB



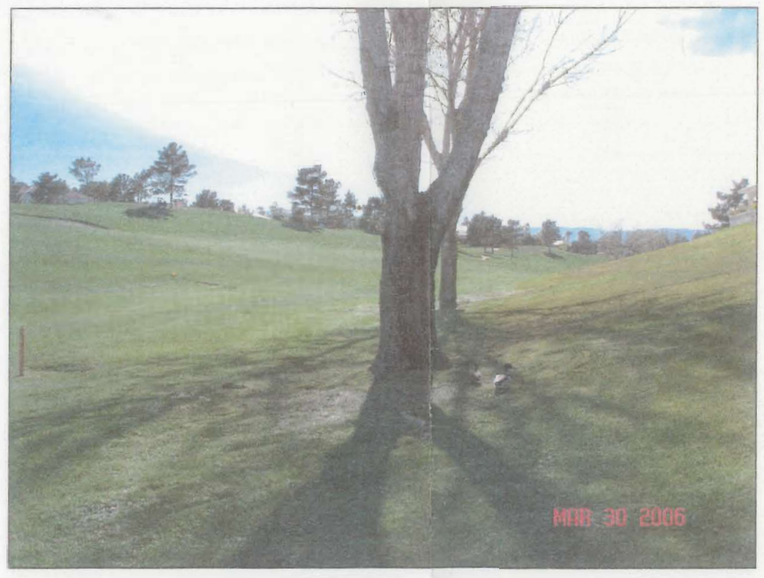
Photograph 1



Photograph 3



Photograph 2



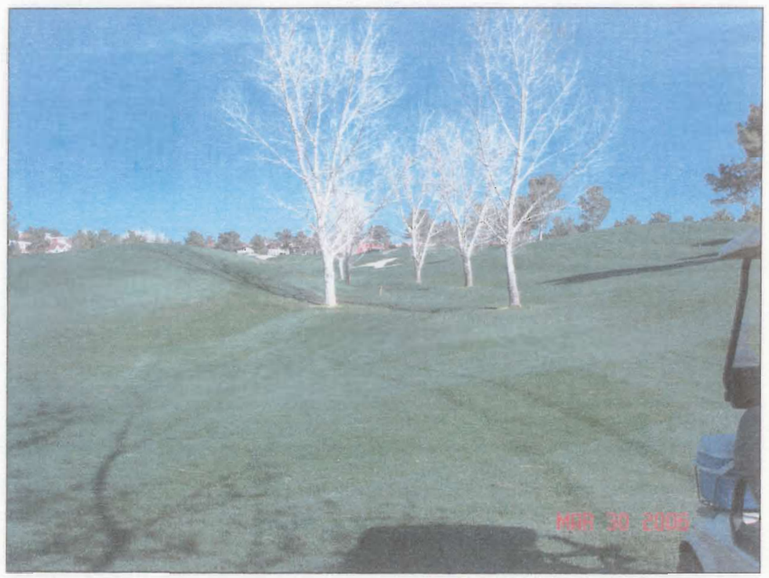
Photograph 4



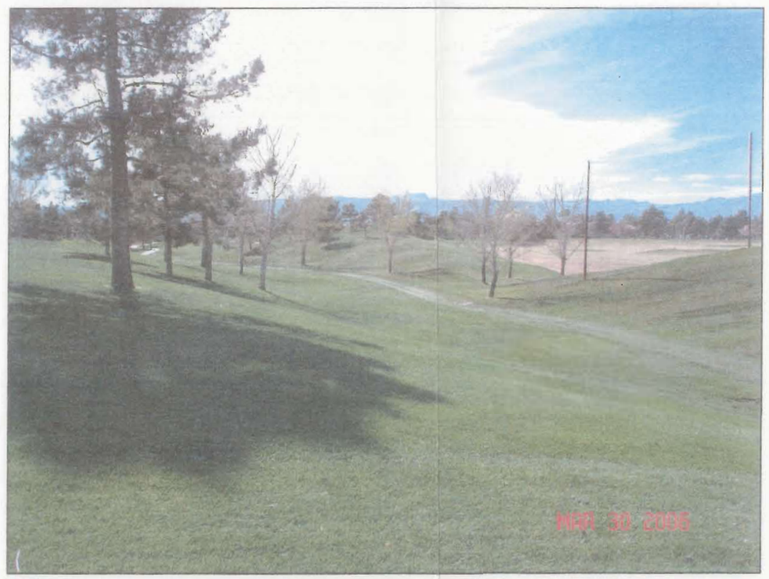
Photograph 5



Photograph 7



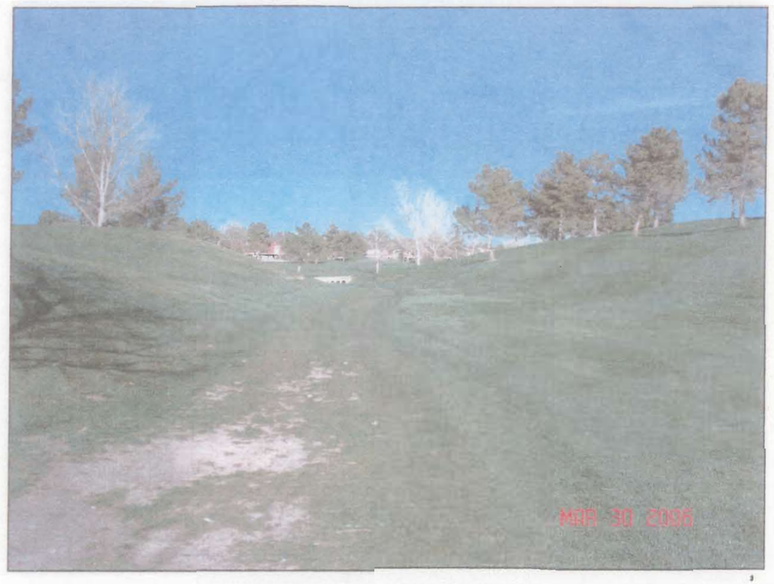
Photograph 6



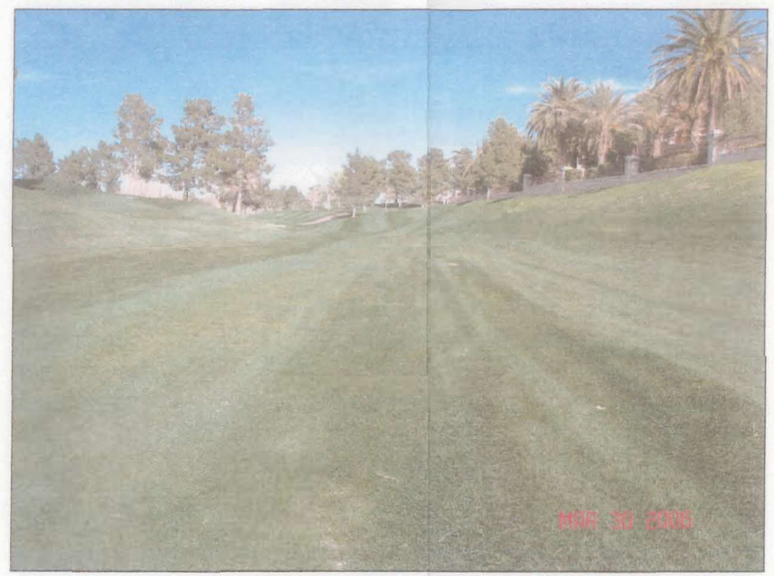
Photograph 8

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

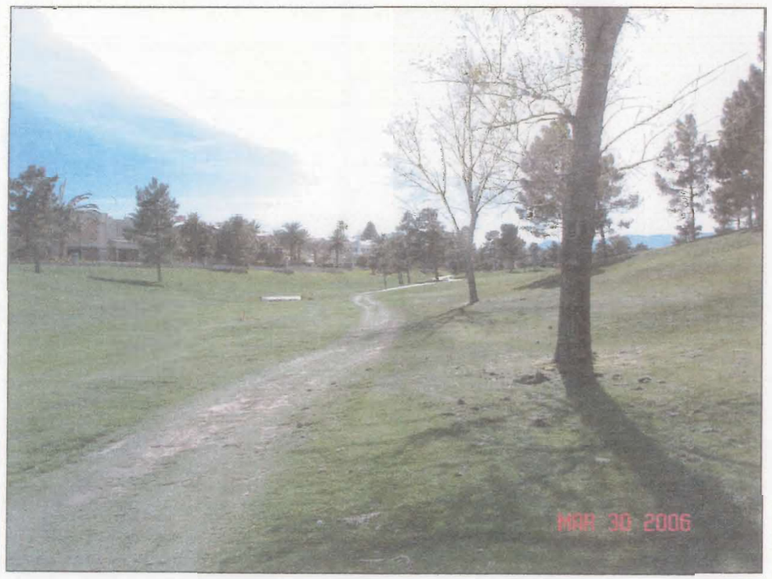
Photographs 5-8
FIGURE 10



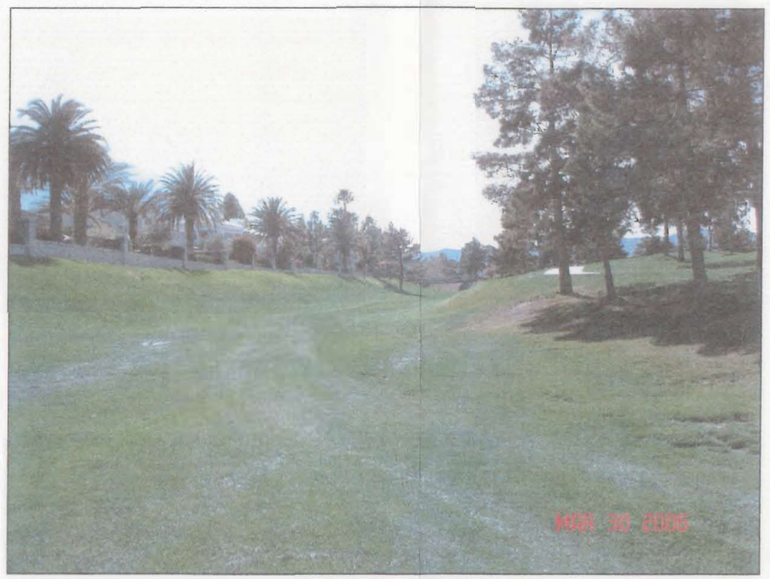
Photograph 9



Photograph 11



Photograph 10



Photograph 12



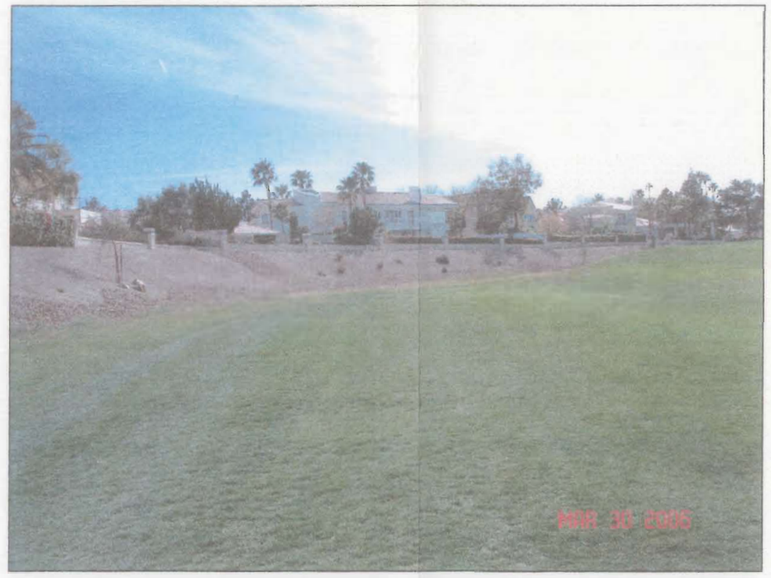
Photograph 13



Photograph 14



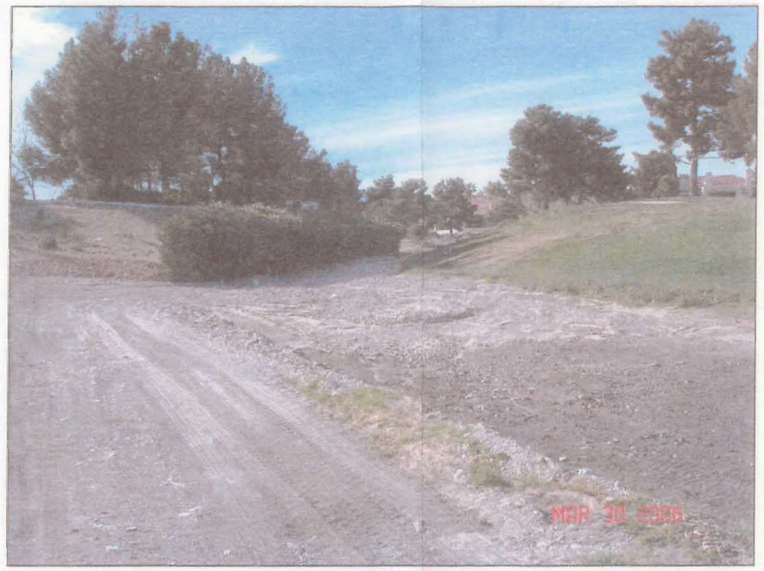
Photograph 15



Photograph 16



Photograph 17



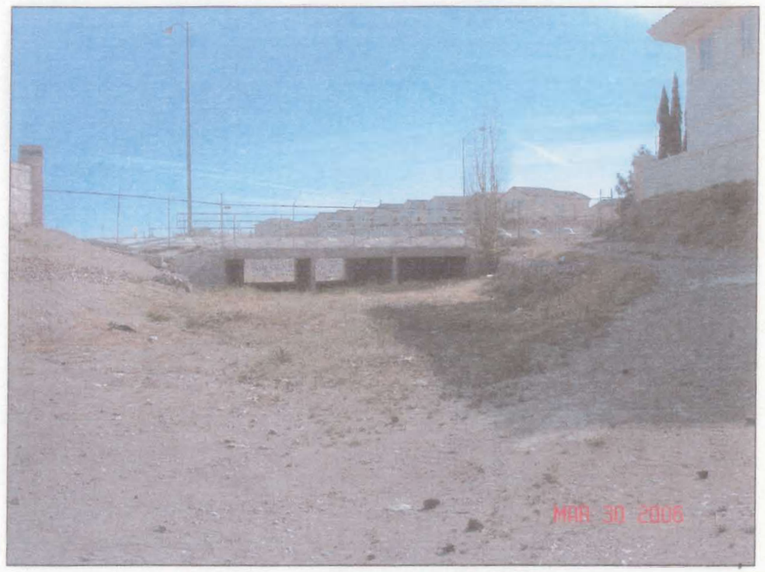
Photograph 19



Photograph 18



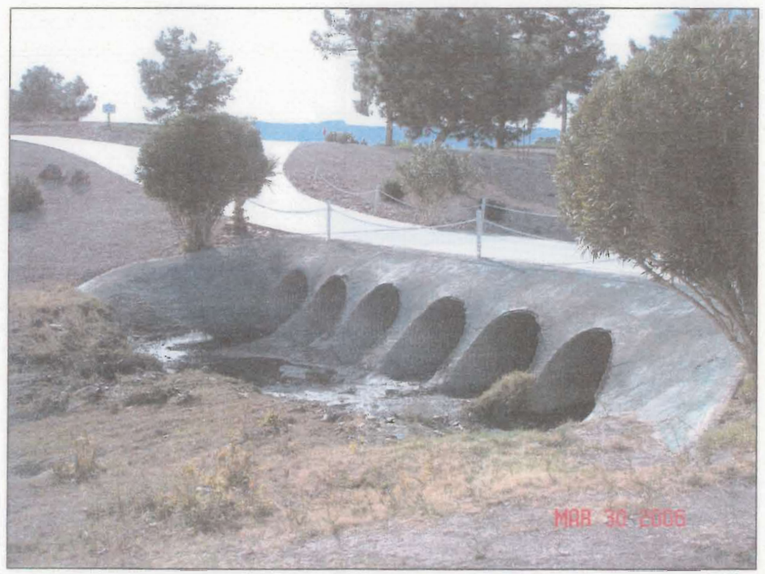
Photograph 20



Photograph 21



Photograph 23



Photograph 22



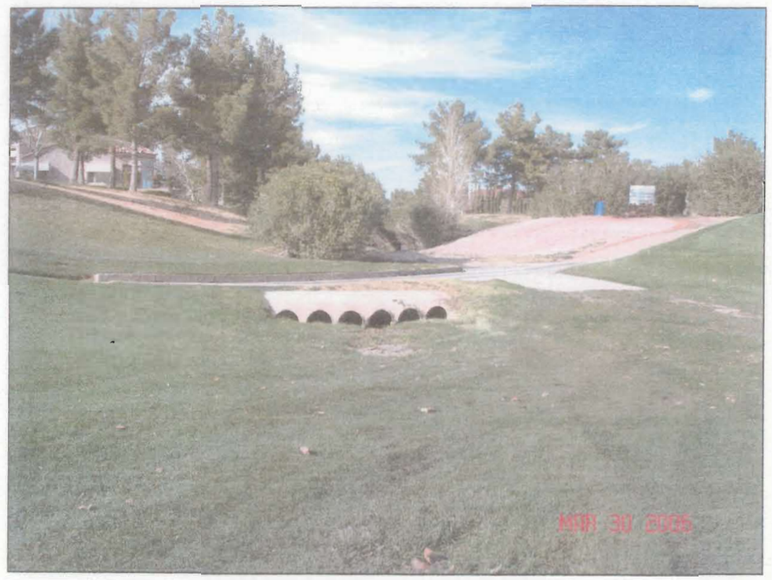
Photograph 24



Photograph 25



Photograph 27



Photograph 26



Photograph 28

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

Photographs 25-28
FIGURE 15



Photograph 29



Photograph 30



Photograph 31



Photograph 32

TROPICANA AVENUE



RAINBOW BOULEVARD

HACIENDA AVENUE

N

250 125 0 250 500 1000

SCALE: 1" = 500'

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

LOMR FOR FLAMINGO WASH SPANISH
TRAIL COUNTRY CLUB

Aerial Photograph Map
FIGURE 17

THE *Louis Berger Group, INC.*

APPENDIX C

Hydrologic Analysis

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL - STANDARD FORM 4

PROJECT NO. : **PROJECT: LOMR for Spanish Trail CC**

FILE : frm4 **CALCULATED BY: B Brown** **DATE : 05/03/06**

Sub-Basin Data					Initial/Overland Time (T_i)			Travel Time (T_t)					T_c	T_c Check (Urbanized Basins)		Final T_c	T_{lag}	Remarks
DESIG	CN	K	AREA (acres)	AREA (mi^2)	LENGTH (ft)	SLOPE (%)	T_i (min)	LENGTH (ft)	SLOPE (%)	V_1 (fps)	V_2 (fps)	T_t (min)	$T_c=T_i+T_t$ (min)	TOTAL (ft)	T_c (min)	T_c (min)	T_{lag} (hrs)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
DEVELOPED CONDITION																		
ST1	62	0.428	319.77	0.4996	900	1.0	36.3	5300	1.0	2.0	3.1	30.3	66.5	6200	44.4	44.4	0.444	
ST2	62	0.428	178.59	0.2790	120	1.0	13.2	5400	1.0	2.0	3.1	30.8	44.1	5520	40.7	40.7	0.407	
ST3	55	0.336	141.48	0.2211	250	1.0	21.7	5400	1.0	2.0	3.1	30.8	52.6	5650	41.4	41.4	0.414	
HA1	80	0.666	59.75	0.0934	650	1.0	19.9	4900	1.5	2.5	3.7	22.9	42.9	5550	40.8	40.8	0.408	

$T_i=(1.8(1.1-K)L^{(1/2)})/(S^{1/3})$

$T_c=T_i+T_t$

$K=0.0132(CN)-.39$

$T_{lag} = 0.6T_c$

For the travel time (T_t) calculations,
V_1 applies to the first 500 feet of travel distance;
V_2 applies to the remaining travel distance.

Travel Time Velocity Formulas

Existing	Developed
$V_1 = 14.8*(S/100)^{1/2}$	$V_1 = 20.2*(S/100)^{1/2}$
$V_2 = 29.4*(S/100)^{1/2}$	$V_2 = 30.6*(S/100)^{1/2}$

All basins over one square mile are calculated by the equation $T_{lag}=20Kn(L*L_c/S^{0.5})^{0.33}$

REFERENCE: CCRFCD HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

STANDARD FORM 4

CURVE NUMBER DETERMINATION*

Flamingo Wash / Spanish Trail Country Club

5/3/2006 BY B.BROWN

BASIN	HYDROLOGIC SOIL GROUP	LAND USE	CURVE NUMBER	PERCENT OF TOTAL	FINAL CN	REMARKS
ST1	A	OPEN SPACE Golf Course	39	33		Table 602, 1 of 4 good condition
	A	RESIDENTIAL <6000 SF LOTS	80	46		Table 602A
	A	RESIDENTIAL <14000 SF LOTS	57	21	62	Table 602A
ST2	A	OPEN SPACE Golf Course	39	43		Table 602, 1 of 4 good condition
	A	RESIDENTIAL <6000 SF LOTS	80	57	62	Table 602A
ST3	A	OPEN SPACE Golf Course	39	5		Table 602, 1 of 4 good condition
	D	OPEN SPACE Golf Course	80	30		Table 602, 1 of 4 good condition
	A	RESIDENTIAL <14000 SF LOTS	57	10		Table 602A
	D	RESIDENTIAL <14000 SF LOTS	86	55	55	Table 602A
**HA1	A	RESIDENTIAL <6000 SF LOTS	80	100	80	Table 602A

*Based on Clark County Regional Flood Control District Hydrologic Criteria and Drainage Design Manual, Updated 2000.
**This area has undergone further development since aerial photography was performed.

RUNOFF CURVE NUMBERS - RESIDENTIAL DISTRICTS

Average Lot Size or Usage[1]	Percent Impervious[2]	Curve Number for Hydrologic Soil Groups			
		A	B	C	D
Apartments/Condos	72	81	88	91	93
Townhouses/6,000 sq ft lots or less[3]	69	80	87	90	92
7,000 sq ft lots	63	76	84	89	91
8,000 sq ft lots	58	73	82	88	90
10,000 sq ft lots	38	61	75	83	87
14,000 sq ft lots	30	57	72	81	86
20,000 sq ft lots	25	54	70	80	85
40,000 sq ft lots	20	51	68	79	84
80,000 sq ft lots	12	46	65	77	82

1 Lot size should represent the size of the average lot and not the gross acreage divided by the number of lots.

2 Actual percent impervious value should be compared to selected land use type.

3 In cases where average residential lots are smaller than 6,000 sq ft, commercial/business/industrial land use should be used.

Revision	Date

REFERENCE:

TABLE 602A

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					

See Table 602A

Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *               JUN   1998              *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   05MAY06  TIME  11:48:10   *
 *                                       *
 *****************************************
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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  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
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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 -AMSKK- 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

1 HEC-1 INPUT PAGE 1

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

          *DIAGRAM
    1     ID     BBBBBBBBBB   THIS MODEL INCLUDES 4 LOCAL BASINS      BBBBBBBBBBB
    2     ID     BBBBBBBBBB   ON/NEAR THE SPANISH TRAIL GOLF COURSE   BBBBBBBBBBB
    3     ID     BBBBBBBBBB   THAT WERE ADDED TO THE HYDROLOGY        BBBBBBBBBBB
    4     ID     BBBBBBBBBB   FOR LAKES DETENTION BASIN FOR THE       BBBBBBBBBBB
    5     ID     BBBBBBBBBB   LAKES DETENTION BASIN FINAL REPORT      BBBBBBBBBBB
    6     ID     BBBBBBBBBB   BY PBS&J, INC.    AUGUST 1999          BBBBBBBBBBB
    7     ID
    8     ID     LAKES DETENTION BASIN
    9     ID     HEC-1 FILE L100A.DAT
   10     ID     100-YEAR FLOWS WITH TOTAL SAHARA FLOWS TO DETENTION BASIN
   11     ID     FLOWS WEST OF HUALAPAI TRAVEL SOUTH
   12     ID     SAHARA FLOWS ARE COMBINED AT INTERSECTING STREETS
   13     ID
   14     ID     BBBBBBBBBB   JR CARDS: 1ST 4 COLUMNS SAME AS LAKES BBBBBBBBBBBBBBB
   15     ID     BBBBBBBBBB   STUDY, LAST 2 COLUMNS ARE FOR FLAMINGOBBBBBBBBBBBBBBB
   16     ID     BBBBBBBBBB   WASH SPANISH TRAIL AREA, AS FOLLOWS:  BBBBBBBBBBBBBBB
   17     ID     BBBBBBBBBB   POINTS NK7 AND CST1: DARF=0.90        BBBBBBBBBBBBBBB
   18     ID     BBBBBBBBBB   POINT CST3:  DARF = 0.89              BBBBBBBBBBBBBBB
   19     ID
   20     IT       3       0       0     300
   21     IO       5       0       0
   22     IN       5       0       0
   23     JR    PREC    1.00   0.924    0.93    0.86    0.90    0.89
   24     VS    DBIN   DBOUT
   25     VV    2.11    2.11

   26     KK      A1
   27     BA   0.048
   28     PB   3.071
   29     KM                SDN#3
   30     PC   0.000   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   31     PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   32     PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   33     PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   34     PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   35     PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   36     PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   37     PC   0.998   0.999   1.000
   38     LS       0      91
   39     UD   0.253
          *

   40     KK     RA1
   41     KM    ROUTE REMAINING FLOWS DOWN GRAND CANYON TO B1
   42     RK     600   0.025    0.02       0    TRAP       3      50
          *
```

```
          43          KK      B1
          44          BA    0.08
          45          PB    3.07
          46          LS       0    87.7
          47          UD   0.229
                      *
1                                        HEC-1 INPUT                                                    PAGE  2

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


          48          KK   COMB1
          49          KM   COMBINE FLOWS FROM A1 AND B1
          50          HC       2
                      *

          51          KK     RB1
          52          RK    3300    0.02    0.02       0    TRAP       3      50
                      *

          53          KK      B2
          54          KM    NO FLOW SPLIT
          55          BA   0.069
          56          PB   3.007
          57          LS       0      87
          58          UD   0.248
                      *

          59          KK     RB2
          60          KM    ROUTE FLOWS FROM B2 TO C2
          61          RK    1100    0.02    0.02       0    TRAP       3      50
                      *

          62          KK      C2
          63          KM   NO FLOW SPLIT
          64          BA    0.12
          65          PB   2.995
          66          LS       0      87
          67          UD   0.242
                      *

          68          KK   COMC2
          69          KM   COMBINE FLOWS FROM COMB1, B2, AND C2
          70          HC       3
                      *

          71          KK    RNC2
          72          RK    1500    0.01    0.02       0    TRAP       3      50
                      *

          73          KK      C1
          74          BA   0.132
          75          PB   3.088
          76          LS       0    78.4
          77          UD   0.259
                      *

          78          KK     RC1
          79          RK    1300  0.0153    0.02       0    TRAP       3      50
                      *
1                                        HEC-1 INPUT                                                    PAGE  3

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


          80          KK      D1
          81          BA   0.123
          82          PB   3.049
          83          LS       0    81.2
          84          UD   0.247
                      *

          85          KK     ND1
          86          KM   NO FLOW SPLIT
          87          HC       2
                      *

          88          KK  D2THRU
          89          KM   DIVERT 75% OF FLOWS FROM LAKE LOOP TO GR. CANYON
          90          DT  D2TURN
          91          DI       0      10      50     100     200     500
          92          DQ       0     7.5    37.5      75     150     375
                      *
```

```
 93          KK  RD2THR
 94          RK    2700   0.017    0.02       0    TRAP       3      50
             *

 95          KK      D2
 96          BA   0.129
 97          PB   2.993
 98          LS       0    86.3
 99          UD   0.196
             *

100          KK     ND2
101          HC       3
             *

102          KK    RND2
103          RK    1350  0.0207    0.02       0    TRAP       3      50
             *

104          KK      E2
105          BA   0.129
106          PB   2.993
107          LS       0    78.6
108          UD   0.295
             *

109          KK  D2TURN
110          KM   RETRIEVED "D2TURN" DIVERTED FROM LAKE LOOP TO GRAND CANYON
111          DR  D2TURN
             *
```



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

112          KK  RD2TUR
113          RK    1300  0.0158    0.02       0    TRAP       3      50
             *

114          KK      E1
115          BA   0.115
116          PB   3.067
117          LS       0    74.3
118          UD   0.289
             *

119          KK     NE1
120          HC       2
             *

121          KK    RNE1
122          RK    2700  0.0174    0.02       0    TRAP       3      50
             *

123          KK   COME1
124          KM   COMBINE E1 WITH FLOWS DOWN GRAND CANYON
125          HC       2
             *

126          KK     NE2
127          HC       2
             *

128          KK    RNE2
129          RK    2600    0.02    0.02       0    TRAP       3      50
             *

130          KK      C3
131          BA    0.11
132          PB   2.922
133          LS       0      80
134          UD   0.296
             *

135          KK      C4
136          BA   0.064
137          PB   2.872
138          LS       0    64.9
139          UD   0.356
             *

140          KK   COMC4
141          KM   COMBINE FLOWS FROM C3 AND C4
142          HC       2
             *
```

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

  143 KK     RC3
  144 RK    1600   0.004    0.02       0    TRAP       3      50
      *
  145 KK      D3
  146 BA   0.123
  147 PB   2.923
  148 LS       0    78.9
  149 UD   0.315
      *
  150 KK      D4
  151 BA   0.047
  152 PB   2.882
  153 LS       0    56.9
  154 UD   0.278
      *
  155 KK   COMD4
  156 KM   COMBINE FLOWS FROM D3, D4 AND STREET FLOWS
  157 HC       3
      *
  158 KK    RND3
  159 RK    2000    0.01    0.02       0    TRAP       3      50
      *
  160 KK      E3
  161 BA     0.1
  162 PB    2.92
  163 LS       0    86.2
  164 UD   0.214
      *
  165 KK     NE3
  166 HC       3
      *
  167 KK     RE3
  168 KM   ROUTE FLOWS FROM NE3 TO NE4
  169 RK    1400   0.021    0.02       0    TRAP       3      50
      *
  170 KK      E4
  171 BA   0.067
  172 PB   2.856
  173 LS       0    72.4
  174 UD   0.303
      *
```



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

  175 KK     NE4
  176 HC       2
      *
  177 KK    RNE4
  178 RK    1500   0.023    0.02       0    TRAP       3      50
      *
  179 KK     A1A
  180 KM   STREET AND LANDSCAPE FLOWS
  181 BA   0.008
  182 PB   3.071
  183 LS       0      91
  184 UD   0.345
      *
  185 KK   OFF-1
  186 KM   BASIN EAST OF HUALAPAI
  187 BA  0.0466
  188 PB    2.77
  189 LS       0      92
  190 UD   0.170
      *
  191 KK   OFF-2
  192 BA  0.0055
```

```
193          PB    2.77
194          LS       0      92
195          UD   0.162
             *

196          KK    COM1
197          KM   COMBINE FLOWS FROM OFF-1 AND OFF-2
198          HC       3
             *

199          KK   RCOM1
200          KM    DIVERT ROUTED FLOWS TO A2
201          RK    2700   0.023    0.02       0    TRAP       3      50
             *

202          KK      A2
203          BA   0.057
204          PB   3.005
205          LS       0    90.9
206          UD   0.207
             *

207          KK   OFF-3
208          BA  0.0859
209          PB    2.77
210          LS       0      95
211          UD   0.175
             *
```



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

212          KK    COM2
213          KM   COMBINE ALL STREET FLOW AT FT APACHE
214          HC       3
             *

215          KK   RCOM2
216          RK    2900   0.022    0.02       0    TRAP       3      50
             *

217          KK     A3A
218          KM   STREET AND LANDSCAPE FLOWS
219          BA   0.008
220          PB   2.932
221          LS       0    90.8
222          UD   0.236
             *

223          KK   OFF-4
224          BA  0.0859
225          PB    2.77
226          LS       0      95
227          UD   0.267
             *

228          KK    COM3
229          KM   COMBINE FLOWS NEAR SAHARA AND EL CAPITAN
230          HC       3
             *

231          KK   RCOM3
232          RK    1550   0.025    0.02       0    TRAP       3      50
             *

233          KK      B4
234          BA   0.027
235          PB    2.87
236          LS       0    90.7
237          UD   0.199
             *

238          KK     RB4
239          KM   ROUTE FLOWS FROM B4 TO A4
240          RK    1500   0.005    0.02       0    TRAP       3      50
             *

241          KK      A4
242          BA   0.043
243          PB   2.859
244          LS       0      91
245          UD   0.171
             *
```

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

 246          KK     NA4
 247          HC       3
              *

 248          KK    RNA4
 249          RK    1100   0.025    0.02       0    TRAP       3      50
              *

 250          KK     A5A
 251          KM   STREET AND LANDSCAPE FLOWS
 252          BA   0.012
 253          PB   2.802
 254          LS       0    93.7
 255          UD   0.285
              *

 256          KK  COMSAH
 257          KM   COMBINE FLOWS IN SAHARA
 258          HC       2
              *

 259          KK    RNA5
 260          KM   ROUTE FLOWS IN SOUTHERN SIDE OF SAHARA TO STARBOARD
 261          RK    2300   0.005    0.02       0    TRAP       3      50
              *

 262          KK      A5
 263          BA   0.092
 264          PB   2.802
 265          LS       0    93.7
 266          UD   0.204
              *

 267          KK  COMA5A
 268          KM   COMBINE FLOWS FROM SAHARA AND BASIN A5
 269          HC       2
              *

 270          KK      A3
 271          BA   0.049
 272          PB   2.932
 273          LS       0    90.8
 274          UD   0.183
              *

 275          KK    RDA3
 276          KM   ROUTE FLOWS FROM A3 DOWN B3
 277          RK     500   0.007    0.02       0    TRAP       3      50
              *
```



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

 278          KK      B3
 279          BA   0.064
 280          PB   2.935
 281          LS       0      87
 282          UD   0.205
              *

 283          KK     NB3
 284          HC       2
              *

 285          KK    RNB3
 286          RK    2000    0.01    0.02       0    TRAP       3      50
              *

 287          KK      D5
 288          BA   0.034
 289          PB   2.854
 290          LS       0    60.9
 291          UD   0.244
              *

 292          KK      C5
 293          BA   0.039
 294          PB   2.837
 295          LS       0    69.3
 296          UD    0.25
```

```
                *
 297            KK   COMC5
 298            KM   COMBINE FLOWS FROM D5 AND C5
 299            HC       2
                *
 300            KK     RC5
 301            KM   ROUTE FLOWS FROM COMC5 TO BEFORE A5
 302            RK    1000   0.008    0.02       0    TRAP       3      50
                *
 303            KK     NC5
 304            HC       2
                *
 305            KK    RNC5
 306            RK    1000    0.02    0.02       0    TRAP       3      50
                *
 307            KK  COMA5B
 308            KM   COMBINE ALL FLOWS AT STARBOARD AND DURANGO
 309            HC       2
                *
1                                       HEC-1 INPUT                                          PAGE 10

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

 310            KK   RSTAR
 311            KM   ROUTE FLOWS FROM STARBOARD AND DURANGO TO B5
 312            RK     900    0.01    0.02       0    TRAP       3      50
                *
 313            KK      B5
 314            BA   0.037
 315            PB   2.795
 316            LS       0    80.3
 317            UD   0.195
                *
 318            KK     NB5
 319            HC       2
                *
 320            KK    RNB5
 321            RK    1700   0.012    0.02       0    TRAP       3      50
                *
 322            KK      E5
 323            BA   0.113
 324            PB   2.798
 325            LS       0    77.9
 326            UD   0.318
                *
 327            KK     NE5
 328            HC       2
                *
 329            KK     TE5
 330            HC       2
                *
 331            KK     DC6
 332            BA   0.058
 333            PB   2.774
 334            LS       0      89
 335            UD   0.163
                *
 336            KK     NDB
 337            KM   INFLOW TO DETENTION BASIN FROM NORTH SIDE
 338            HC       2
                *
 339            KK      A9
 340            BA    0.13
 341            PB   2.902
 342            LS       0    79.3
 343            UD   0.242
                *
1                                       HEC-1 INPUT                                          PAGE 11

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

```
344          KK    RNA9
345          RK    2600  0.0123    0.02       0    TRAP       3      50
             *

346          KK     A10
347          BA   0.127
348          PB   2.813
349          LS       0    74.8
350          UD   0.299
             *

351          KK    NA10
352          HC       2
             *

353          KK    DBIN
354          KM   COMBINES ALL FLOW INTO DETENTION BASIN
355          HC       2
             *

356          KK   DBOUT
357          KM   LAKES DETENTION BASIN
358          KM   AKA NE4E5
359          KM   WITH 36" OUTFALL PIPE
360          KO       3
361          RS       1    ELEV    2570
362          SV       0    1.14    2.64    4.33    5.62    7.11    9.78    14.3    21.8    31.5
363          SV    42.3    53.5    65.1    77.0    89.3     102     115     128     142  145.25
364          SE    2570    2578    2579    2580    2581    2582    2583    2584    2585    2586
365          SE    2587    2588    2589    2590    2591    2592    2593    2594    2595 2595.25
366          SQ     0.0    56.0    58.1    60.2    62.1    64.1    65.9    67.7    69.5    71.2
367          SQ    72.9    74.6    76.2    77.8    79.3    80.8    82.2    83.6    85.0    85.0
             *

368          KK    E6-1
369          KM   EXCLUDING APPROXIMATELY 22 ACRES FOR DETENTION BASIN
370          BA   0.121
371          PB   2.774
372          LS       0    60.1
373          UD   0.172
             *

374          KK     C6
375          BA   0.097
376          PB   2.774
377          LS       0    79.8
378          UD   0.242
             *
```



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

379          KK     RC6
380          RK    1300   0.017    0.02       0    TRAP       3      50
             *

381          KK     D6
382          BA   0.097
383          PB   2.774
384          LS       0      78
385          UD    0.25
             *

386          KK     ND6
387          HC       2
             *

388          KK     RD6
389          RK    1300  0.0125    0.02       0    TRAP       3      50
             *

390          KK   NE6-1
391          HC       3
             *

392          KK   NE6-1
393          RK    2700  0.0214    0.02       0    TRAP       3      50
             *

394          KK     A6
395          BA   0.126
396          PB   2.774
```

```
 397          LS       0    91.6
 398          UD   0.178
              *

 399          KK     DA6
 400          KM    DIVERT 72% TO TARA
 401          DT  DA6TAR
 402          DI       0     100     500    1000
 403          DQ       0      72     360     720
              *

 404          KK     RA6
 405          RK    2700  0.0241    0.02       0    TRAP       3      50
              *

 406          KK      A7
 407          BA   0.126
 408          PB   2.774
 409          LS       0    90.6
 410          UD   0.194
              *
```



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

 411          KK     DA7
 412          KM    DIVERT 26% TO TARA
 413          DT  DA7TAR
 414          DI       0     100     500    1000
 415          DQ       0      26     130     260
              *

 416          KK     NA7
 417          HC       2
              *

 418          KK    RNA7
 419          RK    1300 0.00769    0.02       0    TRAP       3      50
              *

 420          KK      B6
 421          BA   0.126
 422          PB   2.774
 423          LS       0    87.9
 424          UD   0.207
              *

 425          KK     DB6
 426          KM    DIVERT 78% TO EDNA
 427          DT  DB6EDN
 428          DI       0      10     100     500    1000
 429          DQ       0     7.8      78     390     780
              *

 430          KK     RB6
 431          RK    1600   0.017    0.02       0    TRAP       3      50
              *

 432          KK  DA6TAR
 433          KM   RECALL DA6TARA
 434          DR  DA6TAR
              *

 435          KK    RDA6
 436          RK     700    .004    0.02       0    TRAP       3      50
              *

 437          KK  COMTAR
 438          KM   COMBINE FLOWS IN TARA UPSTREAM
 439          HC       2
              *

 440          KK  RCOMTA
 441          KM  ROUTE FLOWS TO TOTAL TARA COMBINE
 442          RK    1652     .03    0.02       0    TRAP       3      50
              *
```



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

 443          KK      B7
 444          BA   0.126
 445          PB   2.774
```

```
446          LS       0    86.3
447          UD   0.227
             *

448          KK     DB7
449          KM    DIVERT 38% TO EDNA
450          DT  DB7EDN
451          DI       0     100     500    1000
452          DQ       0      38     190     380
             *

453          KK   DB7-2
454          KM    DIVERT 20% TO BUFFALO
455          DT    DB72
456          DI       0     100     500    1000
457          DQ       0      20     100     200
             *

458          KK  DA7TAR
459          KM   RECALL DA7TARA
460          DR  DA7TAR
             *

461          KK   COMT2
462          KM   COMBINE TOTAL FLOWS IN TARA
463          HC       3
             *

464          KK     NB7
465          HC       2
             *

466          KK    DB72
467          KM  RECALL FLOWS TO BUFFALO
468          DR    DB72
             *

469          KK   CDN72
470          KM  COMBINE ALL FLOWS IN BUFFALO AT EDNA
471          HC       2
             *

472          KK    RNB7
473          RK     600  0.0241    0.02       0    TRAP       3      50
             *
```

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

474          KK  DB6EDN
475          KM   RECALL DB6EDNA
476          DR  DB6EDN
             *

477          KK    RDB6
478          RK    2700   0.016    0.02       0    TRAP       3      50
             *

479          KK  DB7EDN
480          KM   RECALL DB7EDNA
481          DR  DB7EDN
             *

482          KK  COMEDN
483          KM   COMBINE FLOWS IN EDNA
484          HC       2
             *

485          KK    CNB7
486          KM   COMBINE TOTAL FLOW AT EDNA AND BUFFALO
487          HC       2
             *

488          KK      C7
489          BA   0.126
490          PB   2.774
491          LS       0    79.2
492          UD   0.237
             *

493          KK     NC7
494          HC       2
             *
```

```
 495          KK    RNC7
 496          RK    1300 0.00769    0.02       0    TRAP       3      50
              *

 497          KK      D7
 498          BA   0.126
 499          PB   2.774
 500          LS       0      78
 501          UD   0.242
              *

 502          KK     ND7
 503          HC       2
              *
```



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

 504          KK    RNC7
 505          RK    1300  0.0115    0.02       0    TRAP       3      50
              *

 506          KK      E7
 507          BA   0.126
 508          PB   2.774
 509          LS       0      78
 510          UD   0.297
              *

 511          KK     NE7
 512          HC       3
              *

 513          KK    RNE7
 514          RK    1300 0.00538    0.02       0    TRAP       3      50
              *

 515          KK      F7
 516          BA   0.126
 517          PB   2.774
 518          LS       0    75.6
 519          UD    0.34
              *

 520          KK     NF7
 521          HC       2
              *

 522          KK    RNF7
 523          RK    1300  0.0123    0.02       0    TRAP       3      50
              *

 524          KK    E6-2
 525          BA   0.259
 526          PB   2.774
 527          LS       0    54.9
 528          UD    0.25
              *

 529          KK     RE6
 530          RK    2700   0.024    0.02       0    TRAP       3      50
              *

 531          KK      G7
 532          BA   0.127
 533          PB   2.774
 534          LS       0    74.2
 535          UD   0.282
              *
```



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

 536          KK     NG7
 537          HC       3
              *

 538          KK    RNG7
 539          RK    1300 0.00692    0.02       0    TRAP       3      50
              *

 540          KK      F6
 541          BA   0.128
```

```
542          PB   2.774
543          LS       0    58.4
544          UD   0.517
             *

545          KK     RF6
546          RK    2700  0.0192    0.02       0    TRAP       3      50
             *

547          KK      H7
548          BA   0.127
549          PB   2.774
550          LS       0    85.2
551          UD   0.255
             *

552          KK     NH7
553          HC       3
             *

554          KK    RNH7
555          RK    1300 0.00231    0.02       0    TRAP       3      50
             *

556          KK      G6
557          BA   0.129
558          PB   2.774
559          LS       0    80.6
560          UD    0.28
             *

561          KK     RG6
562          RK    2700  0.0177    0.02       0    TRAP       3      50
             *

563          KK      I7
564          BA    0.13
565          PB   2.774
566          LS       0    79.8
567          UD   0.303
             *
```



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

568          KK     NI7
569          HC       3
             *

570          KK    RNI7
571          RK    1300 0.00461    0.02       0    TRAP       3      50
             *

572          KK      H6
573          BA   0.129
574          PB   2.774
575          LS       0    74.4
576          UD   0.334
             *

577          KK     RH6
578          RK    2700  0.0174    0.02       0    TRAP       3      50
             *

579          KK      J7
580          BA    0.13
581          PB   2.774
582          LS       0    80.6
583          UD   0.269
             *

584          KK     NJ7
585          HC       3
             *

586          KK    RNJ7
587          RK    2700 0.00704    0.02       0    TRAP       3      50
             *

588          KK      J6
589          BA   0.134
590          PB   2.774
591          LS       0      82
592          UD   0.232
```

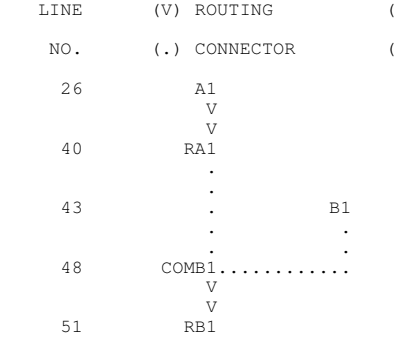
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                *
          593   KK     RJ6
          594   RK    2800  0.0178    0.02       0    TRAP       3      50
                *
          595   KK      K7
          596   BA   0.132
          597   PB   2.774
          598   LS       0      86
          599   UD   0.267
                *
```

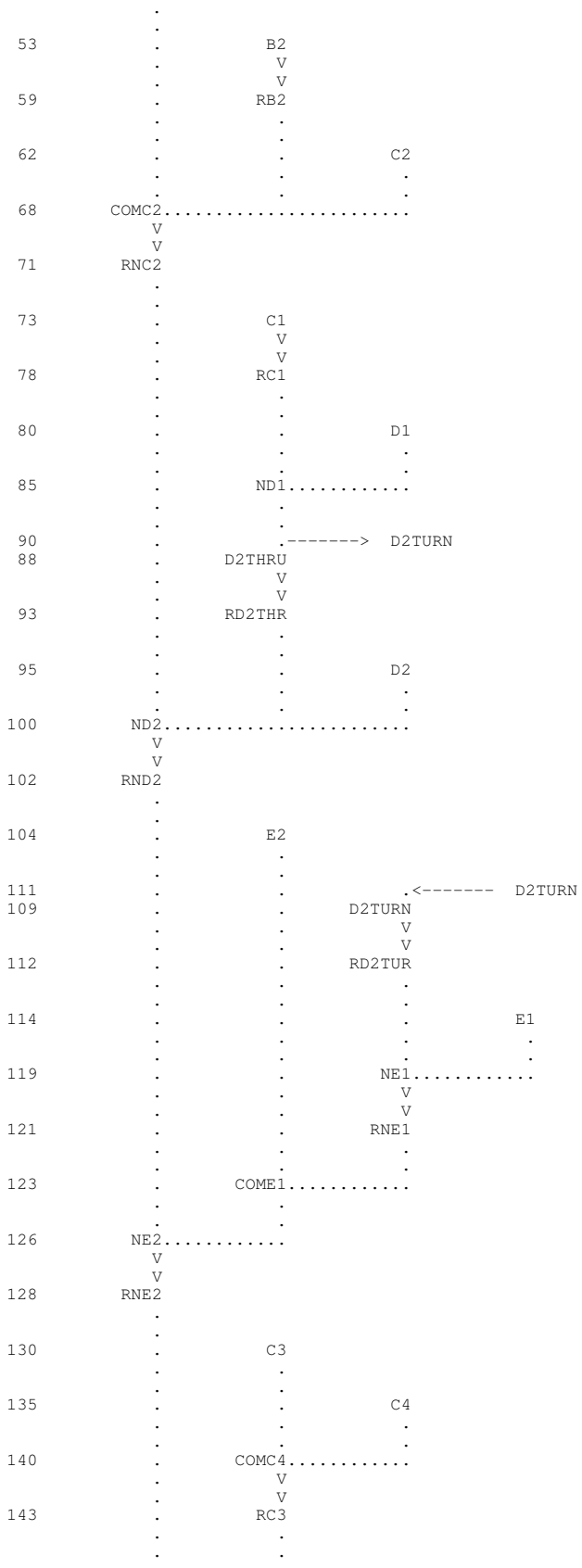


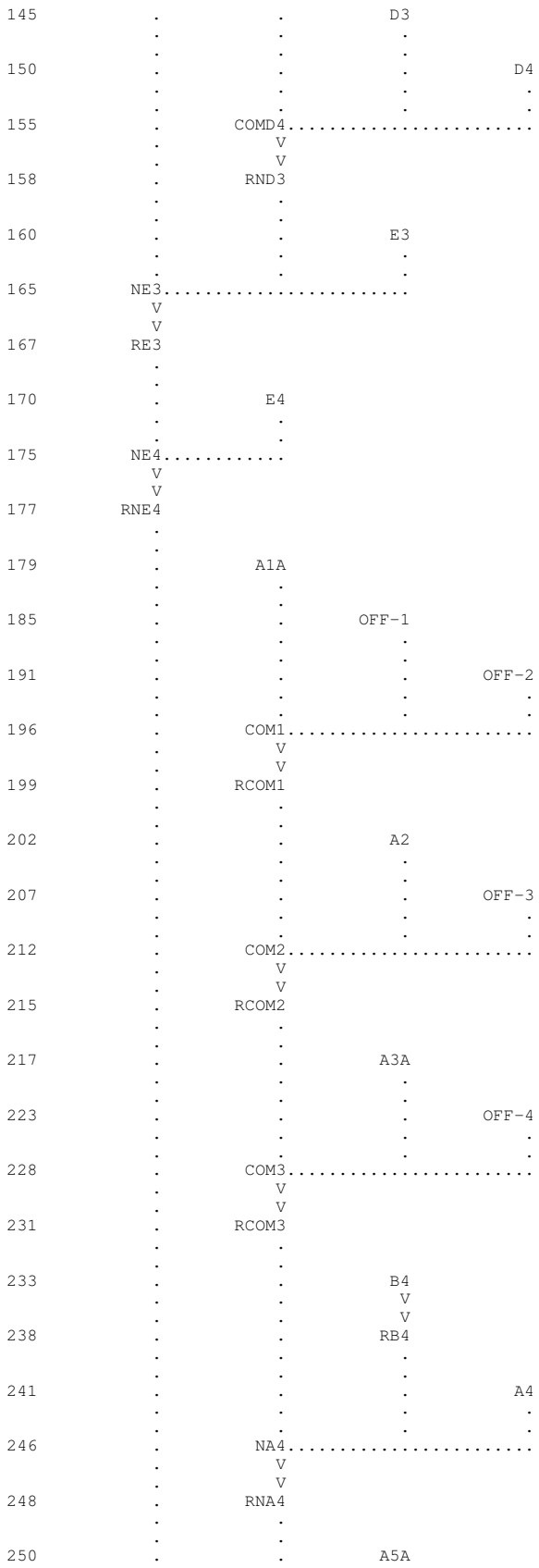
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         LINE   ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
          600   KK     NK7
          601   HC       3
                *
          602   KK    RNK7
          603   RK    2600   0.007   0.025       0    TRAP      20       5
                *
          604   KK     ST1
          605   BA  0.4996
          606   PB   2.774
          607   LS       0      62
          608   UD   0.444
                *
          609   KK     HA1
          610   BA  0.0934
          611   PB   2.774
          612   LS       0      80
          613   UD   0.408
                *
          614   KK    CST1
          615   HC       3
                *
          616   KK    RST1
          617   RK    5700  0.0130   0.025       0    TRAP      20       5
                *
          618   KK     ST2
          619   BA  0.2790
          620   PB   2.774
          621   LS       0      62
          622   UD   0.407
                *
          623   KK     ST3
          624   BA  0.2211
          625   PB   2.774
          626   LS       0      55
          627   UD   0.414
                *
          628   KK    CST3
          629   HC       3
                *
          630   ZZ
```

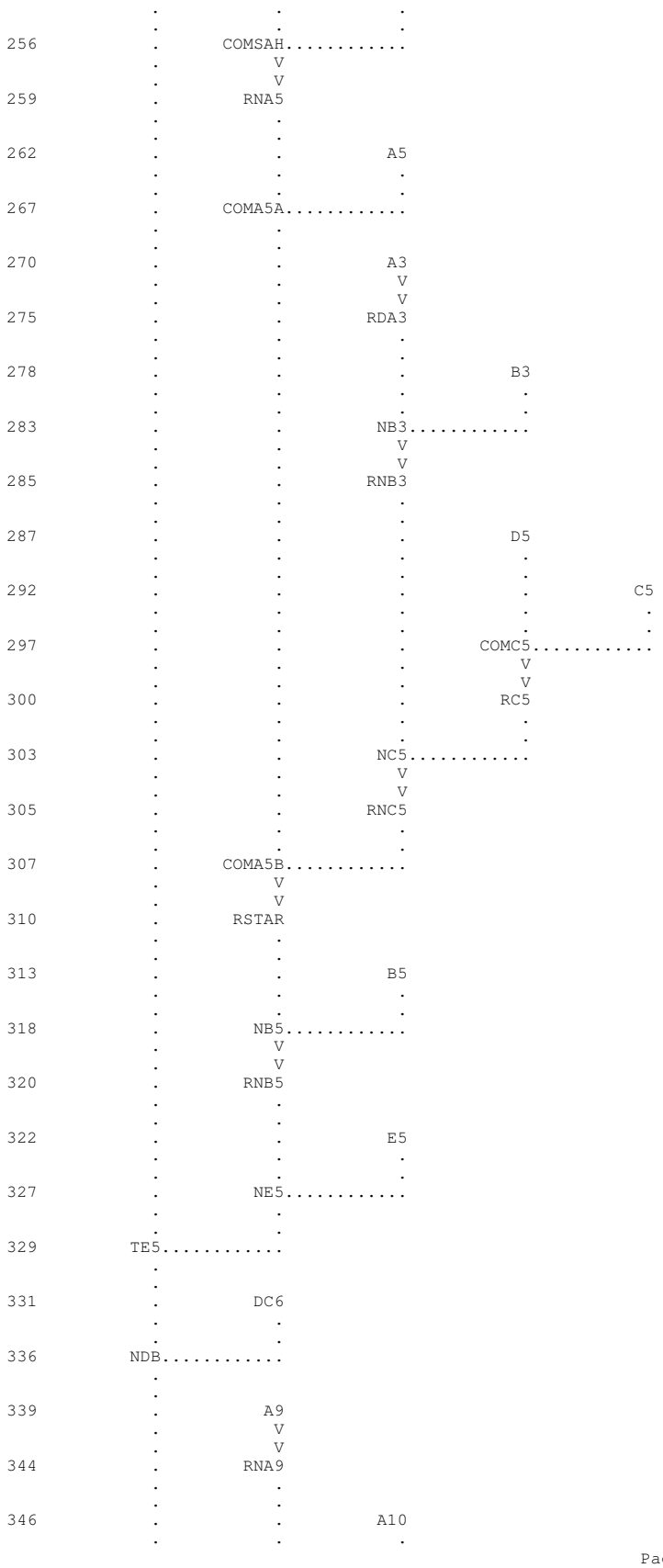
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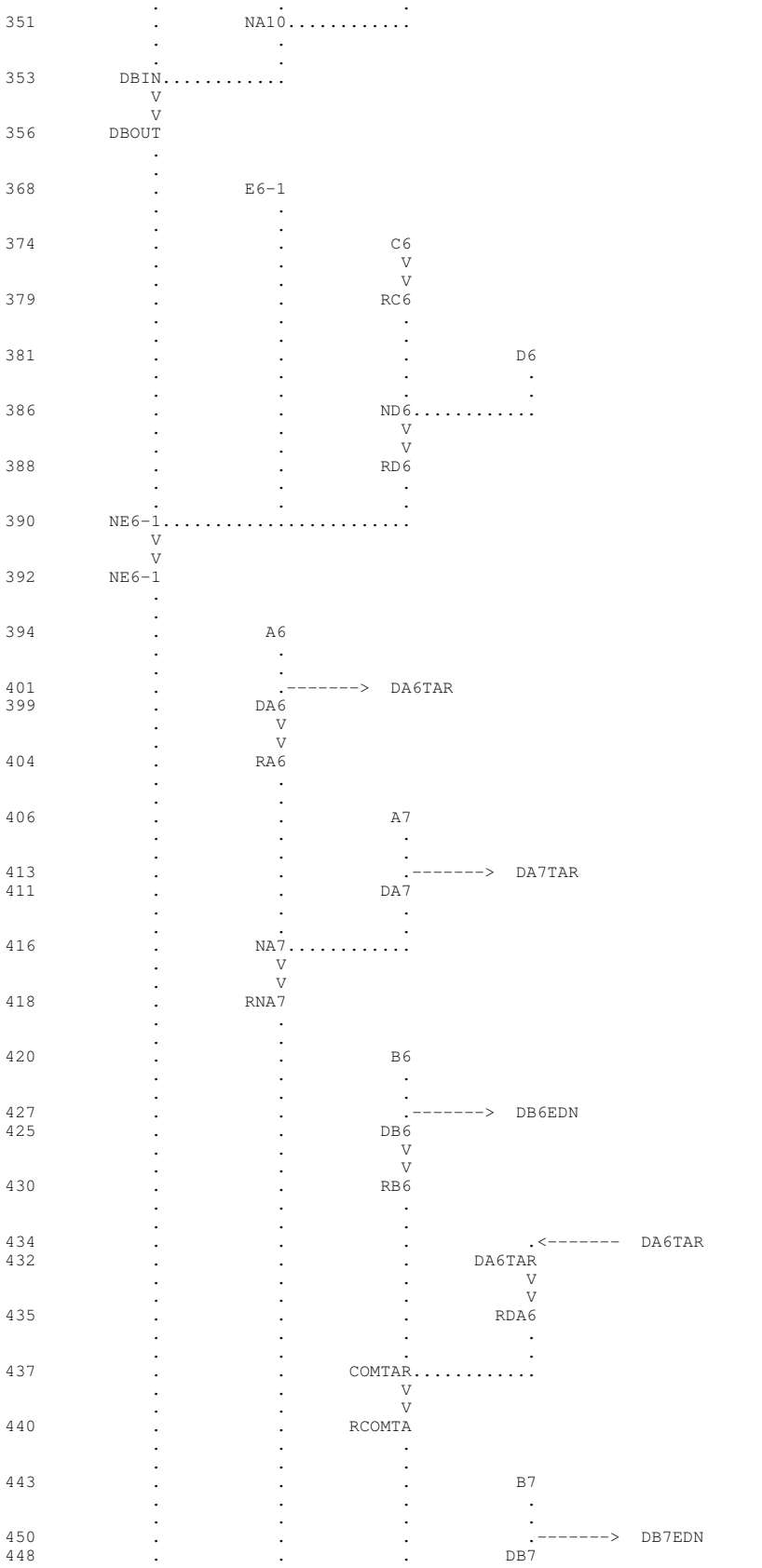
SCHEMATIC DIAGRAM OF STREAM NETWORK

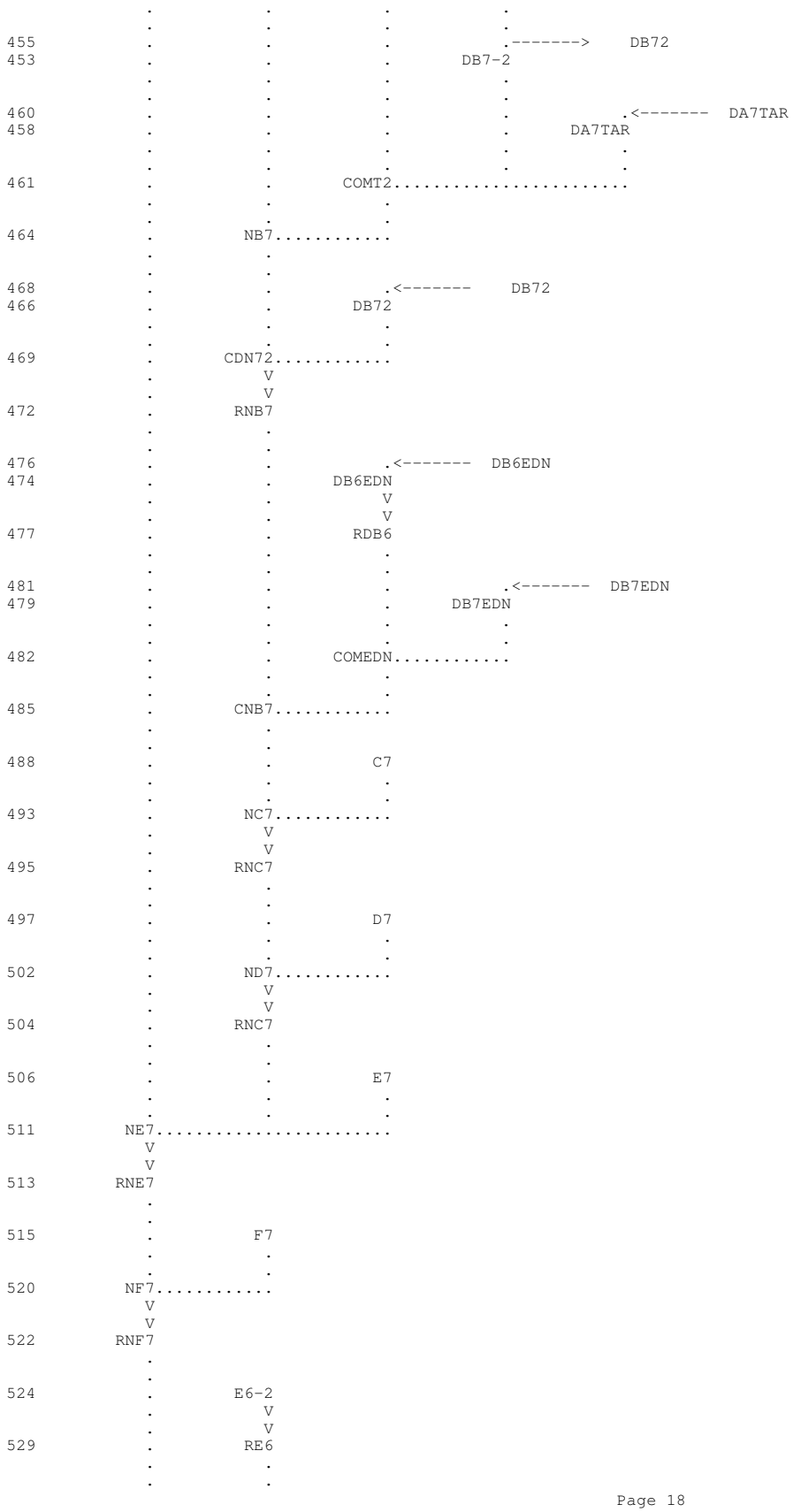


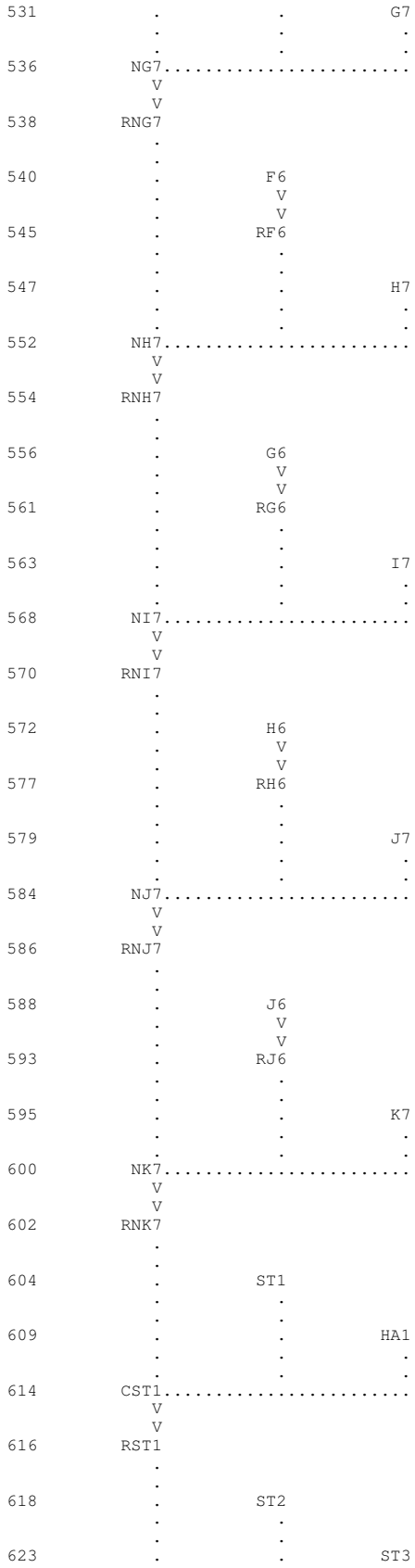

53 B2
59 RB2
62 C2
68 COMC2
71 RNC2
73 C1
78 RC1
80 D1
85 ND1
90 D2TURN
88 D2THRU
93 RD2THR
95 D2
100 ND2
102 RND2
104 E2
111 D2TURN
109 D2TURN
112 RD2TUR
114 E1
119 NE1
121 RNE1
123 COME1
126 NE2
128 RNE2
130 C3
135 C4
140 COMC4
143 RC3


145 D3
150 D4
155 COMD4
158 RND3
160 E3
165 NE3
167 RE3
170 E4
175 NE4
177 RNE4
179 A1A
185 OFF-1
191 OFF-2
196 COM1
199 RCOM1
202 A2
207 OFF-3
212 COM2
215 RCOM2
217 A3A
223 OFF-4
228 COM3
231 RCOM3
233 B4
238 RB4
241 A4
246 NA4
248 RNA4
250 A5A


256 COMSAH
259 RNA5
262 A5
267 COMA5A
270 A3
275 RDA3
278 B3
283 NB3
285 RNB3
287 D5
292 C5
297 COMC5
300 RC5
303 NC5
305 RNC5
307 COMA5B
310 RSTAR
313 B5
318 NB5
320 RNB5
322 E5
327 NE5
329 TE5
331 DC6
336 NDB
339 A9
344 RNA9
346 A10


351 NA10
353 DBIN
356 DBOUT
368 E6-1
374 C6
379 RC6
381 D6
386 ND6
388 RD6
390 NE6-1
392 NE6-1
394 A6
401 DA6TAR
399 DA6
404 RA6
406 A7
413 DA7TAR
411 DA7
416 NA7
418 RNA7
420 B6
427 DB6EDN
425 DB6
430 RB6
434 DA6TAR
432 DA6TAR
435 RDA6
437 COMTAR
440 RCOMTA
443 B7
450 DB7EDN
448 DB7


455 .-------> DB72
453 DB7-2
460 .<------- DA7TAR
458 DA7TAR
461 COMT2
464 NB7
468 .<------- DB72
466 DB72
469 CDN72
472 RNB7
476 .<------- DB6EDN
474 DB6EDN
477 RDB6
481 .<------- DB7EDN
479 DB7EDN
482 COMEDN
485 CNB7
488 C7
493 NC7
495 RNC7
497 D7
502 ND7
504 RNC7
506 E7
511 NE7
513 RNE7
515 F7
520 NF7
522 RNF7
524 E6-2
529 RE6


531 G7
536 NG7
538 RNG7
540 F6
545 RF6
547 H7
552 NH7
554 RNH7
556 G6
561 RG6
563 I7
568 NI7
570 RNI7
572 H6
577 RH6
579 J7
584 NJ7
586 RNJ7
588 J6
593 RJ6
595 K7
600 NK7
602 RNK7
604 ST1
609 HA1
614 CST1
616 RST1
618 ST2
623 ST3

```
              .          .          .
              .          .          .
  628       CST3.....................

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05MAY06  TIME  11:48:10  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

```
                          BBBBBBBBBB   THIS MODEL INCLUDES 4 LOCAL BASINS      BBBBBBBBBBBB
                          BBBBBBBBBB   ON/NEAR THE SPANISH TRAIL GOLF COURSE   BBBBBBBBBBBB
                          BBBBBBBBBB   THAT WERE ADDED TO THE HYDROLOGY        BBBBBBBBBBBB
                          BBBBBBBBBB   FOR LAKES DETENTION BASIN FOR THE       BBBBBBBBBBBB
                          BBBBBBBBBB   LAKES DETENTION BASIN FINAL REPORT      BBBBBBBBBBBB
                          BBBBBBBBBB   BY PBS&J, INC.    AUGUST 1999          BBBBBBBBBBBB

                          LAKES DETENTION BASIN
                          HEC-1 FILE L100A.DAT
                          100-YEAR FLOWS WITH TOTAL SAHARA FLOWS TO DETENTION BASIN
                          FLOWS WEST OF HUALAPAI TRAVEL SOUTH
                          SAHARA FLOWS ARE COMBINED AT INTERSECTING STREETS

                          BBBBBBBBBB   JR CARDS: 1ST 4 COLUMNS SAME AS LAKES BBBBBBBBBBBBBBB
                          BBBBBBBBBB   STUDY, LAST 2 COLUMNS ARE FOR FLAMINGOBBBBBBBBBBBBBBB
                          BBBBBBBBBB   WASH SPANISH TRAIL AREA, AS FOLLOWS:  BBBBBBBBBBBBBBB
                          BBBBBBBBBB   POINTS NK7 AND CST1: DARF=0.90        BBBBBBBBBBBBBBB
                          BBBBBBBBBB   POINT CST3:  DARF = 0.89              BBBBBBBBBBBBBBB


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

     IT          HYDROGRAPH TIME DATA
                        NMIN           3  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      1    0  ENDING DATE
                      NDTIME       1457  ENDING TIME
                       ICENT          19  CENTURY MARK

                    COMPUTATION INTERVAL     .05 HOURS
                         TOTAL TIME BASE   14.95 HOURS

           ENGLISH UNITS
                DRAINAGE AREA         SQUARE MILES
                PRECIPITATION DEPTH   INCHES
                LENGTH, ELEVATION     FEET
                FLOW                  CUBIC FEET PER SECOND
                STORAGE VOLUME        ACRE-FEET
                SURFACE AREA          ACRES
                TEMPERATURE           DEGREES FAHRENHEIT

                  USER-DEFINED OUTPUT SPECIFICATIONS

          TABLE 1
     VS       STATION      DBIN     DBOUT
     VV VARIABLE CODE      2.11      2.11       .00       .00       .00       .00       .00       .00       .00       .00

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                    1.00       .92       .93       .86       .90       .89


          *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1


          *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT
```

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

+ (FEET)	(HR)				
2596.73	6.05	2595.79	2589.76	2589.76	2589.76

CUMULATIVE AREA = 2.58 SQ MI

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

HYDROGRAPH AT STATION DBOUT
FOR PLAN 1, RATIO = .92

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)				
		(CFS)			
+ 85.	5.80	84.	69.	69.	69.
		(INCHES) .302	.621	.621	.621
		(AC-FT) 42.	85.	85.	85.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
143.	6.00	130.	87.	87.	87.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2595.05	6.00	2594.16	2588.41	2588.41	2588.41

CUMULATIVE AREA = 2.58 SQ MI

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

HYDROGRAPH AT STATION DBOUT
FOR PLAN 1, RATIO = .93

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)				
		(CFS)			
+ 85.	5.60	84.	69.	69.	69.
		(INCHES) .303	.622	.622	.622
		(AC-FT) 42.	86.	86.	86.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
144.	6.05	132.	88.	88.	88.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2595.17	6.05	2594.28	2588.51	2588.51	2588.51

CUMULATIVE AREA = 2.58 SQ MI

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

HYDROGRAPH AT STATION DBOUT
FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)				
		(CFS)			
+ 83.	6.00	82.	67.	67.	67.
		(INCHES) .296	.601	.601	.601
		(AC-FT) 41.	83.	83.	83.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
125.	6.00	113.	74.	74.	74.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2593.76	6.00	2592.85	2587.30	2587.30	2587.30

CUMULATIVE AREA = 2.58 SQ MI

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

HYDROGRAPH AT STATION DBOUT
FOR PLAN 1, RATIO = .90

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)					
		(CFS)				
+ 84.	6.00		83.	68.	68.	68.
		(INCHES)	.300	.614	.614	.614
		(AC-FT)	41.	84.	84.	84.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
136.	6.00	124.	82.	82.	82.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2594.57	6.00	2593.68	2588.00	2588.00	2588.00

CUMULATIVE AREA = 2.58 SQ MI

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

HYDROGRAPH AT STATION DBOUT
FOR PLAN 1, RATIO = .89

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)					
		(CFS)				
+ 84.	6.00		83.	68.	68.	68.
		(INCHES)	.299	.610	.610	.610
		(AC-FT)	41.	84.	84.	84.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
133.	6.00	121.	80.	80.	80.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2594.37	6.00	2593.47	2587.82	2587.82	2587.82

CUMULATIVE AREA = 2.58 SQ MI

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					1.00	.92	.93	.86	.90	.89
HYDROGRAPH AT										
+	A1	.05	1	FLOW	70.	63.	64.	58.	61.	60.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RA1	.05	1	FLOW	70.	63.	64.	57.	61.	60.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	B1	.08	1	FLOW	109.	97.	98.	88.	94.	92.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	COMB1	.13	1	FLOW	178.	159.	161.	144.	154.	151.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RB1	.13	1	FLOW	176.	158.	159.	143.	153.	150.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	B2	.07	1	FLOW	85.	76.	77.	68.	73.	72.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RB2	.07	1	FLOW	85.	76.	77.	68.	73.	72.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	C2	.12	1	FLOW	150.	133.	134.	119.	128.	126.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
3 COMBINED AT										
+	COMC2	.32	1	FLOW	404.	361.	363.	324.	347.	341.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNC2	.32	1	FLOW	402.	359.	362.	323.	346.	341.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	C1	.13	1	FLOW	115.	99.	100.	86.	94.	92.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RC1	.13	1	FLOW	114.	98.	99.	85.	93.	91.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	D1	.12	1	FLOW	121.	106.	107.	93.	101.	99.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
2 COMBINED AT										
+	ND1	.25	1	FLOW	234.	202.	205.	176.	192.	188.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
DIVERSION TO										
+	D2TURN	.25	1	FLOW	175.	152.	154.	132.	144.	141.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	D2THRU	.25	1	FLOW	58.	51.	51.	44.	48.	47.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RD2THR	.25	1	FLOW	58.	50.	51.	43.	48.	46.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	D2	.13	1	FLOW	170.	151.	152.	135.	145.	142.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT										
+	ND2	.70	1	FLOW	596.	530.	534.	475.	509.	501.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										

+	RND2	.70	1	FLOW	595.	529.	533.	472.	507.	498.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	E2	.13	1	FLOW	101.	86.	88.	75.	82.	80.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	D2TURN	.00	1	FLOW	175.	152.	154.	132.	144.	141.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RD2TUR	.00	1	FLOW	174.	151.	153.	132.	144.	141.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	E1	.12	1	FLOW	75.	63.	64.	54.	60.	58.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT										
+	NE1	.12	1	FLOW	249.	214.	217.	186.	203.	199.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	RNE1	.12	1	FLOW	248.	212.	215.	183.	201.	196.
				TIME	3.80	3.80	3.80	3.85	3.80	3.85
2 COMBINED AT										
+	COME1	.24	1	FLOW	346.	296.	300.	256.	281.	275.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
2 COMBINED AT										
+	NE2	.94	1	FLOW	932.	816.	824.	723.	781.	766.
				TIME	3.75	3.75	3.75	3.80	3.80	3.80
ROUTED TO										
+	RNE2	.94	1	FLOW	931.	814.	821.	718.	777.	764.
				TIME	3.80	3.80	3.80	3.85	3.80	3.80
HYDROGRAPH AT										
+	C3	.11	1	FLOW	88.	76.	77.	66.	72.	71.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	C4	.06	1	FLOW	16.	12.	12.	9.	11.	11.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
2 COMBINED AT										
+	COMC4	.17	1	FLOW	102.	86.	87.	74.	81.	79.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	RC3	.17	1	FLOW	101.	86.	87.	73.	81.	79.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	D3	.12	1	FLOW	90.	77.	78.	67.	73.	72.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	D4	.05	1	FLOW	5.	3.	3.	2.	3.	3.
				TIME	3.85	3.90	3.90	4.95	3.90	3.90
3 COMBINED AT										
+	COMD4	.34	1	FLOW	193.	163.	166.	140.	154.	151.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
ROUTED TO										
+	RND3	.34	1	FLOW	192.	163.	165.	140.	154.	150.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
HYDROGRAPH AT										
+	E3	.10	1	FLOW	122.	108.	110.	97.	104.	102.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
3 COMBINED AT										
+	NE3	1.39	1	FLOW	1207.	1050.	1060.	921.	1000.	983.
				TIME	3.80	3.80	3.80	3.85	3.80	3.80
ROUTED TO										
+	RE3	1.39	1	FLOW	1199.	1046.	1056.	921.	999.	981.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	E4	.07	1	FLOW	32.	27.	27.	22.	25.	24.

				TIME	3.80	3.80	3.80	3.80	3.80	3.80
2 COMBINED AT										
+	NE4	1.46	1	FLOW	1230.	1072.	1083.	942.	1023.	1005.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
ROUTED TO										
+	RNE4	1.46	1	FLOW	1226.	1065.	1077.	933.	1015.	996.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	A1A	.01	1	FLOW	10.	9.	9.	8.	9.	9.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	OFF-1	.05	1	FLOW	72.	65.	66.	59.	63.	62.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
HYDROGRAPH AT										
+	OFF-2	.01	1	FLOW	9.	8.	8.	7.	8.	7.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT										
+	COM1	.06	1	FLOW	89.	80.	81.	73.	78.	76.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RCOM1	.06	1	FLOW	87.	78.	79.	72.	76.	75.
				TIME	3.65	3.70	3.65	3.70	3.70	3.70
HYDROGRAPH AT										
+	A2	.06	1	FLOW	87.	79.	79.	72.	76.	75.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
HYDROGRAPH AT										
+	OFF-3	.09	1	FLOW	144.	132.	133.	121.	128.	126.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT										
+	COM2	.20	1	FLOW	311.	282.	284.	257.	273.	269.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RCOM2	.20	1	FLOW	308.	280.	282.	255.	271.	266.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	A3A	.01	1	FLOW	11.	10.	10.	9.	10.	10.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	OFF-4	.09	1	FLOW	122.	111.	112.	103.	108.	107.
				TIME	3.65	3.70	3.70	3.70	3.70	3.70
3 COMBINED AT										
+	COM3	.30	1	FLOW	441.	401.	404.	367.	388.	383.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RCOM3	.30	1	FLOW	439.	399.	401.	364.	386.	380.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	B4	.03	1	FLOW	39.	36.	36.	32.	34.	34.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RB4	.03	1	FLOW	39.	35.	35.	32.	34.	33.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	A4	.04	1	FLOW	67.	60.	61.	55.	58.	57.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT										
+	NA4	.37	1	FLOW	533.	484.	487.	441.	468.	461.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNA4	.37	1	FLOW	527.	477.	481.	435.	461.	455.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	A5A	.01	1	FLOW	16.	15.	15.	14.	14.	14.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70

2 COMBINED AT										
+	COMSAH	.38	1	FLOW	544.	492.	495.	448.	476.	469.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNA5	.38	1	FLOW	540.	490.	493.	447.	474.	466.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	A5	.09	1	FLOW	143.	130.	131.	119.	126.	124.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
2 COMBINED AT										
+	COMA5A	.47	1	FLOW	645.	583.	587.	531.	563.	553.
				TIME	3.75	3.75	3.75	3.80	3.75	3.75
HYDROGRAPH AT										
+	A3	.05	1	FLOW	76.	69.	70.	63.	67.	66.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RDA3	.05	1	FLOW	75.	67.	68.	61.	65.	64.
				TIME	3.60	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	B3	.06	1	FLOW	82.	73.	74.	66.	71.	69.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	NB3	.11	1	FLOW	157.	141.	142.	127.	136.	134.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RNB3	.11	1	FLOW	156.	140.	142.	127.	135.	133.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	D5	.03	1	FLOW	6.	5.	5.	3.	4.	4.
				TIME	3.80	3.80	3.80	3.85	3.80	3.80
HYDROGRAPH AT										
+	C5	.04	1	FLOW	16.	13.	13.	10.	12.	12.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT										
+	COMC5	.07	1	FLOW	22.	17.	18.	13.	16.	15.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	RC5	.07	1	FLOW	22.	17.	18.	13.	16.	15.
				TIME	3.80	3.80	3.80	3.85	3.85	3.85
2 COMBINED AT										
+	NC5	.19	1	FLOW	176.	155.	156.	137.	148.	146.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNC5	.19	1	FLOW	173.	153.	154.	136.	146.	144.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT										
+	COMA5B	.66	1	FLOW	819.	736.	742.	666.	709.	697.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	RSTAR	.66	1	FLOW	810.	731.	736.	663.	705.	693.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	B5	.04	1	FLOW	33.	29.	29.	25.	27.	27.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	NB5	.69	1	FLOW	834.	752.	757.	681.	725.	713.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
ROUTED TO										
+	RNB5	.69	1	FLOW	834.	748.	754.	675.	720.	708.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	E5	.11	1	FLOW	72.	61.	62.	52.	58.	56.
				TIME	3.75	3.80	3.80	3.80	3.80	3.80

2 COMBINED AT										
+	NE5	.81	1	FLOW	905.	809.	816.	727.	778.	765.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
2 COMBINED AT										
+	TE5	2.26	1	FLOW	2117.	1867.	1884.	1658.	1788.	1756.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	DC6	.06	1	FLOW	82.	73.	74.	66.	70.	69.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
2 COMBINED AT										
+	NDB	2.32	1	FLOW	2157.	1903.	1920.	1690.	1823.	1790.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	A9	.13	1	FLOW	108.	93.	94.	81.	89.	87.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNA9	.13	1	FLOW	108.	92.	94.	80.	87.	85.
				TIME	3.75	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	A10	.13	1	FLOW	70.	58.	59.	49.	55.	53.
				TIME	3.75	3.75	3.75	3.80	3.75	3.75
2 COMBINED AT										
+	NA10	.26	1	FLOW	177.	150.	152.	129.	142.	139.
				TIME	3.75	3.75	3.75	3.80	3.75	3.80
2 COMBINED AT										
+	DBIN	2.58	1	FLOW	2324.	2046.	2066.	1815.	1959.	1924.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
ROUTED TO										
+	DBOUT	2.58	1	FLOW	85.	85.	85.	83.	84.	84.
				TIME	5.00	5.80	5.60	6.00	6.00	6.00
			** PEAK STAGES IN FEET **							
			1	STAGE	2596.73	2595.05	2595.17	2593.76	2594.57	2594.37
				TIME	6.05	6.00	6.05	6.00	6.00	6.00
HYDROGRAPH AT										
+	E6-1	.12	1	FLOW	20.	14.	14.	10.	12.	12.
				TIME	3.70	3.75	3.75	3.80	3.75	3.75
HYDROGRAPH AT										
+	C6	.10	1	FLOW	76.	66.	66.	57.	62.	61.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RC6	.10	1	FLOW	76.	65.	66.	57.	62.	61.
				TIME	3.70	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	D6	.10	1	FLOW	68.	58.	59.	50.	55.	54.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
2 COMBINED AT										
+	ND6	.19	1	FLOW	144.	123.	124.	106.	117.	114.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RD6	.19	1	FLOW	143.	123.	124.	106.	116.	114.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT										
+	NE6-1	2.89	1	FLOW	236.	208.	209.	186.	199.	196.
				TIME	3.75	3.75	3.75	3.80	3.75	3.75
ROUTED TO										
+	NE6-1	2.89	1	FLOW	234.	207.	209.	186.	199.	195.
				TIME	3.80	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	A6	.13	1	FLOW	190.	172.	173.	156.	166.	164.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
DIVERSION TO										
+	DA6TAR	.13	1	FLOW	137.	124.	125.	113.	119.	118.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
HYDROGRAPH AT										

+	DA6	.13	1	FLOW	53.	48.	48.	44.	46.	46.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RA6	.13	1	FLOW	52.	47.	48.	43.	46.	45.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	A7	.13	1	FLOW	177.	160.	161.	145.	154.	152.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
DIVERSION TO										
+	DA7TAR	.13	1	FLOW	46.	41.	42.	38.	40.	39.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
HYDROGRAPH AT										
+	DA7	.13	1	FLOW	131.	118.	119.	107.	114.	112.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
2 COMBINED AT										
+	NA7	.25	1	FLOW	179.	161.	163.	147.	156.	154.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RNA7	.25	1	FLOW	178.	160.	162.	146.	155.	153.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	B6	.13	1	FLOW	155.	138.	139.	124.	133.	130.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
DIVERSION TO										
+	DB6EDN	.13	1	FLOW	121.	108.	109.	97.	103.	102.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	DB6	.13	1	FLOW	34.	30.	31.	27.	29.	29.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RB6	.13	1	FLOW	34.	30.	31.	27.	29.	29.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	DA6TAR	.00	1	FLOW	137.	124.	125.	113.	119.	118.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
ROUTED TO										
+	RDA6	.00	1	FLOW	134.	122.	122.	111.	118.	116.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	COMTAR	.13	1	FLOW	167.	151.	152.	137.	146.	143.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RCOMTA	.13	1	FLOW	165.	149.	150.	135.	144.	142.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	B7	.13	1	FLOW	140.	124.	125.	111.	119.	117.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
DIVERSION TO										
+	DB7EDN	.13	1	FLOW	53.	47.	48.	42.	45.	44.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	DB7	.13	1	FLOW	87.	77.	78.	69.	74.	73.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
DIVERSION TO										
+	DB72	.13	1	FLOW	17.	15.	16.	14.	15.	15.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	DB7-2	.13	1	FLOW	70.	62.	62.	55.	59.	58.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
HYDROGRAPH AT										
+	DA7TAR	.00	1	FLOW	46.	41.	42.	38.	40.	39.
				TIME	3.60	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT										
+	COMT2	.25	1	FLOW	278.	249.	251.	225.	240.	236.

				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	NB7	.50	1	FLOW	456.	407.	411.	368.	392.	387.
				TIME	3.65	3.65	3.65	3.70	3.65	3.65
HYDROGRAPH AT										
+	DB72	.00	1	FLOW	17.	15.	16.	14.	15.	15.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	CDN72	.50	1	FLOW	473.	423.	427.	381.	407.	402.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RNB7	.50	1	FLOW	469.	421.	425.	381.	406.	401.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	DB6EDN	.00	1	FLOW	121.	108.	109.	97.	103.	102.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
ROUTED TO										
+	RDB6	.00	1	FLOW	120.	107.	107.	96.	103.	100.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	DB7EDN	.00	1	FLOW	53.	47.	48.	42.	45.	44.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65
2 COMBINED AT										
+	COMEDN	.00	1	FLOW	172.	153.	153.	137.	147.	144.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
2 COMBINED AT										
+	CNB7	.50	1	FLOW	641.	574.	578.	518.	553.	545.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
HYDROGRAPH AT										
+	C7	.13	1	FLOW	96.	83.	84.	72.	78.	77.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
2 COMBINED AT										
+	NC7	.63	1	FLOW	737.	656.	662.	590.	631.	621.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNC7	.63	1	FLOW	731.	649.	655.	582.	623.	613.
				TIME	3.70	3.70	3.70	3.75	3.70	3.70
HYDROGRAPH AT										
+	D7	.13	1	FLOW	90.	76.	77.	66.	72.	71.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
2 COMBINED AT										
+	ND7	.76	1	FLOW	821.	726.	733.	647.	695.	684.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
ROUTED TO										
+	RNC7	.76	1	FLOW	816.	723.	730.	646.	694.	682.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT										
+	E7	.13	1	FLOW	82.	70.	71.	60.	66.	64.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT										
+	NE7	3.77	1	FLOW	1123.	990.	999.	880.	948.	931.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	RNE7	3.77	1	FLOW	1115.	985.	995.	877.	943.	928.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	F7	.13	1	FLOW	66.	56.	56.	47.	52.	51.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
2 COMBINED AT										
+	NF7	3.90	1	FLOW	1182.	1041.	1051.	924.	996.	979.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
ROUTED TO										
+	RNF7	3.90	1	FLOW	1172.	1028.	1039.	915.	984.	967.
				TIME	3.80	3.80	3.80	3.85	3.85	3.85

HYDROGRAPH AT										
+	E6-2	.26	1	FLOW	16.	11.	12.	8.	10.	10.
				TIME	3.90	4.95	4.95	4.95	4.95	4.95
ROUTED TO										
+	RE6	.26	1	FLOW	16.	11.	12.	8.	10.	10.
				TIME	4.00	5.10	5.10	5.10	5.10	5.10
HYDROGRAPH AT										
+	G7	.13	1	FLOW	67.	56.	57.	47.	52.	51.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT										
+	NG7	4.29	1	FLOW	1244.	1083.	1095.	959.	1034.	1015.
				TIME	3.80	3.80	3.80	3.85	3.80	3.85
ROUTED TO										
+	RNG7	4.29	1	FLOW	1240.	1082.	1094.	956.	1034.	1015.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
HYDROGRAPH AT										
+	F6	.13	1	FLOW	10.	7.	7.	5.	6.	6.
				TIME	4.15	4.20	4.20	5.15	5.15	5.15
ROUTED TO										
+	RF6	.13	1	FLOW	10.	7.	7.	5.	6.	6.
				TIME	4.30	4.40	4.35	5.35	5.30	5.30
HYDROGRAPH AT										
+	H7	.13	1	FLOW	127.	112.	114.	100.	108.	106.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
3 COMBINED AT										
+	NH7	4.54	1	FLOW	1342.	1172.	1185.	1037.	1120.	1100.
				TIME	3.85	3.85	3.85	3.85	3.85	3.85
ROUTED TO										
+	RNH7	4.54	1	FLOW	1336.	1165.	1177.	1033.	1116.	1095.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
HYDROGRAPH AT										
+	G6	.13	1	FLOW	99.	85.	86.	74.	81.	79.
				TIME	3.70	3.75	3.70	3.75	3.75	3.75
ROUTED TO										
+	RG6	.13	1	FLOW	98.	85.	86.	74.	81.	79.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
HYDROGRAPH AT										
+	I7	.13	1	FLOW	93.	80.	81.	69.	76.	74.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT										
+	NI7	4.80	1	FLOW	1507.	1314.	1327.	1163.	1258.	1234.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
ROUTED TO										
+	RNI7	4.80	1	FLOW	1506.	1307.	1321.	1153.	1249.	1225.
				TIME	3.90	3.90	3.90	3.95	3.90	3.90
HYDROGRAPH AT										
+	H6	.13	1	FLOW	63.	53.	54.	44.	50.	48.
				TIME	3.80	3.80	3.80	3.80	3.80	3.80
ROUTED TO										
+	RH6	.13	1	FLOW	63.	52.	53.	44.	49.	48.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
HYDROGRAPH AT										
+	J7	.13	1	FLOW	102.	88.	89.	76.	84.	82.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
3 COMBINED AT										
+	NJ7	5.06	1	FLOW	1647.	1428.	1443.	1253.	1363.	1336.
				TIME	3.90	3.90	3.90	3.90	3.90	3.90
ROUTED TO										
+	RNJ7	5.06	1	FLOW	1635.	1413.	1430.	1248.	1350.	1326.
				TIME	3.95	3.95	3.95	4.00	4.00	3.95
HYDROGRAPH AT										
+	J6	.13	1	FLOW	120.	104.	106.	91.	100.	97.
				TIME	3.65	3.65	3.65	3.65	3.65	3.65

ROUTED TO											
+	RJ6	.13	1	FLOW	120.	103.	105.	91.	98.	97.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	K7	.13	1	FLOW	135.	119.	121.	106.	114.	112.
				TIME	3.70	3.70	3.70	3.70	3.70	3.70
3 COMBINED AT											
+	NK7	5.33	1	FLOW	1807.	1566.	1584.	1373.	1494.	1470.
				TIME	3.95	3.95	3.95	3.95	3.95	3.95
ROUTED TO											
+	RNK7	5.33	1	FLOW	1794.	1560.	1577.	1372.	1489.	1463.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT											
+	ST1	.50	1	FLOW	71.	52.	53.	38.	46.	44.
				TIME	4.05	4.05	4.05	4.10	4.05	4.05
HYDROGRAPH AT											
+	HA1	.09	1	FLOW	57.	49.	50.	43.	47.	46.
				TIME	3.85	3.85	3.85	3.90	3.85	3.90
3 COMBINED AT											
+	CST1	5.92	1	FLOW	1917.	1656.	1675.	1448.	1577.	1549.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00
ROUTED TO											
+	RST1	5.92	1	FLOW	1912.	1648.	1670.	1434.	1567.	1537.
				TIME	4.05	4.05	4.05	4.05	4.05	4.05
HYDROGRAPH AT											
+	ST2	.28	1	FLOW	41.	30.	31.	22.	27.	26.
				TIME	4.00	4.00	4.00	4.05	4.00	4.00
HYDROGRAPH AT											
+	ST3	.22	1	FLOW	12.	9.	9.	7.	8.	8.
				TIME	5.05	5.05	5.05	5.10	5.05	5.05
3 COMBINED AT											
+	CST3	6.42	1	FLOW	1963.	1685.	1707.	1459.	1599.	1567.
				TIME	4.05	4.05	4.05	4.05	4.05	4.05

1

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= 1.00									
RA1	MANE	.53	69.99	219.97	2.14	3.00	69.65	222.00	2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5472E+01 EXCESS= .0000E+00 OUTFLOW= .5474E+01 BASIN STORAGE= .6091E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92									
RA1	MANE	.57	63.25	220.08	1.92	3.00	62.98	222.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4916E+01 EXCESS= .0000E+00 OUTFLOW= .4918E+01 BASIN STORAGE= .6232E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93									
RA1	MANE	.58	63.76	220.60	1.94	3.00	63.50	222.00	1.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4960E+01 EXCESS= .0000E+00 OUTFLOW= .4961E+01 BASIN STORAGE= .6902E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86									
RA1	MANE	.62	57.56	220.59	1.74	3.00	57.36	222.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4452E+01 EXCESS= .0000E+00 OUTFLOW= .4454E+01 BASIN STORAGE= .6010E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90									
RA1	MANE	.58	61.12	220.10	1.85	3.00	60.87	222.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4742E+01 EXCESS= .0000E+00 OUTFLOW= .4743E+01 BASIN STORAGE= .9415E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RA1	MANE	.62	60.23	220.49	1.82	3.00	59.99	222.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4669E+01 EXCESS= .0000E+00 OUTFLOW= .4671E+01 BASIN STORAGE= .8974E-08 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RB1	MANE	2.43	176.19	225.36	1.97	3.00	175.98	225.00	1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1339E+02 EXCESS= .0000E+00 OUTFLOW= .1342E+02 BASIN STORAGE= .6569E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RB1	MANE	2.65	159.01	224.39	1.76	3.00	158.43	225.00	1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1196E+02 EXCESS= .0000E+00 OUTFLOW= .1199E+02 BASIN STORAGE= .7831E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RB1	MANE	2.61	159.21	225.73	1.77	3.00	158.82	225.00	1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1207E+02 EXCESS= .0000E+00 OUTFLOW= .1210E+02 BASIN STORAGE= .8465E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RB1	MANE	2.55	143.89	224.27	1.58	3.00	143.47	225.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1077E+02 EXCESS= .0000E+00 OUTFLOW= .1079E+02 BASIN STORAGE= .8547E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .90

RB1	MANE	2.52	152.96	223.80	1.69	3.00	152.50	225.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1151E+02 EXCESS= .0000E+00 OUTFLOW= .1154E+02 BASIN STORAGE= .8518E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RB1	MANE	2.68	150.70	224.73	1.66	3.00	150.46	225.00	1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1133E+02 EXCESS= .0000E+00 OUTFLOW= .1135E+02 BASIN STORAGE= .7854E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= 1.00

RB2	MANE	1.15	85.35	221.28	1.75	3.00	85.21	222.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6422E+01 EXCESS= .0000E+00 OUTFLOW= .6426E+01 BASIN STORAGE= .1079E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RB2	MANE	1.14	75.89	222.10	1.55	3.00	75.87	222.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5694E+01 EXCESS= .0000E+00 OUTFLOW= .5698E+01 BASIN STORAGE= .1003E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RB2	MANE	1.15	76.71	221.49	1.56	3.00	76.63	222.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5751E+01 EXCESS= .0000E+00 OUTFLOW= .5754E+01 BASIN STORAGE= .9229E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RB2	MANE	1.16	68.15	221.54	1.38	3.00	68.11	222.00	1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5091E+01 EXCESS= .0000E+00 OUTFLOW= .5095E+01 BASIN STORAGE= .1009E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RB2	MANE	1.03	72.98	221.99	1.49	3.00	72.98	222.00	1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5466E+01 EXCESS= .0000E+00 OUTFLOW= .5472E+01 BASIN STORAGE= .1187E-06 PERCENT ERROR= -.1

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          FOR PLAN = 1  RATIO=  .89
               RB2  MANE         1.03     71.83    221.23      1.46      3.00     71.76    222.00        1.46


CONTINUITY SUMMARY (AC-FT) - INFLOW= .5372E+01 EXCESS= .0000E+00 OUTFLOW= .5378E+01 BASIN STORAGE= .8749E-07 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO= 1.00
               RNC2  MANE         1.25    402.40    225.07      1.83      3.00    402.28    225.00        1.83


CONTINUITY SUMMARY (AC-FT) - INFLOW= .3094E+02 EXCESS= .0000E+00 OUTFLOW= .3097E+02 BASIN STORAGE= .1490E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .92
               RNC2  MANE         1.26    359.46    224.27      1.63      3.00    359.38    225.00        1.63


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2753E+02 EXCESS= .0000E+00 OUTFLOW= .2756E+02 BASIN STORAGE= .1325E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .93
               RNC2  MANE         1.25    362.89    224.66      1.64      3.00    362.41    225.00        1.65


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2778E+02 EXCESS= .0000E+00 OUTFLOW= .2781E+02 BASIN STORAGE= .1347E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .86
               RNC2  MANE         1.26    323.34    225.55      1.46      3.00    323.13    225.00        1.46


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2469E+02 EXCESS= .0000E+00 OUTFLOW= .2471E+02 BASIN STORAGE= .1414E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .90
               RNC2  MANE         1.25    345.66    225.51      1.57      3.00    345.61    225.00        1.57


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2646E+02 EXCESS= .0000E+00 OUTFLOW= .2648E+02 BASIN STORAGE= .1621E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .89
               RNC2  MANE         1.33    340.94    224.90      1.54      3.00    340.83    225.00        1.54


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2602E+02 EXCESS= .0000E+00 OUTFLOW= .2605E+02 BASIN STORAGE= .1374E-04 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO= 1.00
                RC1  MANE         1.30    114.17    224.72      1.22      3.00    113.91    225.00        1.22


CONTINUITY SUMMARY (AC-FT) - INFLOW= .8562E+01 EXCESS= .0000E+00 OUTFLOW= .8568E+01 BASIN STORAGE= .3866E-06 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .92
                RC1  MANE         1.24     98.33    224.17      1.05      3.00     98.09    225.00        1.05


CONTINUITY SUMMARY (AC-FT) - INFLOW= .7378E+01 EXCESS= .0000E+00 OUTFLOW= .7385E+01 BASIN STORAGE= .3291E-06 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .93
                RC1  MANE         1.24     99.75    224.35      1.06      3.00     99.39    225.00        1.06


CONTINUITY SUMMARY (AC-FT) - INFLOW= .7470E+01 EXCESS= .0000E+00 OUTFLOW= .7477E+01 BASIN STORAGE= .3562E-06 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .86
                RC1  MANE         1.43     85.19    224.42       .91      3.00     85.10    225.00         .91


CONTINUITY SUMMARY (AC-FT) - INFLOW= .6417E+01 EXCESS= .0000E+00 OUTFLOW= .6421E+01 BASIN STORAGE= .3162E-06 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .90
                RC1  MANE         1.32     93.58    224.73      1.00      3.00     93.41    225.00        1.00


CONTINUITY SUMMARY (AC-FT) - INFLOW= .7014E+01 EXCESS= .0000E+00 OUTFLOW= .7019E+01 BASIN STORAGE= .3323E-06 PERCENT ERROR=   -.1
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          FOR PLAN = 1  RATIO=  .89
               RC1  MANE         1.26     91.64    224.59       .98      3.00     91.40    225.00         .98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6863E+01 EXCESS= .0000E+00 OUTFLOW= .6869E+01 BASIN STORAGE= .3958E-06 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO= 1.00
            RD2THR  MANE         2.85     57.88    227.10       .32      3.00     57.81    228.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4379E+01 EXCESS= .0000E+00 OUTFLOW= .4387E+01 BASIN STORAGE= .5034E-05 PERCENT ERROR=   -.2


          FOR PLAN = 1  RATIO=  .92
            RD2THR  MANE         3.00     50.14    227.58       .28      3.00     50.10    228.00         .28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3793E+01 EXCESS= .0000E+00 OUTFLOW= .3800E+01 BASIN STORAGE= .6255E-05 PERCENT ERROR=   -.2


          FOR PLAN = 1  RATIO=  .93
            RD2THR  MANE         2.89     50.83    229.50       .28      3.00     50.51    228.00         .28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3838E+01 EXCESS= .0000E+00 OUTFLOW= .3844E+01 BASIN STORAGE= .5975E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .86
            RD2THR  MANE         3.00     43.80    230.08       .24      3.00     43.47    228.00         .24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3314E+01 EXCESS= .0000E+00 OUTFLOW= .3317E+01 BASIN STORAGE= .6715E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .90
            RD2THR  MANE         2.99     47.94    228.75       .27      3.00     47.55    228.00         .27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3612E+01 EXCESS= .0000E+00 OUTFLOW= .3615E+01 BASIN STORAGE= .4419E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .89
            RD2THR  MANE         3.00     46.78    229.87       .26      3.00     46.42    228.00         .26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3537E+01 EXCESS= .0000E+00 OUTFLOW= .3536E+01 BASIN STORAGE= .4575E-05 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO= 1.00
              RND2  MANE          .74    595.29    226.00      1.26      3.00    594.88    225.00        1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4691E+02 EXCESS= .0000E+00 OUTFLOW= .4693E+02 BASIN STORAGE= .2083E-04 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .92
              RND2  MANE          .81    529.30    226.18      1.11      3.00    528.85    225.00        1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4157E+02 EXCESS= .0000E+00 OUTFLOW= .4159E+02 BASIN STORAGE= .2019E-04 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .93
              RND2  MANE          .89    533.15    225.33      1.12      3.00    532.84    225.00        1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4198E+02 EXCESS= .0000E+00 OUTFLOW= .4199E+02 BASIN STORAGE= .1924E-04 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .86
              RND2  MANE          .93    472.94    225.68       .99      3.00    471.91    225.00         .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3715E+02 EXCESS= .0000E+00 OUTFLOW= .3716E+02 BASIN STORAGE= .1840E-04 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .90
              RND2  MANE          .85    507.78    226.40      1.07      3.00    506.97    225.00        1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3990E+02 EXCESS= .0000E+00 OUTFLOW= .3992E+02 BASIN STORAGE= .1855E-04 PERCENT ERROR=    .0
```

FOR PLAN = 1 RATIO= .89

RND2	MANE	.85	499.68	225.95	1.05	3.00	498.19	225.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3921E+02 EXCESS= .0000E+00 OUTFLOW= .3923E+02 BASIN STORAGE= .2049E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RD2TUR	MANE	1.17	174.80	224.49	-1.00	3.00	174.37	225.00	-1.00

FOR PLAN = 1 RATIO= .92

RD2TUR	MANE	1.16	151.18	224.99	-1.00	3.00	151.18	225.00	-1.00

FOR PLAN = 1 RATIO= .93

RD2TUR	MANE	1.20	153.37	224.40	-1.00	3.00	153.00	225.00	-1.00

FOR PLAN = 1 RATIO= .86

RD2TUR	MANE	1.17	131.86	224.80	-1.00	3.00	131.80	225.00	-1.00

FOR PLAN = 1 RATIO= .90

RD2TUR	MANE	1.25	143.83	225.19	-1.00	3.00	143.73	225.00	-1.00

FOR PLAN = 1 RATIO= .89

RD2TUR	MANE	1.23	141.08	224.66	-1.00	3.00	140.93	225.00	-1.00

FOR PLAN = 1 RATIO= 1.00

RNE1	MANE	1.95	248.30	228.36	3.11	3.00	247.61	228.00	3.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1908E+02 EXCESS= .0000E+00 OUTFLOW= .1910E+02 BASIN STORAGE= .1216E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RNE1	MANE	2.14	213.79	229.14	2.68	3.00	211.88	228.00	2.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1641E+02 EXCESS= .0000E+00 OUTFLOW= .1642E+02 BASIN STORAGE= .1107E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNE1	MANE	2.14	215.91	228.78	2.71	3.00	214.55	228.00	2.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1661E+02 EXCESS= .0000E+00 OUTFLOW= .1663E+02 BASIN STORAGE= .1155E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNE1	MANE	2.12	183.96	230.63	2.32	3.00	183.39	231.00	2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1424E+02 EXCESS= .0000E+00 OUTFLOW= .1426E+02 BASIN STORAGE= .1485E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNE1	MANE	2.18	202.94	229.32	2.54	3.00	200.76	228.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1559E+02 EXCESS= .0000E+00 OUTFLOW= .1559E+02 BASIN STORAGE= .1172E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNE1	MANE	2.16	197.94	229.97	2.49	3.00	196.44	231.00	2.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1525E+02 EXCESS= .0000E+00 OUTFLOW= .1526E+02 BASIN STORAGE= .1290E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNE2	MANE	1.35	931.72	227.79	1.47	3.00	931.42	228.00	1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7400E+02 EXCESS= .0000E+00 OUTFLOW= .7406E+02 BASIN STORAGE= .7626E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RNE2	MANE	1.34	816.14	228.63	1.29	3.00	813.62	228.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6487E+02 EXCESS= .0000E+00 OUTFLOW= .6494E+02 BASIN STORAGE= .8145E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNE2	MANE	1.39	823.77	228.81	1.30	3.00	821.28	228.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6557E+02 EXCESS= .0000E+00 OUTFLOW= .6562E+02 BASIN STORAGE= .7860E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNE2	MANE	1.40	721.56	230.12	1.14	3.00	717.78	231.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5738E+02 EXCESS= .0000E+00 OUTFLOW= .5742E+02 BASIN STORAGE= .7789E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNE2	MANE	1.33	780.04	229.73	1.23	3.00	776.71	228.00	1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6202E+02 EXCESS= .0000E+00 OUTFLOW= .6209E+02 BASIN STORAGE= .7556E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNE2	MANE	1.39	765.21	229.44	1.21	3.00	763.53	228.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6086E+02 EXCESS= .0000E+00 OUTFLOW= .6091E+02 BASIN STORAGE= .8578E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RC3	MANE	2.61	101.24	230.74	.92	3.00	101.11	231.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8512E+01 EXCESS= .0000E+00 OUTFLOW= .8516E+01 BASIN STORAGE= .4503E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RC3	MANE	2.65	85.74	231.52	.78	3.00	85.56	231.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7250E+01 EXCESS= .0000E+00 OUTFLOW= .7253E+01 BASIN STORAGE= .5906E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RC3	MANE	2.62	87.12	230.82	.79	3.00	87.06	231.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7347E+01 EXCESS= .0000E+00 OUTFLOW= .7353E+01 BASIN STORAGE= .6069E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RC3	MANE	2.71	73.39	230.07	.67	3.00	73.36	231.00	.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6235E+01 EXCESS= .0000E+00 OUTFLOW= .6240E+01 BASIN STORAGE= .4370E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RC3	MANE	2.66	81.17	231.20	.74	3.00	81.07	231.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6864E+01 EXCESS= .0000E+00 OUTFLOW= .6871E+01 BASIN STORAGE= .6221E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RC3	MANE	2.67	78.99	232.39	.72	3.00	78.93	231.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6705E+01 EXCESS= .0000E+00 OUTFLOW= .6711E+01 BASIN STORAGE= .4610E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RND3	MANE	1.93	192.53	231.46	.90	3.00	191.69	234.00	.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1643E+02 EXCESS= .0000E+00 OUTFLOW= .1644E+02 BASIN STORAGE= .1544E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RND3	MANE	2.00	163.22	232.66	.76	3.00	162.82	234.00	.76	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1399E+02 EXCESS= .0000E+00 OUTFLOW= .1400E+02 BASIN STORAGE= .1732E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RND3	MANE	2.10	165.83	232.53	.77	3.00	165.17	234.00	.77	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1418E+02 EXCESS= .0000E+00 OUTFLOW= .1419E+02 BASIN STORAGE= .1725E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RND3	MANE	2.07	139.86	233.49	.66	3.00	139.62	234.00	.66	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1203E+02 EXCESS= .0000E+00 OUTFLOW= .1204E+02 BASIN STORAGE= .1715E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RND3	MANE	2.05	154.11	233.94	.72	3.00	154.06	234.00	.72	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1325E+02 EXCESS= .0000E+00 OUTFLOW= .1326E+02 BASIN STORAGE= .1668E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RND3	MANE	2.01	150.76	232.51	.71	3.00	150.43	234.00	.71	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1294E+02 EXCESS= .0000E+00 OUTFLOW= .1295E+02 BASIN STORAGE= .2052E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RE3	MANE	.73	1205.96	229.54	1.34	3.00	1198.54	231.00	1.34	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9910E+02 EXCESS= .0000E+00 OUTFLOW= .9913E+02 BASIN STORAGE= .7116E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RE3	MANE	.81	1048.58	229.88	1.17	3.00	1046.05	231.00	1.17	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8653E+02 EXCESS= .0000E+00 OUTFLOW= .8655E+02 BASIN STORAGE= .6759E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RE3	MANE	.79	1058.56	230.07	1.18	3.00	1056.30	231.00	1.18	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8748E+02 EXCESS= .0000E+00 OUTFLOW= .8751E+02 BASIN STORAGE= .7093E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RE3	MANE	.68	920.65	231.72	1.03	3.00	920.64	231.00	1.03	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7621E+02 EXCESS= .0000E+00 OUTFLOW= .7624E+02 BASIN STORAGE= .7129E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RE3	MANE	.79	999.86	230.11	1.12	3.00	999.17	231.00	1.12	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8262E+02 EXCESS= .0000E+00 OUTFLOW= .8264E+02 BASIN STORAGE= .6654E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RE3	MANE	.67	982.70	229.59	1.09	3.00	981.26	231.00	1.09	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8102E+02 EXCESS= .0000E+00 OUTFLOW= .8105E+02 BASIN STORAGE= .7101E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNE4	MANE	.72	1227.90	231.82	1.31	3.00	1226.12	231.00	1.31	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1018E+03 EXCESS= .0000E+00 OUTFLOW= .1018E+03 BASIN STORAGE= .9391E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNE4	MANE	.83	1068.77	232.53	1.14	3.00	1065.43	231.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8876E+02 EXCESS= .0000E+00 OUTFLOW= .8878E+02 BASIN STORAGE= .8623E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNE4	MANE	.82	1079.80	231.81	1.16	3.00	1076.59	231.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8975E+02 EXCESS= .0000E+00 OUTFLOW= .8977E+02 BASIN STORAGE= .8816E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RNE4	MANE	.86	939.14	232.83	1.01	3.00	932.77	231.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7809E+02 EXCESS= .0000E+00 OUTFLOW= .7810E+02 BASIN STORAGE= .8510E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNE4	MANE	.75	1020.65	232.03	1.09	3.00	1015.31	231.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8472E+02 EXCESS= .0000E+00 OUTFLOW= .8475E+02 BASIN STORAGE= .8644E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNE4	MANE	.81	1001.98	232.30	1.07	3.00	996.24	231.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8306E+02 EXCESS= .0000E+00 OUTFLOW= .8308E+02 BASIN STORAGE= .8734E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RCOM1	MANE	2.28	87.22	221.43	1.98	3.00	86.70	219.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6316E+01 EXCESS= .0000E+00 OUTFLOW= .6335E+01 BASIN STORAGE= .2935E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .92

RCOM1	MANE	2.31	78.88	221.60	1.78	3.00	78.26	222.00	1.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5677E+01 EXCESS= .0000E+00 OUTFLOW= .5701E+01 BASIN STORAGE= .2419E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .93

RCOM1	MANE	2.31	80.86	220.62	1.79	3.00	79.06	219.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5727E+01 EXCESS= .0000E+00 OUTFLOW= .5745E+01 BASIN STORAGE= .3644E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .86

RCOM1	MANE	2.37	72.50	221.23	1.61	3.00	71.54	222.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5145E+01 EXCESS= .0000E+00 OUTFLOW= .5160E+01 BASIN STORAGE= .3101E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .90

RCOM1	MANE	2.47	77.09	221.01	1.71	3.00	75.72	222.00	1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5477E+01 EXCESS= .0000E+00 OUTFLOW= .5495E+01 BASIN STORAGE= .3615E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .89

RCOM1	MANE	2.32	75.63	221.27	1.69	3.00	74.69	222.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5394E+01 EXCESS= .0000E+00 OUTFLOW= .5411E+01 BASIN STORAGE= .2598E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= 1.00

RCOM2	MANE	1.83	310.03	220.54	2.11	3.00	308.41	222.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2281E+02 EXCESS= .0000E+00 OUTFLOW= .2286E+02 BASIN STORAGE= .1793E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RCOM2	MANE	1.89	281.11	220.76	1.91	3.00	279.94	222.00	1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2060E+02 EXCESS= .0000E+00 OUTFLOW= .2064E+02 BASIN STORAGE= .1611E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RCOM2	MANE	1.98	283.43	220.64	1.92	3.00	281.68	222.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2076E+02 EXCESS= .0000E+00 OUTFLOW= .2079E+02 BASIN STORAGE= .1569E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RCOM2	MANE	2.01	256.36	221.39	1.73	3.00	255.18	222.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1874E+02 EXCESS= .0000E+00 OUTFLOW= .1876E+02 BASIN STORAGE= .1198E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RCOM2	MANE	1.99	272.01	221.00	1.84	3.00	270.62	222.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1990E+02 EXCESS= .0000E+00 OUTFLOW= .1993E+02 BASIN STORAGE= .1757E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RCOM2	MANE	1.99	267.81	221.26	1.81	3.00	266.42	222.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1961E+02 EXCESS= .0000E+00 OUTFLOW= .1963E+02 BASIN STORAGE= .1381E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RCOM3	MANE	.88	440.39	223.74	2.14	3.00	439.35	222.00	2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3390E+02 EXCESS= .0000E+00 OUTFLOW= .3393E+02 BASIN STORAGE= .1516E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RCOM3	MANE	.86	400.85	223.45	1.94	3.00	399.09	222.00	1.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3066E+02 EXCESS= .0000E+00 OUTFLOW= .3068E+02 BASIN STORAGE= .1593E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RCOM3	MANE	.93	402.77	223.67	1.95	3.00	401.39	222.00	1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3088E+02 EXCESS= .0000E+00 OUTFLOW= .3090E+02 BASIN STORAGE= .1606E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RCOM3	MANE	.87	365.99	223.19	1.76	3.00	364.35	222.00	1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2792E+02 EXCESS= .0000E+00 OUTFLOW= .2794E+02 BASIN STORAGE= .1526E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RCOM3	MANE	.88	387.52	223.17	1.87	3.00	386.16	222.00	1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2963E+02 EXCESS= .0000E+00 OUTFLOW= .2965E+02 BASIN STORAGE= .1396E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RCOM3	MANE	1.03	381.46	222.99	1.85	3.00	380.46	222.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2920E+02 EXCESS= .0000E+00 OUTFLOW= .2922E+02 BASIN STORAGE= .1619E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RB4	MANE	2.74	39.31	221.93	1.93	3.00	39.29	222.00	1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2771E+01 EXCESS= .0000E+00 OUTFLOW= .2782E+01 BASIN STORAGE= .2223E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .92

RB4	MANE	2.82	35.26	221.35	1.73	3.00	35.21	222.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2483E+01 EXCESS= .0000E+00 OUTFLOW= .2494E+01 BASIN STORAGE= .2642E-05 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .93

RB4	MANE	2.78	35.48	223.63	1.75	3.00	35.32	222.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2506E+01 EXCESS= .0000E+00 OUTFLOW= .2515E+01 BASIN STORAGE= .2614E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .86

RB4	MANE	2.92	31.93	223.66	1.56	3.00	31.61	222.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2243E+01 EXCESS= .0000E+00 OUTFLOW= .2251E+01 BASIN STORAGE= .1826E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .90

RB4	MANE	2.89	34.04	222.91	1.67	3.00	33.66	222.00	1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2393E+01 EXCESS= .0000E+00 OUTFLOW= .2399E+01 BASIN STORAGE= .2822E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .89

RB4	MANE	2.82	33.45	223.93	1.64	3.00	33.37	222.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2355E+01 EXCESS= .0000E+00 OUTFLOW= .2364E+01 BASIN STORAGE= .2203E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= 1.00

RNA4	MANE	.59	531.65	223.40	2.10	3.00	527.27	222.00	2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4115E+02 EXCESS= .0000E+00 OUTFLOW= .4117E+02 BASIN STORAGE= .1681E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNA4	MANE	.60	483.13	223.29	1.90	3.00	477.42	222.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3715E+02 EXCESS= .0000E+00 OUTFLOW= .3716E+02 BASIN STORAGE= .1607E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNA4	MANE	.61	484.96	222.90	1.91	3.00	480.51	222.00	1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3744E+02 EXCESS= .0000E+00 OUTFLOW= .3745E+02 BASIN STORAGE= .1616E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RNA4	MANE	.67	440.14	223.43	1.73	3.00	434.60	222.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3379E+02 EXCESS= .0000E+00 OUTFLOW= .3380E+02 BASIN STORAGE= .1657E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNA4	MANE	.63	466.47	223.07	1.83	3.00	461.42	222.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3588E+02 EXCESS= .0000E+00 OUTFLOW= .3589E+02 BASIN STORAGE= .1537E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNA4	MANE	.64	459.95	223.14	1.81	3.00	454.64	222.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3536E+02 EXCESS= .0000E+00 OUTFLOW= .3537E+02 BASIN STORAGE= .1665E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNA5	MANE	2.15	540.75	227.76	2.11	3.00	539.69	228.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4253E+02 EXCESS= .0000E+00 OUTFLOW= .4260E+02 BASIN STORAGE= .1065E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RNA5	MANE	2.20	490.51	228.03	1.90	3.00	490.45	228.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3839E+02 EXCESS= .0000E+00 OUTFLOW= .3846E+02 BASIN STORAGE= .1393E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RNA5	MANE	2.21	494.16	227.53	1.92	3.00	493.12	228.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3869E+02 EXCESS= .0000E+00 OUTFLOW= .3877E+02 BASIN STORAGE= .1099E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RNA5	MANE	2.27	447.80	227.52	1.73	3.00	447.25	228.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3493E+02 EXCESS= .0000E+00 OUTFLOW= .3498E+02 BASIN STORAGE= .1075E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .90

RNA5	MANE	2.22	474.92	227.36	1.84	3.00	474.10	228.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3708E+02 EXCESS= .0000E+00 OUTFLOW= .3716E+02 BASIN STORAGE= .1246E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RNA5	MANE	2.39	466.42	228.34	1.81	3.00	465.76	228.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3655E+02 EXCESS= .0000E+00 OUTFLOW= .3660E+02 BASIN STORAGE= .1313E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RDA3	MANE	.69	76.03	217.70	1.99	3.00	74.65	216.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5202E+01 EXCESS= .0000E+00 OUTFLOW= .5205E+01 BASIN STORAGE= .2642E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RDA3	MANE	.76	68.77	217.58	1.79	3.00	67.36	219.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4665E+01 EXCESS= .0000E+00 OUTFLOW= .4668E+01 BASIN STORAGE= .2329E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RDA3	MANE	.75	69.35	217.39	1.80	3.00	67.93	219.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4707E+01 EXCESS= .0000E+00 OUTFLOW= .4710E+01 BASIN STORAGE= .1816E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RDA3	MANE	.78	62.42	217.75	1.62	3.00	61.32	219.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4217E+01 EXCESS= .0000E+00 OUTFLOW= .4220E+01 BASIN STORAGE= .1998E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RDA3	MANE	.77	66.37	217.40	1.72	3.00	65.10	219.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4496E+01 EXCESS= .0000E+00 OUTFLOW= .4499E+01 BASIN STORAGE= .2343E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RDA3	MANE	.75	65.46	217.59	1.70	3.00	64.15	219.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4426E+01 EXCESS= .0000E+00 OUTFLOW= .4429E+01 BASIN STORAGE= .2172E-07 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNB3	MANE	2.01	156.86	221.25	1.82	3.00	156.48	222.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1095E+02 EXCESS= .0000E+00 OUTFLOW= .1098E+02 BASIN STORAGE= .4135E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .92

RNB3	MANE	2.12	140.38	221.93	1.62	3.00	140.30	222.00	1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9753E+01 EXCESS= .0000E+00 OUTFLOW= .9773E+01 BASIN STORAGE= .2886E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RNB3	MANE	2.07	141.78	221.23	1.64	3.00	141.60	222.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9846E+01 EXCESS= .0000E+00 OUTFLOW= .9867E+01 BASIN STORAGE= .3674E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RNB3	MANE	2.15	126.86	223.03	1.46	3.00	126.78	222.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8763E+01 EXCESS= .0000E+00 OUTFLOW= .8786E+01 BASIN STORAGE= .4011E-05 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .90

RNB3	MANE	2.09	135.35	221.47	1.56	3.00	135.09	222.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9380E+01 EXCESS= .0000E+00 OUTFLOW= .9400E+01 BASIN STORAGE= .2536E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RNB3	MANE	2.05	133.37	222.01	1.53	3.00	133.36	222.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9226E+01 EXCESS= .0000E+00 OUTFLOW= .9247E+01 BASIN STORAGE= .3834E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= 1.00

RC5	MANE	1.87	22.17	229.29	.46	3.00	22.14	228.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1800E+01 EXCESS= .0000E+00 OUTFLOW= .1801E+01 BASIN STORAGE= .3585E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RC5	MANE	1.89	17.28	228.47	.37	3.00	17.19	228.00	.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1443E+01 EXCESS= .0000E+00 OUTFLOW= .1444E+01 BASIN STORAGE= .2970E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RC5	MANE	1.88	17.62	228.24	.38	3.00	17.57	228.00	.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1470E+01 EXCESS= .0000E+00 OUTFLOW= .1471E+01 BASIN STORAGE= .3350E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RC5	MANE	2.05	13.48	229.68	.30	3.00	13.45	231.00	.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1166E+01 EXCESS= .0000E+00 OUTFLOW= .1167E+01 BASIN STORAGE= .3123E-06 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RC5	MANE	1.89	15.78	230.13	.34	3.00	15.71	231.00	.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1337E+01 EXCESS= .0000E+00 OUTFLOW= .1337E+01 BASIN STORAGE= .2433E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RC5	MANE	2.00	15.17	230.56	.33	3.00	15.12	231.00	.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1293E+01 EXCESS= .0000E+00 OUTFLOW= .1293E+01 BASIN STORAGE= .2845E-06 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNC5	MANE	.86	175.21	223.57	1.29	3.00	173.46	225.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1278E+02 EXCESS= .0000E+00 OUTFLOW= .1278E+02 BASIN STORAGE= .3324E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNC5	MANE	.87	154.01	224.00	1.13	3.00	152.83	225.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1122E+02 EXCESS= .0000E+00 OUTFLOW= .1122E+02 BASIN STORAGE= .3254E-05 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .93
              RNC5  MANE          .92    155.37    224.25      1.14      3.00    154.46    225.00        1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1134E+02 EXCESS= .0000E+00 OUTFLOW= .1134E+02 BASIN STORAGE= .3313E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
              RNC5  MANE          .86    136.80    224.01      1.00      3.00    135.91    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9951E+01 EXCESS= .0000E+00 OUTFLOW= .9958E+01 BASIN STORAGE= .3234E-05 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .90
              RNC5  MANE          .80    147.50    223.98      1.08      3.00    146.44    225.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1074E+02 EXCESS= .0000E+00 OUTFLOW= .1074E+02 BASIN STORAGE= .3605E-05 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .89
              RNC5  MANE          .85    145.41    223.71      1.06      3.00    143.92    225.00        1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1054E+02 EXCESS= .0000E+00 OUTFLOW= .1055E+02 BASIN STORAGE= .3578E-05 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO= 1.00
             RSTAR  MANE          .72    816.52    226.27      1.88      3.00    809.53    228.00        1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6583E+02 EXCESS= .0000E+00 OUTFLOW= .6584E+02 BASIN STORAGE= .6219E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .92
             RSTAR  MANE          .62    734.61    226.65      1.69      3.00    730.61    228.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5914E+02 EXCESS= .0000E+00 OUTFLOW= .5916E+02 BASIN STORAGE= .6157E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .93
             RSTAR  MANE          .62    741.04    226.39      1.70      3.00    735.70    228.00        1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5965E+02 EXCESS= .0000E+00 OUTFLOW= .5967E+02 BASIN STORAGE= .5923E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
             RSTAR  MANE          .72    665.05    226.59      1.53      3.00    662.78    228.00        1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5356E+02 EXCESS= .0000E+00 OUTFLOW= .5357E+02 BASIN STORAGE= .5734E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .90
             RSTAR  MANE          .65    708.46    226.56      1.63      3.00    704.90    228.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5705E+02 EXCESS= .0000E+00 OUTFLOW= .5706E+02 BASIN STORAGE= .6176E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .89
             RSTAR  MANE          .66    695.89    226.78      1.60      3.00    692.94    228.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5616E+02 EXCESS= .0000E+00 OUTFLOW= .5618E+02 BASIN STORAGE= .7925E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO= 1.00
              RNB5  MANE         1.13    833.72    228.49      1.84      3.00    833.70    228.00        1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6805E+02 EXCESS= .0000E+00 OUTFLOW= .6809E+02 BASIN STORAGE= .1393E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .92
              RNB5  MANE         1.16    749.98    229.59      1.65      3.00    748.09    228.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6105E+02 EXCESS= .0000E+00 OUTFLOW= .6110E+02 BASIN STORAGE= .1352E-03 PERCENT ERROR=   -.1
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FOR PLAN = 1 RATIO= .93

RNB5	MANE	1.13	755.70	229.14	1.67	3.00	754.05	228.00	1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6160E+02 EXCESS= .0000E+00 OUTFLOW= .6164E+02 BASIN STORAGE= .1453E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNB5	MANE	1.19	679.34	229.99	1.49	3.00	675.00	228.00	1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5523E+02 EXCESS= .0000E+00 OUTFLOW= .5527E+02 BASIN STORAGE= .1422E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNB5	MANE	1.17	723.11	229.45	1.59	3.00	720.12	228.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5887E+02 EXCESS= .0000E+00 OUTFLOW= .5891E+02 BASIN STORAGE= .1483E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNB5	MANE	1.19	710.83	229.30	1.57	3.00	708.16	228.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5794E+02 EXCESS= .0000E+00 OUTFLOW= .5799E+02 BASIN STORAGE= .1431E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNA9	MANE	2.64	107.88	227.15	1.14	3.00	107.56	225.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7869E+01 EXCESS= .0000E+00 OUTFLOW= .7886E+01 BASIN STORAGE= .6692E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RNA9	MANE	2.71	92.85	226.52	.98	3.00	91.83	228.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6778E+01 EXCESS= .0000E+00 OUTFLOW= .6788E+01 BASIN STORAGE= .4808E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNA9	MANE	2.82	93.60	225.18	.99	3.00	93.53	228.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6863E+01 EXCESS= .0000E+00 OUTFLOW= .6871E+01 BASIN STORAGE= .6184E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNA9	MANE	2.94	80.19	225.94	.85	3.00	79.81	228.00	.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5892E+01 EXCESS= .0000E+00 OUTFLOW= .5898E+01 BASIN STORAGE= .5617E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNA9	MANE	2.74	88.33	226.94	.93	3.00	87.45	228.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6442E+01 EXCESS= .0000E+00 OUTFLOW= .6453E+01 BASIN STORAGE= .5406E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RNA9	MANE	2.87	85.94	225.88	.91	3.00	85.41	228.00	.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6303E+01 EXCESS= .0000E+00 OUTFLOW= .6309E+01 BASIN STORAGE= .5652E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RC6	MANE	1.26	76.04	224.57	1.07	3.00	75.65	222.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5544E+01 EXCESS= .0000E+00 OUTFLOW= .5550E+01 BASIN STORAGE= .2289E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RC6	MANE	1.35	65.41	224.76	.92	3.00	65.22	225.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4770E+01 EXCESS= .0000E+00 OUTFLOW= .4776E+01 BASIN STORAGE= .3126E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RC6	MANE	1.33	66.16	223.74	.93	3.00	65.97	225.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4830E+01 EXCESS= .0000E+00 OUTFLOW= .4836E+01 BASIN STORAGE= .3112E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RC6	MANE	1.49	56.70	224.95	.80	3.00	56.67	225.00	.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4143E+01 EXCESS= .0000E+00 OUTFLOW= .4147E+01 BASIN STORAGE= .3340E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RC6	MANE	1.33	62.18	224.76	.88	3.00	61.99	225.00	.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4532E+01 EXCESS= .0000E+00 OUTFLOW= .4537E+01 BASIN STORAGE= .2160E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RC6	MANE	1.45	60.72	224.91	.86	3.00	60.66	225.00	.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4434E+01 EXCESS= .0000E+00 OUTFLOW= .4439E+01 BASIN STORAGE= .2825E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RD6	MANE	1.20	143.68	224.67	1.02	3.00	143.45	225.00	1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1057E+02 EXCESS= .0000E+00 OUTFLOW= .1058E+02 BASIN STORAGE= .1308E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RD6	MANE	1.28	122.94	224.53	.88	3.00	122.79	225.00	.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9067E+01 EXCESS= .0000E+00 OUTFLOW= .9074E+01 BASIN STORAGE= .1561E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RD6	MANE	1.37	124.04	225.61	.89	3.00	123.80	225.00	.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9183E+01 EXCESS= .0000E+00 OUTFLOW= .9190E+01 BASIN STORAGE= .1647E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RD6	MANE	1.38	105.99	224.99	.76	3.00	105.99	225.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7848E+01 EXCESS= .0000E+00 OUTFLOW= .7854E+01 BASIN STORAGE= .1231E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RD6	MANE	1.39	116.16	225.89	.83	3.00	116.03	225.00	.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8602E+01 EXCESS= .0000E+00 OUTFLOW= .8609E+01 BASIN STORAGE= .1221E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RD6	MANE	1.40	113.84	225.01	.81	3.00	113.83	225.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8414E+01 EXCESS= .0000E+00 OUTFLOW= .8421E+01 BASIN STORAGE= .1361E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

NE6-1	MANE	1.84	234.99	229.21	.65	3.00	233.61	228.00	.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1001E+03 EXCESS= .0000E+00 OUTFLOW= .9952E+02 BASIN STORAGE= .6146E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

NE6-1	MANE	1.87	207.74	229.23	.62	3.00	206.97	231.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9568E+02 EXCESS= .0000E+00 OUTFLOW= .9511E+02 BASIN STORAGE= .6007E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

NE6-1	MANE	1.86	209.43	228.93	.62	3.00	208.60	231.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9606E+02 EXCESS= .0000E+00 OUTFLOW= .9539E+02 BASIN STORAGE= .6019E+00 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= .86

NE6-1	MANE	2.05	185.82	230.20	.59	3.00	185.60	231.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9143E+02 EXCESS= .0000E+00 OUTFLOW= .9090E+02 BASIN STORAGE= .5886E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

NE6-1	MANE	1.96	198.94	229.78	.61	3.00	198.58	231.00	.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9410E+02 EXCESS= .0000E+00 OUTFLOW= .9359E+02 BASIN STORAGE= .5963E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

NE6-1	MANE	2.04	195.99	229.43	.60	3.00	195.49	231.00	.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9343E+02 EXCESS= .0000E+00 OUTFLOW= .9281E+02 BASIN STORAGE= .5946E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RA6	MANE	2.63	52.14	219.94	.54	3.00	51.78	222.00	.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3600E+01 EXCESS= .0000E+00 OUTFLOW= .3614E+01 BASIN STORAGE= .2585E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .92

RA6	MANE	2.70	47.03	222.37	.48	3.00	47.01	222.00	.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3232E+01 EXCESS= .0000E+00 OUTFLOW= .3244E+01 BASIN STORAGE= .2127E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .93

RA6	MANE	2.68	47.81	221.93	.49	3.00	47.75	222.00	.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3261E+01 EXCESS= .0000E+00 OUTFLOW= .3275E+01 BASIN STORAGE= .1939E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .86

RA6	MANE	2.66	43.35	220.74	.44	3.00	42.82	222.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2926E+01 EXCESS= .0000E+00 OUTFLOW= .2937E+01 BASIN STORAGE= .2187E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .90

RA6	MANE	2.65	46.20	221.04	.47	3.00	45.58	222.00	.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3117E+01 EXCESS= .0000E+00 OUTFLOW= .3129E+01 BASIN STORAGE= .2833E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .89

RA6	MANE	2.69	45.48	221.62	.46	3.00	45.18	222.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3069E+01 EXCESS= .0000E+00 OUTFLOW= .3083E+01 BASIN STORAGE= .1981E-05 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= 1.00

RNA7	MANE	1.46	178.51	221.89	.95	3.00	178.15	222.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1270E+02 EXCESS= .0000E+00 OUTFLOW= .1272E+02 BASIN STORAGE= .6353E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RNA7	MANE	1.45	160.69	221.01	.85	3.00	159.90	222.00	.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1138E+02 EXCESS= .0000E+00 OUTFLOW= .1139E+02 BASIN STORAGE= .6355E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNA7	MANE	1.54	162.09	220.80	.86	3.00	161.63	222.00	.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1149E+02 EXCESS= .0000E+00 OUTFLOW= .1150E+02 BASIN STORAGE= .6064E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNA7	MANE	1.59	145.94	221.89	.77	3.00	145.71	222.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1027E+02 EXCESS= .0000E+00 OUTFLOW= .1028E+02 BASIN STORAGE= .6228E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNA7	MANE	1.54	155.39	221.53	.82	3.00	154.58	222.00	.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1096E+02 EXCESS= .0000E+00 OUTFLOW= .1097E+02 BASIN STORAGE= .5790E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNA7	MANE	1.46	153.69	221.82	.80	3.00	153.24	222.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1079E+02 EXCESS= .0000E+00 OUTFLOW= .1081E+02 BASIN STORAGE= .5783E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RB6	MANE	2.01	33.90	220.37	.36	3.00	33.89	222.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2382E+01 EXCESS= .0000E+00 OUTFLOW= .2386E+01 BASIN STORAGE= .4760E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RB6	MANE	2.03	30.23	221.91	.31	3.00	30.20	222.00	.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2112E+01 EXCESS= .0000E+00 OUTFLOW= .2115E+01 BASIN STORAGE= .5779E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RB6	MANE	2.01	30.53	222.16	.32	3.00	30.52	222.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2133E+01 EXCESS= .0000E+00 OUTFLOW= .2137E+01 BASIN STORAGE= .5823E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RB6	MANE	2.05	27.17	223.20	.28	3.00	27.13	222.00	.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1888E+01 EXCESS= .0000E+00 OUTFLOW= .1892E+01 BASIN STORAGE= .5161E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .90

RB6	MANE	2.08	29.06	223.14	.30	3.00	29.05	222.00	.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2027E+01 EXCESS= .0000E+00 OUTFLOW= .2031E+01 BASIN STORAGE= .4210E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RB6	MANE	2.09	28.56	221.21	.30	3.00	28.54	222.00	.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1993E+01 EXCESS= .0000E+00 OUTFLOW= .1996E+01 BASIN STORAGE= .6820E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= 1.00

RDA6	MANE	1.16	135.94	218.19	-1.00	3.00	134.22	219.00	-1.00

FOR PLAN = 1 RATIO= .92

RDA6	MANE	1.09	122.95	217.88	-1.00	3.00	121.60	219.00	-1.00

FOR PLAN = 1 RATIO= .93

RDA6	MANE	1.16	123.80	218.05	-1.00	3.00	122.44	219.00	-1.00

FOR PLAN = 1 RATIO= .86

RDA6	MANE	1.17	112.06	218.26	-1.00	3.00	110.77	219.00	-1.00

```
          FOR PLAN = 1  RATIO=  .90
              RDA6  MANE         1.09    118.89    218.36     -1.00      3.00    117.57    219.00       -1.00


          FOR PLAN = 1  RATIO=  .89
              RDA6  MANE         1.07    117.33    217.95     -1.00      3.00    115.88    219.00       -1.00


          FOR PLAN = 1  RATIO= 1.00
                RCOMTA  MANE         1.06    166.92    221.17      1.74      3.00    164.61    222.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1165E+02 EXCESS= .0000E+00 OUTFLOW= .1167E+02 BASIN STORAGE= .2153E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .92
                RCOMTA  MANE         1.21    149.68    220.89      1.55      3.00    148.63    222.00        1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1044E+02 EXCESS= .0000E+00 OUTFLOW= .1045E+02 BASIN STORAGE= .2401E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .93
                RCOMTA  MANE         1.16    151.29    221.43      1.57      3.00    149.92    222.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1053E+02 EXCESS= .0000E+00 OUTFLOW= .1054E+02 BASIN STORAGE= .2047E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .86
                RCOMTA  MANE         1.20    136.33    221.23      1.40      3.00    135.07    222.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9422E+01 EXCESS= .0000E+00 OUTFLOW= .9435E+01 BASIN STORAGE= .1822E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .90
                RCOMTA  MANE         1.25    144.74    221.55      1.50      3.00    143.71    222.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1005E+02 EXCESS= .0000E+00 OUTFLOW= .1006E+02 BASIN STORAGE= .2350E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO=  .89
                RCOMTA  MANE         1.24    142.10    220.75      1.47      3.00    141.60    222.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9899E+01 EXCESS= .0000E+00 OUTFLOW= .9908E+01 BASIN STORAGE= .2186E-05 PERCENT ERROR=   -.1


          FOR PLAN = 1  RATIO= 1.00
              RNB7  MANE          .47    472.04    220.24      1.26      3.00    469.06    222.00        1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3380E+02 EXCESS= .0000E+00 OUTFLOW= .3380E+02 BASIN STORAGE= .3698E-05 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .92
              RNB7  MANE          .37    422.48    219.81      1.12      3.00    420.84    222.00        1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3018E+02 EXCESS= .0000E+00 OUTFLOW= .3018E+02 BASIN STORAGE= .3489E-05 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .93
              RNB7  MANE          .36    426.76    219.82      1.13      3.00    424.97    222.00        1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3047E+02 EXCESS= .0000E+00 OUTFLOW= .3047E+02 BASIN STORAGE= .3646E-05 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .86
              RNB7  MANE          .46    381.43    220.07      1.01      3.00    381.31    222.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2718E+02 EXCESS= .0000E+00 OUTFLOW= .2718E+02 BASIN STORAGE= .3634E-05 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .90
              RNB7  MANE          .39    406.84    219.94      1.08      3.00    406.09    222.00        1.08
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .2904E+02 EXCESS= .0000E+00 OUTFLOW= .2905E+02 BASIN STORAGE= .3657E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNB7	MANE	.35	401.81	219.99	1.06	3.00	400.93	222.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2859E+02 EXCESS= .0000E+00 OUTFLOW= .2860E+02 BASIN STORAGE= .3554E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RDB6	MANE	2.38	120.57	223.30	-1.00	3.00	120.32	222.00	-1.00

FOR PLAN = 1 RATIO= .92

RDB6	MANE	2.51	107.34	223.99	-1.00	3.00	107.06	222.00	-1.00

FOR PLAN = 1 RATIO= .93

RDB6	MANE	2.60	108.00	222.69	-1.00	3.00	107.10	222.00	-1.00

FOR PLAN = 1 RATIO= .86

RDB6	MANE	2.63	96.18	224.32	-1.00	3.00	96.00	222.00	-1.00

FOR PLAN = 1 RATIO= .90

RDB6	MANE	2.59	102.99	223.68	-1.00	3.00	102.64	222.00	-1.00

FOR PLAN = 1 RATIO= .89

RDB6	MANE	2.61	101.23	223.44	-1.00	3.00	100.47	222.00	-1.00

FOR PLAN = 1 RATIO= 1.00

RNC7	MANE	1.08	734.50	223.17	1.58	3.00	731.30	222.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5307E+02 EXCESS= .0000E+00 OUTFLOW= .5311E+02 BASIN STORAGE= .2056E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RNC7	MANE	1.13	653.34	223.98	1.40	3.00	649.20	222.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4704E+02 EXCESS= .0000E+00 OUTFLOW= .4708E+02 BASIN STORAGE= .2235E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNC7	MANE	1.09	659.23	223.43	1.42	3.00	655.22	222.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4751E+02 EXCESS= .0000E+00 OUTFLOW= .4754E+02 BASIN STORAGE= .2430E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNC7	MANE	1.12	587.86	224.13	1.25	3.00	581.55	225.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4208E+02 EXCESS= .0000E+00 OUTFLOW= .4211E+02 BASIN STORAGE= .2188E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNC7	MANE	1.03	627.55	223.58	1.34	3.00	622.60	222.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4516E+02 EXCESS= .0000E+00 OUTFLOW= .4519E+02 BASIN STORAGE= .2141E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNC7	MANE	1.00	619.78	224.17	1.32	3.00	613.33	222.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4440E+02 EXCESS= .0000E+00 OUTFLOW= .4444E+02 BASIN STORAGE= .2191E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNC7	MANE	.85	819.61	223.97	1.48	3.00	815.92	225.00	1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5962E+02 EXCESS= .0000E+00 OUTFLOW= .5967E+02 BASIN STORAGE= .3114E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RNC7	MANE	.97	724.64	224.16	1.31	3.00	722.99	225.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5264E+02 EXCESS= .0000E+00 OUTFLOW= .5267E+02 BASIN STORAGE= .2870E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNC7	MANE	.97	731.64	223.89	1.32	3.00	729.96	225.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5317E+02 EXCESS= .0000E+00 OUTFLOW= .5321E+02 BASIN STORAGE= .3155E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNC7	MANE	.88	646.69	223.78	1.16	3.00	646.13	225.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4689E+02 EXCESS= .0000E+00 OUTFLOW= .4693E+02 BASIN STORAGE= .3199E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNC7	MANE	.87	694.83	223.80	1.25	3.00	693.52	225.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5046E+02 EXCESS= .0000E+00 OUTFLOW= .5049E+02 BASIN STORAGE= .3293E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNC7	MANE	1.00	683.24	224.37	1.23	3.00	682.46	225.00	1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4958E+02 EXCESS= .0000E+00 OUTFLOW= .4961E+02 BASIN STORAGE= .2985E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNE7	MANE	1.10	1118.94	227.55	.82	3.00	1115.43	228.00	.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1656E+03 EXCESS= .0000E+00 OUTFLOW= .1651E+03 BASIN STORAGE= .4968E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNE7	MANE	1.02	988.06	227.37	.76	3.00	985.04	228.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1532E+03 EXCESS= .0000E+00 OUTFLOW= .1528E+03 BASIN STORAGE= .4856E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNE7	MANE	1.17	997.91	227.35	.76	3.00	994.63	228.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1542E+03 EXCESS= .0000E+00 OUTFLOW= .1539E+03 BASIN STORAGE= .4865E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNE7	MANE	1.22	877.42	228.04	.71	3.00	877.27	228.00	.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1425E+03 EXCESS= .0000E+00 OUTFLOW= .1420E+03 BASIN STORAGE= .4759E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNE7	MANE	1.19	943.56	228.08	.74	3.00	943.42	228.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1492E+03 EXCESS= .0000E+00 OUTFLOW= .1487E+03 BASIN STORAGE= .4821E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNE7	MANE	1.20	929.18	227.62	.73	3.00	927.76	228.00	.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1475E+03 EXCESS= .0000E+00 OUTFLOW= .1471E+03 BASIN STORAGE= .4806E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNF7	MANE	.79	1179.75	229.57	.82	3.00	1171.99	228.00	.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1707E+03 EXCESS= .0000E+00 OUTFLOW= .1704E+03 BASIN STORAGE= .3645E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNF7	MANE	.78	1037.86	229.79	.76	3.00	1027.55	228.00	.76	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1575E+03 EXCESS= .0000E+00 OUTFLOW= .1571E+03 BASIN STORAGE= .3563E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNF7	MANE	.83	1048.98	229.70	.76	3.00	1038.57	228.00	.76	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1586E+03 EXCESS= .0000E+00 OUTFLOW= .1583E+03 BASIN STORAGE= .3569E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RNF7	MANE	.92	922.29	229.82	.70	3.00	915.24	231.00	.70	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1461E+03 EXCESS= .0000E+00 OUTFLOW= .1458E+03 BASIN STORAGE= .3491E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNF7	MANE	.79	992.44	229.22	.73	3.00	983.94	231.00	.73	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1532E+03 EXCESS= .0000E+00 OUTFLOW= .1528E+03 BASIN STORAGE= .3537E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNF7	MANE	.83	974.78	229.24	.73	3.00	967.15	231.00	.73	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1514E+03 EXCESS= .0000E+00 OUTFLOW= .1511E+03 BASIN STORAGE= .3526E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RE6	MANE	3.00	15.72	240.99	.14	3.00	15.63	240.00	.14	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1891E+01 EXCESS= .0000E+00 OUTFLOW= .1895E+01 BASIN STORAGE= .2304E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RE6	MANE	2.87	11.33	304.93	.09	3.00	11.30	306.00	.09	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1280E+01 EXCESS= .0000E+00 OUTFLOW= .1282E+01 BASIN STORAGE= .2658E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RE6	MANE	2.81	11.65	305.32	.10	3.00	11.62	306.00	.10	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1325E+01 EXCESS= .0000E+00 OUTFLOW= .1327E+01 BASIN STORAGE= .2718E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RE6	MANE	3.00	8.41	307.80	.06	3.00	8.39	306.00	.06	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8505E+00 EXCESS= .0000E+00 OUTFLOW= .8520E+00 BASIN STORAGE= .2519E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .90

RE6	MANE	2.85	10.26	305.54	.08	3.00	10.25	306.00	.08	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1110E+01 EXCESS= .0000E+00 OUTFLOW= .1112E+01 BASIN STORAGE= .2936E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89

RE6	MANE	2.93	9.75	307.35	.08	3.00	9.73	306.00	.08	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1042E+01 EXCESS= .0000E+00 OUTFLOW= .1044E+01 BASIN STORAGE= .2899E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNG7	MANE	.88	1242.25	230.22	.77	3.00	1239.68	231.00	.77	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1775E+03 EXCESS= .0000E+00 OUTFLOW= .1771E+03 BASIN STORAGE= .4524E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNG7	MANE	.96	1082.05	230.72	.71	3.00	1081.83	231.00	.71	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1628E+03 EXCESS= .0000E+00 OUTFLOW= .1624E+03 BASIN STORAGE= .4423E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNG7	MANE	.91	1093.99	230.63	.72	3.00	1093.63	231.00	.72	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1640E+03 EXCESS= .0000E+00 OUTFLOW= .1636E+03 BASIN STORAGE= .4431E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RNG7	MANE	1.00	957.62	231.85	.66	3.00	956.41	231.00	.66	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1503E+03 EXCESS= .0000E+00 OUTFLOW= .1500E+03 BASIN STORAGE= .4333E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RNG7	MANE	.92	1033.74	230.31	.69	3.00	1033.68	231.00	.69	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1581E+03 EXCESS= .0000E+00 OUTFLOW= .1578E+03 BASIN STORAGE= .4390E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNG7	MANE	.98	1014.81	231.77	.68	3.00	1014.57	231.00	.68	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1561E+03 EXCESS= .0000E+00 OUTFLOW= .1558E+03 BASIN STORAGE= .4377E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RF6	MANE	3.00	10.28	259.10	.21	3.00	10.23	258.00	.21	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1467E+01 EXCESS= .0000E+00 OUTFLOW= .1467E+01 BASIN STORAGE= .5427E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RF6	MANE	2.76	6.96	263.87	.16	3.00	6.95	264.00	.16	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1071E+01 EXCESS= .0000E+00 OUTFLOW= .1071E+01 BASIN STORAGE= .3543E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RF6	MANE	3.00	7.19	261.71	.16	3.00	7.16	261.00	.16	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1100E+01 EXCESS= .0000E+00 OUTFLOW= .1101E+01 BASIN STORAGE= .3777E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RF6	MANE	2.93	5.43	319.03	.11	3.00	5.41	321.00	.11	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7798E+00 EXCESS= .0000E+00 OUTFLOW= .7802E+00 BASIN STORAGE= .4490E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .90

RF6	MANE	2.85	6.36	318.41	.14	3.00	6.36	318.00	.14	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9572E+00 EXCESS= .0000E+00 OUTFLOW= .9574E+00 BASIN STORAGE= .4040E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RF6	MANE	2.87	6.13	317.81	.13	3.00	6.13	318.00	.13	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9114E+00 EXCESS= .0000E+00 OUTFLOW= .9114E+00 BASIN STORAGE= .4854E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RNH7	MANE	1.38	1336.21	234.02	.77	3.00	1336.20	234.00	.77	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1880E+03 EXCESS= .0000E+00 OUTFLOW= .1874E+03 BASIN STORAGE= .6829E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .92

RNH7	MANE	1.47	1167.61	233.55	.71	3.00	1164.82	234.00	.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1718E+03 EXCESS= .0000E+00 OUTFLOW= .1711E+03 BASIN STORAGE= .6677E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .93

RNH7	MANE	1.48	1178.25	233.11	.71	3.00	1176.57	234.00	.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1731E+03 EXCESS= .0000E+00 OUTFLOW= .1726E+03 BASIN STORAGE= .6688E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RNH7	MANE	1.53	1033.76	233.87	.65	3.00	1033.05	234.00	.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1580E+03 EXCESS= .0000E+00 OUTFLOW= .1574E+03 BASIN STORAGE= .6543E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNH7	MANE	1.43	1116.70	234.12	.69	3.00	1116.24	234.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1666E+03 EXCESS= .0000E+00 OUTFLOW= .1660E+03 BASIN STORAGE= .6628E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89

RNH7	MANE	1.50	1096.42	233.83	.68	3.00	1095.22	234.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1644E+03 EXCESS= .0000E+00 OUTFLOW= .1637E+03 BASIN STORAGE= .6609E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RG6	MANE	2.56	98.48	226.84	1.12	3.00	98.43	228.00	1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7695E+01 EXCESS= .0000E+00 OUTFLOW= .7707E+01 BASIN STORAGE= .4536E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RG6	MANE	2.51	85.26	228.54	.97	3.00	84.94	228.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6643E+01 EXCESS= .0000E+00 OUTFLOW= .6652E+01 BASIN STORAGE= .4856E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RG6	MANE	2.55	86.29	228.00	.98	3.00	86.29	228.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6724E+01 EXCESS= .0000E+00 OUTFLOW= .6731E+01 BASIN STORAGE= .5602E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RG6	MANE	2.73	74.09	229.24	.84	3.00	73.54	228.00	.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5787E+01 EXCESS= .0000E+00 OUTFLOW= .5789E+01 BASIN STORAGE= .5564E-05 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RG6	MANE	2.57	81.04	228.83	.92	3.00	80.63	228.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6318E+01 EXCESS= .0000E+00 OUTFLOW= .6326E+01 BASIN STORAGE= .4259E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RG6	MANE	2.54	79.42	229.82	.90	3.00	79.27	228.00	.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6184E+01 EXCESS= .0000E+00 OUTFLOW= .6192E+01 BASIN STORAGE= .4341E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RNI7	MANE	1.01	1506.64	235.22	.79	3.00	1506.15	234.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2025E+03 EXCESS= .0000E+00 OUTFLOW= .2020E+03 BASIN STORAGE= .5273E+00 PERCENT ERROR= .0

```
          FOR PLAN = 1  RATIO=  .92
              RNI7  MANE         1.09   1310.90    235.16       .72      3.00   1307.35    234.00         .72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1841E+03 EXCESS= .0000E+00 OUTFLOW= .1837E+03 BASIN STORAGE= .5156E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .93
              RNI7  MANE         1.05   1324.93    235.39       .72      3.00   1321.34    234.00         .72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1856E+03 EXCESS= .0000E+00 OUTFLOW= .1851E+03 BASIN STORAGE= .5166E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
              RNI7  MANE         1.05   1161.60    235.84       .66      3.00   1153.22    237.00         .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1686E+03 EXCESS= .0000E+00 OUTFLOW= .1682E+03 BASIN STORAGE= .5053E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .90
              RNI7  MANE         1.11   1255.67    236.23       .69      3.00   1248.55    234.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1783E+03 EXCESS= .0000E+00 OUTFLOW= .1778E+03 BASIN STORAGE= .5119E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .89
              RNI7  MANE         1.04   1233.20    235.99       .69      3.00   1224.74    234.00         .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1759E+03 EXCESS= .0000E+00 OUTFLOW= .1755E+03 BASIN STORAGE= .5102E+00 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO= 1.00
               RH6  MANE         2.79     63.31    233.34       .79      3.00     63.16    234.00         .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5416E+01 EXCESS= .0000E+00 OUTFLOW= .5413E+01 BASIN STORAGE= .3767E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .92
               RH6  MANE         2.93     52.49    235.64       .66      3.00     52.35    234.00         .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4550E+01 EXCESS= .0000E+00 OUTFLOW= .4549E+01 BASIN STORAGE= .5208E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .93
               RH6  MANE         2.96     53.41    234.90       .67      3.00     53.19    234.00         .67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4617E+01 EXCESS= .0000E+00 OUTFLOW= .4615E+01 BASIN STORAGE= .6066E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
               RH6  MANE         3.00     44.15    235.54       .56      3.00     43.79    234.00         .56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3858E+01 EXCESS= .0000E+00 OUTFLOW= .3860E+01 BASIN STORAGE= .4863E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .90
               RH6  MANE         2.94     49.46    234.57       .62      3.00     49.26    234.00         .62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4286E+01 EXCESS= .0000E+00 OUTFLOW= .4289E+01 BASIN STORAGE= .3471E-05 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .89
               RH6  MANE         3.00     47.97    235.89       .61      3.00     47.76    234.00         .61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4178E+01 EXCESS= .0000E+00 OUTFLOW= .4177E+01 BASIN STORAGE= .3475E-05 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO= 1.00
              RNJ7  MANE         1.79   1642.24    237.85       .79      3.00   1635.31    237.00         .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2151E+03 EXCESS= .0000E+00 OUTFLOW= .2142E+03 BASIN STORAGE= .9351E+00 PERCENT ERROR=    .0
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FOR PLAN = 1 RATIO= .92

RNJ7	MANE	1.86	1423.65	238.18	.72	3.00	1413.18	237.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1948E+03 EXCESS= .0000E+00 OUTFLOW= .1941E+03 BASIN STORAGE= .9142E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93

RNJ7	MANE	1.75	1438.99	238.20	.72	3.00	1430.29	237.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1964E+03 EXCESS= .0000E+00 OUTFLOW= .1955E+03 BASIN STORAGE= .9160E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RNJ7	MANE	1.89	1251.98	238.61	.66	3.00	1248.46	240.00	.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1778E+03 EXCESS= .0000E+00 OUTFLOW= .1769E+03 BASIN STORAGE= .8963E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90

RNJ7	MANE	1.90	1358.20	238.65	.70	3.00	1350.47	240.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1884E+03 EXCESS= .0000E+00 OUTFLOW= .1877E+03 BASIN STORAGE= .9075E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RNJ7	MANE	1.77	1332.62	237.35	.68	3.00	1326.19	237.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1858E+03 EXCESS= .0000E+00 OUTFLOW= .1848E+03 BASIN STORAGE= .9051E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RJ6	MANE	2.44	119.93	224.44	1.21	3.00	119.57	225.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8601E+01 EXCESS= .0000E+00 OUTFLOW= .8616E+01 BASIN STORAGE= .5026E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92

RJ6	MANE	2.51	103.77	225.60	1.05	3.00	103.48	225.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7466E+01 EXCESS= .0000E+00 OUTFLOW= .7478E+01 BASIN STORAGE= .4490E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .93

RJ6	MANE	2.51	105.15	225.19	1.06	3.00	104.98	225.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7554E+01 EXCESS= .0000E+00 OUTFLOW= .7563E+01 BASIN STORAGE= .4959E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

RJ6	MANE	2.57	91.34	224.40	.92	3.00	91.19	225.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6539E+01 EXCESS= .0000E+00 OUTFLOW= .6552E+01 BASIN STORAGE= .5315E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .90

RJ6	MANE	2.62	98.86	225.62	1.00	3.00	98.46	225.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7115E+01 EXCESS= .0000E+00 OUTFLOW= .7125E+01 BASIN STORAGE= .4030E-05 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .89

RJ6	MANE	2.58	97.39	224.12	.98	3.00	97.10	225.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6970E+01 EXCESS= .0000E+00 OUTFLOW= .6981E+01 BASIN STORAGE= .3761E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= 1.00

RNK7	MANE	1.14	1803.14	239.33	.82	3.00	1793.79	240.00	.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2331E+03 EXCESS= .0000E+00 OUTFLOW= .2325E+03 BASIN STORAGE= .7615E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .92

RNK7 MANE 1.22 1559.65 239.99 .74 3.00 1559.61 240.00 .74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2104E+03 EXCESS= .0000E+00 OUTFLOW= .2098E+03 BASIN STORAGE= .7459E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93
RNK7 MANE 1.20 1580.82 239.23 .74 3.00 1576.85 240.00 .74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2122E+03 EXCESS= .0000E+00 OUTFLOW= .2115E+03 BASIN STORAGE= .7471E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86
RNK7 MANE 1.24 1372.14 239.83 .67 3.00 1371.82 240.00 .67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1915E+03 EXCESS= .0000E+00 OUTFLOW= .1907E+03 BASIN STORAGE= .7323E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .90
RNK7 MANE 1.17 1489.18 239.03 .71 3.00 1488.70 240.00 .71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2033E+03 EXCESS= .0000E+00 OUTFLOW= .2026E+03 BASIN STORAGE= .7409E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .89
RNK7 MANE 1.21 1466.24 239.25 .70 3.00 1463.30 240.00 .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2004E+03 EXCESS= .0000E+00 OUTFLOW= .1998E+03 BASIN STORAGE= .7387E+00 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00
RST1 MANE 1.91 1913.06 240.95 .78 3.00 1911.58 243.00 .77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2460E+03 EXCESS= .0000E+00 OUTFLOW= .2451E+03 BASIN STORAGE= .1346E+01 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .92
RST1 MANE 1.89 1653.03 243.97 .70 3.00 1648.41 243.00 .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2207E+03 EXCESS= .0000E+00 OUTFLOW= .2196E+03 BASIN STORAGE= .1319E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .93
RST1 MANE 1.89 1673.47 243.61 .70 3.00 1669.73 243.00 .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2226E+03 EXCESS= .0000E+00 OUTFLOW= .2213E+03 BASIN STORAGE= .1321E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86
RST1 MANE 2.01 1443.25 243.71 .63 3.00 1434.42 243.00 .63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1996E+03 EXCESS= .0000E+00 OUTFLOW= .1982E+03 BASIN STORAGE= .1295E+01 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= .90
RST1 MANE 1.92 1569.56 244.55 .67 3.00 1566.86 243.00 .67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2127E+03 EXCESS= .0000E+00 OUTFLOW= .2117E+03 BASIN STORAGE= .1310E+01 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .89
RST1 MANE 1.94 1540.48 244.58 .66 3.00 1536.56 243.00 .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2095E+03 EXCESS= .0000E+00 OUTFLOW= .2082E+03 BASIN STORAGE= .1307E+01 PERCENT ERROR= .0

1TABLE 1 STATION DBIN FLOW DBOUT FLOW
PLAN 1 1
RATIO 1.00 1.00

PER	DAY	MON	HRMN		
1	1		0000	.00	.00

2	1	0003	.00	.00
3	1	0006	.00	.00
4	1	0009	.00	.00
5	1	0012	.00	.00
6	1	0015	.00	.00
7	1	0018	.00	.00
8	1	0021	.00	.00
9	1	0024	.03	.00
10	1	0027	.16	.02
11	1	0030	.46	.07
12	1	0033	1.03	.20
13	1	0036	2.15	.46
14	1	0039	4.17	.95
15	1	0042	6.79	1.79
16	1	0045	8.73	2.89
17	1	0048	8.97	3.99
18	1	0051	8.65	4.88
19	1	0054	8.92	5.60
20	1	0057	11.63	6.46
21	1	0100	18.30	8.03
22	1	0103	25.80	10.61
23	1	0106	28.92	13.70
24	1	0109	28.37	16.45
25	1	0112	26.38	18.46
26	1	0115	24.18	19.72
27	1	0118	22.21	20.36
28	1	0121	20.86	20.58
29	1	0124	20.49	20.59
30	1	0127	21.11	20.63
31	1	0130	21.25	20.73
32	1	0133	21.34	20.84
33	1	0136	21.79	20.97
34	1	0139	23.01	21.24
35	1	0142	25.07	21.75
36	1	0145	27.91	22.63
37	1	0148	31.60	23.94
38	1	0151	36.39	25.79
39	1	0154	42.65	28.32
40	1	0157	49.73	31.61
41	1	0200	57.16	35.64
42	1	0203	63.66	40.20
43	1	0206	68.35	44.96
44	1	0209	70.44	49.46
45	1	0212	70.63	53.34
46	1	0215	70.00	56.01
47	1	0218	69.02	56.09
48	1	0221	68.07	56.16
49	1	0224	67.63	56.23
50	1	0227	67.82	56.30

1TABLE 1 (CONT.)		STATION	DBIN FLOW	DBOUT FLOW
		PLAN	1	1
		RATIO	1.00	1.00

PER	DAY	MON	HRMN		
51	1		0230	68.82	56.37
52	1		0233	70.73	56.44
53	1		0236	74.36	56.54
54	1		0239	80.79	56.66
55	1		0242	89.81	56.82
56	1		0245	100.86	57.05
57	1		0248	111.52	57.33
58	1		0251	119.33	57.66
59	1		0254	124.43	58.04
60	1		0257	127.20	58.39
61	1		0300	128.14	58.74
62	1		0303	128.92	59.10
63	1		0306	131.36	59.47
64	1		0309	137.28	59.85
65	1		0312	148.49	60.29
66	1		0315	166.89	60.88
67	1		0318	197.44	61.62
68	1		0321	247.78	62.55
69	1		0324	328.01	63.79
70	1		0327	455.28	64.86
71	1		0330	652.06	66.09
72	1		0333	932.16	67.28
73	1		0336	1271.18	68.47
74	1		0339	1633.15	69.75
75	1		0342	1961.45	71.00
76	1		0345	2197.61	72.33
77	1		0348	2319.21	73.72
78	1		0351	2323.78	75.08

79	1	0354	2232.41	76.33
80	1	0357	2079.34	77.49
81	1	0400	1894.79	78.48
82	1	0403	1701.11	79.34
83	1	0406	1513.90	80.09
84	1	0409	1339.71	80.75
85	1	0412	1182.52	81.28
86	1	0415	1042.53	81.74
87	1	0418	919.35	82.14
88	1	0421	812.18	82.48
89	1	0424	719.98	82.79
90	1	0427	642.65	83.05
91	1	0430	581.16	83.29
92	1	0433	536.10	83.50
93	1	0436	506.59	83.69
94	1	0439	491.54	83.86
95	1	0442	489.82	84.03
96	1	0445	499.00	84.20
97	1	0448	517.22	84.37
98	1	0451	541.76	84.56
99	1	0454	567.59	84.75
100	1	0457	588.84	84.96

1TABLE 1 (CONT.)	STATION	DBIN FLOW	DBOUT FLOW
	PLAN	1	1
	RATIO	1.00	1.00

PER	DAY	MON	HRMN		
101	1		0500	601.57	85.00
102	1		0503	603.82	85.00
103	1		0506	595.77	85.00
104	1		0509	578.37	85.00
105	1		0512	552.56	85.00
106	1		0515	519.62	85.00
107	1		0518	480.85	85.00
108	1		0521	437.89	85.00
109	1		0524	394.00	85.00
110	1		0527	350.78	85.00
111	1		0530	310.00	85.00
112	1		0533	272.75	85.00
113	1		0536	239.50	85.00
114	1		0539	210.28	85.00
115	1		0542	184.85	85.00
116	1		0545	163.30	85.00
117	1		0548	145.20	85.00
118	1		0551	129.93	85.00
119	1		0554	117.02	85.00
120	1		0557	106.14	85.00
121	1		0600	96.68	85.00
122	1		0603	88.52	85.00
123	1		0606	81.48	85.00
124	1		0609	75.21	85.00
125	1		0612	69.50	85.00
126	1		0615	64.30	85.00
127	1		0618	59.52	85.00
128	1		0621	55.02	85.00
129	1		0624	50.72	85.00
130	1		0627	46.54	85.00
131	1		0630	42.47	85.00
132	1		0633	38.53	85.00
133	1		0636	34.76	85.00
134	1		0639	31.20	85.00
135	1		0642	27.87	85.00
136	1		0645	24.82	85.00
137	1		0648	22.02	85.00
138	1		0651	19.47	85.00
139	1		0654	17.21	85.00
140	1		0657	15.17	85.00
141	1		0700	13.35	85.00
142	1		0703	11.76	85.00
143	1		0706	10.39	85.00
144	1		0709	9.17	85.00
145	1		0712	8.09	85.00
146	1		0715	7.16	85.00
147	1		0718	6.36	85.00
148	1		0721	5.65	85.00
149	1		0724	5.03	85.00
150	1		0727	4.49	85.00

1TABLE 1 (CONT.)	STATION	DBIN FLOW	DBOUT FLOW
	PLAN	1	1
	RATIO	1.00	1.00

PER	DAY	MON	HRMN		
151	1		0730	4.01	85.00
152	1		0733	3.59	85.00
153	1		0736	3.22	85.00
154	1		0739	2.90	85.00
155	1		0742	2.61	85.00
156	1		0745	2.37	85.00
157	1		0748	2.16	85.00
158	1		0751	1.95	85.00
159	1		0754	1.76	85.00
160	1		0757	1.61	85.00
161	1		0800	1.46	85.00
162	1		0803	1.33	85.00
163	1		0806	1.21	85.00
164	1		0809	1.11	85.00
165	1		0812	1.01	85.00
166	1		0815	.93	85.00
167	1		0818	.85	85.00
168	1		0821	.79	85.00
169	1		0824	.73	85.00
170	1		0827	.67	85.00
171	1		0830	.62	85.00
172	1		0833	.57	85.00
173	1		0836	.53	85.00
174	1		0839	.49	85.00
175	1		0842	.46	85.00
176	1		0845	.43	85.00
177	1		0848	.40	85.00
178	1		0851	.37	85.00
179	1		0854	.35	85.00
180	1		0857	.32	85.00
181	1		0900	.30	85.00
182	1		0903	.28	85.00
183	1		0906	.26	85.00
184	1		0909	.25	85.00
185	1		0912	.23	85.00
186	1		0915	.22	85.00
187	1		0918	.21	85.00
188	1		0921	.19	85.00
189	1		0924	.18	85.00
190	1		0927	.17	85.00
191	1		0930	.16	85.00
192	1		0933	.15	85.00
193	1		0936	.15	85.00
194	1		0939	.14	85.00
195	1		0942	.13	85.00
196	1		0945	.13	85.00
197	1		0948	.12	85.00
198	1		0951	.11	84.97
199	1		0954	.11	84.94
200	1		0957	.10	84.90

1TABLE 1 (CONT.)	STATION	DBIN FLOW	DBOUT FLOW
	PLAN	1	1
	RATIO	1.00	1.00

PER	DAY	MON	HRMN		
201	1		1000	.10	84.87
202	1		1003	.09	84.83
203	1		1006	.09	84.80
204	1		1009	.08	84.76
205	1		1012	.08	84.73
206	1		1015	.07	84.69
207	1		1018	.07	84.66
208	1		1021	.07	84.62
209	1		1024	.06	84.59
210	1		1027	.06	84.55
211	1		1030	.06	84.52
212	1		1033	.06	84.48
213	1		1036	.05	84.45
214	1		1039	.05	84.41
215	1		1042	.05	84.38
216	1		1045	.05	84.34
217	1		1048	.05	84.31
218	1		1051	.04	84.28
219	1		1054	.04	84.24
220	1		1057	.04	84.21
221	1		1100	.04	84.17
222	1		1103	.04	84.14
223	1		1106	.04	84.10
224	1		1109	.03	84.07

225	1	1112	.03	84.03
226	1	1115	.03	84.00
227	1	1118	.03	83.96
228	1	1121	.03	83.93
229	1	1124	.03	83.89
230	1	1127	.03	83.86
231	1	1130	.03	83.82
232	1	1133	.03	83.79
233	1	1136	.02	83.75
234	1	1139	.02	83.72
235	1	1142	.02	83.69
236	1	1145	.02	83.65
237	1	1148	.02	83.62
238	1	1151	.02	83.58
239	1	1154	.02	83.54
240	1	1157	.02	83.51
241	1	1200	.02	83.47
242	1	1203	.02	83.43
243	1	1206	.02	83.39
244	1	1209	.02	83.36
245	1	1212	.02	83.32
246	1	1215	.02	83.28
247	1	1218	.02	83.25
248	1	1221	.01	83.21
249	1	1224	.01	83.17
250	1	1227	.01	83.14

1TABLE 1 STATION DBIN FLOW DBOUT FLOW
(CONT.)
PLAN 1 1
RATIO 1.00 1.00

PER	DAY	MON	HRMN		
251	1		1230	.01	83.10
252	1		1233	.01	83.06
253	1		1236	.01	83.02
254	1		1239	.01	82.99
255	1		1242	.01	82.95
256	1		1245	.01	82.91
257	1		1248	.01	82.88
258	1		1251	.01	82.84
259	1		1254	.01	82.80
260	1		1257	.01	82.77
261	1		1300	.01	82.73
262	1		1303	.01	82.69
263	1		1306	.01	82.66
264	1		1309	.01	82.62
265	1		1312	.01	82.58
266	1		1315	.01	82.55
267	1		1318	.01	82.51
268	1		1321	.01	82.47
269	1		1324	.01	82.44
270	1		1327	.01	82.40
271	1		1330	.01	82.36
272	1		1333	.01	82.33
273	1		1336	.01	82.29
274	1		1339	.01	82.25
275	1		1342	.01	82.22
276	1		1345	.01	82.18
277	1		1348	.01	82.14
278	1		1351	.01	82.11
279	1		1354	.01	82.07
280	1		1357	.01	82.03
281	1		1400	.01	82.00
282	1		1403	.01	81.96
283	1		1406	.01	81.92
284	1		1409	.01	81.89
285	1		1412	.01	81.85
286	1		1415	.00	81.81
287	1		1418	.00	81.78
288	1		1421	.00	81.74
289	1		1424	.00	81.71
290	1		1427	.00	81.67
291	1		1430	.00	81.63
292	1		1433	.00	81.60
293	1		1436	.00	81.56
294	1		1439	.00	81.52
295	1		1442	.00	81.49
296	1		1445	.00	81.45
297	1		1448	.00	81.41
298	1		1451	.00	81.38
299	1		1454	.00	81.34
300	1		1457	.00	81.31

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             MAX       2323.78      85.00
             MIN           .00        .00
             AVE        156.94      71.01
1                                        HEC-1 INPUT                                        PAGE  1

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

             1
 *** WARNING *** ZZ-CARD MISSING
             2
             3          ZZ
1****************************************                                  ****************************************
 *                                      *                                  *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                  *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                  *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                  *          609 SECOND STREET           *
 *                                      *                                  *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05MAY06  TIME  11:48:10  *                                  *           (916) 756-1104             *
 *                                      *                                  *                                      *
 ****************************************                                  ****************************************



 *** HEC-1 ERROR 1 *** INVALID CARD IDENTIFICATION CODE OR CARD OUT OF SEQUENCE
      CARD NO.    1

      IT          HYDROGRAPH TIME DATA
                         NMIN           3  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1    0  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      1    0  ENDING DATE
                       NDTIME        1457  ENDING TIME
                       ICENT          19  CENTURY MARK

                    COMPUTATION INTERVAL     .05 HOURS
                         TOTAL TIME BASE   14.95 HOURS

            ENGLISH UNITS
                 DRAINAGE AREA         SQUARE MILES
                 PRECIPITATION DEPTH   INCHES
                 LENGTH, ELEVATION     FEET
                 FLOW                  CUBIC FEET PER SECOND
                 STORAGE VOLUME        ACRE-FEET
                 SURFACE AREA          ACRES
                 TEMPERATURE           DEGREES FAHRENHEIT

 *** HEC-1 ERROR 1 *** INVALID CARD IDENTIFICATION CODE OR CARD OUT OF SEQUENCE
      CARD NO.    2

                 SUBBASIN RUNOFF DATA

    0 BA           SUBBASIN CHARACTERISTICS
                         TAREA         .00  SUBBASIN AREA

                   PRECIPITATION DATA

    0 PB                 STORM         .00  BASIN TOTAL PRECIPITATION

    0 PI             INCREMENTAL PRECIPITATION PATTERN


    0 UI           INPUT UNITGRAPH,   0 ORDINATES,  VOLUME =  .00

                                                    ***

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

                                                HYDROGRAPH AT STATION     CST3

 ********************************************************************************************************************************************************************
                                                                                 *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                   *
         1     0000    1     .00     .00     .00         0.       *         1     0730  151     .00     .00     .00         0.
         1     0003    2     .00     .00     .00         0.       *         1     0733  152     .00     .00     .00         0.
         1     0006    3     .00     .00     .00         0.       *         1     0736  153     .00     .00     .00         0.
         1     0009    4     .00     .00     .00         0.       *         1     0739  154     .00     .00     .00         0.
         1     0012    5     .00     .00     .00         0.       *         1     0742  155     .00     .00     .00         0.
         1     0015    6     .00     .00     .00         0.       *         1     0745  156     .00     .00     .00         0.
         1     0018    7     .00     .00     .00         0.       *         1     0748  157     .00     .00     .00         0.
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1	0021	8	.00	.00	.00	0.	*	1	0751	158	.00	.00	.00	0.
1	0024	9	.00	.00	.00	0.	*	1	0754	159	.00	.00	.00	0.
1	0027	10	.00	.00	.00	0.	*	1	0757	160	.00	.00	.00	0.
1	0030	11	.00	.00	.00	0.	*	1	0800	161	.00	.00	.00	0.
1	0033	12	.00	.00	.00	0.	*	1	0803	162	.00	.00	.00	0.
1	0036	13	.00	.00	.00	0.	*	1	0806	163	.00	.00	.00	0.
1	0039	14	.00	.00	.00	0.	*	1	0809	164	.00	.00	.00	0.
1	0042	15	.00	.00	.00	0.	*	1	0812	165	.00	.00	.00	0.
1	0045	16	.00	.00	.00	0.	*	1	0815	166	.00	.00	.00	0.
1	0048	17	.00	.00	.00	0.	*	1	0818	167	.00	.00	.00	0.
1	0051	18	.00	.00	.00	0.	*	1	0821	168	.00	.00	.00	0.
1	0054	19	.00	.00	.00	0.	*	1	0824	169	.00	.00	.00	0.
1	0057	20	.00	.00	.00	0.	*	1	0827	170	.00	.00	.00	0.
1	0100	21	.00	.00	.00	0.	*	1	0830	171	.00	.00	.00	0.
1	0103	22	.00	.00	.00	0.	*	1	0833	172	.00	.00	.00	0.
1	0106	23	.00	.00	.00	0.	*	1	0836	173	.00	.00	.00	0.
1	0109	24	.00	.00	.00	0.	*	1	0839	174	.00	.00	.00	0.
1	0112	25	.00	.00	.00	0.	*	1	0842	175	.00	.00	.00	0.
1	0115	26	.00	.00	.00	0.	*	1	0845	176	.00	.00	.00	0.
1	0118	27	.00	.00	.00	0.	*	1	0848	177	.00	.00	.00	0.
1	0121	28	.00	.00	.00	0.	*	1	0851	178	.00	.00	.00	0.
1	0124	29	.00	.00	.00	0.	*	1	0854	179	.00	.00	.00	0.
1	0127	30	.00	.00	.00	0.	*	1	0857	180	.00	.00	.00	0.
1	0130	31	.00	.00	.00	0.	*	1	0900	181	.00	.00	.00	0.
1	0133	32	.00	.00	.00	0.	*	1	0903	182	.00	.00	.00	0.
1	0136	33	.00	.00	.00	0.	*	1	0906	183	.00	.00	.00	0.
1	0139	34	.00	.00	.00	0.	*	1	0909	184	.00	.00	.00	0.
1	0142	35	.00	.00	.00	0.	*	1	0912	185	.00	.00	.00	0.
1	0145	36	.00	.00	.00	0.	*	1	0915	186	.00	.00	.00	0.
1	0148	37	.00	.00	.00	0.	*	1	0918	187	.00	.00	.00	0.
1	0151	38	.00	.00	.00	0.	*	1	0921	188	.00	.00	.00	0.
1	0154	39	.00	.00	.00	0.	*	1	0924	189	.00	.00	.00	0.
1	0157	40	.00	.00	.00	0.	*	1	0927	190	.00	.00	.00	0.
1	0200	41	.00	.00	.00	0.	*	1	0930	191	.00	.00	.00	0.
1	0203	42	.00	.00	.00	0.	*	1	0933	192	.00	.00	.00	0.
1	0206	43	.00	.00	.00	0.	*	1	0936	193	.00	.00	.00	0.
1	0209	44	.00	.00	.00	0.	*	1	0939	194	.00	.00	.00	0.
1	0212	45	.00	.00	.00	0.	*	1	0942	195	.00	.00	.00	0.
1	0215	46	.00	.00	.00	0.	*	1	0945	196	.00	.00	.00	0.
1	0218	47	.00	.00	.00	0.	*	1	0948	197	.00	.00	.00	0.
1	0221	48	.00	.00	.00	0.	*	1	0951	198	.00	.00	.00	0.
1	0224	49	.00	.00	.00	0.	*	1	0954	199	.00	.00	.00	0.
1	0227	50	.00	.00	.00	0.	*	1	0957	200	.00	.00	.00	0.
1	0230	51	.00	.00	.00	0.	*	1	1000	201	.00	.00	.00	0.
1	0233	52	.00	.00	.00	0.	*	1	1003	202	.00	.00	.00	0.
1	0236	53	.00	.00	.00	0.	*	1	1006	203	.00	.00	.00	0.
1	0239	54	.00	.00	.00	0.	*	1	1009	204	.00	.00	.00	0.
1	0242	55	.00	.00	.00	0.	*	1	1012	205	.00	.00	.00	0.
1	0245	56	.00	.00	.00	0.	*	1	1015	206	.00	.00	.00	0.
1	0248	57	.00	.00	.00	0.	*	1	1018	207	.00	.00	.00	0.
1	0251	58	.00	.00	.00	0.	*	1	1021	208	.00	.00	.00	0.
1	0254	59	.00	.00	.00	0.	*	1	1024	209	.00	.00	.00	0.
1	0257	60	.00	.00	.00	0.	*	1	1027	210	.00	.00	.00	0.
1	0300	61	.00	.00	.00	0.	*	1	1030	211	.00	.00	.00	0.
1	0303	62	.00	.00	.00	0.	*	1	1033	212	.00	.00	.00	0.
1	0306	63	.00	.00	.00	0.	*	1	1036	213	.00	.00	.00	0.
1	0309	64	.00	.00	.00	0.	*	1	1039	214	.00	.00	.00	0.
1	0312	65	.00	.00	.00	0.	*	1	1042	215	.00	.00	.00	0.
1	0315	66	.00	.00	.00	0.	*	1	1045	216	.00	.00	.00	0.
1	0318	67	.00	.00	.00	0.	*	1	1048	217	.00	.00	.00	0.
1	0321	68	.00	.00	.00	0.	*	1	1051	218	.00	.00	.00	0.
1	0324	69	.00	.00	.00	0.	*	1	1054	219	.00	.00	.00	0.
1	0327	70	.00	.00	.00	0.	*	1	1057	220	.00	.00	.00	0.
1	0330	71	.00	.00	.00	0.	*	1	1100	221	.00	.00	.00	0.
1	0333	72	.00	.00	.00	0.	*	1	1103	222	.00	.00	.00	0.
1	0336	73	.00	.00	.00	0.	*	1	1106	223	.00	.00	.00	0.
1	0339	74	.00	.00	.00	0.	*	1	1109	224	.00	.00	.00	0.
1	0342	75	.00	.00	.00	0.	*	1	1112	225	.00	.00	.00	0.
1	0345	76	.00	.00	.00	0.	*	1	1115	226	.00	.00	.00	0.
1	0348	77	.00	.00	.00	0.	*	1	1118	227	.00	.00	.00	0.
1	0351	78	.00	.00	.00	0.	*	1	1121	228	.00	.00	.00	0.
1	0354	79	.00	.00	.00	0.	*	1	1124	229	.00	.00	.00	0.
1	0357	80	.00	.00	.00	0.	*	1	1127	230	.00	.00	.00	0.
1	0400	81	.00	.00	.00	0.	*	1	1130	231	.00	.00	.00	0.
1	0403	82	.00	.00	.00	0.	*	1	1133	232	.00	.00	.00	0.
1	0406	83	.00	.00	.00	0.	*	1	1136	233	.00	.00	.00	0.
1	0409	84	.00	.00	.00	0.	*	1	1139	234	.00	.00	.00	0.
1	0412	85	.00	.00	.00	0.	*	1	1142	235	.00	.00	.00	0.
1	0415	86	.00	.00	.00	0.	*	1	1145	236	.00	.00	.00	0.
1	0418	87	.00	.00	.00	0.	*	1	1148	237	.00	.00	.00	0.
1	0421	88	.00	.00	.00	0.	*	1	1151	238	.00	.00	.00	0.
1	0424	89	.00	.00	.00	0.	*	1	1154	239	.00	.00	.00	0.
1	0427	90	.00	.00	.00	0.	*	1	1157	240	.00	.00	.00	0.
1	0430	91	.00	.00	.00	0.	*	1	1200	241	.00	.00	.00	0.
1	0433	92	.00	.00	.00	0.	*	1	1203	242	.00	.00	.00	0.

1	0436	93	.00	.00	.00	0.	*	1	1206	243	.00	.00	.00	0.
1	0439	94	.00	.00	.00	0.	*	1	1209	244	.00	.00	.00	0.
1	0442	95	.00	.00	.00	0.	*	1	1212	245	.00	.00	.00	0.
1	0445	96	.00	.00	.00	0.	*	1	1215	246	.00	.00	.00	0.
1	0448	97	.00	.00	.00	0.	*	1	1218	247	.00	.00	.00	0.
1	0451	98	.00	.00	.00	0.	*	1	1221	248	.00	.00	.00	0.
1	0454	99	.00	.00	.00	0.	*	1	1224	249	.00	.00	.00	0.
1	0457	100	.00	.00	.00	0.	*	1	1227	250	.00	.00	.00	0.
1	0500	101	.00	.00	.00	0.	*	1	1230	251	.00	.00	.00	0.
1	0503	102	.00	.00	.00	0.	*	1	1233	252	.00	.00	.00	0.
1	0506	103	.00	.00	.00	0.	*	1	1236	253	.00	.00	.00	0.
1	0509	104	.00	.00	.00	0.	*	1	1239	254	.00	.00	.00	0.
1	0512	105	.00	.00	.00	0.	*	1	1242	255	.00	.00	.00	0.
1	0515	106	.00	.00	.00	0.	*	1	1245	256	.00	.00	.00	0.
1	0518	107	.00	.00	.00	0.	*	1	1248	257	.00	.00	.00	0.
1	0521	108	.00	.00	.00	0.	*	1	1251	258	.00	.00	.00	0.
1	0524	109	.00	.00	.00	0.	*	1	1254	259	.00	.00	.00	0.
1	0527	110	.00	.00	.00	0.	*	1	1257	260	.00	.00	.00	0.
1	0530	111	.00	.00	.00	0.	*	1	1300	261	.00	.00	.00	0.
1	0533	112	.00	.00	.00	0.	*	1	1303	262	.00	.00	.00	0.
1	0536	113	.00	.00	.00	0.	*	1	1306	263	.00	.00	.00	0.
1	0539	114	.00	.00	.00	0.	*	1	1309	264	.00	.00	.00	0.
1	0542	115	.00	.00	.00	0.	*	1	1312	265	.00	.00	.00	0.
1	0545	116	.00	.00	.00	0.	*	1	1315	266	.00	.00	.00	0.
1	0548	117	.00	.00	.00	0.	*	1	1318	267	.00	.00	.00	0.
1	0551	118	.00	.00	.00	0.	*	1	1321	268	.00	.00	.00	0.
1	0554	119	.00	.00	.00	0.	*	1	1324	269	.00	.00	.00	0.
1	0557	120	.00	.00	.00	0.	*	1	1327	270	.00	.00	.00	0.
1	0600	121	.00	.00	.00	0.	*	1	1330	271	.00	.00	.00	0.
1	0603	122	.00	.00	.00	0.	*	1	1333	272	.00	.00	.00	0.
1	0606	123	.00	.00	.00	0.	*	1	1336	273	.00	.00	.00	0.
1	0609	124	.00	.00	.00	0.	*	1	1339	274	.00	.00	.00	0.
1	0612	125	.00	.00	.00	0.	*	1	1342	275	.00	.00	.00	0.
1	0615	126	.00	.00	.00	0.	*	1	1345	276	.00	.00	.00	0.
1	0618	127	.00	.00	.00	0.	*	1	1348	277	.00	.00	.00	0.
1	0621	128	.00	.00	.00	0.	*	1	1351	278	.00	.00	.00	0.
1	0624	129	.00	.00	.00	0.	*	1	1354	279	.00	.00	.00	0.
1	0627	130	.00	.00	.00	0.	*	1	1357	280	.00	.00	.00	0.
1	0630	131	.00	.00	.00	0.	*	1	1400	281	.00	.00	.00	0.
1	0633	132	.00	.00	.00	0.	*	1	1403	282	.00	.00	.00	0.
1	0636	133	.00	.00	.00	0.	*	1	1406	283	.00	.00	.00	0.
1	0639	134	.00	.00	.00	0.	*	1	1409	284	.00	.00	.00	0.
1	0642	135	.00	.00	.00	0.	*	1	1412	285	.00	.00	.00	0.
1	0645	136	.00	.00	.00	0.	*	1	1415	286	.00	.00	.00	0.
1	0648	137	.00	.00	.00	0.	*	1	1418	287	.00	.00	.00	0.
1	0651	138	.00	.00	.00	0.	*	1	1421	288	.00	.00	.00	0.
1	0654	139	.00	.00	.00	0.	*	1	1424	289	.00	.00	.00	0.
1	0657	140	.00	.00	.00	0.	*	1	1427	290	.00	.00	.00	0.
1	0700	141	.00	.00	.00	0.	*	1	1430	291	.00	.00	.00	0.
1	0703	142	.00	.00	.00	0.	*	1	1433	292	.00	.00	.00	0.
1	0706	143	.00	.00	.00	0.	*	1	1436	293	.00	.00	.00	0.
1	0709	144	.00	.00	.00	0.	*	1	1439	294	.00	.00	.00	0.
1	0712	145	.00	.00	.00	0.	*	1	1442	295	.00	.00	.00	0.
1	0715	146	.00	.00	.00	0.	*	1	1445	296	.00	.00	.00	0.
1	0718	147	.00	.00	.00	0.	*	1	1448	297	.00	.00	.00	0.
1	0721	148	.00	.00	.00	0.	*	1	1451	298	.00	.00	.00	0.
1	0724	149	.00	.00	.00	0.	*	1	1454	299	.00	.00	.00	0.
1	0727	150	.00	.00	.00	0.	*	1	1457	300	.00	.00	.00	0.
							*							

****

TOTAL RAINFALL = .00, TOTAL LOSS = -.08, TOTAL EXCESS = .08

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)				
		(CFS)			
+ 0.	.00	0.	0.	0.	0.
		(INCHES) .000	.000	.000	.000
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = 6.42 SQ MI

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+					6-HOUR	24-HOUR	72-HOUR			
	HYDROGRAPH AT									
+		CST3	0.	.00	0.	0.	0.	6.42		

*** 2 ERROR(S) DETECTED BY HEC-1 ***

THE Louis Berger Group, INC.

APPENDIX D

Hydraulic Analysis

HEC-RAS Version 4.0 Beta
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

PROJECT DATA
Project Title: BUFFALO CHANNEL
Project File : BUFFALO.prj
Run Date and Time: 10/11/2006 12:36:54 PM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\BUFFALO.p01

Geometry Title: buffalo chnl
Geometry File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\BUFFALO.g01

Flow Title : existing buffalo
Flow File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\BUFFALO.f01

Plan Summary Information:
Number of: Cross Sections = 6 Multiple Openings = 0
Culverts = 1 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Supercritical Flow

FLOW DATA

Flow Title: existing buffalo
Flow File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\BUFFALO.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Buffalo Channel	1	19506.9	1494

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Buffalo Channel	1	PF 1	Normal S = 0.004	Normal S = 0.004

GEOMETRY DATA

Geometry Title: buffalo chnl
Geometry File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\BUFFALO.g01

CROSS SECTION

RIVER: Buffalo Channel
REACH: 1 RS: 19506.9

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2433.68	2	2433.64	14	2425.64	19	2425.44	24	2425.64
36	2433.64	41	2433.74						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	2	.015	36	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2	36	753	753	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2434.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.18	Wt. n-Val.		0.015	
W.S. Elev (ft)	2431.25	Reach Len. (ft)	753.00	753.00	753.00
Crit W.S. (ft)	2432.04	Flow Area (sq ft)		104.40	
E.G. Slope (ft/ft)	0.004001	Area (sq ft)		104.40	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	26.84	Top Width (ft)		26.84	
Vel Total (ft/s)	14.31	Avg. Vel. (ft/s)		14.31	
Max Chl Dpth (ft)	5.81	Hydr. Depth (ft)		3.89	
Conv. Total (cfs)	23618.7	Conv. (cfs)		23618.7	
Length Wtd. (ft)	753.00	Wetted Per. (ft)		30.25	
Min Ch El (ft)	2425.44	Shear (lb/sq ft)		0.86	
Alpha	1.00	Stream Power (lb/ft s)		12.34	
Frctn Loss (ft)		Cum Volume (acre-ft)		3.44	
C & E Loss (ft)		Cum SA (acres)		0.89	

CROSS SECTION

RIVER: Buffalo Channel
REACH: 1 RS: 18753.9

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2430.72	2	2430.68	14	2422.68	19	2422.48	24	2422.68
36	2430.68	41	2430.78						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	2	.015	36	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2	36	245	245	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2431.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.12	Wt. n-Val.		0.015	
W.S. Elev (ft)	2428.33	Reach Len. (ft)	245.00	245.00	245.00
Crit W.S. (ft)	2429.08	Flow Area (sq ft)		105.47	
E.G. Slope (ft/ft)	0.003892	Area (sq ft)		105.47	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	26.96	Top Width (ft)		26.96	
Vel Total (ft/s)	14.17	Avg. Vel. (ft/s)		14.17	
Max Chl Dpth (ft)	5.85	Hydr. Depth (ft)		3.91	
Conv. Total (cfs)	23948.0	Conv. (cfs)		23948.0	
Length Wtd. (ft)	245.00	Wetted Per. (ft)		30.39	
Min Ch El (ft)	2422.48	Shear (lb/sq ft)		0.84	
Alpha	1.00	Stream Power (lb/ft s)		11.94	
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)		1.63	
C & E Loss (ft)	0.02	Cum SA (acres)		0.43	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buffalo Channel
REACH: 1 RS: 18508.9

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2429.74	2	2429.7	14	2421.7	19	2421.5	24	2421.7
36	2429.7	41	2429.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	2	.015	36	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2	36	258.2	258.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2430.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.15	Wt. n-Val.		0.015	
W.S. Elev (ft)	2427.33	Reach Len. (ft)	258.20	258.20	258.20
Crit W.S. (ft)	2428.10	Flow Area (sq ft)		104.83	
E.G. Slope (ft/ft)	0.003957	Area (sq ft)		104.83	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	26.89	Top Width (ft)		26.89	
Vel Total (ft/s)	14.25	Avg. Vel. (ft/s)		14.25	
Max Chl Dpth (ft)	5.83	Hydr. Depth (ft)		3.90	
Conv. Total (cfs)	23751.7	Conv. (cfs)		23751.7	

Length Wtd. (ft)	258.20	Wetted Per. (ft)	30.31
Min Ch El (ft)	2421.50	Shear (lb/sq ft)	0.85
Alpha	1.00	Stream Power (lb/ft s)	12.18
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	1.03
C & E Loss (ft)	0.00	Cum SA (acres)	0.28

CROSS SECTION

RIVER: Buffalo Channel
REACH: 1 RS: 18250.7

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2428.66	2	2428.62	14	2420.62	19	2420.42	24	2420.62
36	2428.62	41	2428.72						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	2	.015	36	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2	36	29.8	29.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2429.43	Element			
Vel Head (ft)	3.23	Wt. n-Val.		0.015	
W.S. Elev (ft)	2426.20	Reach Len. (ft)	29.80	29.80	29.80
Crit W.S. (ft)	2427.02	Flow Area (sq ft)		103.56	
E.G. Slope (ft/ft)	0.004089	Area (sq ft)		103.56	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	26.75	Top Width (ft)		26.75	
Vel Total (ft/s)	14.43	Avg. Vel. (ft/s)		14.43	
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)		3.87	
Conv. Total (cfs)	23362.3	Conv. (cfs)		23362.3	
Length Wtd. (ft)	29.80	Wetted Per. (ft)		30.13	
Min Ch El (ft)	2420.42	Shear (lb/sq ft)		0.88	
Alpha	1.00	Stream Power (lb/ft s)		12.66	
Frctn Loss (ft)	1.04	Cum Volume (acre-ft)		0.42	
C & E Loss (ft)	0.01	Cum SA (acres)		0.12	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buffalo Channel
REACH: 1 RS: 18220.9

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2427.49	.1	2419.49	24.67	2419.49	24.68	2427.49

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	24.68	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	24.68	160.4	160.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2428.91	Element			
Vel Head (ft)	6.44	Wt. n-Val.		0.015	
W.S. Elev (ft)	2422.47	Reach Len. (ft)	160.40	160.40	160.40
Crit W.S. (ft)	2424.33	Flow Area (sq ft)		73.38	
E.G. Slope (ft/ft)	0.013124	Area (sq ft)		73.38	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	24.61	Top Width (ft)		24.61	
Vel Total (ft/s)	20.36	Avg. Vel. (ft/s)		20.36	
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)		2.98	
Conv. Total (cfs)	13041.0	Conv. (cfs)		13041.0	
Length Wtd. (ft)	160.40	Wetted Per. (ft)		30.54	
Min Ch El (ft)	2419.49	Shear (lb/sq ft)		1.97	
Alpha	1.00	Stream Power (lb/ft s)		40.08	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)		0.36	
C & E Loss (ft)	0.32	Cum SA (acres)		0.10	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CULVERT

RIVER: Buffalo Channel
REACH: 1 RS: 18155.6

INPUT

```
Description:
Distance from Upstream XS =       1
Deck/Roadway Width        =     120
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    2430 2427.49      25    2430 2427.49

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2427.49      .1 2419.49   24.67 2419.49   24.68 2427.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .015       0    .015   24.68    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   24.68            .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    2430 2427.49      30    2430 2427.49

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2429      .1  2418.8    30.1  2418.8    30.2    2430

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .015       0    .015    30.2    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    30.2            .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1           Box       8      12
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  1   145.4     .015     .015        0                  .2               1
Number of Barrels =  2
Upstream   Elevation =  2419.49
Centerline Stations
    Sta.    Sta.
    6.17   18.84
Downstream Elevation =  2418.8
Centerline Stations
    Sta.    Sta.
    7.53    20.2

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)       1494.00    Culv Full Len (ft)
  # Barrels                     2    Culv Vel US (ft/s)         17.86
  Q Barrel (cfs)            747.00    Culv Vel DS (ft/s)         15.60
  E.G. US. (ft)            2428.91    Culv Inv El Up (ft)      2419.49
  W.S. US. (ft)            2428.91    Culv Inv El Dn (ft)      2418.80
  E.G. DS (ft)             2425.20    Culv Frctn Ls (ft)          1.36
  W.S. DS (ft)             2422.79    Culv Exit Loss (ft)         1.37
  Delta EG (ft)               3.71    Culv Entr Loss (ft)         0.98
  Delta WS (ft)               6.12    Q Weir (cfs)
  E.G. IC (ft)                        Weir Sta Lft (ft)
  E.G. OC (ft)                        Weir Sta Rgt (ft)
  Culvert Control           Outlet    Weir Submerg
  Culv WS Inlet (ft)       2422.98    Weir Max Depth (ft)
  Culv WS Outlet (ft)      2422.79    Weir Avg Depth (ft)
  Culv Nml Depth (ft)         4.76    Weir Flow Area (sq ft)
  Culv Crt Depth (ft)         4.94    Min El Weir Flow (ft)    2430.01


CROSS SECTION


RIVER: Buffalo Channel
REACH: 1                  RS: 18060.5

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2429      .1  2418.8    30.1  2418.8    30.2    2430

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

0 .015 0 .015 30.2 .015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 30.2 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.20	Element			
Vel Head (ft)	2.41	Wt. n-Val.		0.015	
W.S. Elev (ft)	2422.79	Reach Len. (ft)			
Crit W.S. (ft)	2423.04	Flow Area (sq ft)		119.86	
E.G. Slope (ft/ft)	0.003421	Area (sq ft)		119.86	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	30.07	Top Width (ft)		30.07	
Vel Total (ft/s)	12.46	Avg. Vel. (ft/s)		12.46	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		3.99	
Conv. Total (cfs)	25544.4	Conv. (cfs)		25544.4	
Length Wtd. (ft)		Wetted Per. (ft)		37.98	
Min Ch El (ft)	2418.80	Shear (lb/sq ft)		0.67	
Alpha	1.00	Stream Power (lb/ft s)		8.40	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Buffalo Channel

Reach	River Sta.	n1	n2	n3
1	19506.9	.015	.015	.015
1	18753.9	.015	.015	.015
1	18508.9	.015	.015	.015
1	18250.7	.015	.015	.015
1	18220.9	.015	.015	.015
1	18155.6	Culvert		
1	18060.5	.015	.015	.015

SUMMARY OF REACH LENGTHS

River: Buffalo Channel

Reach	River Sta.	Left	Channel	Right
1	19506.9	753	753	753
1	18753.9	245	245	245
1	18508.9	258.2	258.2	258.2
1	18250.7	29.8	29.8	29.8
1	18220.9	160.4	160.4	160.4
1	18155.6	Culvert		
1	18060.5	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Buffalo Channel

Reach	River Sta.	Contr.	Expan.
1	19506.9	.1	.3
1	18753.9	.1	.3
1	18508.9	.1	.3
1	18250.7	.1	.3
1	18220.9	.1	.3
1	18155.6	Culvert	
1	18060.5	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 01

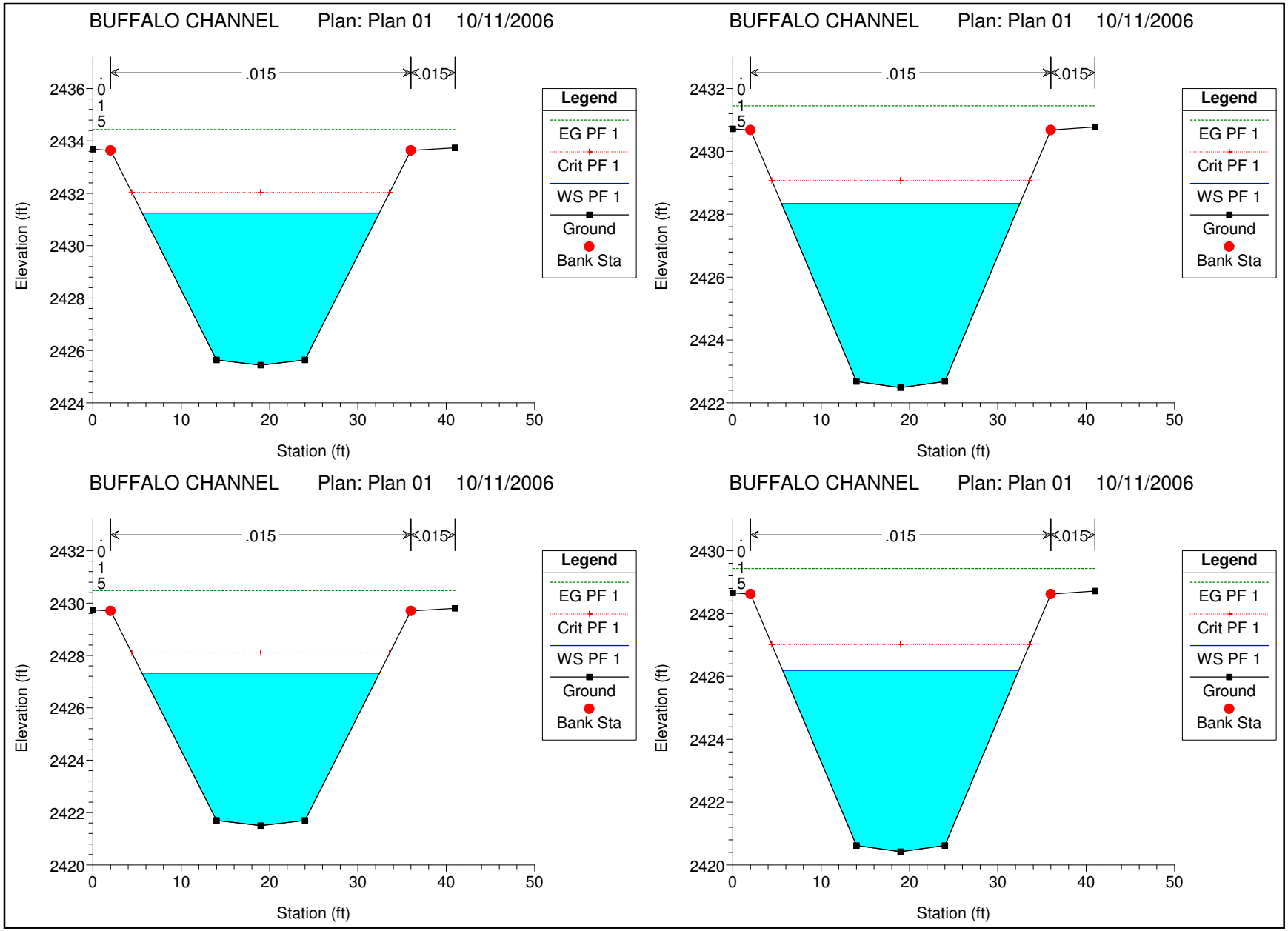
River: Buffalo Channel Reach: 1 RS: 18753.9 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buffalo Channel Reach: 1 RS: 18250.7 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buffalo Channel Reach: 1 RS: 18220.9 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

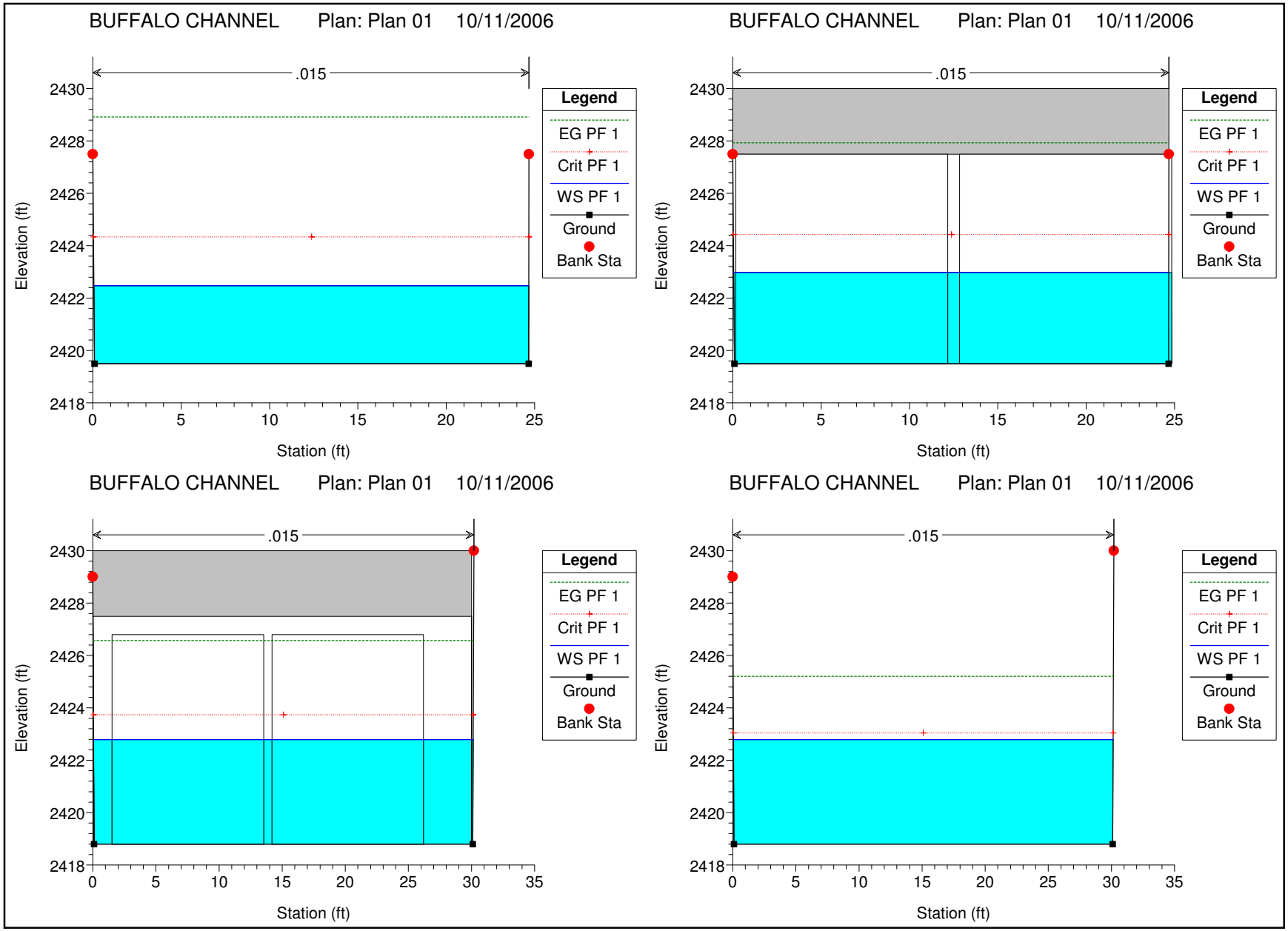
HEC-RAS Plan: Plan 01 River: Buffalo Channel Reach: 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	19506.9	PF 1	1494.00	2425.44	2431.25	2432.04	2434.43	0.004001	14.31	104.40	26.84	1.28
1	18753.9	PF 1	1494.00	2422.48	2428.33	2429.08	2431.45	0.003892	14.17	105.47	26.96	1.26
1	18508.9	PF 1	1494.00	2421.50	2427.33	2428.10	2430.48	0.003957	14.25	104.83	26.89	1.27
1	18250.7	PF 1	1494.00	2420.42	2426.20	2427.02	2429.43	0.004089	14.43	103.56	26.75	1.29
1	18220.9	PF 1	1494.00	2419.49	2422.47	2424.33	2428.91	0.013124	20.36	73.38	24.61	2.08
1	18155.6		Culvert									
1	18060.5	PF 1	1494.00	2418.80	2422.79	2423.04	2425.20	0.003421	12.46	119.86	30.07	2.08

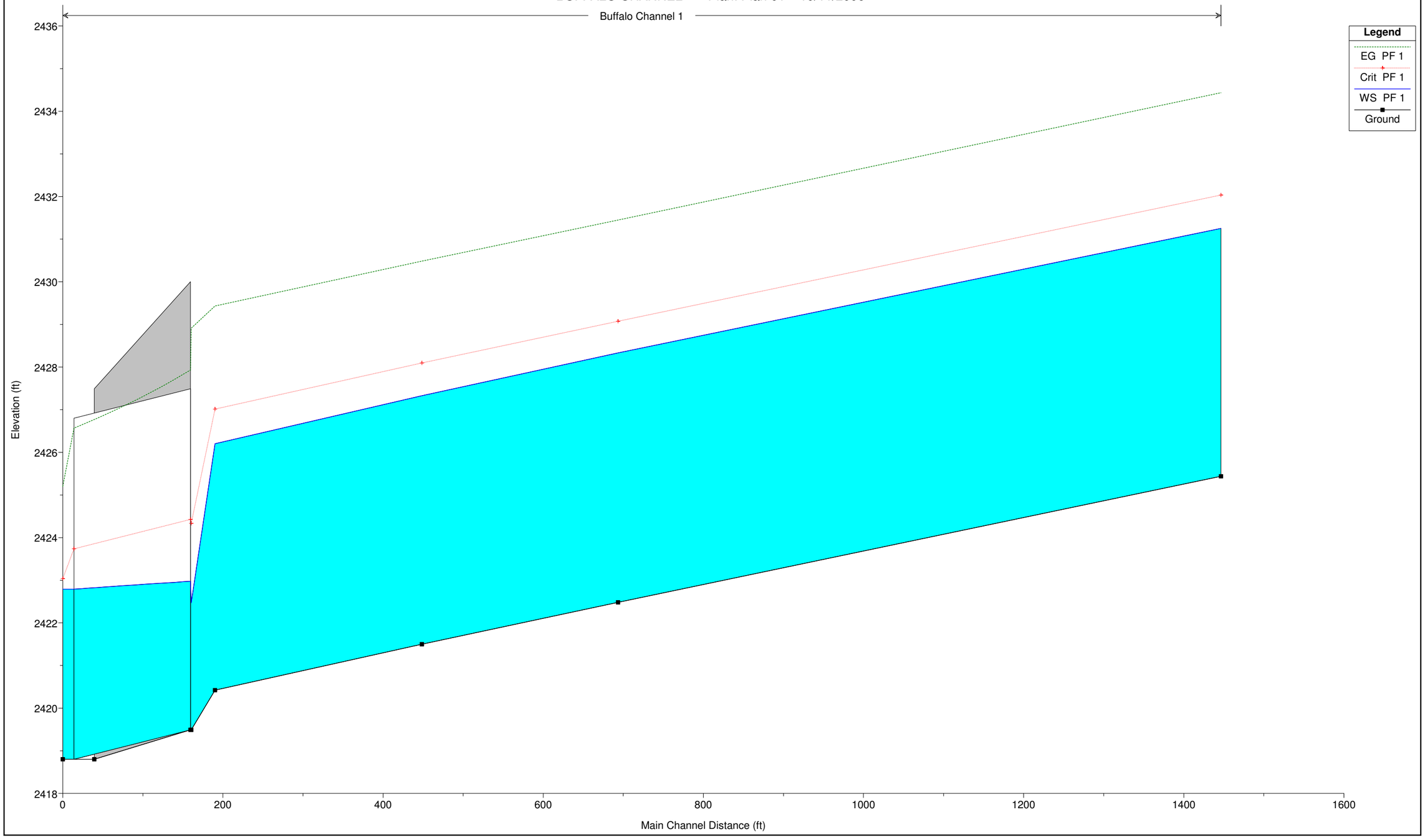
HEC-RAS Plan: Plan 01 River: Buffalo Channel Reach: 1 Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
1	19506.9	PF 1	2434.43	2431.25	3.18				1494.00		26.84
1	18753.9	PF 1	2431.45	2428.33	3.12	2.97	0.02		1494.00		26.96
1	18508.9	PF 1	2430.48	2427.33	3.15	0.96	0.00		1494.00		26.89
1	18250.7	PF 1	2429.43	2426.20	3.23	1.04	0.01		1494.00		26.75
1	18220.9	PF 1	2428.91	2422.47	6.44	0.20	0.32		1494.00		24.61
1	18155.6		Culvert								
1	18060.5	PF 1	2425.20	2422.79	2.41				1494.00		30.07


BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
.015
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
.015
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
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.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
BUFFALO CHANNEL Plan: Plan 01 10/11/2006
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

BUFFALO CHANNEL Plan: Plan 01 10/11/2006



HEC-RAS Version 4.0 Beta
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

PROJECT DATA
Project Title: flamingo wash sp trail
Project File : FWSPTR.prj
Run Date and Time: 10/11/2006 12:23:23 PM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\FWSPTR.p01

Geometry Title: existing conditions
Geometry File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\FWSPTR.g01

Flow Title : 100-year storm
Flow File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\FWSPTR.f01

Plan Summary Information:
Number of: Cross Sections = 84 Multiple Openings = 0
Culverts = 5 Inline Structures = 0
Bridges = 3 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: 100-year storm
Flow File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\FWSPTR.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Flamingo Wash Sp	Upper	18060.5	1577
Flamingo Wash Sp	lower	15591.5	1577
Old input channe	obsolete	1100.0	25

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Flamingo Wash Sp	Upper	PF 1	Normal S = 0.004	
Flamingo Wash Sp	lower	PF 1		Normal S = 0.01
Old input channe	obsolete	PF 1		Normal S = 0.01

GEOMETRY DATA

Geometry Title: existing conditions
Geometry File : C:\Documents and Settings\bmanescu\Desktop\c. HEC-RAS Computer Hydraulic Models\FWSPTR.g01

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Flamingo Wash Sp	Upper		Buffalo
Flamingo Wash Sp	lower	Buffalo	
Old input channe	obsolete	Buffalo	

JUNCTION INFORMATION

Name: Buffalo
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Flamingo Wash SpUpper	to Flamingo Wash Splower			0	0
Flamingo Wash SpUpper	to Old input channeobsolete			0	0

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18060.5

INPUT
Description: open channel between culverts
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2429	.1	2418.8	30.1	2418.8	30.2	2430

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	30.2	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	30.2	15	15	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2426.85	Element			
Vel Head (ft)	0.82	Wt. n-Val.		0.015	
W.S. Elev (ft)	2426.03	Reach Len. (ft)	15.00	15.00	15.00
Crit W.S. (ft)		Flow Area (sq ft)		217.40	
E.G. Slope (ft/ft)	0.000646	Area (sq ft)		217.40	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	30.14	Top Width (ft)		30.14	
Vel Total (ft/s)	7.25	Avg. Vel. (ft/s)		7.25	
Max Chl Dpth (ft)	7.23	Hydr. Depth (ft)		7.21	
Conv. Total (cfs)	62039.9	Conv. (cfs)		62039.9	
Length Wtd. (ft)	15.00	Wetted Per. (ft)		44.46	
Min Ch El (ft)	2418.80	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		1.43	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.05	17.09	
C & E Loss (ft)	0.06	Cum SA (acres)	0.12	4.11	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18045.5

INPUT
Description: culvert u/s face
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2429	.1	2418.7	33.4	2418.7	33.5	2430

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	33.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	33.5	38.9	38.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2426.78	Element			
Vel Head (ft)	0.62	Wt. n-Val.		0.015	
W.S. Elev (ft)	2426.16	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2422.80	Flow Area (sq ft)		248.85	
E.G. Slope (ft/ft)	0.000459	Area (sq ft)		248.85	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	33.44	Top Width (ft)		33.44	
Vel Total (ft/s)	6.34	Avg. Vel. (ft/s)		6.34	
Max Chl Dpth (ft)	7.46	Hydr. Depth (ft)		7.44	
Conv. Total (cfs)	73622.7	Conv. (cfs)		73622.7	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		48.22	
Min Ch El (ft)	2418.70	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.94	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	0.05	17.01	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	4.10	

BRIDGE

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18026.05

INPUT
Description: bridge at spanish gate street
Distance from Upstream XS = .1
Deck/Roadway Width = 38.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    2431  2428.7    33.5    2432  2428.7

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2429      .1  2418.7    33.4  2418.7    33.5    2430

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .015       0    .015    33.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    33.5            .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    2431  2428.7    33.5    2432  2428.7

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2426.6      .1  2418.6    24.9  2418.6      25  2426.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .015       0    .015      25    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0      25            .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1

  E.G. US. (ft)               2426.78    Element                 Inside BR US  Inside BR DS
  W.S. US. (ft)               2426.16    E.G. Elev (ft)             2426.78       2426.68
  Q Total (cfs)               1577.00    W.S. Elev (ft)             2426.16       2425.28
  Q Bridge (cfs)              1577.00    Crit W.S. (ft)             2422.84       2423.61
  Q Weir (cfs)                           Max Chl Dpth (ft)             7.46          6.68
  Weir Sta Lft (ft)                      Vel Total (ft/s)              6.34          9.49
  Weir Sta Rgt (ft)                      Flow Area (sq ft)           248.85        166.13
  Weir Submerg                           Froude # Chl                  0.41          0.65
  Weir Max Depth (ft)                    Specif Force (cu ft)       1237.63       1018.84
  Min El Weir Flow (ft)       2431.01    Hydr Depth (ft)               7.44          6.65
  Min El Prs (ft)             2428.70    W.P. Total (ft)              48.22         38.15
  Delta EG (ft)                  0.11    Conv. Total (cfs)          73622.7       43882.2
  Delta WS (ft)                  0.88    Top Width (ft)               33.44         24.97
  BR Open Area (sq ft)         251.70    Frctn Loss (ft)               0.03          0.00
  BR Open Vel (ft/s)             9.49    C & E Loss (ft)               0.08          0.00
  Coef of Q                              Shear Total (lb/sq ft)        0.15          0.35
  Br Sel Method          Energy only     Power Total (lb/ft s)         0.94          3.33


Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than
         the downstream energy.  This is not physically possible, the momentum answer has been
         disregarded.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 18006.6

INPUT
Description: culvert d/s face
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2426.6      .1  2418.6    24.9  2418.6      25  2426.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

0	.015	0	.015	25	.015	

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	25	13.1	14	14.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.68	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.40	Wt. n-Val.		0.015		
W.S. Elev (ft)	2425.28	Reach Len. (ft)	13.10	14.00	14.70	
Crit W.S. (ft)		Flow Area (sq ft)		166.12		
E.G. Slope (ft/ft)	0.001292	Area (sq ft)		166.12		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	24.97	Top Width (ft)		24.97		
Vel Total (ft/s)	9.49	Avg. Vel. (ft/s)		9.49		
Max Chl Dpth (ft)	6.68	Hydr. Depth (ft)		6.65		
Conv. Total (cfs)	43879.8	Conv. (cfs)		43879.8		
Length Wtd. (ft)	14.00	Wetted Per. (ft)		38.15		
Min Ch El (ft)	2418.60	Shear (lb/sq ft)		0.35		
Alpha	1.00	Stream Power (lb/ft s)		3.33		
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.05	16.83		
C & E Loss (ft)	0.30	Cum SA (acres)	0.12	4.07		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17992.6

INPUT
Description: culvert headwall d/s end
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2427	16.4	2425	23.6	2423	26.1	2419	42.9	2418.5
62.6	2419	63.3	2423	80.8	2429.2				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	23.6	.015	62.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	80.8	205.3	200.3	197.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.37	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.40	Wt. n-Val.		0.019		
W.S. Elev (ft)	2425.96	Reach Len. (ft)	205.30	200.30	197.30	
Crit W.S. (ft)		Flow Area (sq ft)		309.37		
E.G. Slope (ft/ft)	0.000605	Area (sq ft)		309.37		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	63.14	Top Width (ft)		63.14		
Vel Total (ft/s)	5.10	Avg. Vel. (ft/s)		5.10		
Max Chl Dpth (ft)	7.46	Hydr. Depth (ft)		4.90		
Conv. Total (cfs)	64125.6	Conv. (cfs)		64125.6		
Length Wtd. (ft)	200.30	Wetted Per. (ft)		69.57		
Min Ch El (ft)	2418.50	Shear (lb/sq ft)		0.17		
Alpha	1.00	Stream Power (lb/ft s)		0.86		
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	0.05	16.75		
C & E Loss (ft)	0.03	Cum SA (acres)	0.12	4.06		

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17792.3

INPUT
Description: short gabion sides, weeds bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	16.8	2420	18.8	2418	21.4	2417.5	30.4	2417.5
36.7	2418	39.1	2420	56.4	2422	79.9	2426.5		

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	79.9	124.2	113.5	100.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.20	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.31	Wt. n-Val.		0.025		
W.S. Elev (ft)	2425.89	Reach Len. (ft)	124.20	113.50	100.10	
Crit W.S. (ft)		Flow Area (sq ft)		350.64		
E.G. Slope (ft/ft)	0.000792	Area (sq ft)		350.64		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	76.37	Top Width (ft)		76.37		

Vel Total (ft/s)	4.50	Avg. Vel. (ft/s)		4.50	
Max Chl Dpth (ft)	8.39	Hydr. Depth (ft)		4.59	
Conv. Total (cfs)	56052.4	Conv. (cfs)		56052.4	
Length Wtd. (ft)	113.50	Wetted Per. (ft)		79.50	
Min Ch El (ft)	2417.50	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.98	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.05	15.23	
C & E Loss (ft)	0.04	Cum SA (acres)	0.12	3.74	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17678.8

INPUT
Description: short gabion lt side, weeds bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	16.6	2420	19.8	2417.3	42.9	2417.3	50	2418
60.3	2420	79.3	2425	82.9	2426				

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	82.9	144.1	139.7	132.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.027	
W.S. Elev (ft)	2425.92	Reach Len. (ft)	144.10	139.70	132.60
Crit W.S. (ft)		Flow Area (sq ft)		467.44	
E.G. Slope (ft/ft)	0.000390	Area (sq ft)		467.44	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	82.40	Top Width (ft)		82.40	
Vel Total (ft/s)	3.37	Avg. Vel. (ft/s)		3.37	
Max Chl Dpth (ft)	8.62	Hydr. Depth (ft)		5.67	
Conv. Total (cfs)	79884.6	Conv. (cfs)		79884.6	
Length Wtd. (ft)	139.70	Wetted Per. (ft)		85.42	
Min Ch El (ft)	2417.30	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.45	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.05	14.17	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	3.53	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17539.1

INPUT
Description: short gabion lt side, weeds bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	18.3	2420	22.1	2418	24.3	2417.2	49.8	2417.2
55.7	2418	79.9	2425	92	2426				

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	92	61.6	61.6	61.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.		0.027	
W.S. Elev (ft)	2425.87	Reach Len. (ft)	61.60	61.60	61.60
Crit W.S. (ft)		Flow Area (sq ft)		477.09	
E.G. Slope (ft/ft)	0.000406	Area (sq ft)		477.09	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	90.04	Top Width (ft)		90.04	
Vel Total (ft/s)	3.31	Avg. Vel. (ft/s)		3.31	
Max Chl Dpth (ft)	8.67	Hydr. Depth (ft)		5.30	
Conv. Total (cfs)	78272.7	Conv. (cfs)		78272.7	
Length Wtd. (ft)	61.60	Wetted Per. (ft)		92.69	
Min Ch El (ft)	2417.20	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.43	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	0.05	12.65	
C & E Loss (ft)	0.03	Cum SA (acres)	0.12	3.25	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17477.5

INPUT
Description: short gabion lt side, weeds bottom & sides

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	5	2424	19.4	2421.3	29.3	2421	33.1	2420
36.9	2419	38.4	2417.5	48.3	2417.1	66.1	2418	82.8	2420
100.6	2421	113	2422	117.4	2423	150	2425	170	2426

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	19.4	.015	29.3	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	170	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.99	Element			
Vel Head (ft)	0.07	Wt. n-Val.		0.026	
W.S. Elev (ft)	2425.92	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)		743.25	
E.G. Slope (ft/ft)	0.000195	Area (sq ft)		743.25	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	168.28	Top Width (ft)		168.28	
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)		2.12	
Max Chl Dpth (ft)	8.82	Hydr. Depth (ft)		4.42	
Conv. Total (cfs)	112832.9	Conv. (cfs)		112832.9	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		170.20	
Min Ch El (ft)	2417.10	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.11	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.05	11.79	
C & E Loss (ft)	0.01	Cum SA (acres)	0.12	3.07	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17457.5

INPUT
Description: u/s face of cart path culvert
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	10	2424	13.4	2417.1	16.9	2417	32	2417
47.7	2418.1	94.1	2426						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	10	.15	13.4	.015	47.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	94.1	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.98	Element			
Vel Head (ft)	0.16	Wt. n-Val.		0.038	
W.S. Elev (ft)	2425.82	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)	2421.06	Flow Area (sq ft)		494.94	
E.G. Slope (ft/ft)	0.000770	Area (sq ft)		494.94	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	92.14	Top Width (ft)		92.14	
Vel Total (ft/s)	3.19	Avg. Vel. (ft/s)		3.19	
Max Chl Dpth (ft)	8.82	Hydr. Depth (ft)		5.37	
Conv. Total (cfs)	56839.3	Conv. (cfs)		56839.3	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		97.31	
Min Ch El (ft)	2417.00	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.78	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.05	11.51	
C & E Loss (ft)		Cum SA (acres)	0.12	3.01	

CULVERT

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17450.5

INPUT
Description: cart path crossing 5
Distance from Upstream XS = .1
Deck/Roadway Width = 13.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 4

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
11.7	2419.8		13.8	2419.3		19.5	2419.1	
56	2419.3							

Upstream Bridge Cross Section Data
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	10	2424	13.4	2417.1	16.9	2417	32	2417
47.7	2418.1	94.1	2426						

Manning's n Values num= 4

```
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025      10     .15    13.4    .015    47.7    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    94.1             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       4
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    11.7  2419.8            13.8  2419.3            19.5  2419.1
      56  2419.3

Downstream Bridge Cross Section Data
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2426      10    2425    13.4    2417    16.9  2416.9      32  2416.9
    47.7    2418    94.1    2426

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025      10     .15    13.4    .015    47.7    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    94.1             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     1.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0    13.9     .013     .013        0                   .2               1
Number of Barrels =  6
Upstream   Elevation =  2417
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
      16      18      20      22      24      26
Downstream Elevation =  2416.9
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
      16      18      20      22      24      26

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)         25.60    Culv Full Len (ft)         13.90
  # Barrels                     6     Culv Vel US (ft/s)          2.41
  Q Barrel (cfs)             4.27     Culv Vel DS (ft/s)          2.41
  E.G. US. (ft)           2425.98     Culv Inv El Up (ft)      2417.00
  W.S. US. (ft)           2425.82     Culv Inv El Dn (ft)      2416.90
  E.G. DS (ft)            2425.94     Culv Frctn Ls (ft)          0.02
  W.S. DS (ft)            2425.78     Culv Exit Loss (ft)
  Delta EG (ft)              0.04     Culv Entr Loss (ft)         0.02
  Delta WS (ft)              0.04     Q Weir (cfs)             1551.40
  E.G. IC (ft)            2426.01     Weir Sta Lft (ft)           0.00
  E.G. OC (ft)            2425.98     Weir Sta Rgt (ft)          94.10
  Culvert Control          Outlet     Weir Submerg                0.97
  Culv WS Inlet (ft)      2418.50     Weir Max Depth (ft)         6.93
  Culv WS Outlet (ft)     2418.40     Weir Avg Depth (ft)         4.71
  Culv Nml Depth (ft)                 Weir Flow Area (sq ft)    442.78
  Culv Crt Depth (ft)        0.79     Min El Weir Flow (ft)    2419.11


Warning: The weir over culvert is submerged.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17443.5

INPUT
Description: d/s face of cart path culvert
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2426      10    2425    13.4    2417    16.9  2416.9      32  2416.9
    47.7    2418    94.1    2426

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025      10     .15    13.4    .015    47.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    94.1               20      20      20             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1

  E.G. Elev (ft)           2425.94    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.16    Wt. n-Val.                          0.040
  W.S. Elev (ft)           2425.78    Reach Len. (ft)           20.00      20.00      20.00
```

Crit W.S. (ft)		Flow Area (sq ft)			490.49
E.G. Slope (ft/ft)	0.000869	Area (sq ft)			490.49
Q Total (cfs)	1577.00	Flow (cfs)			1577.00
Top Width (ft)	90.61	Top Width (ft)			90.61
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)			3.22
Max Chl Dpth (ft)	8.88	Hydr. Depth (ft)			5.41
Conv. Total (cfs)	53496.8	Conv. (cfs)			53496.8
Length Wtd. (ft)	20.00	Wetted Per. (ft)			96.64
Min Ch El (ft)	2416.90	Shear (lb/sq ft)			0.28
Alpha	1.00	Stream Power (lb/ft s)			0.89
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		0.05	11.35
C & E Loss (ft)	0.02	Cum SA (acres)		0.12	2.98

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17423.5

INPUT
Description: lt side shrubs, gravel bottom, rt side grass

Station Elevation Data	num=	8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	3.4	2417	7.2	2416.8	33.6	2416.8	35.6	2417
37.7	2422	53.1	2427	70.7	2429.5				

Manning's n Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
0	.15	3.4	.027	37.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	70.7	28	28	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2425.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.		0.055	
W.S. Elev (ft)	2425.53	Reach Len. (ft)	28.00	28.00	28.00
Crit W.S. (ft)		Flow Area (sq ft)		325.90	
E.G. Slope (ft/ft)	0.003174	Area (sq ft)		325.90	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	48.38	Top Width (ft)		48.38	
Vel Total (ft/s)	4.84	Avg. Vel. (ft/s)		4.84	
Max Chl Dpth (ft)	8.73	Hydr. Depth (ft)		6.74	
Conv. Total (cfs)	27992.1	Conv. (cfs)		27992.1	
Length Wtd. (ft)	28.00	Wetted Per. (ft)		58.17	
Min Ch El (ft)	2416.80	Shear (lb/sq ft)		1.11	
Alpha	1.00	Stream Power (lb/ft s)		5.37	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	0.05	11.16	
C & E Loss (ft)	0.01	Cum SA (acres)	0.12	2.95	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17395.5

INPUT
Description: lt side shrubs, gravel bottom, rt side grass

Station Elevation Data	num=	8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	6.6	2417	8	2416.7	27.9	2416.7	30.6	2417
38	2422	46.5	2425	69.9	2429.5				

Manning's n Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
0	.15	8	.027	30.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	69.9	106.5	108.6	115.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2425.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.063	
W.S. Elev (ft)	2425.30	Reach Len. (ft)	106.50	108.60	115.10
Crit W.S. (ft)		Flow Area (sq ft)		289.59	
E.G. Slope (ft/ft)	0.005723	Area (sq ft)		289.59	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	47.56	Top Width (ft)		47.56	
Vel Total (ft/s)	5.45	Avg. Vel. (ft/s)		5.45	
Max Chl Dpth (ft)	8.60	Hydr. Depth (ft)		6.09	
Conv. Total (cfs)	20846.4	Conv. (cfs)		20846.4	
Length Wtd. (ft)	108.60	Wetted Per. (ft)		53.89	
Min Ch El (ft)	2416.70	Shear (lb/sq ft)		1.92	
Alpha	1.00	Stream Power (lb/ft s)		10.46	
Frctn Loss (ft)	1.01	Cum Volume (acre-ft)	0.05	10.96	
C & E Loss (ft)	0.05	Cum SA (acres)	0.12	2.92	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17286.9

INPUT
Description: lt side shrubs, gravel bottom, rt side grass
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2425.2	10.8	2417	14.8	2416.5	26.9	2416.5	29.6	2417
37	2422	45.7	2425	64.8	2429				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.15	10.8	.027	37	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	64.8	104.2	104.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2424.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.068	
W.S. Elev (ft)	2423.74	Reach Len. (ft)	104.20	104.20	104.20
Crit W.S. (ft)		Flow Area (sq ft)		200.06	
E.G. Slope (ft/ft)	0.017619	Area (sq ft)		200.06	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	40.12	Top Width (ft)		40.12	
Vel Total (ft/s)	7.88	Avg. Vel. (ft/s)		7.88	
Max Chl Dpth (ft)	7.24	Hydr. Depth (ft)		4.99	
Conv. Total (cfs)	11880.7	Conv. (cfs)		11880.7	
Length Wtd. (ft)	104.20	Wetted Per. (ft)		44.28	
Min Ch El (ft)	2416.50	Shear (lb/sq ft)		4.97	
Alpha	1.00	Stream Power (lb/ft s)		39.17	
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	0.05	10.35	
C & E Loss (ft)	0.17	Cum SA (acres)	0.12	2.81	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17182.7

INPUT
Description: lt side grass, gravel bottom & shrubs rt side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423.1	13.4	2421.1	33.6	2417.1	41.4	2416.2	54.6	2416.2
58.3	2417.1	65	2418.1	92.4	2425.1	116.2	2430.1		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	33.6	.027	58.3	.15	92.4	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	116.2	10	10	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2423.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.076	
W.S. Elev (ft)	2422.69	Reach Len. (ft)	10.00	10.00	10.00
Crit W.S. (ft)		Flow Area (sq ft)		311.38	
E.G. Slope (ft/ft)	0.011210	Area (sq ft)		311.38	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	80.21	Top Width (ft)		80.21	
Vel Total (ft/s)	5.06	Avg. Vel. (ft/s)		5.06	
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)		3.88	
Conv. Total (cfs)	14894.5	Conv. (cfs)		14894.5	
Length Wtd. (ft)	10.00	Wetted Per. (ft)		81.53	
Min Ch El (ft)	2416.20	Shear (lb/sq ft)		2.67	
Alpha	1.00	Stream Power (lb/ft s)		13.54	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	0.05	9.74	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	2.67	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17172.7

```
INPUT
Description: u/s face of cart path culvert
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2423    13.4    2421    33.6    2417    41.4  2416.1    54.6  2416.1
    58.3    2417      65    2418    92.4    2425   116.2    2430

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025    58.3     .15    92.4    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   116.2             63.9    63.9    63.9             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1

  E.G. Elev (ft)           2422.98    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.40    Wt. n-Val.                          0.076
  W.S. Elev (ft)           2422.58    Reach Len. (ft)           63.90      63.90      63.90
  Crit W.S. (ft)           2420.47    Flow Area (sq ft)                   310.24
  E.G. Slope (ft/ft)      0.011209    Area (sq ft)                        310.24
  Q Total (cfs)            1577.00    Flow (cfs)                         1577.00
  Top Width (ft)             80.06    Top Width (ft)                      80.06
  Vel Total (ft/s)            5.08    Avg. Vel. (ft/s)                     5.08
  Max Chl Dpth (ft)           6.47    Hydr. Depth (ft)                     3.88
  Conv. Total (cfs)        14895.5    Conv. (cfs)                        14895.5
  Length Wtd. (ft)           63.90    Wetted Per. (ft)                    81.38
  Min Ch El (ft)           2416.10    Shear (lb/sq ft)                     2.67
  Alpha                       1.00    Stream Power (lb/ft s)              13.56
  Frctn Loss (ft)                     Cum Volume (acre-ft)        0.05     9.67
  C & E Loss (ft)                     Cum SA (acres)              0.12     2.65


CULVERT


RIVER: Flamingo Wash Sp
REACH: Upper             RS: 17140.8

INPUT
Description: cart path crossing 4
Distance from Upstream XS =      .1
Deck/Roadway Width        =    63.7
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    27.6  2418.2            65.3  2417.9

Upstream Bridge Cross Section Data
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2423    13.4    2421    33.6    2417    41.4  2416.1    54.6  2416.1
    58.3    2417      65    2418    92.4    2425   116.2    2430

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025    58.3     .15    92.4    .027

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   116.2             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    29.6  2417.6            75.8  2417.6

Downstream Bridge Cross Section Data
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2423.4    10.3  2420.1    33.7  2417.1    56.7  2416.1    62.9    2416
    68.5  2416.1    88.1  2420.1   110.7  2423.1     123  2424.1

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .025    68.5    .027

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0     123             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     1.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0    63.8     .013     .013        0                  .2                1
Number of Barrels =  6
Upstream   Elevation =  2416
```

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
41.9	43.9	45.9	47.9	49.9	51.9

Downstream Elevation = 2415.9

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
57.9	59.9	61.9	63.9	65.9	67.9

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	76.21	Culv Full Len (ft)	63.80
# Barrels	6	Culv Vel US (ft/s)	7.19
Q Barrel (cfs)	12.70	Culv Vel DS (ft/s)	7.19
E.G. US. (ft)	2422.98	Culv Inv El Up (ft)	2416.00
W.S. US. (ft)	2422.58	Culv Inv El Dn (ft)	2415.90
E.G. DS (ft)	2421.56	Culv Frctn Ls (ft)	0.93
W.S. DS (ft)	2421.08	Culv Exit Loss (ft)	0.32
Delta EG (ft)	1.42	Culv Entr Loss (ft)	0.16
Delta WS (ft)	1.49	Q Weir (cfs)	1500.79
E.G. IC (ft)	2422.71	Weir Sta Lft (ft)	0.44
E.G. OC (ft)	2422.98	Weir Sta Rgt (ft)	84.31
Culvert Control	Outlet	Weir Submerg	0.53
Culv WS Inlet (ft)	2417.50	Weir Max Depth (ft)	5.03
Culv WS Outlet (ft)	2417.40	Weir Avg Depth (ft)	3.46
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	290.17
Culv Crt Depth (ft)	1.34	Min El Weir Flow (ft)	2417.92

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17108.8

INPUT
Description: d/s face of cart path culvert
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423.4	10.3	2420.1	33.7	2417.1	56.7	2416.1	62.9	2416
68.5	2416.1	88.1	2420.1	110.7	2423.1	123	2424.1		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	68.5	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	123	33	33	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2421.56	Element			
Vel Head (ft)	0.48	Wt. n-Val.		0.025	
W.S. Elev (ft)	2421.08	Reach Len. (ft)	33.00	33.00	33.00
Crit W.S. (ft)		Flow Area (sq ft)		283.97	
E.G. Slope (ft/ft)	0.001829	Area (sq ft)		283.97	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	88.24	Top Width (ft)		88.24	
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)		5.55	
Max Chl Dpth (ft)	5.08	Hydr. Depth (ft)		3.22	
Conv. Total (cfs)	36871.2	Conv. (cfs)		36871.2	
Length Wtd. (ft)	33.00	Wetted Per. (ft)		89.08	
Min Ch El (ft)	2416.00	Shear (lb/sq ft)		0.36	
Alpha	1.00	Stream Power (lb/ft s)		2.02	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.05	9.23	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	2.53	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17098.8

INPUT
Description: lt side grass, gravel bottom & rt side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423.3	10.3	2420	33.7	2417	56.7	2416	62.9	2415.9
68.5	2416	88.1	2420	110.7	2423	123	2424		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	56.7	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	123	33	33	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2421.49	Element			
Vel Head (ft)	0.46	Wt. n-Val.		0.026	
W.S. Elev (ft)	2421.03	Reach Len. (ft)	33.00	33.00	33.00
Crit W.S. (ft)		Flow Area (sq ft)		288.34	
E.G. Slope (ft/ft)	0.001897	Area (sq ft)		288.34	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	88.77	Top Width (ft)		88.77	
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)		5.47	
Max Chl Dpth (ft)	5.13	Hydr. Depth (ft)		3.25	
Conv. Total (cfs)	36210.8	Conv. (cfs)		36210.8	

Length Wtd. (ft)	33.00	Wetted Per. (ft)			89.62
Min Ch El (ft)	2415.90	Shear (lb/sq ft)			0.38
Alpha	1.00	Stream Power (lb/ft s)			2.08
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		0.05	9.02
C & E Loss (ft)	0.02	Cum SA (acres)		0.12	2.46

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17065.8

INPUT
Description: shrubs left side, gravel bottom, grass right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423	11.3	2420.3	25.4	2417	40	2416	51.8	2415.5
61.8	2416	96.3	2424	123	2424.7				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.027	11.3	.15	25.4	.027	61.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	123	52.5	66.8	84.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2421.35	Element		Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.			0.060	
W.S. Elev (ft)	2420.71	Reach Len. (ft)		52.50	66.80	84.90
Crit W.S. (ft)		Flow Area (sq ft)			246.93	
E.G. Slope (ft/ft)	0.013430	Area (sq ft)			246.93	
Q Total (cfs)	1577.00	Flow (cfs)			1577.00	
Top Width (ft)	72.54	Top Width (ft)			72.54	
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)			6.39	
Max Chl Dpth (ft)	5.21	Hydr. Depth (ft)			3.40	
Conv. Total (cfs)	13607.7	Conv. (cfs)			13607.7	
Length Wtd. (ft)	66.80	Wetted Per. (ft)			73.57	
Min Ch El (ft)	2415.50	Shear (lb/sq ft)			2.81	
Alpha	1.00	Stream Power (lb/ft s)			17.97	
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)		0.05	8.81	
C & E Loss (ft)	0.13	Cum SA (acres)		0.12	2.40	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16999.0

INPUT
Description: shrubs left side, gravel bottom, grass right side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2427	15.2	2420	25.6	2420	33.8	2416	38.8	2415.5
49.8	2415.3	62.6	2415.5	70.4	2416	125.4	2417		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.027	15.2	.015	25.6	.15	38.8	.027	70.4	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	125.4	41	42.5	43	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2420.93	Element		Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.			0.048	
W.S. Elev (ft)	2420.74	Reach Len. (ft)		41.00	42.50	43.00
Crit W.S. (ft)		Flow Area (sq ft)			455.28	
E.G. Slope (ft/ft)	0.002026	Area (sq ft)			455.28	
Q Total (cfs)	1577.00	Flow (cfs)			1577.00	
Top Width (ft)	111.81	Top Width (ft)			111.81	
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)			3.46	
Max Chl Dpth (ft)	5.44	Hydr. Depth (ft)			4.07	
Conv. Total (cfs)	35037.5	Conv. (cfs)			35037.5	
Length Wtd. (ft)	42.50	Wetted Per. (ft)			116.70	
Min Ch El (ft)	2415.30	Shear (lb/sq ft)			0.49	
Alpha	1.00	Stream Power (lb/ft s)			1.71	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)		0.05	8.28	
C & E Loss (ft)	0.05	Cum SA (acres)		0.12	2.26	

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp

REACH: Upper RS: 16956.5

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426.5	25.6	2417	34.5	2416	47.6	2415	53.6	2414.9
62.3	2415	68.8	2416	89	2422				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47.6	.027	62.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	89	196.6	208	217.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2420.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.025	
W.S. Elev (ft)	2420.12	Reach Len. (ft)	196.60	208.00	217.70
Crit W.S. (ft)		Flow Area (sq ft)		240.69	
E.G. Slope (ft/ft)	0.002281	Area (sq ft)		240.69	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	65.50	Top Width (ft)		65.50	
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)		6.55	
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)		3.67	
Conv. Total (cfs)	33022.3	Conv. (cfs)		33022.3	
Length Wtd. (ft)	208.00	Wetted Per. (ft)		66.83	
Min Ch El (ft)	2414.90	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		3.36	
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	0.05	7.94	
C & E Loss (ft)	0.09	Cum SA (acres)	0.12	2.17	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16748.5

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2422.5	34.4	2415	35	2414	41.2	2413.3	51.1	2413.3
54.1	2414	90.4	2424						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	41.2	.027	51.1	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	90.4	225.8	230.7	239.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2419.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.55	Wt. n-Val.		0.025	
W.S. Elev (ft)	2418.40	Reach Len. (ft)	225.80	230.70	239.80
Crit W.S. (ft)	2418.40	Flow Area (sq ft)		158.06	
E.G. Slope (ft/ft)	0.006747	Area (sq ft)		158.06	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	51.25	Top Width (ft)		51.25	
Vel Total (ft/s)	9.98	Avg. Vel. (ft/s)		9.98	
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)		3.08	
Conv. Total (cfs)	19198.4	Conv. (cfs)		19198.4	
Length Wtd. (ft)	230.70	Wetted Per. (ft)		52.89	
Min Ch El (ft)	2413.30	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)		12.56	
Frctn Loss (ft)	1.27	Cum Volume (acre-ft)	0.05	6.98	
C & E Loss (ft)	0.11	Cum SA (acres)	0.12	1.89	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16517.8

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2420	25.2	2413	32.5	2412	36.6	2411.9	40.7	2412
52.5	2413	71.1	2419	88.2	2422				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	32.5	.027	40.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	88.2	390	390	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2418.18	Element			
Vel Head (ft)	1.18	Wt. n-Val.		0.025	
W.S. Elev (ft)	2417.00	Reach Len. (ft)	390.00	390.00	390.00
Crit W.S. (ft)		Flow Area (sq ft)		180.89	
E.G. Slope (ft/ft)	0.004546	Area (sq ft)		180.89	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	54.09	Top Width (ft)		54.09	
Vel Total (ft/s)	8.72	Avg. Vel. (ft/s)		8.72	
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)		3.34	
Conv. Total (cfs)	23388.4	Conv. (cfs)		23388.4	
Length Wtd. (ft)	390.00	Wetted Per. (ft)		55.38	
Min Ch El (ft)	2411.90	Shear (lb/sq ft)		0.93	
Alpha	1.00	Stream Power (lb/ft s)		8.08	
Frctn Loss (ft)	1.51	Cum Volume (acre-ft)	0.05	6.09	
C & E Loss (ft)	0.08	Cum SA (acres)	0.12	1.61	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16127.8

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2417	23.5	2411	30.4	2410	47.6	2411	83.2	2421

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	30.4	.027	47.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	83.2	96.3	92.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2416.59	Element			
Vel Head (ft)	0.90	Wt. n-Val.		0.026	
W.S. Elev (ft)	2415.68	Reach Len. (ft)	96.30	92.80	92.80
Crit W.S. (ft)		Flow Area (sq ft)		206.83	
E.G. Slope (ft/ft)	0.003340	Area (sq ft)		206.83	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	59.10	Top Width (ft)		59.10	
Vel Total (ft/s)	7.62	Avg. Vel. (ft/s)		7.62	
Max Chl Dpth (ft)	5.68	Hydr. Depth (ft)		3.50	
Conv. Total (cfs)	27285.4	Conv. (cfs)		27285.4	
Length Wtd. (ft)	92.80	Wetted Per. (ft)		60.44	
Min Ch El (ft)	2410.00	Shear (lb/sq ft)		0.71	
Alpha	1.00	Stream Power (lb/ft s)		5.44	
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	0.05	4.35	
C & E Loss (ft)	0.21	Cum SA (acres)	0.12	1.10	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16035.0

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2417	33.7	2410	43.6	2409.9	64	2409.9	71.8	2410
121.9	2419								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	43.6	.027	64	.025	71.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.9	106.2	119.3	133.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.026	
W.S. Elev (ft)	2416.06	Reach Len. (ft)	106.20	119.30	133.30
Crit W.S. (ft)		Flow Area (sq ft)		424.31	
E.G. Slope (ft/ft)	0.000560	Area (sq ft)		424.31	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	101.00	Top Width (ft)		101.00	
Vel Total (ft/s)	3.72	Avg. Vel. (ft/s)		3.72	
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)		4.20	
Conv. Total (cfs)	66630.8	Conv. (cfs)		66630.8	
Length Wtd. (ft)	119.24	Wetted Per. (ft)		102.16	
Min Ch El (ft)	2409.90	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.54	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.05	3.68	
C & E Loss (ft)	0.02	Cum SA (acres)	0.12	0.93	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15915.7

INPUT
Description: gravel bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416.5	0	2415.1	12.4	2414	44.5	2410	53.2	2409
63.6	2408.8	76.7	2409	83.1	2410	123.5	2419		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	123.5	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.027	0.027	
W.S. Elev (ft)	2416.04	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)	19.04	496.88	
E.G. Slope (ft/ft)	0.000445	Area (sq ft)	19.04	496.88	
Q Total (cfs)	1577.00	Flow (cfs)	13.38	1563.62	
Top Width (ft)	150.63	Top Width (ft)	40.40	110.23	
Vel Total (ft/s)	3.06	Avg. Vel. (ft/s)	0.70	3.15	
Max Chl Dpth (ft)	7.24	Hydr. Depth (ft)	0.47	4.51	
Conv. Total (cfs)	74764.5	Conv. (cfs)	634.5	74130.0	
Length Wtd. (ft)	20.00	Wetted Per. (ft)	40.41	111.33	
Min Ch El (ft)	2408.80	Shear (lb/sq ft)	0.01	0.12	
Alpha	1.05	Stream Power (lb/ft s)	0.01	0.39	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.03	2.42	
C & E Loss (ft)	0.00	Cum SA (acres)	0.07	0.65	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15895.7

INPUT
Description: u/s face of cart path
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.2	17.7	2414.2	31.6	2412.2	51.6	2410.2
57.8	2409.2	65.1	2408.7	72.4	2409.2	86.8	2410.2	121.6	2419.2

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.027	0.027	
W.S. Elev (ft)	2416.00	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)	2412.94	Flow Area (sq ft)	24.16	455.98	
E.G. Slope (ft/ft)	0.000583	Area (sq ft)	24.16	455.98	
Q Total (cfs)	1577.00	Flow (cfs)	17.50	1559.50	
Top Width (ft)	169.24	Top Width (ft)	60.00	109.24	
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)	0.72	3.42	
Max Chl Dpth (ft)	7.30	Hydr. Depth (ft)	0.40	4.17	
Conv. Total (cfs)	65325.3	Conv. (cfs)	725.1	64600.2	
Length Wtd. (ft)	73.80	Wetted Per. (ft)	60.01	110.40	
Min Ch El (ft)	2408.70	Shear (lb/sq ft)	0.01	0.15	
Alpha	1.07	Stream Power (lb/ft s)	0.01	0.51	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.02	2.20	
C & E Loss (ft)		Cum SA (acres)	0.05	0.59	

CULVERT

RIVER: Flamingo Wash Sp

REACH: Upper RS: 15888.2

INPUT
Description: cart path crossing 3
Distance from Upstream XS = .1
Deck/Roadway Width = 73.6
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
22	2413.3	100.8	2413.4

Upstream Bridge Cross Section Data
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.2	17.7	2414.2	31.6	2412.2	51.6	2410.2
57.8	2409.2	65.1	2408.7	72.4	2409.2	86.8	2410.2	121.6	2419.2

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	121.6	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
22	2413.3	100.8	2413.4

Downstream Bridge Cross Section Data
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.1	17.7	2414.1	31.6	2412.1	51.6	2410.1
57.8	2409.1	65.1	2408.6	72.4	2409.1	86.8	2410.1	121.6	2419.1

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	121.6	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Circular	3.5	

FHWA Chart # 55- Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
0	73.7	.013	.013	0	.2	1

Number of Barrels = 6
Upstream Elevation = 2409.2
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
55.1	59.1	63.1	67.1	71.1	75.1

Downstream Elevation = 2409.1
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
55.1	59.1	63.1	67.1	71.1	75.1

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	380.08	Culv Full Len (ft)	73.70
# Barrels	6	Culv Vel US (ft/s)	6.58
Q Barrel (cfs)	63.35	Culv Vel DS (ft/s)	6.58
E.G. US. (ft)	2416.19	Culv Inv El Up (ft)	2409.20
W.S. US. (ft)	2416.00	Culv Inv El Dn (ft)	2409.10
E.G. DS (ft)	2415.37	Culv Frctn Ls (ft)	0.29
W.S. DS (ft)	2415.09	Culv Exit Loss (ft)	0.39
Delta EG (ft)	0.82	Culv Entr Loss (ft)	0.13
Delta WS (ft)	0.91	Q Weir (cfs)	1196.92
E.G. IC (ft)	2415.69	Weir Sta Lft (ft)	-60.00
E.G. OC (ft)	2416.19	Weir Sta Rgt (ft)	109.95
Culvert Control	Outlet	Weir Submerg	0.53
Culv WS Inlet (ft)	2412.70	Weir Max Depth (ft)	2.89
Culv WS Outlet (ft)	2412.60	Weir Avg Depth (ft)	1.80
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	305.37
Culv Crt Depth (ft)	2.49	Min El Weir Flow (ft)	2413.31

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15880.7

INPUT
Description: d/s face of cart path culvert
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.1	17.7	2414.1	31.6	2412.1	51.6	2410.1
57.8	2409.1	65.1	2408.6	72.4	2409.1	86.8	2410.1	121.6	2419.1

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.027	
W.S. Elev (ft)	2415.09	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)		Flow Area (sq ft)		368.29	
E.G. Slope (ft/ft)	0.001164	Area (sq ft)		368.29	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	105.88	Top Width (ft)		105.88	
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)		4.28	
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)		3.48	
Conv. Total (cfs)	46224.3	Conv. (cfs)		46224.3	
Length Wtd. (ft)	73.80	Wetted Per. (ft)		106.94	
Min Ch El (ft)	2408.60	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		1.07	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	0.00	1.50	
C & E Loss (ft)	0.00	Cum SA (acres)	0.00	0.41	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15860.7

INPUT
Description: gravel sides & bottom
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-55	2416	0	2415	17.7	2414	31.6	2412	51.6	2410
57.8	2409	65.1	2408.5	72.4	2409	86.8	2410	121.6	2419

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-55	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.000	0.027	
W.S. Elev (ft)	2415.01	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)		Flow Area (sq ft)	0.00	370.08	
E.G. Slope (ft/ft)	0.001149	Area (sq ft)	0.00	370.08	
Q Total (cfs)	1577.00	Flow (cfs)	0.00	1577.00	
Top Width (ft)	106.44	Top Width (ft)	0.28	106.15	
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)	0.03	4.26	
Max Chl Dpth (ft)	6.51	Hydr. Depth (ft)	0.00	3.49	
Conv. Total (cfs)	46518.9	Conv. (cfs)	0.0	46518.9	
Length Wtd. (ft)	73.80	Wetted Per. (ft)	0.28	107.21	
Min Ch El (ft)	2408.50	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		1.06	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.00	0.88	
C & E Loss (ft)	0.06	Cum SA (acres)	0.00	0.23	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15786.9

INPUT
Description: shrubs along gabions rt side. gravel bottom, grass lt side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2419	23.4	2418	34	2416	43.9	2413	56.5	2409
69.5	2408	77.7	2407.8	81	2408	90.6	2416	102.1	2419

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	56.5	.027	81	.15	90.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.1	78.3	91.8	103.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.		0.059	
W.S. Elev (ft)	2414.15	Reach Len. (ft)	78.30	91.80	103.70

Crit W.S. (ft)	2412.77	Flow Area (sq ft)	209.66
E.G. Slope (ft/ft)	0.013632	Area (sq ft)	209.66
Q Total (cfs)	1577.00	Flow (cfs)	1577.00
Top Width (ft)	48.25	Top Width (ft)	48.25
Vel Total (ft/s)	7.52	Avg. Vel. (ft/s)	7.52
Max Chl Dpth (ft)	6.35	Hydr. Depth (ft)	4.34
Conv. Total (cfs)	13507.0	Conv. (cfs)	13507.0
Length Wtd. (ft)	91.80	Wetted Per. (ft)	51.31
Min Ch El (ft)	2407.80	Shear (lb/sq ft)	3.48
Alpha	1.00	Stream Power (lb/ft s)	26.15
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	0.38
C & E Loss (ft)	0.07	Cum SA (acres)	0.10

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15695.1

INPUT
Description: shrubs along gabions rt side. gravel bottom, grass lt side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2418	26	2417	47	2410.9	61	2407	67.4	2406.1
81.2	2406.4	84.8	2407	91.8	2410	130.6	2420		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47	.027	67.4	.15	84.8	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	130.6	81.5	103.6	127.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2412.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.61	Wt. n-Val.		0.081	
W.S. Elev (ft)	2410.94	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	2410.94	Flow Area (sq ft)		154.76	
E.G. Slope (ft/ft)	0.068838	Area (sq ft)		154.76	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	48.59	Top Width (ft)		48.59	
Vel Total (ft/s)	10.19	Avg. Vel. (ft/s)		10.19	
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)		3.19	
Conv. Total (cfs)	6010.6	Conv. (cfs)		6010.6	
Length Wtd. (ft)	0.00	Wetted Per. (ft)		49.98	
Min Ch El (ft)	2406.10	Shear (lb/sq ft)		13.31	
Alpha	1.00	Stream Power (lb/ft s)		135.60	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)			
C & E Loss (ft)	0.34	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15591.5

INPUT
Description: grass left side, 1.5' weed in bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2414	28.9	2406	42	2404.9	47.1	2404.7	72.2	2404.7
77.8	2405	79.9	2406	96	2406	97.9	2407	132.4	2418

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47.1	.029	72.2	.025	79.9	.015	96	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	132.4	141.2	154.6	169.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2409.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.		0.025	

W.S. Elev (ft)	2408.99	Reach Len. (ft)	141.20	154.60	169.30
Crit W.S. (ft)		Flow Area (sq ft)		281.33	
E.G. Slope (ft/ft)	0.001802	Area (sq ft)		281.33	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	86.06	Top Width (ft)		86.06	
Vel Total (ft/s)	5.61	Avg. Vel. (ft/s)		5.61	
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)		3.27	
Conv. Total (cfs)	37153.4	Conv. (cfs)		37153.4	
Length Wtd. (ft)	154.60	Wetted Per. (ft)		87.30	
Min Ch El (ft)	2404.70	Shear (lb/sq ft)		0.36	
Alpha	1.00	Stream Power (lb/ft s)		2.03	
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)		26.73	
C & E Loss (ft)	0.05	Cum SA (acres)		9.41	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15436.9

INPUT
Description: grass left side, 1.5' weed in bottom, gravel right side
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2412	29.3	2405	35.4	2404.5	86.8	2404.5	96	2405
115.5	2410	132.3	2418						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	35.4	.029	86.8	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	132.3	171	180.6	189.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2409.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.028	
W.S. Elev (ft)	2408.87	Reach Len. (ft)	171.00	180.60	189.10
Crit W.S. (ft)		Flow Area (sq ft)		348.60	
E.G. Slope (ft/ft)	0.001318	Area (sq ft)		348.60	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	98.02	Top Width (ft)		98.02	
Vel Total (ft/s)	4.52	Avg. Vel. (ft/s)		4.52	
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		3.56	
Conv. Total (cfs)	43433.6	Conv. (cfs)		43433.6	
Length Wtd. (ft)	180.60	Wetted Per. (ft)		99.00	
Min Ch El (ft)	2404.50	Shear (lb/sq ft)		0.29	
Alpha	1.00	Stream Power (lb/ft s)		1.31	
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)		25.61	
C & E Loss (ft)	0.07	Cum SA (acres)		9.09	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15256.3

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2411.3	11.8	2411	41.2	2407	51.6	2405	59.3	2404.3
69.7	2404	76.9	2403.9	93.2	2404	99	2405	131.6	2418

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93.2	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	131.6	227.6	228.9	230.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2408.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.		0.025	
W.S. Elev (ft)	2407.73	Reach Len. (ft)	227.60	228.90	230.40
Crit W.S. (ft)		Flow Area (sq ft)		197.99	
E.G. Slope (ft/ft)	0.004708	Area (sq ft)		197.99	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	70.04	Top Width (ft)		70.04	
Vel Total (ft/s)	7.96	Avg. Vel. (ft/s)		7.96	
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)		2.83	
Conv. Total (cfs)	22982.2	Conv. (cfs)		22982.2	
Length Wtd. (ft)	228.90	Wetted Per. (ft)		70.93	
Min Ch El (ft)	2403.90	Shear (lb/sq ft)		0.82	
Alpha	1.00	Stream Power (lb/ft s)		6.54	
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)		24.48	
C & E Loss (ft)	0.04	Cum SA (acres)		8.74	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15027.4

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2409.2	15.4	2408	29	2404	38.5	2403	44.8	2402.4
55.7	2402.2	63	2402.2	71.1	2403	77	2404	101.4	2414

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	71.1	.027

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
0	101.4	91.4	121.6	147.6	.1		.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2407.39	Element			
Vel Head (ft)	1.40	Wt. n-Val.		0.025	
W.S. Elev (ft)	2406.00	Reach Len. (ft)	91.40	121.60	147.60
Crit W.S. (ft)	2406.00	Flow Area (sq ft)		166.36	
E.G. Slope (ft/ft)	0.006810	Area (sq ft)		166.36	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	59.66	Top Width (ft)		59.66	
Vel Total (ft/s)	9.48	Avg. Vel. (ft/s)		9.48	
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	19109.7	Conv. (cfs)		19109.7	
Length Wtd. (ft)	121.60	Wetted Per. (ft)		60.55	
Min Ch El (ft)	2402.20	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		11.07	
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)		23.52	
C & E Loss (ft)	0.11	Cum SA (acres)		8.40	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14905.8

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2407	22.1	2404	35.9	2402	40.6	2401.5	66.5	2401.3
84.2	2401.4	87.6	2402	93.5	2403	122.2	2414		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	87.6	.027

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
0	122.2	91	106.6	118.7	.1		.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2405.52	Element			
Vel Head (ft)	1.01	Wt. n-Val.		0.025	
W.S. Elev (ft)	2404.51	Reach Len. (ft)	91.00	106.60	118.70
Crit W.S. (ft)	2404.32	Flow Area (sq ft)		195.21	
E.G. Slope (ft/ft)	0.005709	Area (sq ft)		195.21	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	79.04	Top Width (ft)		79.04	
Vel Total (ft/s)	8.08	Avg. Vel. (ft/s)		8.08	
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)		2.47	
Conv. Total (cfs)	20872.0	Conv. (cfs)		20872.0	
Length Wtd. (ft)	106.60	Wetted Per. (ft)		79.66	
Min Ch El (ft)	2401.30	Shear (lb/sq ft)		0.87	
Alpha	1.00	Stream Power (lb/ft s)		7.06	
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)		23.01	
C & E Loss (ft)	0.02	Cum SA (acres)		8.21	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp

REACH: lower RS: 14799.2

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2407	29.4	2403	41.3	2401	46.1	2400.7	73.2	2400.6
93.7	2401	121.8	2413						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93.7	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.8	121.5	133.7	141.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2404.81	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.21	Wt. n-Val.		0.026		
W.S. Elev (ft)	2403.60	Reach Len. (ft)	121.50	133.70	141.30	
Crit W.S. (ft)	2403.60	Flow Area (sq ft)		178.79		
E.G. Slope (ft/ft)	0.007351	Area (sq ft)		178.79		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	74.79	Top Width (ft)		74.79		
Vel Total (ft/s)	8.82	Avg. Vel. (ft/s)		8.82		
Max Chl Dpth (ft)	3.00	Hydr. Depth (ft)		2.39		
Conv. Total (cfs)	18393.8	Conv. (cfs)		18393.8		
Length Wtd. (ft)	133.70	Wetted Per. (ft)		75.55		
Min Ch El (ft)	2400.60	Shear (lb/sq ft)		1.09		
Alpha	1.00	Stream Power (lb/ft s)		9.58		
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)		22.56		
C & E Loss (ft)	0.01	Cum SA (acres)		8.02		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14665.5

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2407	24.5	2405	47.2	2399	56.9	2398	62.5	2397.9
76.1	2398	95	2399	98.1	2400	121.5	2409		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	95	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.5	300	300	300	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2402.76	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.33	Wt. n-Val.		0.025		
W.S. Elev (ft)	2401.43	Reach Len. (ft)	300.00	300.00	300.00	
Crit W.S. (ft)	2401.43	Flow Area (sq ft)		170.13		
E.G. Slope (ft/ft)	0.006810	Area (sq ft)		170.13		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	63.78	Top Width (ft)		63.78		
Vel Total (ft/s)	9.27	Avg. Vel. (ft/s)		9.27		
Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)		2.67		
Conv. Total (cfs)	19109.9	Conv. (cfs)		19109.9		
Length Wtd. (ft)	300.00	Wetted Per. (ft)		64.60		
Min Ch El (ft)	2397.90	Shear (lb/sq ft)		1.12		
Alpha	1.00	Stream Power (lb/ft s)		10.38		
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)		22.02		
C & E Loss (ft)	0.02	Cum SA (acres)		7.80		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14365.5

INPUT

Description: grass left side and bottom, gravel right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2399.3	24	2396	33.2	2395	46.2	2394.5	63.8	2394
71.7	2395	75.1	2395.5	101.6	2406				

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	71.7	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	101.6	105.1	100.6	95.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2399.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.27	Wt. n-Val.		0.025	
W.S. Elev (ft)	2397.77	Reach Len. (ft)	105.10	100.60	95.70
Crit W.S. (ft)	2397.77	Flow Area (sq ft)		174.21	
E.G. Slope (ft/ft)	0.007085	Area (sq ft)		174.21	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	69.68	Top Width (ft)		69.68	
Vel Total (ft/s)	9.05	Avg. Vel. (ft/s)		9.05	
Max Chl Dpth (ft)	3.77	Hydr. Depth (ft)		2.50	
Conv. Total (cfs)	18735.2	Conv. (cfs)		18735.2	
Length Wtd. (ft)	100.60	Wetted Per. (ft)		70.40	
Min Ch El (ft)	2394.00	Shear (lb/sq ft)		1.09	
Alpha	1.00	Stream Power (lb/ft s)		9.91	
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)		20.84	
C & E Loss (ft)	0.08	Cum SA (acres)		7.34	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14264.9

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2400	21.7	2395	30.2	2394	41.3	2393.6	60.6	2393.6
70.2	2394	102.2	2405						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	70.2	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.2	45	45	45	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2398.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.		0.025	
W.S. Elev (ft)	2397.33	Reach Len. (ft)	45.00	45.00	45.00
Crit W.S. (ft)		Flow Area (sq ft)		197.21	
E.G. Slope (ft/ft)	0.004590	Area (sq ft)		197.21	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	68.32	Top Width (ft)		68.32	
Vel Total (ft/s)	8.00	Avg. Vel. (ft/s)		8.00	
Max Chl Dpth (ft)	3.73	Hydr. Depth (ft)		2.89	
Conv. Total (cfs)	23277.5	Conv. (cfs)		23277.5	
Length Wtd. (ft)	45.00	Wetted Per. (ft)		69.22	
Min Ch El (ft)	2393.60	Shear (lb/sq ft)		0.82	
Alpha	1.00	Stream Power (lb/ft s)		6.53	
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)		20.41	
C & E Loss (ft)	0.14	Cum SA (acres)		7.19	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14219.9

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2397.5	36.8	2396	46.1	2395	56.6	2394	78.8	2393.1
93.6	2393.1	100.5	2394	127.2	2404				

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93.6	.027

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

0	127.2	45	45	45	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2398.02	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.51	Wt. n-Val.		0.025		
W.S. Elev (ft)	2397.51	Reach Len. (ft)	45.00	45.00	45.00	
Crit W.S. (ft)	2396.61	Flow Area (sq ft)		275.22		
E.G. Slope (ft/ft)	0.002830	Area (sq ft)		275.22		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	109.87	Top Width (ft)		109.87		
Vel Total (ft/s)	5.73	Avg. Vel. (ft/s)		5.73		
Max Chl Dpth (ft)	4.41	Hydr. Depth (ft)		2.50		
Conv. Total (cfs)	29646.0	Conv. (cfs)		29646.0		
Length Wtd. (ft)	45.00	Wetted Per. (ft)		110.73		
Min Ch El (ft)	2393.10	Shear (lb/sq ft)		0.44		
Alpha	1.00	Stream Power (lb/ft s)		2.52		
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)		20.16		
C & E Loss (ft)	0.09	Cum SA (acres)		7.09		

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14174.9

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	19.2	2397	28.8	2394	46.5	2393	61.2	2392.7
71.1	2393	75.9	2394	102.6	2404				

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	71.1	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.6	203	200	197	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2397.74	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.39	Wt. n-Val.		0.025		
W.S. Elev (ft)	2396.36	Reach Len. (ft)	203.00	200.00	197.00	
Crit W.S. (ft)	2396.36	Flow Area (sq ft)		166.81		
E.G. Slope (ft/ft)	0.006947	Area (sq ft)		166.81		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	60.93	Top Width (ft)		60.93		
Vel Total (ft/s)	9.45	Avg. Vel. (ft/s)		9.45		
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)		2.74		
Conv. Total (cfs)	18920.4	Conv. (cfs)		18920.4		
Length Wtd. (ft)	200.00	Wetted Per. (ft)		61.86		
Min Ch El (ft)	2392.70	Shear (lb/sq ft)		1.17		
Alpha	1.00	Stream Power (lb/ft s)		11.06		
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)		19.93		
C & E Loss (ft)	0.05	Cum SA (acres)		7.01		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13974.9

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2400	24.7	2390.7	33.9	2390	41.6	2389.8	54.7	2389.6
60.1	2390	66.2	2391	88.9	2402				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	24.7	.027	66.2	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	88.9	60.8	46.3	32.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2395.02	Element	Left OB	Channel	Right OB	

Vel Head (ft)	1.22	Wt. n-Val.		0.028	
W.S. Elev (ft)	2393.79	Reach Len. (ft)	60.80	46.30	32.10
Crit W.S. (ft)	2393.47	Flow Area (sq ft)		177.67	
E.G. Slope (ft/ft)	0.006283	Area (sq ft)		177.67	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	55.48	Top Width (ft)		55.48	
Vel Total (ft/s)	8.88	Avg. Vel. (ft/s)		8.88	
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)		3.20	
Conv. Total (cfs)	19895.0	Conv. (cfs)		19895.0	
Length Wtd. (ft)	46.30	Wetted Per. (ft)		56.81	
Min Ch El (ft)	2389.60	Shear (lb/sq ft)		1.23	
Alpha	1.00	Stream Power (lb/ft s)		10.89	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)		19.14	
C & E Loss (ft)	0.06	Cum SA (acres)		6.74	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13928.6

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401.1	15.8	2399.1	27.7	2390.1	32.2	2389.6	47.5	2389.5
67.5	2389.6	70	2390.1	93.8	2401.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	67.5	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	93.8	46	42	36	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2394.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.		0.029	
W.S. Elev (ft)	2393.69	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2393.01	Flow Area (sq ft)		194.71	
E.G. Slope (ft/ft)	0.004651	Area (sq ft)		194.71	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	54.47	Top Width (ft)		54.47	
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)		8.10	
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)		3.57	
Conv. Total (cfs)	23123.0	Conv. (cfs)		23123.0	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		56.57	
Min Ch El (ft)	2389.50	Shear (lb/sq ft)		1.00	
Alpha	1.00	Stream Power (lb/ft s)		8.10	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		18.95	
C & E Loss (ft)	0.00	Cum SA (acres)		6.68	

Note: Manning's n values were composited to a single value in the main channel.

BRIDGE

RIVER: Flamingo Wash Sp
REACH: lower RS: 13912.6

INPUT
Description: main roadway bridge
Distance from Upstream XS = .1
Deck/Roadway Width = 41.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0	2402	2399	95	2402.5	2399

Upstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401.1	15.8	2399.1	27.7	2390.1	32.2	2389.6	47.5	2389.5
67.5	2389.6	70	2390.1	93.8	2401.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	67.5	.032

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	93.8	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0	2402	2399	95	2402.5	2399

Downstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	15.8	2399	27.7	2390	32.2	2389.5	47.5	2389.4
67.5	2389.5	70	2390	93.8	2401.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	70	.032

Bank Sta: Left Right Coeff Contr. Expan.

0	93.8	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

			Inside BR US	Inside BR DS
E.G. US. (ft)	2394.71	Element		
W.S. US. (ft)	2393.69	E.G. Elev (ft)	2394.71	2394.46
Q Total (cfs)	1577.00	W.S. Elev (ft)	2393.69	2393.12
Q Bridge (cfs)	1577.00	Crit W.S. (ft)	2392.98	2392.93
Q Weir (cfs)		Max Chl Dpth (ft)	4.19	3.71
Weir Sta Lft (ft)		Vel Total (ft/s)	8.10	9.31
Weir Sta Rgt (ft)		Flow Area (sq ft)	194.67	169.37
Weir Submerg		Froude # Chl	0.76	0.92
Weir Max Depth (ft)		Specif Force (cu ft)	776.37	749.84
Min El Weir Flow (ft)	2402.01	Hydr Depth (ft)	3.57	3.20
Min El Prs (ft)	2399.00	W.P. Total (ft)	56.57	54.70
Delta EG (ft)	0.26	Conv. Total (cfs)	24421.4	19802.1
Delta WS (ft)	0.78	Top Width (ft)	54.46	52.86
BR Open Area (sq ft)	531.96	Frctn Loss (ft)	0.21	0.00
BR Open Vel (ft/s)	9.31	C & E Loss (ft)	0.03	0.02
Coef of Q		Shear Total (lb/sq ft)	0.90	1.23
Br Sel Method	Energy only	Power Total (lb/ft s)	7.26	11.41

Note: Manning's n values were composited to a single value in the main channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13896.6

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	15.8	2399	27.7	2390	32.2	2389.5	47.5	2389.4
67.5	2389.5	70	2390	93.8	2401.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	70	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

0	93.8	46	42	36	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2394.45	Element			
Vel Head (ft)	1.54	Wt. n-Val.		0.028	
W.S. Elev (ft)	2392.91	Reach Len. (ft)	46.00	42.00	36.00
Crit W.S. (ft)	2392.91	Flow Area (sq ft)		158.55	
E.G. Slope (ft/ft)	0.008394	Area (sq ft)		158.55	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	52.17	Top Width (ft)		52.17	
Vel Total (ft/s)	9.95	Avg. Vel. (ft/s)		9.95	
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)		3.04	
Conv. Total (cfs)	17213.1	Conv. (cfs)		17213.1	
Length Wtd. (ft)	42.00	Wetted Per. (ft)		53.89	
Min Ch El (ft)	2389.40	Shear (lb/sq ft)		1.54	
Alpha	1.00	Stream Power (lb/ft s)		15.34	
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)		18.77	
C & E Loss (ft)	0.02	Cum SA (acres)		6.63	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there

is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13854.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2400	24.3	2397	50.2	2389	58.8	2388.9	77	2388.9
85	2389	119.9	2401.5						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	119.9	234.5	224.2	219.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2393.98	Element			
Vel Head (ft)	1.47	Wt. n-Val.		0.025	
W.S. Elev (ft)	2392.51	Reach Len. (ft)	234.50	224.20	219.80
Crit W.S. (ft)	2392.51	Flow Area (sq ft)		162.16	
E.G. Slope (ft/ft)	0.006661	Area (sq ft)		162.16	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	55.99	Top Width (ft)		55.99	
Vel Total (ft/s)	9.72	Avg. Vel. (ft/s)		9.72	
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)		2.90	
Conv. Total (cfs)	19322.6	Conv. (cfs)		19322.6	
Length Wtd. (ft)	224.20	Wetted Per. (ft)		57.13	
Min Ch El (ft)	2388.90	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)		11.48	
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)		18.62	
C & E Loss (ft)	0.05	Cum SA (acres)		6.58	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13630.4

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2391.8	16	2391	51	2386	62.6	2385	82.2	2385.6
90.7	2386	128.4	2400						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	128.4	300	300	300	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2390.13	Element			
Vel Head (ft)	1.29	Wt. n-Val.		0.025	
W.S. Elev (ft)	2388.84	Reach Len. (ft)	300.00	300.00	300.00
Crit W.S. (ft)	2388.84	Flow Area (sq ft)		173.16	
E.G. Slope (ft/ft)	0.006754	Area (sq ft)		173.16	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	67.24	Top Width (ft)		67.24	
Vel Total (ft/s)	9.11	Avg. Vel. (ft/s)		9.11	
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)		2.58	
Conv. Total (cfs)	19189.3	Conv. (cfs)		19189.3	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		68.02	
Min Ch El (ft)	2385.00	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		9.78	
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)		17.75	
C & E Loss (ft)	0.02	Cum SA (acres)		6.26	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13330.4

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2393	11.4	2392	64.9	2382	71.7	2381.6	87.1	2381.5
93	2382	129.7	2396						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	129.7	145.1	150.2	153.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2387.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.		0.025	
W.S. Elev (ft)	2385.61	Reach Len. (ft)	145.10	150.20	153.10
Crit W.S. (ft)	2385.61	Flow Area (sq ft)		163.08	
E.G. Slope (ft/ft)	0.006654	Area (sq ft)		163.08	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	56.87	Top Width (ft)		56.87	
Vel Total (ft/s)	9.67	Avg. Vel. (ft/s)		9.67	
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)		2.87	
Conv. Total (cfs)	19332.4	Conv. (cfs)		19332.4	
Length Wtd. (ft)	150.20	Wetted Per. (ft)		57.90	
Min Ch El (ft)	2381.50	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		11.31	
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)		16.59	
C & E Loss (ft)	0.07	Cum SA (acres)		5.83	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13180.2

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2387	50.9	2385	86.9	2381	105.5	2379.8	120.7	2380
130.6	2381	164.8	2393						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	164.8	94.4	130.6	144.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2384.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.23	Wt. n-Val.		0.025	
W.S. Elev (ft)	2383.47	Reach Len. (ft)	94.40	130.60	144.20
Crit W.S. (ft)	2383.47	Flow Area (sq ft)		177.13	
E.G. Slope (ft/ft)	0.006964	Area (sq ft)		177.13	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	73.00	Top Width (ft)		73.00	
Vel Total (ft/s)	8.90	Avg. Vel. (ft/s)		8.90	
Max Chl Dpth (ft)	3.67	Hydr. Depth (ft)		2.43	
Conv. Total (cfs)	18897.7	Conv. (cfs)		18897.7	
Length Wtd. (ft)	130.60	Wetted Per. (ft)		73.65	
Min Ch El (ft)	2379.80	Shear (lb/sq ft)		1.05	
Alpha	1.00	Stream Power (lb/ft s)		9.31	
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)		16.01	
C & E Loss (ft)	0.17	Cum SA (acres)		5.61	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13049.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2389	13.3	2388	45.3	2387	64.7	2386	86.7	2384
129.1	2383	160.7	2380	187.5	2378.9	205.8	2378.9	213.6	2379
271.1	2391								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
64.7	271.1	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2383.19		Element			
Vel Head (ft)	0.67		Wt. n-Val.		0.025	
W.S. Elev (ft)	2382.52		Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)			Flow Area (sq ft)		239.22	
E.G. Slope (ft/ft)	0.003680		Area (sq ft)		239.22	
Q Total (cfs)	1577.00		Flow (cfs)		1577.00	
Top Width (ft)	96.27		Top Width (ft)		96.27	
Vel Total (ft/s)	6.59		Avg. Vel. (ft/s)		6.59	
Max Chl Dpth (ft)	3.62		Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	25995.1		Conv. (cfs)		25995.1	
Length Wtd. (ft)	20.00		Wetted Per. (ft)		96.77	
Min Ch El (ft)	2378.90		Shear (lb/sq ft)		0.57	
Alpha	1.00		Stream Power (lb/ft s)		3.74	
Frctn Loss (ft)	0.03		Cum Volume (acre-ft)		15.38	
C & E Loss (ft)	0.14		Cum SA (acres)		5.35	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13029.6

INPUT
Description: grass bottom & sides, u/s face of cart path culvert
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2392.7	17	2392.2	62.4	2384.2	109	2380.2	121.2	2379.2
139.3	2378.2	145.9	2378.1	174.5	2377.8	182.2	2378.2	227.2	2386.2
245.9	2388.9								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
62.4	245.9	10	10	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2383.02		Element			
Vel Head (ft)	0.22		Wt. n-Val.		0.025	
W.S. Elev (ft)	2382.80		Reach Len. (ft)	10.00	10.00	10.00
Crit W.S. (ft)	2380.80		Flow Area (sq ft)		417.38	
E.G. Slope (ft/ft)	0.000853		Area (sq ft)		417.38	
Q Total (cfs)	1577.00		Flow (cfs)		1577.00	
Top Width (ft)	129.38		Top Width (ft)		129.38	
Vel Total (ft/s)	3.78		Avg. Vel. (ft/s)		3.78	
Max Chl Dpth (ft)	5.00		Hydr. Depth (ft)		3.23	
Conv. Total (cfs)	53996.6		Conv. (cfs)		53996.6	
Length Wtd. (ft)	10.00		Wetted Per. (ft)		129.98	
Min Ch El (ft)	2377.80		Shear (lb/sq ft)		0.17	
Alpha	1.00		Stream Power (lb/ft s)		0.65	
Frctn Loss (ft)			Cum Volume (acre-ft)		15.23	
C & E Loss (ft)			Cum SA (acres)		5.30	

CULVERT

RIVER: Flamingo Wash Sp
REACH: lower RS: 13024.6

INPUT
Description: cart path crossing 2
Distance from Upstream XS = .1
Deck/Roadway Width = 8.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 3

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
114.6	2379.7		171	2379.8		192.8	2380.1	

Upstream Bridge Cross Section Data
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2392.7	17	2392.2	62.4	2384.2	109	2380.2	121.2	2379.2
139.3	2378.2	145.9	2378.1	174.5	2377.8	182.2	2378.2	227.2	2386.2

```
   245.9  2388.9

Manning's n Values        num=       1
     Sta   n Val
       0    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
          62.4   245.9            .1       .3

Downstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   114.6  2379.7             171  2379.8           192.8  2380.1

Downstream Bridge Cross Section Data
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2392.6      17  2392.1    62.4  2384.1     109  2380.1   121.2  2379.1
   139.3  2378.1   145.9    2378   174.5  2377.7   182.2  2378.1   227.2  2386.1
   245.9  2388.8

Manning's n Values        num=       1
     Sta   n Val
       0    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
          62.4   245.9            .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     1.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0     9.9     .013     .013        0                  .2               1
Number of Barrels =  6
Upstream   Elevation =  2377.8
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
   165.1   167.1   169.1   171.1   173.1   175.1
Downstream Elevation =  2377.7
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
   165.1   167.1   169.1   171.1   173.1   175.1

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)        103.25    Culv Full Len (ft)          9.90
  # Barrels                      6    Culv Vel US (ft/s)          9.74
  Q Barrel (cfs)             17.21    Culv Vel DS (ft/s)          9.74
  E.G. US. (ft)            2383.02    Culv Inv El Up (ft)      2377.80
  W.S. US. (ft)            2382.80    Culv Inv El Dn (ft)      2377.70
  E.G. DS (ft)             2381.78    Culv Frctn Ls (ft)          0.27
  W.S. DS (ft)             2380.99    Culv Exit Loss (ft)         0.68
  Delta EG (ft)               1.24    Culv Entr Loss (ft)         0.29
  Delta WS (ft)               1.81    Q Weir (cfs)             1473.75
  E.G. IC (ft)             2382.94    Weir Sta Lft (ft)          76.07
  E.G. OC (ft)             2383.02    Weir Sta Rgt (ft)         209.35
  Culvert Control           Outlet    Weir Submerg                0.31
  Culv WS Inlet (ft)       2379.30    Weir Max Depth (ft)         3.33
  Culv WS Outlet (ft)      2379.20    Weir Avg Depth (ft)         2.55
  Culv Nml Depth (ft)         1.50    Weir Flow Area (sq ft)    339.83
  Culv Crt Depth (ft)         1.50    Min El Weir Flow (ft)    2379.71


Note:    Culvert critical depth exceeds the height of the culvert.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower             RS: 13019.6

INPUT
Description: grass bottom & sides, d/s face of cart path culvert
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2392.6      17  2392.1    62.4  2384.1     109  2380.1   121.2  2379.1
   139.3  2378.1   145.9    2378   174.5  2377.7   182.2  2378.1   227.2  2386.1
   245.9  2388.8

Manning's n Values        num=       1
     Sta   n Val
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.4   245.9               20      20      20             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2381.78	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.79	Wt. n-Val.		0.025		
W.S. Elev (ft)	2380.99	Reach Len. (ft)	20.00	20.00	20.00	
Crit W.S. (ft)	2380.70	Flow Area (sq ft)		221.29		
E.G. Slope (ft/ft)	0.004998	Area (sq ft)		221.29		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	99.82	Top Width (ft)		99.82		
Vel Total (ft/s)	7.13	Avg. Vel. (ft/s)		7.13		
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)		2.22		
Conv. Total (cfs)	22306.9	Conv. (cfs)		22306.9		
Length Wtd. (ft)	20.00	Wetted Per. (ft)		100.19		
Min Ch El (ft)	2377.70	Shear (lb/sq ft)		0.69		
Alpha	1.00	Stream Power (lb/ft s)		4.91		
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)		15.16		
C & E Loss (ft)	0.02	Cum SA (acres)		5.28		

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12999.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2392.5	17	2392	62.4	2384	109	2380	121.2	2379
139.3	2378	145.9	2377.9	174.5	2377.6	182.2	2378	227.2	2386
245.9	2388.7								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
62.4	245.9	125.3	114.7	112.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2381.64	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.03	Wt. n-Val.		0.025		
W.S. Elev (ft)	2380.61	Reach Len. (ft)	125.30	114.70	112.50	
Crit W.S. (ft)	2380.61	Flow Area (sq ft)		193.80		
E.G. Slope (ft/ft)	0.007273	Area (sq ft)		193.80		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	94.94	Top Width (ft)		94.94		
Vel Total (ft/s)	8.14	Avg. Vel. (ft/s)		8.14		
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)		2.04		
Conv. Total (cfs)	18492.2	Conv. (cfs)		18492.2		
Length Wtd. (ft)	114.70	Wetted Per. (ft)		95.28		
Min Ch El (ft)	2377.60	Shear (lb/sq ft)		0.92		
Alpha	1.00	Stream Power (lb/ft s)		7.51		
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)		15.06		
C & E Loss (ft)	0.01	Cum SA (acres)		5.23		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12884.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2397	16.5	2395	72.7	2381	105.7	2376	117.8	2375.7
132.7	2375.8	146.1	2376	160.7	2377	166.8	2378	198.8	2386

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	16.5	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16.5	198.8	100	100	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2379.88	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.13	Wt. n-Val.		0.025		
W.S. Elev (ft)	2378.75	Reach Len. (ft)	100.00	100.00	100.00	
Crit W.S. (ft)	2378.75	Flow Area (sq ft)		184.48		
E.G. Slope (ft/ft)	0.007093	Area (sq ft)		184.48		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	82.24	Top Width (ft)		82.24		
Vel Total (ft/s)	8.55	Avg. Vel. (ft/s)		8.55		
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.24		
Conv. Total (cfs)	18724.7	Conv. (cfs)		18724.7		
Length Wtd. (ft)	100.00	Wetted Per. (ft)		82.66		

Min Ch El (ft)	2375.70	Shear (lb/sq ft)	0.99
Alpha	1.00	Stream Power (lb/ft s)	8.45
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	14.57
C & E Loss (ft)	0.01	Cum SA (acres)	5.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12784.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2390.5	17.9	2389	71.4	2377	79.7	2376	93	2375
108	2374.8	120.2	2375	137.8	2376	152.2	2378	178.7	2385.2

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17.9	178.7	163.1	151.7	136.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2379.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.		0.025	
W.S. Elev (ft)	2377.95	Reach Len. (ft)	163.10	151.70	136.60
Crit W.S. (ft)	2377.95	Flow Area (sq ft)		186.56	
E.G. Slope (ft/ft)	0.007098	Area (sq ft)		186.56	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	84.70	Top Width (ft)		84.70	
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)		8.45	
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	18717.6	Conv. (cfs)		18717.6	
Length Wtd. (ft)	151.70	Wetted Per. (ft)		85.07	
Min Ch El (ft)	2374.80	Shear (lb/sq ft)		0.97	
Alpha	1.00	Stream Power (lb/ft s)		8.22	
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)		14.14	
C & E Loss (ft)	0.00	Cum SA (acres)		4.81	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12633.2

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2379	28.2	2375	36.9	2374	51.7	2373.2	68.6	2373.2
89.1	2374	143.1	2384.5						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	143.1	40.4	30.4	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2377.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.		0.025	
W.S. Elev (ft)	2376.33	Reach Len. (ft)	40.40	30.40	20.00
Crit W.S. (ft)	2376.33	Flow Area (sq ft)		185.17	
E.G. Slope (ft/ft)	0.007002	Area (sq ft)		185.17	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	82.23	Top Width (ft)		82.23	
Vel Total (ft/s)	8.52	Avg. Vel. (ft/s)		8.52	
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)		2.25	
Conv. Total (cfs)	18845.7	Conv. (cfs)		18845.7	
Length Wtd. (ft)	30.40	Wetted Per. (ft)		82.64	
Min Ch El (ft)	2373.20	Shear (lb/sq ft)		0.98	
Alpha	1.00	Stream Power (lb/ft s)		8.34	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		13.49	
C & E Loss (ft)	0.29	Cum SA (acres)		4.52	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12602.8

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2374.6	45.7	2374	117.2	2374	138.8	2373	156.4	2372.2
174.6	2373	189.2	2374	243.8	2385				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	243.8	29.5	29.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2376.46	Element			
Vel Head (ft)	0.15	Wt. n-Val.		0.025	
W.S. Elev (ft)	2376.31	Reach Len. (ft)	29.50	29.50	29.50
Crit W.S. (ft)		Flow Area (sq ft)		504.13	
E.G. Slope (ft/ft)	0.000822	Area (sq ft)		504.13	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	200.65	Top Width (ft)		200.65	
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)		3.13	
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)		2.51	
Conv. Total (cfs)	55006.5	Conv. (cfs)		55006.5	
Length Wtd. (ft)	29.50	Wetted Per. (ft)		202.68	
Min Ch El (ft)	2372.20	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.40	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		13.25	
C & E Loss (ft)	0.01	Cum SA (acres)		4.42	

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12573.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2377	88.7	2374	102.5	2373	133	2372	153.2	2372
172.5	2373	233.7	2385						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	233.7	30.4	30.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2376.42	Element			
Vel Head (ft)	0.24	Wt. n-Val.		0.025	
W.S. Elev (ft)	2376.18	Reach Len. (ft)	30.40	30.40	30.40
Crit W.S. (ft)		Flow Area (sq ft)		400.43	
E.G. Slope (ft/ft)	0.001344	Area (sq ft)		400.43	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	164.41	Top Width (ft)		164.41	
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)		3.94	
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)		2.44	
Conv. Total (cfs)	43010.4	Conv. (cfs)		43010.4	
Length Wtd. (ft)	30.40	Wetted Per. (ft)		164.84	
Min Ch El (ft)	2372.00	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.80	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		12.95	
C & E Loss (ft)	0.04	Cum SA (acres)		4.29	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12542.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378	62.4	2378	91.8	2373	110.5	2372	125.6	2371.8
136.2	2372	152.1	2373	213.7	2385				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
62.4	213.7	30.1	30.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2376.32	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.63	Wt. n-Val.		0.025		
W.S. Elev (ft)	2375.69	Reach Len. (ft)	30.10	30.10	30.10	
Crit W.S. (ft)		Flow Area (sq ft)		247.82		
E.G. Slope (ft/ft)	0.002992	Area (sq ft)		247.82		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	89.95	Top Width (ft)		89.95		
Vel Total (ft/s)	6.36	Avg. Vel. (ft/s)		6.36		
Max Chl Dpth (ft)	3.89	Hydr. Depth (ft)		2.76		
Conv. Total (cfs)	28829.9	Conv. (cfs)		28829.9		
Length Wtd. (ft)	30.10	Wetted Per. (ft)		90.50		
Min Ch El (ft)	2371.80	Shear (lb/sq ft)		0.51		
Alpha	1.00	Stream Power (lb/ft s)		3.26		
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)		12.72		
C & E Loss (ft)	0.01	Cum SA (acres)		4.20		

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12512.8

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2383	38.7	2382	83.9	2373	90.3	2372	99.1	2371.5
127.4	2372	141.5	2373	198.2	2384.1				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
38.7	198.2	138	150.5	163.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2376.22	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.71	Wt. n-Val.		0.025		
W.S. Elev (ft)	2375.50	Reach Len. (ft)	138.00	150.50	163.10	
Crit W.S. (ft)		Flow Area (sq ft)		232.42		
E.G. Slope (ft/ft)	0.003332	Area (sq ft)		232.42		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	82.94	Top Width (ft)		82.94		
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79		
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)		2.80		
Conv. Total (cfs)	27321.9	Conv. (cfs)		27321.9		
Length Wtd. (ft)	150.50	Wetted Per. (ft)		83.56		
Min Ch El (ft)	2371.50	Shear (lb/sq ft)		0.58		
Alpha	1.00	Stream Power (lb/ft s)		3.93		
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)		12.55		
C & E Loss (ft)	0.08	Cum SA (acres)		4.14		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12362.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2381.5	33.6	2381	43.6	2380	73.4	2371	78.7	2370
90.7	2369.6	100.9	2370	164.5	2384				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
33.6	164.5	114	103.1	90.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2375.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.		0.025	
W.S. Elev (ft)	2373.97	Reach Len. (ft)	114.00	103.10	90.70
Crit W.S. (ft)	2373.97	Flow Area (sq ft)		161.60	
E.G. Slope (ft/ft)	0.006622	Area (sq ft)		161.60	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	55.40	Top Width (ft)		55.40	
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)		9.76	
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		2.92	
Conv. Total (cfs)	19379.7	Conv. (cfs)		19379.7	
Length Wtd. (ft)	103.10	Wetted Per. (ft)		56.38	
Min Ch El (ft)	2369.60	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)		11.56	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)		11.87	
C & E Loss (ft)	0.32	Cum SA (acres)		3.91	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12259.2

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2376	38.8	2375	72.1	2370	77.8	2369	91.4	2368
101.5	2368	111.1	2369	173	2382				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	173	22.4	16	9.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2374.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.025	
W.S. Elev (ft)	2373.79	Reach Len. (ft)	22.40	16.00	9.20
Crit W.S. (ft)		Flow Area (sq ft)		307.72	
E.G. Slope (ft/ft)	0.001400	Area (sq ft)		307.72	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	87.00	Top Width (ft)		87.00	
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)		5.12	
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)		3.54	
Conv. Total (cfs)	42151.2	Conv. (cfs)		42151.2	
Length Wtd. (ft)	16.00	Wetted Per. (ft)		87.95	
Min Ch El (ft)	2368.00	Shear (lb/sq ft)		0.31	
Alpha	1.00	Stream Power (lb/ft s)		1.57	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		11.32	
C & E Loss (ft)	0.06	Cum SA (acres)		3.74	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12243.2

INPUT
Description: grass bottom & sides, u/s face of cart path culvert
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378.3	80.8	2368.3	89.4	2368	108.9	2367.9	118.3	2368.3
129.6	2370.3	176	2380.3	193.9	2382.4				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	176	16	16	16	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2374.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.025	
W.S. Elev (ft)	2373.91	Reach Len. (ft)	16.00	16.00	16.00
Crit W.S. (ft)	2371.26	Flow Area (sq ft)		429.83	
E.G. Slope (ft/ft)	0.000633	Area (sq ft)		429.83	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	

Top Width (ft)	110.88	Top Width (ft)	110.88
Vel Total (ft/s)	3.67	Avg. Vel. (ft/s)	3.67
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)	3.88
Conv. Total (cfs)	62699.7	Conv. (cfs)	62699.7
Length Wtd. (ft)	16.00	Wetted Per. (ft)	111.80
Min Ch El (ft)	2367.90	Shear (lb/sq ft)	0.15
Alpha	1.00	Stream Power (lb/ft s)	0.56
Frctn Loss (ft)		Cum Volume (acre-ft)	11.18
C & E Loss (ft)		Cum SA (acres)	3.70

CULVERT

RIVER: Flamingo Wash Sp
REACH: lower RS: 12234.95

INPUT
Description: cart path crossing 1
Distance from Upstream XS = .1
Deck/Roadway Width = 15.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 3

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
56.6	2371.3		100	2370.2		131.1	2370.6	

Upstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378.3	80.8	2368.3	89.4	2368	108.9	2367.9	118.3	2368.3
129.6	2370.3	176	2380.3	193.9	2382.4				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left Right Coeff Contr. Expan.
0 176 .1 .3

Downstream Deck/Roadway Coordinates
num= 3

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
56.6	2371.3		100	2370.2		131.1	2370.6	

Downstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378.2	80.8	2368.2	89.4	2367.9	108.9	2367.8	118.3	2368.2
129.6	2370.2	176	2380.2	193.9	2382.3				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left Right Coeff Contr. Expan.
0 176 .1 .3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Circular	1.5	

FHWA Chart # 55- Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	0	15.9	.013	.013	0	.2	1

Number of Barrels = 6
Upstream Elevation = 2368.3
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
95	97	99	101	103	105

Downstream Elevation = 2368.2
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
95	97	99	101	103	105

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	120.15	Culv Full Len (ft)	15.90
# Barrels	6	Culv Vel US (ft/s)	11.33
Q Barrel (cfs)	20.02	Culv Vel DS (ft/s)	11.33
E.G. US. (ft)	2374.13	Culv Inv El Up (ft)	2368.30
W.S. US. (ft)	2373.91	Culv Inv El Dn (ft)	2368.20
E.G. DS (ft)	2372.34	Culv Frctn Ls (ft)	0.58
W.S. DS (ft)	2371.16	Culv Exit Loss (ft)	0.81
Delta EG (ft)	1.78	Culv Entr Loss (ft)	0.40
Delta WS (ft)	2.75	Q Weir (cfs)	1456.85
E.G. IC (ft)	2374.07	Weir Sta Lft (ft)	33.98
E.G. OC (ft)	2374.13	Weir Sta Rgt (ft)	147.20
Culvert Control	Outlet	Weir Submerg	0.14

Culv WS Inlet (ft)	2369.80	Weir Max Depth (ft)	3.89
Culv WS Outlet (ft)	2369.70	Weir Avg Depth (ft)	2.82
Culv Nml Depth (ft)	1.50	Weir Flow Area (sq ft)	319.59
Culv Crt Depth (ft)	1.50	Min El Weir Flow (ft)	2370.21

Note: Culvert critical depth exceeds the height of the culvert.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12226.7

INPUT
Description: grass bottom & sides, ds face of cart path culvert
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378.2	80.8	2368.2	89.4	2367.9	108.9	2367.8	118.3	2368.2
129.6	2370.2	176	2380.2	193.9	2382.3				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	176	15.7	15.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2372.34	Element			
Vel Head (ft)	1.19	Wt. n-Val.		0.025	
W.S. Elev (ft)	2371.16	Reach Len. (ft)	15.70	15.70	15.70
Crit W.S. (ft)	2371.16	Flow Area (sq ft)		180.37	
E.G. Slope (ft/ft)	0.007027	Area (sq ft)		180.37	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	77.12	Top Width (ft)		77.12	
Vel Total (ft/s)	8.74	Avg. Vel. (ft/s)		8.74	
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)		2.34	
Conv. Total (cfs)	18812.8	Conv. (cfs)		18812.8	
Length Wtd. (ft)	15.70	Wetted Per. (ft)		77.59	
Min Ch El (ft)	2367.80	Shear (lb/sq ft)		1.02	
Alpha	1.00	Stream Power (lb/ft s)		8.92	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)		11.07	
C & E Loss (ft)	0.00	Cum SA (acres)		3.67	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12211.0

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378	80.8	2368	89.4	2367.7	108.9	2367.6	118.3	2368
129.6	2370	176	2380	193.9	2382.1				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	176	69.8	71.1	70.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2372.14	Element			
Vel Head (ft)	1.19	Wt. n-Val.		0.025	
W.S. Elev (ft)	2370.95	Reach Len. (ft)	69.80	71.10	70.50
Crit W.S. (ft)	2370.95	Flow Area (sq ft)		180.17	
E.G. Slope (ft/ft)	0.007050	Area (sq ft)		180.17	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	77.09	Top Width (ft)		77.09	
Vel Total (ft/s)	8.75	Avg. Vel. (ft/s)		8.75	
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)		2.34	
Conv. Total (cfs)	18782.4	Conv. (cfs)		18782.4	
Length Wtd. (ft)	71.10	Wetted Per. (ft)		77.56	
Min Ch El (ft)	2367.60	Shear (lb/sq ft)		1.02	
Alpha	1.00	Stream Power (lb/ft s)		8.95	
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)		11.01	
C & E Loss (ft)	0.03	Cum SA (acres)		3.64	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there

is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12139.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2377	42.8	2371	71.4	2368	84.6	2367	93.8	2366.4
114.5	2366.2	128.7	2367	148.9	2370	203.3	2380	211.8	2381

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
42.8	148.9	105.9	70.6	37.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2370.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.		0.025	
W.S. Elev (ft)	2369.47	Reach Len. (ft)	105.90	70.60	37.60
Crit W.S. (ft)	2369.47	Flow Area (sq ft)		188.42	
E.G. Slope (ft/ft)	0.007210	Area (sq ft)		188.42	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	87.89	Top Width (ft)		87.89	
Vel Total (ft/s)	8.37	Avg. Vel. (ft/s)		8.37	
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)		2.14	
Conv. Total (cfs)	18571.7	Conv. (cfs)		18571.7	
Length Wtd. (ft)	70.60	Wetted Per. (ft)		88.23	
Min Ch El (ft)	2366.20	Shear (lb/sq ft)		0.96	
Alpha	1.00	Stream Power (lb/ft s)		8.05	
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)		10.70	
C & E Loss (ft)	0.01	Cum SA (acres)		3.50	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12069.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2373	29.1	2371	54.6	2369	74	2366.4	93.4	2366
109.7	2365.6	121.8	2366	138.1	2367	166.1	2371	209.1	2380
216.4	2381								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
54.6	166.1	87	70	52.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2369.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.05	Wt. n-Val.		0.025	
W.S. Elev (ft)	2368.65	Reach Len. (ft)	87.00	70.00	52.20
Crit W.S. (ft)	2368.65	Flow Area (sq ft)		191.56	
E.G. Slope (ft/ft)	0.007288	Area (sq ft)		191.56	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	92.38	Top Width (ft)		92.38	
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)		8.23	
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.07	
Conv. Total (cfs)	18472.9	Conv. (cfs)		18472.9	
Length Wtd. (ft)	70.00	Wetted Per. (ft)		92.69	
Min Ch El (ft)	2365.60	Shear (lb/sq ft)		0.94	
Alpha	1.00	Stream Power (lb/ft s)		7.74	
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)		10.40	
C & E Loss (ft)	0.05	Cum SA (acres)		3.36	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp

REACH: lower RS: 11999.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2371.4	26.8	2371	58	2366	62.7	2365.5	96.4	2365
117.1	2366	128.8	2367	189.1	2380	207	2382		

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
26.8	189.1	107.8	99.8	89.9 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2369.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.		0.025	
W.S. Elev (ft)	2368.26	Reach Len. (ft)	107.80	99.80	89.90
Crit W.S. (ft)	2368.01	Flow Area (sq ft)		210.64	
E.G. Slope (ft/ft)	0.005194	Area (sq ft)		210.64	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	90.75	Top Width (ft)		90.75	
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)		7.49	
Max Chl Dpth (ft)	3.26	Hydr. Depth (ft)		2.32	
Conv. Total (cfs)	21881.5	Conv. (cfs)		21881.5	
Length Wtd. (ft)	99.80	Wetted Per. (ft)		91.17	
Min Ch El (ft)	2365.00	Shear (lb/sq ft)		0.75	
Alpha	1.00	Stream Power (lb/ft s)		5.61	
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)		10.07	
C & E Loss (ft)	0.04	Cum SA (acres)		3.21	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11899.5

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2371.2	35.2	2370	51.5	2368	72.2	2365	78	2364
95.9	2363.3	107.4	2364	116.6	2365	185.2	2380	196.9	2381

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
35.2	185.2	125.1	130.2	141.3 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2368.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.27	Wt. n-Val.		0.025	
W.S. Elev (ft)	2367.23	Reach Len. (ft)	125.10	130.20	141.30
Crit W.S. (ft)	2367.23	Flow Area (sq ft)		174.51	
E.G. Slope (ft/ft)	0.006907	Area (sq ft)		174.51	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	69.95	Top Width (ft)		69.95	
Vel Total (ft/s)	9.04	Avg. Vel. (ft/s)		9.04	
Max Chl Dpth (ft)	3.93	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	18974.8	Conv. (cfs)		18974.8	
Length Wtd. (ft)	130.20	Wetted Per. (ft)		70.52	
Min Ch El (ft)	2363.30	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		9.64	
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)		9.63	
C & E Loss (ft)	0.01	Cum SA (acres)		3.03	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11769.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2372.9	34.7	2363	42	2362	52.6	2361.7	64.5	2362
72.3	2363	156	2378						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	156	86.5	102.5	127.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2367.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.		0.025	
W.S. Elev (ft)	2365.69	Reach Len. (ft)	86.50	102.50	127.70
Crit W.S. (ft)	2365.69	Flow Area (sq ft)		167.71	
E.G. Slope (ft/ft)	0.006760	Area (sq ft)		167.71	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	62.08	Top Width (ft)		62.08	
Vel Total (ft/s)	9.40	Avg. Vel. (ft/s)		9.40	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		2.70	
Conv. Total (cfs)	19180.0	Conv. (cfs)		19180.0	
Length Wtd. (ft)	102.50	Wetted Per. (ft)		62.83	
Min Ch El (ft)	2361.70	Shear (lb/sq ft)		1.13	
Alpha	1.00	Stream Power (lb/ft s)		10.59	
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)		9.12	
C & E Loss (ft)	0.00	Cum SA (acres)		2.83	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11666.8

INPUT
Description: grass bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2368.4	26.6	2368	78.6	2368	103.3	2362	119.1	2360.8
130.3	2361	138.9	2362	161	2368	242.5	2383		

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
78.6	161	144.5	149.5	155.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2366.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.		0.025	
W.S. Elev (ft)	2364.95	Reach Len. (ft)	144.50	149.50	155.70
Crit W.S. (ft)	2364.95	Flow Area (sq ft)		165.29	
E.G. Slope (ft/ft)	0.006598	Area (sq ft)		165.29	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	58.64	Top Width (ft)		58.64	
Vel Total (ft/s)	9.54	Avg. Vel. (ft/s)		9.54	
Max Chl Dpth (ft)	4.15	Hydr. Depth (ft)		2.82	
Conv. Total (cfs)	19414.9	Conv. (cfs)		19414.9	
Length Wtd. (ft)	149.50	Wetted Per. (ft)		59.49	
Min Ch El (ft)	2360.80	Shear (lb/sq ft)		1.14	
Alpha	1.00	Stream Power (lb/ft s)		10.92	
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)		8.73	
C & E Loss (ft)	0.01	Cum SA (acres)		2.69	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11517.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2368.3	28.2	2366.5	81	2367.1	97.2	2366	115	2361
133.2	2358.7	139.9	2359	156.1	2361	182.5	2366	211.7	2370
256.8	2372.5								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
81	182.5	96.4	100.1	102.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2364.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.38	Wt. n-Val.		0.025	
W.S. Elev (ft)	2363.27	Reach Len. (ft)	96.40	100.10	102.70
Crit W.S. (ft)	2363.27	Flow Area (sq ft)		167.51	
E.G. Slope (ft/ft)	0.006661	Area (sq ft)		167.51	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	61.15	Top Width (ft)		61.15	
Vel Total (ft/s)	9.41	Avg. Vel. (ft/s)		9.41	
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)		2.74	
Conv. Total (cfs)	19322.6	Conv. (cfs)		19322.6	
Length Wtd. (ft)	100.10	Wetted Per. (ft)		61.95	
Min Ch El (ft)	2358.70	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		10.59	
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)		8.16	
C & E Loss (ft)	0.04	Cum SA (acres)		2.48	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11417.2

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2368	20.6	2365	33.6	2364	104.6	2363	128.6	2359
148.3	2357.9	166.9	2359	196.7	2364	221.2	2367	237	2370
267.2	2372.3								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
104.6	196.7	99.8	99.4	100.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2363.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.		0.025	
W.S. Elev (ft)	2361.82	Reach Len. (ft)	99.80	99.40	100.80
Crit W.S. (ft)	2361.82	Flow Area (sq ft)		176.28	
E.G. Slope (ft/ft)	0.006929	Area (sq ft)		176.28	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	71.97	Top Width (ft)		71.97	
Vel Total (ft/s)	8.95	Avg. Vel. (ft/s)		8.95	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)		2.45	
Conv. Total (cfs)	18945.5	Conv. (cfs)		18945.5	
Length Wtd. (ft)	99.40	Wetted Per. (ft)		72.50	
Min Ch El (ft)	2357.90	Shear (lb/sq ft)		1.05	
Alpha	1.00	Stream Power (lb/ft s)		9.41	
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)		7.76	
C & E Loss (ft)	0.06	Cum SA (acres)		2.33	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11317.8

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2363	17.2	2364	74.3	2361	97.5	2360	138.3	2357
145	2356.4	155	2357	199.2	2363.5	220.7	2364	240	2367
266.3	2376								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17.2	199.2	104.7	104.2	103.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2361.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.05	Wt. n-Val.		0.025	
W.S. Elev (ft)	2360.53	Reach Len. (ft)	104.70	104.20	103.90

Crit W.S. (ft)	2360.53	Flow Area (sq ft)	192.07
E.G. Slope (ft/ft)	0.007372	Area (sq ft)	192.07
Q Total (cfs)	1577.00	Flow (cfs)	1577.00
Top Width (ft)	93.69	Top Width (ft)	93.69
Vel Total (ft/s)	8.21	Avg. Vel. (ft/s)	8.21
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	2.05
Conv. Total (cfs)	18367.5	Conv. (cfs)	18367.5
Length Wtd. (ft)	104.20	Wetted Per. (ft)	94.12
Min Ch El (ft)	2356.40	Shear (lb/sq ft)	0.94
Alpha	1.00	Stream Power (lb/ft s)	7.71
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	7.34
C & E Loss (ft)	0.01	Cum SA (acres)	2.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11213.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2367	26.8	2362.9	45.8	2364.6	116.7	2356	128.7	2355.8
135.9	2356	152.4	2357	168.2	2360	206.8	2365	256.5	2376

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	256.5	102.2	100.5	101.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2360.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.		0.025	
W.S. Elev (ft)	2359.43	Reach Len. (ft)	102.20	100.50	101.20
Crit W.S. (ft)	2359.43	Flow Area (sq ft)		179.97	
E.G. Slope (ft/ft)	0.007032	Area (sq ft)		179.97	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	76.74	Top Width (ft)		76.74	
Vel Total (ft/s)	8.76	Avg. Vel. (ft/s)		8.76	
Max Chl Dpth (ft)	3.63	Hydr. Depth (ft)		2.35	
Conv. Total (cfs)	18805.2	Conv. (cfs)		18805.2	
Length Wtd. (ft)	100.50	Wetted Per. (ft)		77.21	
Min Ch El (ft)	2355.80	Shear (lb/sq ft)		1.02	
Alpha	1.00	Stream Power (lb/ft s)		8.97	
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)		6.90	
C & E Loss (ft)	0.00	Cum SA (acres)		1.94	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11113.1

INPUT
Description: grass bottom & sides
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2366.6	48	2360	71.3	2358	93	2355	112.2	2354.8
116.3	2355	127.4	2356	154.6	2361	173.7	2363	206	2365
225.1	2367	231.9	2368						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
48	154.6	80.6	96.7	118.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2359.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.		0.025	
W.S. Elev (ft)	2358.51	Reach Len. (ft)	80.60	96.70	118.20
Crit W.S. (ft)	2358.51	Flow Area (sq ft)		180.01	
E.G. Slope (ft/ft)	0.006488	Area (sq ft)		180.01	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	75.75	Top Width (ft)		75.75	
Vel Total (ft/s)	8.76	Avg. Vel. (ft/s)		8.76	
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)		2.38	

Conv. Total (cfs)	19578.5	Conv. (cfs)	19578.5
Length Wtd. (ft)	96.70	Wetted Per. (ft)	76.25
Min Ch El (ft)	2354.80	Shear (lb/sq ft)	0.96
Alpha	1.00	Stream Power (lb/ft s)	8.38
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	6.48
C & E Loss (ft)	0.01	Cum SA (acres)	1.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11016.4

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2366.6	15.7	2365	58.1	2355	62.7	2354	73.1	2353
89.5	2353	104.2	2354	112.3	2355	136	2360	170	2364
206.6	2366.5								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	206.6	251.8	277.3	314	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2357.86	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.27	Wt. n-Val.		0.025		
W.S. Elev (ft)	2356.59	Reach Len. (ft)	251.80	277.30	314.00	
Crit W.S. (ft)	2356.59	Flow Area (sq ft)		174.13		
E.G. Slope (ft/ft)	0.006764	Area (sq ft)		174.13		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	68.45	Top Width (ft)		68.45		
Vel Total (ft/s)	9.06	Avg. Vel. (ft/s)		9.06		
Max Chl Dpth (ft)	3.59	Hydr. Depth (ft)		2.54		
Conv. Total (cfs)	19175.1	Conv. (cfs)		19175.1		
Length Wtd. (ft)	277.30	Wetted Per. (ft)		69.05		
Min Ch El (ft)	2353.00	Shear (lb/sq ft)		1.06		
Alpha	1.00	Stream Power (lb/ft s)		9.64		
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)		6.09		
C & E Loss (ft)	0.26	Cum SA (acres)		1.60		

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 10739.1

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2364	44.2	2352	56	2351	71.5	2350.5	84	2351
89.8	2352	109.8	2357.3	163.1	2371.5				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	163.1	236.6	302.1	218.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2356.66	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.42	Wt. n-Val.		0.025		
W.S. Elev (ft)	2356.24	Reach Len. (ft)	236.60	302.10	218.30	
Crit W.S. (ft)		Flow Area (sq ft)		304.17		
E.G. Slope (ft/ft)	0.001250	Area (sq ft)		304.17		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	77.22	Top Width (ft)		77.22		
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)		5.18		

Max Chl Dpth (ft)	5.74	Hydr. Depth (ft)	3.94
Conv. Total (cfs)	44607.9	Conv. (cfs)	44607.9
Length Wtd. (ft)	302.10	Wetted Per. (ft)	78.48
Min Ch El (ft)	2350.50	Shear (lb/sq ft)	0.30
Alpha	1.00	Stream Power (lb/ft s)	1.57
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	4.57
C & E Loss (ft)	0.02	Cum SA (acres)	1.14

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 10512.5

INPUT
Description: shrubs along gabions on rt side, grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2360	35.4	2349	47.9	2348.6	56.7	2348.8	62	2348.9
63.3	2353	109.1	2371.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	56.7	.15	63.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	109.1	314.3	308.7	302.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2355.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.055	
W.S. Elev (ft)	2355.20	Reach Len. (ft)	314.30	308.70	302.20
Crit W.S. (ft)	2353.15	Flow Area (sq ft)		244.43	
E.G. Slope (ft/ft)	0.008378	Area (sq ft)		244.43	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	53.37	Top Width (ft)		53.37	
Vel Total (ft/s)	6.45	Avg. Vel. (ft/s)		6.45	
Max Chl Dpth (ft)	6.60	Hydr. Depth (ft)		4.58	
Conv. Total (cfs)	17228.9	Conv. (cfs)		17228.9	
Length Wtd. (ft)	308.70	Wetted Per. (ft)		57.75	
Min Ch El (ft)	2348.60	Shear (lb/sq ft)		2.21	
Alpha	1.00	Stream Power (lb/ft s)		14.28	
Frctn Loss (ft)	4.83	Cum Volume (acre-ft)		2.66	
C & E Loss (ft)	0.10	Cum SA (acres)		0.68	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 10203.8

INPUT
Description: shrubs along gabions on rt side, grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355	37.1	2346	43.3	2345	62.5	2345	68.8	2346
70.1	2350	98.5	2360						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	62.5	.15	70.1	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	98.5	10.8	83.8	68.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2350.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.66	Wt. n-Val.		0.060	
W.S. Elev (ft)	2349.26	Reach Len. (ft)	10.80	83.80	68.80
Crit W.S. (ft)	2349.26	Flow Area (sq ft)		152.31	
E.G. Slope (ft/ft)	0.038870	Area (sq ft)		152.31	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	46.19	Top Width (ft)		46.19	
Vel Total (ft/s)	10.35	Avg. Vel. (ft/s)		10.35	
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)		3.30	
Conv. Total (cfs)	7998.8	Conv. (cfs)		7998.8	
Length Wtd. (ft)	83.80	Wetted Per. (ft)		49.10	
Min Ch El (ft)	2345.00	Shear (lb/sq ft)		7.53	
Alpha	1.00	Stream Power (lb/ft s)		77.94	
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)		1.26	
C & E Loss (ft)	0.26	Cum SA (acres)		0.33	

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 10120.0

INPUT
Description: us end of rainbow bridge
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355.7	21.3	2352.7	41.5	2342.7	50.5	2341.7	60.6	2340.7
66.3	2340.7	76.5	2341.7	127.7	2357.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.5	.035	76.5	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	127.7	120	120	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2347.11	Element			
Vel Head (ft)	0.80	Wt. n-Val.		0.038	
W.S. Elev (ft)	2346.32	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2345.16	Flow Area (sq ft)		220.21	
E.G. Slope (ft/ft)	0.005710	Area (sq ft)		220.21	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	57.08	Top Width (ft)		57.08	
Vel Total (ft/s)	7.16	Avg. Vel. (ft/s)		7.16	
Max Chl Dpth (ft)	5.62	Hydr. Depth (ft)		3.86	
Conv. Total (cfs)	20868.7	Conv. (cfs)		20868.7	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		58.78	
Min Ch El (ft)	2340.70	Shear (lb/sq ft)		1.34	
Alpha	1.00	Stream Power (lb/ft s)		9.56	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.90	
C & E Loss (ft)	0.00	Cum SA (acres)		0.23	

Note: Manning's n values were composited to a single value in the main channel.

BRIDGE

RIVER: Flamingo Wash Sp
REACH: lower RS: 10060.0

INPUT
Description: Flamingo Wash/Rainbow Bridge
Distance from Upstream XS = .1
Deck/Roadway Width = 119.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 2355.9	2352.7	130 2358.2	2352.7

Upstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355.7	21.3	2352.7	41.5	2342.7	50.5	2341.7	60.6	2340.7
66.3	2340.7	76.5	2341.7	127.7	2357.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.5	.035	76.5	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	127.7	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 2355.9	2352.7	130 2358.2	2352.7

Downstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355	21.3	2352	41.5	2342	50.5	2341	60.6	2340
66.3	2340	76.5	2341	127.7	2357				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.5	.035	76.5	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	127.7	.1	.3

```
Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1

  E.G. US. (ft)               2347.11    Element                Inside BR US  Inside BR DS
  W.S. US. (ft)               2346.32    E.G. Elev (ft)             2347.11       2346.55
  Q Total (cfs)               1577.00    W.S. Elev (ft)             2346.32       2345.83
  Q Bridge (cfs)              1577.00    Crit W.S. (ft)             2345.18       2344.48
  Q Weir (cfs)                           Max Chl Dpth (ft)             5.62          5.83
  Weir Sta Lft (ft)                      Vel Total (ft/s)              7.16          6.78
  Weir Sta Rgt (ft)                      Flow Area (sq ft)           220.16        232.69
  Weir Submerg                           Froude # Chl                  0.64          0.60
  Weir Max Depth (ft)                    Specif Force (cu ft)        852.01        882.32
  Min El Weir Flow (ft)       2355.91    Hydr Depth (ft)               3.86          4.00
  Min El Prs (ft)             2352.70    W.P. Total (ft)              58.78         59.99
  Delta EG (ft)                  0.57    Conv. Total (cfs)          22544.6       24386.4
  Delta WS (ft)                  0.48    Top Width (ft)               57.07         58.21
  BR Open Area (sq ft)         690.95    Frctn Loss (ft)               0.54          0.00
  BR Open Vel (ft/s)             7.16    C & E Loss (ft)               0.03          0.00
  Coef of Q                              Shear Total (lb/sq ft)        1.14          1.01
  Br Sel Method          Energy only     Power Total (lb/ft s)         8.20          6.86


Note:    Manning's n values were composited to a single value in the main channel.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 10000.0

INPUT
Description: ds end of rainbow bridge
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    2355    21.3    2352    41.5    2342    50.5    2341    60.6    2340
    66.3    2340    76.5    2341   127.7    2357

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04    50.5    .035    76.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            0   127.7             60.1    60.1    60.1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1

  E.G. Elev (ft)            2346.55    Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.71    Wt. n-Val.                            0.038
  W.S. Elev (ft)            2345.83    Reach Len. (ft)             60.10      60.10      60.10
  Crit W.S. (ft)                       Flow Area (sq ft)                     232.65
  E.G. Slope (ft/ft)       0.004897    Area (sq ft)                          232.65
  Q Total (cfs)             1577.00    Flow (cfs)                           1577.00
  Top Width (ft)              58.20    Top Width (ft)                         58.20
  Vel Total (ft/s)             6.78    Avg. Vel. (ft/s)                        6.78
  Max Chl Dpth (ft)            5.83    Hydr. Depth (ft)                        4.00
  Conv. Total (cfs)        22535.1    Conv. (cfs)                          22535.1
  Length Wtd. (ft)            60.10    Wetted Per. (ft)                       59.99
  Min Ch El (ft)            2340.00    Shear (lb/sq ft)                        1.19
  Alpha                        1.00    Stream Power (lb/ft s)                  8.04
  Frctn Loss (ft)              0.41    Cum Volume (acre-ft)                    0.28
  C & E Loss (ft)              0.06    Cum SA (acres)                          0.07


Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 9939.9
```

INPUT
Description: grouted riprap sides, unlined bottom
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2354	19.7	2341	37.7	2340	46	2340	53	2341
86.7	2358								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	19.7	.035	53	.04	86.7	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	86.7	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2346.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.36	Wt. n-Val.		0.037	
W.S. Elev (ft)	2344.72	Reach Len. (ft)			
Crit W.S. (ft)	2344.34	Flow Area (sq ft)		168.81	
E.G. Slope (ft/ft)	0.010005	Area (sq ft)		168.81	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	46.31	Top Width (ft)		46.31	
Vel Total (ft/s)	9.34	Avg. Vel. (ft/s)		9.34	
Max Chl Dpth (ft)	4.72	Hydr. Depth (ft)		3.65	
Conv. Total (cfs)	15766.3	Conv. (cfs)		15766.3	
Length Wtd. (ft)		Wetted Per. (ft)		48.41	
Min Ch El (ft)	2340.00	Shear (lb/sq ft)		2.18	
Alpha	1.00	Stream Power (lb/ft s)		20.35	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Old input channe
REACH: obsolete RS: 1100.0

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2415.2	17.7	2414.2	31.6	2412.2	51.6	2410.2	57.8	2409.2
65.1	2408.7	72.4	2409.2	86.8	2410.2	121.6	2419.2		

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2409.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.027	
W.S. Elev (ft)	2409.41	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)	2409.41	Flow Area (sq ft)		7.09	
E.G. Slope (ft/ft)	0.015190	Area (sq ft)		7.09	
Q Total (cfs)	25.00	Flow (cfs)		25.00	
Top Width (ft)	18.83	Top Width (ft)		18.83	
Vel Total (ft/s)	3.53	Avg. Vel. (ft/s)		3.53	
Max Chl Dpth (ft)	0.71	Hydr. Depth (ft)		0.38	
Conv. Total (cfs)	202.8	Conv. (cfs)		202.8	
Length Wtd. (ft)	73.80	Wetted Per. (ft)		18.89	
Min Ch El (ft)	2408.70	Shear (lb/sq ft)		0.36	
Alpha	1.00	Stream Power (lb/ft s)		1.25	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)		0.01	
C & E Loss (ft)	0.01	Cum SA (acres)		0.03	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Old input channe
REACH: obsolete RS: 1000.0

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2419	23.4	2418	34	2416	56.5	2409	69.5	2408
77.7	2407.8	81	2408	90.6	2416	102.1	2419		

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.1	78.3	91.8	103.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2408.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.027	
W.S. Elev (ft)	2408.46	Reach Len. (ft)			
Crit W.S. (ft)	2408.40	Flow Area (sq ft)		7.91	
E.G. Slope (ft/ft)	0.009999	Area (sq ft)		7.91	
Q Total (cfs)	25.00	Flow (cfs)		25.00	
Top Width (ft)	18.01	Top Width (ft)		18.01	
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	
Max Chl Dpth (ft)	0.66	Hydr. Depth (ft)		0.44	
Conv. Total (cfs)	250.0	Conv. (cfs)		250.0	
Length Wtd. (ft)		Wetted Per. (ft)		18.20	
Min Ch El (ft)	2407.80	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		0.86	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Flamingo Wash Sp

Reach	River Sta.	n1	n2	n3	n4	n5
Upper	18060.5	.015	.015	.015		
Upper	18045.5	.015	.015	.015		
Upper	18026.05	Bridge				
Upper	18006.6	.015	.015	.015		
Upper	17992.6	.025	.015	.025		
Upper	17792.3	.025				
Upper	17678.8	.027				
Upper	17539.1	.027				
Upper	17477.5	.025	.015	.027		
Upper	17457.5	.025	.15	.015	.025	
Upper	17450.5	Culvert				
Upper	17443.5	.025	.15	.015	.025	
Upper	17423.5	.15	.027	.025		
Upper	17395.5	.15	.027	.025		
Upper	17286.9	.15	.027	.025		
Upper	17182.7	.025	.027	.15	.027	
Upper	17172.7	.025	.15	.027		
Upper	17140.8	Culvert				
Upper	17108.8	.025	.027			
Upper	17098.8	.025	.027			
Upper	17065.8	.027	.15	.027	.025	
Upper	16999.0	.027	.015	.15	.027	.025
Upper	16956.5	.025	.027	.025		
Upper	16748.5	.025	.027	.025		
Upper	16517.8	.025	.027	.025		
Upper	16127.8	.025	.027	.025		
Upper	16035.0	.025	.027	.025	.025	
Upper	15915.7	.027	.027			
Upper	15895.7	.027	.027			
Upper	15888.2	Culvert				
Upper	15880.7	.027	.027			
Upper	15860.7	.027	.027			
Upper	15786.9	.025	.027	.15	.025	
Upper	15695.1	.025	.027	.15	.027	
lower	15591.5	.025	.029	.025	.015	.025
lower	15436.9	.025	.029	.027		
lower	15256.3	.025	.027			
lower	15027.4	.025	.027			
lower	14905.8	.025	.027			
lower	14799.2	.025	.032			
lower	14665.5	.025	.027			
lower	14365.5	.025	.027			
lower	14264.9	.025	.027			
lower	14219.9	.025	.027			
lower	14174.9	.025	.027			
lower	13974.9	.032	.027	.032		
lower	13928.6	.032	.027	.032		
lower	13912.6	Bridge				
lower	13896.6	.032	.027	.032		
lower	13854.6	.025				
lower	13630.4	.025				
lower	13330.4	.025				
lower	13180.2	.025				
lower	13049.6	.025				
lower	13029.6	.025				
lower	13024.6	Culvert				
lower	13019.6	.025				
lower	12999.6	.025				
lower	12884.9	.025	.025			
lower	12784.9	.025				
lower	12633.2	.025				
lower	12602.8	.025				
lower	12573.3	.025				
lower	12542.9	.025				
lower	12512.8	.025				
lower	12362.3	.025				
lower	12259.2	.025				
lower	12243.2	.025				
lower	12234.95	Culvert				

lower	12226.7	.025			
lower	12211.0	.025			
lower	12139.9	.025			
lower	12069.3	.025			
lower	11999.3	.025			
lower	11899.5	.025			
lower	11769.3	.025			
lower	11666.8	.025			
lower	11517.3	.025			
lower	11417.2	.025			
lower	11317.8	.025			
lower	11213.6	.025			
lower	11113.1	.025	.025		
lower	11016.4	.025			
lower	10739.1	.025			
lower	10512.5	.025	.15	.025	
lower	10203.8	.025	.15	.025	
lower	10120.0	.04	.035	.04	
lower	10060.0	Bridge			
lower	10000.0	.04	.035	.04	
lower	9939.9	.04	.035	.04	.04

River:Old input channe

Reach	River Sta.	n1
obsolete	1100.0	.027
obsolete	1000.0	.027

SUMMARY OF REACH LENGTHS

River: Flamingo Wash Sp

Reach	River Sta.	Left	Channel	Right
Upper	18060.5	15	15	15
Upper	18045.5	38.9	38.9	38.9
Upper	18026.05	Bridge		
Upper	18006.6	13.1	14	14.7
Upper	17992.6	205.3	200.3	197.3
Upper	17792.3	124.2	113.5	100.1
Upper	17678.8	144.1	139.7	132.6
Upper	17539.1	61.6	61.6	61.6
Upper	17477.5	20	20	20
Upper	17457.5	14	14	14
Upper	17450.5	Culvert		
Upper	17443.5	20	20	20
Upper	17423.5	28	28	28
Upper	17395.5	106.5	108.6	115.1
Upper	17286.9	104.2	104.2	104.2
Upper	17182.7	10	10	10
Upper	17172.7	63.9	63.9	63.9
Upper	17140.8	Culvert		
Upper	17108.8	33	33	33
Upper	17098.8	33	33	33
Upper	17065.8	52.5	66.8	84.9
Upper	16999.0	41	42.5	43
Upper	16956.5	196.6	208	217.7
Upper	16748.5	225.8	230.7	239.8
Upper	16517.8	390	390	390
Upper	16127.8	96.3	92.8	92.8
Upper	16035.0	106.2	119.3	133.3
Upper	15915.7	20	20	20
Upper	15895.7	68	73.8	75.1
Upper	15888.2	Culvert		
Upper	15880.7	68	73.8	75.1
Upper	15860.7	68	73.8	75.1
Upper	15786.9	78.3	91.8	103.7
Upper	15695.1	81.5	103.6	127.4
lower	15591.5	141.2	154.6	169.3
lower	15436.9	171	180.6	189.1
lower	15256.3	227.6	228.9	230.4
lower	15027.4	91.4	121.6	147.6
lower	14905.8	91	106.6	118.7
lower	14799.2	121.5	133.7	141.3
lower	14665.5	300	300	300
lower	14365.5	105.1	100.6	95.7
lower	14264.9	45	45	45
lower	14219.9	45	45	45
lower	14174.9	203	200	197
lower	13974.9	60.8	46.3	32.1
lower	13928.6	46	42	36
lower	13912.6	Bridge		
lower	13896.6	46	42	36
lower	13854.6	234.5	224.2	219.8
lower	13630.4	300	300	300
lower	13330.4	145.1	150.2	153.1
lower	13180.2	94.4	130.6	144.2
lower	13049.6	20	20	20
lower	13029.6	10	10	10
lower	13024.6	Culvert		
lower	13019.6	20	20	20
lower	12999.6	125.3	114.7	112.5
lower	12884.9	100	100	100
lower	12784.9	163.1	151.7	136.6

lower	12633.2	40.4	30.4	20
lower	12602.8	29.5	29.5	29.5
lower	12573.3	30.4	30.4	30.4
lower	12542.9	30.1	30.1	30.1
lower	12512.8	138	150.5	163.1
lower	12362.3	114	103.1	90.7
lower	12259.2	22.4	16	9.2
lower	12243.2	16	16	16
lower	12234.95	Culvert		
lower	12226.7	15.7	15.7	15.7
lower	12211.0	69.8	71.1	70.5
lower	12139.9	105.9	70.6	37.6
lower	12069.3	87	70	52.2
lower	11999.3	107.8	99.8	89.9
lower	11899.5	125.1	130.2	141.3
lower	11769.3	86.5	102.5	127.7
lower	11666.8	144.5	149.5	155.7
lower	11517.3	96.4	100.1	102.7
lower	11417.2	99.8	99.4	100.8
lower	11317.8	104.7	104.2	103.9
lower	11213.6	102.2	100.5	101.2
lower	11113.1	80.6	96.7	118.2
lower	11016.4	251.8	277.3	314
lower	10739.1	236.6	302.1	218.3
lower	10512.5	314.3	308.7	302.2
lower	10203.8	10.8	83.8	68.8
lower	10120.0	120	120	120
lower	10060.0	Bridge		
lower	10000.0	60.1	60.1	60.1
lower	9939.9	0	0	0

River: Old input channe

Reach	River Sta.	Left	Channel	Right
obsolete	1100.0	68	73.8	75.1
obsolete	1000.0	78.3	91.8	103.7

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Flamingo Wash Sp

Reach	River Sta.	Contr.	Expan.
Upper	18060.5	.1	.3
Upper	18045.5	.1	.3
Upper	18026.05	Bridge	
Upper	18006.6	.1	.3
Upper	17992.6	.1	.3
Upper	17792.3	.1	.3
Upper	17678.8	.1	.3
Upper	17539.1	.1	.3
Upper	17477.5	.1	.3
Upper	17457.5	.1	.3
Upper	17450.5	Culvert	
Upper	17443.5	.1	.3
Upper	17423.5	.1	.3
Upper	17395.5	.1	.3
Upper	17286.9	.1	.3
Upper	17182.7	.1	.3
Upper	17172.7	.1	.3
Upper	17140.8	Culvert	
Upper	17108.8	.1	.3
Upper	17098.8	.1	.3
Upper	17065.8	.1	.3
Upper	16999.0	.1	.3
Upper	16956.5	.1	.3
Upper	16748.5	.1	.3
Upper	16517.8	.1	.3
Upper	16127.8	.1	.3
Upper	16035.0	.1	.3
Upper	15915.7	.1	.3
Upper	15895.7	.1	.3
Upper	15888.2	Culvert	
Upper	15880.7	.1	.3
Upper	15860.7	.1	.3
Upper	15786.9	.1	.3
Upper	15695.1	.1	.3
lower	15591.5	.1	.3
lower	15436.9	.1	.3
lower	15256.3	.1	.3
lower	15027.4	.1	.3
lower	14905.8	.1	.3
lower	14799.2	.1	.3
lower	14665.5	.1	.3
lower	14365.5	.1	.3
lower	14264.9	.1	.3
lower	14219.9	.1	.3
lower	14174.9	.1	.3
lower	13974.9	.1	.3
lower	13928.6	.1	.3
lower	13912.6	Bridge	
lower	13896.6	.1	.3
lower	13854.6	.1	.3
lower	13630.4	.1	.3

lower	13330.4		.1	.3
lower	13180.2		.1	.3
lower	13049.6		.1	.3
lower	13029.6		.1	.3
lower	13024.6	Culvert		
lower	13019.6		.1	.3
lower	12999.6		.1	.3
lower	12884.9		.1	.3
lower	12784.9		.1	.3
lower	12633.2		.1	.3
lower	12602.8		.1	.3
lower	12573.3		.1	.3
lower	12542.9		.1	.3
lower	12512.8		.1	.3
lower	12362.3		.1	.3
lower	12259.2		.1	.3
lower	12243.2		.1	.3
lower	12234.95	Culvert		
lower	12226.7		.1	.3
lower	12211.0		.1	.3
lower	12139.9		.1	.3
lower	12069.3		.1	.3
lower	11999.3		.1	.3
lower	11899.5		.1	.3
lower	11769.3		.1	.3
lower	11666.8		.1	.3
lower	11517.3		.1	.3
lower	11417.2		.1	.3
lower	11317.8		.1	.3
lower	11213.6		.1	.3
lower	11113.1		.1	.3
lower	11016.4		.1	.3
lower	10739.1		.1	.3
lower	10512.5		.1	.3
lower	10203.8		.1	.3
lower	10120.0		.1	.3
lower	10060.0	Bridge		
lower	10000.0		.1	.3
lower	9939.9		.1	.3

River: Old input channe

Reach	River Sta.	Contr.	Expan.
obsolete	1100.0	.1	.3
obsolete	1000.0	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 01

River: Flamingo Wash Sp Reach: Upper RS: 18026.05 Profile: PF 1
  Warning:For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy. This is not physically possible, the momentum answer has been disregarded.
River: Flamingo Wash Sp Reach: Upper RS: 18026.05 Profile: PF 1 Upstream
  Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 18006.6 Profile: PF 1
  Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 17992.6 Profile: PF 1
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17539.1 Profile: PF 1
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 17477.5 Profile: PF 1
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17450.5 Profile: PF 1
  Warning:The weir over culvert is submerged.
River: Flamingo Wash Sp Reach: Upper RS: 17443.5 Profile: PF 1
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17423.5 Profile: PF 1
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17395.5 Profile: PF 1
  Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
  Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17286.9 Profile: PF 1
  Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
  Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17182.7 Profile: PF 1
  Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17098.8 Profile: PF 1
  Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Flamingo Wash Sp Reach: Upper   RS: 17065.8   Profile: PF 1
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 16999.0   Profile: PF 1
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 16956.5   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 16748.5   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 16517.8   Profile: PF 1
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 16127.8   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 15860.7   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper   RS: 15786.9   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper   RS: 15695.1   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:A flow split was encountered. The program first calculated the momentum of both channels below the junction. An
             energy balance was performed across the junction from the stream with the highest momentum downstream to the section
             upstream.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 15591.5   Profile: PF 1
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 15436.9   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 15256.3   Profile: PF 1
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 15027.4   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 14905.8   Profile: PF 1
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 14799.2   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 14665.5   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 14365.5   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 14264.9 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 14219.9 Profile: PF 1
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 14174.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13974.9 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13928.6 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13912.6 Profile: PF 1 Upstream
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13912.6 Profile: PF 1 Downstream
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13896.6 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower RS: 13854.6 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 13630.4 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 13330.4 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 13180.2 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 13049.6 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: lower RS: 13024.6 Profile: PF 1 Culv: Culvert #1
Note: Culvert critical depth exceeds the height of the culvert.
River: Flamingo Wash Sp Reach: lower RS: 12999.6 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12884.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12784.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12633.2 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12602.8 Profile: PF 1
Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Flamingo Wash Sp Reach: lower RS: 12573.3 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: lower RS: 12512.8 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: lower RS: 12362.3 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12259.2 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: lower RS: 12234.95 Profile: PF 1 Culv: Culvert #1
Note: Culvert critical depth exceeds the height of the culvert.
River: Flamingo Wash Sp Reach: lower RS: 12226.7 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12211.0 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12139.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 12069.3 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11899.5 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11769.3 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11666.8 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11517.3 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11417.2 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower RS: 11317.8 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

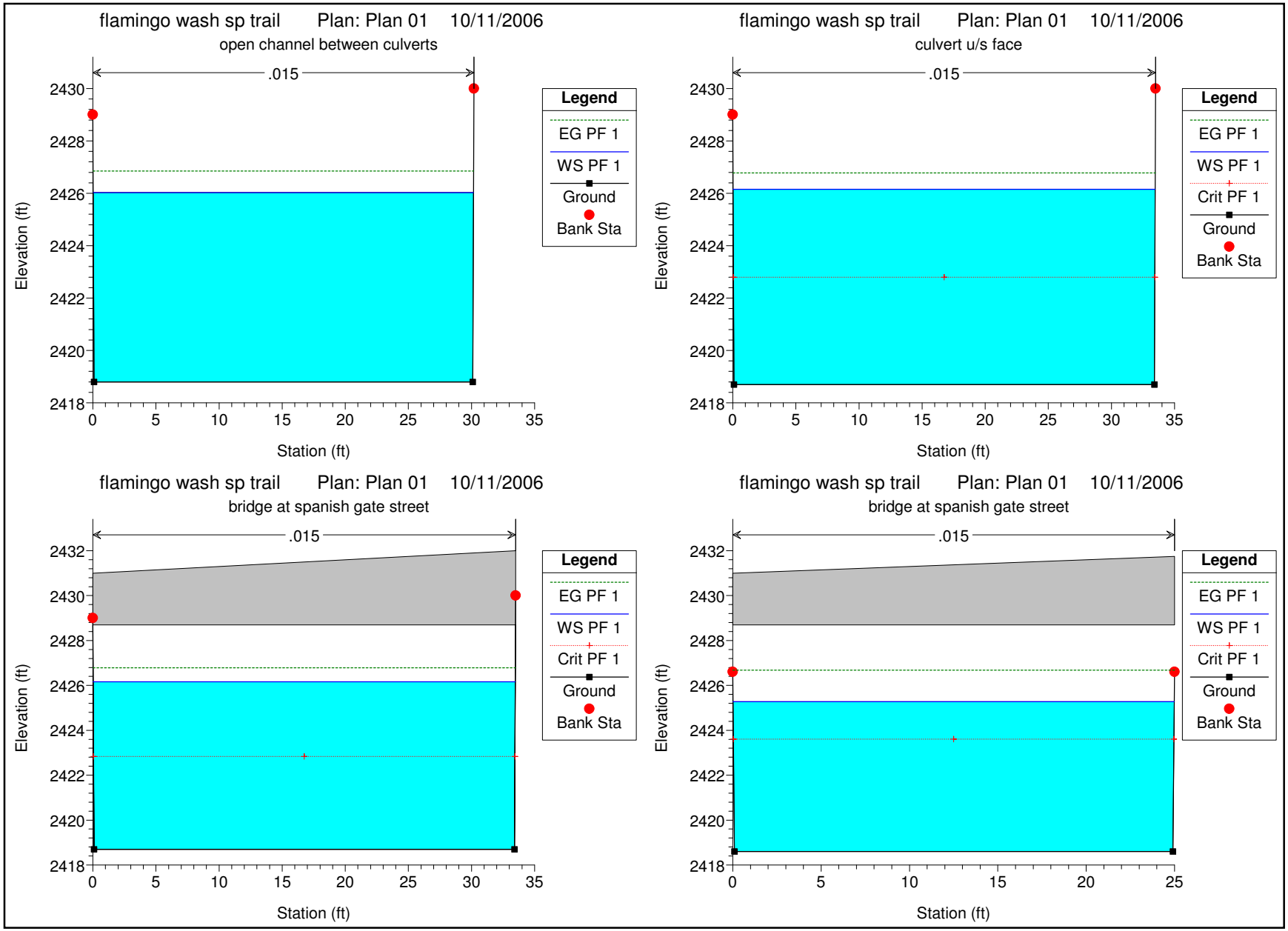
River: Flamingo Wash Sp Reach: lower   RS: 11213.6   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower   RS: 11113.1   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower   RS: 11016.4   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
River: Flamingo Wash Sp Reach: lower   RS: 10739.1   Profile: PF 1
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: lower   RS: 10512.5   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 10203.8   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 10120.0   Profile: PF 1
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 10060.0   Profile: PF 1 Upstream
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 10060.0   Profile: PF 1 Downstream
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 10000.0   Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: lower   RS: 9939.9   Profile: PF 1
     Note: Manning's n values were composited to a single value in the main channel.
River: Old input channe Reach: obsolete   RS: 1100.0   Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
             program defaulted to critical depth.

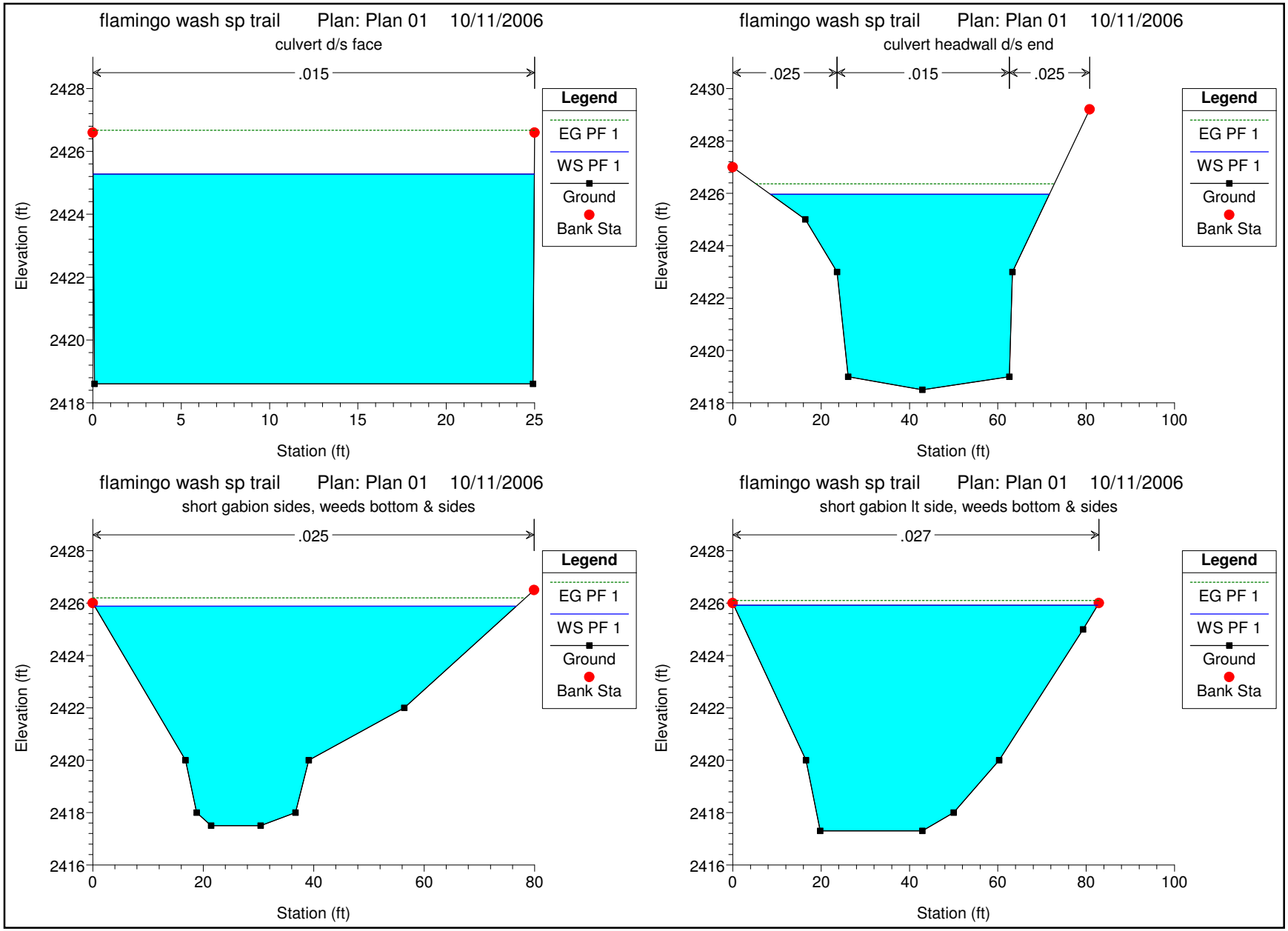
HEC-RAS Plan: Plan 01 River: Flamingo Wash Sp Reach: Upper Profile: PF 1

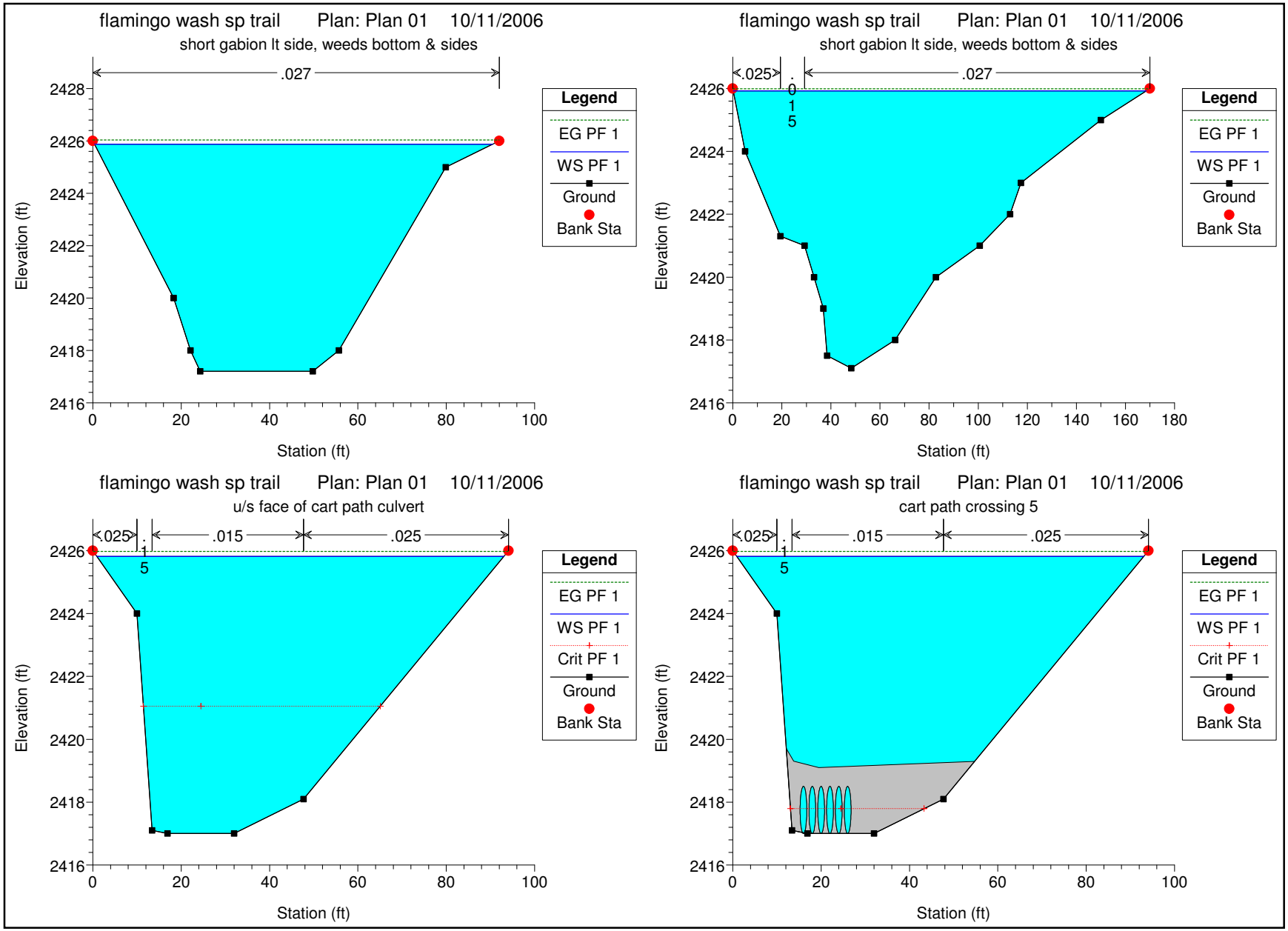
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Upper	18060.5	PF 1	1577.00	2418.80	2426.03		2426.85	0.000646	7.25	217.40	30.14	0.48
Upper	18045.5	PF 1	1577.00	2418.70	2426.16	2422.80	2426.78	0.000459	6.34	248.85	33.44	0.41
Upper	18026.05		Bridge									
Upper	18006.6	PF 1	1577.00	2418.60	2425.28		2426.68	0.001292	9.49	166.12	24.97	0.65
Upper	17992.6	PF 1	1577.00	2418.50	2425.96		2426.37	0.000605	5.10	309.37	63.14	0.41
Upper	17792.3	PF 1	1577.00	2417.50	2425.89		2426.20	0.000792	4.50	350.64	76.37	0.37
Upper	17678.8	PF 1	1577.00	2417.30	2425.92		2426.10	0.000390	3.37	467.44	82.40	0.25
Upper	17539.1	PF 1	1577.00	2417.20	2425.87		2426.04	0.000406	3.31	477.09	90.04	0.25
Upper	17477.5	PF 1	1577.00	2417.10	2425.92		2425.99	0.000195	2.12	743.25	168.28	0.18
Upper	17457.5	PF 1	1577.00	2417.00	2425.82	2421.06	2425.98	0.000770	3.19	494.94	92.14	0.24
Upper	17450.5		Culvert									
Upper	17443.5	PF 1	1577.00	2416.90	2425.78		2425.94	0.000869	3.22	490.49	90.61	0.24
Upper	17423.5	PF 1	1577.00	2416.80	2425.53		2425.89	0.003174	4.84	325.90	48.38	0.33
Upper	17395.5	PF 1	1577.00	2416.70	2425.30		2425.76	0.005723	5.45	289.59	47.56	0.39
Upper	17286.9	PF 1	1577.00	2416.50	2423.74		2424.70	0.017619	7.88	200.06	40.12	0.62
Upper	17182.7	PF 1	1577.00	2416.20	2422.69		2423.09	0.011210	5.06	311.38	80.21	0.45
Upper	17172.7	PF 1	1577.00	2416.10	2422.58	2420.47	2422.98	0.011209	5.08	310.24	80.06	0.46
Upper	17140.8		Culvert									
Upper	17108.8	PF 1	1577.00	2416.00	2421.08		2421.56	0.001829	5.55	283.97	88.24	0.55
Upper	17098.8	PF 1	1577.00	2415.90	2421.03		2421.49	0.001897	5.47	288.34	88.77	0.53
Upper	17065.8	PF 1	1577.00	2415.50	2420.71		2421.35	0.013430	6.39	246.93	72.54	0.61
Upper	16999.0	PF 1	1577.00	2415.30	2420.74		2420.93	0.002026	3.46	455.28	111.81	0.30
Upper	16956.5	PF 1	1577.00	2414.90	2420.12		2420.79	0.002281	6.55	240.69	65.50	0.60
Upper	16748.5	PF 1	1577.00	2413.30	2418.40	2418.40	2419.94	0.006747	9.98	158.06	51.25	1.00
Upper	16517.8	PF 1	1577.00	2411.90	2417.00		2418.18	0.004546	8.72	180.89	54.09	0.84
Upper	16127.8	PF 1	1577.00	2410.00	2415.68		2416.59	0.003340	7.62	206.83	59.10	0.72
Upper	16035.0	PF 1	1577.00	2409.90	2416.06		2416.27	0.000560	3.72	424.31	101.00	0.32
Upper	15915.7	PF 1	1577.00	2408.80	2416.04		2416.20	0.000445	3.15	515.93	150.63	0.26
Upper	15895.7	PF 1	1577.00	2408.70	2416.00	2412.94	2416.18	0.000583	3.42	480.14	169.24	0.30
Upper	15888.2		Culvert									
Upper	15880.7	PF 1	1577.00	2408.60	2415.09		2415.37	0.001164	4.28	368.29	105.88	0.40
Upper	15860.7	PF 1	1577.00	2408.50	2415.01		2415.29	0.001149	4.26	370.08	106.44	0.40
Upper	15786.9	PF 1	1577.00	2407.80	2414.15	2412.77	2415.02	0.013632	7.52	209.66	48.25	0.64
Upper	15695.1	PF 1	1577.00	2406.10	2410.94	2410.94	2412.55	0.068838	10.19	154.76	48.59	1.01

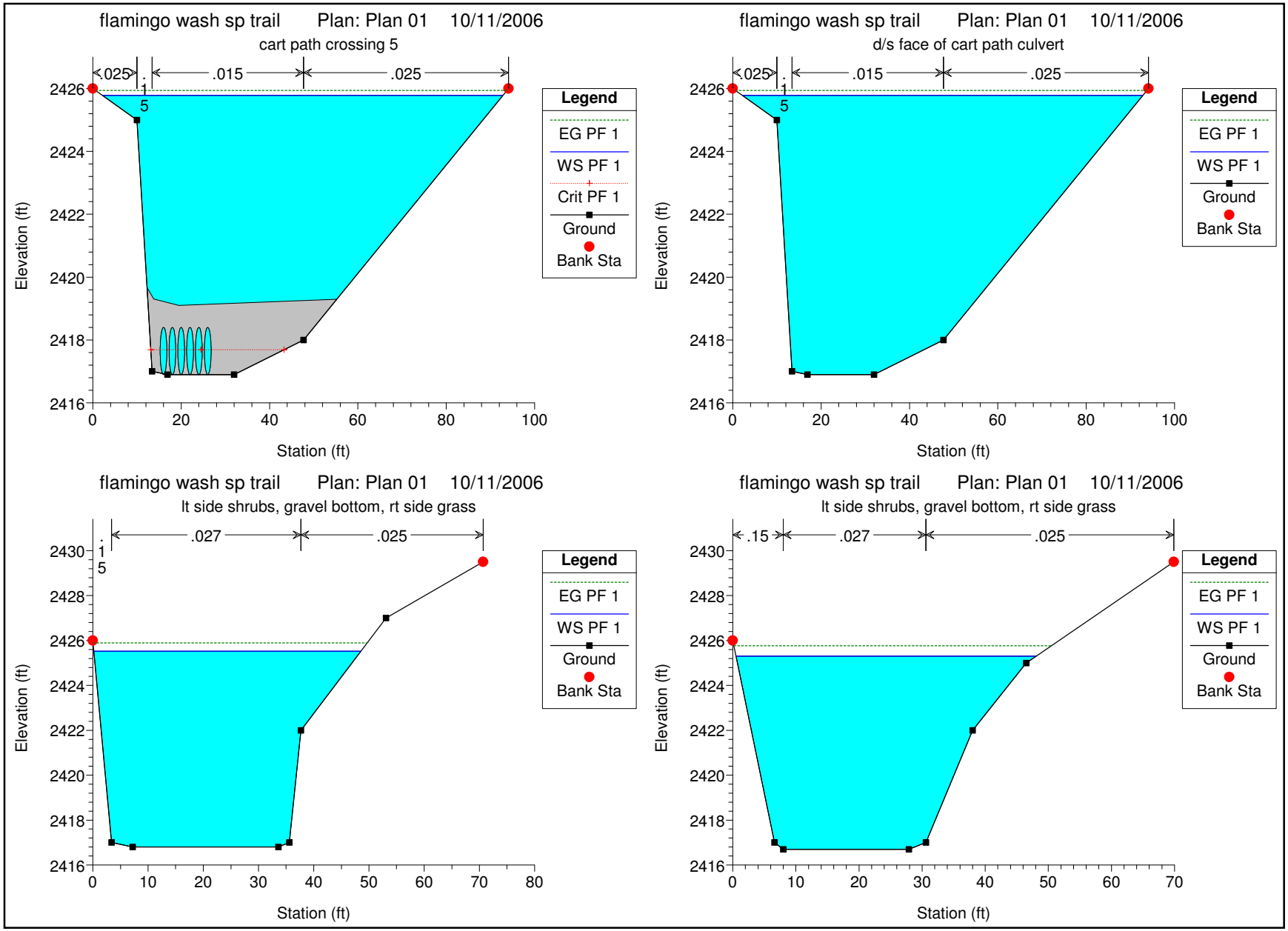
HEC-RAS Plan: Plan 01 River: Flamingo Wash Sp Reach: Upper Profile: PF 1

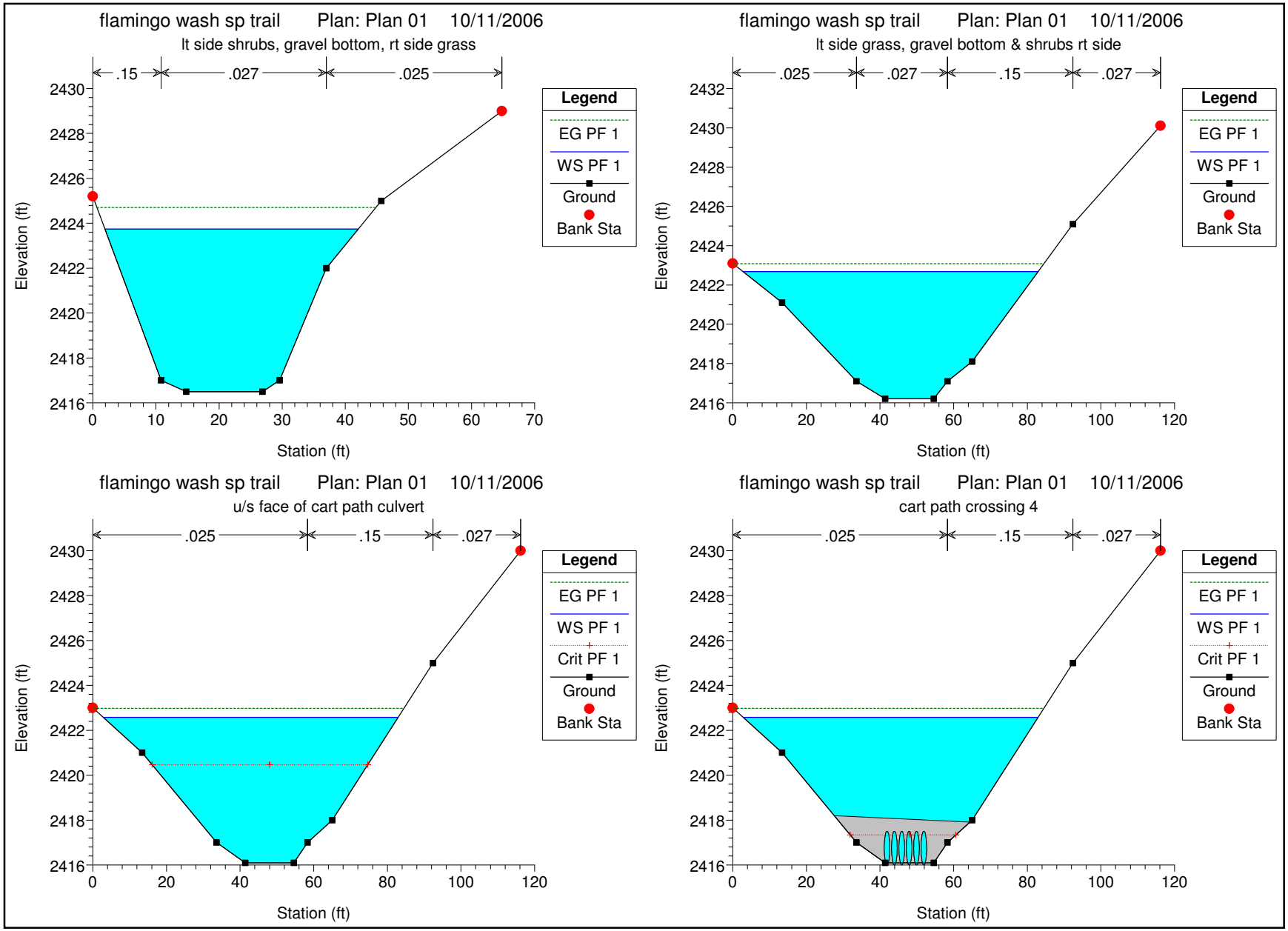
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Upper	18060.5	PF 1	2426.85	2426.03	0.82	0.01	0.06		1577.00		30.14
Upper	18045.5	PF 1	2426.78	2426.16	0.62	0.00	0.00		1577.00		33.44
Upper	18026.05		Bridge								
Upper	18006.6	PF 1	2426.68	2425.28	1.40	0.01	0.30		1577.00		24.97
Upper	17992.6	PF 1	2426.37	2425.96	0.40	0.14	0.03		1577.00		63.14
Upper	17792.3	PF 1	2426.20	2425.89	0.31	0.06	0.04		1577.00		76.37
Upper	17678.8	PF 1	2426.10	2425.92	0.18	0.06	0.00		1577.00		82.40
Upper	17539.1	PF 1	2426.04	2425.87	0.17	0.02	0.03		1577.00		90.04
Upper	17477.5	PF 1	2425.99	2425.92	0.07	0.01	0.01		1577.00		168.28
Upper	17457.5	PF 1	2425.98	2425.82	0.16				1577.00		92.14
Upper	17450.5		Culvert								
Upper	17443.5	PF 1	2425.94	2425.78	0.16	0.03	0.02		1577.00		90.61
Upper	17423.5	PF 1	2425.89	2425.53	0.36	0.12	0.01		1577.00		48.38
Upper	17395.5	PF 1	2425.76	2425.30	0.46	1.01	0.05		1577.00		47.56
Upper	17286.9	PF 1	2424.70	2423.74	0.96	1.45	0.17		1577.00		40.12
Upper	17182.7	PF 1	2423.09	2422.69	0.40	0.11	0.00		1577.00		80.21
Upper	17172.7	PF 1	2422.98	2422.58	0.40				1577.00		80.06
Upper	17140.8		Culvert								
Upper	17108.8	PF 1	2421.56	2421.08	0.48	0.06	0.00		1577.00		88.24
Upper	17098.8	PF 1	2421.49	2421.03	0.46	0.13	0.02		1577.00		88.77
Upper	17065.8	PF 1	2421.35	2420.71	0.63	0.28	0.13		1577.00		72.54
Upper	16999.0	PF 1	2420.93	2420.74	0.19	0.09	0.05		1577.00		111.81
Upper	16956.5	PF 1	2420.79	2420.12	0.67	0.76	0.09		1577.00		65.50
Upper	16748.5	PF 1	2419.94	2418.40	1.55	1.27	0.11		1577.00		51.25
Upper	16517.8	PF 1	2418.18	2417.00	1.18	1.51	0.08		1577.00		54.09
Upper	16127.8	PF 1	2416.59	2415.68	0.90	0.10	0.21		1577.00		59.10
Upper	16035.0	PF 1	2416.27	2416.06	0.21	0.06	0.02		1577.00		101.00
Upper	15915.7	PF 1	2416.20	2416.04	0.15	0.01	0.00	13.38	1563.62		150.63
Upper	15895.7	PF 1	2416.18	2416.00	0.18			17.50	1559.50		169.24
Upper	15888.2		Culvert								
Upper	15880.7	PF 1	2415.37	2415.09	0.28	0.09	0.00		1577.00		105.88
Upper	15860.7	PF 1	2415.29	2415.01	0.28	0.20	0.06	0.00	1577.00		106.44
Upper	15786.9	PF 1	2415.02	2414.15	0.88	2.40	0.07		1577.00		48.25
Upper	15695.1	PF 1	2412.55	2410.94	1.61	0.00	0.34		1577.00		48.59

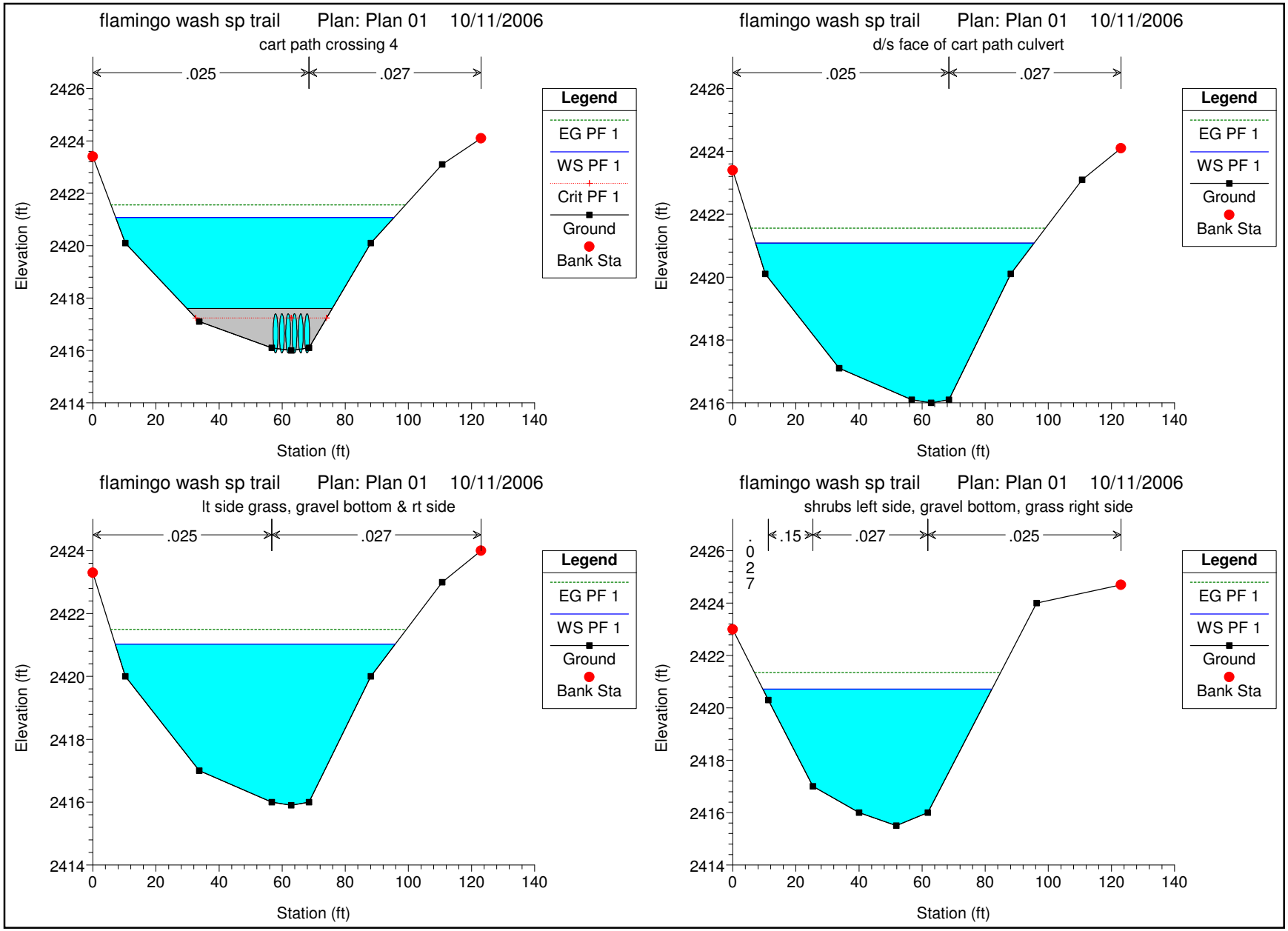

flamingo wash sp trail Plan: Plan 01 10/11/2006
open channel between culverts
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
culvert u/s face
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
bridge at spanish gate street
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
bridge at spanish gate street
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

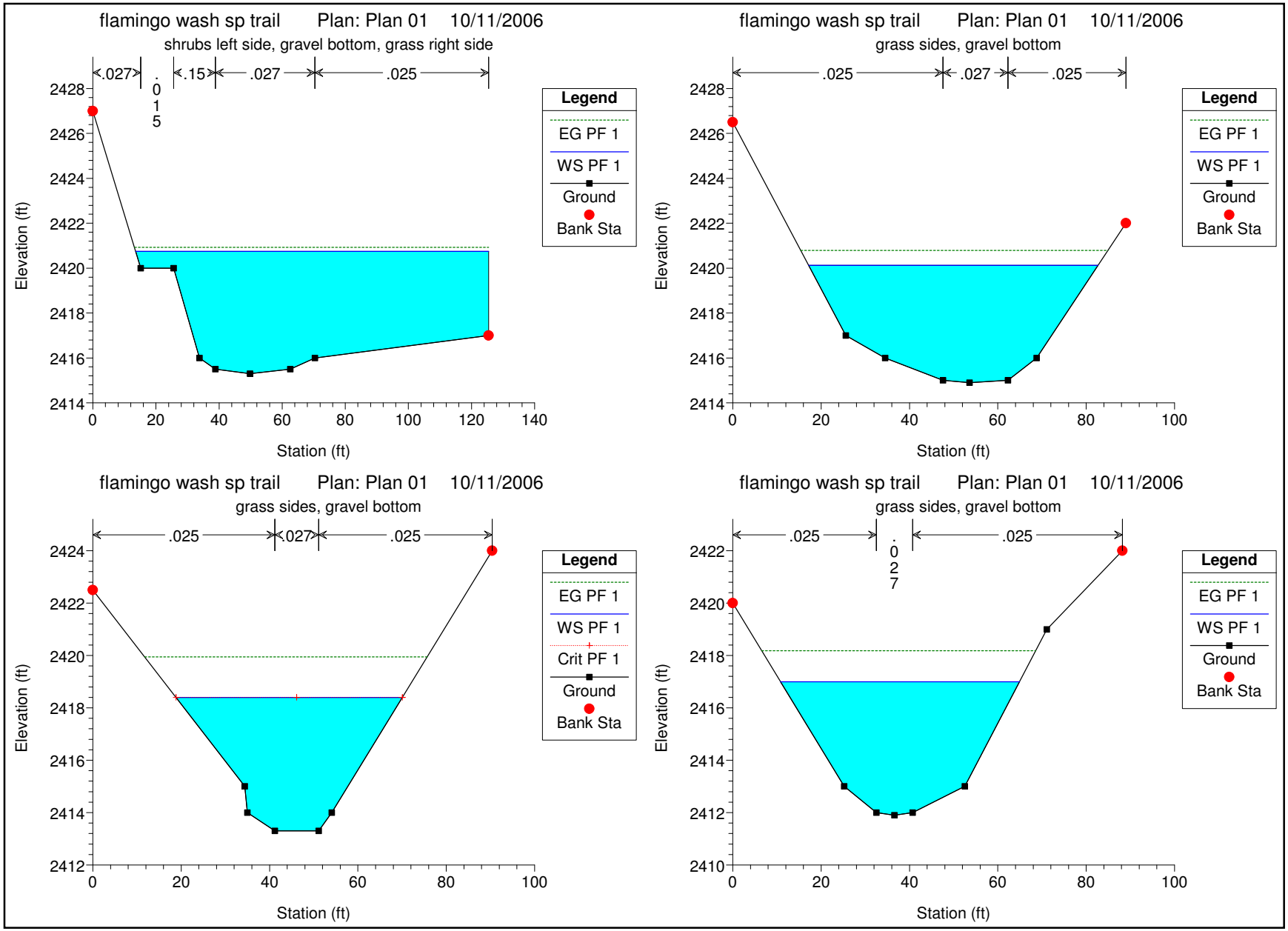

flamingo wash sp trail Plan: Plan 01 10/11/2006
culvert d/s face
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
culvert headwall d/s end
.025
.015
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
short gabion sides, weeds bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
short gabion lt side, weeds bottom & sides
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

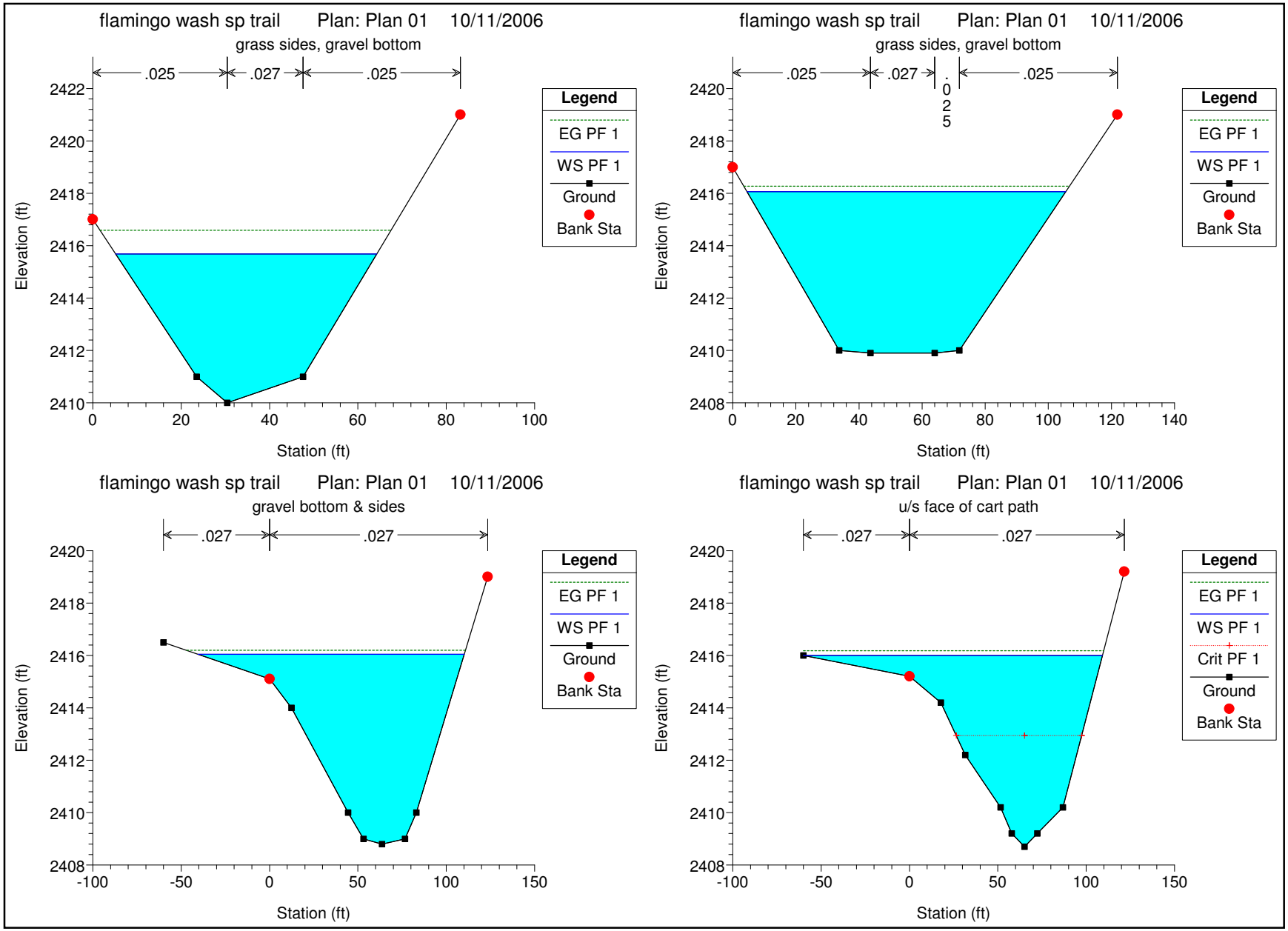

flamingo wash sp trail Plan: Plan 01 10/11/2006
short gabion lt side, weeds bottom & sides
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
short gabion lt side, weeds bottom & sides
.025
.01
5
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
u/s face of cart path culvert
.025
.01
5
.015
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 5
.025
.01
5
.015
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

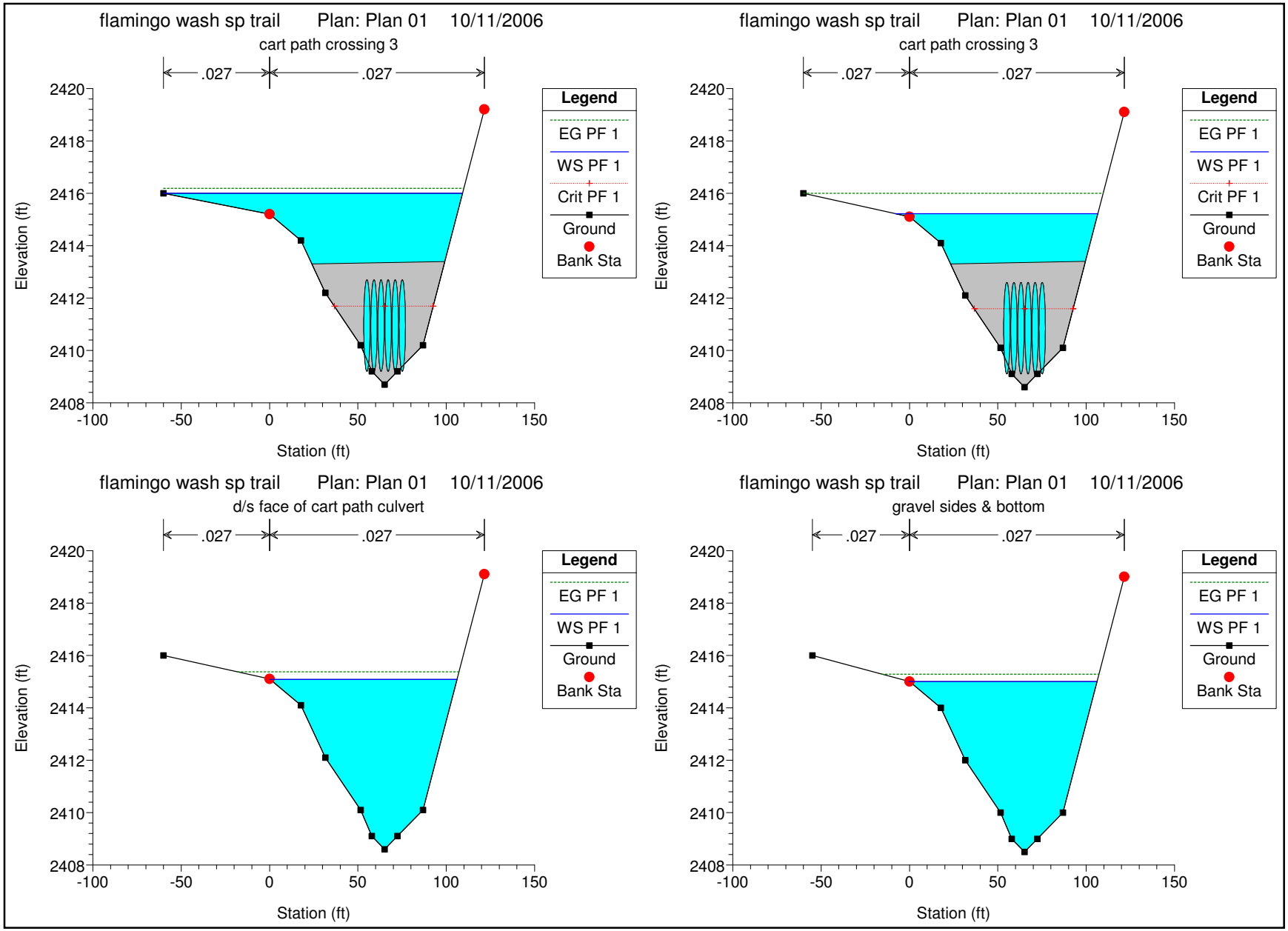

flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 5
.025
.015
.025
1
5
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
d/s face of cart path culvert
.025
.015
.025
1
5
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
lt side shrubs, gravel bottom, rt side grass
.027
.025
1
5
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
lt side shrubs, gravel bottom, rt side grass
.15
.027
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

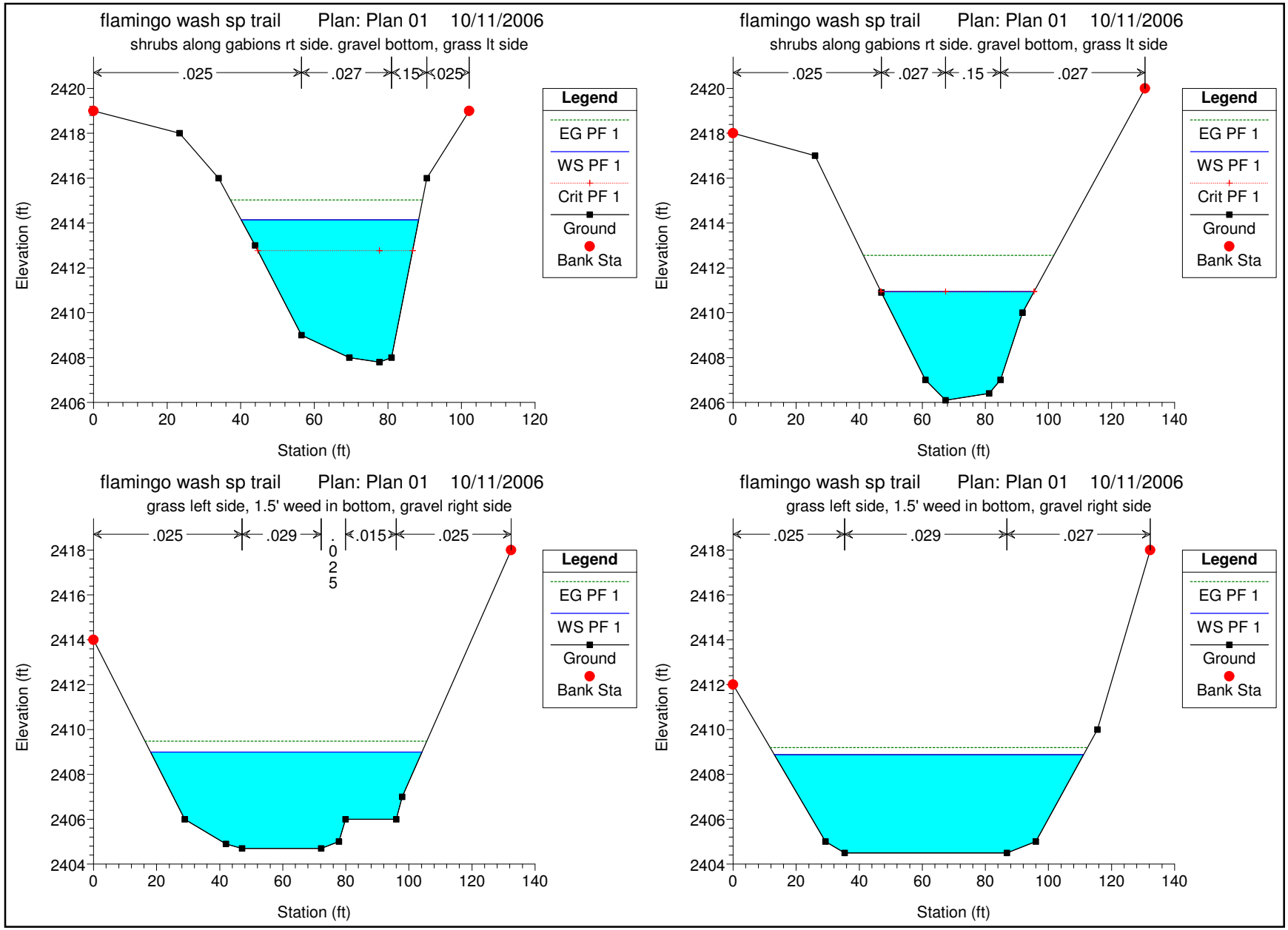

flamingo wash sp trail Plan: Plan 01 10/11/2006
lt side shrubs, gravel bottom, rt side grass
.15
.027
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
lt side grass, gravel bottom & shrubs rt side
.025
.027
.15
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
u/s face of cart path culvert
.025
.15
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 4
.025
.15
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

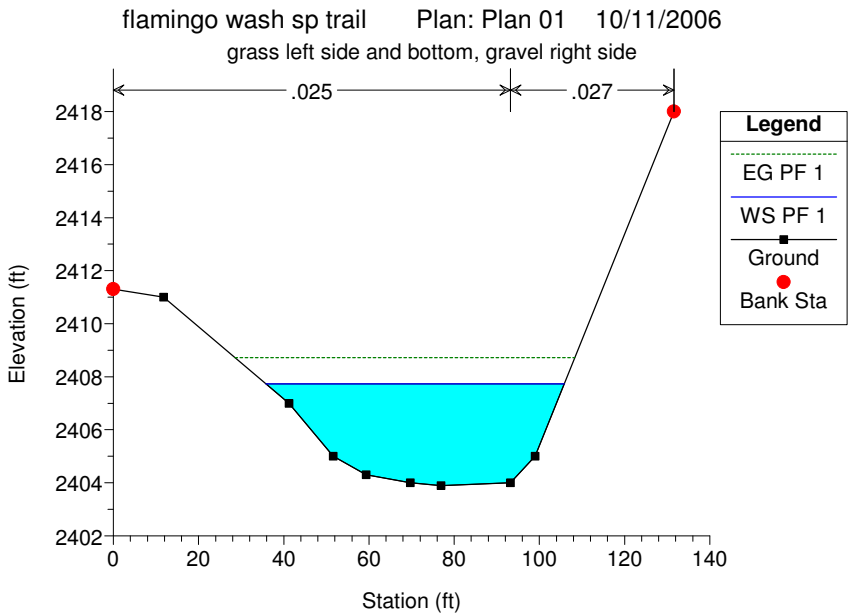

flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 4
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
d/s face of cart path culvert
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
lt side grass, gravel bottom & rt side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs left side, gravel bottom, grass right side
.027
.15
.027
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

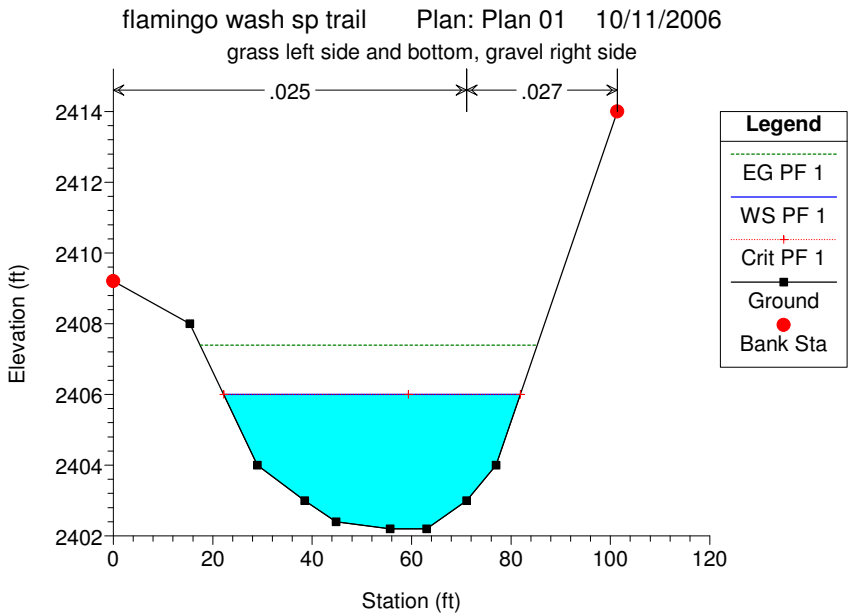

flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs left side, gravel bottom, grass right side
.027
.015
.15
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

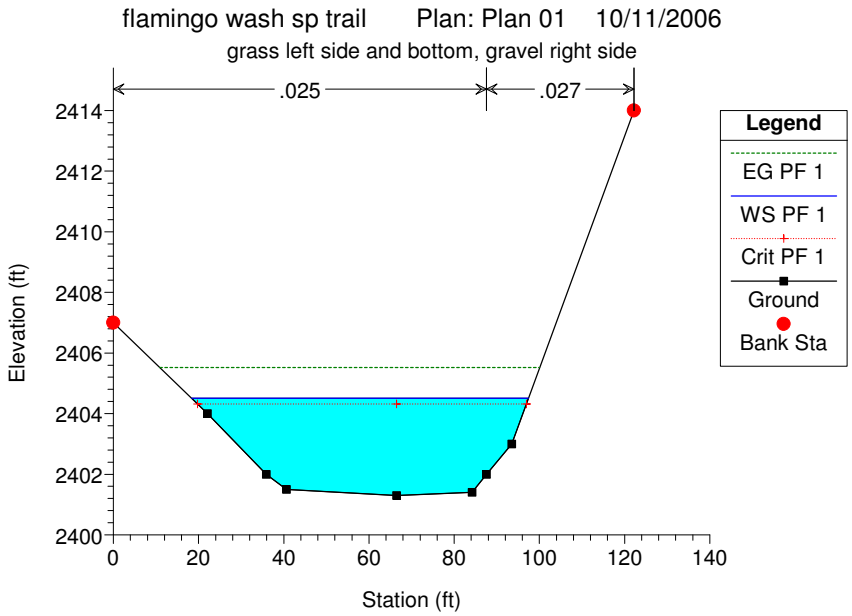

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass sides, gravel bottom
.025
.027
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass sides, gravel bottom
.025
.027
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
gravel bottom & sides
.027
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
u/s face of cart path
.027
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

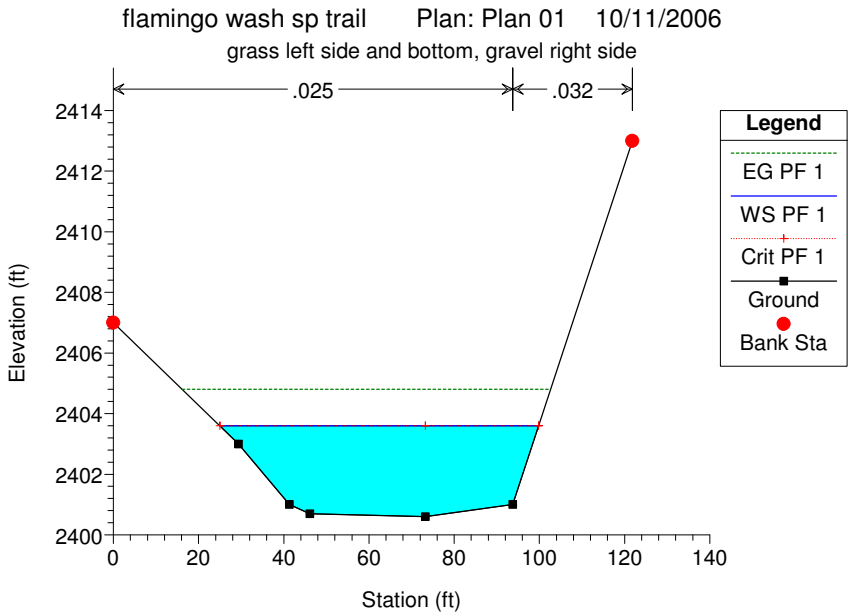

flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 3
.027
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 3
flamingo wash sp trail Plan: Plan 01 10/11/2006
d/s face of cart path culvert
flamingo wash sp trail Plan: Plan 01 10/11/2006
gravel sides & bottom

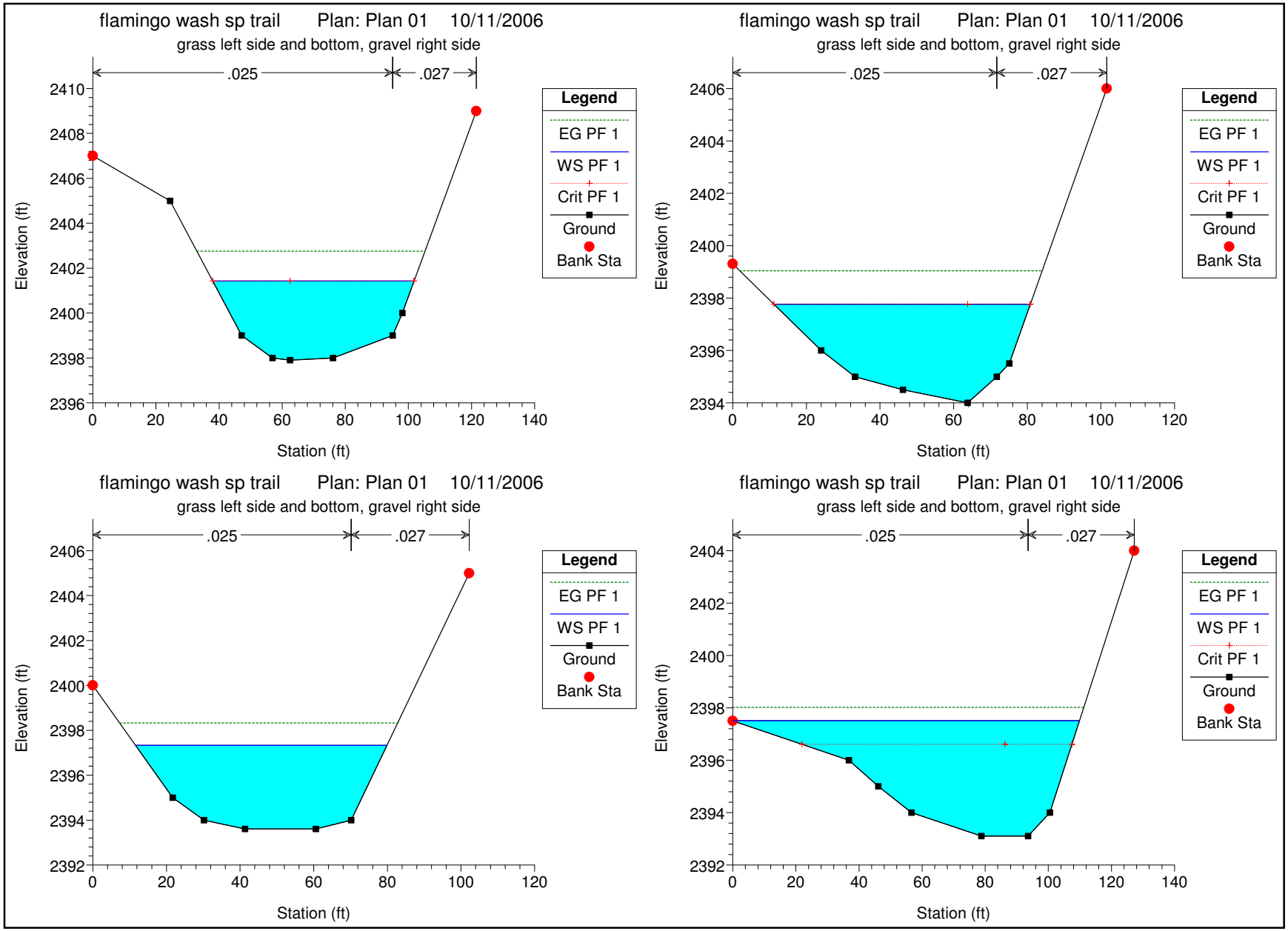

flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs along gabions rt side. gravel bottom, grass lt side
.025
.027
.15
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs along gabions rt side. gravel bottom, grass lt side
.025
.027
.15
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side, 1.5' weed in bottom, gravel right side
.025
.029
.025
.015
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side, 1.5' weed in bottom, gravel right side
.025
.029
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

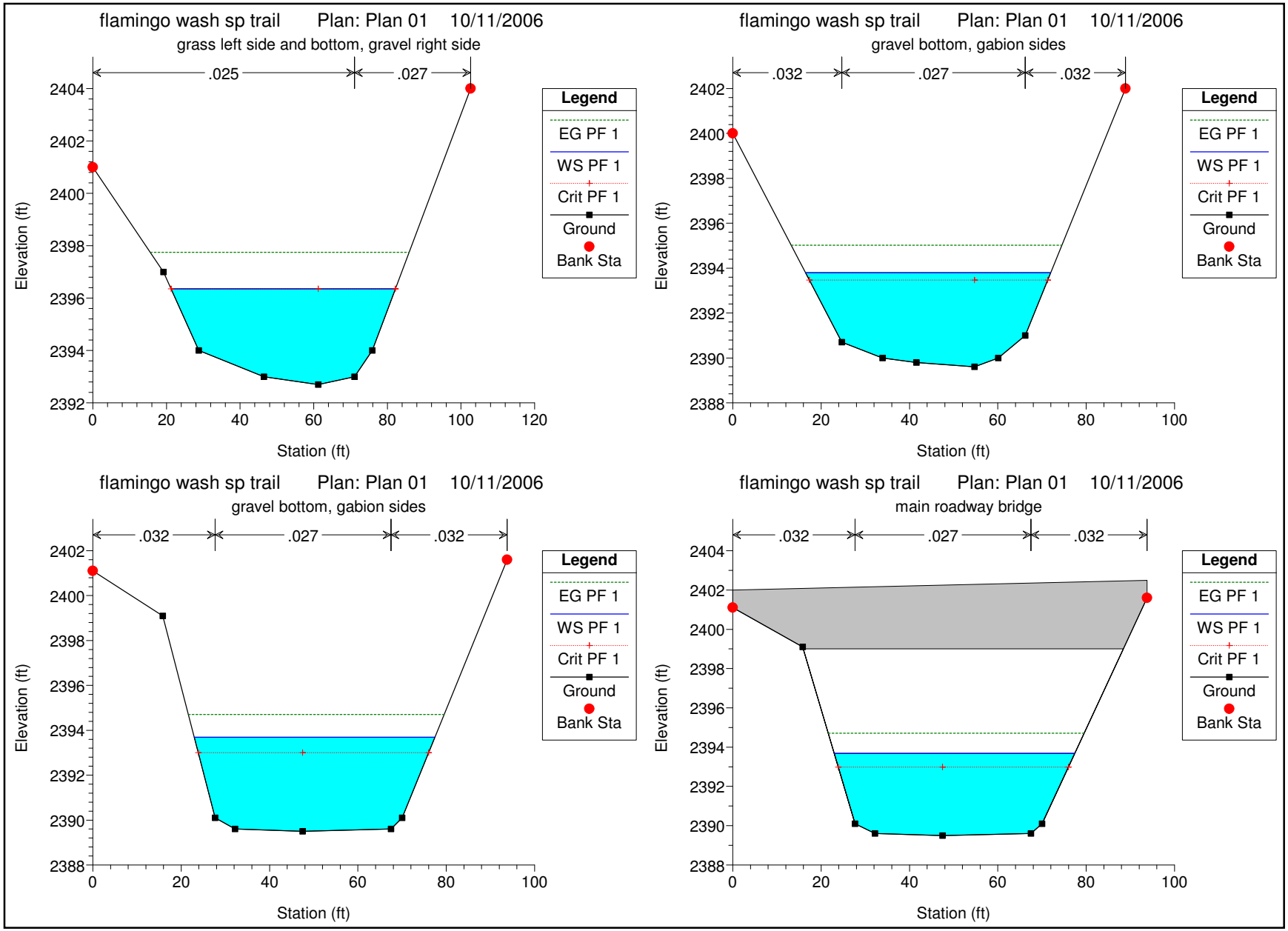

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

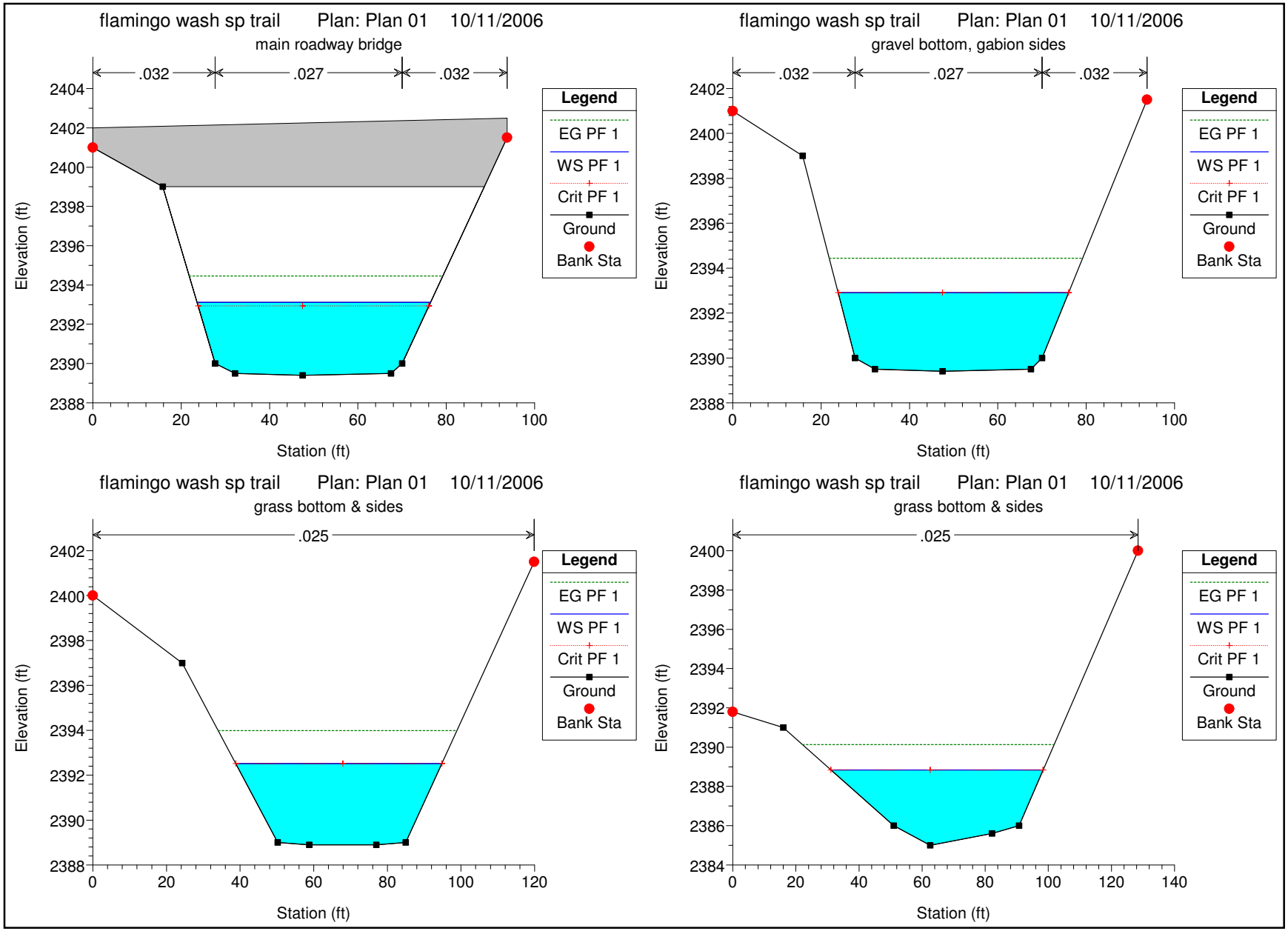

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

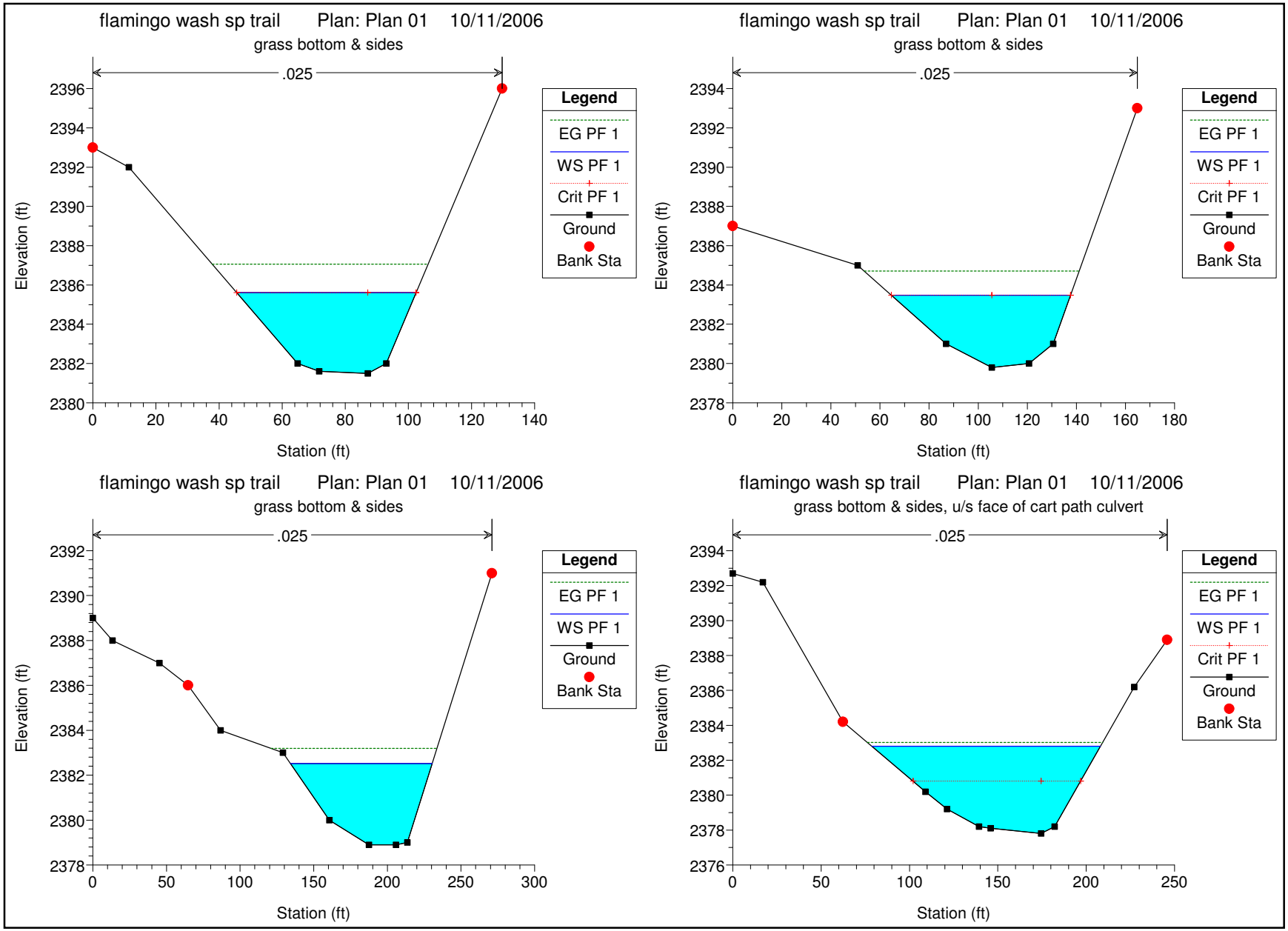

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

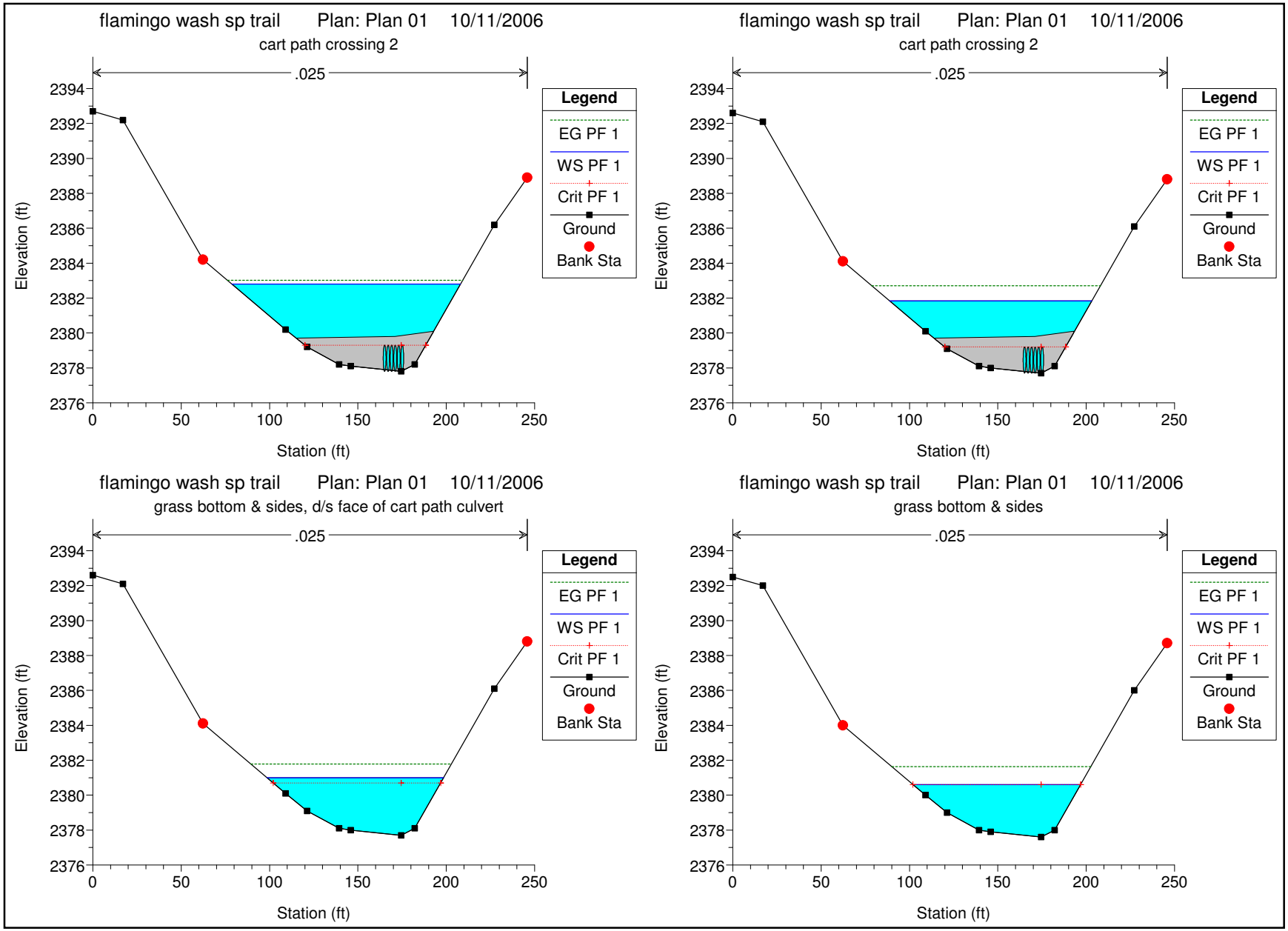

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

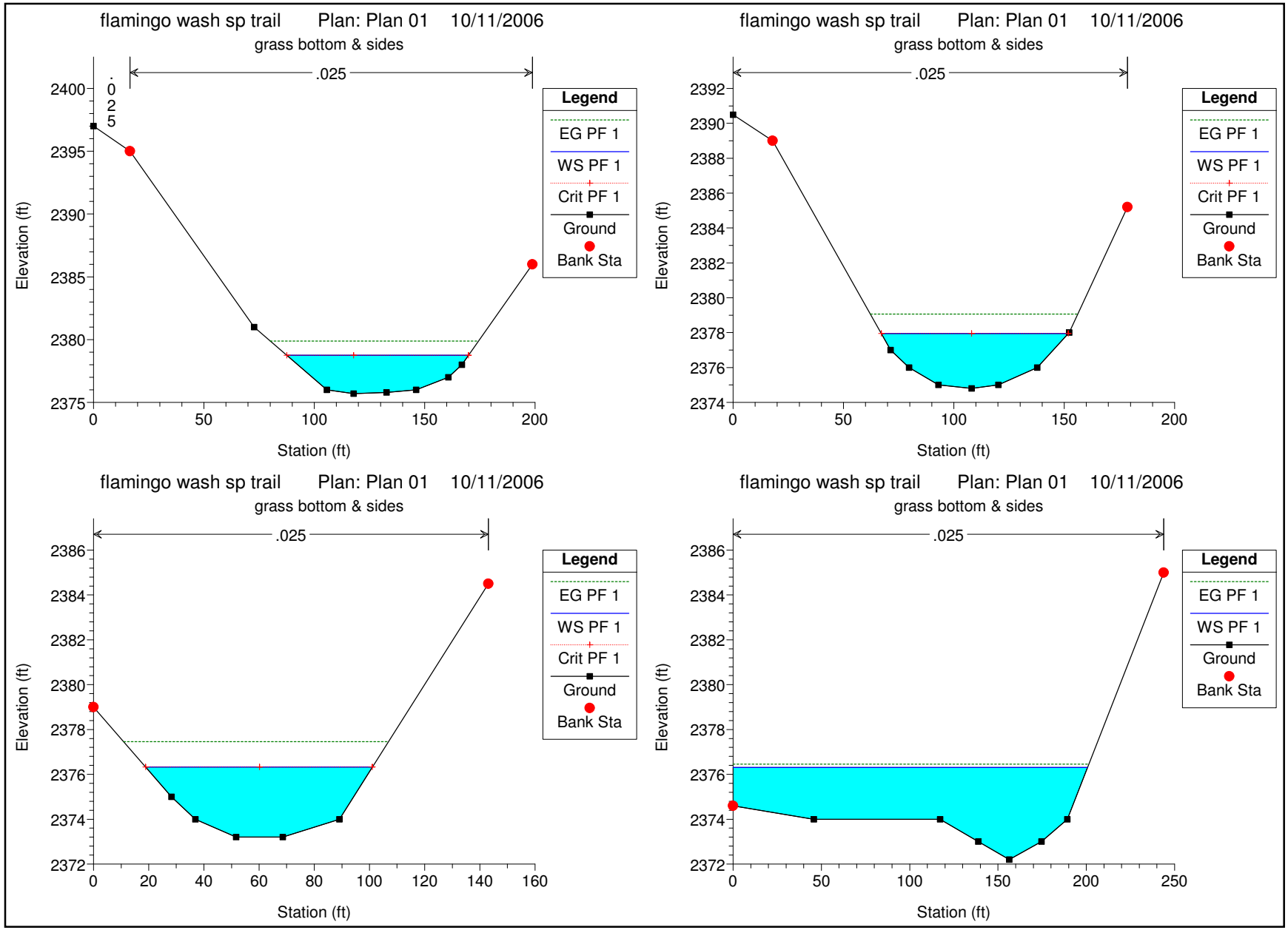

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

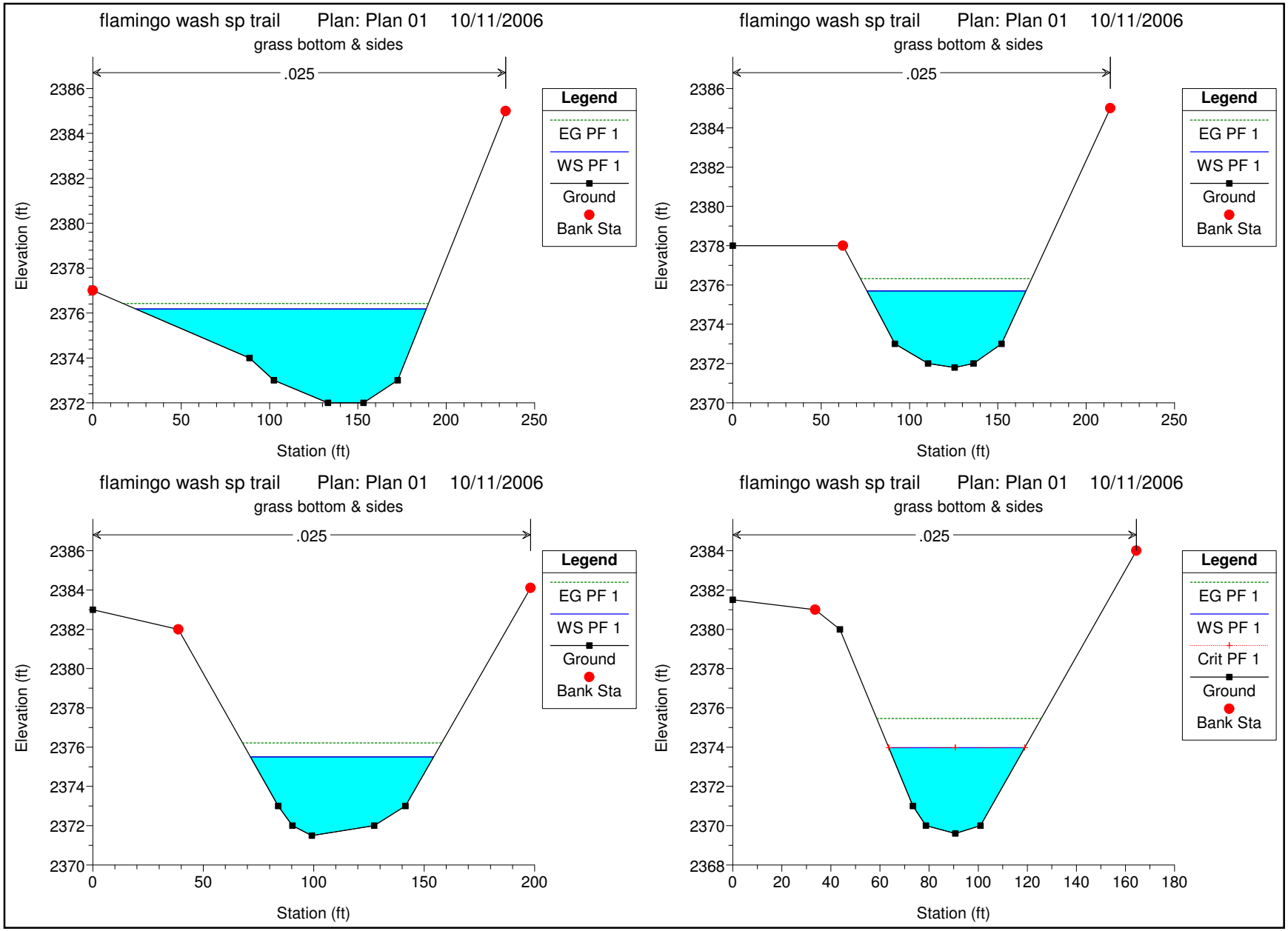

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass left side and bottom, gravel right side
.025
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
gravel bottom, gabion sides
.032
.027
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
gravel bottom, gabion sides
.032
.027
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
main roadway bridge
.032
.027
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

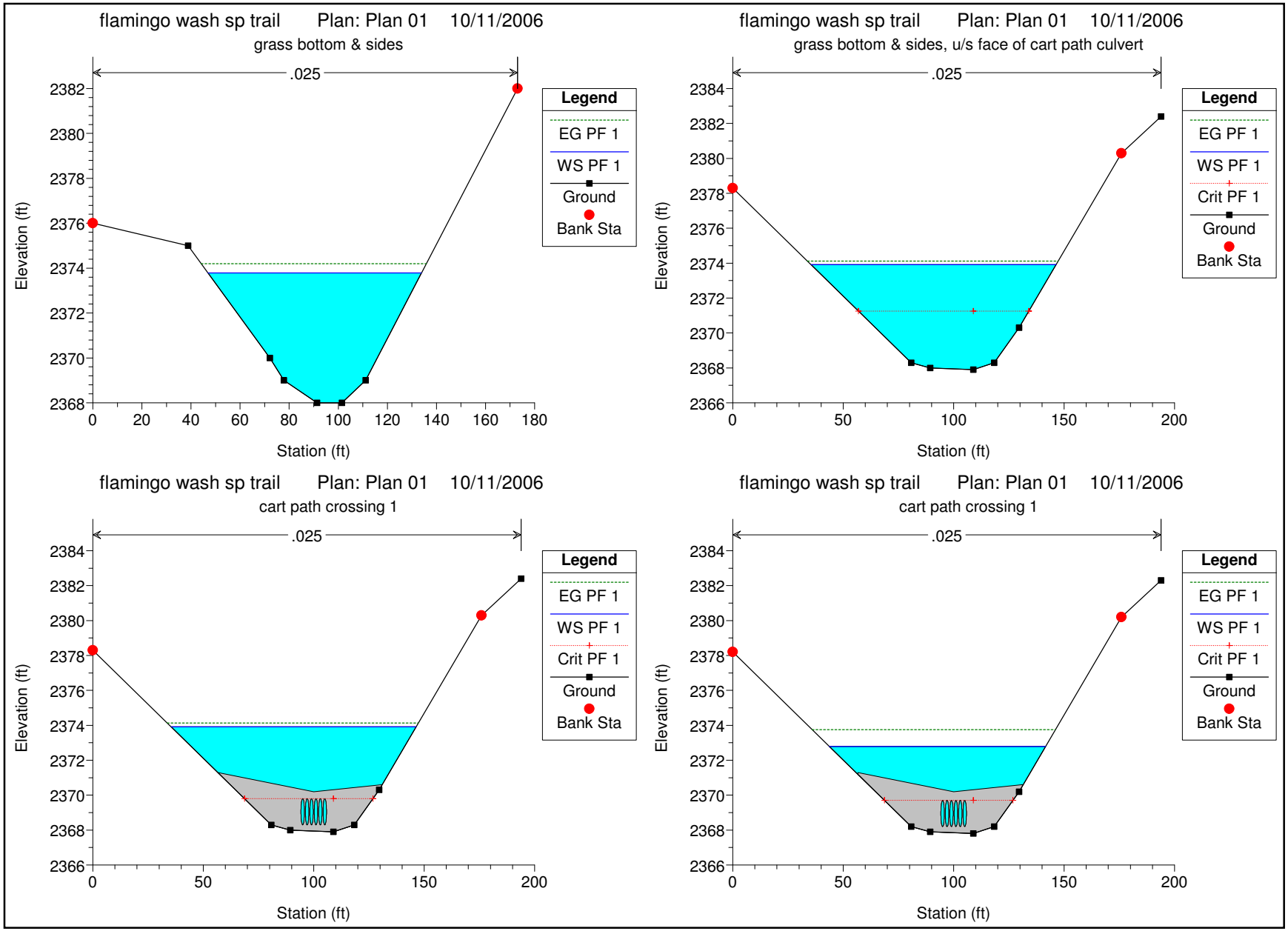

flamingo wash sp trail Plan: Plan 01 10/11/2006
main roadway bridge
.032
.027
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
gravel bottom, gabion sides
.032
.027
.032
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

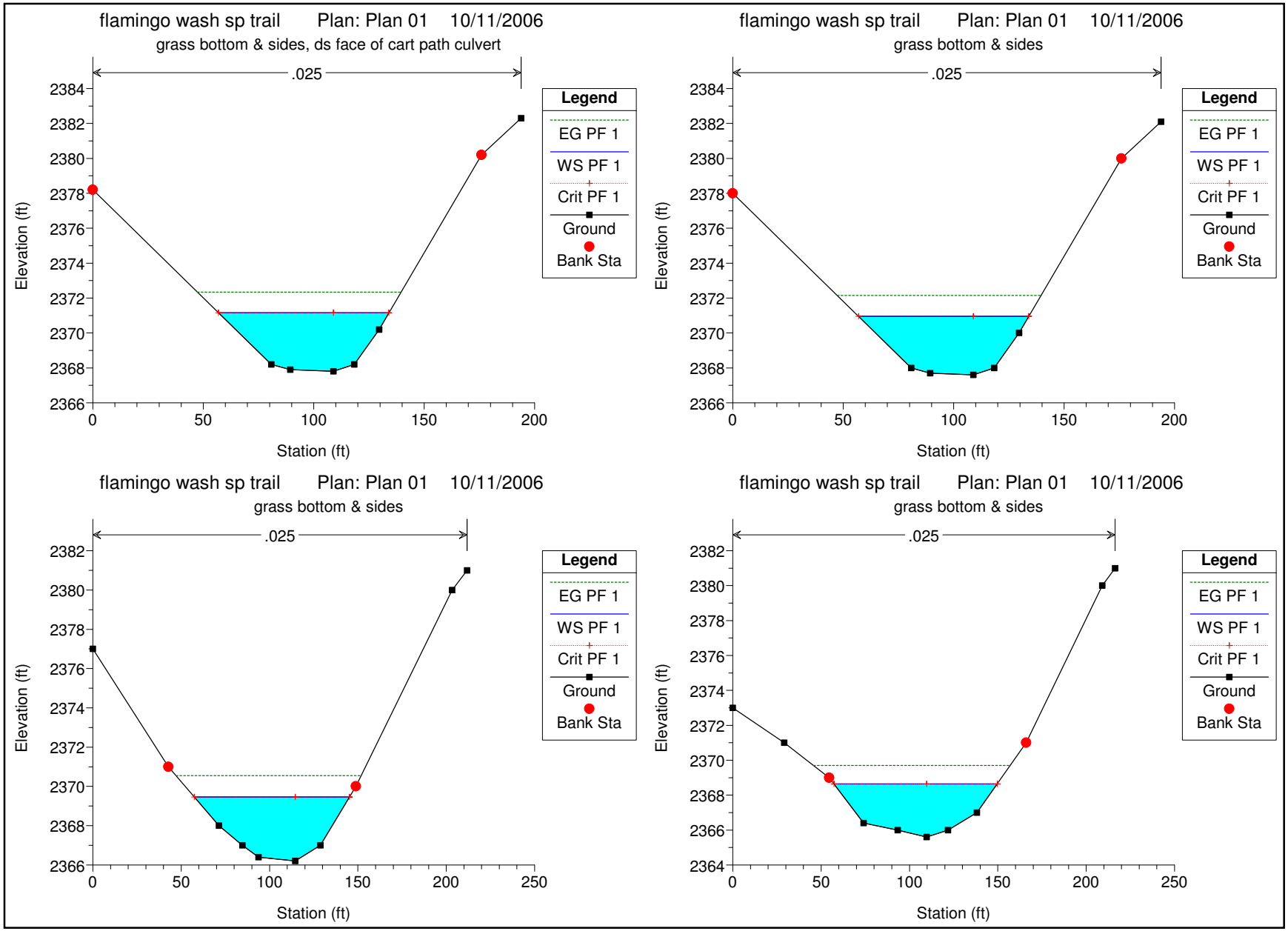

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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EG PF 1
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flamingo wash sp trail Plan: Plan 01 10/11/2006
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Elevation (ft)
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WS PF 1
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Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides, u/s face of cart path culvert
.025
Elevation (ft)
Station (ft)
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Crit PF 1
Ground
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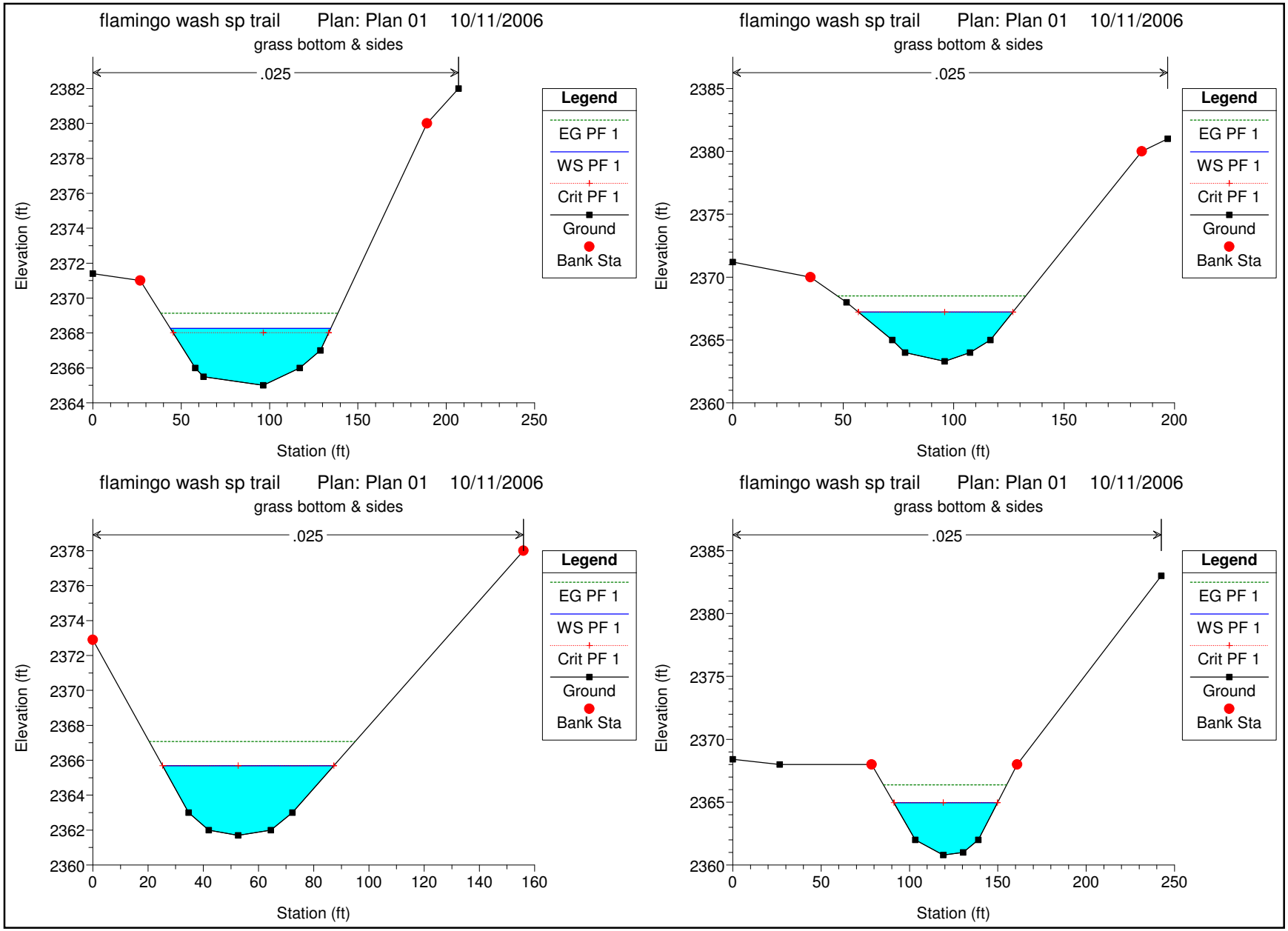

flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 2
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2394
2392
2390
2388
2386
2384
2382
2380
2378
2376
0
50
100
150
200
250
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 2
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides, d/s face of cart path culvert
.025
Legend
EG PF 1
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Legend
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Elevation (ft)
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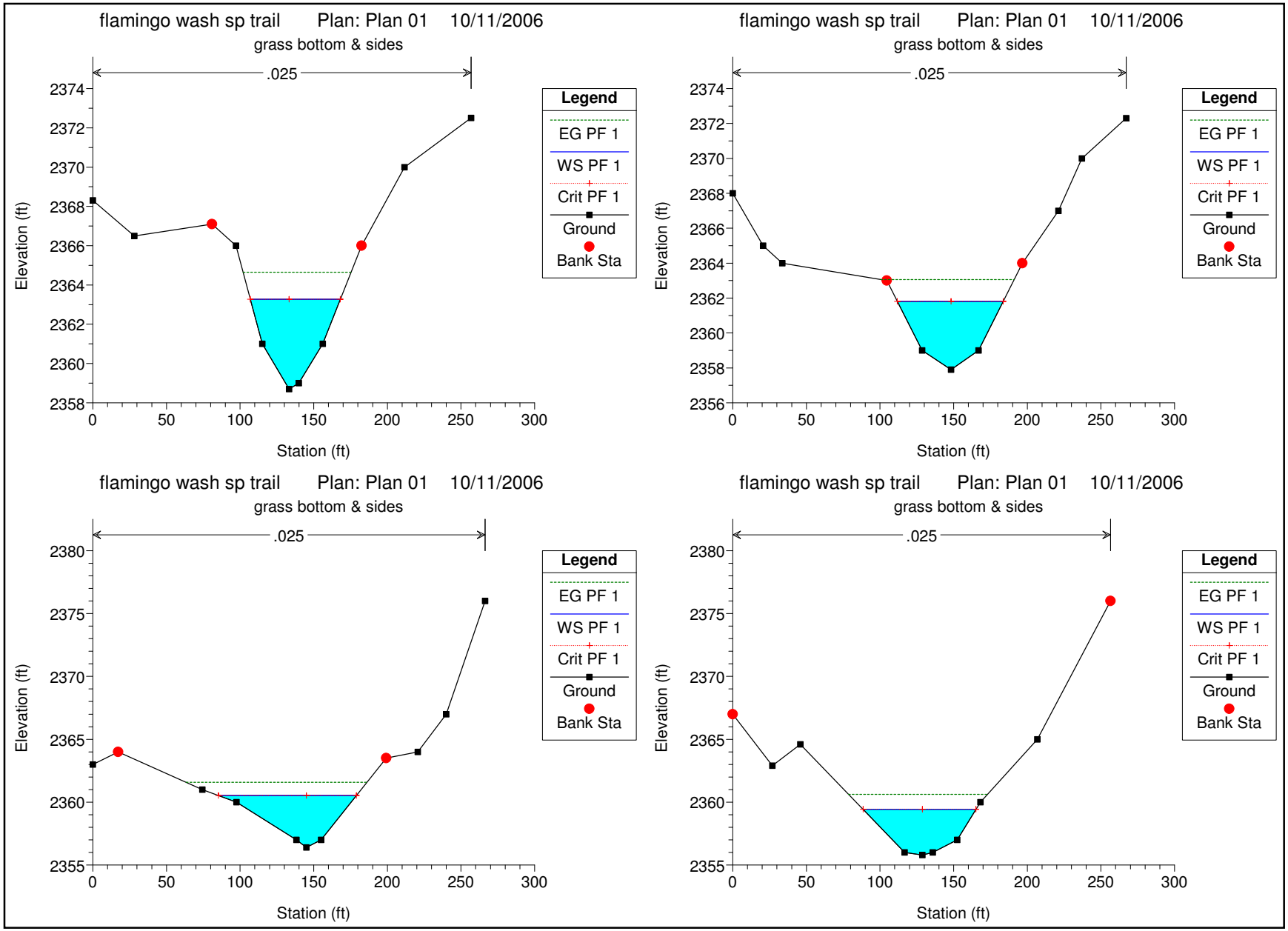

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Crit PF 1
Ground
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Elevation (ft)
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Crit PF 1
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Elevation (ft)
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Legend
EG PF 1
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
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2372
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80
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140
160
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Legend
EG PF 1
WS PF 1
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Elevation (ft)
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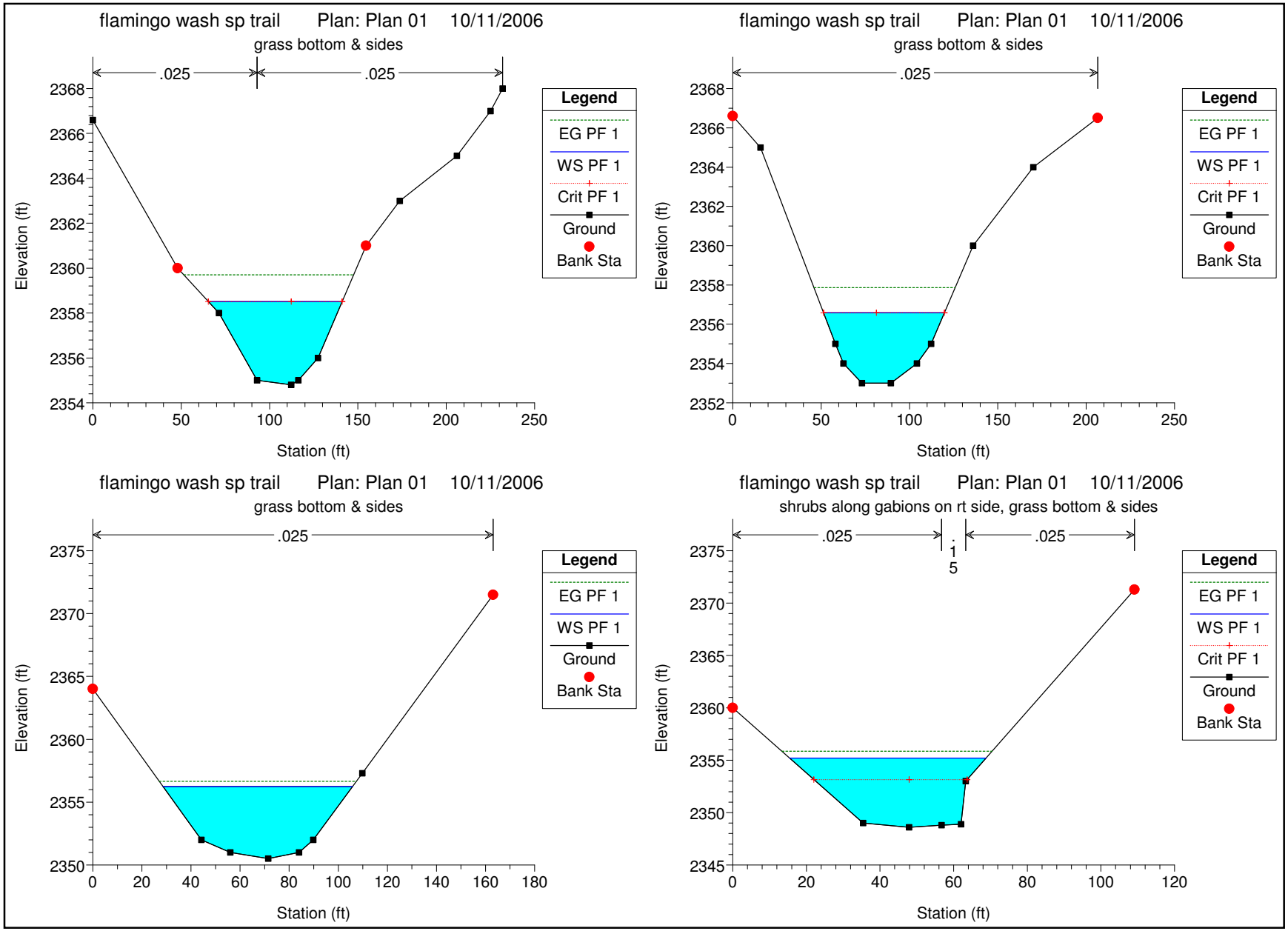

flamingo wash sp trail Plan: Plan 01 10/11/2006
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Station (ft)
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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flamingo wash sp trail Plan: Plan 01 10/11/2006
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Station (ft)
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Crit PF 1
Ground
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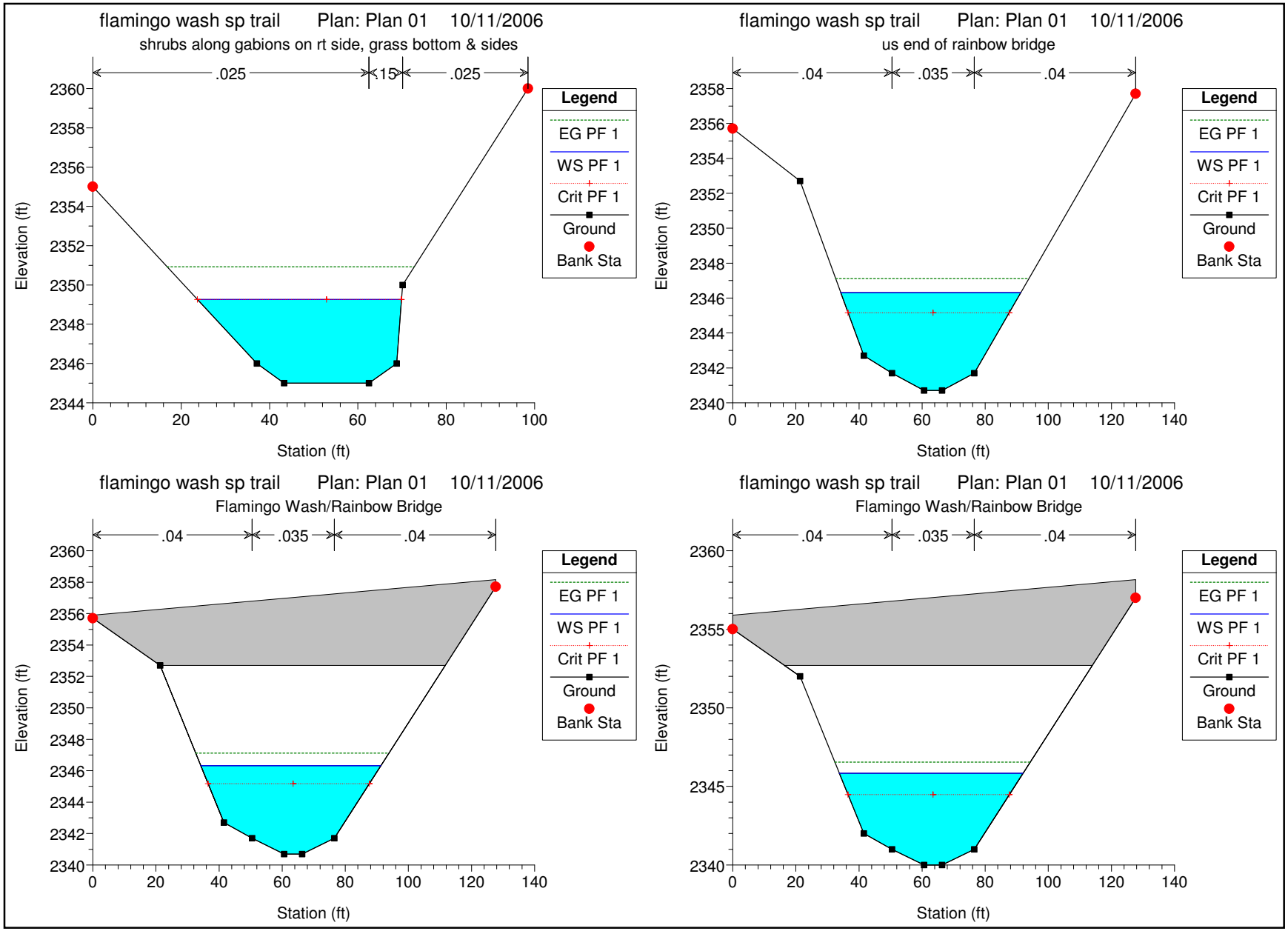

flamingo wash sp trail Plan: Plan 01 10/11/2006
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides, u/s face of cart path culvert
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Station (ft)
Legend
EG PF 1
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Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 1
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Elevation (ft)
Station (ft)
Legend
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WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
cart path crossing 1
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

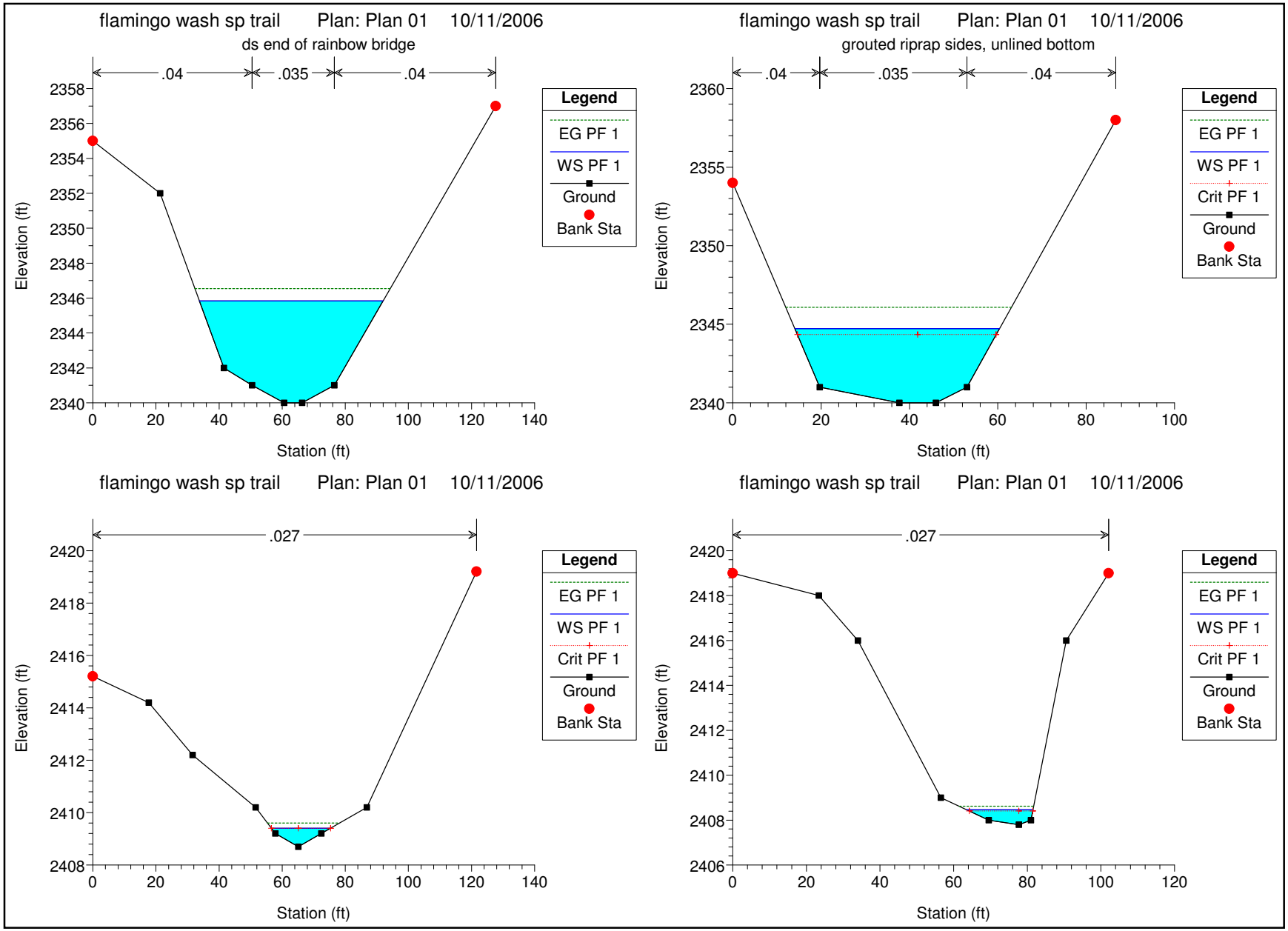

flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides, ds face of cart path culvert
.025
Elevation (ft)
Station (ft)
Legend
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WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Station (ft)
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Crit PF 1
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flamingo wash sp trail Plan: Plan 01 10/11/2006
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WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
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Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Ground
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Station (ft)
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WS PF 1
Crit PF 1
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flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
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WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
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Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grass bottom & sides
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs along gabions on rt side, grass bottom & sides
.025
.1
.5
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


flamingo wash sp trail Plan: Plan 01 10/11/2006
shrubs along gabions on rt side, grass bottom & sides
.025
.15
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
us end of rainbow bridge
.04
.035
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
Flamingo Wash/Rainbow Bridge
.04
.035
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
Flamingo Wash/Rainbow Bridge
.04
.035
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


flamingo wash sp trail Plan: Plan 01 10/11/2006
ds end of rainbow bridge
.04
.035
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
grouted riprap sides, unlined bottom
.04
.035
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
flamingo wash sp trail Plan: Plan 01 10/11/2006
.027
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

flamingo wash sp trail Plan: Plan 01 10/11/2006

Flamingo Wash Sp Upper

Legend

EG PF 1

WS PF 1

Crit PF 1

Ground

Elevation (ft)

2435

2430

2425

2420

2415

2410

2405

0

500

1000

1500

2000

2500

3000

Main Channel Distance (ft)

THE Louis Berger Group, INC.

APPENDIX E

Excerpts from Effective FIS

DRAFT

FLAMINGO WASH
FLOOD INSURANCE STUDY RESTUDY

CLARK COUNTY, NEVADA

550.032

OCTOBER 1997

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this study is to investigate the limits of flood hazards due to the Flamingo Wash from Rainbow Boulevard downstream to Industrial Road, from the Imperial Palace Casino downstream to Spencer Street, and from Eastern Avenue downstream to the Las Vegas Wash Confluence by approximate methods. The above reaches of the Flamingo Wash all lie within the unincorporated areas of Clark County, Nevada. The results of this flood risk study will be used to update the Flood Insurance Rate Maps (FIRM) for Clark County (Unincorporated Areas). The FIRMs are distributed by the Federal Emergency Management Agency (FEMA) to aid in the administration of the National Flood Insurance Program (NFIP). This program was established with the passage of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 to enable property owners to purchase insurance protection against losses from flooding.

1.2 Authority For Study

G. C. Wallace, Inc. (GCW) was authorized by the Clark County Regional Flood Control District (CCRFCD) to perform this study for these unincorporated areas of Clark County under contract, "Agreement of Professional Services for Flamingo Wash Flood Insurance Study Restudy," dated November 14, 1996.

The topographic mapping was performed by Nevada Aerial Mapping (Reference 1) for G. C. Wallace, Inc.

The work was completed October 1997.

1.3 Community Coordination and Acknowledgment

The area of approximate study was outlined by the CCRFCD and coordinated with Clark County Public Works (CCPW). The CCRFCD provided available hydrologic data including the "Technical Support Data Notebook for the Upper

Flamingo Wash Detention Basin Letter of Map Revision," January 1996 (Reference 2).

On December 3, 1996, representatives of the CCRFCD, CCPW, and GCW met for the initial coordination meeting to discuss scheduling, study methods, assumptions, and the format of deliverable items. Throughout the project, coordination meetings were held to discuss progress and preliminary study results.

All meeting minutes and written comments are included in the TSDN, Section 1 General Documentation. This study incorporates all appropriate comments.

1.4 Community Concurrence

The study members of GCW have maintained close contact with CCRFCD and CCPW throughout the project. Both CCRFCD and CCPW have had the opportunity through continued meetings and review submittals, to provide input regarding the results of the study. At the time of the submittal of this study to FEMA, both CCRFCD and CCPW concur with the results of this study. Letters of concurrence are included in the TSDN, Section 1.4 - General Correspondence.

2.0 AREAS STUDIED

2.1 Scope of Study

This study involved a review and restudy of the effective FIRMs within a portion of the unincorporated areas of Clark County, more specifically, the Flamingo Wash from Rainbow Boulevard downstream to Industrial Road, from the Imperial Palace Casino downstream to Spencer Street, and from Eastern Avenue downstream to the Las Vegas Wash Confluence. The study area is shown in Figure 1, and include delineation of those areas studied by approximate methods.

The flooding source studied by approximate methods was selected by CCRFCD and CCPW. The approximate method study areas encompass the following:

- Rainbow Boulevard to Jones Boulevard Reach
- Jones Boulevard to Industrial Road Reach
- Imperial Palace to Spencer Street Reach
- Eastern Avenue to Las Vegas Wash Reach

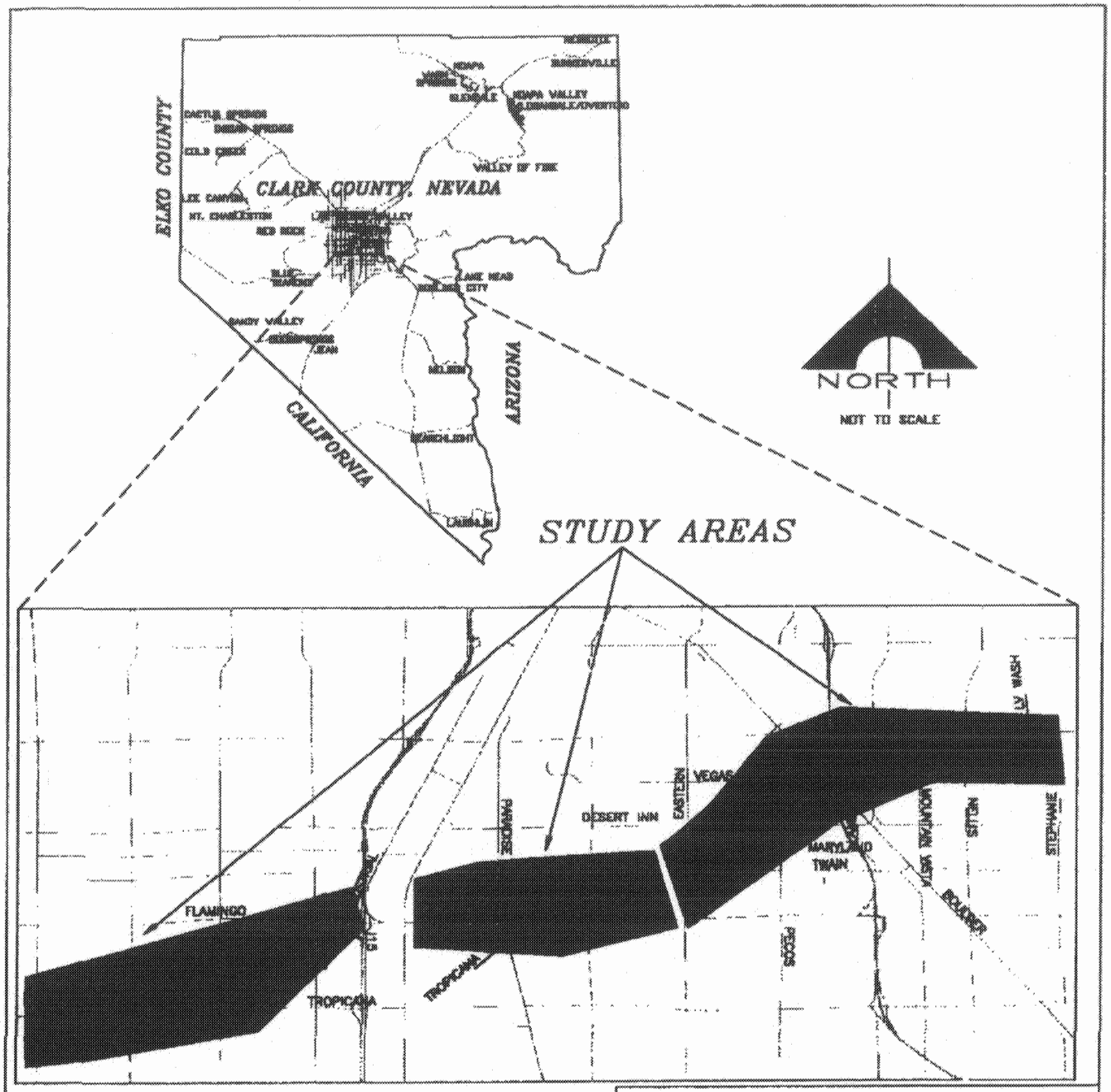
Areas excluded from study include the Tropicana Wash and Tropicana Wash Breakouts, the Las Vegas Wash, the Industrial Road to Imperial Palace Reach, and the Spencer Street to Eastern Avenue Reach.

In order to minimize the cost of this study, two (2) reaches of the Flamingo Wash were determined not to be included, thus, becoming areas of discontinuity. The first area of discontinuity is between Industrial Road and the Imperial Palace Hotel and Casino Parking Garage. The Flamingo Wash storm flows were expected and later confirmed to be intercepted and conveyed by the Industrial Road Culvert which continues under I-15, Caesars Palace Hotel and Casino, Las Vegas Boulevard, and the Imperial Palace Hotel and Casino because a significant reduction in peak flows in this area was realized due to the upstream improvements.

The second area of discontinuity is between Spencer Street and Eastern Avenue. This area is a community golf course and the previous FEMA designated Special Flood Hazard Areas are generally confined to it. Therefore, no further analyses is warranted.

2.2 Community Description

The study area is located within the central portion of Clark County in Southern Nevada as shown in Figure 1. The Flamingo Wash is situated in the middle of the Las Vegas Valley. The Las Vegas Valley is surrounded by desert mountains and slopes generally from west to east towards Lake Mead.



FLAMINGO WASH FIS RESTUDY
CCRFCD

FIGURE 1

VICINITY MAP

G.C. WALLACE, INC.
Engineering/Architecture

The Las Vegas Valley is approximately 35 miles wide (north to south) by 30 miles long (west to east). It is bounded on the north by the Sheep Range and the Las Vegas Range; on the east by Sunrise, Frenchman, and River Mountains; on the south by the Black Mountains; and on the west by the Spring Mountains. The valley is most densely populated in the center and generally decreases in density towards the fringes. Residential and commercial development are the predominant land uses within the Valley.

Rainfall is generally the result of two distinctly different meteorological events. High intensity, short-duration thunderstorms typically occurring in the late summer months of July, August, and September. These late summer storms can produce high runoff rates over small geographical areas. During the winter months, precipitation generally results from frontal and pacific storm movements with longer durations, lower intensities, and larger aerial coverages.

2.3 Principal Flood Problems

2.3.1 Rainbow Boulevard to Jones Boulevard Reach

No significant flood problems noted in this reach.

2.3.2 Jones Boulevard to Industrial Road Reach

The area surrounding the Flamingo Wash between Cameron Street and Arville Street from Harmon Avenue to Tropicana Avenue is subject to flooding during a major storm event due to the limited capacity of the Cameron Street Culvert/Orleans Culvert.

2.3.3 Imperial Palace to Spencer Street Reach

The area surrounding the Flamingo Wash between the Imperial Palace Hotel and Casino Parking Garage and Koval Lane is subjected to flooding partially due to the limited capacity of the Winnick Avenue Inlet Structure and Culverts.

The Flamingo Wash flows are outletted in the Imperial Palace Hotel and Casino Parking Garage and are conveyed to Winnick Avenue where a culvert, inlet structure, and an inverted crown street section have been constructed by Clark County Public Works to reduce the flood hazard problems in this area.

A scaled physical hydraulic model of this facility was constructed by the Bureau of Reclamation to investigate the effectiveness of this facility during the design phase of this facility (Reference 3). Conclusions of this report suggest that at least 50 percent of the storm flows will be intercepted by this facility.

The remainder of the storm flows continue down Winnick Avenue as surface flow to Koval Lane. At Koval Lane, the water spills over back into the Flamingo Wash.

Factors that may aggravate local flooding include debris clogging the Winnick Avenue grates.

2.3.4 Eastern Avenue to Las Vegas Wash Reach

The area surrounding the Flamingo Wash west of Boulder Highway is subjected to flooding partially due to the limited capacity of the Boulder Highway Culverts.

Factors that may aggravate local flooding include minimal drainage improvements and cross-sections having limited conveyance capacity.

2.4 Flood Protection Measures

The facilities listed below have been constructed by local public agencies and/or private developers over a long period of time and the majority of these facilities were constructed prior to the Las Vegas Valley Flood Insurance Study Hydrology Report by James M. Montgomery Consulting Engineers, Inc., dated

September 1991. No new construction is associated with this project. Maintenance of these facilities is provided by Clark County Public Works and funded by the Clark County Regional Flood Control District.

2.4.1 Rainbow Boulevard to Jones Boulevard Reach

Clark County Regional Flood Control District Master Plan facilities which have been constructed include the Rainbow Boulevard Bridge, Tropicana Avenue Bridge, Torrey Pines Drive Culvert.

No significant flood control facilities such as levees, dams, or detention basins have been constructed within this reach.

2.4.2 Jones Boulevard to Industrial Road Reach

Clark County Regional Flood Control District Master Plan facilities which have been constructed include the Jones Boulevard Culvert, Decatur Boulevard Culvert, Cameron Street Culvert/Orleans Culvert, Arville Street Culvert, Valley View Boulevard Culvert, Flamingo Road/Industrial Road Connector Culvert, Flamingo Road Overpass, Union Pacific Railroad Bridge, Industrial Road Culvert.

No significant flood control facilities such as levees, dams, or detention basins have been constructed within this reach.

2.4.3 Imperial Palace to Spencer Street Reach

Clark County Regional Flood Control District Master Plan facilities which have been constructed include the Winnick Avenue Culvert, Hughes Center Culvert, Palos Verdes Street Culvert, Swenson Street Culvert, Cambridge Street Culvert, Maryland Parkway Culvert, Spencer Street Culvert.

No significant flood control facilities such as levees, dams, or detention basins have been constructed within this reach.

2.4.4 Eastern Avenue to Las Vegas Wash Reach

Clark County Regional Flood Control District Master Plan facilities which have been constructed include the Eastern Avenue Culvert, Pecos-McLeod Interconnect Bridge, Desert Inn Road Culvert, Mojave Road Culvert, Trailer Park Bridge, Boulder Highway Culvert, US 95 Bridge, Lamb Boulevard Culvert, Nellis Boulevard Bridge.

No significant flood control facilities such as levees, dams, or detention basins have been constructed within this reach.

3.0 ENGINEERING METHODS

3.1 Hydrologic Analysis

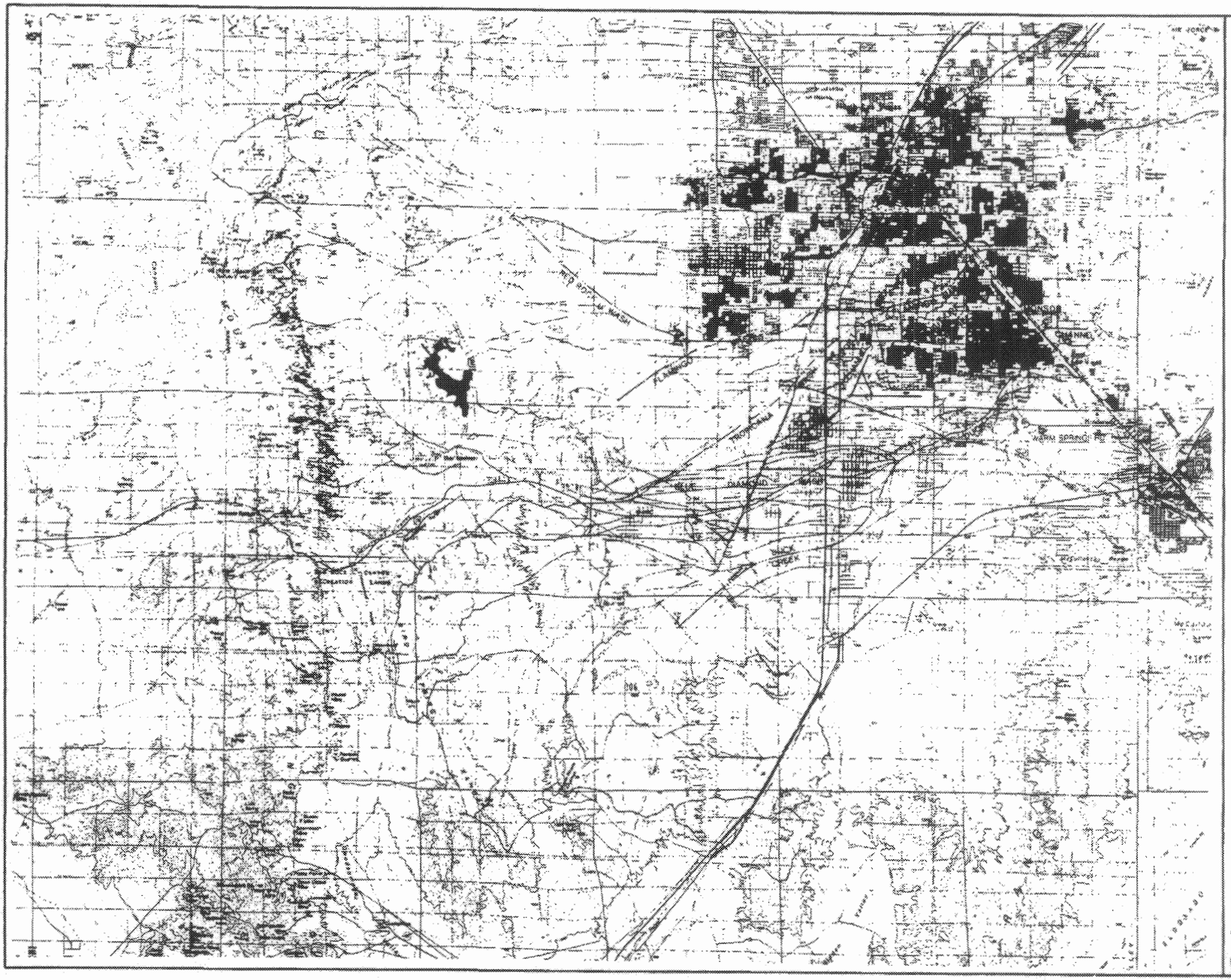
3.1.1 Introduction

This section summarizes the existing conditions/existing facilities of the Flamingo Wash drainage basin conducted for the Flamingo Wash FIS Restudy. The study area covered by this analysis includes the Flamingo Wash, Tropicana Wash, and Red Rock Wash drainage areas. The purpose of this analysis was to develop acceptable discharges for use in the Flamingo Wash FIS Restudy.

The basis of the hydrologic analysis was the HEC-1 model developed by James M. Montgomery Consulting Engineers, Inc. for the Las Vegas Valley Flood Insurance Study Hydrology Report dated September 1991.

Peak discharges have been computed for proposed FIS concentration points for the 100-year return period only using the September 1990 version of the HEC-1 Flood Hydrograph Package.

Subbasins are shown on Figure S-4 of the 1991 Master Plan Update for the Las Vegas Valley included here as Figure 2.



REGIONAL FLOOD CONTROL DISTRICT

1991 FLOOD CONTROL MASTER PLAN UPDATE LAS VEGAS VALLEY

LEGEND

45 SUBAREA DESIGNATION

SUBAREA DELINEATION

FIGURE 2

0 7,500 15,000 22,500

(APPROXIMATE)

SOUTHWEST BASIN HYDROLOGIC SUBAREAS

FIGURE 5-4

James M. Montgomery Consulting Engineers, Inc.

Las Vegas, Nevada

3.1.2 Modifications to the 1991 Effective Model

The following paragraphs discuss the changes made to the Flamingo/Tropicana Wash HEC-1 model from the 1991 Las Vegas Valley FIS Hydrology Report.

3.1.2.1 Previous HEC-1 analyses in the study area were performed using the August 1988 version of the program (File: F100.DAT). This study was performed using the September 1990 version of the HEC-1 Flood Hydrograph Package.

3.1.2.2 Minor changes were made to some Kinematic Wave routings due to the inability of the September 1990 version of HEC-1 to run these routings (File: F100R.DAT).

3.1.2.3 The Red Rock Detention Basin drainage area is no longer included as a part of the Flamingo Wash watershed for the 100-year return period storm event. This is due to the negligible contribution of runoff from the detention basin during the 100-year storm event since the Red Rock Detention Basin Expansion project (LOMR Case No. 97-09-177P). The Depth Area Reduction Factors (DARF) were increased with the decrease in drainage area for this study (File: F-FL.DAT).

3.1.2.4 The Upper Flamingo Wash Detention Basin and drainage area were modified to reflect the Upper Flamingo Wash Detention Basin LOMR (LOMR Case No. 97-09-138P) except for the Red Rock Detention Basin drainage area as discussed above (File: F-FL.DAT).

3.1.2.5 Peak discharges for FIS hydrology were required at numerous concentration points in the Flamingo Wash drainage area. Appropriate peak discharges at each concentration point were determined using two (2) design storm centerings:

3.1.2.5.1 For each concentration point, a storm covering the Flamingo and Tropicana watersheds was investigated. No runoff from the Red Rock Detention Basin watershed was assumed. DARF's for this scenario were based on the total

tributary area, excluding the Red Rock Detention Basin area. This is referred to as the "Overall Storm" (File: F-FL.DAT).

3.1.2.5.2 For each concentration point, a storm covering the Flamingo and Tropicana watersheds, excluding the Red Rock and Upper Flamingo Wash Detention Basin areas, was investigated. No runoff from the Red Rock or Upper Flamingo Wash Detention Basins were assumed. DARF's for this scenario were based on the storm area upstream of each concentration point. This is referred to as the "Central Storm" (File: F-FLC.DAT). The Central Storm produces discharges which differ from the Overall Storm. The Overall Storm produces higher discharges upstream of the Flamingo/Tropicana confluence while the Central Storm produces higher discharges downstream.

3.1.3 Summary of Results

The existing conditions, 100-year HEC-1 model was executed for the two storm scenarios discharged above. Results are shown in Table 1. This table lists the tributary area, appropriate DARF, and peak discharge for each proposed FIS concentration point assuming occurrence of the Overall Storm and Central Storm.

The conclusion was made from the data presented in Table 1 that the controlling storm (i.e., the storm producing the largest peak discharge) is the Overall Storm for all Flamingo Wash locations between the Upper Flamingo Wash Detention Basin and the Tropicana Wash confluence. Downstream of the Flamingo/Tropicana Wash confluence, the Central Storm controls.

Note that for the Overall Storm, the peak discharge drops significantly with the increase in tributary area upstream of the Flamingo/Tropicana Wash confluence. This is due to differences in peak time and DARF. However, it is felt that instead of having the peak discharge go down in this reach, the highest peak discharge held through this reach would be more appropriate.

TABLE 1
COMPARISON OF ALTERNATIVE 100-YEAR STORM SIMULATIONS FOR FLAMINGO WASH WATERSHED

Concentration Point	Description	Overall Storm			Central Storm			Adopted Discharge (cfs)
		Area (sq mi)	DARF	Peak Q (cfs)	Area (sq mi)	DARF	Peak Q (cfs)	
F8	Flamingo Wash at Rainbow Blvd.	37.94	0.72	3,874	3.38	0.92	1,310	3,900
F9	Flamingo Wash at Jones Blvd.	40.35	0.71	3,646	5.79	0.90	1,517	3,900
F14	Flamingo Wast at Decatur Blvd.	50.27	0.68	2,902	15.71	0.82	2,268	3,900
F15	Flamingo Wash at UPRR	51.59	0.68	2,921	17.03	0.80	2,366	3,900
F16	Flamingo Wash at I-15/Caesars Palace	52.11	0.68	2,931	17.55	0.80	2,445	3,900
F17	Flamingo Wash at Winnick Ave./Hughes Center	52.76	0.68	2,934	18.20	0.80	2,581	3,900
F17	Flamingo Wash at Flamingo/Tropicana Confluence	73.61	0.64	4,556	39.05	0.71	4,627	4,600
F18	Flamingo Wash at Spencer St.	77.79	0.64	5,151	43.23	0.71	5,496	5,500
F20B	Flamingo Wash at D/S Desert Inn Rd.	85.45	0.62	5,650	50.89	0.68	5,832	5,800
F22	Flamingo Wash at Boulder Hwy.	90.15	0.61	5,974	55.59	0.67	6,257	6,300
F23	Flamingo Wash at Nellis Blvd./Las Vegas Wash	92.07	0.61	6,098	57.51	0.67	6,411	6,400

F-FL.DAT

```
1********     /****************************
*                                         *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)     *
*             SEPTEMBER 1990              *
*              VERSION 4.0                *
*                                         *
*  RUN DATE  10/06/1997  TIME  14:08:45   *
*                                         *
*******************************************
```

```
 ****************************************
*                                        *
*    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 -AMSKK- 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

1 HEC-1 INPUT PAGE 1

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

              *DIAGRAM
    1         ID        INPUT FILE = F-FL.DAT       BY: JEP        DATE:  10/06/97
    2         ID        FLAMINGO WASH FIS RESTUDY GCW MODIFICATIONS
    3         ID
    4         ID        REVISED DUPLICATED FIS MODEL F100R.DAT
    5         ID        DELETE RED ROCK WATERSHED TO SIMULATE EXPANSION OF RR DET. BASIN
    6         ID        MODIFY UFWDB PER B & V LOMR REQUEST;BASIN R6 NOT ROUTED THRU UFWDB
    7         ID
    8         ID     CLARK COUNTY FLOOD CONTROL DISTRICT MASTER PLAN UPDATE
    9         ID     RED ROCK/FLAMINGO/TROPICANA WATERSHED
   10         ID     EXISTING DRAINAGE SYSTEM WITH PRESENT DEVELOPMENT
   11         ID     FLAMINGO/TROPICANA STORM (NO UPPER BLUE DIAMOND)- MAIN CHANNEL RUN
   12         ID         100-YEAR 6-HR STORM (SDN #5)
   13         ID         JMM    OCTOBER 1990
   14         ID
   15         ID         BASIC DATA FILE BASED ON COE FILE S10P40X.
   16         ID         MODIFICATIONS ADDED FROM B&V RED ROCK BASIN AND UPPER FLAMINGO
   17         ID         BASIN HEC-1 RUNS; NIMBUS NORTHWEST MCCARRAN AIRPORT HEC-1 RUNS;
   18         ID         AND SUBBASIN MODIFICATIONS DUE TO RECENT DEVELOPMENT.
   19         ID
   20         ID         COE MUSKINGUM ROUTING CONVERTED TO KINEMATIC FOR EXISTING
   21         ID         IMPROVED CHANNELS FROM FACILITY INVENTORY.
   22         ID
   23         ID     PB CARDS CONTAIN POINT PRECIPITATION.  DARF'S FROM CCRFCD MANUAL
   24         ID     BASED ON STORM AREAS FOR CONCENTRATION POINTS AS FOLLOWS:
   25         ID
   26         ID         SUBBASIN         AREA (SQMI)              DARF
   27         ID         --------         -----------              ----
   28         ID         RAINBOW           37.94                   0.72
   29         ID           JONES           40.35                   0.71
   30         ID         DECATUR,          50.27                   0.68
```

(EXCERPTS!)

```
                ID        UPPR,I15,CAESARS,  51-53
             32 ID        WINNICK,HUGHES
             33 ID        FL/TROP CONF.,     73-78                  0.64
             34 ID         SPENCER
             35 ID        D/S FROM DI        85.45                  0.62
             36 ID        BLDR HWY,NELLIS,   90-92                  0.61
             37 ID        DESERT ROSE
             38 ID
             39 IT      5       0       0     200
             40 IO      5
             41 JR    PREC     .72     .71     .68     .64     .62     .61

             42 KK    RR23 RUNOFF FROM RR23
             43 BA    2.03
             44 PC    .000    .020    .059    .080    .110    .144    .150    .160    .168    .171
             45 PC    .180    .182    .187    .190    .197    .202    .210    .220    .230    .241
             46 PC    .250    .259    .265    .280    .290    .300    .305    .309    .310    .317
             47 PC    .321    .327    .333    .346    .361    .381    .408    .430    .477    .514
             48 PC    .561    .630    .710    .720    .731    .752    .779    .790    .795    .804
             49 PC    .810    .820    .826    .840    .859    .889    .910    .938    .966    .970
             50 PC    .974    .979    .981    .983    .985    .989    .990    .992    .993    .996
             51 PC    .997    .999   1.00
             52 PB    3.20
             53 LS       0   74.9
1                                        HEC-1 INPUT                                          PAGE  2

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

             54 UK     500    .025    0.15     100
             55 RK    5500    .025    .030    0.09                          1
             56 RK   15500    .023    .030            TRAP     100       5      NO

             57 KK      R1 RUNOFF FROM R1
             58 BA    1.12
             59 PB    3.17
             60 LS       0    87.7
             61 UD    0.47

             62 KK    RR23 COMBINE R1+RR23
             63 HC       2

             64 KK      R5 ROUTE RR23 THRU R5
             65 RM       5    0.39    0.15

             66 KK    RR20 RUNOFF FROM RR20
             67 BA    1.37
             68 PB    3.22
             69 LS       0      88
             70 UD    0.69

             71 KK      R5 ROUTE RR20 THRU R5
             72 RM       7    0.61    0.15

             73 KK    RR21 RUNOFF FROM RR21
             74 BA    6.27
             75 PB    3.26
             76 LS       0      87
             77 UD    1.00

             78 KK      R5 ROUTE RR21 THRU R5
             79 RM       8    0.64    0.15

             80 KK    RR22 RUNOFF FROM RR22
             81 BA    2.15
             82 PB    3.20
             83 LS       0      87
             84 UD    0.62

             85 KK      R5 ROUTE RR22 THRU R5
```

```
                RM       8    0.70    0.15

 87             KK      R5 RUNOFF FROM R5
 88             BA    5.77
 89             PB    3.00
 90             LS       0    75.5
 91             UK     600    .025     .15     100
 92             RK    7920    .023    .030     .20                      1
 93             RK   13000    .019    .030             TRAP      40       2
1                                      HEC-1 INPUT                                    PAGE  3

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

 94             KK      R5 COMBINE R5+RR23+RR22+RR21+RR20
 95             HC       5

 96             KK      F1 RUNOFF FROM F1
 97             BA    4.63
 98             PB    3.23
 99             LS       0      88
100             UD    0.78

101             KK      F5 ROUTE F1 THRU F5
102             RM      12    0.99    0.15

103             KK      F2 RUNOFF FROM F2
104             BA    1.28
105             PB    3.19
106             LS       0      88
107             UD     .43

108             KK      F5 ROUTE F2 THRU F5
109             RM       9    0.76    0.15

110             KK      F3 RUNOFF FROM F3
111             BA    2.60
112             PB    3.09
113             LS       0      87
114             UD     .34

115             KK      F5 ROUTE F3 THRU F5
116             RM       5    0.40    0.15

117             KK      F4 RUNOFF FROM F4
118             BA    1.30
119             PB    3.03
120             LS       0      86
121             UD     .41

122             KK      F5 ROUTE F4 THRU F5
123             RM       8    0.69    0.15

124             KK     F5N RUNOFF FROM F5N
125             BA    4.04
126             PB    3.00
127             LS       0      85
128             UK     300    .025     .15     100
129             RK    3200    .025    .030     .20                      1
130             RK   18000    .023    .030             TRAP      70       5      NO

131             KK     F5S RUNOFF FROM F5S
132             BA    2.00
133             PB    2.86
134             LS       0      85
135             UK     400    .020     .25     100
136             RK    3500    .020    .030     .16                      1
137             RK   14500    .017    .030             TRAP      50       5      NO
1                                      HEC-1 INPUT                                    PAGE  4
```

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

 138          KK      F5 COMBINE F5N AND F5S
 139          HC       2

 140          KK      F5 F5 WITH ROUTED F1, F2, F3, F4 AND R5
 141          HC       6

 142          KK  UFL.DB UPPER FLAMINGO DETENTION BASIN
 143          KM        MODIFIED TO AGREE WITH UFLDB LOMR SUBMITTAL BY B & V
 144          KM          STORAGE-OUTFLOW DATA FROM B&V DESIGN PLANS
 145          RS       1    STOR       0
 146          SV       0      10      25     100     220     585    1005    1045    1195    1515
 147          SV    2244
 148          SQ       0      75     300     675     910    1100    1260    1280    5170   20600
 149          SQ   50300
 150          SE    2445  2447.5    2450    2455    2460    2465    2470  2470.5    2472    2475
 151          SE    2480

 152          KK     F5R ROUTE UPPER FLAMINGO DB OUTFLOW THRU OUTFALL CHANNEL
 153          KM         CHANNEL GEOMETRY FROM B&V PREDESIGN MEMORANDUM
 154          RK    3500    .010    .020           TRAP      30       3

 155          KK     F6A RUNOFF FROM F6A
 156          BA     .55
 157          PB    2.86
 158          LS       0      88
 159          UD    0.35

 160          KK     F6B ROUTE F6A THRU F6B
 161          RM       4    0.35    0.15

 162          KK     F6B RUNOFF FROM F6B
 163          BA    0.85
 164          PB    2.77
 165          LS       0      88
 166          UD    0.30

 167          KK     F6B COMBINE F6A AND F6B
 168          HC       2

 169          KK      F7 ROUTE F6 THRU F7
 170          RM       3    0.28    0.15

 171          KK      F7 RUNOFF FROM F7
 172          BA    1.50
 173          PB    2.77
 174          LS       0    85.5
 175          UK     700    .015     .15     100
 176          RK    4000   .0114    .030     .65                      1
 177          RK    7500   .0116    .030            TRAP      50       5      NO
```



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

 178          KK      F7 COMBINE F7 WITH ROUTED F6
 179          HC       2

 180          KK      F7 COMBINED F7 WITH F5R
 181          HC       2

 182          KK     F7R ROUTE F7 THRU F8 (FLWA1267-1335)
 183          RK    5230    .011    .030            TRAP      40       1

 184          KK      F8 RUNOFF FROM F8
 185          BA     .48
```

```
          LS       0    66.1       0       0      98       0
187       UK    1500    .014     .28      83
188       UK      50    .020     .10      17
189       RK    1800     .01    .020    .048
190       RK    7200    .010    .030                    30       2      NO

191       KK      F8 COMBINE F8 AND F7R
192       KM         RAINBOW
193       HC       2

194       KK      F9 ROUTE F8 THRU F9 (FLWA1203)
195       RK    1740   .0138    .015            TRAP      40       2

196       KK       . (FLWA1152)
197       RK    2640   .0044    .040            TRAP      50       3

198       KK      R6 RUNOFF FROM R6
199       KM        MOVED HYDROGRAPH
200       BA    1.51
201       PB    2.77
202       LS       0    73.2
203       UK     500    .015     .15     100
204       RK    5200    .016    .030     .13                     1
205       RK    8000   .0044    .030            TRAP      40       1      NO

206       KK      F9ROUTE R6 THRU F9
207       KM        ADDED ROUTING
208       RK    1740   .0138    .015            TRAP      40       2

209       KK      F9 RUNOFF FROM F9
210       BA     .90
211       LS       0    63.0       0       0      98       0
212       UK     500    .010     .25      73
213       UK      40    .015     .10      27
214       RK    2400    .007    .020     .35                     1
215       RK    2300    .008    .020    .015                     1
216       RK   10800    .013    .023            TRAP      50       3      NO
1                                          HEC-1 INPUT                                                    PAGE  6

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

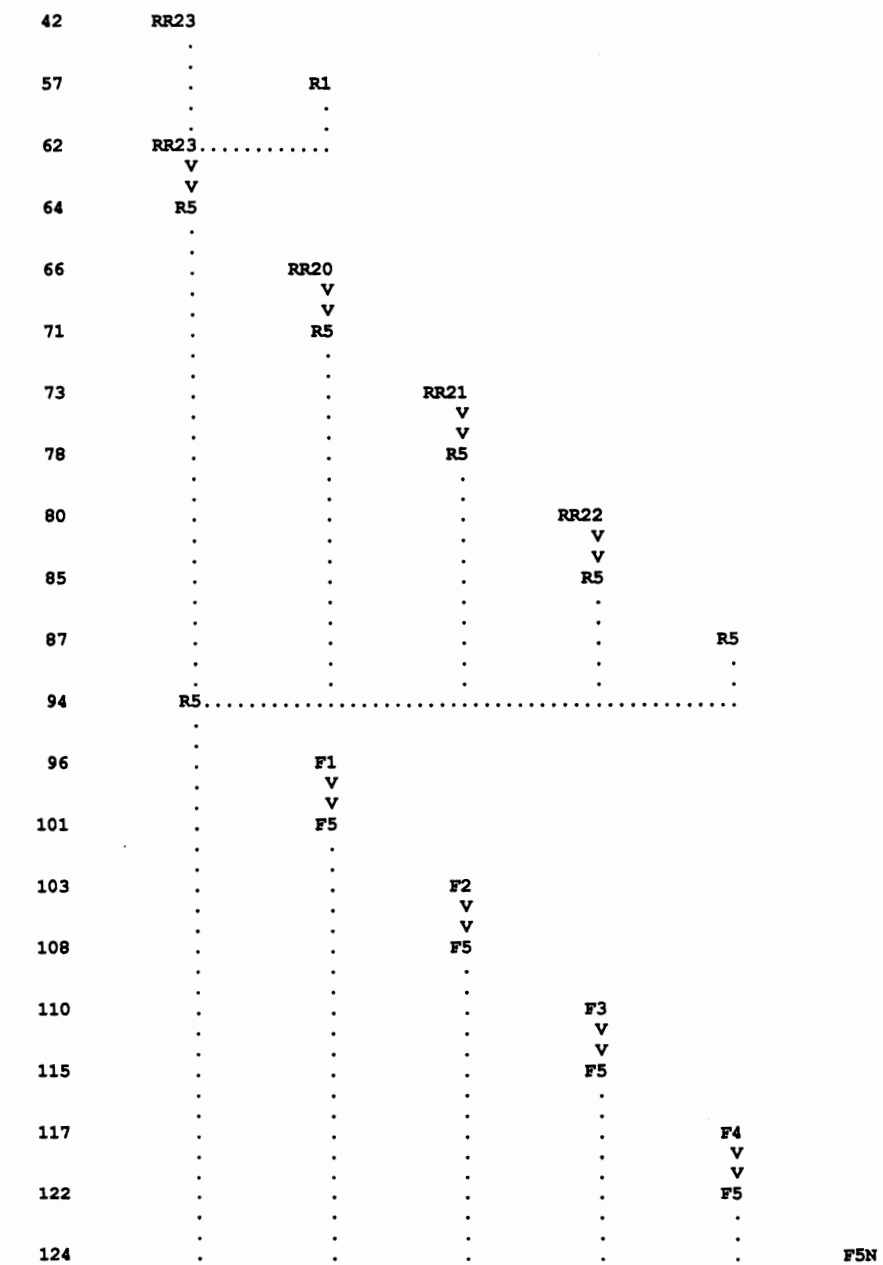
217       KK      F9 COMBINE R6 WITH F9
218       KM        ADDED COMBINATION
219       HC       2

220       KK      F9 COMBINE F8 WITH F9
221       KM           JONES
222       HC       2
```

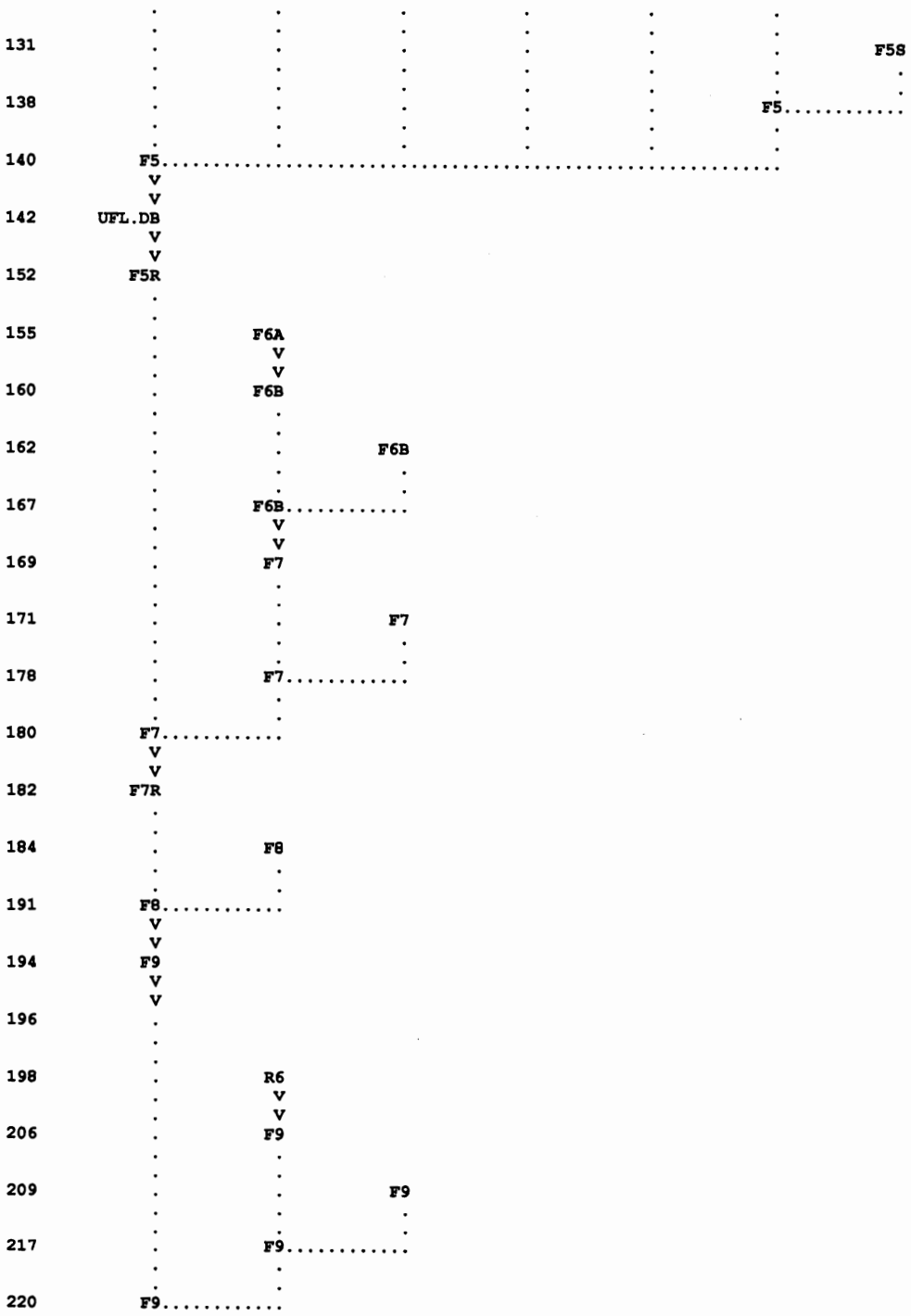
SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING
(.) CONNECTOR
(---->) DIVERSION OR PUMP FLOW
(<----) RETURN OF DIVERTED OR PUMPED FLOW



(EXCERPTS!)


131
F5S
138
F5
140
F5
142
UFL.DB
152
F5R
155
F6A
160
F6B
162
F6B
167
F6B
169
F7
171
F7
178
F7
180
F7
182
F7R
184
F8
191
F8
194
F9
196
198
R6
206
F9
209
F9
217
F9
220
F9

```
              V
              V
  223        F14
              .
              .
```

1

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

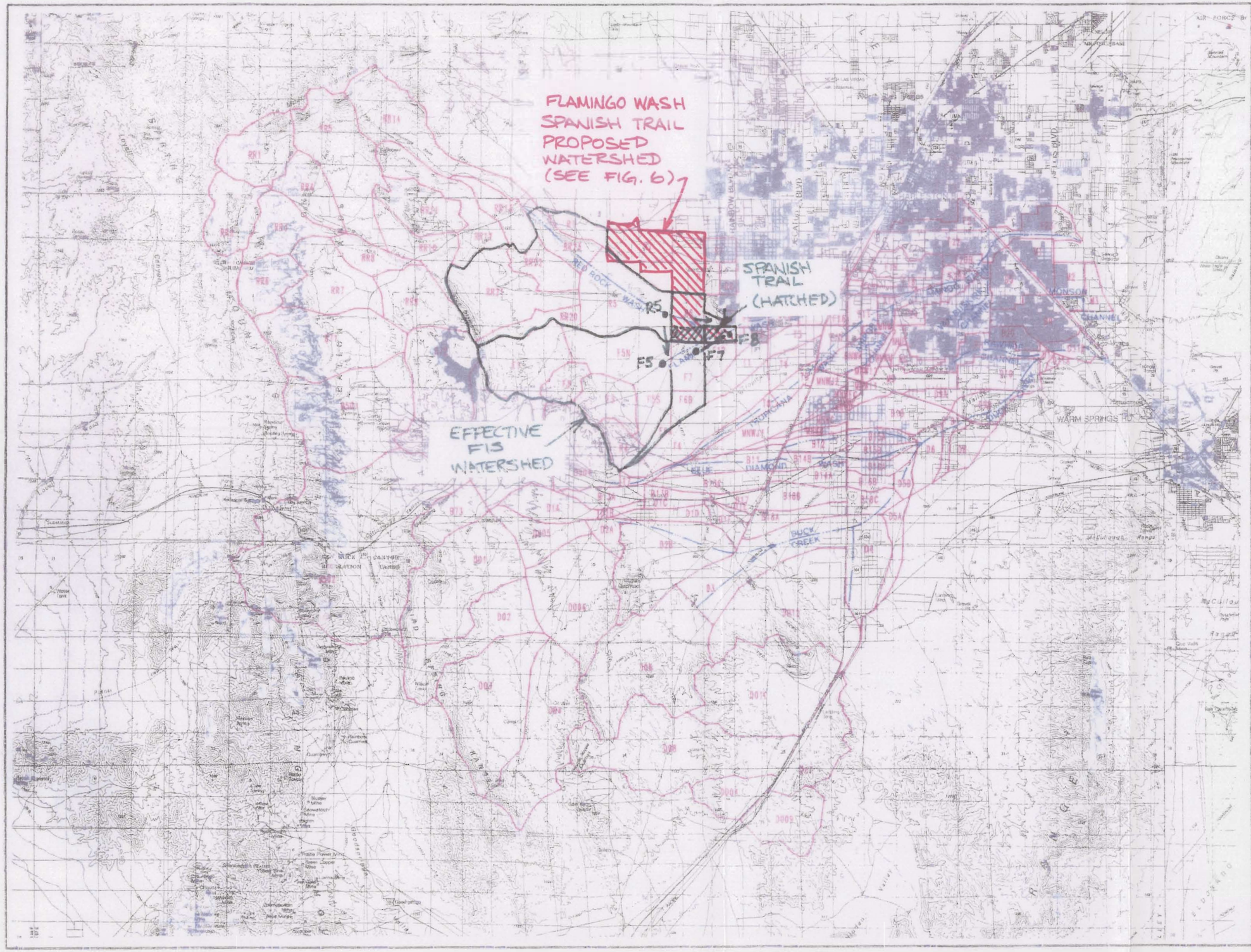
OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .72	RATIO 2 .71	RATIO 3 .68	RATIO 4 .64	RATIO 5 .62	RATIO 6 .61
HYDROGRAPH AT										
+	RR23	2.03	1	FLOW	274.	268.	242.	214.	199.	191.
				TIME	5.25	5.25	5.25	5.25	5.25	5.25
HYDROGRAPH AT										
+	R1	1.12	1	FLOW	488.	477.	446.	404.	384.	373.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83
2 COMBINED AT										
+	RR23	3.15	1	FLOW	564.	552.	510.	461.	434.	420.
				TIME	5.08	5.08	5.08	5.08	5.08	5.08
ROUTED TO										
+	R5	3.15	1	FLOW	546.	531.	490.	442.	416.	402.
				TIME	4.50	5.50	5.50	5.50	5.50	5.50
HYDROGRAPH AT										
+	RR20	1.37	1	FLOW	511.	500.	468.	425.	403.	393.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08
ROUTED TO										
+	R5	1.37	1	FLOW	477.	467.	437.	397.	377.	367.
				TIME	4.75	4.75	4.75	4.75	4.75	4.75
HYDROGRAPH AT										
+	RR21	6.27	1	FLOW	1833.	1793.	1672.	1512.	1433.	1394.
				TIME	4.42	4.42	4.42	4.42	4.42	4.42
ROUTED TO										
+	R5	6.27	1	FLOW	1774.	1735.	1618.	1465.	1390.	1352.
				TIME	5.08	5.08	5.08	5.17	5.17	5.17
HYDROGRAPH AT										
+	RR22	2.15	1	FLOW	798.	780.	728.	658.	623.	606.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00
ROUTED TO										
+	R5	2.15	1	FLOW	731.	715.	667.	603.	572.	556.
				TIME	4.75	4.75	4.75	4.75	4.75	4.75

(EXCERPTS!)

HYDROGRAPH AT										
+	R5	5.77	1	FLOW	733.	705.	650.	573.	525.	508.
				TIME	5.17	5.17	5.17	5.17	5.17	5.17
5 COMBINED AT										
+	R5	18.71	1	FLOW	4055.	3949.	3663.	3272.	3064.	2966.
				TIME	5.00	5.00	5.00	5.00	5.00	5.08
HYDROGRAPH AT										
+	F1	4.63	1	FLOW	1623.	1588.	1485.	1348.	1280.	1247.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17
ROUTED TO										
+	F5	4.63	1	FLOW	1492.	1461.	1366.	1241.	1180.	1149.
				TIME	5.25	5.25	5.25	5.25	5.25	5.25
HYDROGRAPH AT										
+	F2	1.28	1	FLOW	595.	582.	545.	495.	470.	458.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO										
+	F5	1.28	1	FLOW	516.	505.	472.	428.	407.	396.
				TIME	4.58	4.58	4.58	4.58	4.58	4.58
HYDROGRAPH AT										
+	F3	2.60	1	FLOW	1214.	1188.	1107.	1002.	949.	923.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	F5	2.60	1	FLOW	1085.	1061.	990.	895.	848.	825.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17
HYDROGRAPH AT										
+	F4	1.30	1	FLOW	509.	497.	462.	416.	393.	382.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO										
+	F5	1.30	1	FLOW	443.	433.	402.	361.	341.	331.
				TIME	4.50	4.50	4.50	4.50	4.50	4.50
HYDROGRAPH AT										
+	F5N	4.04	1	FLOW	1010.	975.	875.	758.	697.	674.
				TIME	4.33	4.33	4.42	4.50	4.58	4.58
HYDROGRAPH AT										
+	F5S	2.00	1	FLOW	502.	486.	436.	370.	339.	323.
				TIME	4.17	4.17	4.17	4.25	4.33	4.33
2 COMBINED AT										
+	F5	6.04	1	FLOW	1492.	1435.	1290.	1102.	1014.	973.
				TIME	4.25	4.25	4.33	4.42	4.50	4.58
6 COMBINED AT										
+	F5	34.56	1	FLOW	7739.	7559.	7051.	6376.	6021.	5850.
				TIME	5.08	5.08	5.08	5.08	5.08	5.17
ROUTED TO										
+	UFL.DB	34.56	1	FLOW	3766.	3488.	2584.	1266.	1238.	1225.
				TIME	6.50	6.50	6.75	7.25	7.25	7.25
			** PEAK STAGES IN FEET **							
			1	STAGE	2471.46	2471.35	2471.00	2470.15	2469.32	2468.91
				TIME	6.50	6.50	6.75	7.25	7.25	7.25
ROUTED TO										
+	F5R	34.56	1	FLOW	3761.	3486.	2580.	1266.	1238.	1225.
				TIME	6.50	6.58	6.83	7.33	7.33	7.33

HYDROGRAP.										
+	F6A	.55	1	FLOW	237.	232.	216.	196.	186.	181.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	F6B	.55	1	FLOW	214.	209.	195.	176.	167.	162.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT										
+	F6B	.85	1	FLOW	375.	367.	342.	308.	292.	284.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT										
+	F6B	1.40	1	FLOW	490.	479.	445.	402.	380.	370.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO										
+	F7	1.40	1	FLOW	463.	453.	422.	381.	360.	350.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT										
+	F7	1.50	1	FLOW	347.	335.	296.	253.	232.	221.
				TIME	4.17	4.17	4.25	4.33	4.33	4.42
2 COMBINED AT										
+	F7	2.90	1	FLOW	806.	783.	713.	623.	577.	554.
				TIME	4.08	4.17	4.17	4.17	4.17	4.17
2 COMBINED AT										
+	F7	37.46	1	FLOW	3881.	3591.	2652.	1536.	1494.	1473.
				TIME	6.50	6.58	6.83	5.33	5.33	5.33
ROUTED TO										
+	F7R	37.46	1	FLOW	3869.	3582.	2647.	1535.	1493.	1472.
				TIME	6.58	6.58	6.83	5.33	5.42	5.42
HYDROGRAPH AT										
+	F8	.48	1	FLOW	56.	55.	51.	48.	46.	45.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT										
+	F8	37.94	1	FLOW	3874.	3586.	2650.	1550.	1507.	1486.
				TIME	6.58	6.58	6.83	5.33	5.33	5.33
ROUTED TO										
+	F9	37.94	1	FLOW	3874.	3581.	2645.	1549.	1506.	1485.
				TIME	6.58	6.58	6.83	5.33	5.33	5.33
ROUTED TO										
+	.	37.94	1	FLOW	3868.	3580.	2644.	1549.	1506.	1485.
				TIME	6.58	6.67	6.92	5.42	5.42	5.42
HYDROGRAPH AT										
+	R6	1.51	1	FLOW	134.	129.	115.	94.	84.	78.
				TIME	5.25	5.25	5.33	5.42	5.50	5.58
ROUTED TO										
+	F9	1.51	1	FLOW	133.	129.	114.	94.	83.	78.
				TIME	5.25	5.33	5.33	5.50	5.50	5.58
HYDROGRAPH AT										
+	F9	.90	1	FLOW	164.	162.	153.	143.	136.	133.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT										
+	F9	2.41	1	FLOW	202.	194.	173.	143.	136.	133.
				TIME	5.17	5.17	5.25	3.75	3.75	3.75
2 COMBINED AT										

+	F9	40.35	1	FLOW	3940.	3646.	2694.	1[illegible]	1631.	1603.
				TIME	6.58	6.67	6.92	5.42	5.42	5.42



CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

1991 FLOOD CONTROL MASTER PLAN UPDATE LAS VEGAS VALLEY

LEGEND

45 SUBAREA DESIGNATION

—— SUBAREA DELINEATION

FROM:
FLAMINGO WASH
FIS, 1997

0 7,500 15,000 22,500
(APPROXIMATE)

SOUTHWEST BASIN
HYDROLOGIC SUBAREAS

FIGURE S-4

JMM James M. Montgomery
Consulting Engineers, Inc.
Las Vegas, Nevada

2.2.1 RAINBOW BLVD. TO JONES BLVD. REACH

BASE0.D1

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version  4.6.2;  May 1991            *
*                                       *
*  JN DATE    060CT97    TIME   10:38:01 *
*****************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  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
```

(EXCERPTS!)

THIS RUN EXECUTED 06OCT97 10:38:03

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

```
T1      550.032
T2      FLAMINGO WASH FIS RESTUDY
T3      FLOODPLAIN DETERMINATION
T3      RAINBOW BLVD. TO JONES BLVD.
T4      FILE: BASE0.D1
T4      STARTING WSE = 2278.74  FROM BASE1.D1
T4      SUBCRITICAL RUN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    NVINS     Q         WSEL      FQ

                2                                                         3900    2278.74

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                 -1                                      -2        -6

   RIABLE CODES FOR SUMMARY PRINTOUT

    150                 100

IC    0.025     0.025     0.03      0.1       0.3
I1      470        21   1033.6   1139.45    496.29     497.3    497.44
IR   2287.1      1000   2286.43   1011.63   2286.11   1013.88      2286   1018.25   2285.78   1026.47
IR     2284   1029.84      2282    1033.6      2280   1037.35      2278   1041.08      2276   1044.81
IR   2274.8   1047.02   2274.47   1125.14      2276   1128.04      2278   1131.84      2280   1135.65
IR     2282   1139.45      2284   1143.25   2285.45   1146.01      2286   1157.83   2286.04    1158.7
IR   2286.2   1160.71

IC    0.025     0.025      .015
I1      480        27   1037.36   1120.53    314.57    317.78    315.97
IR   2294.3      1000      2294   1007.37   2293.91   1009.73   2293.01   1023.57   2292.78   1027.28
IR     2292   1028.94      2290   1033.16      2288   1037.36   2286.16   1041.18      2286   1041.54
IR     2284   1045.96      2282   1050.19      2280   1055.11   2279.98   1055.27   2280.03   1060.89
IR     2280   1096.41   2280.31   1101.25      2282   1105.98      2284   1110.71      2286   1115.55
IR     2288   1120.53      2290    1125.3      2292   1129.86   2292.43   1130.82   2292.52   1169.51
IR     2292   1170.97   2291.65   1171.6

IC     0.02      0.02     0.015
I1      490        13      1054   1095.75    144.45    149.77    143.95
IS       10                         1054      2294   1095.75      2294
IR   2294.4      1000   2294.73   1002.88   2294.72   1015.52    2294.6   1027.21      2294   1031.11
     2294.1      1054    2284.1      1054    2284.1   1095.75    2294.1   1095.75      2294   1107.09
     2294.5   1111.08   2294.61   1127.32   2294.51   1131.81
```

	0.025	0.025	0.015							
S	.9	1.56	2.6	100	41.75	1.75	320	0	2284.6	2284.1
X1	500	10	1050	1091.75	102	102	102			
X2			1	2292.6	2295.3			1.33		
X3	10			1050	2294	1091.75	2294			
GR	2294.5	1000	2294.88	1008.14	2294.73	1038.02	2294.6	1050	2284.6	1050
GR	2284.6	1091.75	2294.6	1091.75	2294.56	1100.74	2294.86	1121.69	2294.5	1125.84
NC	0.02	0.02	0.02							
X1	510	25	1004.78	1116.38	25	25	25			
GR	2298.8	1000	2298	1000.62	2296.14	1001.97	2296	1004.78	2295.65	1011.7
GR	2294	1018.55	2292	1024.72	2291.3	1026.83	2290	1029.58	2288	1033.81
GR	2286	1038.05	2285.06	1039.94	2285.06	1087.65	2286	1089.57	2288	1093.44
GR	2288.7	1095.14	2290	1097.3	2292	1101.56	2294	1107.37	2295.46	1111.71
GR	2295.5	1116.38	2296	1123.41	2296.51	1129.95	2297.66	1133.29	2297.62	1149.23
NC	0.02	0.02	0.02							
X1	520	6	1000	1086.89	270.2	253.62	261.38			
GR	2304.6	1000	2292.1	1027.64	2287.2	1043.88	2287.1	1068.47	2296.4	1086.89
GR	2299.8	1115.75								
NC	0.02	0.02	0.02							
X1	530	12	1012.73	1091.01	290.28	300.88	292.28			
GR	2306.5	1000	2305.16	1002.59	2304.10	1012.73	2299.36	1021.04	2299.44	1024.50
GR	2289.5	1043.63	2289.31	1058.09	2289.85	1075.82	2296.48	1091.01	2297.34	1100.5
G	2301.5	1118.84	2302.73	1126.28						
	0.02	0.02	0.02							
X1	540	10	1011.97	1089	478.99	474.14	474.25			
GR	2308.1	1000	2307.49	1011.97	2293.72	1038.41	2292.99	1056.88	2294.28	1074.36
GR	2301.1	1089	2301.85	1102.44	2305.68	1118.12	2306.02	1122.17	2306.89	1124.57
NC	0.02	0.02	0.02							
X1	550	11	1015.21	1090.47	518.84	523.12	520.66			
GR	2314.3	1000	2312.70	1004.83	2312.22	1015.21	2297.95	1046.16	2297.68	1059.03
GR	2298.0	1071.99	2304.93	1090.47	2307.63	1114.24	2308.23	1126.06	2309.40	1128.02
GR	2309.2	1129.01								
NC	0.02	0.02	0.02							
X1	560	12	1018.03	1090.97	479.65	475.74	479.99			
GR	2319.6	1000	2318.50	1002.59	2317.24	1018.03	2302.47	1045	2302.36	1066.33
GR	2302.6	1077	2304.01	1078.97	2304.21	1081.04	2309.45	1090.97	2313.96	1118.24
GR	2314.8	1127.28	2315.85	1129.28						
NC	0.02	0.02	0.02							
X1	570	6	1000	1075.08	390.27	400.54	397.21			
GR	2316.4	1000	2310.41	1012.38	2306.89	1030.12	2307.49	1041.92	2310.55	1063.27
GR	2316.5	1075.08								

	0.02	0.02	0.015							
X1	580	5	1000	1041.75	120.01	116.82	123.21			
X3	10			1000	2317.8	1041.75	2317.8	2317.8	2317.8	
GR	2317.3	1000	2310.02	1000	2310.02	1041.75	2317.64	1041.75	2317.64	1078.71
SB	.9	1.56	2.6	132	41.75	1.75	320		2312.18	2310.02
NC	0.02	0.02	0.015							
X1	590	4	1000	1041.75	134.38	132.50	125.31			
X2			1	2320.18	2322.01			1.33		
X3	10			1000	2324.1	1041.75	2324.1			
GR	2324.0	1000	2312.18	1000	2312.18	1041.75	2324.0	1041.75		
NC	0.02	0.02	0.02							
X1	600	7	1000	1089.82	133.41	120.42	123.12			
GR	2325.3	1000	2321.55	1005.46	2314.06	1017.49	2314.10	1040.45	2315.06	1068.41
GR	2325.3	1089.82	2325.30	1091.72						
NC	0.02	0.02	0.02							
X1	610	12	1019.65	1108.86	473.98	414.07	443.09			
GR	2328.9	1000	2329.43	1013.76	2327.86	1019.65	2319.17	1036.52	2318.69	1059.47
GR	2318.2	1061.23	2318.72	1063.31	2318.73	1081.16	2319.15	1086.20	2331.00	1108.86
GR	2331.0	1110.79	2330.49	1119.31						
NC	0.02	0.02	0.02							
X1	620	13	1017.50	1108.12	491.57	536.11	512.99			
G	2333.8	1000	2332.15	1013.04	2330.86	1017.5	2324.57	1028.71	2323.47	1030.25
	2323.1	1039.35	2322.65	1041.70	2322.41	1047.74	2323.18	1067.52	2323.13	1084.98
	2336.4	1108.12	2336.46	1110.13	2336.14	1116.80				
NC	0.02	0.02	0.02							
X1	630	8	1000	1094.39	383.67	381.50	381.82			
GR	2336.0	1000	2326.15	1025.52	2325.00	1044.64	2324.81	1066.49	2326.92	1071.49
GR	2339.9	1094.39	2339.91	1096.31	2339.69	1112.07				
NC	.015	.02	.015							
X1	640	6	1000	1066	194.78	125.27	87.80			
X3	10			1000	2337.25	1066	2337.25			
GR	2337.2	1000	2333.25	1000	2327.25	1009	2327.25	1057	2333.25	1066
GR	2337.2	1066								
SB	.90	1.56	2.6	184	48	6	426	1.5	2328.41	2327.25
NC	.02	.02	.015							
X1	650	6	1000	1066	188.47	187.44	198.08			
X2			1	2336.41	2339.86			1.33		
X3	10			1000	2336.41	1066	2336.41			
GR	2336.4	1000	2334.41	1000	2328.41	1009	2328.41	1057	2334.41	1066
GR	2336.4	1066								

	.03	.03	.025							
X	660	11	1000	1079.80	99.31	163.20	127.89			
GR	2339.7	1000	2339.59	1000.88	2340.05	1003.49	2334.75	1004.66	2333.26	1007.57
GR	2329.8	1013.92	2329.24	1037.32	2329.67	1058.47	2331.76	1067.91	2338.02	1072.09
GR	2341.3	1079.80								
NC	.03	.03	.025							
X1	670	11	1000	1085.33	503.66	552.77	530.81			
GR	2341.0	1000	2341.07	1003.53	2341.07	1010.83	2341.07	1013.66	2338.05	1015.93
GR	2333.2	1021.71	2332.37	1043.45	2332.59	1053.02	2333.69	1058.39	2342.45	1071.27
GR	2349.4	1085.33								
NC	.03	.03	.025							
X1	680	11	1000	1085.52	483.05	501.60	508.76			
GR	2351	1000	2346.16	1006.72	2345.75	1012.63	2345.23	1015.64	2342.32	1017.51
GR	2335.4	1023.77	2334.72	1035.57	2334.89	1055.45	2336.08	1058.93	2343.65	1071.58
GR	2351.8	1085.52								
NC	.03	.03	.02							
X1	690	4	1000	1082	433	442.93	437.49			
X3	10			1000	2352.4	1082	2352.4			
GR	2352.4	1000	2338.40	1021	2338.40	1061	2352.40	1082		
SB	.90	1.56	2.6	130	40	4	798	1.5	2338.49	2338.40
NC	.03	.03	.02							
X	700	4	1000	1082	126.98	127.16	119.30			
			1	2352.49	2354.36			1.33		
	10			1000	2352.49	1082	2352.49			
GR	2352.4	1000	2338.49	1021	2338.49	1061	2352.49	1082		
NC	.03	.03	.025	.1	.3					
X1	710	5	1000	1094.10	41.86	31.18	33.13			
GR	2353.1	1000	2341.58	1036.19	2341.63	1047.76	2341.74	1066.24	2354.06	1094.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	OLOB	OCH	OROB	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
ALLOWABLE ERROR FOR CRITICAL DEPTH DETERMINATION (ALLDC) = 2.000 PERCENT OF THE DEPTH

CCHV= .100 CEHV= .300
*SECNO 470.000
3720 CRITICAL DEPTH ASSUMED

470.000	4.27	2278.74	2278.74	2278.74	2280.64	1.90	.00	.00	2282.00
3900.0	.0	3900.0	.0	.0	352.7	.0	.0	.0	2282.00
.00	.00	11.06	.00	.000	.030	.000	.000	2274.47	1039.69
.008742	496.	497.	497.	0	4	0	.00	93.56	1133.26

*SECNO 480.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

480.000	5.51	2285.49	2285.49	.00	2287.77	2.28	1.19	.11	2288.00
900.0	.0	3900.0	.0	.0	322.0	.0	2.4	.6	2288.00
.01	.00	12.11	.00	.000	.015	.000	.000	2279.98	1042.67
002096	315.	316.	318.	0	11	0	.00	71.65	1114.32

*SECNO 490.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1054.0 1095.8 TYPE= 1 TARGET= 41.750
ELENCL= 2294.00 ELENCR= 2294.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2294.10 ELREA= 2294.10

490.000	6.47	2290.57	2290.57	.00	2293.81	3.23	.33	.29	2294.10
3900.0	.0	3900.0	.0	.0	270.2	.0	3.4	.8	2294.10
.01	.00	14.43	.00	.000	.015	.000	.000	2284.10	1054.00
.002522	144.	144.	150.	0	8	0	.00	41.75	1095.75

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	OLOB	OCH	OROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
[illegible]HE	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 2289.61 , NOT 2290.57 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	100.00	41.75	1.75	320.00	.00	2284.60	2284.10

*SECNO 500.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.41

CLASS B LOW FLOW

3420 BRIDGE W.S.= 2291.01 BRIDGE VELOCITY= 14.65 CALCULATED CHANNEL AREA= 256.

EGPRS	EGLWC	K3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
[illegible].17	2294.79	.00	0.	3900.	320.	320.	2292.60	2295.30	0.

3470 ENCROACHMENT STATIONS= 1050.0 1091.8 TYPE= 1 TARGET= 41.750
ELEMCL= 2294.00 ELEMCR= 2294.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2294.60 ELREA= 2294.60

500.000	8.16	2292.76	.00	.00	2294.79	2.04	.99	.00	2294.60
3900.0	.0	3900.0	.0	.0	340.6	.0	4.1	.9	2294.60
.01	.00	11.45	.00	.000	.015	.000	.000	2284.60	1050.00
.001263	102.	102.	102.	0	0	0	.00	41.75	1091.75

*SECNO 510.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.49

510.000	9.30	2294.36	2290.49	.00	2294.96	.60	.02	.14	2296.00
3900.0	.0	3900.0	.0	.0	627.0	.0	4.4	.9	2295.50
.01	.00	6.22	.00	.000	.020	.000	.000	2285.06	1017.09
[illegible]0568	25.	25.	25.	3	14	0	.00	91.33	1108.42

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 520.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

520.000	7.11	2294.21	2294.21	.00	2296.79	2.58	.31	.59	2304.60
3900.0	.0	3900.0	.0	.0	302.6	.0	7.2	1.4	2296.40
.02	.00	12.89	.00	.000	.020	.000	.000	2287.10	1022.98
.003669	270.	261.	254.	0	15	0	.00	59.57	1082.55

*SECNO 530.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

530.000	6.87	2296.18	2296.18	.00	2298.74	2.55	1.06	.00	2304.10
3900.0	.0	3900.0	.0	.0	304.1	.0	9.2	1.8	2296.48
.03	.00	12.83	.00	.000	.020	.000	.000	2289.31	1030.77
.003617	290.	292.	301.	0	8	0	.00	59.57	1090.33

*540.000
MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

540.000	6.97	2299.96	2299.96	.00	2302.51	2.54	1.72	.00	2307.49
3900.0	.0	3900.0	.0	.0	304.7	.0	12.6	2.4	2301.10
.04	.00	12.80	.00	.000	.020	.000	.000	2292.99	1026.42
.003625	479.	474.	474.	0	5	0	.00	60.14	1086.56

SECNO 550.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

550.000	7.27	2304.95	2304.95	.00	2307.55	2.59	1.90	.01	2312.22
3900.0	.0	3900.0	.0	.0	301.8	.0	16.2	3.1	2304.93
.05	.00	12.92	.05	.000	.020	.020	.000	2297.68	1030.97
.003691	519.	521.	523.	0	8	0	.00	59.72	1090.69

SECNO 560.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

560.000	6.77	2309.13	2309.13	.00	2311.76	2.63	1.77	.01	2317.24
3900.0	.0	3900.0	.0	.0	299.5	.0	19.5	3.8	2309.45
.06	.00	13.02	.00	.000	.020	.000	.000	2302.36	1032.84
.003674	480.	480.	476.	0	11	0	.00	57.52	1090.36

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 570.000									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
570.000	7.19	2314.08	2314.08	.00	2316.51	2.43	1.46	.02	2316.40
3900.0	.0	3900.0	.0	.0	311.9	.0	22.3	4.3	2316.50
.07	.00	12.50	.00	.000	.020	.000	.000	2306.89	1004.80
.003696	390.	397.	401.	0	8	0	.00	65.48	1070.28
*SECNO 580.000									
3301 HV CHANGED MORE THAN HVINS									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
3470 ENCROACHMENT STATIONS= 1000.0 1041.8 TYPE= 1 TARGET= 41.750									
ELENCL= 2317.80 ELENCR= 2317.80									
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2317.80 ELREA= 2317.80									
1000	6.47	2316.49	2316.49	.00	2319.73	3.24	.37	.24	2367.30
3900.0	.0	3900.0	.0	.0	270.2	.0	23.1	4.5	2317.80
.07	.00	14.44	.00	.000	.015	.000	.000	2310.02	1000.00
.002524	120.	123.	117.	0	12	0	.00	41.75	1041.75
SPECIAL BRIDGE									
3227 DOWNSTREAM ELEV IS 2315.53 , NOT 2316.49 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)									
SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.56	2.60	132.00	41.75	1.75	320.00	.00	2312.18	2310.02
*SECNO 590.000									
3790 POSSIBLE INVALID SOLUTION 20 TRIALS OF EG NOT ENOUGH									
FINAL QWEIR + QPR = 4407. DOES NOT EQUAL ACTUAL Q = 3900.									
3840, FLOW IS BY WEIR AND LOW FLOW									
3301 HV CHANGED MORE THAN HVINS									
3420 BRIDGE W.S.= 2319.00 BRIDGE VELOCITY= 13.95 CALCULATED CHANNEL AREA= 273.									

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	OLOB	OCH	OROB	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

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
2320.09	2322.02	2.51	0.	4407.	320.	320.	2320.18	2322.01	132.

3470 ENCROACHMENT STATIONS= 1000.0 1041.8 TYPE= 1 TARGET= 41.750
ELENCL= 2324.10 ELENCR= 2324.10

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2374.00 ELREA= 2324.10

590.000	7.31	2319.49	.00	.00	2322.02	2.53	2.29	.00	2374.00
3900.0	.0	3900.0	.0	.0	305.5	.0	23.9	4.6	2324.10
.07	.00	12.76	.00	.000	.015	.000	.000	2312.18	1000.00
.001744	134.	125.	133.	4	0	20	.00	41.75	1041.75

*SECNO 600.000

3301 HV CHANGED MORE THAN HVINS

600.000	6.89	2320.95	2319.68	.00	2322.35	1.40	.22	.11	2325.30
3900.0	.0	3900.0	.0	.0	411.0	.0	24.9	4.8	2325.30
.07	.00	9.49	.00	.000	.020	.000	.000	2314.06	1006.41
.001768	133.	123.	120.	5	15	0	.00	74.34	1080.75

*SECNO 610.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

610.000	6.04	2324.24	2324.24	.00	2326.56	2.32	1.10	.28	2327.86
3900.0	.0	3900.0	.0	.0	318.9	.0	28.7	5.5	2331.00
.08	.00	12.23	.00	.000	.020	.000	.000	2318.20	1026.68
.003715	474.	443.	414.	0	11	0	.00	69.25	1095.93

*SECNO 620.000
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	CORAE	TOPWID	ENDST
620.000	5.71	2328.12	2328.12	.00	2330.41	2.29	1.93	.00	2330.86
3900.0	.0	3900.0	.0	.0	321.4	.0	32.4	6.3	2336.40
.10	.00	12.13	.00	.000	.020	.000	.000	2322.41	1022.38
.003761	492.	513.	536.	0	11	0	.00	71.30	1093.68

*SECNO 630.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

630.000	6.28	2331.09	2331.09	.00	2333.49	2.40	1.42	.03	2336.00
3900.0	.0	3900.0	.0	.0	313.7	.0	35.2	6.9	2339.90
.11	.00	12.43	.00	.000	.020	.000	.000	2324.81	1012.72
.003688	384.	382.	382.	0	8	0	.00	66.13	1078.85

*SECNO 640.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1000.0 1066.0 TYPE= 1 TARGET= 66.000
ICL= 2337.25 ELENCR= 2337.25

OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2387.20 ELREA= 2337.25

640.000	5.53	2332.78	2332.78	.00	2335.22	2.43	.24	.01	2387.20
3900.0	.0	3900.0	.0	.0	311.5	.0	35.8	7.1	2337.25
.11	.00	12.52	.00	.000	.015	.000	.000	2327.25	1000.70
.002097	195.	88.	125.	0	11	0	.00	64.60	1065.30

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 2331.67 , NOT 2332.78 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.56	2.60	184.00	48.00	6.00	426.00	1.50	2328.41	2327.25

*SECNO 650.000

301 HV CHANGED MORE THAN HVINS

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.74

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

CLASS B LOW FLOW

3420 BRIDGE W.S.= 2333.81 BRIDGE VELOCITY= 12.79 CALCULATED CHANNEL AREA= 271.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
2334.81	2337.18	.00	0.	3900.	426.	432.	2336.41	2339.86	0.

3470 ENCROACHMENT STATIONS= 1000.0 1066.0 TYPE= 1 TARGET= 66.000
ELENCL= 2336.41 ELENCR= 2336.41

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2386.40 ELREA= 2336.41

650.000	7.59	2336.00	.00	.00	2337.18	1.18	1.97	.00	2386.40
3900.0	.0	3900.0	.0	.0	447.1	.0	37.6	7.4	2336.41
.11	.00	8.72	.00	.000	.015	.000	.000	2328.41	1000.00
.000690	188.	198.	187.	0	0	0	.00	66.00	1066.00

660.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .43

660.000	6.51	2335.75	2334.97	.00	2337.54	1.78	.17	.18	2339.70
3900.0	.0	3900.0	.0	.0	364.0	.0	38.8	7.6	2341.30
.12	.00	10.72	.00	.000	.025	.000	.000	2329.24	1004.44
.003646	99.	128.	163.	3	15	0	.00	66.14	1070.58

*SECNO 670.000

$301 HV CHANGED MORE THAN HVINS

$185 MINIMUM SPECIFIC ENERGY
$720 CRITICAL DEPTH ASSUMED

670.000	7.01	2339.38	2339.38	.00	2342.21	2.83	2.41	.31	2341.00
3900.0	.0	3900.0	.0	.0	289.1	.0	42.7	8.3	2349.40
.13	.00	13.49	.00	.000	.025	.000	.000	2332.37	1014.93
.005792	504.	531.	553.	0	8	0	.00	51.83	1066.76

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

SECNO 680.000

;301 HV CHANGED MORE THAN HVINS

680.000	7.74	2342.46	2341.83	.00	2344.76	2.30	2.50	.05	2351.00
3900.0	.0	3900.0	.0	.0	320.5	.0	46.3	8.9	2351.80
.14	.00	12.17	.00	.000	.025	.000	.000	2334.72	1017.42
.004223	483.	509.	502.	2	5	0	.00	52.18	1069.60

;SECNO 690.000
;185 MINIMUM SPECIFIC ENERGY
;720 CRITICAL DEPTH ASSUMED

;470 ENCROACHMENT STATIONS= 1000.0 1082.0 TYPE= 1 TARGET= 82.000
ELENCL= 2352.40 ELENCR= 2352.40

;495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2402.40 ELREA= 2352.40

490.000	6.12	2344.52	2344.52	.00	2347.13	2.61	1.73	.09	2402.40
3900.0	.0	3900.0	.0	.0	300.9	.0	49.4	9.4	2352.40
.15	.00	12.96	.00	.000	.020	.000	.000	2338.40	1011.82
003708	433.	437.	443.	0	15	0	.00	58.35	1070.18

;PECIAL BRIDGE

;227 DOWNSTREAM ELEV IS 2343.46 , NOT 2344.52 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

;B XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.56	2.60	130.00	40.00	4.00	798.00	1.50	2338.49	2338.40

*SECNO 700.000

;301 HV CHANGED MORE THAN HVINS

;302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.60

;LASS B LOW FLOW

;420 BRIDGE W.S.= 2344.94 BRIDGE VELOCITY= 13.13 CALCULATED CHANNEL AREA= 295.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	OLOB	OCH	OROB	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

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	2347.85	.00	0.	3900.	798.	798.	2352.49	2354.36	0.

3470 ENCROACHMENT STATIONS= 1000.0 1082.0 TYPE= 1 TARGET= 82.000
ELENCL= 2352.49 ELENCR= 2352.49

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2402.40 ELREA= 2352.49

700.000	8.00	2346.49	.00	.00	2347.85	1.36	.73	.00	2402.40
3900.0	.0	3900.0	.0	.0	416.5	.0	50.4	9.6	2352.49
.15	.00	9.36	.00	.000	.020	.000	.000	2338.49	1008.92
.001442	127.	119.	127.	0	0	0	.00	64.09	1073.00

CCHV= .100 CEHV= .300
*SECNO 710.000

V CHANGED MORE THAN HVINS

7185 MINIMUN SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

710.000	6.61	2348.19	2348.19	.00	2350.62	2.42	.08	.32	2353.10
3900.0	.0	3900.0	.0	.0	312.2	.0	50.7	9.7	2354.06
.15	.00	12.49	.00	.000	.025	.000	.000	2341.58	1015.42
.005765	42.	33.	31.	0	15	0	.00	65.41	1080.83

THIS RUN EXECUTED 060CT97 10:39:40

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

RAINBOW BLVD. TO JONES B

SUMMARY PRINTOUT TABLE 100

	SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	M3	DEPTH	CWSEL	VCH	EG
*	500.000	2294.79	2292.60	2294.17	2295.30	3900.00	.00	2.00	.00	8.16	2292.76	11.45	2294.79
*	590.000	2322.02	2320.18	2320.09	2322.01	4406.91	.34	15.00	2.51	7.31	2319.49	12.76	2322.02
*	650.000	2337.18	2336.41	2334.81	2339.86	3900.00	.00	2.00	.00	7.59	2336.00	8.72	2337.18
	700.000	2347.85	2352.49	.00	2354.36	3900.00	.00	2.00	.00	8.00	2346.49	9.36	2347.85

`OW BLVD. TO JONES B

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	LG	10*KS	VCH	AREA	.01K
*	470.000	.00	.00	.00	2274.47	3900.00	2278.74	2278.74	2280.64	87.42	11.06	352.70	417.11
*	480.000	315.97	.00	.00	2279.98	3900.00	2285.49	2285.49	2287.77	20.96	12.11	322.04	851.87
*	490.000	143.95	.00	.00	2284.10	3900.00	2290.57	2290.57	2293.81	25.22	14.43	270.24	776.67
*	500.000	102.00	2295.30	2292.60	2284.60	3900.00	2292.76	.00	2294.79	12.63	11.45	340.59	1097.48
*	510.000	25.00	.00	.00	2285.06	3900.00	2294.36	2290.49	2294.96	5.68	6.22	627.03	1636.48
*	520.000	261.38	.00	.00	2287.10	3900.00	2294.21	2294.21	2296.79	36.69	12.89	302.60	643.85
*	530.000	292.28	.00	.00	2289.31	3900.00	2296.18	2296.18	2298.74	36.17	12.83	304.07	648.48
*	540.000	474.25	.00	.00	2292.99	3900.00	2299.96	2299.96	2302.51	36.25	12.80	304.74	647.74
*	550.000	520.66	.00	.00	2297.68	3900.00	2304.95	2304.95	2307.55	36.91	12.92	301.79	641.97
*	560.000	479.99	.00	.00	2302.36	3900.00	2309.13	2309.13	2311.76	36.74	13.02	299.48	643.40
	570.000	397.21	.00	.00	2306.89	3900.00	2314.08	2314.08	2316.51	36.96	12.50	311.92	641.50
*	580.000	123.21	.00	.00	2310.02	3900.00	2316.49	2316.49	2319.73	25.24	14.44	270.16	776.32
*	590.000	125.31	2322.01	2320.18	2312.18	3900.00	2319.49	.00	2322.02	17.44	12.76	305.54	933.85
	600.000	123.12	.00	.00	2314.06	3900.00	2320.95	2319.68	2322.35	17.68	9.49	411.00	927.39
*	610.000	443.09	.00	.00	2318.20	3900.00	2324.24	2324.24	2326.56	37.15	12.23	318.95	639.89
*	620.000	512.99	.00	.00	2322.41	3900.00	2328.12	2328.12	2330.41	37.61	12.13	321.44	635.96
*	630.000	381.82	.00	.00	2324.81	3900.00	2331.09	2331.09	2333.49	36.88	12.43	313.74	642.22
*	640.000	87.80	.00	.00	2327.25	3900.00	2332.78	2332.78	2335.22	20.97	12.52	311.48	851.58
*	650.000	198.08	2339.86	2336.41	2328.41	3900.00	2336.00	.00	2337.18	6.90	8.72	447.09	1485.20
*	660.000	127.89	.00	.00	2329.24	3900.00	2335.75	2334.97	2337.54	36.46	10.72	363.96	645.89
*	670.000	530.81	.00	.00	2332.37	3900.00	2339.38	2339.38	2342.21	57.92	13.49	289.08	512.43
	680.000	508.76	.00	.00	2334.72	3900.00	2342.46	2341.83	2344.76	42.23	12.17	320.47	600.15
*	690.000	437.49	.00	.00	2338.40	3900.00	2344.52	2344.52	2347.13	37.08	12.96	300.89	640.44
*	700.000	119.30	2354.36	2352.49	2338.49	3900.00	2346.49	.00	2347.85	14.42	9.36	416.54	1026.94

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
710.000	33.13	.00	.00	2341.58	3900.00	2348.19	2348.19	2350.62	57.65	12.49	312.19	513.63

THIS SECTION IS JUST DOWNSTREAM OF BRIDGE AT RAINBOW.

'ON BLVD. TO JONES B

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	470.000	3900.00	2278.74	.00	.00	.00	93.56	.00
*	480.000	3900.00	2285.49	.00	6.75	.00	71.65	315.97
*	490.000	3900.00	2290.57	.00	5.08	.00	41.75	143.95
*	500.000	3900.00	2292.76	.00	2.19	.00	41.75	102.00
*	510.000	3900.00	2294.36	.00	1.60	.00	91.33	25.00
*	520.000	3900.00	2294.21	.00	-.15	.00	59.57	261.38
*	530.000	3900.00	2296.18	.00	1.97	.00	59.57	292.28
*	540.000	3900.00	2299.96	.00	3.78	.00	60.14	474.25
*	550.000	3900.00	2304.95	.00	4.99	.00	59.72	520.66
*	560.000	3900.00	2309.13	.00	4.18	.00	57.52	479.99
	570.000	3900.00	2314.08	.00	4.95	.00	65.48	397.21
*	580.000	3900.00	2316.49	.00	2.41	.00	41.75	123.21
*	590.000	3900.00	2319.49	.00	3.00	.00	41.75	125.31
	600.000	3900.00	2320.95	.00	1.46	.00	74.34	123.12
*	610.000	3900.00	2324.24	.00	3.29	.00	69.25	443.09
*	620.000	3900.00	2328.12	.00	3.88	.00	71.30	512.99
*	630.000	3900.00	2331.09	.00	2.97	.00	66.13	381.82
*	640.000	3900.00	2332.78	.00	1.69	.00	64.60	87.80
*	650.000	3900.00	2336.00	.00	3.22	.00	66.00	198.08
*	660.000	3900.00	2335.75	.00	-.25	.00	66.14	127.89
*	670.000	3900.00	2339.38	.00	3.63	.00	51.83	530.81
	680.000	3900.00	2342.46	.00	3.08	.00	52.18	508.76
*	690.000	3900.00	2344.52	.00	2.06	.00	58.35	437.49
*	700.000	3900.00	2346.49	.00	1.98	.00	64.09	119.30

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
710.000	3900.00	2348.19	.00	1.70	.00	65.41	33.13

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 470.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 480.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 480.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 490.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 490.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 500.000 PROFILE= 1 HYDRAULIC JUMP D.S.
WARNING SECNO= 500.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 510.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 520.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 520.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 530.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 530.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 540.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 570.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 570.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 580.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 580.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 590.000 PROFILE= 1 HYDRAULIC JUMP D.S.
CAUTION SECNO= 590.000 PROFILE= 1 20 TRIALS OF EG NOT ENOUGH

CAUTION SECNO= 610.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 610.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 620.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 620.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 630.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 630.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 640.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 640.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 650.000 PROFILE= 1 HYDRAULIC JUMP D.S.
WARNING SECNO= 650.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

SECNO= 660.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO= 670.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
AUTION SECNO= 670.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

AUTION SECNO= 690.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
AUTION SECNO= 690.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

AUTION SECNO= 700.000 PROFILE= 1 HYDRAULIC JUMP D.S.
ARNING SECNO= 700.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO= 710.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
AUTION SECNO= 710.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

TABLE 1
COMPARISON OF ALTERNATIVE 100-YEAR STORM SIMULATIONS FOR FLAMINGO WASH WATERSHED

Concentration Point	Description	Overall Storm			Central Storm			Adopted Discharge (cfs)
		Area (sq mi)	DARF	Peak Q (cfs)	Area (sq mi)	DARF	Peak Q (cfs)	
F8	Flamingo Wash at Rainbow Blvd.	37.94	0.72	3,874	3.38	0.92	1,310	3,900
F9	Flamingo Wash at Jones Blvd.	40.35	0.71	3,646	5.79	0.90	1,517	3,900
F14	Flamingo Wast at Decatur Blvd.	50.27	0.68	2,902	15.71	0.82	2,268	3,900
F15	Flamingo Wash at UPRR	51.59	0.68	2,921	17.03	0.80	2,366	3,900
F16	Flamingo Wash at I-15/Caesars Palace	52.11	0.68	2,931	17.55	0.80	2,445	3,900
F17	Flamingo Wash at Winnick Ave./Hughes Center	52.76	0.68	2,934	18.20	0.80	2,581	3,900
F17	Flamingo Wash at Flamingo/Tropicana Confluence	73.61	0.64	4,556	39.05	0.71	4,627	4,600
F18	Flamingo Wash at Spencer St.	77.79	0.64	5,151	43.23	0.71	5,496	5,500
F20B	Flamingo Wash at D/S Desert Inn Rd.	85.45	0.62	5,650	50.89	0.68	5,832	5,800
F22	Flamingo Wash at Boulder Hwy.	90.15	0.61	5,974	55.59	0.67	6,257	6,300
F23	Flamingo Wash at Nellis Blvd./Las Vegas Wash	92.07	0.61	6,098	57.51	0.67	6,411	6,400

the Flamingo Wash. Approximately 2,700 cfs will flow into Boulder Highway. Boulder Highway is sagged in this location and will allow the overflow to spillover back into the Flamingo Wash to the east. Note the revised floodplain in this area is increased.

After discussions with the CCRFCD, it was decided to designate the Special Flood Hazard Area by approximate methods (Zone A) because of the extent of existing development and the narrow width of the floodplain along the majority of the entire study area.

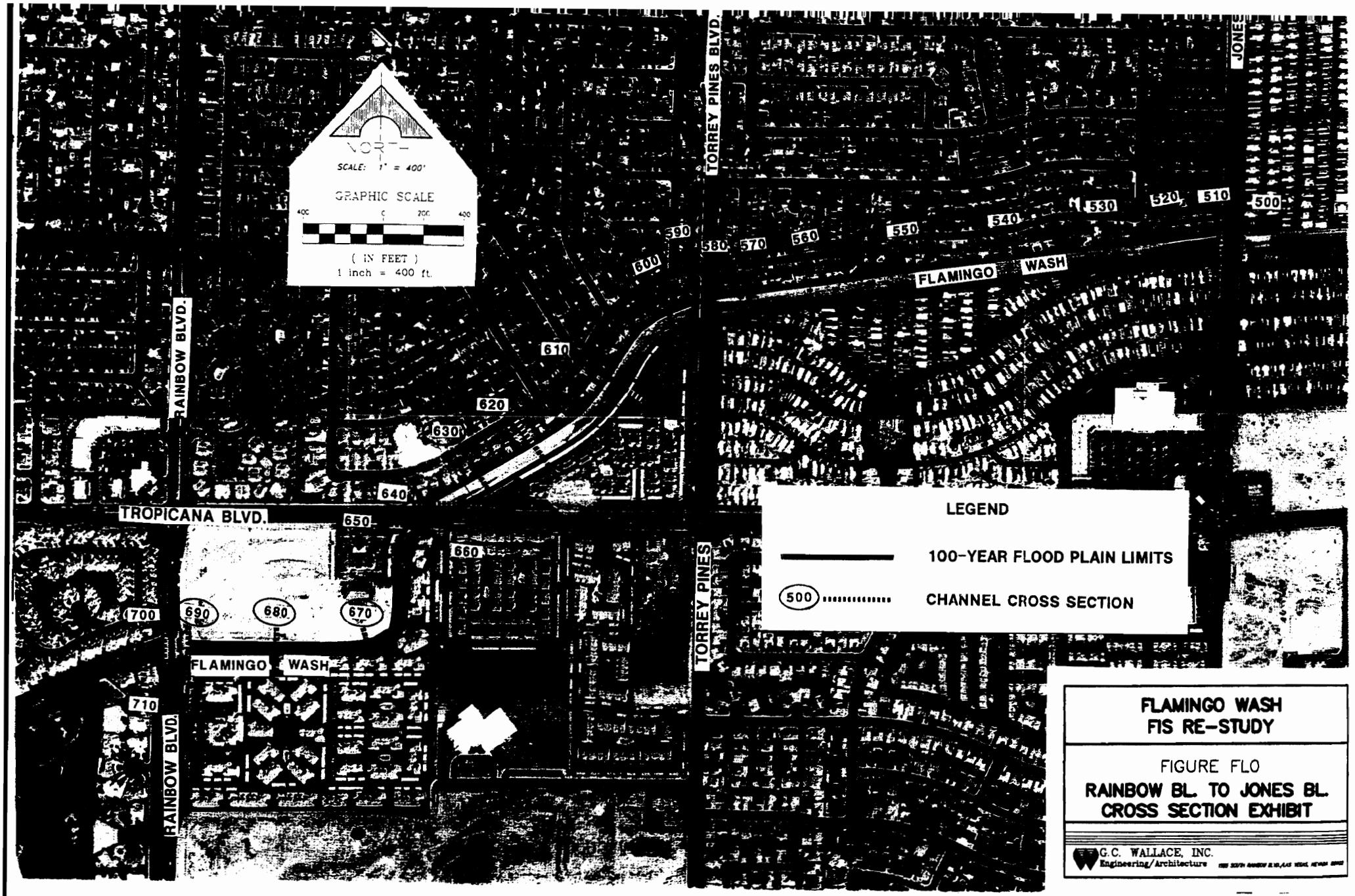
TABLE 3
HYDRAULIC ANALYSIS DISCHARGES
FLAMINGO WASH FIS RESTUDY
Clark County, Nevada

Reach	Section Numbers	100-Year Peak Flow Rates (cfs)
Rainbow Blvd. to Jones Blvd.	520 - 700	3,900
Jones Blvd. to Industrial Rd.	10 - 510	3,900
Imperial Palace to Spencer St.	10 - 50	5,500
	60 - 280	4,600
	290 - 560	3,900
Eastern Ave. to Las Vegas Wash	10 - 140	6,400
	150 - 440	6,300
	450 - 660	5,800
	670 - 810	5,500

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

4.1 Floodplain Boundaries

Floodplain boundaries for the approximate method areas were delineated on topographic maps with a scale of 1" = 400' and a contour interval of 4-feet. Spot elevations were plotted and used in areas requiring greater definition. The


NORTH
SCALE: 1" = 400'
GRAPHIC SCALE
400 0 200 400
(IN FEET)
1 inch = 400 ft.
RAINBOW BLVD.
TROPICANA BLVD.
TORREY PINES BLVD.
JONES
FLAMINGO WASH
500
510
520
530
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
LEGEND
100-YEAR FLOOD PLAIN LIMITS
500 CHANNEL CROSS SECTION
FLAMINGO WASH
FIS RE-STUDY
FIGURE FLO
RAINBOW BL. TO JONES BL.
CROSS SECTION EXHIBIT
G.C. WALLACE, INC.
Engineering/Architecture

THE *Louis Berger Group,* INC.

APPENDIX F

Reference Material for Upper Flamingo Wash Detention Basin and Upper Flamingo Diversion Channel

CLA.01.A87

RFCD
FILE COPY
DO NOT
REMOVE
FROM
OFFICE

"AS
BUILT"

DEPARTMENT OF PUBLIC WORKS

UPPER FLAMINGO WASH DETENTION BASIN AND DISCHARGE CHANNEL

PREPARED BY

County Commissioners

BRUCE L. WOODBURY, CHAIRMAN
PAUL J. CHRISTENSEN, VICE-CHAIRMAN
JAY BINGHAM
MANUEL J. CORTEZ
THALIA M. DONDERO
KAREN HAYES
WILLIAM U. PEARSON

BLACK & VEATCH
ENGINEERS-ARCHITECTS
LAS VEGAS, NEVADA

County Manager
DONALD L. "PAT" SHALMY

Director of Public Works
APPROVED: _____
M. J. MANNING P. E.

Clark County Regional Flood Control District
General Manager / Chief Engineer
APPROVED: _____ 12/17
VIRGINIA E. BAX VALENTINE P.E.

FUNDED BY: CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

AGENCY	PLANS REVIEWED BY	DATE
NEVADA POWER		8/27/90
CENTEL		082790
LAS VEGAS WATER DISTRICT		9-11-90
SOUTHWEST GAS		09/06/90
C.C. SANITATION DISTRICT		9/6/90

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY	DATE OF APPROVAL
PROGRAM DEVELOPMENT OFFICE		8-12-89
DESIGN DIVISION		12-11-90
TRAFFIC MANAGEMENT		7-12-89
MAINTENANCE MANAGEMENT		7-13-89
COMMUNITY DEVELOPMENT		10-24-90
CONSTRUCTION MANAGEMENT		12/7/90

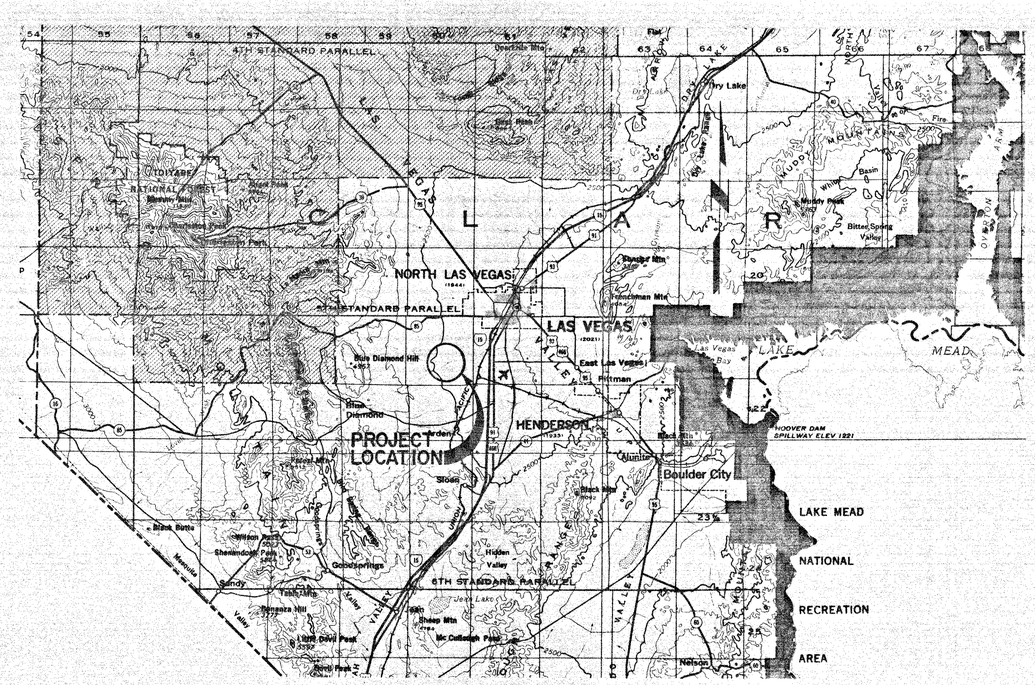
REVISIONS						
REV. NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE
1	ADDENDUM ISSUED FOR CONSTRUCTION	SCR	4/1/91	D.V.R.	4/1/91
2	CONFORMS TO CONSTRUCTION RECORDS	SCR	3/25/92	D.V.R.	7/2/92

DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

COVER SHEET

PROJECT NO.
L-1310

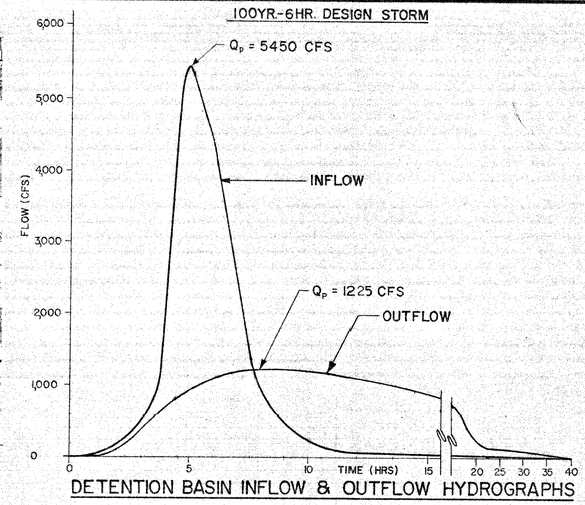
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DEC 2 1992
REGIONAL FLOOD CONTROL DISTRICT
4625



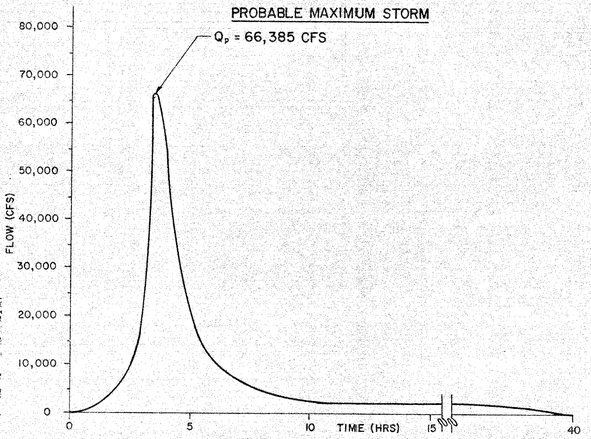
VICINITY MAP

4 0 12 MILES

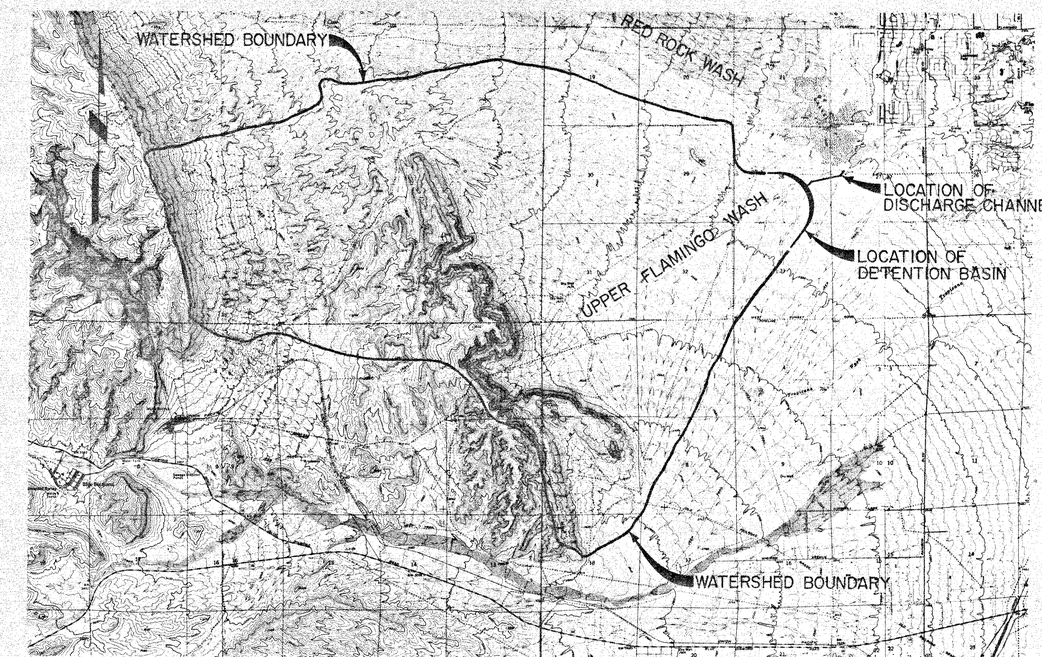
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DETENTION BASIN INFLOW & OUTFLOW HYDROGRAPHS



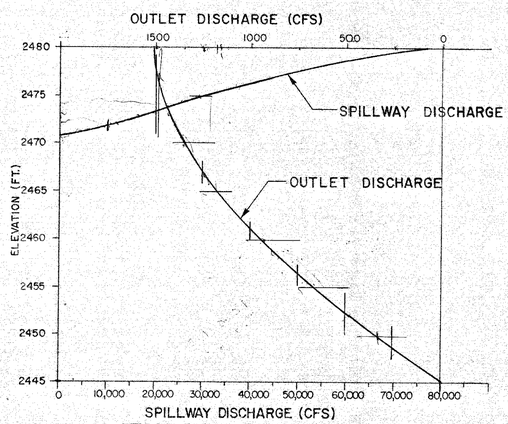
EMERGENCY SPILLWAY DESIGN HYDROGRAPH



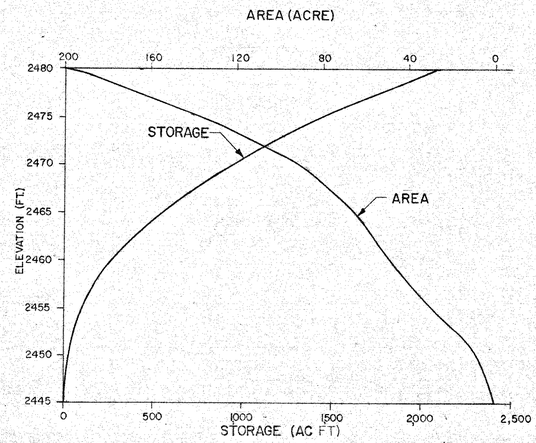
WATERSHED BOUNDARY MAP

1/2 0 1 MILE

3/4 1/4



STAGE-DISCHARGE CURVES



STAGE-STORAGE & STAGE-AREA CURVES

PERTINENT DATA

DRAINAGE AREA 19.1 SQ. MILES

DESIGN STORMS:
- 100YR.-6HR. THUNDERSTORM FOR DETENTION BASIN CAPACITY
  - TOTAL RAINFALL - 2.58"
  - PEAK INFLOW - 5450 CFS
  - VOLUME OF INFLOW HYDROGRAPH - 1400 ACRE FT.
- PROBABLE MAXIMUM STORM FOR EMERGENCY SPILLWAY CAPACITY
  - TOTAL RAINFALL - 11.87
  - PEAK INFLOW - 66,385 CFS
  - VOLUME OF INFLOW HYDROGRAPH - 12,041 ACRE FT.

DETENTION BASIN EMBANKMENT
- TYPE: HOMOGENEOUS EARTHFILL WITH HORIZONTAL DRAINAGE BLANKET
- LENGTH: 4813'
- MAXIMUM HEIGHT ABOVE STREAM BED: 38'
- TOP ELEVATION: 2480'
- FREEBOARD: FOR 100YR.-6HR. STORM-10.4'
  FOR PROBABLE MAXIMUM STORM--1.6'
- SLOPES: UPSTREAM SLOPE - 3:1
  DOWNSTREAM SLOPE - 2.5:1, VARIABLE, 2:1

IMPOUNDMENT AREA:
- FOR 100YR.-6HR. STORM:
  - LAKE LEVEL - 2469.6
  - SURFACE AREA - 89.5 ACRE
  - VOLUME - 880 ACRE FT.
- FOR THE PROBABLE MAXIMUM STORM
  - LAKE LEVEL - 2478.4
  - SURFACE AREA - 174 ACRE
  - VOLUME - 1875 ACRE FT.

2470.5

SPILLWAY
- TYPE: UNCONTROLLED FREE OVERFALL REINFORCED CONCRETE 4-CYCLE LABYRINTH SPILLWAY
  - CREST ELEVATION - 2470.5
  - CREST LENGTH - 884'
  - SPILLWAY WIDTH - 272'
  - WALL HEIGHT - 24.5'
  - DISCHARGE CAPACITY AT 100YR. POOL - 0 CFS
  - DISCHARGE CAPACITY AT PMF POOL - 59,565 CFS

OUTLET WORKS
- TYPE: UNCONTROLLED ORIFICE IN SPILLWAY WALL WITH TRASH RACK
  - ORIFICE DIMENSIONS - 8'-0" X 7'-0"
  - DISCHARGE CAPACITY AT 100YR. POOL - 1225 CFS
  - DISCHARGE CAPACITY AT PMF POOL - 1505 CFS

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
3/25/92	CONFORMS TO CONSTRUCTION RECORDS		VKA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WJR TJE
CHECKED TGR
APPROVED
DATE 6-6-89

Black & Veatch
Engineers-Architects
Las Vegas, Nevada

PROJECT NO. 14625

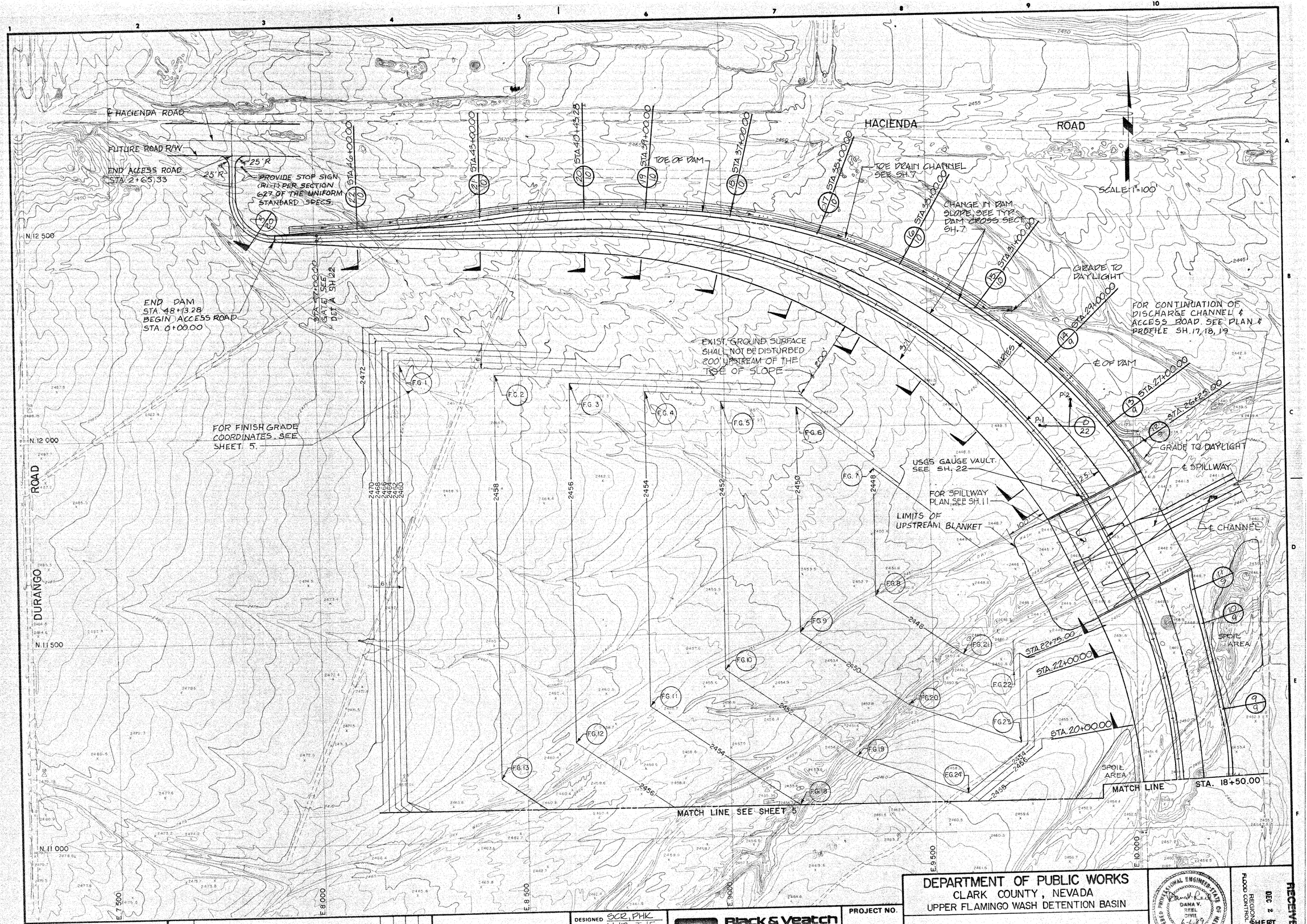
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

MAPS, PERTINENT DATA, & HYDROGRAPHS

PROFESSIONAL ENGINEER STATE OF NEVADA DANA V. REFL CIVIL No. 7121 6-6-89

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SHEET OF 23



3/25/92	CONFORMS TO CONSTRUCTION RECORDS	VKA	SCR	DVR		
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Engineers-Architects
Las Vegas, Nevada

PROJECT NO. 14625

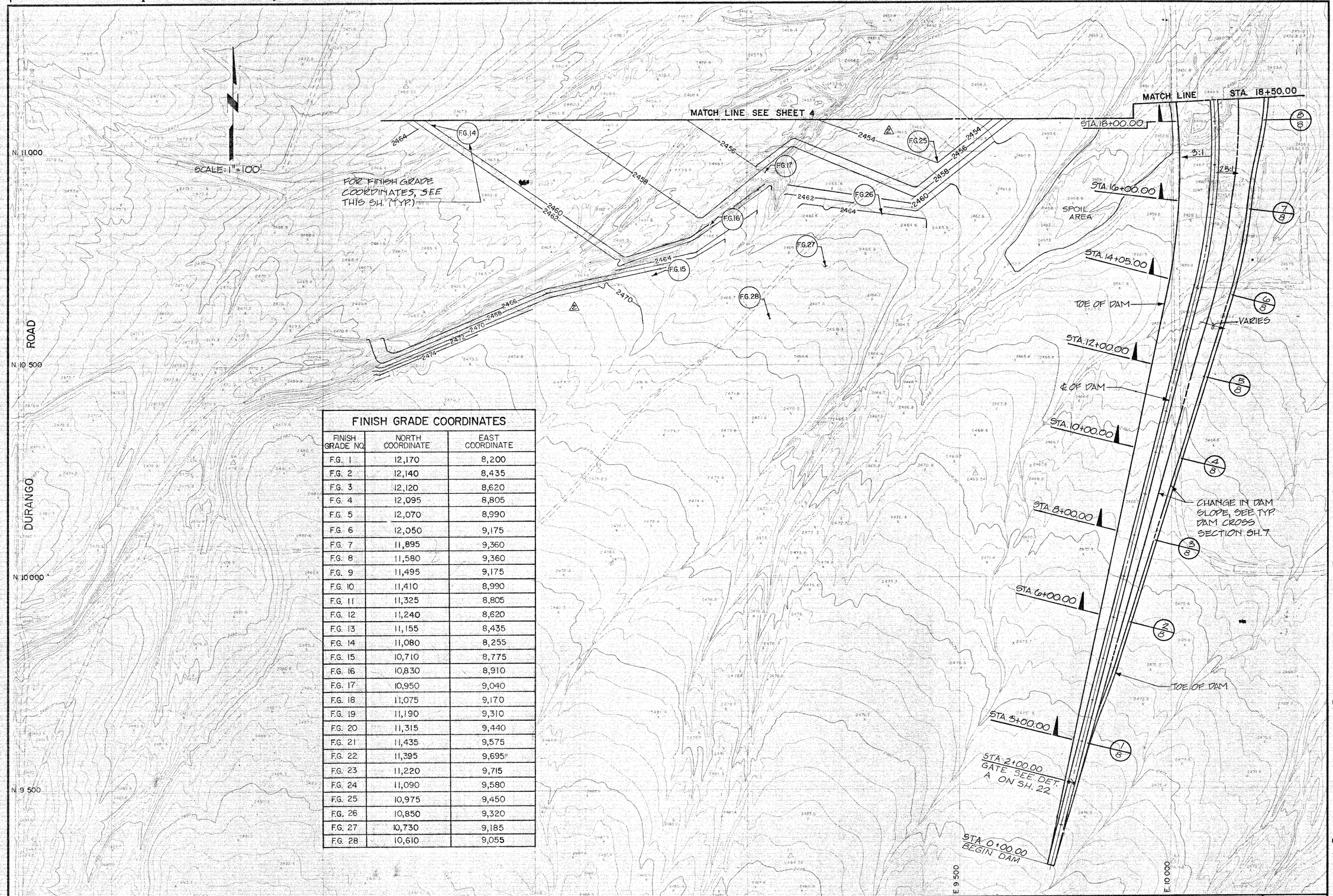
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

DAM & IMPOUNDMENT GRADING PLAN NO.1

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA DANA V. REEL No. 7138 CIVIL 6-6-89

RECEIVED DEC 2 1992 REGIONAL FLOOD CONTROL DISTRICT

SHEET 4 OF 23



FINISH GRADE COORDINATES

FINISH GRADE NO.	NORTH COORDINATE	EAST COORDINATE
F.G. 1	12,170	8,200
F.G. 2	12,140	8,435
F.G. 3	12,120	8,620
F.G. 4	12,095	8,805
F.G. 5	12,070	8,990
F.G. 6	12,050	9,175
F.G. 7	11,895	9,360
F.G. 8	11,580	9,360
F.G. 9	11,495	9,175
F.G. 10	11,410	8,990
F.G. 11	11,325	8,805
F.G. 12	11,240	8,620
F.G. 13	11,155	8,435
F.G. 14	11,080	8,255
F.G. 15	10,710	8,775
F.G. 16	10,830	8,910
F.G. 17	10,950	9,040
F.G. 18	11,075	9,170
F.G. 19	11,190	9,310
F.G. 20	11,315	9,440
F.G. 21	11,435	9,575
F.G. 22	11,395	9,695
F.G. 23	11,220	9,715
F.G. 24	11,090	9,580
F.G. 25	10,975	9,450
F.G. 26	10,850	9,320
F.G. 27	10,730	9,185
F.G. 28	10,610	9,055

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
3/25/92	CONFORMS TO CONSTRUCTION RECORDS	2	VKA	SCR	DVR

L-1310

DESIGNED SCR, DHK
DETAILED WLR TJE
CHECKED WLW
APPROVED
DATE 6-6-89

Black & Veatch
Engineers-Architects
Las Vegas, Nevada

PROJECT NO. 14625

DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

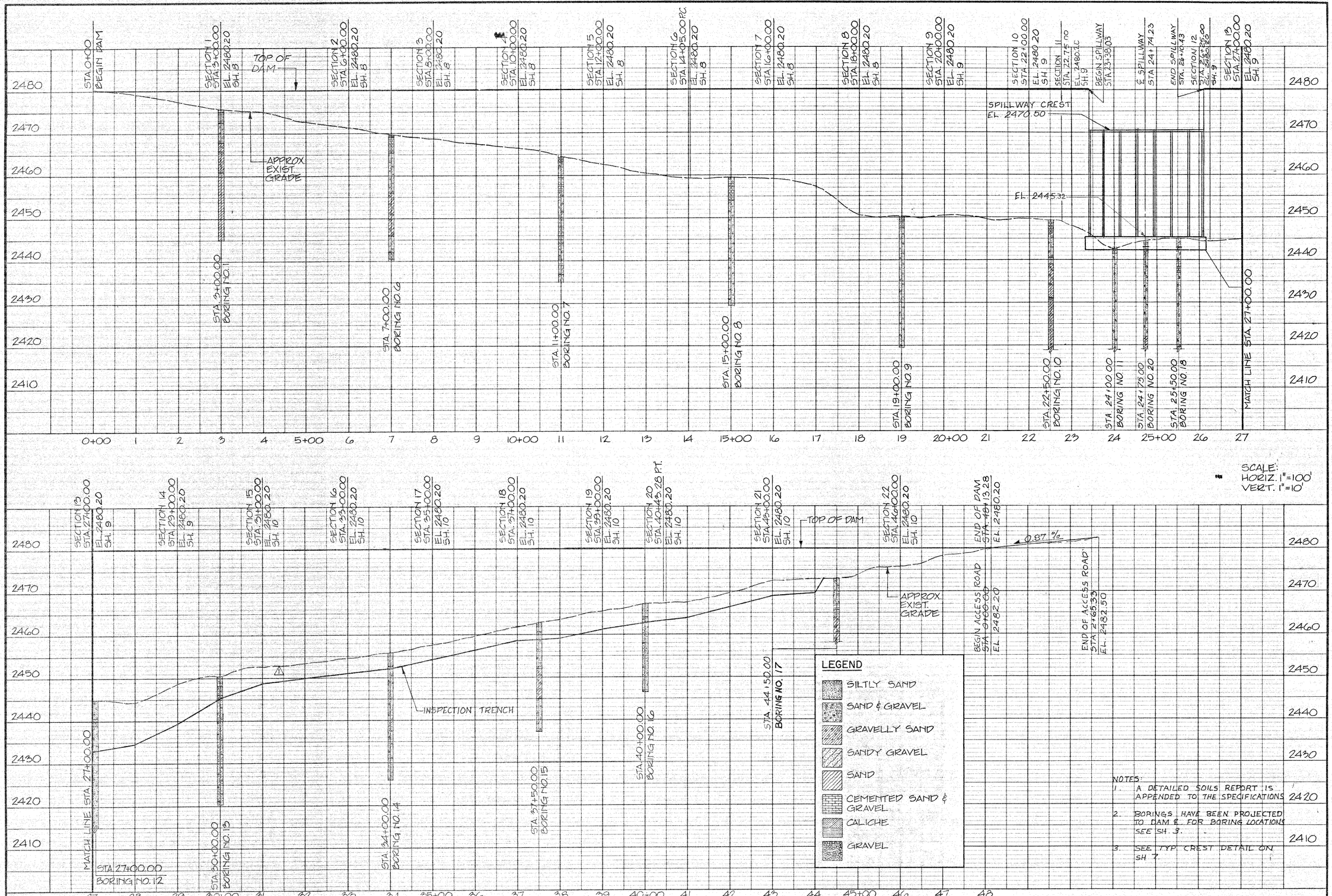
DAM & IMPOUNDMENT GRADING PLAN NO. 2

DANA V. REEL, CIVIL, 6-6-89

REGIONAL FLOOD CONTROL DISTRICT

SHEET 5 OF 23

RECEIVED DEC 2 1992



NOTES:
1. A DETAILED SOILS REPORT IS APPENDED TO THE SPECIFICATIONS
2. BORINGS HAVE BEEN PROJECTED TO DAM ℄ FOR BORING LOCATIONS SEE SH. 3.
3. SEE TYP. CREST DETAIL ON SH. 7.

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
3/25/92	CONFORMS TO CONSTRUCTION RECORDS	1	VKA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WJR TJE
CHECKED WLW
APPROVED AC Gilcrease
DATE 6-6-89

Black & Veatch
Engineers-Architects
Las Vegas, Nevada

PROJECT NO. 14625

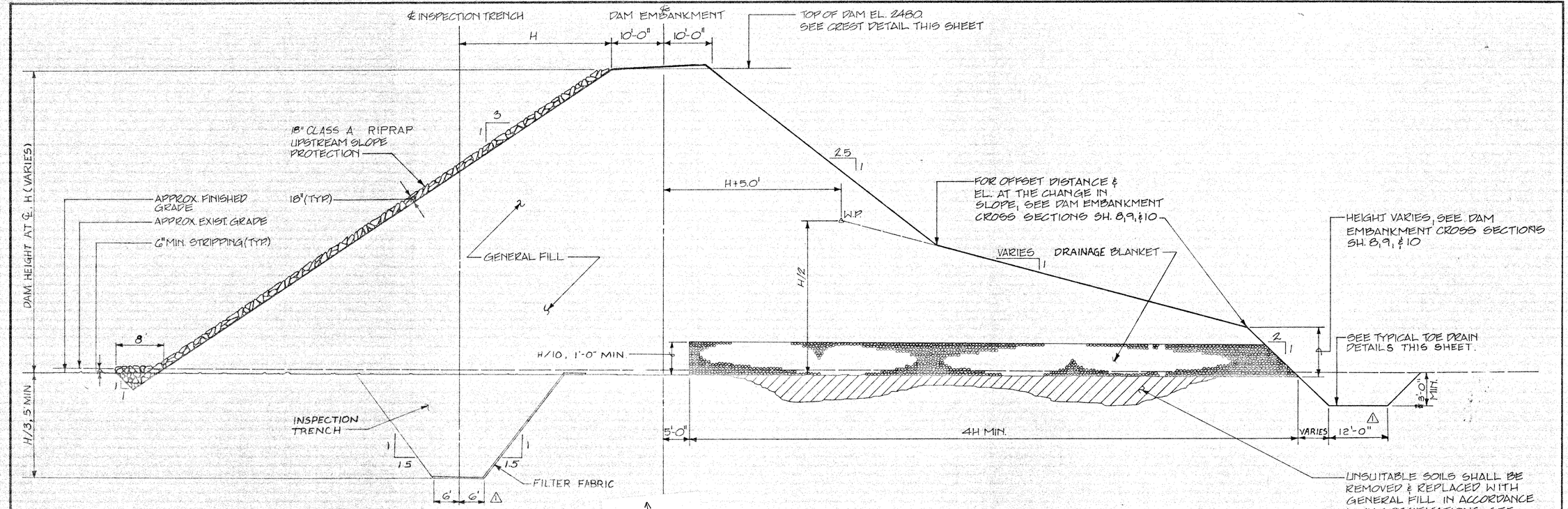
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

DAM EMBANKMENT CENTER LINE PROFILE

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - DANA V. REEL - CIVIL - No. 7138

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DEC 2 1992
FLOOD CONTROL DISTRICT

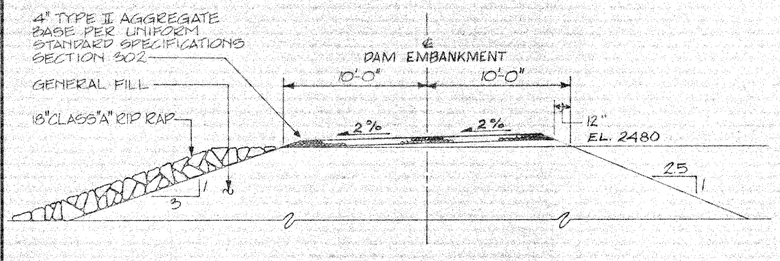
SHEET 6 OF 23



THIS DETAIL ONLY. 8½x11

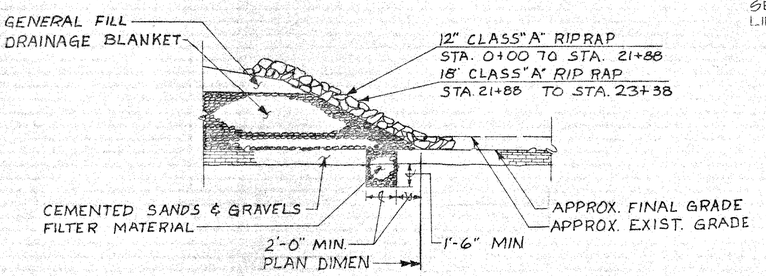
TYPICAL CROSS SECTION

HORIZ. 1"=10'
VERT. 1"=5'



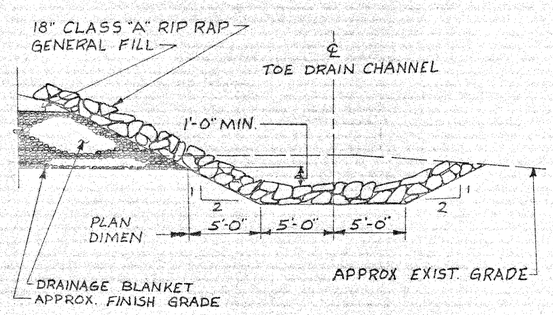
TYPICAL CREST DETAIL

1"=5'-0"



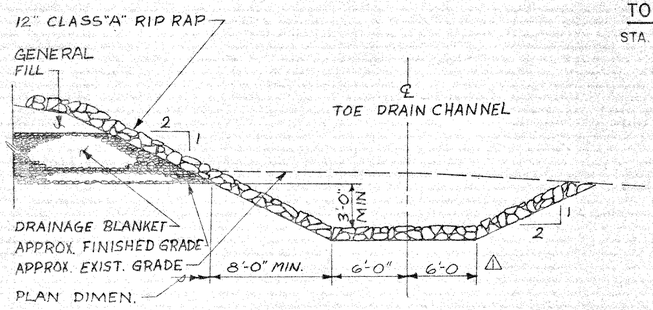
TOE DRAIN DETAIL

STA. 0+00 TO STA. 23+38
SCALE: 1"=5'



TOE DRAIN DETAIL

STA. 26+10 TO STA. 26+60
SCALE: 1"=5'



TOE DRAIN DETAIL

STA. 26+60 TO STA. 48+13
SCALE 1"=5'

NOTES:

1. CREST EL. DOES NOT INCLUDE 2% CROSS SLOPE OR 4" TYPE II AGGREGATE BASE FOR THE SERVICE ROAD. SEE TYP. CREST DET. THIS SH.
2. SIDE SLOPES OF THE INSPECTION TRENCH SHALL BE 1.5 H TO 1.0 V. FLATTER SLOPES SHALL BE PROVIDED IF REQ'D FOR STABILITY.

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
3/26/92	CONFORMS TO CONSTRUCTION RECORDS	1	WA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WJR, TJE
CHECKED WLW
APPROVED
DATE 6-6-91

Black & Veatch
Engineers-Architects
Las Vegas, Nevada

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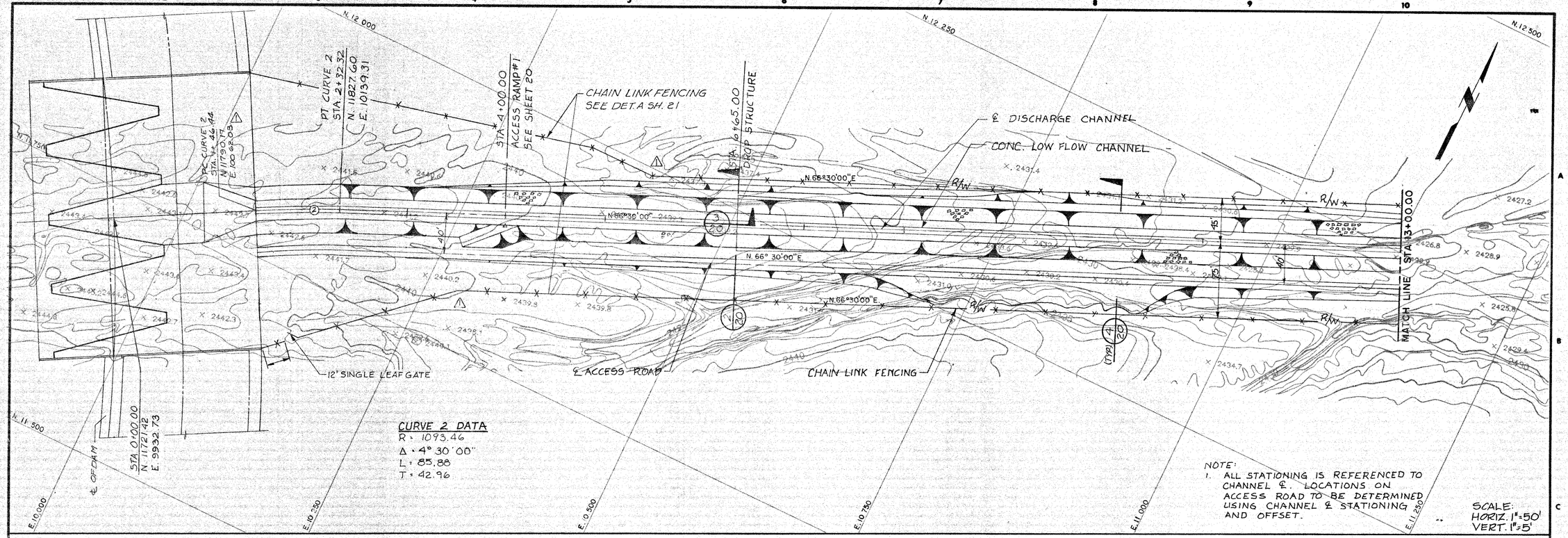
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

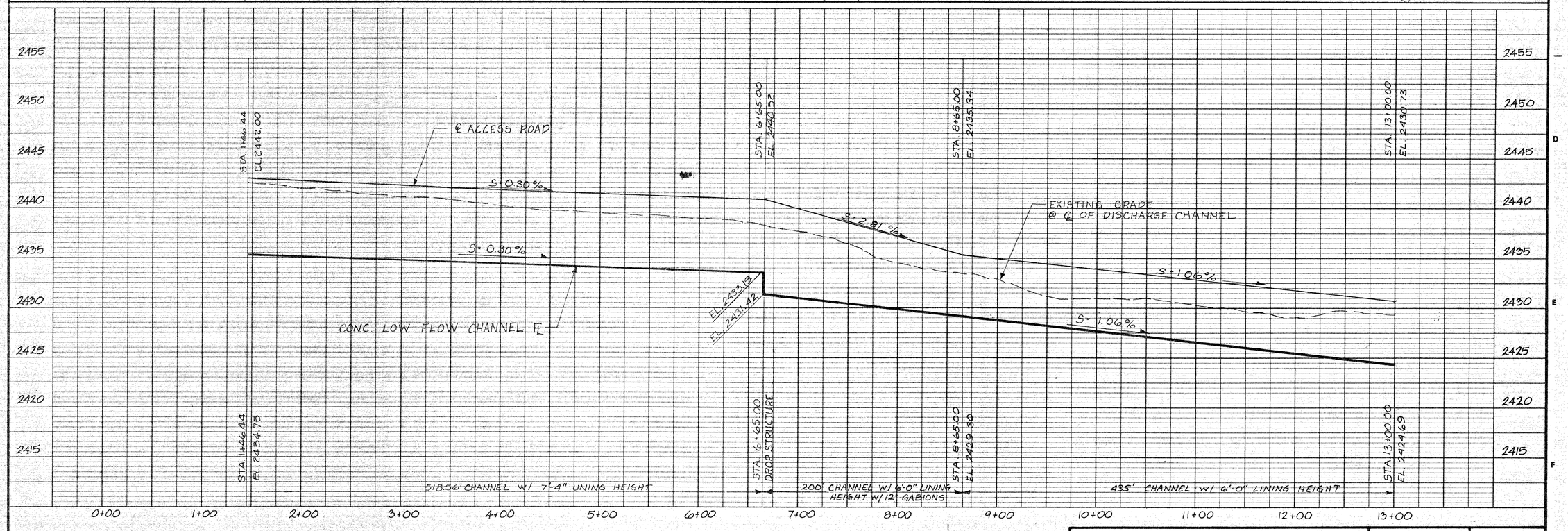
TYPICAL DAM EMBANKMENT CROSS-SECTION

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA DANA Y. REEL CIVIL No. 7139

RECEIVED DEC 2 1992 FLOOD CONTROL DISTRICT

SHEET 7 OF 23





DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
4/1/92	CONFORMS TO CONSTRUCTION RECORDS	1	WA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WJR, TJE
CHECKED KEL
APPROVED
DATE 4-89

Black & Veatch
Engineers - Architects
Las Vegas, Nevada

PROJECT NO. 14625

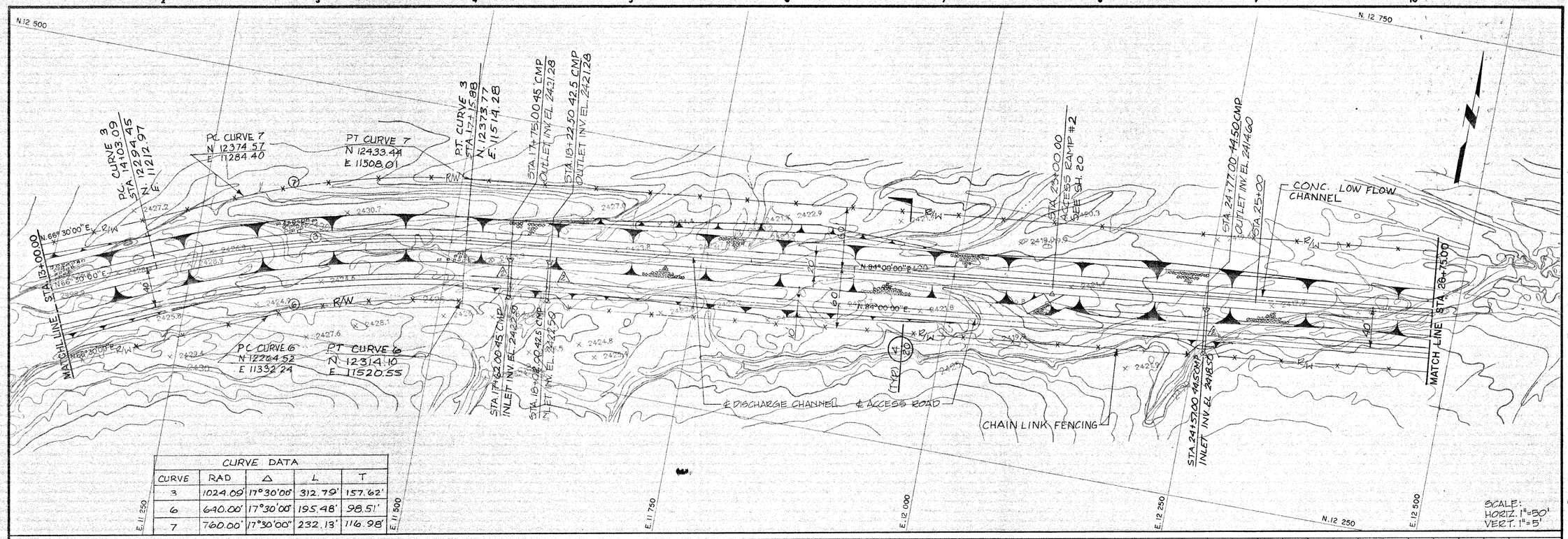
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

DISCHARGE CHANNEL PLAN & PROFILE
STA 0+00.00 TO STA.13+00.00

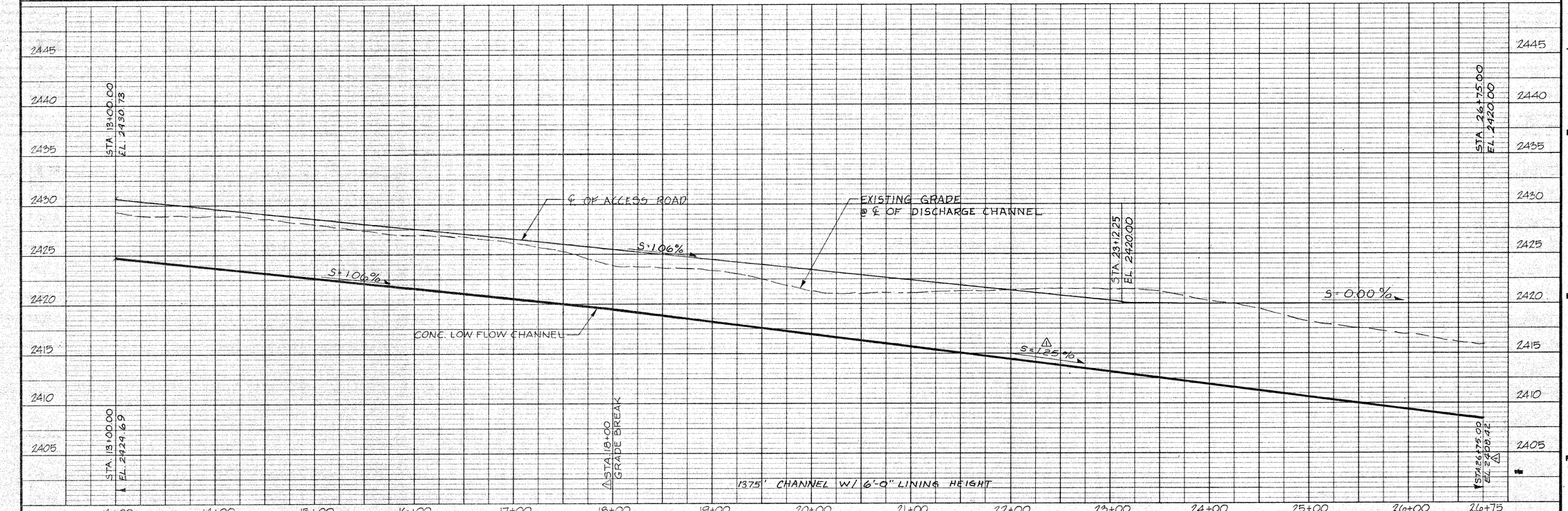
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
DANA V. REEL
CIVIL
No. 7138

RECEIVED
DEC 2 2
REGIONAL FLOOD CONTROL DISTRICT

SHEET 22 OF 23



CURVE DATA				
CURVE	RAD	Δ	L	T
3	1024.00'	17°30'00"	312.79'	157.62'
6	640.00'	17°30'00"	195.48'	98.51'
7	760.00'	17°30'00"	232.13'	116.98'



SCALE:
HORIZ. 1"=50'
VERT. 1"=5'

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
4/11/92	CONFORMS TO CONSTRUCTION RECORDS	2	WA	SCR	DVR
4/2/91	ADDENDUM NO. 1 ISSUED FOR CONST.	1	VKA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WJR, TJE
CHECKED KEL
APPROVED [signature]
DATE 1-6-89

Black & Veatch
Engineers - Architects
Las Vegas, Nevada

PROJECT NO. 14625

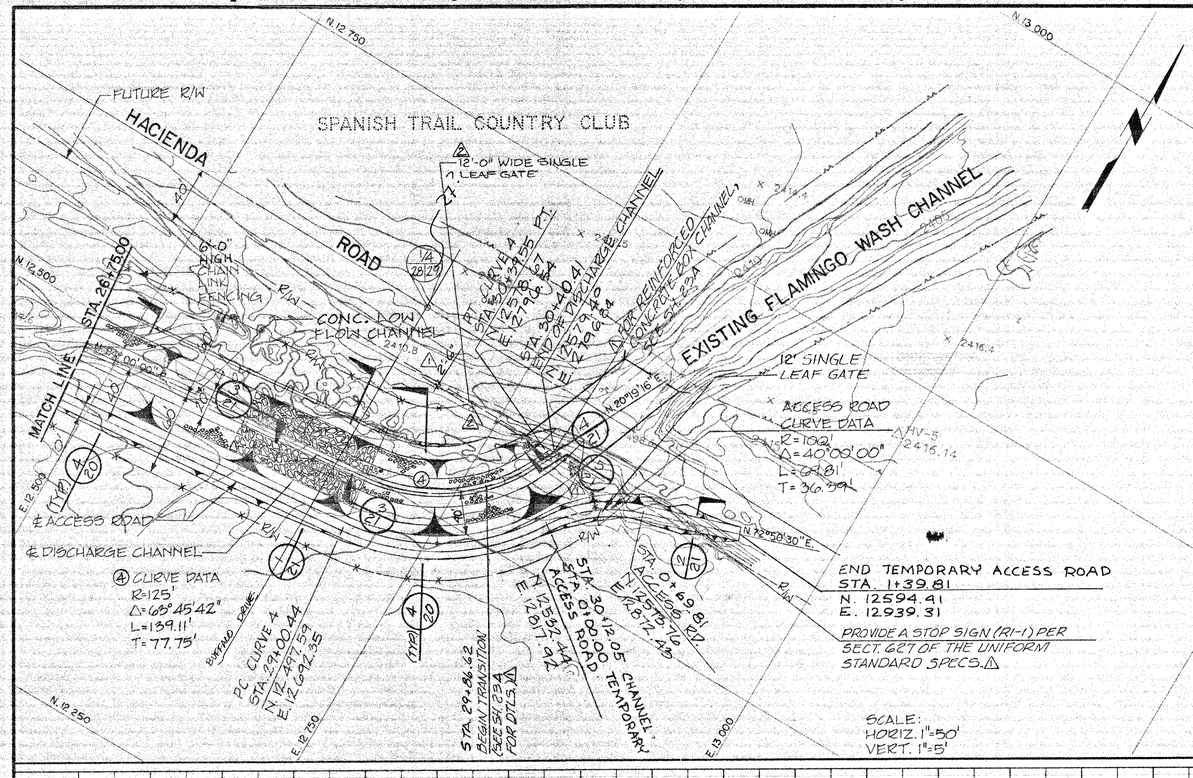
DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

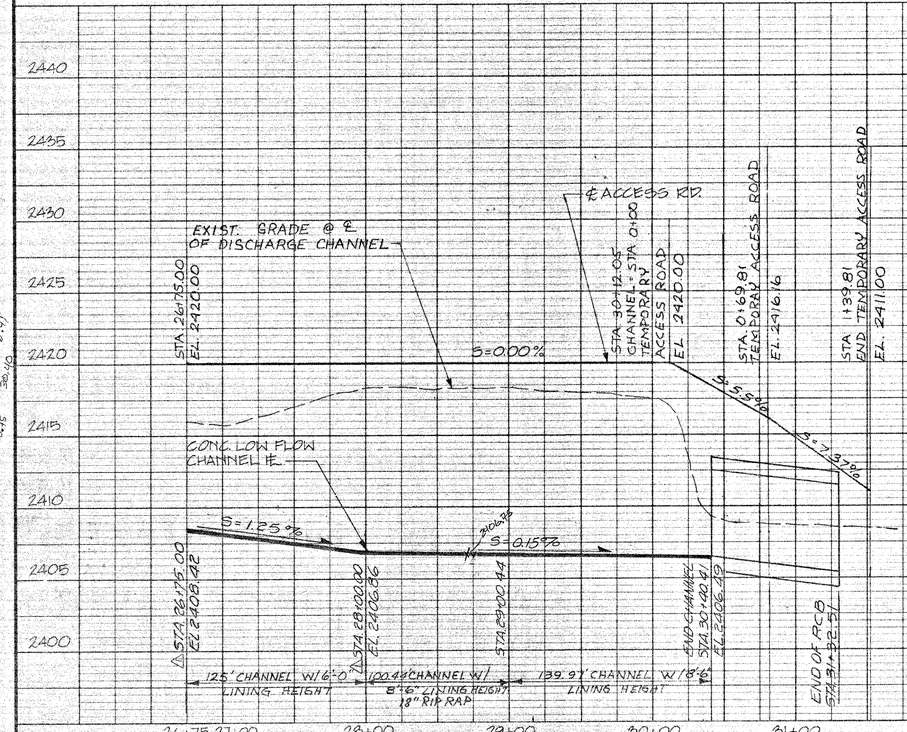
DISCHARGE CHANNEL PLAN & PROFILE
STA. 13+00.00 TO STA. 26+75.00

PROFESSIONAL ENGINEER STATE OF NEVADA
DANA V. REFL
CIVIL
No. 7139
1-6-89

RECEIVED
DEC 2 1991
REGIONAL FLOOD CONTROL DISTRICT

SHEET 8 OF 23





DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
4/1/92	CONFORMS TO CONSTRUCTION RECORDS	2	JWA	SCR	DVR
4/2/91	ADDENDUM NO. 1 ISSUED FOR CONST.	1	JWA	SCR	DVR

L-1310

DESIGNED SCR, PHK
DETAILED WWR, TJE
CHECKED KEL
APPROVED
DATE 4-1-91

Black & Veatch
Engineers - Architects
Las Vegas, Nevada

PROJECT NO. 14625

DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY, NEVADA
UPPER FLAMINGO WASH DETENTION BASIN

DISCHARGE CHANNEL PLAN & PROFILE
STA. 26+75.00 TO STA. 30+43.62

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
DANA V. REEL
No. 7128
6-6-89

RECEIVED
DEC 2 1991
REGIONAL FLOOD CONTROL DISTRICT

SHEET 19 OF 23

GENERAL NOTES

1. PRECAST CONCRETE BOX CULVERT DESIGN PER STATE OF NEVADA STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION, PAGE D-20.1 (1) (2007), AASHTO M273, TABLE 2 OR EQUIVALENT, ASTM C850, TABLE 2.

2. CONSTRUCTION SPECIFICATIONS: STATE OF NEVADA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

3. LOADING: LIVE LOAD: HS20-44
   DEAD LOAD: EQUIVALENT FLUID PRESSURE FOR
   a) 140 PCF VERTICAL & 42 PCF HORIZONTAL
   b) 140 PCF VERTICAL & 140 PCF HORIZONTAL
   LOAD FACTORS: 1.50 x 1.55 x 2.5 (LL)

4. FOUNDATION PRESSURE: 1400 PSF

5. UNIT STRESSES: MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c) = 3250 PSI
   MAXIMUM ALLOWABLE SHEAR (Vc) = 3.5 $\sqrt{f'c}$ PSI
   REINFORCING STEEL: ASTM A615 GRADE 60

6. REINFORCEMENT CLEARANCE:
   2" FROM INSIDE BOTTOM OF BOTTOM SLAB
   2 INCH ELSEWHERE

7. PROVIDE 12" min. ON BOTTOM AND 18" min. ON ALL SIDES. TYPE II AT 95% MAX. RELATIVE DENSITY.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL MODIFICATIONS REQUIRED DUE TO USE OF PRECAST BOX CULVERT.

BENCHMARK

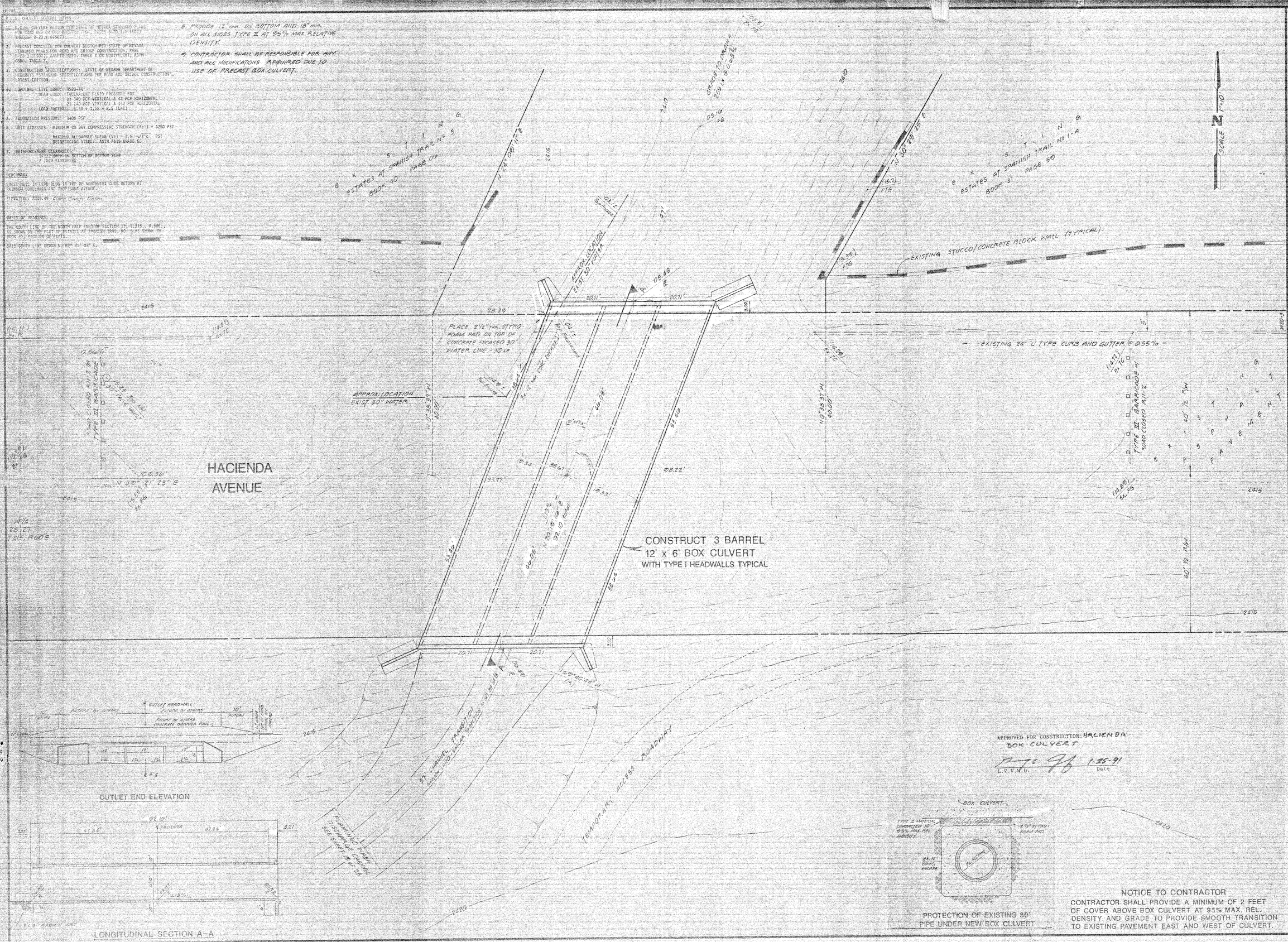
BASIS: NAIL IN LEAD PLUG IN TOP OF NORTHWEST CURB RETURN AT RAINBOW BOULEVARD AND TROPICANA AVENUE.

ELEVATION: 2325.49 Clark County Datum

BASIS OF BEARINGS

THE SOUTH LINE OF THE NORTH HALF (N1/2) OF SECTION 27, T.21S., R.60E., AS SHOWN ON THE RECORD OF SURVEY AT FOOTHILL TRAIL NO. 5-A, AS SHOWN IN BOOK 40, PAGE 09 OF PLATS.

SAID SOUTH LINE BEARS N 89° 21' 23" E.



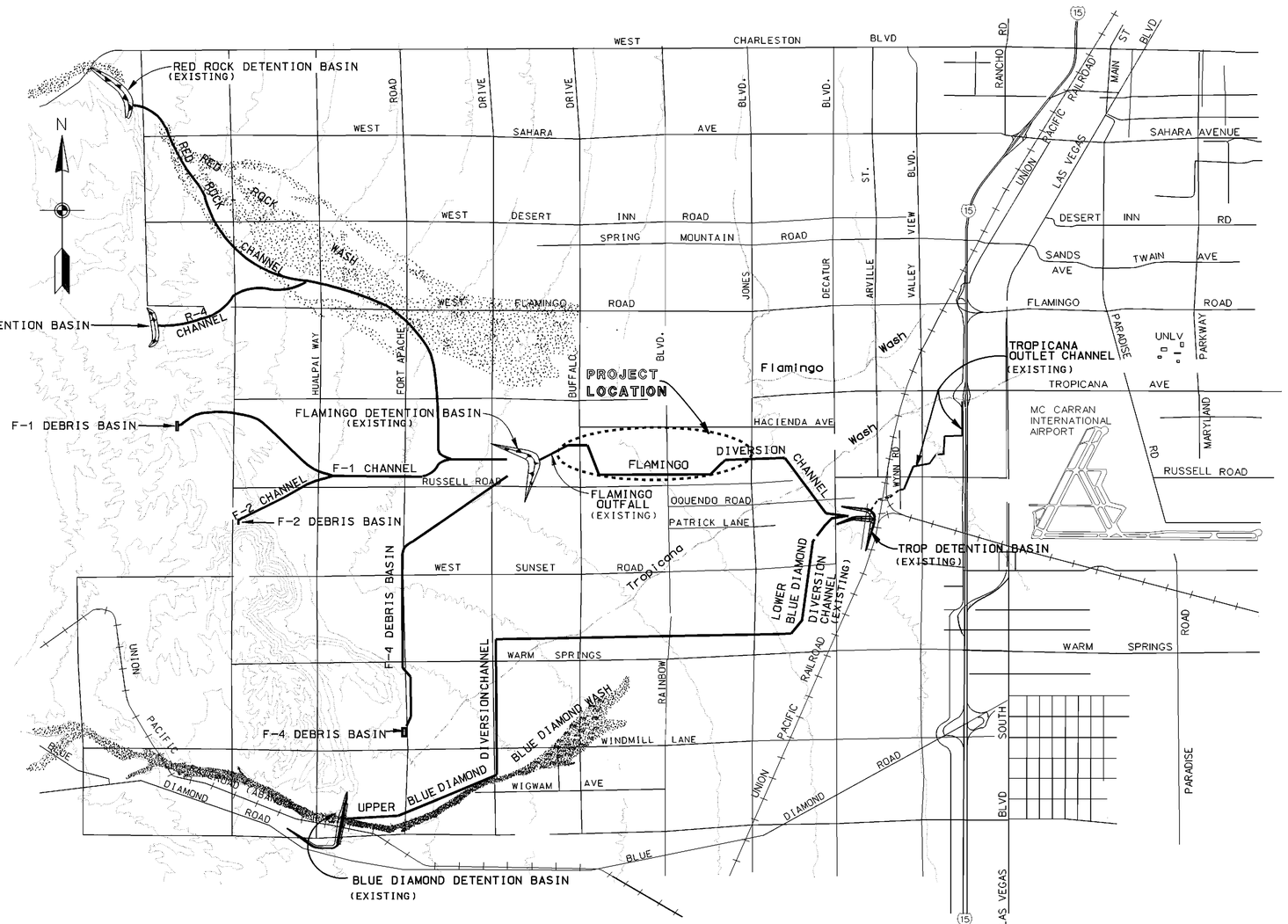
OUTLET END ELEVATION

92.10'
HACIENDA
42.84'
42.84'
3.21'
3.21'
0.13%
0.13%
2.15'
2.15'
2.15'

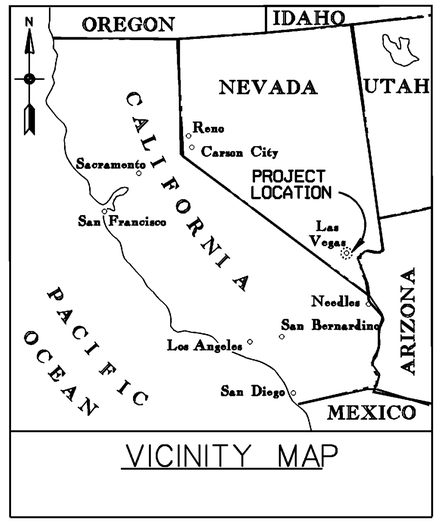
LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL

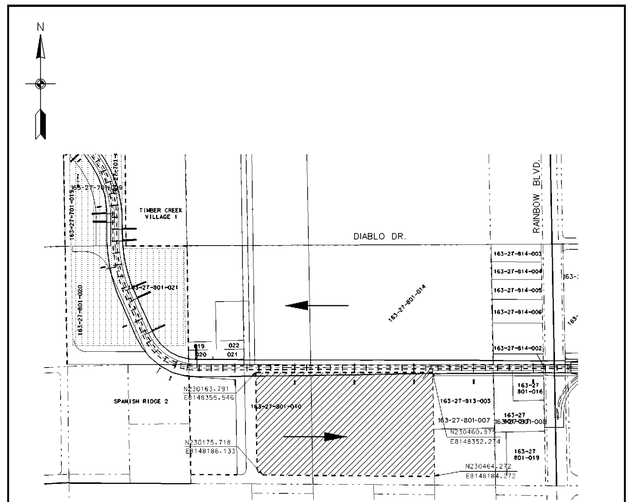
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)



PROJECT LOCATION MAP



VICINITY MAP



LEGEND

PARCEL BOUNDARIES

T.C.E.

CONTRACTORS STAGING AREA (A)

NOT TO SCALE

AGENCY	PLANS REVIEWED BY	DATE
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHERN NEVADA WATER AUTHORITY		
SPRINT/CENTRAL TELEPHONE COMPANY		
SOUTHWEST GAS CORPORATION		
NEVADA POWER COMPANY		
CLARK COUNTY SANITATION DISTRICT		
WILLIAMS GAS PIPE LINE-WEST		
AT&T		
COX COMMUNICATIONS LAS VEGAS, INC.		

Clark County Department of Public Works

Approved by:

M.J. Manning, P.E., Director

Clark County Regional Flood Control District

Approved by:

Gale Wm. Fraser, II, P.E., General Manger/Chief Engineer

County Manager

Thom F. Reilly

County Commissioners

Dario Herrera, Chair
Myrna Williams, Vice Chair
Yvonne Atkinson Gates
Erin Kenny
Mary J. Kincaid-Chauncey
Chip Maxfield
Bruce L. Woodbury

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

NOTE:
1. ALL ROADS SHOWN ON THIS DRAWING MAY NOT HAVE BEEN CONSTRUCTED YET. THE ROUTE FOR SITE ACCESS AND DISPOSAL OF MATERIALS SHALL BE VERIFIED BY THE CONTRACTOR.
2. DRAINAGE FACILITIES SHOWN ON THIS DRAWING ARE PROPOSED FUTURE CONSTRUCTION UNLESS NOTED OTHERWISE.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
A	REVISED STAGING AREA AND TCE LINE		

REVISIONS

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
VICINITY MAP, PROJECT LOCATION MAP
AND CONTRACTOR'S STAGING AREA

THIS PROJECT WAS DESIGNED BY THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152. SIGNATURES AFFIXED HEREON INDICATE OFFICIAL RECOMMENDATION AND APPROVAL OF ALL THE DRAWINGS IN THIS SET.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

PREPARED UNDER THE DIRECTION OF:
COLONEL RICHARD G. THOMPSON
DISTRICT ENGINEER

SUBMITTED BY: DATE
CHIEF, DESIGN BRANCH

APPROVED: DATE
CHIEF, ENGINEERING DIVISION

DESIGNED BY: AJQ
DRAWN BY: AQM
CHECKED BY: GED

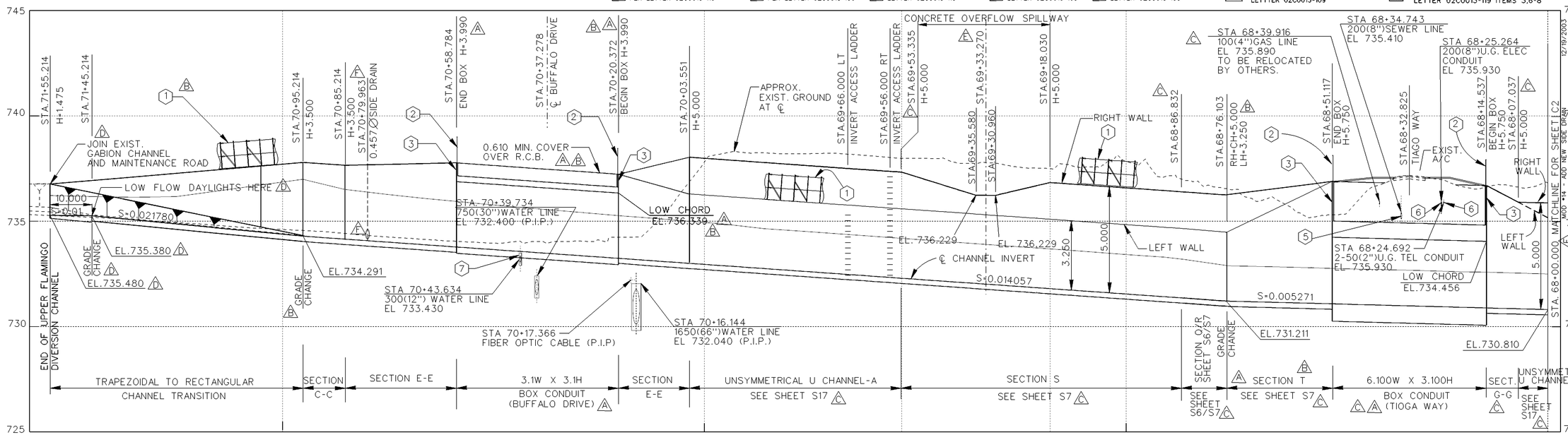
SPEC. NO. DACW09-02-B-0009
FILE NAME: T01Am1.dgn
DISTRICT FILE NO. 196/1109 REV 'A'

SHEET
T1

8 7 6 5 SAFETY PAYS 4 3 2 1

VALUE ENGINEERING PAYS

△M MOVED CHAIN LINK FENCE PER LETTER 02C0013-119
△L PAVEMENT NOT REPLACED PER LETTER 02C0013-109
△K ADDED ROCK MULCH PER LETTER 02C0013-119
△J GRADING CHANGE PER LETTER 02C0013-109
△I GRADING CHANGE PER LETTER 02C0013-109
△H GRADING CHANGE PER LETTTER 02C0013-109
△G ADDED ROCK MULCH PER LETTER 02C0013-119 ITEMS 3,6-8

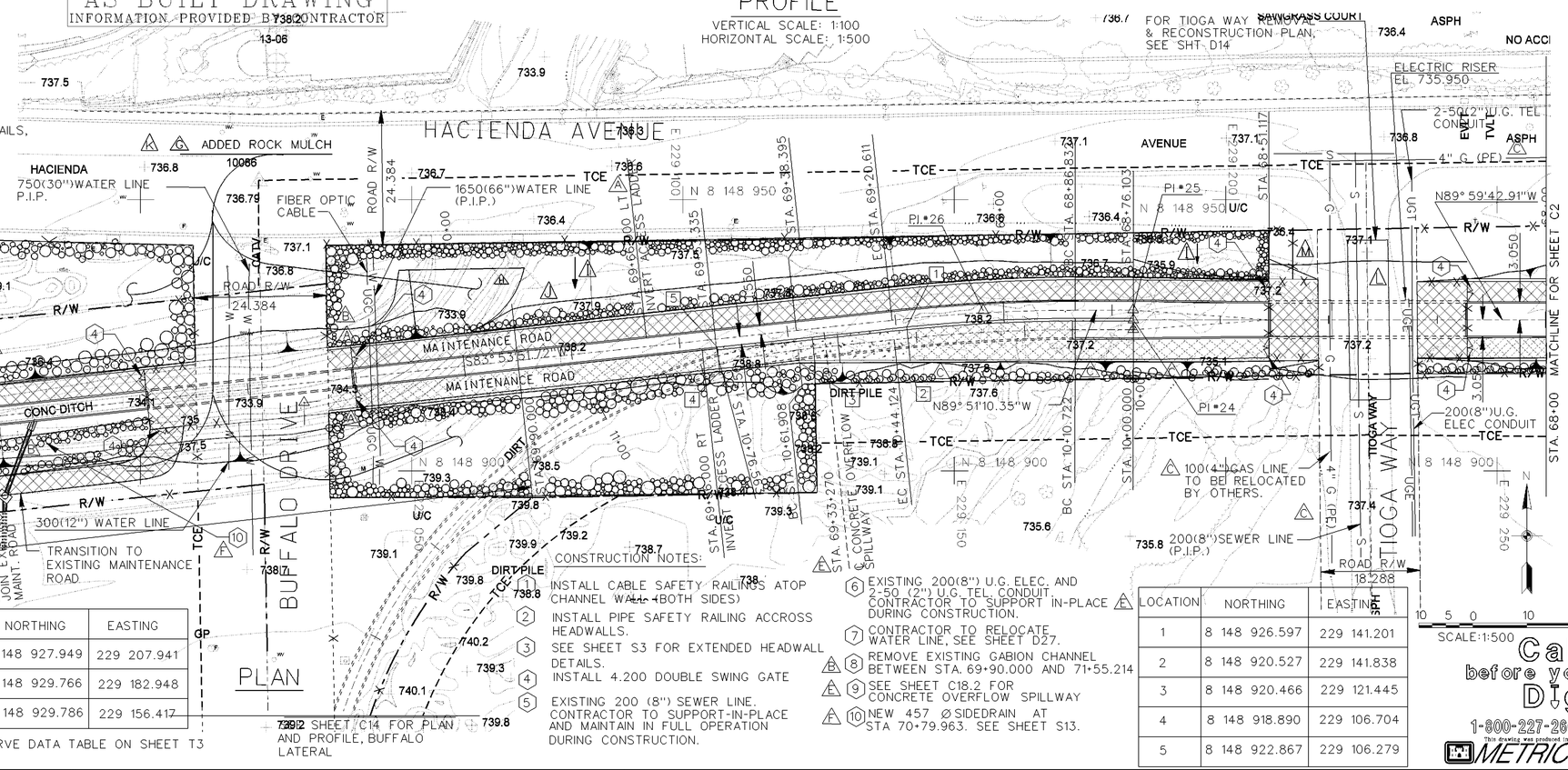


REFERENCE NOTES:

1. FOR CROSS SECTIONS, SEE SHEET C19.
2. FOR TYPICAL CHANNEL SECTION AND DETAIL, SEE SHEET S2.
3. FOR INVERT ACCESS LADDER, SEE SHEET S2.
4. FOR PIPE SAFETY RAILING, SEE SHEET M2.
5. FOR CABLE SAFETY RAILING, SEE SHEET M3.
6. FOR BUFFALO LATERAL PLAN & PROFILE, SEE SHEET C14.
7. FOR BUFFALO CONFLUENCE DETAILS, SEE SHEETS S6 AND S7.
8. FOR TYP. BOX CONDUITS AT BUFFALO DRIVE AND TIAGO WAY, SEE SHEET S3.
9. FOR TRAPEZOIDAL TO RECTANGULAR CHANNEL TRANSITION DETAILS, SEE SHEETS S11 AND S12.
10. FOR EXISTING GABION CHANNEL, SEE SHEET M4.
11. FOR MAINT. ROAD AND CHAIN LINK FENCING DETAILS, SEE SHEET M1.

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

PROFILE
VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PI *	NORTHING	EASTING
24	8 148 927.949	229 207.941
25	8 148 929.766	229 182.948
26	8 148 929.786	229 156.417

* SEE CURVE DATA TABLE ON SHEET T3

CONSTRUCTION NOTES:

1. INSTALL CABLE SAFETY RAILINGS ATOP CHANNEL WALLS (BOTH SIDES)
2. INSTALL PIPE SAFETY RAILING ACCROSS HEADWALLS.
3. SEE SHEET S3 FOR EXTENDED HEADWALL DETAILS.
4. INSTALL 4.200 DOUBLE SWING GATE
5. EXISTING 200 (8") SEWER LINE. CONTRACTOR TO SUPPORT-IN-PLACE AND MAINTAIN IN FULL OPERATION DURING CONSTRUCTION.
6. EXISTING 200(8") U.G. ELEC. AND 2-50 (2") U.G. TEL CONDUIT. CONTRACTOR TO SUPPORT IN-PLACE DURING CONSTRUCTION. E
7. CONTRACTOR TO RELOCATE WATER LINE, SEE SHEET D27.
8. REMOVE EXISTING GABION CHANNEL BETWEEN STA. 69+90.000 AND 71+55.214 A
9. SEE SHEET C18.2 FOR CONCRETE OVERFLOW SPILLWAY E
10. NEW 457 ØSIDEDRAIN AT STA 70+79.963. SEE SHEET S13. A

LOCATION	NORTHING	EASTING
1	8 148 926.597	229 141.201
2	8 148 920.527	229 141.838
3	8 148 920.466	229 121.445
4	8 148 918.890	229 106.704
5	8 148 922.867	229 106.279

SYMBOL	DESCRIPTIONS REVISIONS	
A	MOD #5 - CLARIFY GAS LINE ROUTE AND CORRECTED STATION, SECTION, AND ELEVATION CALLOUTS AND ADDED NOTES.	11/29/2002
B	REVISED BOD'S NOTES & CALLOUTS; CHANGED BOD'S NOTES	12/19/2003
C	MOD #8 - REVISE CONNECTION @ GABION CHNNL	04/17/2003
D	MOD #2 - CLARIFY GAS LINE ROUTE AND CORRECTED STATION, SECTION, AND ELEVATION CALLOUTS AND ADDED NOTES.	11/29/2002
E	MOD #9 - ADD CONCRETE SPILLWAY	05/15/2003
F	MOD #10 - ADD NEW SIDE DRAIN	12/19/2003

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL (FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
STA.71+55.214 TO STA.68+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJO
DRAWN BY: AOM
CHECKED BY: GED

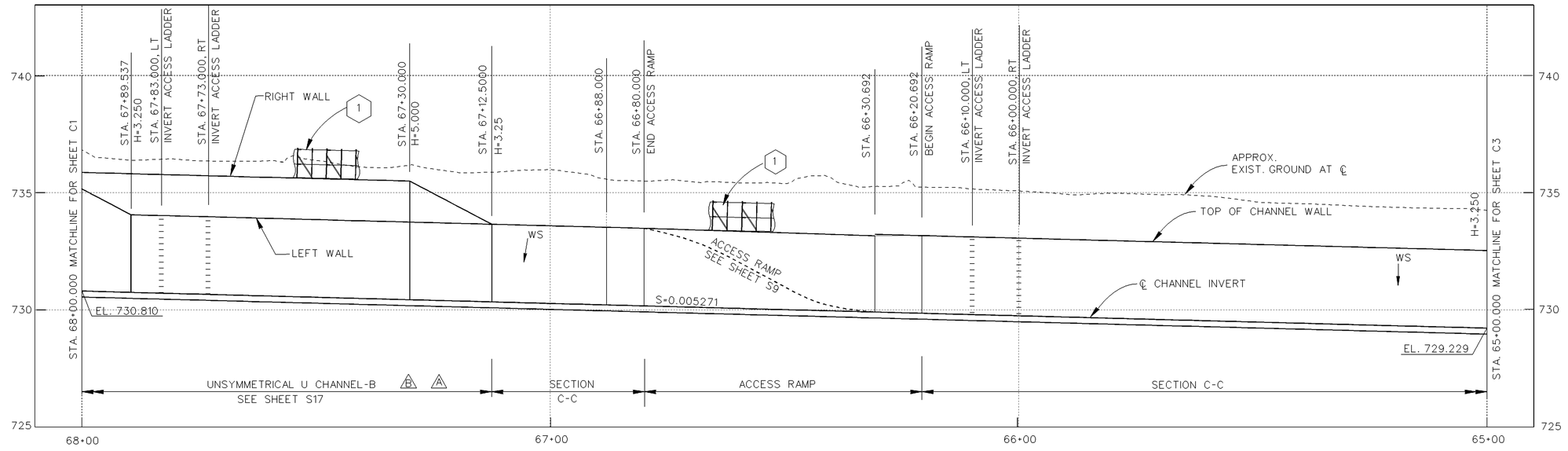
FILE NAME: C01MOD14.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1116 REV 'F'

SHEET C1

Call before you Dig 1-800-227-2600
This drawing was produced in METRIC

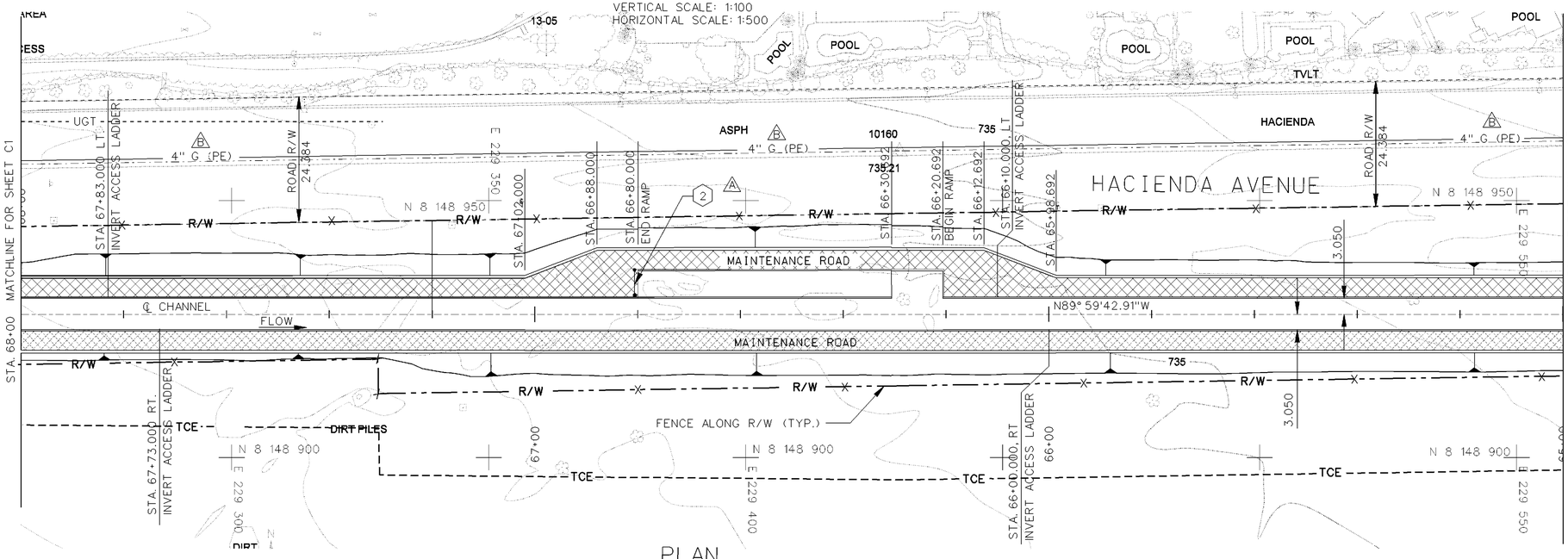
SAFETY PAYS

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PLAN

CONSTRUCTION NOTES:

1. INSTALL CABLE SAFETY RAILLINGS ATOP CHANNEL WALL (BOTH SIDES)
2. INSTALL PIPE ACCESS RMAP GATE.

REFERENCE NOTES:

1. FOR TYP. CHANNEL SECTIONS AND DETAILS, SEE SHEET S2
2. FOR INVERT ACCESS LADDER, SEE SHEET S2
3. FOR MAINT. ROAD DETAIL., SEE SHEET M1
4. FOR CHAIN LINK FENCING, SEE SHEET M1
5. FOR CABLE SAFETY RAILING, SEE SHEET M3
6. FOR INVERT ACCESS RAMP, SEE SHEET S9.
7. FOR PIPE ACCESS RAMP GATE, SEE SHEET M2.

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig
1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS	11/29/2002
B	MOD #2 - ADD 4" GAS LINE AND CLARIFY PROFILE	
A	ADDED PIPE ACCESS RAMP GATE; REVISED ALIGNMENT	

REVISIONS

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)

PLAN AND PROFILE
STA.68+00.000 TO STA.65+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: AJQ
DRAWN BY: A. MUST.
CHECKED BY: G.DAVIS

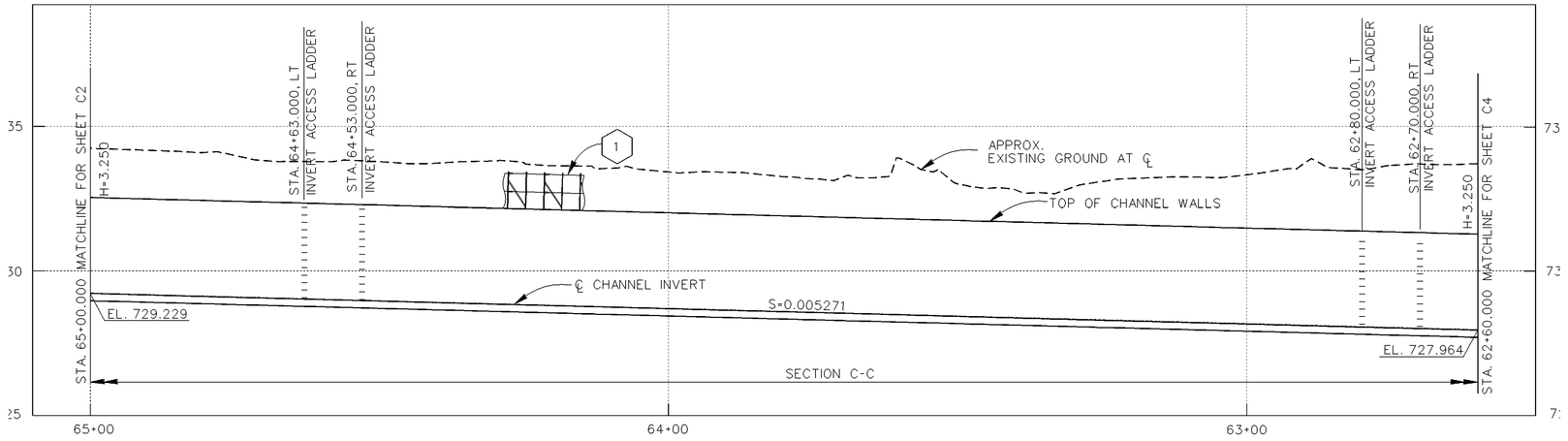
SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DISTRICT FILE NO. 196/1117 REV 'B' | SPEC. NO. DACW09-02-B-0009 | FILE NAME: C02MOD2.DGN

SHEET
C2

8 7 6 5 SAFETY PAYS 4 3 2 1

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1

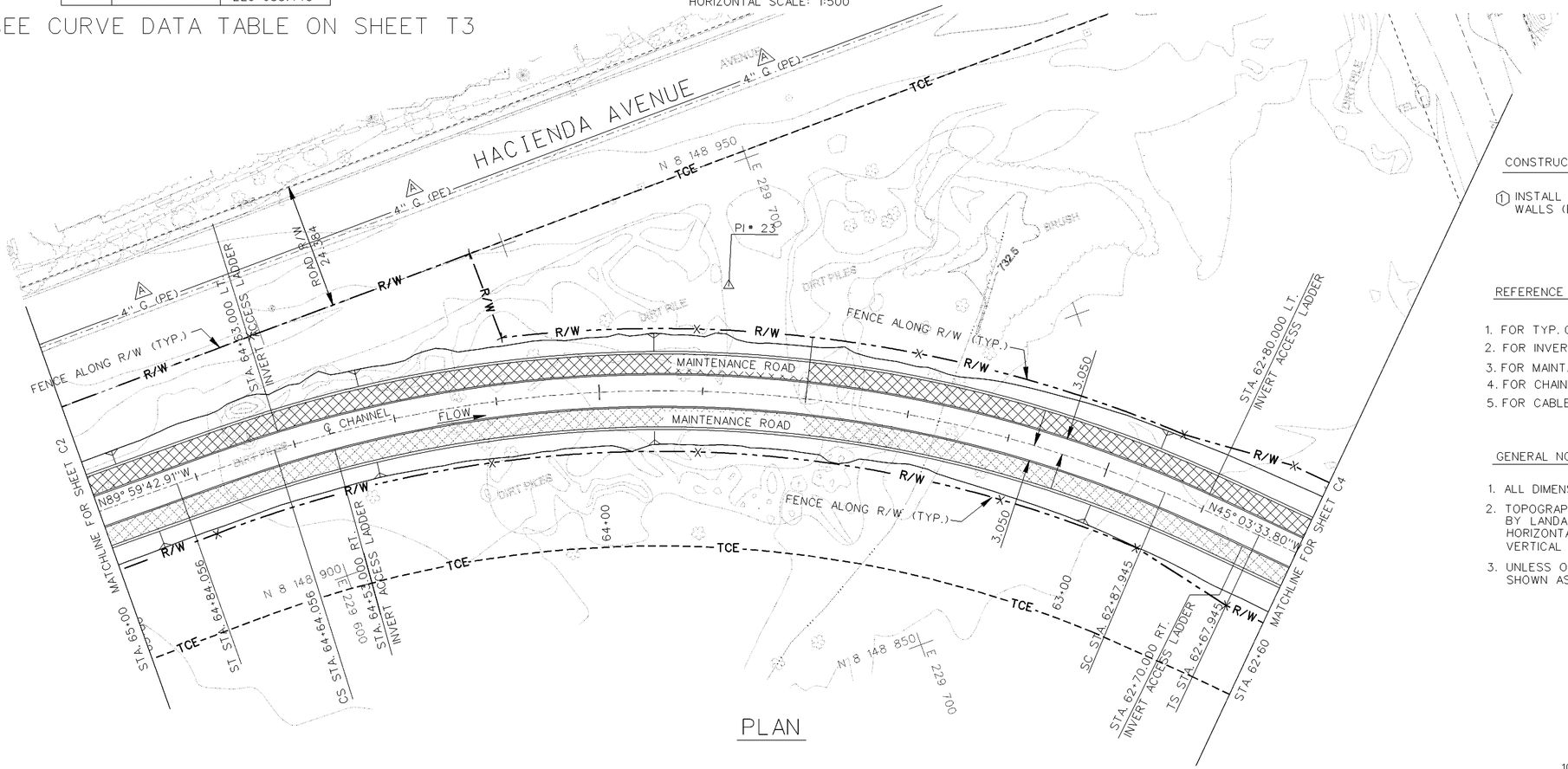


PI *	NORTHING	EASTING
23	8 148 927.982	229 688.443

* SEE CURVE DATA TABLE ON SHEET T3

PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PLAN

CONSTRUCTION NOTES:

1. INSTALL CABLE SAFETY RAILINGS ATOP CHANNEL WALLS (BOTH SIDES)

REFERENCE NOTES:

1. FOR TYP. CHANNEL SECTIONS AND DETAILS, SEE SHEET S2
2. FOR INVERT ACCESS LADDER, SEE SHEET S2
3. FOR MAINT. ROAD DETAIL, SEE SHEET M1
4. FOR CHAIN LINK FENCING, SEE SHEET M1
5. FOR CABLE SAFETY RAILLING, SEE SHEET M3

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

10 5 0 10 20
SCALE: 1:500

Call before you Dig
1-800-227-2600
This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS	REVISIONS
1	MOD #1 - ADD 4" GAS LINE	11/20/2002

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
STA.65+00.000 TO STA.62+60.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

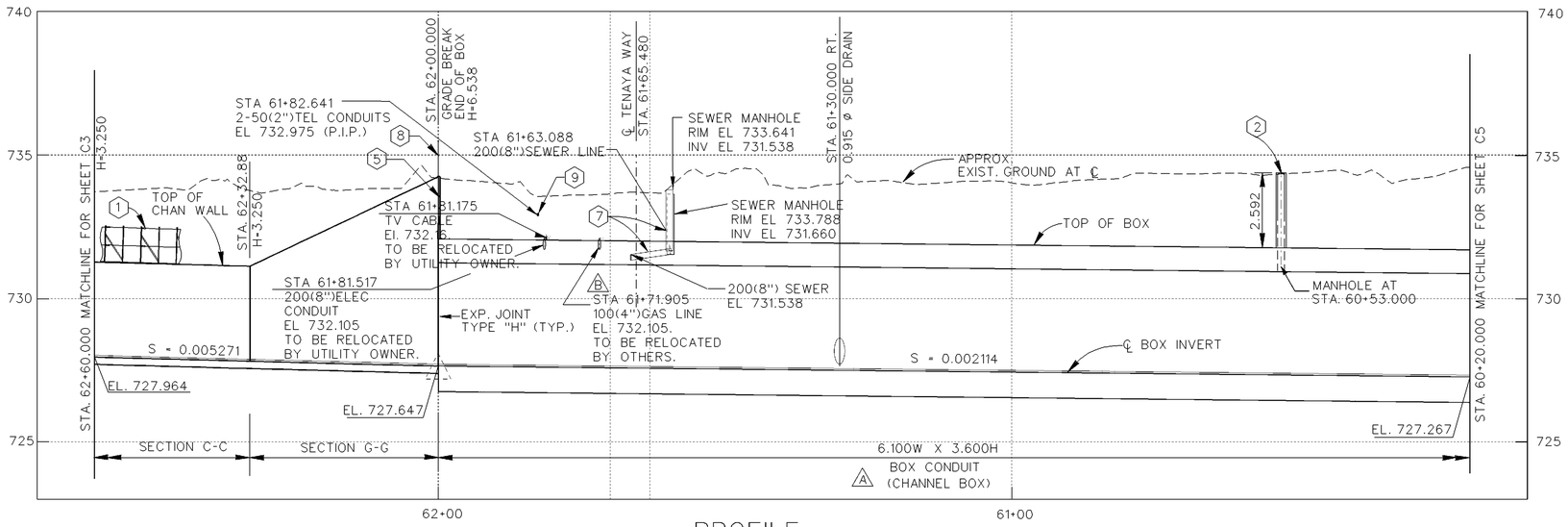
SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJO
DRAWN BY: AOM
CHECKED BY: GED

FILE NAME: C03MOD1.DGN
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1118 REV 'A'

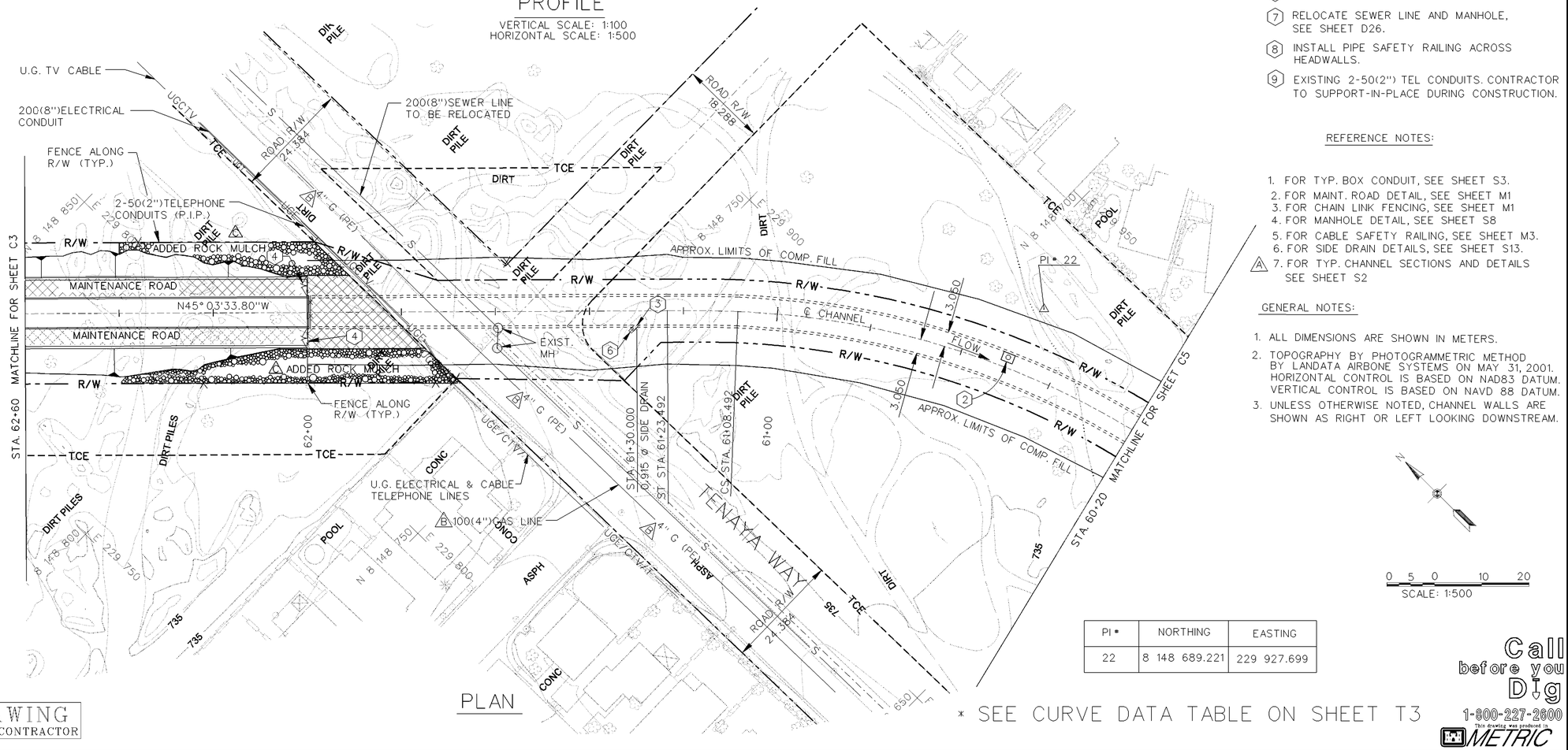
SHEET C3

8 7 6 5 SAFETY PAYS 4 3 2 1



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PI •	NORTHING	EASTING
22	8 148 689.221	229 927.699

* SEE CURVE DATA TABLE ON SHEET T3

PLAN

CONSTRUCTION NOTES:

1. INSTALL CABLE SAFTY RAILING ATOP CHANNEL WALL (BOTH SIDES).
2. INSTALL INVERT ACCESS MANHOLE.
3. INSTALL 0.915 Ø RCP SIDE DRAIN STUB-OUT.
4. INSTALL 4.200 DOUBLE SWING GATE
5. SEE SHEET S3 FOR EXTENDED HEADWALL DETAILS.
6. CONNECT TO STORMDRAIN ON SHT D6.
7. RELOCATE SEWER LINE AND MANHOLE, SEE SHEET D26.
8. INSTALL PIPE SAFETY RAILING ACROSS HEADWALLS.
9. EXISTING 2-50(2") TEL CONDUITS. CONTRACTOR TO SUPPORT-IN-PLACE DURING CONSTRUCTION.

REFERENCE NOTES:

1. FOR TYP. BOX CONDUIT, SEE SHEET S3.
2. FOR MAINT. ROAD DETAIL, SEE SHEET M1
3. FOR CHAIN LINK FENCING, SEE SHEET M1
4. FOR MANHOLE DETAIL, SEE SHEET S8
5. FOR CABLE SAFETY RAILING, SEE SHEET M3.
6. FOR SIDE DRAIN DETAILS, SEE SHEET S13.
7. FOR TYP. CHANNEL SECTIONS AND DETAILS SEE SHEET S2

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

N

0 5 0 10 20
SCALE: 1:500

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig 1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS	REVISIONS
A	ADDED NOTE.	
B	MOD#1-CLARIFY G.L. CALLOUTS.	11/20/2002
C	ADDED ROCK MULCH PER LETTER 02C0013-119 ITEMS 1,2	

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
STA. 62+60.000 TO STA. 60+20.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

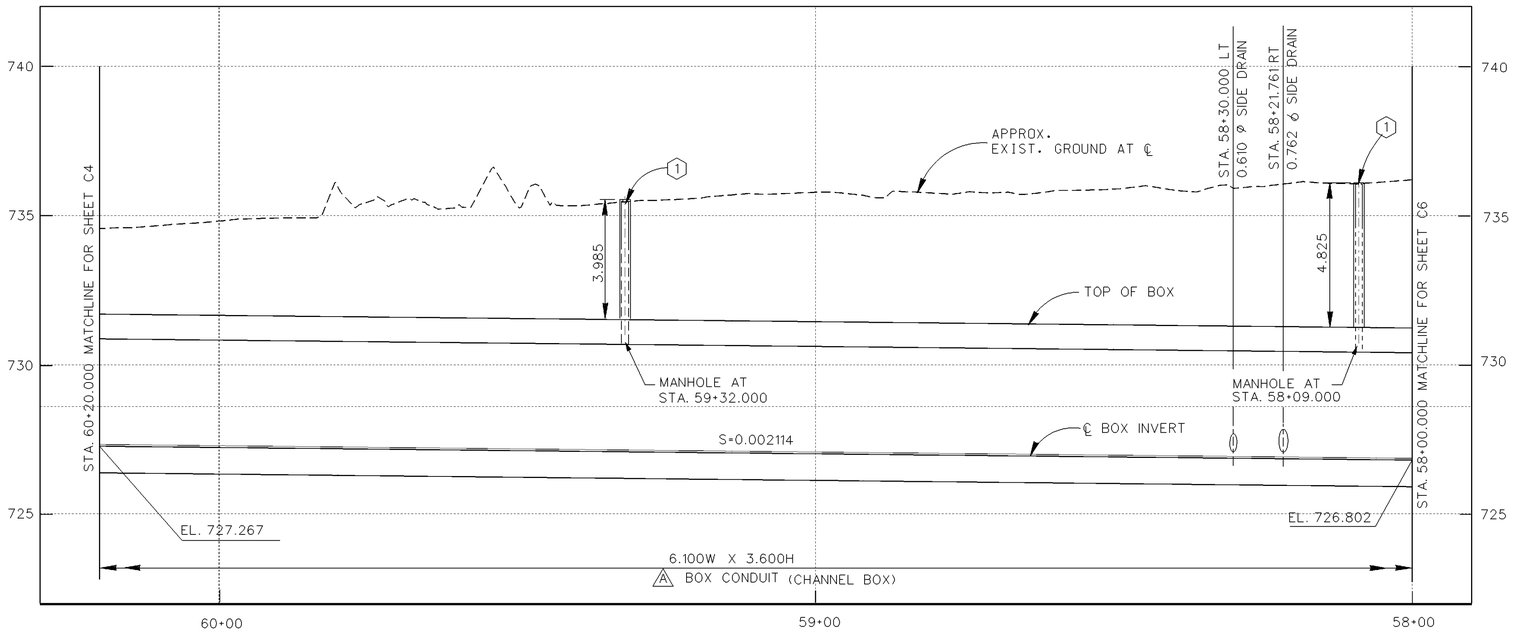
SUBMITTED BY: THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJQ
DRAWN BY: SQM
CHECKED BY: GED

FILE NAME: C04MOD1.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1119 REV 'B'

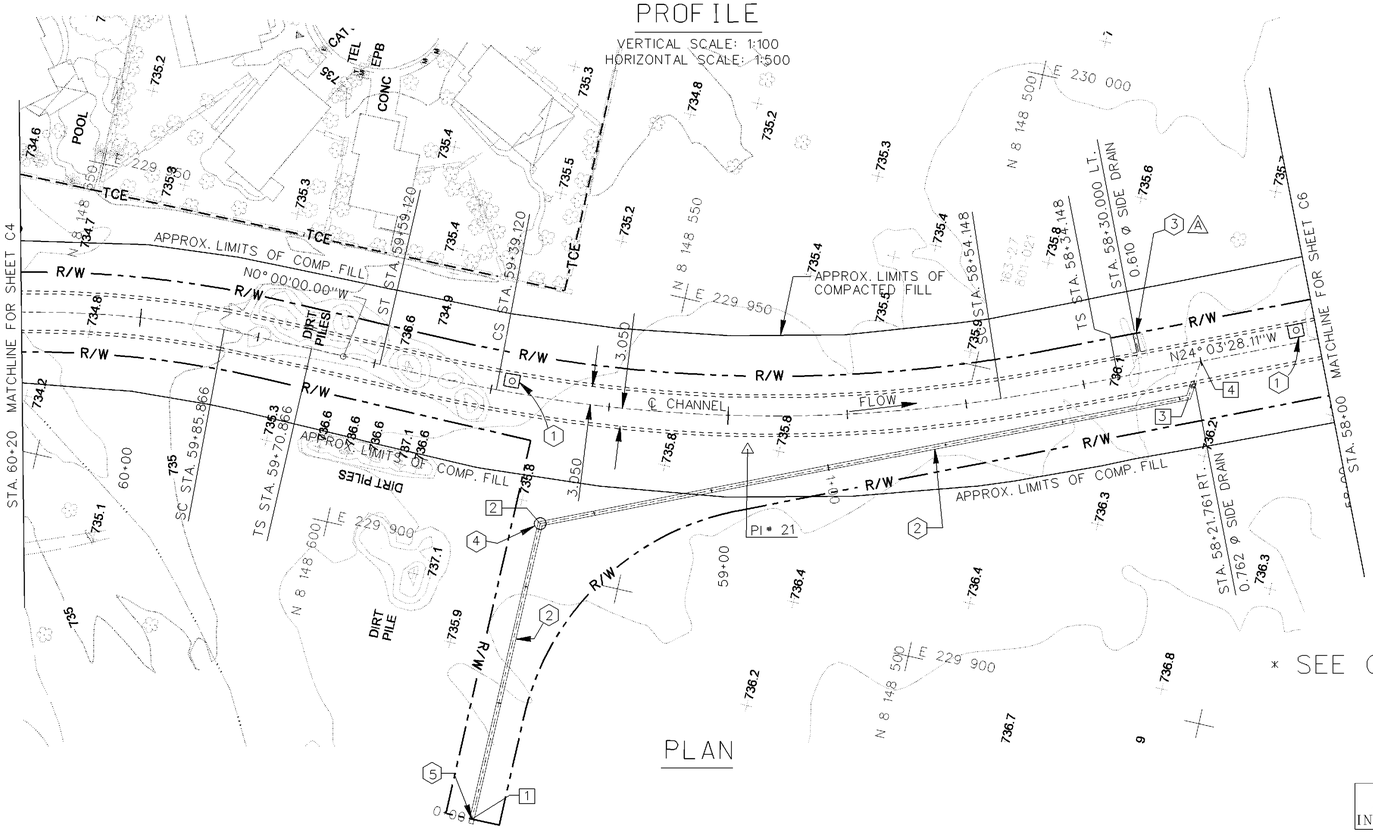
SHEET C4

VALUE ENGINEERING PAYS



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PLAN

STA 58+21.761 RIGHT 0.762 ø SIDE DRAIN		
PT	NORTHING	EASTING
1	8 148 565.120	229 856.950
2	8 148 565.120	229 907.760
3	8 148 464.034	229 952.879
4	8 148 463.370	229 959.260

CONSTRUCTION NOTES:

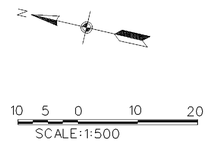
1. INSTALL MANHOLES PER DETAILS ON SHEET S8.
2. CONSTRUCT 0.762 ø SIDE DRAIN.
3. CONSTRUCT 0.610 ø SIDE DRAIN. PLUG PIPE END OF SIDE DRAIN WITH 20mm PLYWOOD. A
4. CONSTRUCT 1.500 MANHOLE TYPE III PER STD DWG. 406 OF "UNIFORM STANDARD DRAWINGS", CLARK COUNTY AREA, NEVADA.
5. CONNECT TO STORMDRAIN ON SHT D6.

REFERENCE NOTE:

1. FOR TYP. BOX CONDUIT OF CHANNEL BOX SECTION, SEE SHEET S3.
2. FOR MANHOLE DETAIL, SEE SHEET S8
3. FOR CROSS SECTIONS, SEE SHEET C19, C20
4. FOR SIDE DRAIN TABULATION AND DETAILS, SEE SHEET S13
5. FOR 0.762 ø SIDE DRAIN PROFILE, SEE SHEET C15. A

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDDATA AIRBORNE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM, VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.



PI *	NORTHING	EASTING
21	8 148 534.075	229 927.699

* SEE CURVE DATA TABLE ON SHEET T3

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig
1-800-227-2600
This drawing was produced in METRIC

SYMBOL	REVISED NOTES. DESCRIPTIONS REVISIONS
A	

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
STA.60+20.000 TO STA.58+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: AJO
DRAWN BY: SOM
CHECKED BY: GED

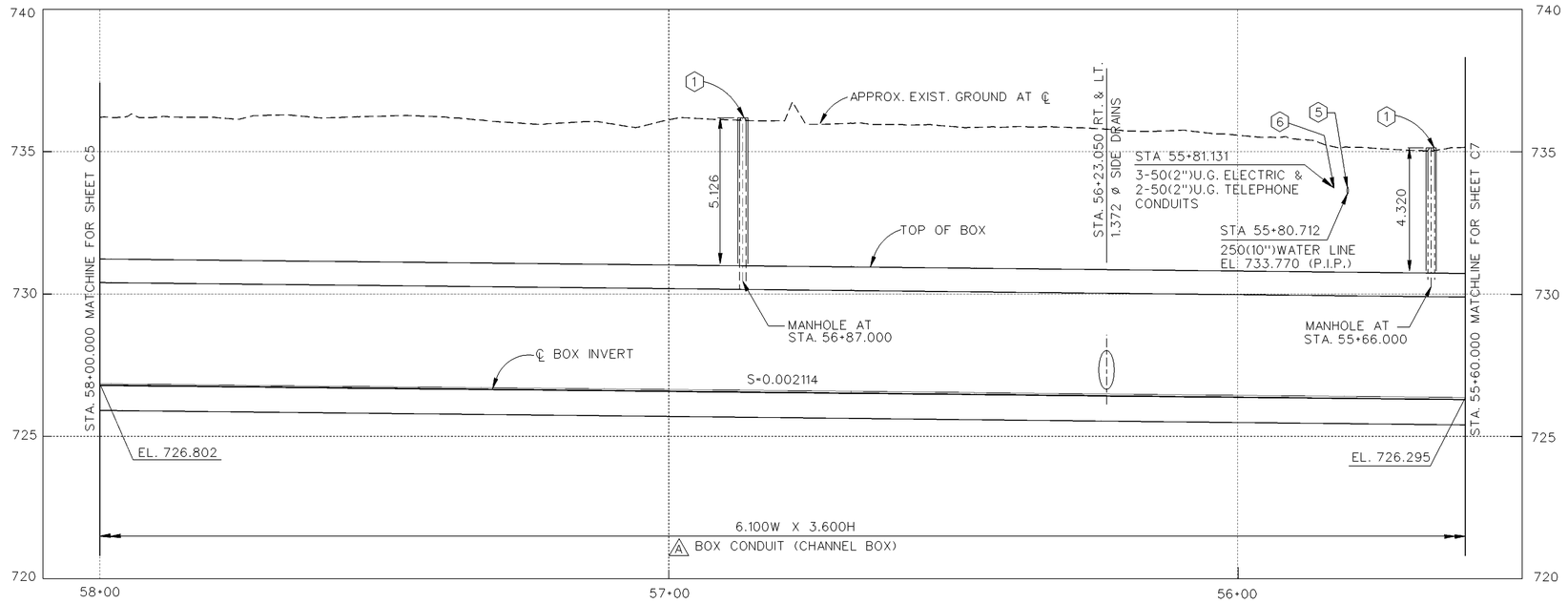
SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

FILE NAME: C05Am1.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1120 REV 'A'

SHEET
C5

SAFETY PAYS

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR



STA 56+23.050 LEFT 1.372 ø SIDE DRAIN		
PT	NORTHING	EASTING
1L	8 148 384.830	229 987.050
2L	8 148 384.830	230 014.930
3L	8 148 376.720	230 028.960
4L	8 148 371.060	230 050.110
5L	8 148 371.060	230 103.440
6L	8 148 365.180	230 109.310

STA 56+23.050 RIGHT 1.372 ø SIDE DRAIN		
PT	NORTHING	EASTING
1R	8 148 380.710	229 987.053
2R	8 148 380.710	229 997.303
3R	8 148 359.206	230 041.338
4R	8 148 359.206	230 103.338
5R	8 148 365.180	230 109.310

CONSTRUCTION NOTES:

1. INSTALL MANHOLE, SEE SHEET S8.
2. STA. 56+23.05 LF. 1372 mm ø SIDE DRAIN STUB-OUT
3. STA. 56+23.05 RT. 1372 mm ø SIDE DRAIN STUB-OUT
4. INLET-STRUCTURE, DOUBLE RCP, SEE SHEET S21
5. EXISTING 250(10") WATER LINE. CONTRACTOR TO SUPPORT AND PROTECT-IN-PLACE DURING CONSTRUCTION.
6. EXISTING 3-50(2") U.G. ELECTRICAL AND 2-50(2") U.G. TELEPHONE CONDUITS. CONTRACTOR TO SUPPORT AND PROTECT-IN-PLACE DURING CONSTRUCTION.
7. INLET-STRUCTURE, SINGLE RCP, SEE SHEET S22

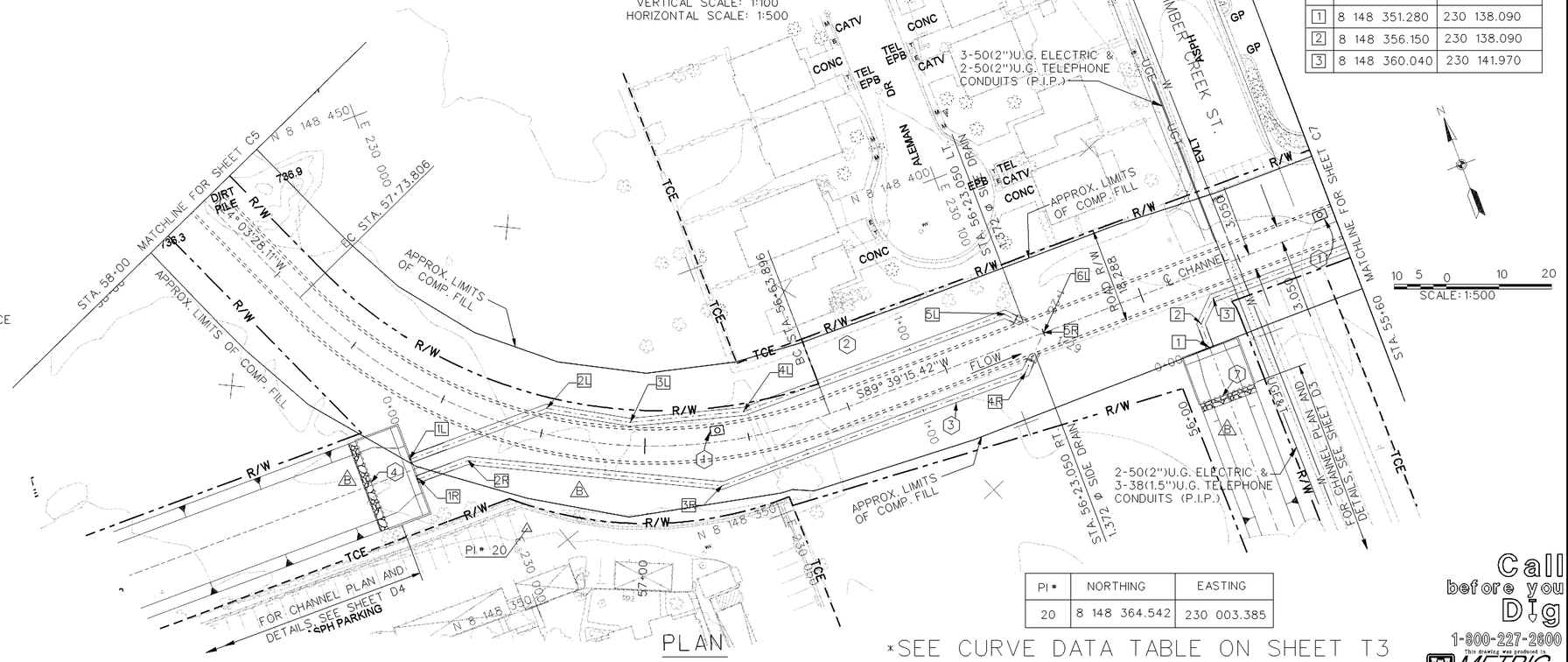
REFERENCE NOTE:

1. FOR TYP. BOX CONDUIT, SEE SHEET S3
2. FOR MANHOLE DETAIL, SEE SHEET S8
3. FOR CROSS SECTIONS, SEE SHEET C19, C20.
4. FOR SIDE DRAIN PROFILES, SEE SHEET C15

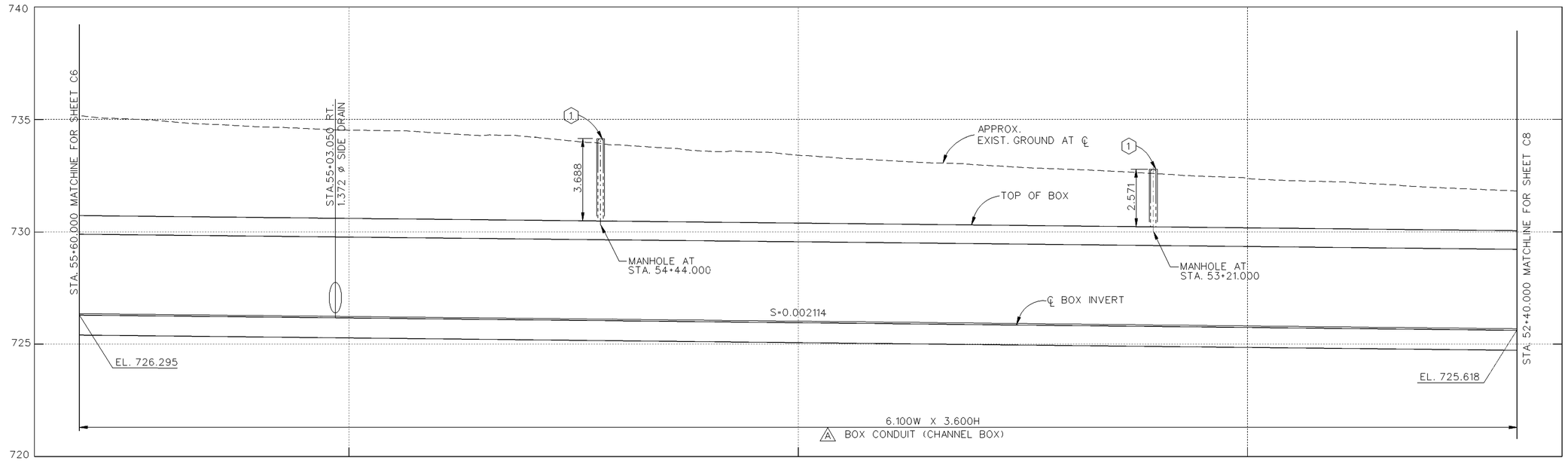
GENERAL NOTES:

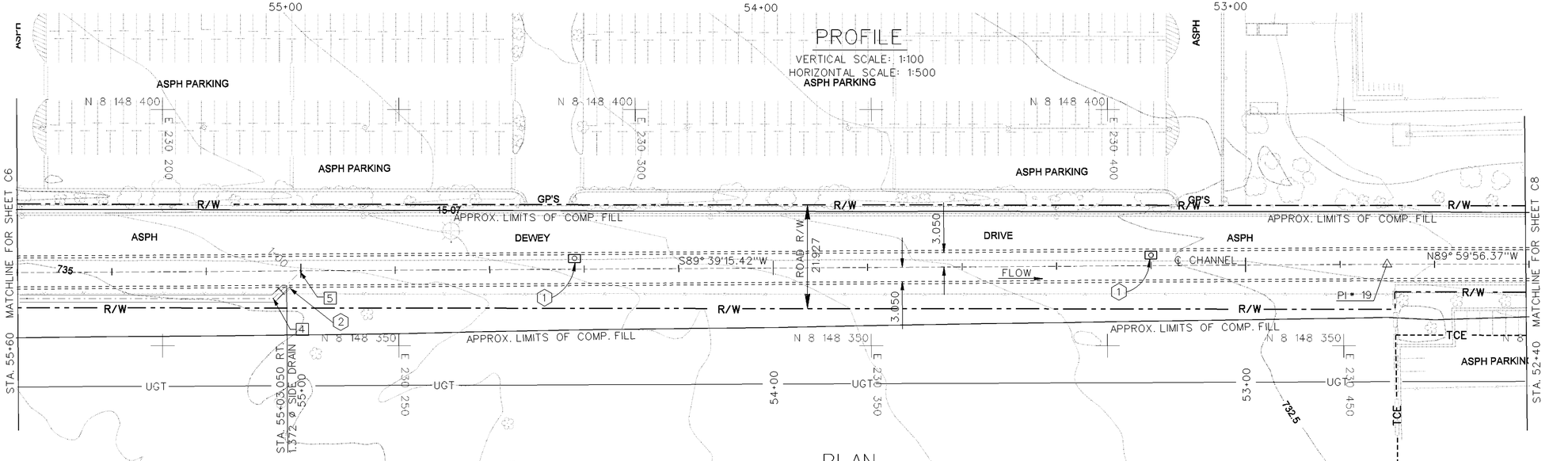
1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31. 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PROFILE
VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500


STA. 58+00 MATCHLINE FOR SHEET C5
N 8 148 450
E 230 000
DIRT PILE
736.9
736.3
BC STA. 57+73.806
APPROX. LIMITS OF COMP. FILL
R/W
TCE
STA. 58+00.000
STA. 57+00.000
STA. 56+23.050 RT. 1.372 ø SIDE DRAIN
STA. 56+23.050 LT. 1.372 ø SIDE DRAIN
BC STA. 56+63.896
S89° 39' 15.42"W
FLOW
0.00%
2.00%
1.00%
0.50%
250(10")WATER LINE (P.I.P.)
3-50(2")U.G. ELECTRIC & 2-50(2")U.G. TELEPHONE CONDUITS (P.I.P.)
2-50(2")U.G. ELECTRIC & 3-38(1.5")U.G. TELEPHONE CONDUITS (P.I.P.)
TIMBER CREEK ST.
ALLEY
CATV
CONC
TEL
EPB
GP
ROAD 288
℄ CHANNEL
FOR CHANNEL PLAN AND DETAILS, SEE SHEET D4
FOR CHANNEL PLAN AND DETAILS, SEE SHEET D3
PI • 20
N 8 148 350
E 230 000
57+00
N 8 148 400
N 8 148 380
N 8 148 360
N 8 148 340
N 8 148 320
N 8 148 300
E 230 100
E 230 200
E 230 300
E 230 400
E 230 500
E 230 600
E 230 700
E 230 800
E 230 900
E 231 000
E 231 100
E 231 200
E 231 300
E 231 400
E 231 500
E 231 600
E 231 700
E 231 800
E 231 900
E 232 000
E 232 100
E 232 200
E 232 300
E 232 400
E 232 500
E 232 600
E 232 700
E 232 800
E 232 900
E 233 000
E

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1





CONSTRUCTION NOTES:

1. INSTALL MANHOLE, SEE SHEET S8.
2. STA.55+03.05 RT. 1372mm ø SIDE DRAIN STUB-OUT

STA 55+03.050 RIGHT 1.372 ø SIDE DRAIN		
PT	NORTHING	EASTING
4	8 148 360.040	230 223.440
5	8 148 365.910	230 229.310

REFERENCE NOTE:

1. FOR CROSS SECTIONS, SEE SHEET C19, C20.
2. FOR TYP. BOX CONDUIT OF CHANNEL BOX SECTION, SEE SHEET S3
3. FOR MANHOLE DETAIL, SEE SHEET S8

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PI •	NORTHING	EASTING
19	8 148 367.292	230 459.190

* SEE CURVE DATA TABLE ON SHEET T3

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

SCALE: 1:500

Call before you Dig 1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS
A	ADDED NOTE.

REVISIONS

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)

PLAN AND PROFILE
STA.55+60.000 TO STA.52+40.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

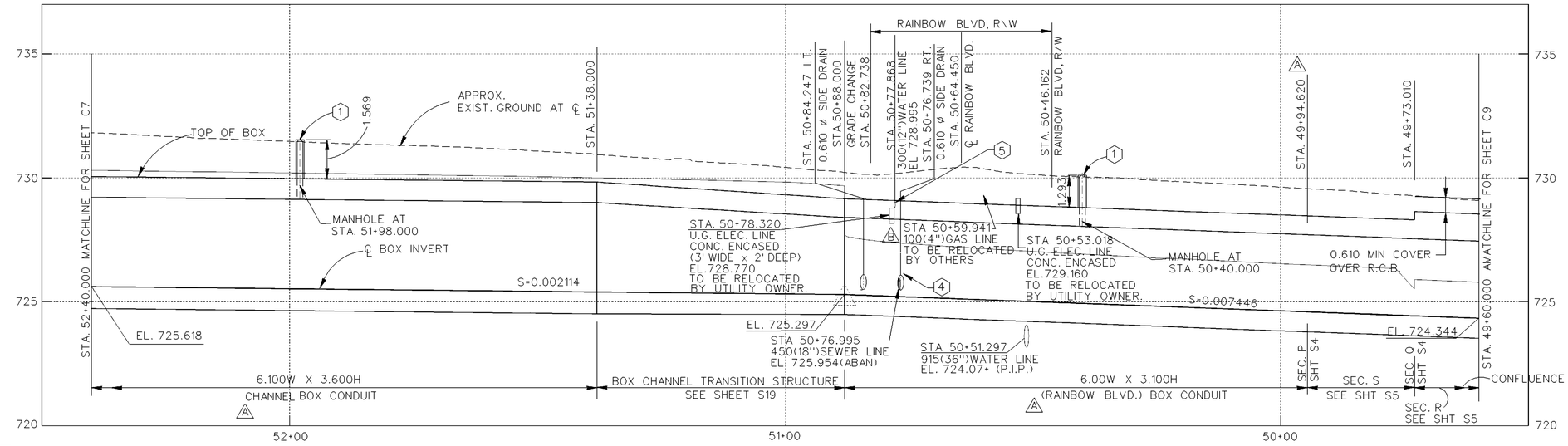
DESIGNED BY: AJO
DRAWN BY: AQM
CHECKED BY: GED

DISTRICT FILE NO. 196/1122 REV 'A' | SPEC. NO. DACW09-02-B-0009 | FILE NAME: C07Am1.dgn

SHEET C7

8 7 6 5 SAFETY PAYS 4 3 2 1

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



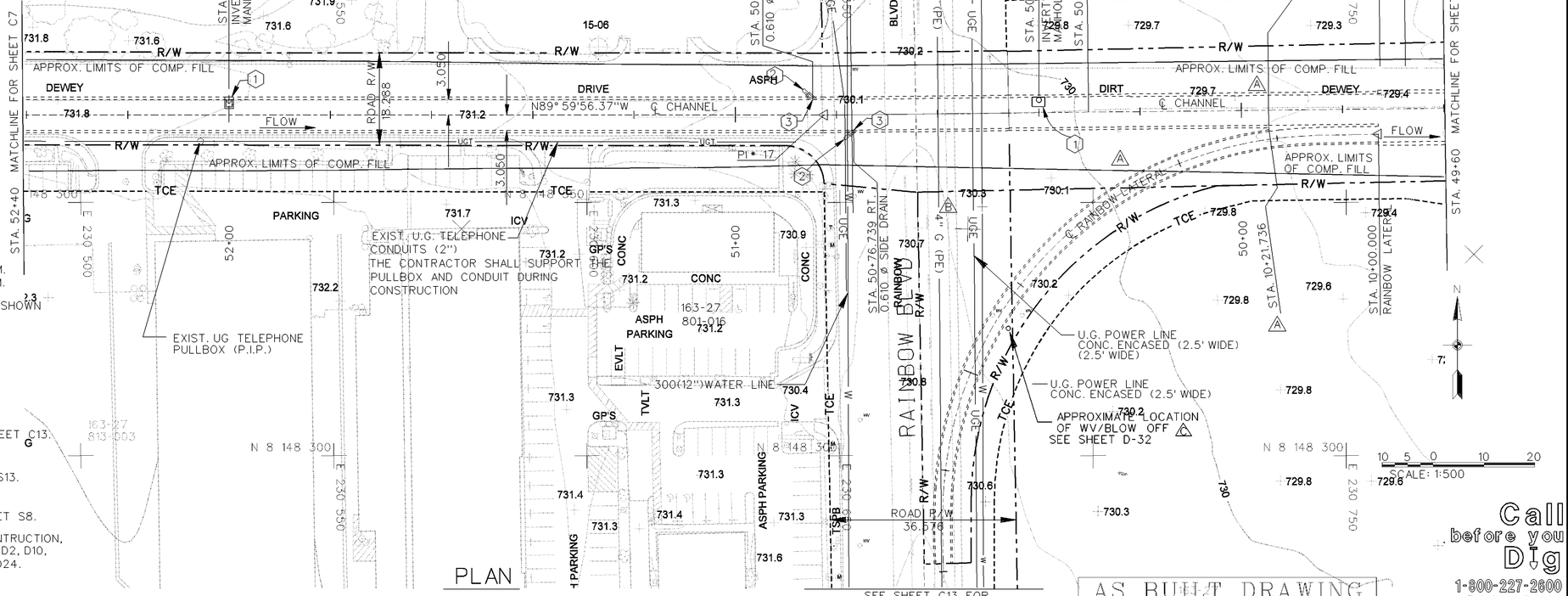
PI =	NORTHING	EASTING
17	8 148 367.289	230 646.902

* SEE CURVE DATA TABLE ON SHEET T3

PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500

PLAN



CONSTRUCTION NOTES:

1. INSTALL INVERT ACCESS MANHOLE
2. CONNECT TO STORMDRAIN ON SHT D2.
3. INSTALL 0.610 ø SIDE DRAIN STUB-OUT.
4. REMOVE AND CAP NORTH AND SOUTH ENDS OF THE SEWER LINE AT RAINBOW BLVD.
5. RELOCATE 300 (12") WATER LINE, SEE SHEET D28

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM

REFERENCE NOTES:

1. FOR TYPICAL BOX CONDUIT SEE SHEET S3. RAINBOW BLVD. SECTION, SEE SHEET S3
2. FOR RAINBOW LATERAL PLAN & PROFILE, SEE SHEET C13.
3. FOR RAINBOW LATERAL CONFLUENCE DETAILS, SEE SHEETS S4 AND S5.
4. FOR SIDE DRAIN STUB-OUT DETAILS, SEE SHEET S13.
5. FOR CROSS SECTIONS, SEE SHEETS C19 & C20.
6. FOR INVERT ACCESS MANHOLE DETAILS, SEE SHEET S8.
7. FOR DEWEY DR. AND RAINBOW BLVD. ROAD RECONTRUCTION, SEE CLARK CO. DEPT. OF PUBLIC WORKS SHEETS D2, D10, D11, D12, D13, D15, D16, D17, D18, D19, D20, D21, D22, D24.

SEE SHEET C13 FOR PLAN AND PROFILE, RAINBOW LATERAL

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig 1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS	
	REVISIONS	
A	MOVE BLOW OFF PER LETTER 02C0013-101	11/20/2002
B	MOD#1 - CLARIFY GAS LINE CALLOUTS	
A	REVISED STATIONING & DEFINED FILL LIMITS: RECORD WATER LINE	

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL (FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)

PLAN AND PROFILE
STA.52+40.000 TO STA.49+60.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: AJQ
DRAWN BY: A.MUST.
CHECKED BY: G.DAVIS

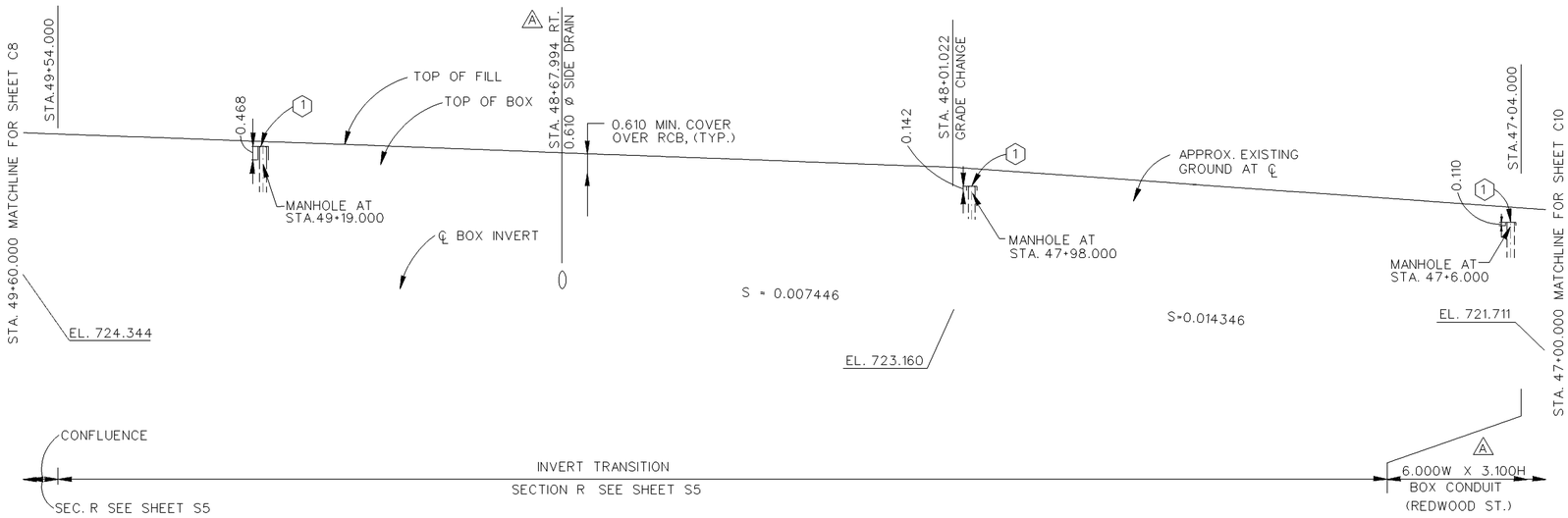
SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

FILE NAME: C08MOD1.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1123 REV 'B'

SHEET C8

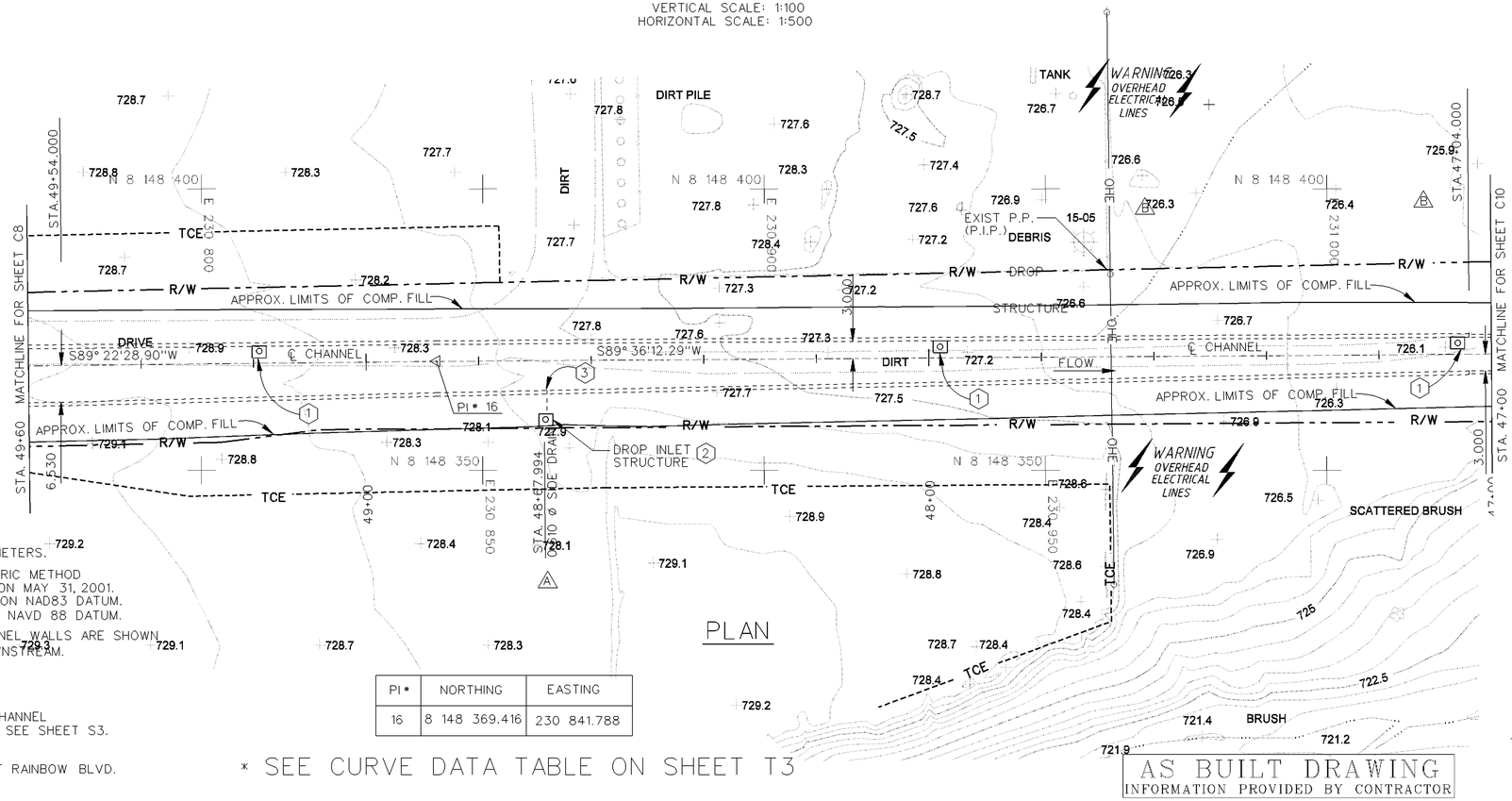
8 7 6 5 SAFETY PAYS 4 3 2 1

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



CONSTRUCTION NOTES:

1. INSTALL MANHOLE, SEE SHEET S8
2. INSTALL DROP INLET STRUCTURE. SEE SHEET S20.
3. INSTALL 0.610 Ø SIDE DRAIN STUB-OUT

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

REFERENCE NOTES:

1. FOR TYP. BOX CONDUIT OF CHANNEL BOX SECTIONS AND DETAILS, SEE SHEET S3.
2. FOR MANHOLE, SEE SHEET S8
3. FOR CONFLUENCE SECTION AT RAINBOW BLVD. SEE SHEET S4 AND S5.

PLAN

PI •	NORTHING	EASTING
16	8 148 369.416	230 841.788

* SEE CURVE DATA TABLE ON SHEET T3

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

SYMBOL	DESCRIPTIONS	REVISIONS
A	CORRECTED SIDEDRAIN & OHE LOCATIONS.	
B	ADDED NOTES: MOD #3 - DELETE TCE NORTH OF CHNNL.	12/11/2002

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL (FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)

PLAN AND PROFILE

STA.49+60.000 TO STA.47+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: AJQ
DRAWN BY: A.MUST.
CHECKED BY: G.DAVI.

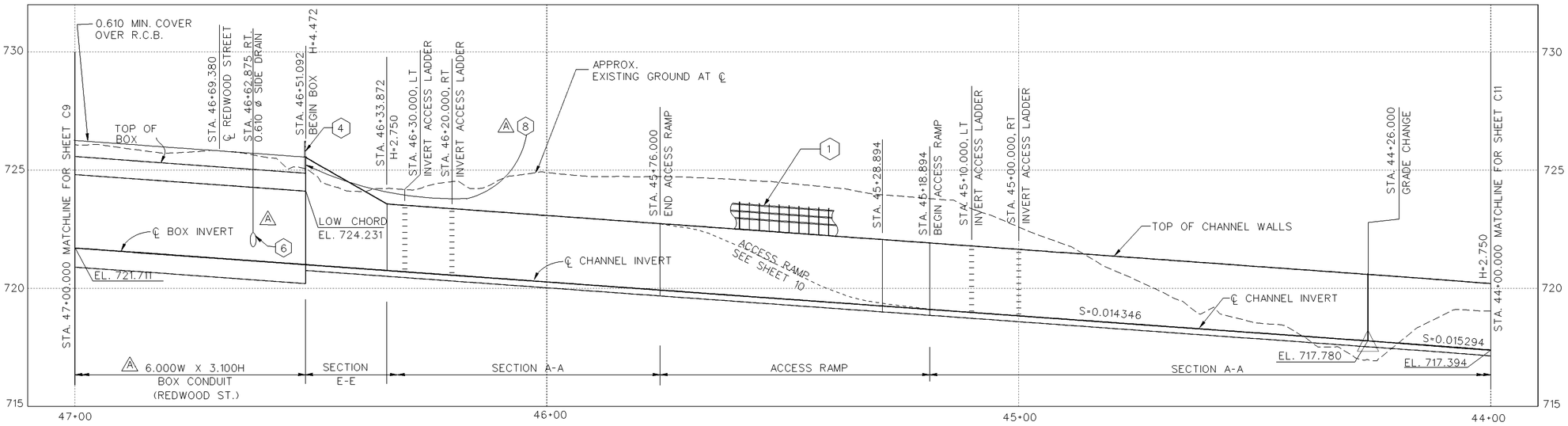
SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

FILE NAME: C09MOD3.DGN
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1124 REV 'B'

SHEET C9

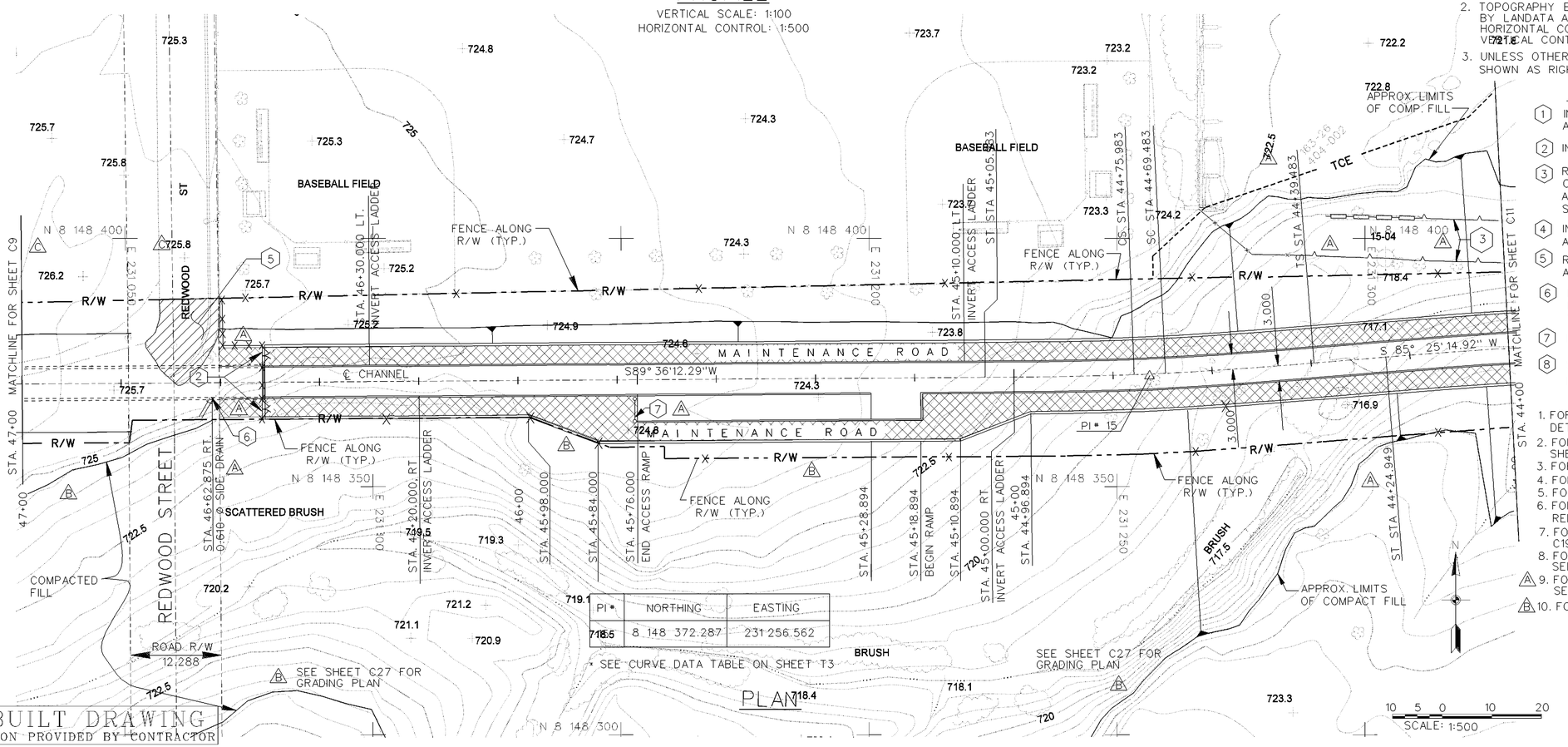
Call before you Dig 1-800-227-2600
This drawing was produced in METRIC

8 7 6 5 SAFETY PAYS 4 3 2 1



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL CONTROL: 1:500



PI *	NORTHING	EASTING
15	8 148 372.287	231 256.562

* SEE CURVE DATA TABLE ON SHEET T3

PLAN

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001 HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

CONSTRUCTION NOTES:

1. INSTALL PIPE SAFETY RAILINGS ATOP CHANNEL WALLS (BOTH SIDES)
2. INSTALL 4.200 DOUBLE SWING GATE
3. REMOVE AND SALVAGE EXISTING CONCRETE BLOCKS AND FENCE AND STORE AT LOCATION ON SHEET C11
4. INSTALL PIPE SAFETY RAILING ACROSS HEADWALL
5. REMOVE EXISTING ROAD, CURB, AND SIDEWALK. SEE SHEET D9.
6. INSTALL 0.610 ø SIDE DRAIN. PLUG PIPE END OF SIDE DRAIN WITH 20 mm PLYWOOD. A
7. INSTALL PIPE ACCESS RAMP GATE. A
8. SEE SHEET S3 FOR EXTENDED A HEADWALL DETAILS

REFERENCE NOTES:

1. FOR TYP. CHANNEL SECTIONS AND DETAILS, SEE SHEET S2
2. FOR INVERT ACCESS LADDER, SEE SHEET S2.
3. FOR PIPE SAFETY RAILING, SEE SHT M2.
4. FOR MAINT. ROAD DETAILS, SEE SHT M1.
5. FOR CHAIN LINK FENCING, SEE SHT M1.
6. FOR TYP. BOX CONDUIT SECTION AT REDWOOD STREET, SEE SHEET S3
7. FOR CROSS SECTIONS, SEE SHEET C19 AND C20.
8. FOR INVERT ACCESS RAMP, SEE SHEET S10.
9. A FOR PIPE ACCESS RAMP GATE, SEE SHEET M2
10. B FOR GRADING PLAN SEE SHEET C27.

SCALE: 1:500

Call before you Dig 1-800-227-2600
This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS / REVISIONS	
A	ADDED SIDE DRAIN NOTES, A.C. PAVEMENT & POST FENCE REMOVED NOTES	
B	ADDED GRADING PLAN REFERENCE NOTES.	
C	MOD #3 - DELETE TCE NORTH OF CHANNL.	12/11/2002

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL (FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)

PLAN AND PROFILE STA. 47+00.000 TO STA. 44+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: AJQ
DRAWN BY: SOM
CHECKED BY: GED

SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

FILE NAME: C10MOD3.DGN
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1125 REV 'C'

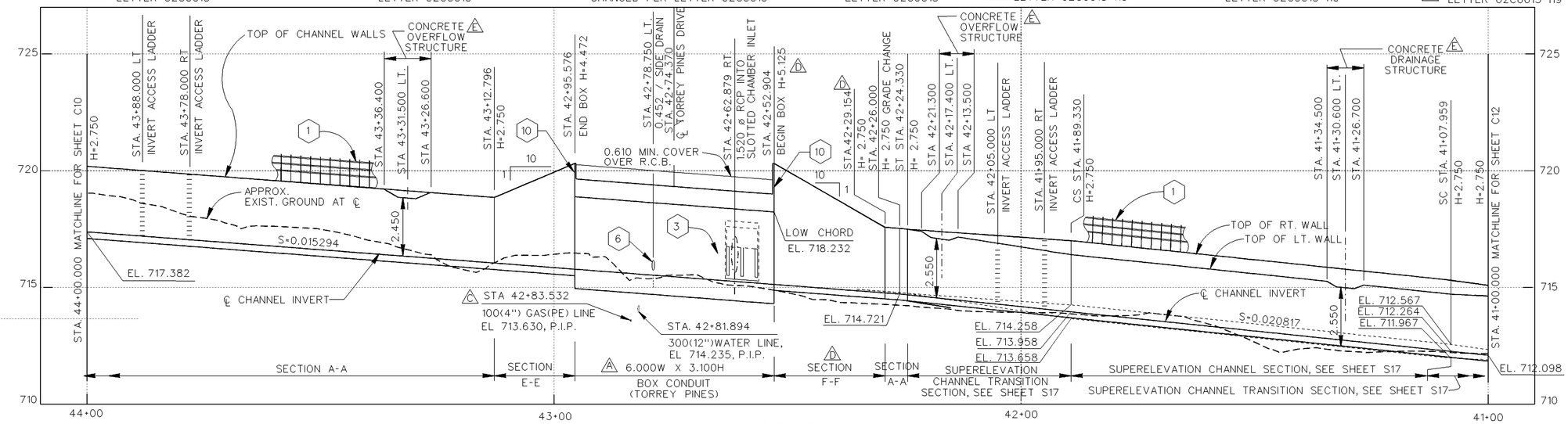
SHEET C10

VALUE ENGINEERING PAYS

L CHANGED LOCATION OF MANHOLE PER LETTER 02C0013
K ADDED CONTOUR LINES PER LETTER 02C0013
J CONCRETE OVERFLOW SWALE/GRADING CHANGED PER LETTER 02C0013
I HATCH CHANGE PER LETTER 02C0013
H ROD IRON FENCE ADDED PER LETTER 02C0013-119
G MOVED AND ADDED GATES PER LETTER 02C0013-119
F ADDED ROCK MULCH PER LETTER 02C0013-119

E MOD #7-REVISE OVERFLOW STRUCTURES 03/10/2003
D MOD #5-MODIFY WALL HEIGHT TRANSITION 01/28/2003
C CLARIFY GAS LINE CALLOUTS.
B ADDED GRADING PLAN REFERENCE NOTE.
A REVISED/ADDED NOTES; ADDED POWER LINE RELOCATED MANHOLE; ADDED UTILITY STRIPPER

SYMBOL | DESCRIPTIONS | REVISIONS



PROFILE

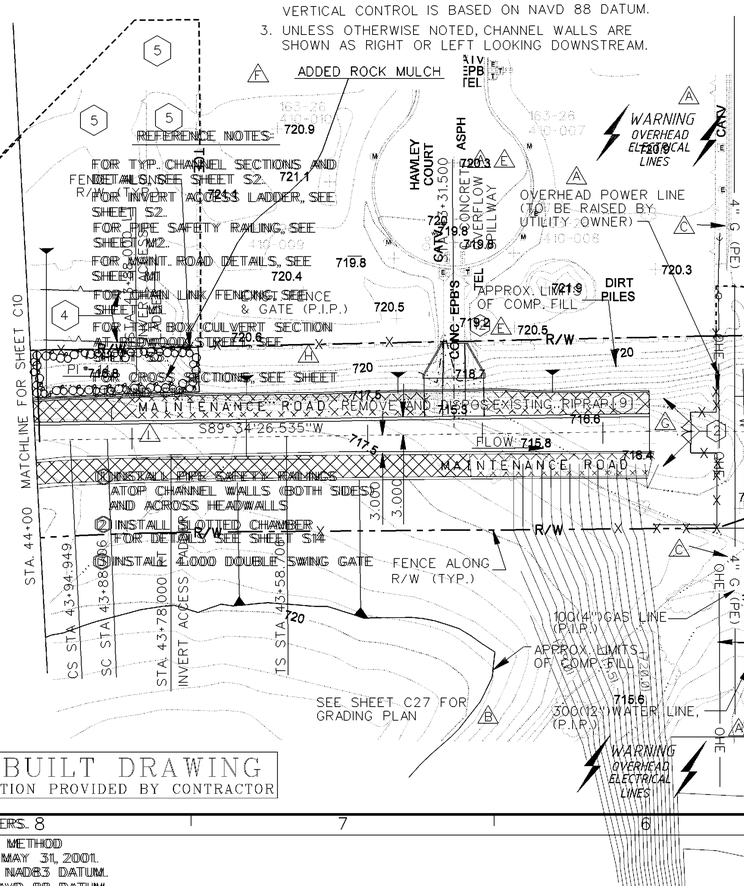
VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PI *	NORTHING	EASTING
13	8148380.595	231585.661

* SEE TABLE ON SHEET T3



REFERENCE NOTES:

1. FOR CROSS SECTIONS, SEE SHEET C19, C20.
2. FOR TYP. CHANNEL SECTIONS AND DETAILS SEE SHEET S2
3. FOR INVERT ACCESS LADDER, SEE SHT. S2
4. FOR MAINT. ROAD DETAIL, SEE SHEET M1
5. FOR CHAIN LINK FENCING, SEE SHEET M1
6. FOR PIPE SAFETY RAILING, SEE SHEET M2
7. FOR TYP. BOX CONDUIT SECTION AT TORREY PINES DR., SEE SHEET S3
A 8. FOR METAL FENCE DETAILS, SEE SHEET M4
A 9. FOR SUPERELEVATION CHANNEL SECTION AND TRANSITION, SEE SHEET S17.
E 10. FOR GRADING PLAN, SEE SHEET C27.

CONSTRUCTION NOTES:

1. INSTALL PIPE SAFETY RAILINGS ATOP CHANNEL WALLS (BOTH SIDES).
2. INSTALL 4.200 DOUBLE SWING GATE
3. INSTALL SLOTTED CHAMBER FOR DETAILS SEE SHEET S-14
4. REMOVE AND SALVAGE EXISTING CONCRETE BLOCKS AND FENCE AND STORE AT LOCATION (5)
5. STORAGE LOCATION FOR SALVAGED CONCRETE BLOCKS AND FENCE
6. INSTALL 452 RCP AND SIDE DRAIN CONNECTION AND CONNECT TO EXISTING 452 RCP
7. MAINTAIN EXISTING TRAFFIC BARRIERS
8. INSTALL TEMPORARY CONCRETE K-RAILS AS TRAFFIC BARRIER
9. REMOVE EXIST. GROUTED RIPRAP ON NORTH SIDE OF CHANNEL BETWEEN CHANNEL AND THE R/W FROM STA.41+25.306 TO STA. 43+85.000
10. SEE SHEET S3 FOR EXTENDED HEADWALL DETAILS.
11. REMOVE EXIST. CONCRETE PAVING ON THE NORTH SIDE OF THE CHANNEL AT TORREY PINES
E 12. SEE SHEET C17 FOR CONCRETE OVERFLOW STRUCTURE
A 13. PLUG PIPE END OF SIDE DRAIN WITH 20 mm PLYWOOD
E 14. SEE SHEET C17.1 FOR CONCRETE OVERFLOW STRUCTURE
E 15. SEE SHEET C18 FOR CONCRETE OVERFLOW STRUCTURE

SCALE: 1:500

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig 1-800-227-2600
This drawing was produced in METRIC

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA

UPPER FLAMINGO DIVERSION CHANNEL
DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
STA.44+00.000 TO STA.41+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJQ
DRAWN BY: A. MUST.
CHECKED BY: G.DAVIS

FILE NAME: C11MOD7.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1126 REV 'E'

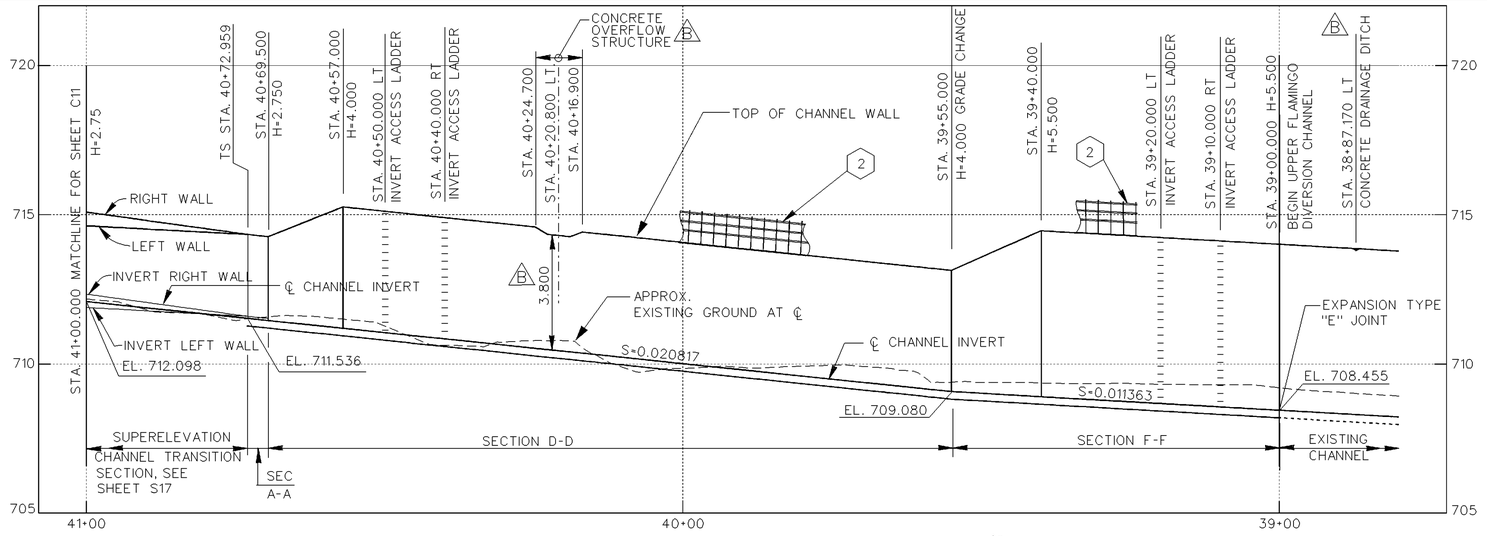
SHEET C11

SAFETY PAYS

C10

VALUE ENGINEERING PAYS

SAFETY PAYS



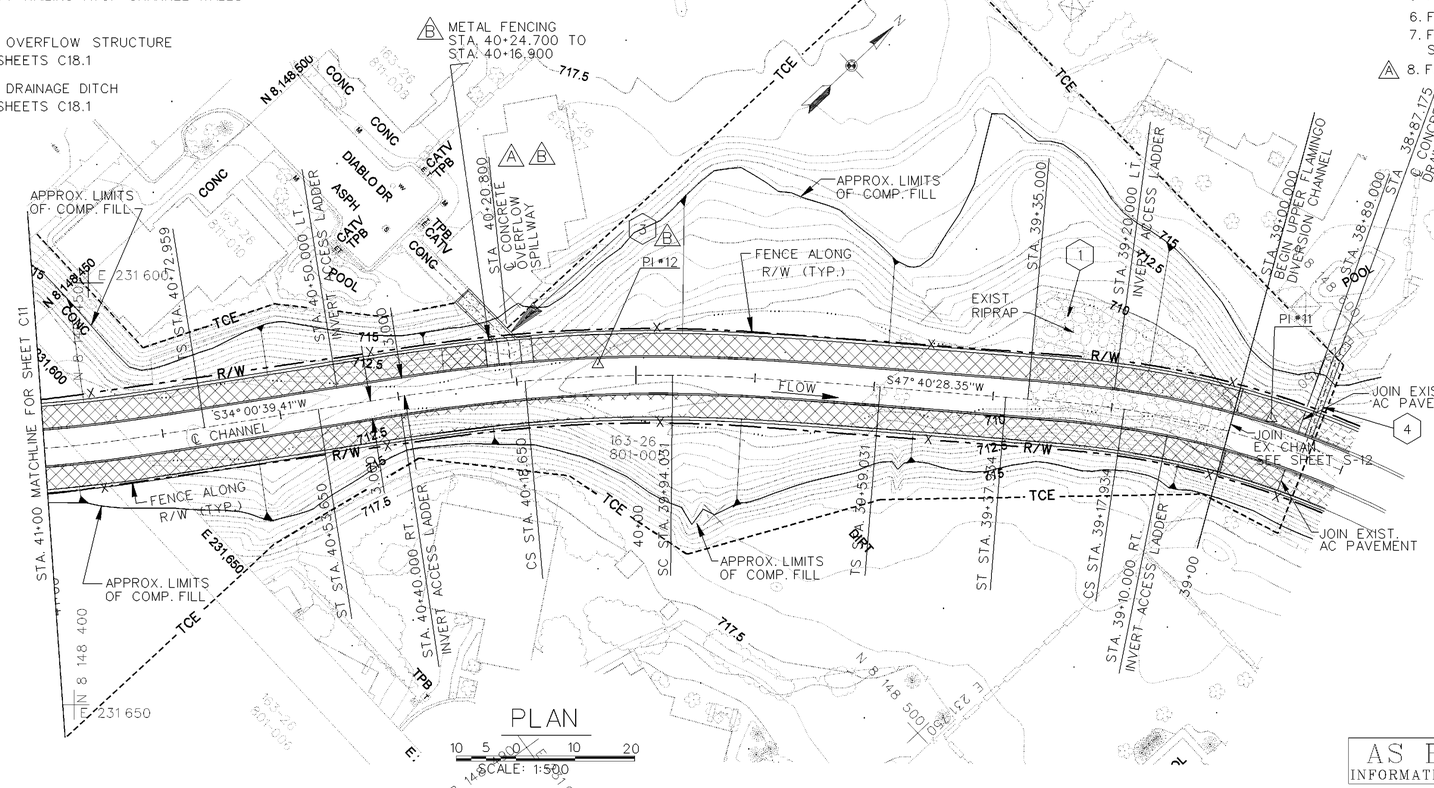
PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500

CONSTRUCTION NOTES:

1. REMOVE AND DISPOSE EXISTING RIPRAP.
2. INSTALL PIPE SAFETY RAILING ATOP CHANNEL WALLS (BOTH SIDES).
3. INSTALL CONCRETE OVERFLOW STRUCTURE FOR DETAIL SEE SHEETS C18.1
4. INSTALL CONCRETE DRAINAGE DITCH FOR DETAIL SEE SHEETS C18.1





PLAN

SCALE: 1:500

REFERENCE NOTES:

1. FOR CROSS SECTIONS, SEE SHEET C19, C20.
2. FOR TYP. CHANNEL SECTIONS AND DETAILS, SEE SHEET S2
3. FOR INVERT ACCESS LADDERS, SEE SHEET S2
4. FOR MAINTENANCE ROAD DETAIL, SEE SHEET M1
5. FOR CHAIN IN LINK FENCING, SEE SHEET M1
6. FOR PIPE SAFETY RAILING, SEE SHEET M2
7. FOR SUPERELEVATION CHANNEL SECTION AND TRANSITION, SEE SHEET S17
8. FOR METAL FENCE DETAILS, SEE SHEET M4

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PI *	NORTHING	EASTING
11	8 148 579.277	231 751.994
12	8 148 503.040	231 668.285
* SEE TABLE ON SHEET T3		

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig
1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS REVISIONS	03/10/2003
B	MOD#7-REVISE OVERFLOW STRUCTURES	
A		

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
DETENTION BASIN TO EL CAMINO ROAD)
(FLAMINGO
PLAN AND PROFILE
STA.41+00.000 TO STA.39+00.000

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:
THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJQ
DRAWN BY: SOM
CHECKED BY: GED

FILE NAME: C12MOD7.DGN
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1127 REV 'B'

SHEET
C12

VALUE ENGINEERING PAYS

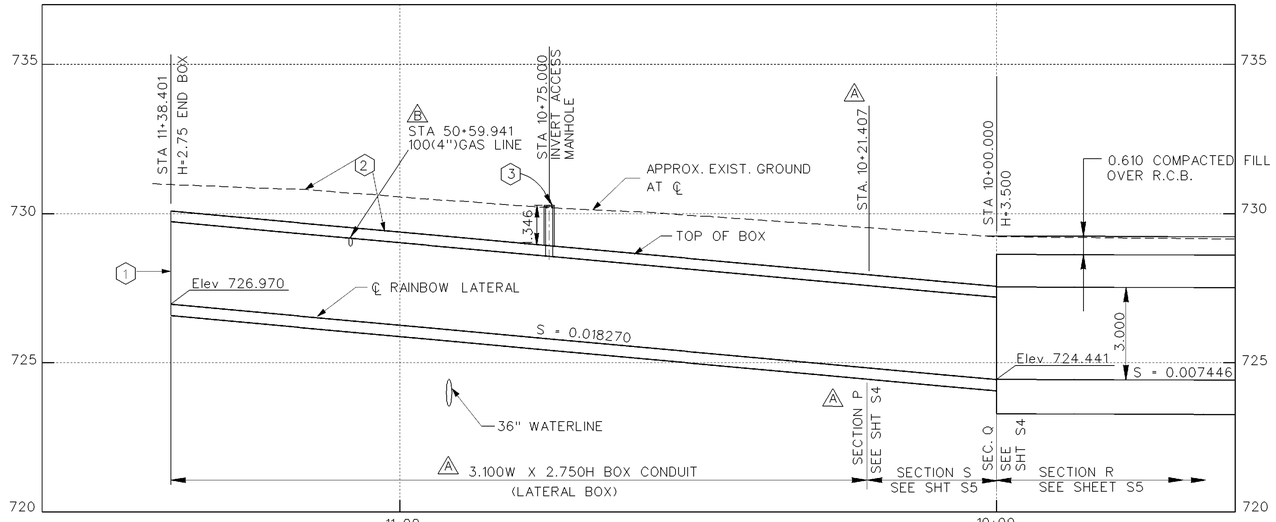
SAFETY PAYS

CONSTRUCTION NOTES:

1. STA. 11+38.403 INSTALL BULKHEAD AND BACKFILL SEE SHEET S8 FOR DETAILS
2. BACKFILL WITH COMPACTED FILL AND GRADE TO INITIAL CONDITIONS.
3. INSTALL INVERT ACCESS MANHOLE.

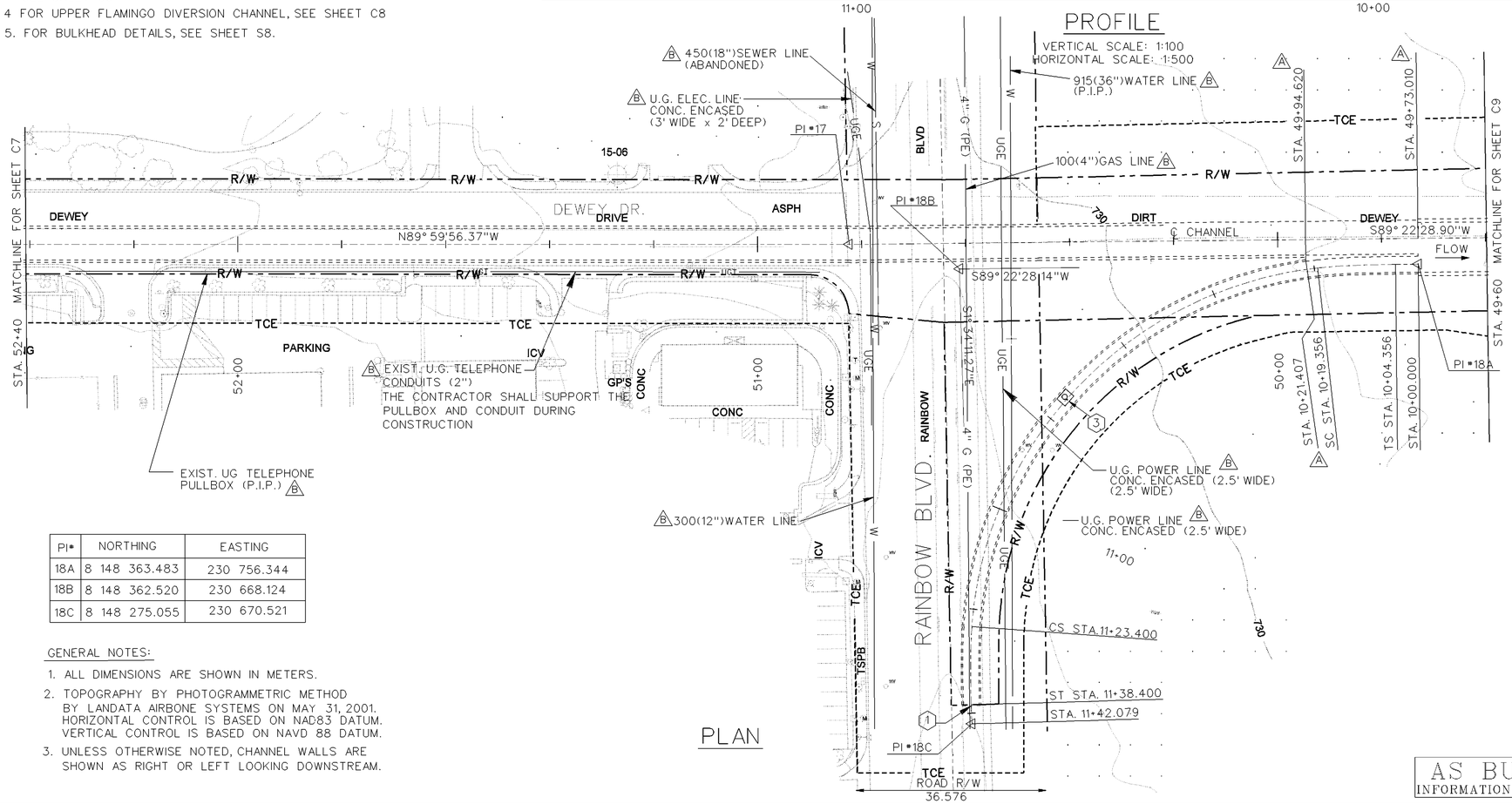
REFERENCE NOTES:

1. FOR RAINBOW CONFLUENCE CROSS SECTION, SEE SHEET S4, S5
2. FOR MANHOLE DETAIL, SEE SHEET S8
3. FOR TYP. BOX CONDUIT SECTION AT RAINBOW BLVD. SEE SHEET S3
4. FOR UPPER FLAMINGO DIVERSION CHANNEL, SEE SHEET C8
5. FOR BULKHEAD DETAILS, SEE SHEET S8.



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PI•	NORTHING	EASTING
18A	8 148 363.483	230 756.344
18B	8 148 362.520	230 668.124
18C	8 148 275.055	230 670.521

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

PLAN

SCALE: 1:500

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig
1-800-227-2600

This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS REVISIONS	
B	MOD •1-ADD UTILITIES TO MATCH C8	11/20/2002
A	REVISED STATIONS AND NOTE.	

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
RAINBOW LATERAL

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

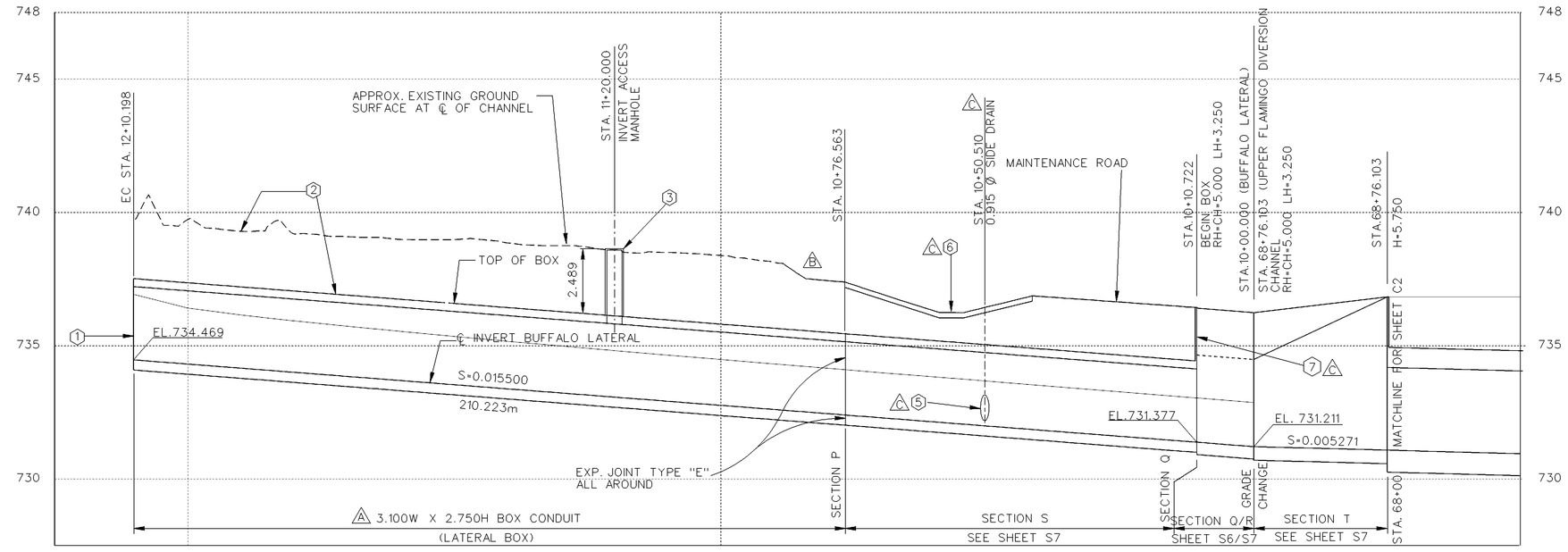
SUBMITTED BY:
THOMAS H SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJQ
DRAWN BY: AQM
CHECKED BY: GED

DISTRICT FILE NO. 196/1128 REV 'B' SPEC. NO. DACW09-02-B-0009 FILE NAME: C13MOD1.dgn

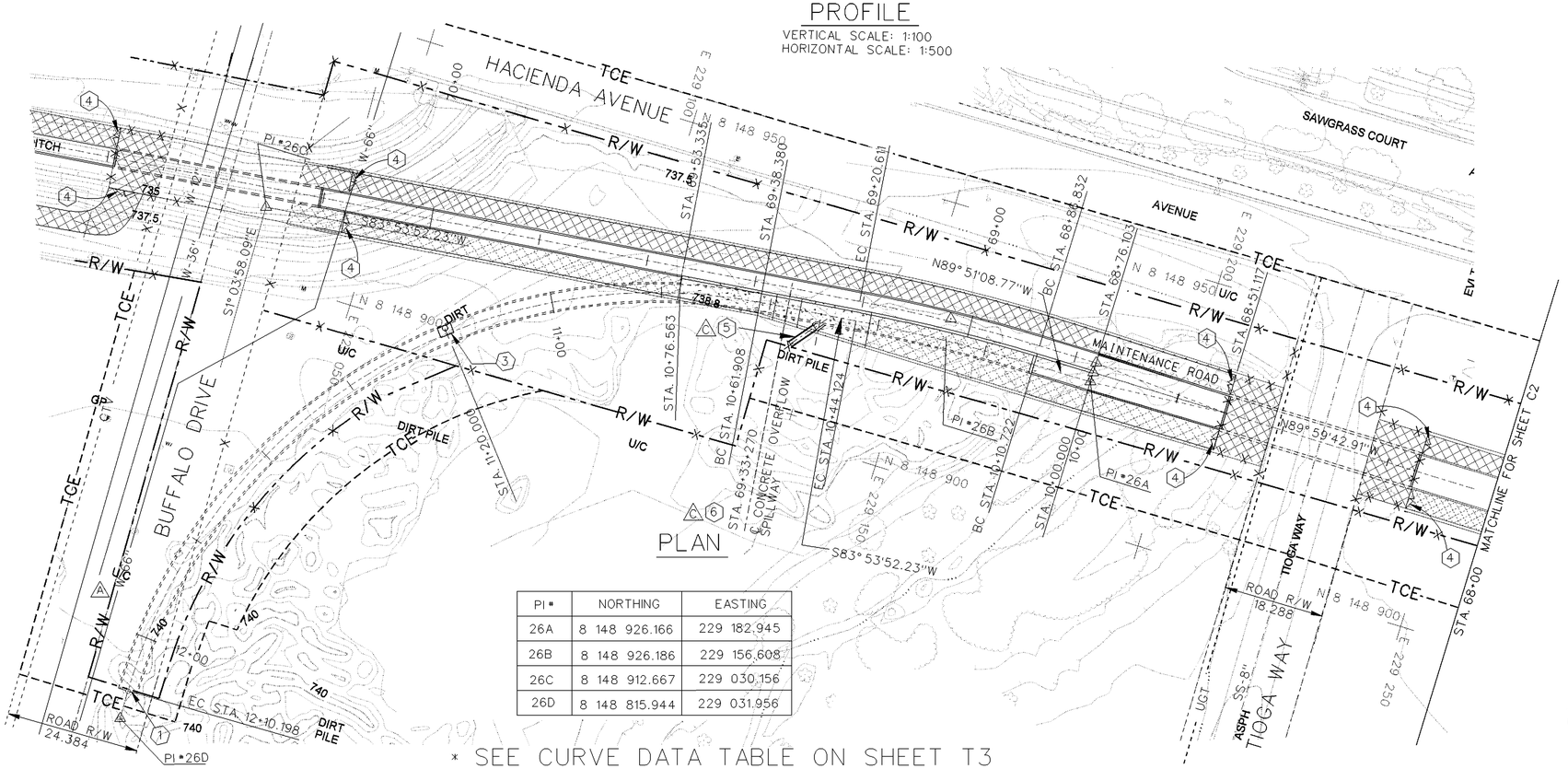
SHEET
C13

VALUE ENGINEERING PAYS



PROFILE

VERTICAL SCALE: 1:100
HORIZONTAL SCALE: 1:500



PI #	NORTHING	EASTING
26A	8 148 926.166	229 182.945
26B	8 148 926.186	229 156.608
26C	8 148 912.667	229 030.156
26D	8 148 815.944	229 031.956

PLAN

* SEE CURVE DATA TABLE ON SHEET T3

10 5 0 10 20
SCALE: 1:500

CONSTRUCTION NOTES:

1. INSTALL BULKHEAD AND BACKFILL TO EXIST GROUND SURFACE.
2. BACKFILL WITH COMPACTED FILL AND GRADE TO INITIIAL CONDITIONS. (EXCEPT IN THE AREA OF THE MAINTENANCE ROAD)
3. INSTALL INVERT ACCESS MANHOLE.
4. INSTALL 4.200 DOUBLE SWING GATE
5. INSTALL 915 RCP AND SIDE DRAIN STUB-OUT.
6. SEE SHEET C1 AND C18.2 FOR CONCRETE OVERFLOW SPILLWAY.
7. SEE SHEET S3 FOR EXTENDED HEADWALL DETAILS.

REFERENCE NOTES:

1. FOR BUFFALO CONFLUENCE STRUCTURAL DETAILS, SEE SHEETS S6 AND S7.
2. FOR BUFFALO LATERAL BOX CONDUIT SECTION, SEE SHEET S3.
3. FOR MANHOLE DETAIL, SEE SHEET S8.
4. FOR BULKHEAD DETAILS, SEE SHEET S8.
5. FOR 4.200 DOUBLE SWING GATE DETAILS, SEE SHEET M1.
6. FOR MAINTENANCE ROAD DETAILS, SEE SHEET M1
7. FOR SIDE DRAIN STUB-OUT DETAILS, SEE SHEET S13.

GENERAL NOTES:

1. ALL DIMENSIONS ARE SHOWN IN METERS.
2. TOPOGRAPHY BY PHOTOGRAMMETRIC METHOD BY LANDATA AIRBONE SYSTEMS ON MAY 31, 2001. HORIZONTAL CONTROL IS BASED ON NAD83 DATUM. VERTICAL CONTROL IS BASED ON NAVD 88 DATUM.
3. UNLESS OTHERWISE NOTED, CHANNEL WALLS ARE SHOWN AS RIGHT OR LEFT LOOKING DOWNSTREAM.

AS BUILT DRAWING
INFORMATION PROVIDED BY CONTRACTOR

Call before you Dig
1-800-227-2600
This drawing was produced in METRIC

SYMBOL	DESCRIPTIONS REVISIONS	
C	MOD#9-ADD NEW SIDE DRAIN & SPILLWAY	5/15/2003
B	REVISED GROUND LINE IN PROFILE	
A	ADDED NOTE & EXTENDED WATERL LINE.	

LAS VEGAS WASH AND TRIBUTARIES
(TROPICANA AND FLAMINGO WASHES), NEVADA
UPPER FLAMINGO DIVERSION CHANNEL
(FLAMINGO DETENTION BASIN TO EL CAMINO ROAD)
PLAN AND PROFILE
BUFFALO LATERAL

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: THOMAS H. SAGE, PE
CHIEF, DESIGN BRANCH

DESIGNED BY: AJO
DRAWN BY: AQM
CHECKED BY: GED

FILE NAME: C14M009.dgn
SPEC. NO. DACW09-02-B-0009
DISTRICT FILE NO. 196/1129 REV 'C'

SHEET C14

SAFETY PAYS

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

REPLY TO
ATTENTION OF

June 15, 2005

Office of the Chief
Hydrology & Hydraulics Branch

Mr. Gale Wm. Fraser II, P.E.
General Manager
Clark County Regional Flood Control District
600 Grand Central Parkway, Suite 300
Las Vegas, Nevada 89106-4511

Dear Mr. Fraser:

This certification letter is to assist you in acquiring a "Letter of Map Revision" (LOMR) for the Upper Flamingo Diversion Channel element of the Tropicana and Flamingo Washes flood control project.

Federal law allows a Federal agency with responsibility for flood control, such as the U.S. Army Corps of Engineers, to certify to the Federal Emergency Management Agency (FEMA), that a particular project has been adequately designed and constructed to provide protection from the base flood (100-year flood or a flood event with a one percent chance of being equaled or exceeded in any given year). This law is contained in the Code of Federal Regulations, Title 44– Federal Emergency Management Agency; Subchapter B – Insurance and Hazard Mitigation, National Flood Insurance Program; Part 65 – Identification and Mapping, Section 65.10(e) – Certification Requirements.

It is our understanding that the "residual" floodplain (defined as the local floodplain left after completion of this project feature) will be addressed by Clark County in their LOMR submittal to FEMA. Under this authority and with this understanding, I hereby certify that the Upper Flamingo Diversion Channel was designed and constructed to convey the base flood from the downstream limit Station 39+00 upstream to the Upper Flamingo Detention Basin. The Upper Flamingo Diversion Channel will be operated and maintained by the local sponsor in accordance with an operations & maintenance manual, which will be prepared in the near future.

Copies of this letter are being furnished to Messrs. Les Sakumoto and Gregor Blackburn, Region IX FEMA, 1111 Broadway, Suite 1200, Oakland, California 94607. Questions may be directed to Mr. Kevin Inada of my staff at (213) 452-3694.

Sincerely,

James A. DeLapp
Major, US Army
Acting Deputy District Engineer

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

REPLY TO
ATTENTION OF

February 3, 2006

Hydrology & Hydraulics Branch

Mr. Gale Wm. Fraser, II, P.E.
General Manager
Clark County Regional Flood Control District
600 Grand Central Parkway, Suite 300
Las Vegas, Nevada 89106-4511

Dear Mr. Fraser:

This certification letter is to assist you in acquiring a "Letter of Map Revision" (LOMR) for the Upper Flamingo Detention Basin (UFDB) element of the Tropicana and Flamingo Washes flood control project.

Federal law allows a Federal agency with responsibility for flood control, such as the U.S. Army Corps of Engineers, to certify to the Federal Emergency Management Agency (FEMA), that a particular project has been adequately designed and constructed to provide protection from the base flood (100-year flood or a flood event with a one percent chance of being equaled or exceeded in any given year). This law is contained in the Code of Federal Regulations, Title 44– FEMA; Subchapter B – Insurance and Hazard Mitigation, National Flood Insurance Program; Part 65 – Identification and Mapping, Section 65.10(e) – Certification Requirements.

It is our understanding that the "residual" floodplain (defined as the local flood plain left after completion of this project feature) will be addressed by Clark County in their LOMR submittal to FEMA. Under this authority and with this understanding, I hereby certify that the UFDB was designed and in its current constructed storage condition will store the inflowing base flood and release the base flood at a reduced discharge well within the capacity of the existing downstream channel in the reach from the UFDB downstream to Buffalo Road. The constructed Corps of Engineers channel downstream from Buffalo Road was previously certified. The UFDB will be operated and maintained by the local sponsor in accordance with an operations and maintenance manual, which will be prepared in the near future.

Copies of this letter are being furnished to Messrs. Les Sakumoto and Gregor Blackburn, Region IX FEMA, 1111 Broadway, Suite 1200, Oakland, California 94607. Questions may be directed to Mr. Kevin Inada of my staff at (213) 452-3694.

Sincerely,

Alex C. Dornstauder
Colonel, US Army
District Engineer

BENCHMARK

CLARK COUNTY BENCHMARK NO. 60
S TATION 8C10 27W4

BEING A RIVET AND SQUARE ALUMINUM PLATE IN TOP OF CURB, NORTH SIDE OF HACIENDA AVE. 180 FEET EAST OF THE PROJECTION OF BUFFALO DRIVE.

ELEVATION: 736.654 METERS CLAR COUNTY VERTICAL CONTROL v.2003
NORTH AMERICAN VERTICAL DATUM OF 1988

ELEVATION: 2416.84 U.S. SURVVEY FEET (COMPUTED)

BASIS OF BEARING

SOUTH 18° 03' 39" EAST BEING THE LINE BETWEEN CLARK COUNTY GEODETIC CONTROL POINTS 838 AND 943 AS DESCRIBED IN A RECORD OF SURVEY ON FILE WITH THE CLARK COUNTY RECORDER IN FILE 88, PAGE 53, OF SURVEYS.

THE *Louis Berger Group,* INC.

APPENDIX G

**Reference Material for Buffalo Drive Channel,
from Tropicana Avenue to about 2000 feet upstream**

BUFFALO DRIVE

(TROPICANA AVE. TO STA. 43+69.00)

PARDEE CONSTRUCTION COMPANY

G. G. WALLACE, INC.

Engineering / Architecture

las vegas, nevada

23-0070

sht. 1 of 7

5524.2009A

R.L.B. - BUFFALO DRIVE

GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION, EXTENT OF TRANSITIONS TO BE DETERMINED BY THE COUNTY ENGINEER.

2. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. (CALL BEFORE YOU DIG 800-227-2600).

3. CONSTRUCTION TO BE PER UNIFORM STANDARD SPECIFICATIONS AND DRAWINGS; CLARK COUNTY, NEVADA.

4. CONSTRUCTION SURVEY:

   GRADES ARE GIVEN FROM TOP OF STAKES OR NAILS. THE CONTRACTORS ARE CAUTIONED TO OBSERVE THE FOLLOWING RULE IN USING THE GRADE STAKES GIVEN BY THIS OFFICE. THREE CONSECUTIVE POINTS THAT ARE SHOWN TO BE ON THE SAME RATE OF SLOPE MUST BE USED IN COMMON IN ORDER THAT ANY VARIATION OUT OF A PERFECT STRAIGHT GRADE MAY BE DETECTED, AND IN CASE ANY SUCH DISCREPANCY IS FOUND, THE SAME MUST BE REPORTED OTHERWISE THIS OFFICE WILL NOT BE RESPONSIBLE FOR ANY ERROR IN THE GRADE OF THE FINISH WORK.

5. WHEEL CHAIR RAMPS SHALL BE CONSTRUCTED AT ALL STREET INTERSECTIONS PER CLARK COUNTY STANDARD DRAWING 118. EXACT LOCATION OF RAMP TO BE DETERMINED IN FIELD BY A CLARK COUNTY INSPECTOR.

6. ALL OFF-SITE IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS AND IMPROVEMENT DRAWINGS, LATEST REVISION.

7. CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.

8. EXACT LOCATION OF ALL SAWCUTS TO BE DETERMINED BY CLARK COUNTY INSPECTOR IN THE FIELD.

9. ALL WORK WITHIN THE RIGHT-OF-WAY OUTSIDE THE PROJECT BOUNDARIES REQUIRES A SEPARATE ENCROACHMENT PERMIT ISSUED BY CLARK COUNTY DEPARTMENT OF PUBLIC WORKS. TRENCH AND PAVEMENT REPLACEMENT CONDITIONS WILL BE AS PER PERMIT.

10. VALLEY GUTTERS WITH A GRADE OF 0.40% ONE PERCENT OR LESS SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE PROPER DRAINAGE ACROSS ALL VALLEY GUTTERS.

11. FINAL ASPHALTIC CONCRETE (AC) PAVEMENT SURFACES SHALL BE ONE-HALF INCH ABOVE THE LIP OF THE GUTTER (INCLUDING OPEN GRADE).

SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS OF THE CLARK COUNTY SANITATION DISTRICT, AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, LATEST EDITION IN ALL CASES, THE DISTRICT'S CRITERIA SHALL SUPERSEDE THE UNIFORM STANDARD SPECIFICATIONS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATION BOOKS.
2. CLARK COUNTY SANITATION DISTRICT'S STANDARD DRAWINGS SHALL APPLY TO ALL CONSTRUCTION.
3. SEWER MAINS ONLY TO BE LAID IN SEWER TRENCHES.
4. ALL 4" HOUSE LATERALS TO BE LAID AT NOT LESS THAN MINIMUM SLOPES AS SHOWN IN THE DISTRICT'S STANDARDS.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CLARK COUNTY SANITATION DISTRICT.
6. SOIL TESTING SHALL BE IN ACCORDANCE WITH ITEM 25 OF THE CONSTRUCTION STANDARDS OF THE DISTRICT'S DESIGN AND CONSTRUCTION STANDARDS.
7. ALL EXFILTRATION, INFILTRATION, AND AIR TESTING OF LINES SHALL BE IN ACCORDANCE WITH THE DISTRICT'S DESIGN AND CONSTRUCTION STANDARDS.
8. CUT SHEETS MUST BE SUBMITTED TO THE DISTRICT BEFORE CONSTRUCTION WILL BE PERMITTED TO START.
9. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE DISTRICT MUST BE CLASS "A" CONTRACTORS.
10. ALL LATERAL CONNECTIONS AT THE PROPERTY OR EASEMENT LINE REQUIRE AN INSPECTION BY THE DISTRICT.

WATER NOTES

1. ALL WORK TO CONFORM TO LAS VEGAS VALLEY WATER DISTRICT STANDARD PLATES.
2. ALL WORK, EXCEPT AS MODIFIES HEREON OR BY NOTE NO. 1, SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT DRAFT OR EDITION OF "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF OFFSITE IMPROVEMENTS", CLARK COUNTY AREA.
3. NOTICE TO BE GIVEN ENGINEERING DEPARTMENT OF THE LAS VEGAS VALLEY WATER DISTRICT 48 HOURS PRIOR TO ACTUAL CONSTRUCTION.
4. SERVICE SADDLES OR TAPPED COLLARS WILL BE REQUIRED ON ALL 3/4" AND 1" SERVICE LATERALS. SERVICE SADDLES ONLY WILL BE PERMITTED ON 1-1/2" AND 2" SERVICE LATERALS.
5. ALL LINES TO BE PRESSURE TESTED TO 200 PSI.
6. DEFLECTION ANGLE SHALL NOT EXCEED 2-1/2 DEGREES PER 13 FOOT SECTION OF PIPE FOR PIPE SIZES SMALLER THAN 14 INCHES AND SHALL NOT EXCEED 2 DEGREES FOR PIPE SIZES BETWEEN 14 INCHES AND 16 INCHES.
7. ALL METERS SHALL BE LOCATED OUTSIDE OF DRIVEWAYS.
8. DETECTOR TAPE REQUIRED IN ACCORDANCE WITH STANDARD PLATE NO. 27 WHERE INDICATED AND AS FOLLOWS:
   (A) OVER ALL MAINS NOT INSTALLED AT 6 FEET FROM BACK OF CURB.
   (B) OVER ALL SERVICE LATERALS NOT INSTALLED AT RIGHT ANGLES TO MAINS.
9. FOR CURVED LINES WITH RADIUS BETWEEN 155' AND 300', 6' - 6" LENGTHS OF PIPE MUST BE USED. FOR CURVED LINES OF LESS THAN 155', 3' - 3" LENGTHS OF FITTINGS MUST BE USED.

Traffic Management Division
Clark County Public Works
APPROVED
By: Richard J Ramos 1/2/90
Traffic Manager Date
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF ANY VIOLATION OF STATE OR COUNTY LAW S/OR REGULATIONS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

TRAFFIC NOTES

1. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMANTS INTO EXISTING COUNTY STREETS IMMEADATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
2. ALL CONSTRUCTION SIGNING, BARRICADING AND TRAFFIC DELINEATION SHALL CONFORM TO THE "NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK 1985" AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" LATEST EDITION. (REVISION #4, MARCH 1986)
3. THE DEVELOPER SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL PERMANENT SIGNS SHOWN ON THE PLANS. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CLARK COUNTY STANDARDS. ALL OTHER SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES--1978 REVISION #4, MARCH 1986" AND SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH CLARK COUNTY STANDARDS.
4. IF A PROPOSED STREET LIGHT STANDARD IS FIELD LOCATED TO WITHIN FIVE (5) FEET OF ANY SIGN SHOWN HEREON TO BE MOUNTED ON A SIGN POST, THEN CHANGE SIGN MOUNTING TO ONE ON THE STREET LIGHT STANDARD.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE COUNTY TRAFFIC ENGINEER.
6. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.

FIRE DEPARTMENT NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH CLARK COUNTY STANDARD SPECIFICATIONS AND DRAWINGS, CLARK COUNTY FIRE DEPARTMENT "HYDRANT SPECIFICATIONS," HYDRANT INSTALLATION SPECIFICATIONS" AND WATER RESOLUTION REQUIREMENTS.
2. ON ANY NEW HOME OR BUILDING CONSTRUCTION ACCESSIBLE FIRE HYDRANTS SHALL BE INSTALLED BEFORE ACTUAL CONSTRUCTION COMMENCES AND SAID FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH ADEQUATE WATER SUPPLY.
3. PAINTING OF CURBS AND/OR STRIPING OF ASPHALT AREAS AND PROTECTION OF HYDRANTS FROM PHYSICAL INJURY . . . PER CLARK COUNTY FIRE DEPARMENT "HYDRANT INSTALLATION SPECIFICATIONS" SHALL BE COMPLETED BEFORE APPROVAL OF HYDRANTS BY THE CLARK COUNTY FIRE DEPARTMENT CAN BE OBTAINED.
4. NO FIRE HYDRANT SHALL BE LOCATED WITHIN FIFTEEN FEET OF A DRIVEWAY, SIX FEET OF A POWER POLE, LIGHT STANDARD OR OTHER OBSTRUCTION. FOR WALL, FENCE AND PLANTER LOCATIONS, DRAWING 44.0 "B" SHALL BE USED.

STREET LIGHTING NOTES

ALL STREET LIGHTING INSTALLATIONS, EXCEPT AS NOTED ON THE STREET LIGHTING PLANS SHALL CONFORM TO THE STANDARD DETAILS FOR STREET LIGHTING AND TRAFFIC SIGNALS DRAWINGS L-779 (INCLUDING STREET LIGHTING NOTES) LATEST EDITION.
THESE INSTALLATIONS SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF OFFSITE IMPROVEMENTS, CLARK COUNTY, NEVADA AREA AND THE UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA, WHERE APPLICABLE.

SPECIAL NOTES

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CLARK COUNTY DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

APPROVALS

This approval is only for the placement and clearance of street light and signal light installations.

Dec. 14, 1989 (DATE)
by
NEVADA POWER COMPANY

COUNTY OF CLARK
FIRE DEPARTMENT
APPROVED
By Jim Fitzgerald 12-15-89 Date
Approval of these plans 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. NO FIRE HYD.

COUNTY OF CLARK
DEPARTMENT OF PUBLIC WORKS
PROPERTY DEVELOPMENT SECTION
UTILITIES ENCROACHMENT REVIEW
ACCEPTED FOR FILING
BY Harry Bowlin 12/21/89
RIGHT-OF-WAY USE PERMITS & UTILITIES COORDINATOR
ACCEPTANCE OF THESE PLANS 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.

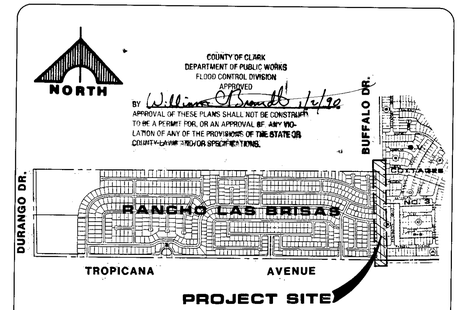
Ryc Pro Short 4 & C 11-20-89
LAS VEGAS VALLEY WATER DISTRICT DATE

Richard J Ramos 1/17/90
CLARK COUNTY TRAFFIC MANAGEMENT DIVISION DATE

Kent D. Faulkner 12/15/89
CLARK COUNTY SANITATION DISTRICT DATE

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 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 will be relocated at no expense to Clark County.



VICINITY MAP

INDEX OF DRAWINGS

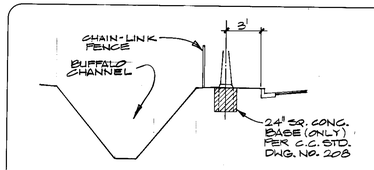
NO.	TITLE
1.	COVER SHEET
2.	GENERAL NOTES & MISC.
3.	QUANTITIES
4.	PLAN & PROFILE (STA. 37+85.03 - STA. 51+00)
5.	PLAN & PROFILE (STA. 51+00 - STA. 63+69)
6.	BOX CULVERT DETAILS
7.	SPECIAL DETAILS
7A.	UNDERGROUND POWER DETAIL

BASIS OF BEARING

NORTH 00° 25' 52" EAST BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 21 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN BY PLAT ON FILE IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE ON PAGE OF BOOK 34 OF PLATS.

BENCHMARK

NAIL IN EAST SIDE OF P.P. #24236-T 225' SOUTH AND 49.5' WEST OF 1/4 COR. 21-22
(BUFFALO & HARMON INT.)
ELEVATION = 2437.94 S.V. DATUM



STREET LIGHT LOCATION PLAN

LEGEND

- FIRE HYDRANT W/6" G.V.
- W — WATER LINE
- S — SEWER LINE
- SEWER LATERAL
- GV — GATE VALVE
- REDUCER
- MH — SEWER MANHOLE
- 1 1/4" PVC CONDUIT (ST. LT.)
- 250W HPS LUMINAIRE W/ 11 GA. POLE
- 100W HPS LUMINAIRE W/ 11 GA. POLE
- PB — NO. 3 1/2 CONCRETE PULL BOX W/ METAL COVER
- CONCRETE DRIVEWAY

Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE (USA)

RELEASED FOR ☐ BID ☐ CONSTRUCTION
_____ DATE: _____
PARDEE CONSTRUCTION COMPANY

RECOMMENDED Jeffrey J. Freiberg JEFFREY J. FREIBERG
8443 R.E. NO. 12/13/89 DATE
REV DATE DESCRIPTION
△ 6/5/90 ADDED SHT. 7A TO INDEX

G.C. WALLACE, INC. Engineering/Architecture 1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89102

PARDEE CONSTRUCTION COMPANY
RANCHO LAS BRISAS
GENERAL NOTES & MISC.

SHEET 2 OF 7 SHEETS

JOB NO. 5524.2009A

23-5070

PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

2430 / 2435 / 2425 / 2420 / 2415

30.81 FG
51+00.00 30.61 TC
21.81 FL

R= -0.40%
℄ PROFILE
EXIST. GRADE @ WEST R/W
WEST TC PROFILE
BUFFALO CHANNEL PROFILE (℄ FLOW LINE)
FOR BOX CULVERT DETAILS SEE SHEET 6. (EXISTING)
47.84' = L.O.C.
59+08.77 BCR 27.37 TC
5+54.80 BCR 27.11 TC
59+08.77 BEGIN TRANS. 27.57 FG
59+43.05 E.B. 27.57 FG
59+85.05 TROPICANA AVENUE 28.44 FG
℄ STA. 59+72.15 (8.25)FL
59+00.00 (11.36) FL
R=-1.00%
FLOW LINE OF (½) 12" PVC

(29.25) TMHT
(21.40) INV.
(18.38) INV. 8" PVC PIPE
(17.88) INV. 12" PVC PIPE
(17.88) INV. 12" PVC PIPE OUT
ALT. 'A' - 260.00 LF 12" PVC PUBLIC SEWER @1.41%
ALT. 'B' - 260.00 LF 8" PVC PUBLIC SEWER @1.245%
53+90.00 REMOVE EXIST. CONN. TO EXIST.
53+66.00 EX. MH NO. 6 PER RLB R-2 NO. 3
53+79.09 (1350 D) 30" RCP

51 / 52 / 53 / 54 / 55+00 / 56 / 57 / 58 / 59 / 60+00

NOTE: Power poles and/or other existing facilities not in proper location based on proposed improvements shown hereon will be re-located at no expense to Clark County.

Clark County
Department of Public Works
Engineering Division
Acceptance of plans for filing
By Robert Thompson 1/7/96
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 the improvements from the engineering design depicted herein.
10/14/91
10/31/94
12/13/95
10/31/96

COUNTY OF CLARK
DEPARTMENT OF PUBLIC WORKS
FLOOD CONTROL DIVISION
APPROVED
BY William C. Strawn 11/4/96
APPROVAL OF THESE PLANS 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

SECTION

SAWCUT & MATCH EXIST. PAVE. @ ℄
R/W — VARIES — R/W
19' 23' VARIES 30' (SEE PLAN)
CHAIN-LINK FENCE
BUFFALO CHANNEL
EXIST. PAVE.
3" A.C. W/ 4" TYPE 2
8" A.C. W/ 4" TYPE 2
EXIST. CONCRETE

NOTES:
1. STRUCTURAL SECTION OF STREET TO CONFORM TO UNIFORM STANDARD DRAWING 101
2. OWNER AGREES THAT IF EXISTING NATIVE MATERIAL DOES NOT CONFORM TO SPECIFICATIONS FOR TYPE 1 BASE, OWNER WILL IMPORT TYPE 1 BASE FOR A.C. PAVEMENT

EXISTING SPRING VALLEY COTTAGES UNIT NO. 3-B

WEAKENED PLANE JOINTS AT 25' STATIONS (TYP.) LENGTH OF CHANNEL.
52+15.05 EXIST. ST. LT.
53+67.00 BEGIN TRANSITION CHANNEL & STREET
54+55.05 EXIST. ST. LT.
56+12.00 END TRANSITION CHANNEL & STREET
56+95.05 EXIST. ST. LT.
05+80.00 EXIST. ST. LT.
NOTE: MOUNT R8-3a & R7-1ap ON STREET LIGHT POLES.
R8-3a
R7-1ap
(TYP. BOTH SIDES)
2" EXIST. OVERPAVE
2" WIDE WHITE PAINT STRIPE @12 O.C. (TYP.)
SAWCUT @ ℄ & MATCH EXIST. PAVEMENT
EXIST. MH's
N. 00°25'52" E.
0.40%
EXIST. 30" WATER
EXIST. 10" GAS
SEE DETAIL "A" SHT. 2 FOR ST. LT. LOCATION.
SEE DETAIL "A" SHT. 2 FOR ST. J.T. LOCATION
RELOCATE EXIST. W3-1a
REMOVE EXIST. GRAVEL ROAD
REMOVE EXIST. GUARD RAIL
LANE LINE PER C.C. STD. DWG. NO. 131
STORAGE LANE LINE PER C.C. STD. DWG. NO. 131
REMOVE EXIST. RCP
INSTALL 30" (R1-1) STOP SIGN
1 1/2" PVC COND.
TYPE 1 CENTER LINE PER C.C. STD. DWG. 129
SAWCUT @ ℄ AND MATCH EXIST. PAVEMENT.
FOR BOX CULVERT DESIGN SEE SHEET 6.
SECTION LINE
1 1/4" PVC
EX. MH NO. 6 PER RLB R-2 NO. 3
30" RCP
NO. 3 1/2 PB
EXIST. NOT PB
EXIST. P.P.
52+18.08 ST. LT.
54+55.05 ST. LT.
56+95.05 ST. LT.
59+85.05
5+00.22= 5+00.00
5+54.80 BCR
5+08.77 BCR
N 88°-30'-31"E
N 88°-12'-31"W
230'
84.92'
42'
ALT. 'A' - 12" PIPE
ALT. 'B' - 8" PIPE
51+00.00 MATCH LINE SEE SHEET 5
30.6 30.2 30.0 30.0 30.7 30.7 30.7 30.7 30.9 31.1 31.4 31.6
6' HIGH CHAIN-LINK FENCE ALONG TOP OF CHANNEL 4.5' WEST OF BACK OF CURB
REMOVE EXIST. DROP INLET & 30" RCP
SEE DETAIL 4/7
BONAVENTURE DR.
BUFFALO DRIVE
CUT-OFF WALL AT 100' STATIONS (TYP.) LENGTH OF CHANNEL
SEE SHEET 6 FOR GREATER DETAIL OF THIS AREA
COMMON LOT
EXIST. 21" SEWER
18" STORM DRAIN (SEE TROPICANA AVE.)
EXIST. 16" WATER
TROPICANA AVENUE (SEE PLANS BY THIS FIRM)

BCR CURVE DATA

NO.	Δ	R	L	T
1.	90°-21'-37"	30.00'	47.84'	30.72'

NOTE: FOR SIGNAL UNDERGROUNDS SEE TROPICANA AVE.

NORTH
SCALE: 1" = 30'

RELEASED FOR ☐ BID ☐ CONSTRUCTION
DATE:
PARDEE CONSTRUCTION COMPANY

REV	DATE	DESCRIPTION
12	10/95	ADD LOOP DETECTOR CONDUIT
11	10/95	ADD WALL BACK-OUT ℄
10	2/11/94	DRAIN PAN
9	1/94	REV. ENTIRE CHANNEL
8	8/94	ADD LOT & REMOVE STREET CHANGE PAD ELEVS.
7	03/96	REV. ST. NAME-SAN RAMON DR. TO BONAVENTURE DR.

RECOMMENDED FOR APPROVAL
CHIEF, FLOOD CONTROL DIVISION
DEPARTMENT OF PUBLIC WORKS
8443 12/18/91
R.E. NO. DATE
JEFFREY L. FRIEDRICH
No. 8443
STATE OF NEVADA

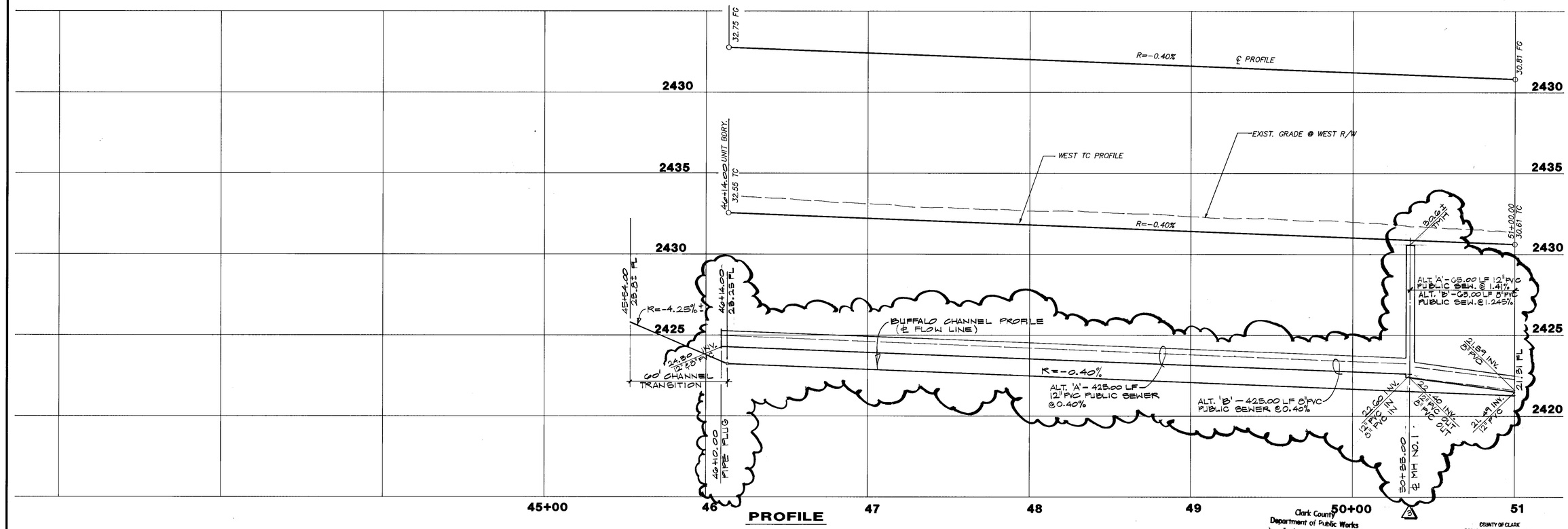
G.C. WALLACE, INC.
Engineering/Architecture
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89102

PARDEE CONSTRUCTION COMPANY
RANCHO LAS BRISAS
BUFFALO DRIVE

SHEET 4 OF 7 SHEETS

JOB NO. 5524.2009A

23 00 20



PROFILE

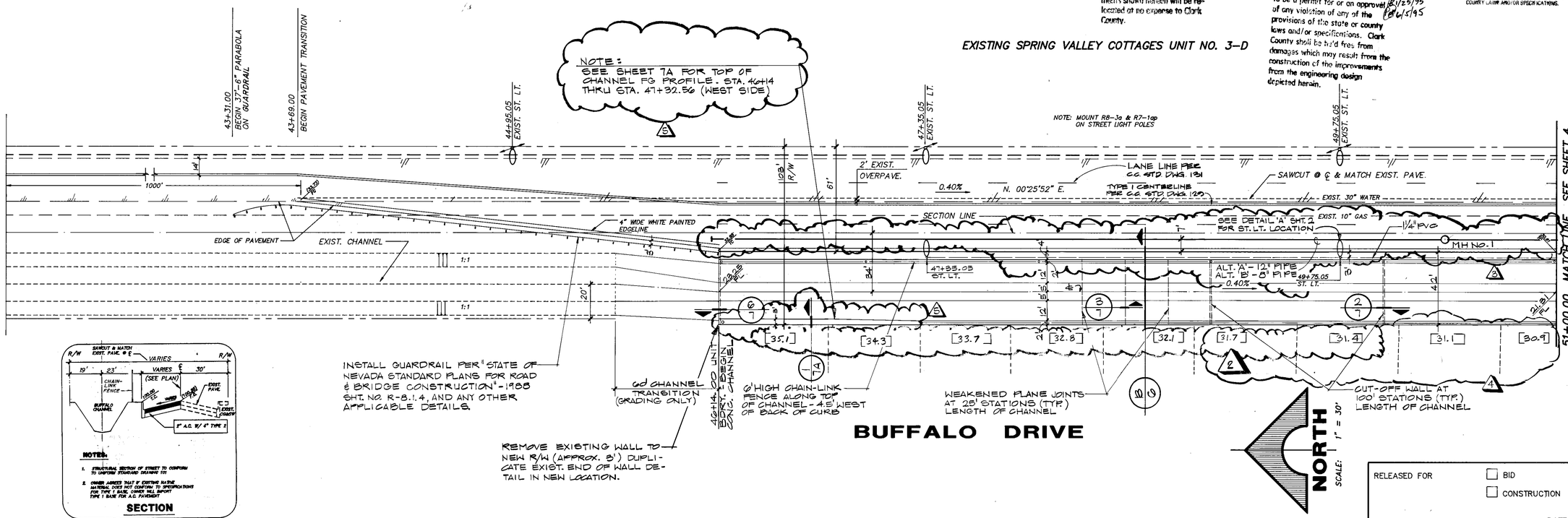
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

Clark County
Department of Public Works
Engineering Division
Acceptance of plans for filing
By _____ 1/17/90
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 the improvements from the engineering design depicted herein. 12/16/91 12/9/91 12/5/95 12/6/95

COUNTY OF CLARK
DEPARTMENT OF PUBLIC WORKS
FLOOD CONTROL DIVISION
APPROVED
BY William Ahrenth 1/4/90
APPROVAL OF THESE PLANS 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.

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.

EXISTING SPRING VALLEY COTTAGES UNIT NO. 3-D



SECTION

BUFFALO DRIVE

NORTH
SCALE: 1" = 30'

RELEASED FOR ☐ BID ☐ CONSTRUCTION
DATE: _____
PARDEE CONSTRUCTION COMPANY

REV.	DATE	DESCRIPTION
1	1/6/91	REV. ENTIRE CHANNEL
2	8/6/91	REV. FUTURE T/C ELEVS.
3	11/6/95	ADD. SEWER LINE
4	6/23/95	REV. FUT. PAD LOTLINES & ELEV.
5	6/29/95	Rev. Nest Top of Channel Elev.

RECOMMENDED
Jeffrey J. Freiberg
JEFFREY J. FREIBERG
R.E. NO. 8443
12/19/89
DATE

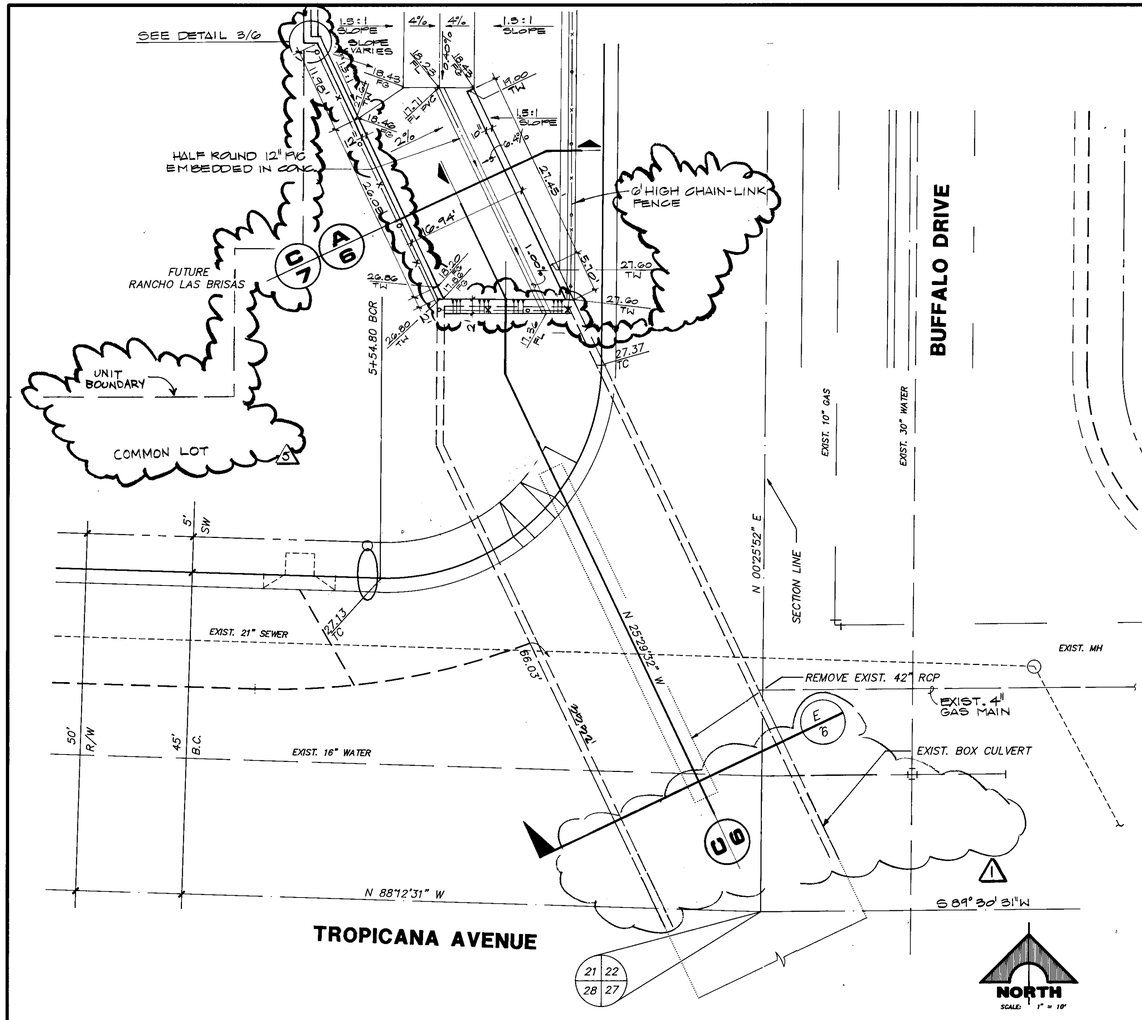
G.C. WALLACE, INC.
Engineering/Architecture
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89102

PARDEE CONSTRUCTION COMPANY
RANCHO LAS BRISAS
BUFFALO DRIVE

SHEET 5 OF 7 SHEETS

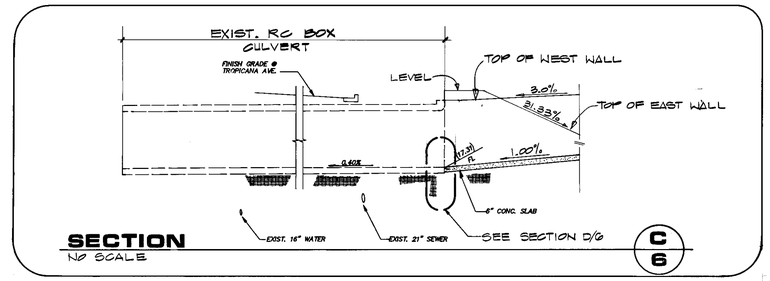
JOB NO. 5524.2009A

93-0070

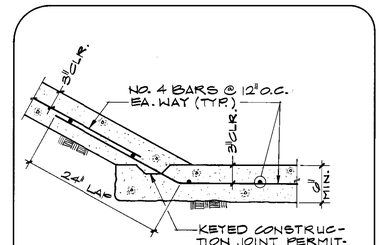


R.C.B. CULVERT GENERAL NOTES:

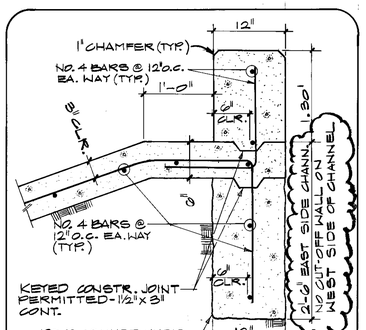
1. DESIGN SPECIFICATIONS: AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1977" AND INTERIM SPECIFICATIONS THROUGH 1980 EXCEPT AS NOTED. FOR STATE OF NEVADA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS, LATEST.
2. ALTERNATE PRECAST R.C.B. CULVERT DESIGNED IN ACCORDANCE WITH ASTM C789 IS ACCEPTABLE.
3. CONSTRUCTION SPECIFICATIONS: STATE OF NEVADA DEPARTMENT OF HIGHWAYS "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST EDITION.
4. LOADING: LIVE LOAD: HS20-44
   DEAD LOAD: EQUIVALENT FLUID PRESSURE FOR
   1) 140 PCF VERTICAL & 42 PCF HORIZONTAL
   2) 140 PCF VERTICAL & 140 PCF HORIZONTAL
   LOAD FACTORS: 1.50 + 1.5E + 2.5(L+I)
5. FOUNDATION PRESSURE: 1400 PSF
6. UNIT STRESSES:
   MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c) = 3250 PSI
   MAXIMUM ALLOWABLE SHEAR (Vc) = 1.5 √f'c PSI
   REINFORCING STEEL: ASTM A615 GRADE 60
7. REINFORCEMENT CLEARANCES:
   2-1/2 INCH ON BOTTOM OF BOTTOM SLAB
   2 INCH ELSEWHERE



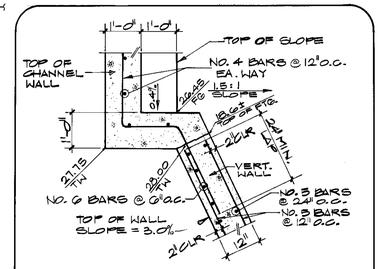
SECTION C/6
NO SCALE



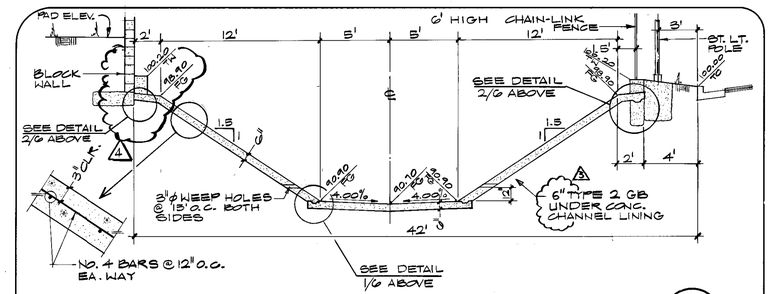
DETAIL 1/6
SCALE: 1" = 1'-0"



DETAIL 2/6
SCALE: 1" = 1'-0"

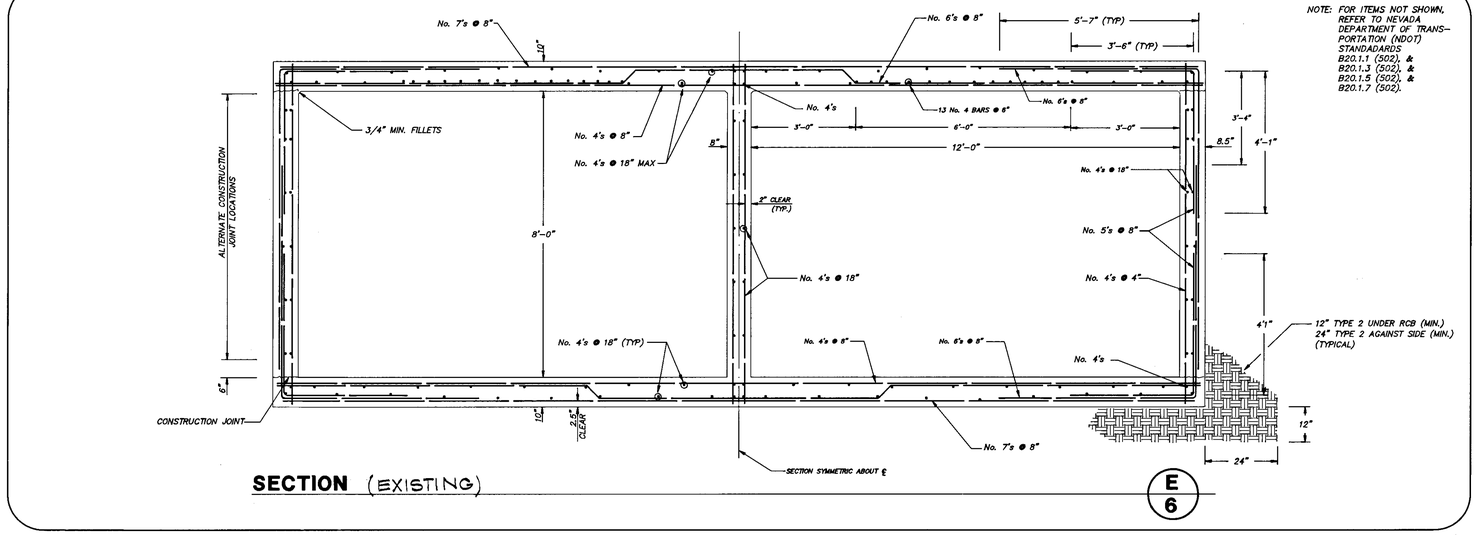


DETAIL 3/6
SCALE: ½" = 1'-0"



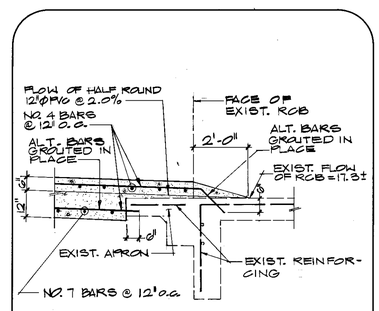
SECTION
SCALE: 1" = 5'

B/6



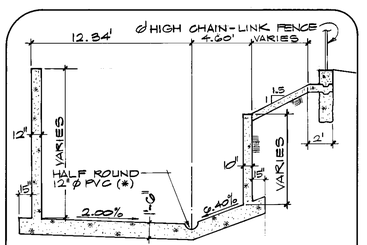
NOTE: FOR ITEMS NOT SHOWN, REFER TO NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) STANDARDS B20.1.1 (502), & B20.1.3 (502), & B20.1.5 (502), & B20.1.7 (502).

SECTION (EXISTING) E/6



SECTION
SCALE: 3/8" = 1'-0"

D/6



NOTE: SEE SECTION C/7 FOR MORE DETAILED INFORMATION OF THIS SECTION.
* CONTRACTOR HAS THE OPTION TO FORM 12"Φ HALF ROUND SHAPE IN LIEU OF PVC PIPE.

SECTION
NO SCALE

A/6

REV	DATE	DESCRIPTION
1	5/9/96	ADD EXIST. MASONRY WALLS & CHAIN LINK FENCE
2	10/6/11	REV. ALL SECTIONS & DETAILS
3	10/31/12	REV. C.B. FROM 12" TO 6"
4	4/25/13	REV. SECT. B/6 & 2/6
5	12/2/13	ADD CHAIN LINK FENCE & REMOVE CONCRETE BARRIER

RECOMMENDED Jeffrey J. Freiberg 12/18/96
JEFFREY J. FREIBERG — R.E. NO. 8443 — DATE

G.C. WALLACE, INC.
Engineering/Architecture
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89102

PARDEE CONSTRUCTION COMPANY
RANCHO LAS BRISAS-BUFFALO DRIVE
BOX CULVERT DETAILS

RELEASED FOR ☐ BID ☐ CONSTRUCTION
DATE:
PARDEE CONSTRUCTION COMPANY

SHEET 6 OF 7 SHEETS

JOB NO. 5524.2009A

23-0070

Orthometric Height Conversion

Orthometric height conversion is performed by calculating the datum shift based from modeled values.
The resulting datum shift is displayed.
The converted orthometric height is displayed only if the height to be converted from was not left blank.
******* See input format details below *******

ENTER North Latitude :..... 36 05 59.64

ENTER West Longitude :..... 115 15 40.58

ENTER Orthometric Height : 2423.25 ft **-- Entry is Optional; Default units (meters) --**

SELECT Vertical Datum :... ◉ **NGVD 29** ○ **NAVD 88 -- of the entered height --**

If the orthometric height is unknown DO NOT ENTER ZERO; leave the entry field BLANK !

Submit Clear

Latitude and Longitude are REQUIRED:

```
Position may be entered in any of the following three formats:
  1. degrees, minutes and decimal seconds ( xxx  xx  xx.xxx)
  2. degrees and decimal minutes          ( xxx  xx.xxx)
  3. decimal degrees                      ( xxx.xxxxx)

Note: There MUST be one or more blanks between entry fields
      Decimals can be keyed commensurate with the field's precision, but are not req
```

Orthometric Height to be converted FROM is OPTIONAL:

```
Height may be entered in either meters or U.S. survey feet:
  1. meters:  xxxx.xxx
  2. feet  :  xxxx.xx  FT  ( MUST include FT or ft for feet !)
```

It is possible that the datum shift computation may not succeed.
There could be many reasons for this, including position and height entry errors. In such a case, an error code is returned.
Questions concerning the datum shift computation process may be mailed to NGS

Questions concerning the VERTCON process may be mailed to NGS

Latitude: 36 05 59.64

Longitude: 115 15 40.58

NGVD 29 height: 2423.25 ft

Datum shift(NAVD 88 minus NGVD 29): 2.192 feet

Converted to NAVD 88 height: 2425.442 feet

THE *Louis Berger Group,* INC.

APPENDIX H

Reference Material for Lakes Detention Basin, Collection Facilities, and Outfall Facilities

CLA.13.A.97

Lakes Detention Basin, Collection System, & Outfall

Design Calculations

DESIGN CALCULATIONS FOR LAKES DETENTION BASIN AND ASSOCIATED COLLECTION AND OUTFALL FACILITIES

Prepared for:



Clark County Department
of Public Works
500 South Grand Central Parkway
Las Vegas, Nevada 89155

Prepared by:

PBS&J

901 North Green Valley Parkway Suite #100
Henderson, Nevada 89014

PBS&J Reference Number 51516
August 20, 1999

SECTION 6
WSPG

DURANGO

```
JD  0  0  1
T1 WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
T2 DU8.DAT
SO   456.06 2582.00  9       .015                2590.00
 R   472.67 2582.33  9       .015
 R   629.15 2585.47  9       .015                                          90.0
 R   935.17 2591.58  9       .015
 R  1013.71 2593.15  9       .015                                          45.0
 R  1030.92 2593.52  9       .015
JX  1035.42 2594.98  9  5    .015   71.0         2598.00        45.0
 R  1036.42 2595.30  9       .015
JX  1047.92 2595.79  9  8    .015  976.0         2595.61        20.0
 R  1228.35 2600.00  1       .013
JX  1233.35 2600.00  1  6    .013   18.0         2605.00        70.0          1
 R  1448.55 2603.73  1       .013                                          15.0
JX  1453.55 2603.73  1  6    .013   18.0         2608.73        60.0          1
 R  1759.40 2608.62  2       .013                                           1
JX  1764.40 2608.62  2 14    .013   20.0         2613.12        60.0          1
 R  1820.59 2609.60  2       .013
JX  1825.59 2609.60 10 14    .013   19.0         2615.10        60.0          1
 R  1929.88 2611.84 10       .013
 R  2119.71 2615.93 10       .013                                           1
 R  2471.05 2622.03 10       .013                                           1
 R  2822.39 2624.67 10       .013                                           1
 R  3173.73 2627.30 10       .013                                           1
 R  3392.59 2628.94 10       .013                                           1
 R  3792.59 2631.94 10       .013                                           1
 R  3892.49 2632.69 10       .013                                           1
 R  4092.71 2634.19 10       .013
JX  4097.71 2634.19 10 11    .013  159.0         2637.19        45.0          1
 R  4220.12 2635.89 10       .013
JX  4225.12 2636.39  2  4    .013   74.0         2639.89        45.0          1
 R  4394.38 2638.64  2       .013                                           1
 R  4796.16 2640.65  2       .013                                           1
 R  5106.55 2642.21  2       .013
JX  5111.66 2642.33  2 14    .013   18.0         2647.23        60.0          1
 R  5258.98 2642.96  2       .013                                           1
 R  5498.20 2644.16  2       .013                                           1
 R  5832.45 2645.83  2       .013                                           1
 R  6166.71 2647.50  2       .013                                           1
 R  6418.23 2648.76  2       .013                                           1
 R  6530.56 2649.37  2       .013                                     45.0  1
 R  6551.89 2649.50  2       .013
JX  6556.89 2651.50 12  5 14.013   43.0     27.02654.502655.00 60.0  60.0  1
 R  6683.96 2654.70 12       .013
JX  6688.96 2655.83 11  4 13.013  110.0     70.02656.832657.33 60.0  45.0  1
SH  6708.96 2656.33 11       .013
CD   1  4              7.0
CD   2  4              7.5
CD   3  4              5.5
CD   4  4              4.0
CD   5  4              3.0
CD   6  4              2.0
CD   7  4              1.5
CD   8  3              6.0       9.0
CD   9  3   1   1.0    6.0      17.0
CD  10  4              8.0
CD  11  4              5.0
CD  12  4              6.0
CD  13  4              3.5
```

CD 14 4 2.5

Q 275.0

STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
Portions Copyrighted by CIVILSOFT, 1986, 1987, 1989

Version [redacted]
Serial Number [redacted]

Jan 18, 1999 14:47:30

Input file : DU8.DAT
Output file: DU8.OUT

INPUT FILE LISTING

```
T1 WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
T2 DU8.DAT
SO   456.06 2582.00  9       .015                2590.00
R    472.67 2582.33  9       .015
R    629.15 2585.47  9       .015                                        90.0
R    935.17 2591.58  9       .015
R   1013.71 2593.15  9       .015                                        45.0
R   1030.92 2593.52  9       .015
JX  1035.42 2594.98  9  5    .015   71.0         2598.00        45.0
R   1036.42 2595.30  9       .015
JX  1047.92 2595.79  9  8    .015  976.0         2595.61        20.0
R   1228.35 2600.00  1       .013
JX  1233.35 2600.00  1  6    .013   18.0         2605.00        70.0        1
R   1448.55 2603.73  1       .013                                        15.0
JX  1453.55 2603.73  1  6    .013   18.0         2608.73        60.0        1
R   1759.40 2608.62  2       .013                                         1
JX  1764.40 2608.62  2 14    .013   20.0         2613.12        60.0        1
R   1820.59 2609.60  2       .013
JX  1825.59 2609.60 10 14    .013   19.0         2615.10        60.0        1
R   1929.88 2611.84 10       .013
R   2119.71 2615.93 10       .013                                         1
R   2471.05 2622.03 10       .013                                         1
R   2822.39 2624.67 10       .013                                         1
R   3173.73 2627.30 10       .013                                         1
R   3392.59 2628.94 10       .013                                         1
R   3792.59 2631.94 10       .013                                         1
R   3892.49 2632.69 10       .013                                         1
R   4092.71 2634.19 10       .013
JX  4097.71 2634.19 10 11    .013  159.0         2637.19        45.0        1
R   4220.12 2635.89 10       .013
JX  4225.12 2636.39  2  4    .013   74.0         2639.89        45.0        1
R   4394.38 2638.64  2       .013                                         1
R   4796.16 2640.65  2       .013                                         1
R   5106.55 2642.21  2       .013
JX  5111.66 2642.33  2 14    .013   18.0         2647.23        60.0        1
R   5258.98 2642.96  2       .013                                         1
R   5498.20 2644.16  2       .013                                         1
R   5832.45 2645.83  2       .013                                         1
R   6166.71 2647.50  2       .013                                         1
R   6418.23 2648.76  2       .013                                         1
R   6530.56 2649.37  2       .013                                  45.0   1
R   6551.89 2649.50  2       .013
JX  6556.89 2651.50 12  5 14.013   43.0     27.02654.502655.00 60.0  60.0  1
R   6683.96 2654.70 12       .013
JX  6688.96 2655.83 11  4 13.013  110.0     70.02656.832657.33 60.0  45.0  1
SH  6708.96 2656.33 11       .013
```

SP

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

0 CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			7.00														
CD	2	4			7.50														
CD	3	4			5.50														
CD	4	4			4.00														
CD	5	4			3.00														
CD	6	4			2.00														
CD	7	4			1.50														
CD	8	3	0	.00	6.00	9.00	.00	.00	.00										
CD	9	3	1	1.00	6.00	17.00	.00	.00	.00										
CD	10	4			8.00														
CD	11	4			5.00														
CD	12	4			6.00														
CD	13	4			3.50														
CD	14	4			2.50														

1 PAGE NO 1

0 WATER SURFACE PROFILE - TITLE CARD LISTING

0HEADING LINE NO 1 IS -

0HEADING LINE NO 2 IS - WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN

0 DU8.DAT

0HEADING LINE NO 3 IS -

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	456.06	2582.00	9	2590.00

0 ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	472.67	2582.33	9	.015	.00	.00	.00	0

0 ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	629.15	2585.47	9	.015	.00	.00	90.00	0

0 ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	935.17	2591.58	9	.015	.00	.00	.00	0

0 ELEMENT NO 5 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1013.71	2593.15	9	.015	.00	.00	45.00	0

0 ELEMENT NO 6 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.92	2593.52	9	.015	.00	.00	.00	0

0 ELEMENT NO 7 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1035.42	2594.98	9	5	0	.015	71.0	.0	2598.00	.00	45.00	.00

0 ELEMENT NO 8 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1036.42	2595.30	9	.015	.00	.00	.00	0

0 ELEMENT NO 9 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1047.92	2595.79	9	8	0	.015	976.0	.0	2595.61	.00	20.00	.00

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 10 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1228.35	2600.00	1	.013	.00	.00	.00	0

0 ELEMENT NO 11 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1233.35	2600.00	1	6	0	.013	18.0	.0	2605.00	.00	70.00	.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

1 PAGE NO 3

0 WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 12 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1448.55	2603.73	1	.013	.00	.00	15.00	0

0 ELEMENT NO 13 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1453.55	2603.73	1	6	0	.013	18.0	.0	2608.73	.00	60.00	.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 14 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1759.40	2608.62	2	.013	.00	.00	.00	1

0 ELEMENT NO 15 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1764.40	2608.62	2	14	0	.013	20.0	.0	2613.12	.00	60.00	.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

0 ELEMENT NO 16 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1820.59	2609.60	2	.013	.00	.00	.00	0

0 ELEMENT NO 17 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1825.59	2609.60	10	14	0	.013	19.0	.0	2615.10	.00	60.00	.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

0 ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1929.88	2611.84	10	.013	.00	.00	.00	0

0 ELEMENT NO 19 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2119.71	2615.93	10	.013	.00	.00	.00	1

0 ELEMENT NO 20 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2471.05	2622.03	10	.013	.00	.00	.00	1

1 PAGE NO 4

0 WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2822.39	2624.67	10	.013	.00	.00	.00	1

0 ELEMENT NO 22 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3173.73	2627.30	10	.013	.00	.00	.00	1

0 ELEMENT NO 23 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3392.59	2628.94	10	.013	.00	.00	.00	1

0 ELEMENT NO 24 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3792.59	2631.94	10	.013	.00	.00	.00	1

0 ELEMENT NO 25 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3892.49	2632.69	10	.013	.00	.00	.00	1

0 ELEMENT NO 26 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4092.71	2634.19	10	.013	.00	.00	.00	0

0 ELEMENT NO 27 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4097.71	2634.19	10	11	0	.013	159.0	.0	2637.19	.00	45.00	.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

0 ELEMENT NO 28 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4220.12	2635.89	10	.013	.00	.00	.00	0

0 ELEMENT NO 29 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4225.12	2636.39	2	4	0	.013	74.0	.0	2639.89	.00	45.00	.00

0 ELEMENT NO 30 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4394.38	2638.64	2	.013	.00	.00	.00	1

0 ELEMENT NO 31 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4796.16	2640.65	2	.013	.00	.00	.00	1

PAGE NO 5

0 WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 32 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5106.55	2642.21	2	.013	.00	.00	.00	0

0 ELEMENT NO 33 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	5111.66	2642.33	2	14	0	.013	18.0	.0	2647.23	.00	60.00	.00

0 ELEMENT NO 34 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5258.98	2642.96	2	.013	.00	.00	.00	1

0 ELEMENT NO 35 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5498.20	2644.16	2	.013	.00	.00	.00	1

0 ELEMENT NO 36 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5832.45	2645.83	2	.013	.00	.00	.00	1

0 ELEMENT NO 37 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6166.71	2647.50	2	.013	.00	.00	.00	1

0 ELEMENT NO 38 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6418.23	2648.76	2	.013	.00	.00	.00	1

0 ELEMENT NO 39 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6530.56	2649.37	2	.013	.00	.00	45.00	1

0 ELEMENT NO 40 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6551.89	2649.50	2	.013	.00	.00	.00	0

0 ELEMENT NO 41 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	6556.89	2651.50	12	5	14	.013	43.0	27.0	2654.50	2655.00	60.00	60.00

0 ELEMENT NO 42 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6683.96	2654.70	12	.013	.00	.00	.00	0

0 ELEMENT NO 43 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	6688.96	2655.83	11	4	13	.013	110.0	70.0	2656.83	2657.33	60.00	45.00

0 WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 44 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	6708.96	2656.33	11	.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

1

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
456.06	2582.00	8.00	2590.00	1898.0	19.87	6.14	2596.14	.00	6.00	6.00	17.00	.00	1	1.00
16.61	.01987					.01975	.33		4.99			.00		
472.67	2582.33	8.00	2590.33	1898.0	19.87	6.14	2596.47	.00	6.00	6.00	17.00	.00	1	1.00
156.48	.02007					.01975	3.09		4.97			.00		
629.15	2585.47	9.77	2595.24	1898.0	19.87	6.14	2601.38	.00	6.00	6.00	17.00	.00	1	1.00
~~306.02~~	~~.01997~~					.01975	5.04		4.98			.00		
935.17	2591.58	9.71	2601.29	1898.0	19.87	6.14	2607.43	.00	6.00	6.00	17.00	.00	1	1.00
78.54	.01999					.01975	1.55		4.98			.00		
1013.71	2593.15	10.60	2603.75	1898.0	19.87	6.14	2609.89	.00	6.00	6.00	17.00	.00	1	1.00
17.21	.02151					.01975	.34		4.84			.00		
1030.92	2593.52	10.57	2604.09	1898.0	19.87	6.14	2610.23	.00	6.00	6.00	17.00	.00	1	1.00
JUNCT STR	.32444					.01903	.09					.00		
1035.42	2594.98	9.93	2604.91	1827.0	19.13	5.69	2610.60	.00	6.00	6.00	17.00	.00	1	1.00
1.00	.32007					.01830	.02		1.77			.00		
1036.42	2595.30	9.63	2604.93	1827.0	19.13	5.69	2610.62	.00	6.00	6.00	17.00	.00	1	1.00
JUNCT STR	.04261					.01114	.13					.00		
1047.92	2595.79	13.72	2609.51	851.0	22.11	7.60	2617.11	.00	6.78	7.00	.00	.00	0	.00
180.43	.02333					.01775	3.20		5.06			.00		
1228.35	2600.00	12.71	2612.71	851.0	22.11	7.60	2620.31	.00	6.78	7.00	.00	.00	0	.00
JUNCT STR	.00000					.01737	.09					.00		
1233.35	2600.00	13.41	2613.41	833.0	21.65	7.28	2620.69	.00	6.76	7.00	.00	.00	0	.00
215.20	.01733					.01700	3.66		5.68			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1448.55	2603.73	13.70	2617.43	833.0	21.65	7.28	2624.71	.00	6.76	7.00	.00	.00	0	.00
JUNCT STR	.00000					.01664	.08					.00		
1453.55	2603.73	14.36	2618.09	815.0	18.45	5.29	2623.38	.00	6.98	7.50	.00	.00	0	.00
305.85	.01599					.01127	3.45		5.26			.00		
1759.40	2608.62	13.18	2621.80	815.0	18.45	5.29	2627.09	.00	6.98	7.50	.00	.00	0	.00
JUNCT STR	.00000					.01099	.05					.00		
1764.40	2608.62	13.72	2622.34	795.0	18.00	5.03	2627.37	.00	6.94	7.50	.00	.00	0	.00
56.19	.01744					.01072	.60		5.00			.00		
1820.59	2609.60	13.34	2622.94	795.0	18.00	5.03	2627.98	.00	6.94	7.50	.00	.00	0	.00
JUNCT STR	.00000					.00898	.04					.00		
1825.59	2609.60	14.90	2624.50	776.0	15.44	3.70	2628.20	.00	6.97	8.00	.00	.00	0	.00
104.29	.02148					.00724	.75		4.38			.00		
1929.88	2611.84	13.41	2625.25	776.0	15.44	3.70	2628.95	.00	6.97	8.00	.00	.00	0	.00
189.83	.02155					.00724	1.37		4.37			.00		
2119.71	2615.93	10.88	2626.81	776.0	15.44	3.70	2630.51	.00	6.97	8.00	.00	.00	0	.00
277.58	.01736					.00724	2.01		4.68			.00		
2397.29	2620.75	8.22	2628.97	776.0	15.44	3.70	2632.67	.00	6.97	8.00	.00	.00	0	.00
HYDRAULIC JUMP												.00		
2397.29	2620.75	5.72	2626.47	776.0	20.19	6.33	2632.80	.00	6.97	8.00	.00	.00	0	.00
21.51	.01736					.00953	.20		4.68			.00		
2418.80	2621.12	5.85	2626.97	776.0	19.72	6.04	2633.01	.00	6.97	8.00	.00	.00	0	.00
31.89	.01736					.00879	.28		4.68			.00		

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WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
2450.69	2621.68	6.12	2627.80	776.0	18.80	5.49	2633.29	.00	6.97	8.00	.00	.00	0	.00
20.36	.01736					.00791	.16		4.68			.00		
2471.05	2622.03	6.43	2628.46	776.0	17.93	4.99	2633.45	.00	6.97	8.00	.00	.00	0	.00
.00	.01736					.00751	.00		4.68			.00		
2471.05	2622.03	6.43	2628.46	776.0	17.93	4.99	2633.45	.00	6.97	8.00	.00	.00	0	.00
351.34	.00751					.00750	2.63		6.43			.00		
2822.39	2624.67	6.44	2631.11	776.0	17.90	4.98	2636.09	.00	6.97	8.00	.00	.00	0	.00
351.34	.00749					.00749	2.63		6.44			.00		
3173.73	2627.30	6.44	2633.74	776.0	17.91	4.98	2638.72	.00	6.97	8.00	.00	.00	0	.00
218.86	.00749					.00750	1.64		6.44			.00		
3392.59	2628.94	6.43	2635.37	776.0	17.91	4.99	2640.36	.00	6.97	8.00	.00	.00	0	.00
400.00	.00750					.00745	2.98		6.43			.00		
3792.59	2631.94	6.48	2638.42	776.0	17.79	4.92	2643.34	.00	6.97	8.00	.00	.00	0	.00
99.90	.00751					.00736	.74		6.43			.00		
3892.49	2632.69	6.52	2639.21	776.0	17.70	4.87	2644.07	.00	6.97	8.00	.00	.00	0	.00
107.61	.00749					.00725	.78		6.44			.00		
4000.10	2633.50	6.59	2640.09	776.0	17.51	4.77	2644.85	.00	6.97	8.00	.00	.00	0	.00
92.61	.00749					.00688	.64		6.44			.00		
4092.71	2634.19	6.97	2641.16	776.0	16.70	4.33	2645.49	.00	6.97	8.00	.00	.00	0	.00
JUNCT STR	.00000					.00558	.03					.00		
4097.71	2634.19	9.87	2644.06	617.0	12.27	2.34	2646.40	.00	6.32	8.00	.00	.00	0	.00
122.41	.01389					.00458	.56		4.35			.00		

WATER SURFACE PROFILE LISTING

WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
4220.12	2635.89	8.73	2644.62	617.0	12.27	2.34	2646.96	.00	6.32	8.00	.00	.00	0	.00
JUNCT STR	.10000					.00479	.02					.00		
4225.12	2636.39	8.64	2645.03	543.0	12.29	2.35	2647.38	.00	6.01	7.50	.00	.00	0	.00
150.63	.01329					.00498	.75		4.24			.00		
4375.75	2638.39	7.50	2645.89	543.0	12.29	2.35	2648.24	.00	6.01	7.50	.00	.00	0	.00
18.63	.01329					.00469	.09		4.24			.00		
4394.38	2638.64	7.31	2645.95	543.0	12.38	2.38	2648.33	.00	6.01	7.50	.00	.00	0	.00
401.78	.00500					.00438	1.76		6.15			.00		
4796.16	2640.65	6.91	2647.56	543.0	12.76	2.53	2650.09	.00	6.01	7.50	.00	.00	0	.00
.00	.00500					.00434	.00		6.15			.00		
4796.16	2640.65	6.91	2647.56	543.0	12.76	2.53	2650.09	.00	6.01	7.50	.00	.00	0	.00
310.39	.00503					.00447	1.39		6.13			.00		
5106.55	2642.21	6.49	2648.70	543.0	13.37	2.78	2651.47	.00	6.01	7.50	.00	.00	0	.00
.00	.00503					.00460	.00		6.13			.00		
5106.55	2642.21	6.49	2648.70	543.0	13.37	2.78	2651.47	.00	6.01	7.50	.00	.00	0	.00
JUNCT STR	.02351					.00432	.02					.00		
5111.66	2642.33	6.97	2649.30	525.0	12.27	2.34	2651.64	.00	5.92	7.50	.00	.00	0	.00
147.32	.00428					.00405	.60		6.51			.00		
5258.98	2642.96	6.91	2649.87	525.0	12.34	2.37	2652.23	.00	5.92	7.50	.00	.00	0	.00
228.71	.00502					.00418	.96		5.93			.00		
5487.69	2644.11	6.48	2650.59	525.0	12.94	2.60	2653.19	.00	5.92	7.50	.00	.00	0	.00
10.51	.00502					.00431	.05		5.93			.00		

WATER SURFACE PROFILE LISTING

WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
5498.20	2644.16	6.46	2650.62	525.0	12.98	2.62	2653.23	.00	5.92	7.50	.00	.00	0	.00
.00	.00502					.00432	.00		5.93			.00		
5498.20	2644.16	6.46	2650.62	525.0	12.98	2.62	2653.23	.00	5.92	7.50	.00	.00	0	.00
167.14	.00500					.00452	.76		5.94			.00		
5665.34	2645.00	6.12	2651.11	525.0	13.61	2.88	2653.99	.00	5.92	7.50	.00	.00	0	.00
91.01	.00500					.00486	.44		5.94			.00		
5756.36	2645.45	5.94	2651.39	525.0	14.00	3.04	2654.43	.00	5.92	7.50	.00	.00	0	.00
HYDRAULIC JUMP												.00		
5756.36	2645.45	5.90	2651.35	525.0	14.08	3.08	2654.43	.00	5.92	7.50	.00	.00	0	.00
76.09	.00500					.00526	.40		5.94			.00		
5832.45	2645.83	5.70	2651.53	525.0	14.57	3.30	2654.83	.00	5.92	7.50	.00	.00	0	.00
86.32	.00500					.00572	.49		5.94			.00		
5918.77	2646.26	5.47	2651.73	525.0	15.20	3.59	2655.32	.00	5.92	7.50	.00	.00	0	.00
89.61	.00500					.00636	.57		5.94			.00		
6008.38	2646.71	5.24	2651.95	525.0	15.94	3.95	2655.89	.00	5.92	7.50	.00	.00	0	.00
82.09	.00500					.00713	.58		5.94			.00		
6090.47	2647.12	5.02	2652.14	525.0	16.72	4.34	2656.48	.00	5.92	7.50	.00	.00	0	.00
76.24	.00500					.00801	.61		5.94			.00		
6166.71	2647.50	4.81	2652.31	525.0	17.53	4.78	2657.09	.00	5.92	7.50	.00	.00	0	.00
61.64	.00501					.00894	.55		5.93			.00		
6228.35	2647.81	4.65	2652.45	525.0	18.26	5.18	2657.64	.00	5.92	7.50	.00	.00	0	.00
67.27	.00501					.01001	.67		5.93			.00		

WATER SURFACE PROFILE LISTING

WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
6295.62	2648.15	4.46	2652.61	525.0	19.16	5.70	2658.31	.00	5.92	7.50	.00	.00	0	.00
63.01	.00501					.01131	.71		5.93			.00		
6358.63	2648.46	4.29	2652.75	525.0	20.09	6.27	2659.02	.00	5.92	7.50	.00	.00	0	.00
59.60	.00501					.01281	.76		5.93			.00		
6418.23	2648.76	4.13	2652.89	525.0	21.07	6.90	2659.79	.00	5.92	7.50	.00	.00	0	.00
56.71	.00543					.01447	.82		5.71			.00		
6474.94	2649.07	3.98	2653.05	525.0	22.06	7.56	2660.61	.00	5.92	7.50	.00	.00	0	.00
55.62	.00543					.01637	.91		5.71			.00		

0	6530.56	2649.37	3.83	2653.20	525.0	23.14	8.32	2661.52	.00	5.92		7.50	.00	.00	0	.00
0	21.33	.00609					.01783	.38			5.44			.00		
0	6551.89	2649.50	3.78	2653.28	525.0	23.56	8.62	2661.90	.00	5.92		7.50	.00	.00	0	.00
0	JUNCT STR	.40000					.01724	.09						.00		
0	6556.89	2651.50	4.22	2655.72	455.0	21.39	7.11	2662.84	.00	5.55		6.00	.00	.00	0	.00
0	JUNCT STR	.40000					.01623	.00						.00		
0	6556.89	2651.50	4.22	2655.72	455.0	21.39	7.11	2662.84	.00	5.55		6.00	.00	.00	0	.00
0	12.82	.02518					.01601	.21			3.62			.00		
0	6569.71	2651.82	4.27	2656.09	455.0	21.15	6.95	2663.04	.00	5.55		6.00	.00	.00	0	.00
0	42.67	.02518					.01497	.64			3.62			.00		
0	6612.38	2652.90	4.46	2657.36	455.0	20.17	6.32	2663.68	.00	5.55		6.00	.00	.00	0	.00
0	30.50	.02518					.01343	.41			3.62			.00		
0	6642.87	2653.67	4.68	2658.35	455.0	19.23	5.75	2664.09	.00	5.55		6.00	.00	.00	0	.00
0	21.54	.02518					.01212	.26			3.62			.00		
1															PAGE	7

WATER SURFACE PROFILE LISTING

WSPG RUN FOR LAKES DETENTION BASIN DURANGO TO DESERT INN
DU8.DAT

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	6664.41	2654.21	4.92	2659.13	455.0	18.33	5.22	2664.35	.00	5.55		6.00	.00	.00	0	.00
0	13.93	.02518					.01105	.15			3.62			.00		
0	6678.34	2654.56	5.20	2659.76	455.0	17.48	4.75	2664.51	.00	5.55		6.00	.00	.00	0	.00
0	5.62	.02518					.01029	.06			3.62			.00		
0	6683.96	2654.70	5.55	2660.25	455.0	16.66	4.32	2664.56	.00	5.55		6.00	.00	.00	0	.00
0	JUNCT STR	.22603					.01057	.05						.00		
0	6688.96	2655.83	8.30	2664.13	275.0	14.01	3.05	2667.18	.00	4.56		5.00	.00	.00	0	.00
0	JUNCT STR	.22603					.00557	.11						.00		
0	6708.96	2656.33	8.30	2664.63	275.0	14.01	3.05	2667.68	.00	4.56		5.00	.00	.00	0	.00
1																

DESERT INN

```
JD  0  0  1
T1 WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
T2 FILE NAME DINEW4.DAT CHANNEL REVISED FROM DINEW3.DAT
T3 INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL
SO   254.13 2582.00 20       .015                  2590.00
R    270.74 2582.33 20       .015
R    427.82 2585.47 20       .015                                90
R    733.24 2591.58 20       .015
R    811.78 2593.15 20       .015                                45
R    829.00 2593.52 20       .015
JX   833.50 2594.98 20  8    .015    69.0          2598.0        45
R    834.50 2595.08 20       .015                                      20.0  1
JX   846.00 2595.18 20 10    .015   715.0          2595.79       45
R    963.79 2599.95 10       .015
R    968.79 2600.05 10       .015                                      25.0  1
R   1882.46 2625.81 17       .015                                            1
R   2343.66 2635.77 17       .015
JX  2348.66 2635.96 17  3    .015     7.0          2639.02       90.0
R   2898.47 2647.71 17       .015
JX  2903.47 2647.85 17  3    .015    17.0          2650.95       90.0
R   2909.65 2647.89 17       .015
R   3576.01 2654.58 17       .015
R   3682.31 2657.63 17       .015
JX  3687.31 2658.63 17  6    .015   120.0          2659.5        45.0
R   4422.21 2679.34  9       .015
JX  4427.21 2679.39  9  4    .015    24.0          2684.84       60.0
R   5221.69 2692.53  9       .015
JX  5226.69 2693.53  9  4    .015    48.0          2698.03       45.0
R   5961.60 2707.33 18       .013
TS  5966.60 2707.38 17       .013
R   6169.01 2711.20 17       .013                                            1
JX  6174.01 2714.70 17 11    .013   449.0          2714.70       43.0
R   6429.19 2719.55 11       .013                                            1
JX  6434.19 2721.05 11  7    .013    35.0          2722.05       90.0
R   7186.10 2735.05 13       .013                                            1
JX  7191.10 2736.05 13  3    .013    16.0          2737.55       90.0
R   7746.05 2744.40 13       .013                                            1
JX  7751.05 2744.50 13  8    .013    52.0          2744.45       90.0
R   8862.18 2761.19 13       .013                                            1
JX  8867.18 2763.69 13  6    .013   226.0          2761.19       45.0
R   8985.03 2765.50  7       .013                                            1
SH                    7       .013
CD   1  3                 5.5      8.64
CD   2  3   1   1.00      7.0      9.00
CD   3  4                 1.5
CD   4  4                 2.0
CD   5  3                 8.0     12.00
CD   6  4                 5.5
CD   7  4                 2.5
CD   8  4                 3.0
CD   9  4                 7.5
CD  10  3                 6.0      9.0
CD  11  4                 6.0
CD  12  3                 5.0      8.00
CD  13  4                 5.0
CD  14  4                 4.5
CD  15  3                10.00    10.00
CD  16  3                 8.00     8.00
CD  17  4                 8.0
CD  18  4                 7.0
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CD  19  4                       2.0
CD  20  3   1    1.0     6.0     17.0

D               38.0
```

STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Dec 11, 1998 10:16:29

Input file : dinew4.dat
Output file: dinew4.out

INPUT FILE LISTING

```
T1 WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
T2 FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
T3 INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL
SO   254.13 2582.00 20      .015                2590.00
R    270.74 2582.33 20      .015
R    427.82 2585.47 20      .015                                    90
R    733.24 2591.58 20      .015
R    811.78 2593.15 20      .015                                    45
R    829.00 2593.52 20      .015
JX   833.50 2594.98 20  8   .015    69.0        2598.0              45
R    834.50 2595.08 20      .015                                          20.0  1
JX   846.00 2595.18 20 10   .015   715.0        2595.79             45
R    963.79 2599.95 10      .015
R    968.79 2600.05 10      .015                                          25.0  1
R   1882.46 2625.81 17      .015                                                1
R   2343.66 2635.77 17      .015
JX  2348.66 2635.96 17  3   .015     7.0        2639.02             90.0
R   2898.47 2647.71 17      .015
JX  2903.47 2647.85 17  3   .015    17.0        2650.95             90.0
R   2909.65 2647.89 17      .015
R   3576.01 2654.58 17      .015
R   3682.31 2657.63 17      .015
JX  3687.31 2658.63 17  6   .015   120.0        2659.5              45.0
R   4422.21 2679.34  9      .015
JX  4427.21 2679.39  9  4   .015    24.0        2684.84             60.0
R   5221.69 2692.53  9      .015
JX  5226.69 2693.53  9  4   .015    48.0        2698.03             45.0
R   5961.60 2707.33 18      .013
TS  5966.60 2707.38 17      .013
R   6169.01 2711.20 17      .013                                                1
JX  6174.01 2714.70 17 11   .013   449.0        2714.70             43.0
R   6429.19 2719.55 11      .013                                                1
JX  6434.19 2721.05 11  7   .013    35.0        2722.05             90.0
R   7186.10 2735.05 13      .013                                                1
JX  7191.10 2736.05 13  3   .013    16.0        2737.55             90.0
R   7746.05 2744.40 13      .013                                                1
JX  7751.05 2744.50 13  8   .013    52.0        2744.45             90.0
R   8862.18 2761.19 13      .013                                                1
JX  8867.18 2763.69 13  6   .013   226.0        2761.19             45.0
R   8985.03 2765.50  7      .013                                                1
SH                   7      .013
```

SP

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	.00	5.50	8.64	.00	.00	.00										
CD	2	3	1	1.00	7.00	9.00	.00	.00	.00										
CD	3	4			1.50														
CD	4	4			2.00														
CD	5	3	0	.00	8.00	12.00	.00	.00	.00										
CD	6	4			5.50														
CD	7	4			2.50														
CD	8	4			3.00														
CD	9	4			7.50														
CD	10	3	0	.00	6.00	9.00	.00	.00	.00										
CD	11	4			6.00														
CD	12	3	0	.00	5.00	8.00	.00	.00	.00										
CD	13	4			5.00														
CD	14	4			4.50														
CD	15	3	0	.00	10.00	10.00	.00	.00	.00										
CD	16	3	0	.00	8.00	8.00	.00	.00	.00										
CD	17	4			8.00														
CD	18	4			7.00														
CD	19	4			2.00														
CD	20	3	1	1.00	6.00	17.00	.00	.00	.00										

1 PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
WSPG FOR NEW DESERT INN FLOWS AT THE LAKES

HEADING LINE NO 2 IS -
FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT

HEADING LINE NO 3 IS -
INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	254.13	2582.00	20	2590.00

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	270.74	2582.33	20	.015	.00	.00	.00	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	427.82	2585.47	20	.015	.00	.90	.00	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

733.24 2591.58 20 .015 .00 .00 .00 0

0 ELEMENT NO 5 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	811.78	2593.15	20	.015	.00	.45	.00	0

0 ELEMENT NO 6 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	829.00	2593.52	20	.015	.00	.00	.00	0

0 ELEMENT NO 7 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	833.50	2594.98	20	8	0	.015	69.0	.0	2598.00	.00	.45	.00

0 ELEMENT NO 8 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	834.50	2595.08	20	.015	.00	.00	20.00	1

0 ELEMENT NO 9 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	846.00	2595.18	20	10	0	.015	715.0	.0	2595.79	.00	.45	.00

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 10 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	963.79	2599.95	10	.015	.00	.00	.00	0

0 ELEMENT NO 11 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	968.79	2600.05	10	.015	.00	.00	25.00	1

1
0 PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 12 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1882.46	2625.81	17	.015	.00	.00	.00	1

0 ELEMENT NO 13 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2343.66	2635.77	17	.015	.00	.00	.00	0

0 ELEMENT NO 14 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2348.66	2635.96	17	3	0	.015	7.0	.0	2639.02	.00	90.00	.00

0 ELEMENT NO 15 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2898.47	2647.71	17	.015	.00	.00	.00	0

0 ELEMENT NO 16 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2903.47	2647.85	17	3	0	.015	17.0	.0	2650.95	.00	90.00	.00

0 ELEMENT NO 17 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2909.65	2647.89	17	.015	.00	.00	.00	0

0 ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3576.01	2654.58	17	.015	.00	.00	.00	0

0 ELEMENT NO 19 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3682.31	2657.63	17	.015	.00	.00	.00	0

0 ELEMENT NO 20 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	3687.31	2658.63	17	6	0	.015	120.0	.0	2659.50	.00	45.00	.00

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4422.21	2679.34	9	.015	.00	.00	.00	0

1
0 PAGE NO 4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 22 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4427.21	2679.39	9	4	0	.015	24.0	.0	2684.84	.00	60.00	.00

0 ELEMENT NO 23 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5221.69	2692.53	9	.015	.00	.00	.00	0

0 ELEMENT NO 24 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	5226.69	2693.53	9	4	0	.015	48.0	.0	2698.03	.00	45.00	.00

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 25 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5961.60	2707.33	18	.013	.00	.00	.00	0

0 ELEMENT NO 26 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	5966.60	2707.38	17	.013

0 ELEMENT NO 27 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6169.01	2711.20	17	.013	.00	.00	.00	1

0 ELEMENT NO 28 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	6174.01	2714.70	17	11	0	.013	449.0	.0	2714.70	.00	43.00	.00

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 29 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6429.19	2719.55	11	.013	.00	.00	.00	1

0 ELEMENT NO 30 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	6434.19	2721.05	11	7	0	.013	35.0	.0	2722.05	.00	90.00	.00

1
0 PAGE NO 5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 31 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	7186.10	2735.05	13	.013	.00	.00	.00	1

0 ELEMENT NO 32 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	7191.10	2736.05	13	3	0	.013	16.0	.0	2737.55	.00	90.00	.00

0 ELEMENT NO 33 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	7746.05	2744.40	13	.013	.00	.00	.00	1

0 ELEMENT NO 34 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	7751.05	2744.50	13	8	0	.013	52.0	.0	2744.45	.00	90.00	.00

0 ELEMENT NO 35 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

```
                                8862.18 2761.19   13                .013                                .00     .00      .00      1
0 ELEMENT NO  36 IS A JUNCTION          *       *     *       *       *                   *       *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                8867.18 2763.69   13     6     0    .013    226.0       .0  2761.19      .00   45.00     .00
  WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
0 ELEMENT NO  37 IS A REACH             *       *
                    U/S DATA   STATION    INVERT  SECT                N                                  RADIUS  ANGLE  ANG PT  MAN H
                                8985.03 2765.50    7                .013                                   .00     .00      .00      1
0 ELEMENT NO  38 IS A SYSTEM HEADWORKS                  *                 *
                    U/S DATA   STATION    INVERT  SECT                                          W S ELEV
                                8985.03 2765.50    7                                               .00
  NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

  ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
1                                                                                                                    PAGE    1

                                        WATER SURFACE PROFILE LISTING
                                WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
                                FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
                                INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL
0 STATION     INVERT   DEPTH     W.S.        Q       VEL      VEL      ENERGY   SUPER  CRITICAL              HGT/    BASE/     ZL    NO  AVBPR
  0 L/ELEM     ELEV    OF FLOW   ELEV                        HEAD     GRD.EL.  ELEV   DEPTH                 DIA     ID NO.          PIER
               SO                                          SF AVE     HF                 NORM DEPTH                        ZR
*****************************************************************************************************************************
0   254.13  2582.00     8.00   2590.00   1816.0   19.02     5.62   2595.62    .00     6.00                 6.00     17.00    .00    1   1.00
0    16.61   .01987                                        .01808     .30                      4.82                          .00
0   270.74  2582.33     7.97   2590.30   1816.0   19.02     5.62   2595.92    .00     6.00                 6.00     17.00    .00    1   1.00
0   157.08   .01999                                        .01808    2.84                      4.81                          .00
0   427.82  2585.47     7.78   2593.25   1816.0   19.02     5.62   2598.87    .00     6.00                 6.00     17.00    .00    1   1.00
0   305.42   .02001                                        .01808    5.52                      4.81                          .00
0   733.24  2591.58     7.20   2598.78   1816.0   19.02     5.62   2604.40    .00     6.00                 6.00     17.00    .00    1   1.00
0    78.54   .01999                                        .01808    1.42                      4.81                          .00
0   811.78  2593.15     7.13   2600.28   1816.0   19.02     5.62   2605.90    .00     6.00                 6.00     17.00    .00    1   1.00
0    17.22   .02149                                        .01808     .31                      4.68                          .00
0   829.00  2593.52     7.07   2600.59   1816.0   19.02     5.62   2606.21    .00     6.00                 6.00     17.00    .00    1   1.00
0JUNCT STR   .32444                                        .01741     .08                                                    .00
0   833.50  2594.98     6.30   2601.28   1747.0   18.29     5.20   2606.48    .00     6.00                 6.00     17.00    .00    1   1.00
0     1.00   .10010                                        .01674     .02                      2.58                          .00
0   834.50  2595.08     6.82   2601.90   1747.0   18.29     5.20   2607.10    .00     6.00                 6.00     17.00    .00    1   1.00
0JUNCT STR   .00868                                        .01129     .13                                                    .00
0   846.00  2595.18    10.53   2605.71   1032.0   19.20     5.73   2611.44    .00     6.00                 6.00      9.00    .00    0    .00
0   117.79   .04050                                        .01726    2.03                      3.62                          .00
0   963.79  2599.95     7.79   2607.74   1032.0   19.20     5.73   2613.47    .00     6.00                 6.00      9.00    .00    0    .00
0     5.00   .02002                                        .01726     .09                      4.70                          .00
0   968.79  2600.05     8.54   2608.59   1032.0   19.20     5.73   2614.32    .00     6.00                 6.00      9.00    .00    0    .00
0   968.79  2600.05     5.32   2605.37   1032.0   29.08    13.14   2618.51    .00     7.57                 8.00      .00     .00    0    .00
1                                                                                                                    PAGE    2

                                        WATER SURFACE PROFILE LISTING
                                WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
                                FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
                                INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL
0 STATION     INVERT   DEPTH     W.S.        Q       VEL      VEL      ENERGY   SUPER  CRITICAL              HGT/    BASE/     ZL    NO  AVBPR
  0 L/ELEM     ELEV    OF FLOW   ELEV                        HEAD     GRD.EL.  ELEV   DEPTH                 DIA     ID NO.          PIER
               SO                                          SF AVE     HF                 NORM DEPTH                        ZR
*****************************************************************************************************************************
0   450.06   .02819                                        .02738    12.32                      5.30                          .00
0  1418.85  2612.74     5.40   2618.14   1032.0   28.59    12.70   2630.84    .00     7.57                 8.00      .00     .00    0    .00
0   321.46   .02819                                        .02534    8.15                       5.30                          .00
0  1740.31  2621.80     5.64   2627.44   1032.0   27.26    11.54   2638.99    .00     7.57                 8.00      .00     .00    0    .00
0   142.15   .02819                                        .02263    3.22                       5.30                          .00
0  1882.46  2625.81     5.90   2631.71   1032.0   25.99    10.50   2642.20    .00     7.57                 8.00      .00     .00    0    .00
0   461.20   .02160                                        .02070    9.55                       5.87                          .00
0  2343.66  2635.77     6.06   2641.83   1032.0   25.26     9.92   2651.75    .00     7.57                 8.00      .00     .00    0    .00
0JUNCT STR   .03799                                        .02019     .10                                                    .00
0  2348.66  2635.96     5.98   2641.94   1025.0   25.42    10.04   2651.98    .00     7.56                 8.00      .00     .00    0    .00
0    92.02   .02137                                        .02017    1.86                       5.86                          .00
0  2440.68  2637.93     6.03   2643.96   1025.0   25.22     9.88   2653.84    .00     7.56                 8.00      .00     .00    0    .00
0   254.27   .02137                                        .01900    4.83                       5.86                          .00
0  2694.94  2643.36     6.33   2649.69   1025.0   24.05     8.99   2658.67    .00     7.56                 8.00      .00     .00    0    .00
0   115.81   .02137                                        .01719    1.99                       5.86                          .00
0  2810.76  2645.84     6.66   2652.49   1025.0   22.93     8.17   2660.66    .00     7.56                 8.00      .00     .00    0    .00
0    62.63   .02137                                        .01574     .99                       5.86                          .00
0  2873.39  2647.17     7.05   2654.22   1025.0   21.86     7.43   2661.65    .00     7.56                 8.00      .00     .00    0    .00
0    25.08   .02137                                        .01483     .37                       5.86                          .00
0  2898.47  2647.71     7.56   2655.27   1025.0   20.84     6.75   2662.02    .00     7.56                 8.00      .00     .00    0    .00
0JUNCT STR   .02803                                        .01540     .08                                                    .00
0  2903.47  2647.85     8.21   2656.06   1008.0   20.05     6.25   2662.31    .00     7.53                 8.00      .00     .00    0    .00
1                                                                                                                    PAGE    3

                                        WATER SURFACE PROFILE LISTING
                                WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
                                FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
                                INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL
0 STATION     INVERT   DEPTH     W.S.        Q       VEL      VEL      ENERGY   SUPER  CRITICAL              HGT/    BASE/     ZL    NO  AVBPR
  0 L/ELEM     ELEV    OF FLOW   ELEV                        HEAD     GRD.EL.  ELEV   DEPTH                 DIA     ID NO.          PIER
               SO                                          SF AVE     HF                 NORM DEPTH                        ZR
*****************************************************************************************************************************
0     6.18   .00644                                        .01626     .10                      8.00                          .00
0  2909.65  2647.89     8.27   2656.16   1008.0   20.05     6.25   2662.41    .00     7.53                 8.00      .00     .00    0    .00
0   666.36   .01004                                        .01626    10.84                      8.00                          .00
0  3576.01  2654.58    12.42   2667.00   1008.0   20.05     6.25   2673.25    .00     7.53                 8.00      .00     .00    0    .00
0   106.30   .02869                                        .01626    1.73                       5.18                          .00
0  3682.31  2657.63    11.10   2668.73   1008.0   20.05     6.25   2674.98    .00     7.53                 8.00      .00     .00    0    .00
0JUNCT STR   .20000                                        .01444     .07                                                    .00
0  3687.31  2658.63    12.71   2671.34    888.0   20.10     6.28   2677.61    .00     7.11                 7.50      .00     .00    0    .00
0   289.02   .02818                                        .01781    5.15                       5.05                          .00
0  3976.33  2666.77     9.70   2676.48    888.0   20.10     6.28   2682.76    .00     7.11                 7.50      .00     .00    0    .00
0HYDRAULIC JUMP                                                                                                              .00
0  3976.33  2666.77     5.26   2672.03    888.0   26.85    11.21   2683.24    .00     7.11                 7.50      .00     .00    0    .00
0   162.79   .02818                                        .02442    3.98                       5.05                          .00
0  4139.12  2671.36     5.41   2676.77    888.0   26.02    10.52   2687.29    .00     7.11                 7.50      .00     .00    0    .00
0   119.62   .02818                                        .02229    2.67                       5.05                          .00
0  4258.74  2674.73     5.66   2680.40    888.0   24.81     9.57   2689.96    .00     7.11                 7.50      .00     .00    0    .00
0    72.49   .02818                                        .02003    1.45                       5.05                          .00
0  4331.23  2676.78     5.94   2682.72    888.0   23.65     8.70   2691.41    .00     7.11                 7.50      .00     .00    0    .00
0    47.43   .02818                                        .01814     .86                       5.05                          .00
0  4378.66  2678.11     6.26   2684.37    888.0   22.55     7.90   2692.27    .00     7.11                 7.50      .00     .00    0    .00
```

0	30.31	.02818					.01661	.50			5.05			.00		
0	4408.98	2678.97	6.62	2685.59	888.0	21.50	7.19	2692.78	.00	7.11		7.50	.00	.00	0	.00
1															PAGE	4

WATER SURFACE PROFILE LISTING
WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	13.23	.02818				.01568	.21			5.05			.00		
0	4422.21	2679.34	7.11	2686.45	888.0	20.50	6.53	2692.99	.00	7.11		7.50	.00	.00	0	.00
0	JUNCT STR	.00996					.01613	.08						.00		
0	4427.21	2679.39	8.01	2687.40	864.0	19.56	5.94	2693.34	.00	7.07		7.50	.00	.00	0	.00
0	444.75	.01654					.01686	7.50			6.21			.00		
0	4871.96	2686.75	8.15	2694.89	864.0	19.56	5.94	2700.84	.00	7.07		7.50	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		
0	4871.96	2686.75	5.94	2692.68	864.0	23.04	8.25	2700.93	.00	7.07		7.50	.00	.00	0	.00
0	186.58	.01654					.01862	3.47			6.21			.00		
0	5058.54	2689.83	5.76	2695.59	864.0	23.74	8.76	2704.35	.00	7.07		7.50	.00	.00	0	.00
0	163.15	.01654					.02031	3.31			6.21			.00		
0	5221.69	2692.53	5.50	2698.03	864.0	24.89	9.63	2707.66	.00	7.07		7.50	.00	.00	0	.00
0	JUNCT STR	.20000					.02051	.10						.00		
0	5226.69	2693.53	5.44	2698.97	816.0	23.79	8.80	2707.76	.00	6.98		7.50	.00	.00	0	.00
0	JUNCT STR	.20000					.01889	.00						.00		
0	5226.69	2693.53	5.44	2698.97	816.0	25.45	10.06	2709.03	.00	6.74		7.00	.00	.00	0	.00
0	332.77	.01878					.01764	5.87			5.35			.00		
0	5559.46	2699.78	5.59	2705.37	816.0	24.76	9.53	2714.90	.00	6.74		7.00	.00	.00	0	.00
0	235.86	.01878					.01637	3.86			5.35			.00		
0	5795.31	2704.21	5.89	2710.10	816.0	23.61	8.66	2718.76	.00	6.74		7.00	.00	.00	0	.00
0	115.79	.01878					.01504	1.74			5.35			.00		
0	5911.10	2706.38	6.24	2712.63	816.0	22.51	7.88	2720.50	.00	6.74		7.00	.00	.00	0	.00
1															PAGE	5

WATER SURFACE PROFILE LISTING
WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	50.50	.01878				.01436	.73			5.35			.00		
0	5961.60	2707.33	6.74	2714.07	816.0	21.46	7.16	2721.23	.00	6.74		7.00	.00	.00	0	.00
0	TRANS STR	.00996					.01112	.06						.00		
0	5966.60	2707.38	10.11	2717.49	816.0	16.23	4.10	2721.59	.00	7.10		8.00	.00	.00	0	.00
0	202.41	.01887					.00800	1.62			4.70			.00		
0	6169.01	2711.20	8.12	2719.32	816.0	16.23	4.10	2723.41	.00	7.10		8.00	.00	.00	0	.00
0	JUNCT STR	.70000					.00476	.02						.00		
0	6174.01	2714.70	7.95	2722.65	367.0	12.98	2.62	2725.27	.00	5.17		6.00	.00	.00	0	.00
0	101.46	.01901					.00751	.76			3.45			.00		
0	6275.47	2716.63	6.84	2723.47	367.0	12.98	2.62	2726.08	.00	5.17		6.00	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		
0	6275.47	2716.63	3.73	2720.36	367.0	19.88	6.14	2726.50	.00	5.17		6.00	.00	.00	0	.00
0	37.06	.01901					.01468	.54			3.45			.00		
0	6312.53	2717.33	3.78	2721.11	367.0	19.57	5.95	2727.06	.00	5.17		6.00	.00	.00	0	.00
0	70.27	.01901					.01358	.95			3.45			.00		
0	6382.80	2718.67	3.94	2722.61	367.0	18.66	5.41	2728.02	.00	5.17		6.00	.00	.00	0	.00
0	46.39	.01901					.01207	.56			3.45			.00		
0	6429.19	2719.55	4.11	2723.66	367.0	17.79	4.92	2728.58	.00	5.17		6.00	.00	.00	0	.00
0	JUNCT STR	.30000					.01134	.06						.00		
0	6434.19	2721.05	3.83	2724.88	332.0	17.43	4.72	2729.60	.00	4.96		6.00	.00	.00	0	.00
0	JUNCT STR	.30000					.01497	.00						.00		
0	6434.19	2721.05	3.83	2724.88	332.0	20.57	6.58	2731.46	.00	4.77		5.00	.00	.00	0	.00
1															PAGE	6

WATER SURFACE PROFILE LISTING
WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	124.44	.01862				.01863	2.32			3.83			.00		
0	6558.63	2723.37	3.83	2727.20	332.0	20.57	6.58	2733.77	.00	4.77		5.00	.00	.00	0	.00
0	458.25	.01862					.01798	8.24			3.83			.00		
0	7016.89	2731.90	3.96	2735.86	332.0	19.90	6.15	2742.01	.00	4.77		5.00	.00	.00	0	.00
0	169.21	.01862					.01655	2.80			3.83			.00		
0	7186.10	2735.05	4.17	2739.22	332.0	18.97	5.59	2744.81	.00	4.77		5.00	.00	.00	0	.00
0	JUNCT STR	.20000					.01537	.08						.00		
0	7191.10	2736.05	4.06	2740.11	316.0	18.50	5.32	2745.43	.00	4.72		5.00	.00	.00	0	.00
0	332.26	.01505					.01465	4.87			4.05			.00		
0	7523.36	2741.05	4.16	2745.21	316.0	18.10	5.09	2750.30	.00	4.72		5.00	.00	.00	0	.00
0	173.42	.01505					.01378	2.39			4.05			.00		
0	7696.78	2743.66	4.40	2748.06	316.0	17.25	4.63	2752.69	.00	4.72		5.00	.00	.00	0	.00
0	49.27	.01505					.01298	.64			4.05			.00		
0	7746.05	2744.40	4.72	2749.12	316.0	16.45	4.21	2753.33	.00	4.72		5.00	.00	.00	0	.00
0	JUNCT STR	.02002					.01150	.06						.00		
0	7751.05	2744.50	7.32	2751.82	264.0	13.45	2.81	2754.63	.00	4.51		5.00	.00	.00	0	.00
0	374.04	.01502					.01028	3.84			3.47			.00		
0	8125.09	2750.12	5.59	2755.71	264.0	13.45	2.81	2758.52	.00	4.51		5.00	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		
0	8125.09	2750.12	3.47	2753.59	264.0	18.13	5.11	2758.70	.00	4.51		5.00	.00	.00	0	.00
0	296.07	.01502					.01481	4.38			3.47			.00		
0	8421.15	2754.57	3.50	2758.06	264.0	17.99	5.03	2763.09	.00	4.51		5.00	.00	.00	0	.00
1															PAGE	7

WATER SURFACE PROFILE LISTING
WSPG FOR NEW DESERT INN FLOWS AT THE LAKES
FILE NAME DINEW.DAT CHANNEL REVISED FROM DBI2.DAT
INCLUDES BOX CULVERT TO DET BASIN, DURANGO AS LATERAL

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	264.22	.01502				.01389	3.67			3.47			.00		

0	8685.37	2758.53	3.66	2762.19	264.0	17.15	4.57	2766.76	.00	4.51		5.00	.00	.00	0	.00
0	93.57	.01502					.01244	1.16			3.47			.00		
0	8778.94	2759.94	3.83	2763.77	264.0	16.35	4.16	2767.93	.00	4.51		5.00	.00	.00	0	.00
0	48.65	.01502					.01120	.54			3.47			.00		
0	8827.59	2760.67	4.02	2764.69	264.0	15.59	3.78	2768.47	.00	4.51		5.00	.00	.00	0	.00
0	25.85	.01502					.01017	.26			3.47			.00		
0	8853.45	2761.06	4.24	2765.30	264.0	14.87	3.43	2768.73	.00	4.51		5.00	.00	.00	0	.00
0	8.73	.01502					.00937	.08			3.47			.00		
0	8862.18	2761.19	4.51	2765.69	264.0	14.17	3.12	2768.82	.00	4.51		5.00	.00	.00	0	.00
0	JUNCT STR	.50000					.00463	.02						.00		
0	8867.18	2763.69	5.52	2769.21	38.0	7.74	.93	2770.14	.00	2.08		2.50	.00	.00	0	.00
0	117.85	.01536					.00858	1.01			1.61			.00		
0	8985.03	2765.50	4.77	2770.27	38.0	7.74	.93	2771.20	.00	2.08		2.50	.00	.00	0	.00
1																

BUFFALO SOUTH

```
JD  0  0  1
T1 WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
T2 RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
T3 FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
SO      0.002425.61  1       .013
R     313.762426.24  1       .013
TS    323.762426.26 19       .013
TS    333.762426.28 20       .013
TS    343.762426.30 21       .013
TS    353.762426.32 22       .013
TS    363.762426.34 23       .013
WX                   2       .013
R    1328.092428.75  2       .013
R    1341.092428.79  2       .013
TS   1349.092428.82 17       .013
R    1367.092428.87 17       .013
TS   1375.092428.90 24       .013
R    1380.092428.93 24       .013
JX   1385.092429.05 24 11    .013   105.0        2429.34        60.0
R    1435.092429.10 24       .013
JX   1437.092429.11 24 11    .013    20.0        2431.43        60.0
R    2704.592433.20 24       .013                                       3
JX   2708.092433.21 24 11    .013    48.6        2435.69        90.0
R    2723.092433.37 24       .013
JX   2726.592433.39 24 11    .013    48.6        2435.75        62.0
R    2762.092433.47 24       .013                                       1
JX   2768.092433.49 24 8     .013    30.8        2435.39        60.0
R    4002.112437.29 24       .013                                       3
JX   4014.112439.18  3 8     .013    73.0        2441.71        30.0
R    4682.122441.32  3       .013
TS   4690.122441.35  3       .013                                       1
R    4732.122442.76 18       .013                                       1
R    4982.122444.52 18       .013
JX   4985.622444.62 18 10    .013    19.0        2447.58        60.0
R    5705.122446.92 18       .013                                       1
JX   5706.622446.93 18 28    .013     3.0        2451.39        90.0
R    6360.762449.01 18       .013                                       1
TS   6368.762449.11 18       .013
R    6699.762452.81 18       .013                                       1
JX   6709.062452.82 18 26    .013    17.0        2456.23        90.0
R    6713.062453.30 18       .013
TS   6721.062453.40 18       .013
R    7133.062458.51 18       .013                                       1
R    7172.062458.65 18       .013
JX   7174.062458.66 18 28    .013    17.0        2463.16        45.0
R    7651.682460.17 18       .013                                       1
JX   7654.442460.21  5 25    .013   255.0        2461.86        45.0
R    7706.402461.14  5       .013
TS   7714.402461.30 14       .013
R    8400.872475.03 14       .013                                       1
R    8782.872478.28 14       .013
TS   8790.872478.36  4       .013
R    8953.002480.00  4       .013
JX   8956.002480.10  4 10    .013    55.0        2483.00        72.0
R    9009.982480.58  4       .013
R    9114.002481.50  4       .013
TS   9122.002481.54 14       .013
R    9549.922483.70 14       .013
JX   9554.922483.72 14 11    .013    63.0        2487.21        60.0
R   10212.232489.63 14       .013
```

```
JX  10217.232490.13  6 10   .013    46.0        2494.63        60.0
 R  10393.872491.72  6      .013                                      1
 R  10996.202494.73  6      .013                                      1
 R  11598.542499.55  6      .013                                      1
JX  11608.542499.65  6 13   .013   206.0        2501.55        47.0
 R  11726.382500.57  6      .013                                      1
 R  12201.022502.00  6      .013                                      1
JX  12206.022502.10  6 11   .013    67.0        2506.00        60.0
 R  12925.752504.15  6      .013                                      1
JX  12935.752506.15  6 13   .013   237.0        2506.15        48.0
 R  13023.492506.42 13      .013                                      1
TS  13029.492507.42 25      .013
 R  13559.552509.01 25      .013                                      1
JX  13565.552509.51 25 26   .013    21.0        2511.51        60.0
 R  13696.112509.90  8      .013
 R  13702.112510.00  8      .013                                      1
SH                   8
CD   1  1              8.0     10.0 1.5  1.5
CD   2  3   1  1.0     6.0     21.0
CD   3  3              6.0     12.0
CD   4  3              6.0      9.0
CD   5  3              5.0     12.0
CD   6  4              7.50
CD   7  4              7.00
CD   8  4              4.00
CD   9  4              2.50
CD  10  4              3.00
CD  11  4              3.50
CD  12  4              5.00
CD  13  4              5.50
CD  14  4              8.00
CD  15  4              6.50
CD  16  3              5.00    15.00
CD  17  3   1  1.0     5.00    23.00
CD  18  3              7.00    10.00
CD  19  5
CD  20  5
CD  21  5
CD  22  5
CD  23  3              6.00    21.00
CD  24  3   1  1.0     7.00    19.00
CD  25  4              4.50
CD  26  4              2.00
CD  27  3              5.00     3.00
CD  28  4              1.50
PTS19  7 10.0  34.45 20.0  28.06 20.0  26.42 26.0  26.26 35.0  26.42
PTS      35.0  28.06 44.0  34.45
PTS20  7 10.0  34.47 17.0  29.68 17.0  26.40 24.5  26.28 37.0  26.40
PTS      37.0  29.68 44.0  34.47
PTS21  7 10.0  34.50 14.5  31.30 14.5  26.38 23.0  26.30 35.0  26.30
PTS      35.0  31.30 44.0  34.50
PTS22  7 10.0  34.52 12.0  32.92 12.0  26.36 22.0  26.32 32.0  26.36
PTS      32.0  32.92 44.0  34.52

Q            85.0
```

STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Jan 21, 1999 22:55:56

Input file : buffalo.dat
Output file: buffalo.out

INPUT FILE LISTING

```
T1 WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
T2 RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
T3 FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
SO      0.002425.61  1       .013
R     313.762426.24  1       .013
TS    323.762426.26 19       .013
TS    333.762426.28 20       .013
TS    343.762426.30 21       .013
TS    353.762426.32 22       .013
TS    363.762426.34 23       .013
WX                   2       .013
R    1328.092428.75  2       .013
R    1341.092428.79  2       .013
TS   1349.092428.82 17       .013
R    1367.092428.87 17       .013
TS   1375.092428.90 24       .013
R    1380.092428.93 24       .013
JX   1385.092429.05 24 11    .013   105.0        2429.34        60.0
R    1435.092429.10 24       .013
JX   1437.092429.11 24 11    .013    20.0        2431.43        60.0
R    2704.592433.20 24       .013                                       3
JX   2708.092433.21 24 11    .013    48.6        2435.69        90.0
R    2723.092433.37 24       .013
JX   2726.592433.39 24 11    .013    48.6        2435.75        62.0
R    2762.092433.47 24       .013                                       1
JX   2768.092433.49 24 8     .013    30.8        2435.39        60.0
R    4002.112437.29 24       .013                                       3
JX   4014.112439.18  3 8     .013    73.0        2441.71        30.0
R    4682.122441.32  3       .013
TS   4690.122441.35  3       .013                                       1
R    4732.122442.76 18       .013                                       1
R    4982.122444.52 18       .013
JX   4985.622444.62 18 10    .013    19.0        2447.58        60.0
R    5705.122446.92 18       .013                                       1
JX   5706.622446.93 18 28    .013     3.0        2451.39        90.0
R    6360.762449.01 18       .013                                       1
TS   6368.762449.11 18       .013
R    6699.762452.81 18       .013                                       1
JX   6709.062452.82 18 26    .013    17.0        2456.23        90.0
R    6713.062453.30 18       .013
TS   6721.062453.40 18       .013
R    7133.062458.51 18       .013                                       1
R    7172.062458.65 18       .013
JX   7174.062458.66 18 28    .013    17.0        2463.16        45.0
R    7651.682460.17 18       .013                                       1
JX   7654.442460.21  5 25    .013   255.0        2461.86        45.0
R    7706.402461.14  5       .013
TS   7714.402461.30 14       .013
R    8400.872475.03 14       .013                                       1
R    8782.872478.28 14       .013
TS   8790.872478.36  4       .013
R    8953.002480.00  4       .013
JX   8956.002480.10  4 10    .013    55.0        2483.00        72.0
R    9009.982480.58  4       .013
R    9114.002481.50  4       .013
TS   9122.002481.54 14       .013
R    9549.922483.70 14       .013
JX   9554.922483.72 14 11    .013    63.0        2487.21        60.0
R   10212.232489.63 14       .013
JX  10217.232490.13  6 10    .013    46.0        2494.63        60.0
R   10393.872491.72  6       .013                                       1
R   10996.202494.73  6       .013                                       1
R   11598.542499.55  6       .013                                       1
JX  11608.542499.65  6 13    .013   206.0        2501.55        47.0
R   11726.382500.57  6       .013                                       1
R   12201.022502.00  6       .013                                       1
JX  12206.022502.10  6 11    .013    67.0        2506.00        60.0
R   12925.752504.15  6       .013                                       1
JX  12935.752506.15  6 13    .013   237.0        2506.15        48.0
R   13023.492506.42 13       .013                                       1
TS  13029.492507.42 25       .013
R   13559.552509.01 25       .013                                       1
JX  13565.552509.51 25 26    .013    21.0        2511.51        60.0
R   13696.112509.90  8       .013
R   13702.112510.00  8       .013                                       1
SH                   8
1                                                SP
                    WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING                                    PAGE    1
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR    INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH                 DROP

 CD      1    1      0       .00       8.00   10.00  1.50  1.50   .00
 CD      2    3      1      1.00       6.00   21.00   .00   .00   .00
 CD      3    3      0       .00       6.00   12.00   .00   .00   .00
 CD      4    3      0       .00       6.00    9.00   .00   .00   .00
 CD      5    3      0       .00       5.00   12.00   .00   .00   .00
 CD      6    4                        7.50
```

```
 CD      7    4                          7.00
 CD      8    4                          4.00
 CD      9    4                          2.50
 CD     10    4                          3.00
 CD     11    4                          3.50
 CD     12    4                          5.00
 CD     13    4                          5.50
 CD     14    4                          8.00
 CD     15    4                          6.50
 CD     16    3      0         .00       5.00    15.00     .00    .00    .00
 CD     17    3      1        1.00       5.00    23.00     .00    .00    .00
 CD     18    3      0         .00       7.00    10.00     .00    .00    .00
 CD     19    5      0         .00
 CD     20    5      0         .00
 CD     21    5      0         .00
 CD     22    5      0         .00
 CD     23    3      0         .00       6.00    21.00     .00    .00    .00
 CD     24    3      1        1.00       7.00    19.00     .00    .00    .00
 CD     25    4                          4.50
 CD     26    4                          2.00
 CD     27    3      0         .00       5.00     3.00     .00    .00    .00
 CD     28    4                          1.50
1                                                SP
                                WATER SURFACE PROFILE - CROSS SECTION POINT LISTING                                  PAGE    2
   CARD  SECT  NO OF    X(1) , Y(1)    X(2) , Y(2)    X(3) , Y(3)    X(4) , Y(4)    X(5) , Y(5)    X(6) , Y(6)    X(7) , Y(7)
   CODE   NO   POINTS   X(8) , Y(8)    X(9) , Y(9)   X(10) ,Y(10)   X(11) ,Y(11)   X(N) , Y(N)   X(N+1),Y(N+1)  X(99) ,Y(99)

0  PTS    19     7     10.00  34.45   20.00  28.06   20.00  26.42   26.00  26.26   35.00  26.42   35.00  28.06   44.00  34.45
0  PTS    20     7     10.00  34.47   17.00  29.68   17.00  26.40   24.50  26.28   37.00  26.40   37.00  29.68   44.00  34.47
0  PTS    21     7     10.00  34.50   14.50  31.30   14.50  26.38   23.00  26.30   35.00  26.30   35.00  31.30   44.00  34.50
0  PTS    22     7     10.00  34.52   12.00  32.92   12.00  26.36   22.00  26.32   32.00  26.36   32.00  32.92   44.00  34.52
1                                                                                                                  PAGE NO   1
0                          WATER SURFACE PROFILE - TITLE CARD LISTING
0HEADING LINE NO 1 IS -
0                            WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
0HEADING LINE NO 2 IS -
0                            RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
0HEADING LINE NO 3 IS -
0                            FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
1                                                                                                                  PAGE NO   2
0                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
0 ELEMENT NO   1 IS A SYSTEM OUTLET          *          *          *
                       U/S DATA   STATION    INVERT  SECT                                          W S ELEV
                                      .00 2425.61    1                                               .00
0 ELEMENT NO   2 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                   313.76 2426.24    1              .013                                      .00    .00     .00      0
0 ELEMENT NO   3 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                   323.76 2426.26   19              .013
0 ELEMENT NO   4 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                   333.76 2426.28   20              .013
0 ELEMENT NO   5 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                   343.76 2426.30   21              .013
0 ELEMENT NO   6 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                   353.76 2426.32   22              .013
0 ELEMENT NO   7 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                   363.76 2426.34   23              .013
0 ELEMENT NO   8 IS A  WALL  EXIT                                    *
                       U/S DATA   STATION    INVERT  SECT
                                   363.76 2426.34    2
0 ELEMENT NO   9 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  1328.09 2428.75    2              .013                                      .00    .00     .00      0
0 ELEMENT NO  10 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  1341.09 2428.79    2              .013                                      .00    .00     .00      0
0 ELEMENT NO  11 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                  1349.09 2428.82   17              .013
0 ELEMENT NO  12 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  1367.09 2428.87   17              .013                                      .00    .00     .00      0
0 ELEMENT NO  13 IS A TRANSITION            *          *          *
                       U/S DATA   STATION    INVERT  SECT              N
                                  1375.09 2428.90   24              .013
                                                                                                                   PAGE NO   3
                           WATER SURFACE PROFILE - ELEMENT CARD LISTING
0 ELEMENT NO  14 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  1380.09 2428.93   24              .013                                      .00    .00     .00      0
0 ELEMENT NO  15 IS A JUNCTION              *          *          *          *                    *                    *
                       U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                  1385.09 2429.05   24    11     0    .013    105.0       .0  2429.34       .00  60.00     .00
0 ELEMENT NO  16 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  1435.09 2429.10   24              .013                                      .00    .00     .00      0
0 ELEMENT NO  17 IS A JUNCTION              *          *          *          *                    *                    *
                       U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                  1437.09 2429.11   24    11     0    .013     20.0       .0  2431.43       .00  60.00     .00
0 ELEMENT NO  18 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  2704.59 2433.20   24              .013                                      .00    .00     .00      3
0 ELEMENT NO  19 IS A JUNCTION              *          *          *          *                    *                    *
                       U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                  2708.09 2433.21   24    11     0    .013     48.6       .0  2435.69       .00  90.00     .00
0 ELEMENT NO  20 IS A REACH                 *          *          *
                       U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                                  2723.09 2433.37   24              .013                                      .00    .00     .00      0
0 ELEMENT NO  21 IS A JUNCTION              *          *          *          *                    *                    *
                       U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
```

2726.59 2433.39 24 11 0 .013 48.6 .0 2435.75 .00 62.00 .00

0 ELEMENT NO 22 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	2762.09	2433.47	24	.013	.00	.00	.00	1

0 ELEMENT NO 23 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	2768.09	2433.49	24	8	0	.013	30.8	.0	2435.39	.00	60.00	.00

1
0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

PAGE NO 4

0 ELEMENT NO 24 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4002.11	2437.29	24	.013	.00	.00	.00	3

0 ELEMENT NO 25 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	4014.11	2439.18	3	8	0	.013	73.0	.0	2441.71	.00	30.00	.00

0 ELEMENT NO 26 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4682.12	2441.32	3	.013	.00	.00	.00	0

0 ELEMENT NO 27 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	4690.12	2441.35	3	.013

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

0 ELEMENT NO 28 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4732.12	2442.76	18	.013	.00	.00	.00	1

0 ELEMENT NO 29 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4982.12	2444.52	18	.013	.00	.00	.00	0

0 ELEMENT NO 30 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	4985.62	2444.62	18	10	0	.013	19.0	.0	2447.58	.00	60.00	.00

0 ELEMENT NO 31 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	5705.12	2446.92	18	.013	.00	.00	.00	1

0 ELEMENT NO 32 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	5706.62	2446.93	18	28	0	.013	3.0	.0	2451.39	.00	90.00	.00

0 ELEMENT NO 33 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	6360.76	2449.01	18	.013	.00	.00	.00	1

1
0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

PAGE NO 5

0 ELEMENT NO 34 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	6368.76	2449.11	18	.013

0 ELEMENT NO 35 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	6699.76	2452.81	18	.013	.00	.00	.00	1

0 ELEMENT NO 36 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	6709.06	2452.82	18	26	0	.013	17.0	.0	2456.23	.00	90.00	.00

0 ELEMENT NO 37 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	6713.06	2453.30	18	.013	.00	.00	.00	0

0 ELEMENT NO 38 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	6721.06	2453.40	18	.013

0 ELEMENT NO 39 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	7133.06	2458.51	18	.013	.00	.00	.00	1

0 ELEMENT NO 40 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	7172.06	2458.65	18	.013	.00	.00	.00	0

0 ELEMENT NO 41 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	7174.06	2458.66	18	28	0	.013	17.0	.0	2463.16	.00	45.00	.00

0 ELEMENT NO 42 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	7651.68	2460.17	18	.013	.00	.00	.00	1

0 ELEMENT NO 43 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	7654.44	2460.21	5	25	0	.013	255.0	.0	2461.86	.00	45.00	.00

1
0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

PAGE NO 6

0 ELEMENT NO 44 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	7706.40	2461.14	5	.013	.00	.00	.00	0

0 ELEMENT NO 45 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	7714.40	2461.30	14	.013

0 ELEMENT NO 46 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	8400.87	2475.03	14	.013	.00	.00	.00	1

0 ELEMENT NO 47 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	8782.87	2478.28	14	.013	.00	.00	.00	0

0 ELEMENT NO 48 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	8790.87	2478.36	4	.013

0 ELEMENT NO 49 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	8953.00	2480.00	4	.013	.00	.00	.00	0

0 ELEMENT NO 50 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	8956.00	2480.10	4	10	0	.013	55.0	.0	2483.00	.00	72.00	.00

0 ELEMENT NO 51 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	9009.98	2480.58	4	.013	.00	.00	.00	0

0 ELEMENT NO 52 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	9114.00	2481.50	4	.013	.00	.00	.00	0

0 ELEMENT NO 53 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	9122.00	2481.54	14	.013

0 ELEMENT NO 54 IS A REACH

```
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                             9549.92 2483.70   14              .013                                    .00    .00     .00      0
 0 ELEMENT NO  55 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             9554.92 2483.72   14     11     0  .013    63.0       .0  2487.21      .00   60.00     .00
1
0                                                                                                            PAGE NO   7
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 0 ELEMENT NO  56 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            10212.23 2489.63   14              .013                                    .00    .00     .00      0
 0 ELEMENT NO  57 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                            10217.23 2490.13    6     10     0  .013    46.0       .0  2494.63      .00   60.00     .00
 0 ELEMENT NO  58 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            10393.87 2491.72    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  59 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            10996.20 2494.73    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  60 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            11598.54 2499.55    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  61 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                            11608.54 2499.65    6     13     0  .013   206.0       .0  2501.55      .00   47.00     .00
 0 ELEMENT NO  62 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            11726.38 2500.57    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  63 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            12201.02 2502.00    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  64 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                            12206.02 2502.10    6     11     0  .013    67.0       .0  2506.00      .00   60.00     .00
 0 ELEMENT NO  65 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            12925.75 2504.15    6              .013                                    .00    .00     .00      1
 0 ELEMENT NO  66 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                            12935.75 2506.15    6     13     0  .013   237.0       .0  2506.15      .00   48.00     .00
1
0                                                                                                            PAGE NO   8
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 0 ELEMENT NO  67 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            13023.49 2506.42   13              .013                                    .00    .00     .00      1
 0 ELEMENT NO  68 IS A TRANSITION    *       *       *
                U/S DATA   STATION    INVERT  SECT              N
                            13029.49 2507.42   25              .013
 0 ELEMENT NO  69 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            13559.55 2509.01   25              .013                                    .00    .00     .00      1
 0 ELEMENT NO  70 IS A JUNCTION      *       *       *       *                       *                       *       *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                            13565.55 2509.51   25     26     0  .013    21.0       .0  2511.51      .00   60.00     .00
 WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 0 ELEMENT NO  71 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            13696.11 2509.90    8              .013                                    .00    .00     .00      0
 0 ELEMENT NO  72 IS A REACH         *       *       *
                U/S DATA   STATION    INVERT  SECT              N                                  RADIUS  ANGLE  ANG PT  MAN H
                            13702.11 2510.00    8              .013                                    .00    .00     .00      1
 0 ELEMENT NO  73 IS A SYSTEM HEADWORKS      *                       *
                U/S DATA   STATION    INVERT  SECT                                          W S ELEV
                            13702.11 2510.00    8                                              .00
 NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

  ERROR MESSAGE NO. 32 - CRITICAL DEPTH MAY BE INACCURATE IN ELEMENT  73   INCREMENT =    .000010
  ERROR MESSAGE NO. 32 - CRITICAL DEPTH MAY BE INACCURATE IN ELEMENT  72   INCREMENT =    .000010
  ERROR MESSAGE NO. 32 - CRITICAL DEPTH MAY BE INACCURATE IN ELEMENT  71   INCREMENT =    .000010
  ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
1                                                                                                            PAGE     1
                                    WATER SURFACE PROFILE LISTING
                          WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
                          RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
                          FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
 0 STATION    INVERT   DEPTH     W.S.        Q       VEL      VEL      ENERGY   SUPER  CRITICAL          HGT/   BASE/     ZL    NO  AVBPR
             ELEV    OF FLOW    ELEV                         HEAD    GRD.EL.   ELEV    DEPTH             DIA    ID NO.          PIER
 0 L/ELEM     SO                                          SF AVE      HF                  NORM DEPTH                    ZR
 ********************************************************************************************************************************
 0      .00  2425.61     6.10   2431.71    1417.0    12.14     2.29   2434.00    .00     6.27              8.00    10.00   1.50    0    .00
 0   224.80   .00201                                     .00201     .45                          6.10                      1.50
 0   224.80  2426.06     6.10   2432.16    1417.0    12.14     2.29   2434.45    .00     6.27              8.00    10.00   1.50    0    .00
 0    88.96   .00201                                     .00190     .17                          6.10                      1.50
 0   313.76  2426.24     6.27   2432.51    1417.0    11.66     2.11   2434.62    .00     6.27              8.00    10.00   1.50    0    .00
 0TRANS STR   .00200                                     .00161     .02                                                   1.50
 0   323.76  2426.26     6.71   2432.97    1417.0    10.47     1.70   2434.67            6.20                      19              0    .00
 0TRANS STR   .00200                                     .00111     .01
 0   333.76  2426.28     7.39   2433.67    1417.0     8.35     1.08   2434.75            5.61                      20              0    .00
 0TRANS STR   .00200                                     .00090     .01
 0   343.76  2426.30     7.25   2433.55    1417.0     8.91     1.23   2434.79            5.45                      21              0    .00
 0TRANS STR   .00200                                     .00116     .01
 0   353.76  2426.32     6.94   2433.26    1417.0    10.20     1.62   2434.88            5.40                      22              0    .00
 0TRANS STR   .00200                                     .00224     .02
 0   363.76  2426.34     6.66   2433.00    1417.0    11.27     1.97   2434.97    .00     5.21              6.00    21.00    .00    0    .00
 0  WALL EXIT                                                                                                              .00
 0   363.76  2426.34     6.66   2433.00    1417.0    11.86     2.19   2435.18    .00     5.38              6.00    21.00    .00    1   1.00
 0   964.33   .00250                                     .00468    4.51                          6.00                       .00
 0  1328.09  2428.75     8.76   2437.51    1417.0    11.86     2.19   2439.70    .00     5.38              6.00    21.00    .00    1   1.00
 0    13.00   .00308                                     .00468     .06                          5.78                       .00
 0  1341.09  2428.79     8.78   2437.57    1417.0    11.86     2.19   2439.76    .00     5.38              6.00    21.00    .00    1   1.00
 0TRANS STR   .00375                                     .00547     .04                                                    .00
1                                                                                                            PAGE     2
                                    WATER SURFACE PROFILE LISTING
                          WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
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RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	1349.09	2428.82	8.46	2437.28	1417.0	12.94	2.60	2439.88	.00	5.00		5.00	23.00	.00	1	1.00
0	18.00	.00278					.00626	.11			5.00			.00		
0	1367.09	2428.87	8.52	2437.39	1417.0	12.94	2.60	2440.00	.00	5.00		5.00	23.00	.00	1	1.00
0	TRANS STR	.00372					.00512	.04						.00		
0	1375.09	2428.90	9.22	2438.12	1417.0	11.29	1.98	2440.10	.00	5.78		7.00	19.00	.00	1	1.00
0	5.00	.00601					.00398	.02			5.00			.00		
0	1380.09	2428.93	9.21	2438.14	1417.0	11.29	1.98	2440.12	.00	5.78		7.00	19.00	.00	1	1.00
0	JUNCT STR	.02402					.00369	.02						.00		
0	1385.09	2429.05	9.53	2438.58	1312.0	10.45	1.70	2440.28	.00	5.49		7.00	19.00	.00	1	1.00
0	50.00	.00100					.00341	.17			7.00			.00		
0	1435.09	2429.10	9.65	2438.75	1312.0	10.45	1.70	2440.45	.00	5.49		7.00	19.00	.00	1	1.00
0	JUNCT STR	.00501					.00336	.01						.00		
0	1437.09	2429.11	9.74	2438.85	1292.0	10.29	1.65	2440.50	.00	5.43		7.00	19.00	.00	1	1.00
0	1267.50	.00323					.00330	4.19			5.91			.00		
0	2704.59	2433.20	10.09	2443.29	1292.0	10.29	1.65	2444.94	.00	5.43		7.00	19.00	.00	1	1.00
0	JUNCT STR	.00286					.00318	.01						.00		
0	2708.09	2433.21	10.34	2443.55	1243.4	9.91	1.53	2445.07	.00	5.29		7.00	19.00	.00	1	1.00
0	15.00	.01068					.00306	.05			3.66			.00		
0	2723.09	2433.37	10.22	2443.59	1243.4	9.91	1.53	2445.12	.00	5.29		7.00	19.00	.00	1	1.00
0	JUNCT STR	.00565					.00294	.01						.00		
0	2726.59	2433.39	10.42	2443.81	1194.8	9.52	1.41	2445.22	.00	5.15		7.00	19.00	.00	1	1.00
0	35.50	.00226					.00283	.10			6.40			.00		
1																

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	2762.09	2433.47	10.51	2443.98	1194.8	9.52	1.41	2445.39	.00	5.15		7.00	19.00	.00	1	1.00
0	JUNCT STR	.00334					.00275	.02						.00		
0	2768.09	2433.49	10.64	2444.13	1164.0	9.27	1.34	2445.46	.00	5.07		7.00	19.00	.00	1	1.00
0	1234.02	.00308					.00268	3.31			5.55			.00		
0	4002.11	2437.29	10.35	2447.64	1164.0	9.27	1.34	2448.98	.00	5.07		7.00	19.00	.00	1	1.00
0	JUNCT STR	.15749					.00487	.06						.00		
0	4014.11	2439.18	6.58	2445.76	1091.0	15.21	3.59	2449.35	.00	6.00		6.00	12.00	.00	0	.00
0	668.01	.00320					.00705	4.71			6.00			.00		
0	4682.12	2441.32	9.15	2450.47	1091.0	15.21	3.59	2454.06	.00	6.00		6.00	12.00	.00	0	.00
0	TRANS STR	.00375					.00705	.06						.00		
0	4690.12	2441.35	9.17	2450.52	1091.0	15.64	3.80	2454.33	.00	7.00		7.00	10.00	.00	0	.00
0	42.00	.03357					.00718	.30			3.30			.00		
0	4732.12	2442.76	8.26	2451.02	1091.0	15.64	3.80	2454.82	.00	7.00		7.00	10.00	.00	0	.00
0	250.00	.00704					.00718	1.80			5.87			.00		
0	4982.12	2444.52	8.29	2452.81	1091.0	15.64	3.80	2456.61	.00	7.00		7.00	10.00	.00	0	.00
0	JUNCT STR	.02860					.00706	.02						.00		
0	4985.62	2444.62	8.47	2453.09	1072.0	15.37	3.67	2456.76	.00	7.00		7.00	10.00	.00	0	.00
0	719.50	.00320					.00694	4.99			7.00			.00		
0	5705.12	2446.92	11.34	2458.26	1072.0	15.37	3.67	2461.93	.00	7.00		7.00	10.00	.00	0	.00
0	JUNCT STR	.00667					.00692	.01						.00		
0	5706.62	2446.93	11.38	2458.31	1069.0	15.33	3.65	2461.96	.00	7.00		7.00	10.00	.00	0	.00
0	654.14	.00318					.00690	4.51			7.00			.00		
1																

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	6360.76	2449.01	14.00	2463.01	1069.0	15.33	3.65	2466.66	.00	7.00		7.00	10.00	.00	0	.00
0	TRANS STR	.01251					.00690	.06						.00		
0	6368.76	2449.11	13.95	2463.06	1069.0	15.33	3.65	2466.71	.00	7.00		7.00	10.00	.00	0	.00
0	331.00	.01118					.00690	2.28			4.85			.00		
0	6699.76	2452.81	12.72	2465.53	1069.0	15.33	3.65	2469.18	.00	7.00		7.00	10.00	.00	0	.00
0	JUNCT STR	.00108					.00679	.06						.00		
0	6709.06	2452.82	13.00	2465.82	1052.0	15.08	3.54	2469.36	.00	7.00		7.00	10.00	.00	0	.00
0	4.00	.11999					.00668	.03			2.06			.00		
0	6713.06	2453.30	12.55	2465.85	1052.0	15.08	3.54	2469.38	.00	7.00		7.00	10.00	.00	0	.00
0	TRANS STR	.01248					.00668	.05						.00		
0	6721.06	2453.40	12.50	2465.90	1052.0	15.08	3.54	2469.44	.00	7.00		7.00	10.00	.00	0	.00
0	412.00	.01240					.00668	2.75			4.61			.00		
0	7133.06	2458.51	10.32	2468.83	1052.0	15.08	3.54	2472.36	.00	7.00		7.00	10.00	.00	0	.00
0	39.00	.00359					.00668	.26			7.00			.00		
0	7172.06	2458.65	10.44	2469.09	1052.0	15.08	3.54	2472.63	.00	7.00		7.00	10.00	.00	0	.00
0	JUNCT STR	.00501					.00657	.01						.00		
0	7174.06	2458.66	10.62	2469.28	1035.0	14.84	3.42	2472.70	.00	6.93		7.00	10.00	.00	0	.00
0	477.62	.00316					.00646	3.09			7.00			.00		
0	7651.68	2460.17	12.37	2472.54	1035.0	14.84	3.42	2475.96	.00	6.93		7.00	10.00	.00	0	.00
0	JUNCT STR	.01451					.00631	.02						.00		
0	7654.44	2460.21	13.44	2473.65	780.0	13.05	2.65	2476.30	.00	5.00		5.00	12.00	.00	0	.00
0	51.96	.01790					.00615	.32			2.77			.00		
1																

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	7706.40	2461.14	12.83	2473.97	780.0	13.05	2.65	2476.62	.00	5.00		5.00	12.00	.00	0	.00
0	TRANS STR	.02002					.00673	.05						.00		
0	7714.40	2461.30	11.85	2473.15	780.0	15.52	3.74	2476.89	.00	6.98		8.00	.00	.00	0	.00
0	147.44	.02000					.00731	1.08			4.49			.00		
0	7861.84	2464.25	10.02	2474.27	780.0	15.52	3.74	2478.01	.00	6.98		8.00	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		

0 7861.84	2464.25	4.69	2468.94	780.0	25.44	10.06	2479.00	.00	6.98		8.00	.00	.00	0	.00
0 122.79	.02000					.01692	2.08			4.49			.00		
0 7984.63	2466.71	4.77	2471.48	780.0	24.94	9.67	2481.14	.00	6.98		8.00	.00	.00	0	.00
0 153.21	.02000					.01554	2.38			4.49			.00		
0 8137.84	2469.77	4.97	2474.74	780.0	23.78	8.79	2483.52	.00	6.98		8.00	.00	.00	0	.00
0 95.08	.02000					.01378	1.31			4.49			.00		
0 8232.92	2471.67	5.18	2476.85	780.0	22.67	7.99	2484.83	.00	6.98		8.00	.00	.00	0	.00
0 64.91	.02000					.01223	.79			4.49			.00		
0 8297.83	2472.97	5.40	2478.37	780.0	21.62	7.26	2485.63	.00	6.98		8.00	.00	.00	0	.00
0 46.33	.02000					.01089	.50			4.49			.00		
0 8344.15	2473.90	5.64	2479.53	780.0	20.61	6.60	2486.13	.00	6.98		8.00	.00	.00	0	.00
0 33.38	.02000					.00972	.32			4.49			.00		
0 8377.53	2474.56	5.89	2480.46	780.0	19.65	6.00	2486.46	.00	6.98		8.00	.00	.00	0	.00
0 23.34	.02000					.00871	.20			4.49			.00		
0 8400.87	2475.03	6.17	2481.20	780.0	18.74	5.46	2486.66	.00	6.98		8.00	.00	.00	0	.00
0 176.30	.00851					.00810	1.43			6.09			.00		

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WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 8577.17	2476.53	6.28	2482.80	780.0	18.44	5.28	2488.09	.00	6.98		8.00	.00	.00	0	.00
0 168.95	.00851					.00759	1.28			6.09			.00		
0 8746.12	2477.97	6.60	2484.57	780.0	17.58	4.80	2489.37	.00	6.98		8.00	.00	.00	0	.00
0 36.75	.00851					.00694	.25			6.09			.00		
0 8782.87	2478.28	6.98	2485.26	780.0	16.76	4.37	2489.63	.00	6.98		8.00	.00	.00	0	.00
0TRANS STR	.01001					.00703	.06						.00		
0 8790.87	2478.36	8.16	2486.52	780.0	14.51	3.27	2489.79	.00	6.00		6.00	9.00	.00	0	.00
0 162.13	.01012					.00741	1.20			4.42			.00		
0 8953.00	2480.00	7.72	2487.72	780.0	14.51	3.27	2490.99	.00	6.00		6.00	9.00	.00	0	.00
0JUNCT STR	.03337					.00690	.02						.00		
0 8956.00	2480.10	8.45	2488.55	725.0	13.49	2.83	2491.38	.00	5.86		6.00	9.00	.00	0	.00
0 53.98	.00889					.00640	.35			4.39			.00		
0 9009.98	2480.58	8.32	2488.90	725.0	13.49	2.83	2491.73	.00	5.86		6.00	9.00	.00	0	.00
0 104.02	.00884					.00640	.67			4.40			.00		
0 9114.00	2481.50	8.07	2489.57	725.0	13.49	2.83	2492.39	.00	5.86		6.00	9.00	.00	0	.00
0TRANS STR	.00501					.00595	.05						.00		
0 9122.00	2481.54	7.68	2489.22	725.0	14.62	3.32	2492.54	.00	6.78		8.00	.00	.00	0	.00
0 278.90	.00505					.00588	1.64			8.00			.00		
0 9400.90	2482.95	8.00	2490.95	725.0	14.42	3.23	2494.18	.00	6.78		8.00	.00	.00	0	.00
0 149.02	.00505					.00629	.94			8.00			.00		
0 9549.92	2483.70	8.19	2491.89	725.0	14.42	3.23	2495.12	.00	6.78		8.00	.00	.00	0	.00
0JUNCT STR	.00400					.00579	.03						.00		

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WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 9554.92	2483.72	9.15	2492.87	662.0	13.17	2.70	2495.56	.00	6.52		8.00	.00	.00	0	.00
0 307.76	.00899					.00524	1.61			5.24			.00		
0 9862.68	2486.49	8.00	2494.49	662.0	13.17	2.70	2497.18	.00	6.52		8.00	.00	.00	0	.00
0 11.12	.00899					.00507	.06			5.24			.00		
0 9873.80	2486.59	7.95	2494.54	662.0	13.18	2.70	2497.24	.00	6.52		8.00	.00	.00	0	.00
0HYDRAULIC JUMP													.00		
0 9873.80	2486.59	5.25	2491.84	662.0	18.93	5.57	2497.41	.00	6.52		8.00	.00	.00	0	.00
0 338.43	.00899					.00894	3.03			5.24			.00		
0 10212.23	2489.63	5.26	2494.89	662.0	18.90	5.55	2500.44	.00	6.52		8.00	.00	.00	0	.00
0JUNCT STR	.10000					.00846	.04						.00		
0 10217.23	2490.13	5.55	2495.68	616.0	17.58	4.80	2500.48	.00	6.36		7.50	.00	.00	0	.00
0 99.72	.00900					.00769	.77			5.29			.00		
0 10316.95	2491.03	5.74	2496.77	616.0	16.98	4.48	2501.25	.00	6.36		7.50	.00	.00	0	.00
0 60.43	.00900					.00703	.42			5.29			.00		
0 10377.38	2491.57	6.03	2497.60	616.0	16.19	4.07	2501.67	.00	6.36		7.50	.00	.00	0	.00
0 16.49	.00900					.00638	.11			5.29			.00		
0 10393.87	2491.72	6.36	2498.08	616.0	15.43	3.70	2501.78	.00	6.36		7.50	.00	.00	0	.00
0 62.18	.00500					.00588	.37			7.50			.00		
0 10456.05	2492.03	6.75	2498.78	616.0	14.71	3.36	2502.14	.00	6.36		7.50	.00	.00	0	.00
0 388.68	.00500					.00569	2.21			7.50			.00		
0 10844.72	2493.97	7.32	2501.30	616.0	14.03	3.06	2504.36	.00	6.36		7.50	.00	.00	0	.00
0 132.50	.00500					.00605	.80			7.50			.00		

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WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 10977.22	2494.64	7.50	2502.14	616.0	13.94	3.02	2505.16	.00	6.36		7.50	.00	.00	0	.00
0 18.98	.00500					.00640	.12			7.50			.00		
0 10996.20	2494.73	7.53	2502.26	616.0	13.94	3.02	2505.28	.00	6.36		7.50	.00	.00	0	.00
0 24.31	.00800					.00640	.16			5.55			.00		
0 11020.51	2494.92	7.50	2502.42	616.0	13.94	3.02	2505.45	.00	6.36		7.50	.00	.00	0	.00
0 121.93	.00800					.00598	.73			5.55			.00		
0 11142.44	2495.90	7.15	2503.05	616.0	14.18	3.12	2506.18	.00	6.36		7.50	.00	.00	0	.00
0HYDRAULIC JUMP													.00		
0 11142.44	2495.90	5.60	2501.50	616.0	17.42	4.72	2506.21	.00	6.36		7.50	.00	.00	0	.00
0 306.80	.00800					.00761	2.33			5.55			.00		
0 11449.24	2498.36	5.74	2504.10	616.0	16.98	4.48	2508.57	.00	6.36		7.50	.00	.00	0	.00
0 122.63	.00800					.00703	.86			5.55			.00		
0 11571.87	2499.34	6.03	2505.36	616.0	16.19	4.07	2509.44	.00	6.36		7.50	.00	.00	0	.00
0 26.67	.00800					.00638	.17			5.55			.00		
0 11598.54	2499.55	6.36	2505.91	616.0	15.43	3.70	2509.61	.00	6.36		7.50	.00	.00	0	.00
0JUNCT STR	.00998					.00447	.04						.00		
0 11608.54	2499.65	9.61	2509.26	410.0	9.28	1.34	2510.60	.00	5.24		7.50	.00	.00	0	.00
0 117.84	.00781					.00285	.34			4.20			.00		

0 11726.38	2500.57	9.10	2509.67	410.0	9.28	1.34	2511.00	.00	5.24		7.50	.00	.00	0	.00
0 474.64	.00301					.00285	1.35			5.97			.00		
0 12201.02	2502.00	9.09	2511.09	410.0	9.28	1.34	2512.43	.00	5.24		7.50	.00	.00	0	.00
0JUNCT STR	.02002					.00242	.01						.00		
1														PAGE	9

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 12206.02	2502.10	9.64	2511.74	343.0	7.76	.94	2512.67	.00	4.79		7.50	.00	.00	0	.00
0 719.73	.00285					.00200	1.44			5.25			.00		
0 12925.75	2504.15	9.07	2513.22	343.0	7.76	.94	2514.16	.00	4.79		7.50	.00	.00	0	.00
0JUNCT STR	.20000					.00109	.01						.00		
0 12935.75	2506.15	7.93	2514.08	106.0	4.46	.31	2514.39	.00	2.85		5.50	.00	.00	0	.00
0 87.74	.00308					.00100	.09			2.97			.00		
0 13023.49	2506.42	7.76	2514.18	106.0	4.46	.31	2514.49	.00	2.85		5.50	.00	.00	0	.00
0TRANS STR	.16667					.00195	.01						.00		
0 13029.49	2507.42	6.47	2513.89	106.0	6.66	.69	2514.58	.00	3.03		4.50	.00	.00	0	.00
0 530.06	.00300					.00291	1.54			3.63			.00		
0 13559.55	2509.01	6.45	2515.46	106.0	6.66	.69	2516.15	.00	3.03		4.50	.00	.00	0	.00
0JUNCT STR	.08333					.00239	.01						.00		
0 13565.55	2509.51	6.32	2515.83	85.0	6.76	.71	2516.54	.00	2.79		4.00	.00	.00	0	.00
0 130.56	.00299					.00350	.46			4.00			.00		
0 13696.11	2509.90	6.39	2516.29	85.0	6.76	.71	2517.00	.00	2.79		4.00	.00	.00	0	.00
0 6.00	.01668					.00350	.02			1.90			.00		
0 13702.11	2510.00	6.35	2516.35	85.0	6.76	.71	2517.06	.00	2.79		4.00	.00	.00	0	.00

BUFFALO NORTH

```
JD  0  0  1
T1 WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
T2 RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
T3 FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
SO       0.002425.61  1       .013
R      313.762426.24  1       .013
TS     323.762426.26 19       .013
TS     333.762426.28 20       .013
TS     343.762426.30 21       .013
TS     353.762426.32 22       .013
TS     363.762426.34 23       .013
WX                    2       .013
R     1328.092428.75  2       .013
R     1341.092428.79  2       .013
TS    1349.092428.82 17       .013
R     1367.092428.87 17       .013
TS    1375.092428.90 24       .013
R     1380.092428.93 24       .013
JX    1385.092429.05 24 11    .013    105.0         2429.34         60.0
R     1435.092429.10 24       .013
JX    1437.092429.11 24 11    .013     20.0         2431.43         60.0
R     2704.592433.20 24       .013                                          3
JX    2708.092433.21 24 11    .013     48.6         2435.69         90.0
R     2723.092433.37 24       .013
JX    2726.592433.39 24 11    .013     48.6         2435.75         62.0
R     2762.092433.47 24       .013                                          1
JX    2768.092433.49 24 8     .013     30.8         2435.39         60.0
R     4002.112437.29 24       .013                                          3
JX    4014.112439.18  3 8     .013     73.0         2441.71         30.0
R     4682.122441.32  3       .013
TS    4690.122441.35  3       .013                                          1
R     4732.122442.76 18       .013                                          1
R     4982.122444.52 18       .013
JX    4985.622444.62 18 10    .013     19.0         2447.58         60.0
R     5705.122446.92 18       .013                                          1
JX    5706.622446.93 18 28    .013      3.0         2451.39         90.0
R     6360.762449.01 18       .013                                          1
TS    6368.762449.11 18       .013
R     6699.762452.81 18       .013                                          1
JX    6709.062452.82 18 26    .013     17.0         2456.23         90.0
R     6713.062453.30 18       .013
TS    6721.062453.40 18       .013
R     7133.062458.51 18       .013                                          1
R     7172.062458.65 18       .013
JX    7174.062458.66 18 28    .013     17.0         2463.16         45.0
R     7651.682460.17 18       .013                                          1
JX    7654.442460.21  5 25    .013    255.0         2461.86         45.0
R     7706.402461.14  5       .013
TS    7714.402461.30 14       .013
R     8400.872475.03 14       .013                                          1
R     8782.872478.28 14       .013
TS    8790.872478.36  4       .013
R     8953.002480.00  4       .013
JX    8956.002480.10  4 10    .013     55.0         2483.00         72.0
R     9009.982480.58  4       .013
R     9114.002481.50  4       .013
TS    9122.002481.54 14       .013
R     9577.422483.70 14       .013
JX    9582.422483.72 14 10    .013     63.0         2487.21         60.0
R    10234.732489.63 14       .013                                          1
```

```
JX  10239.732490.13  6  9    .013    46.0        2495.13        60.0
 R  10413.872491.72  6       .013                                    1
R   10815.432493.74  6       .013
R   11216.992496.34  6       .013
 R  11616.042499.55  6       .013                                    1
JX  11621.042499.65  6 12    .013   180.0        2502.05        45.0
R   11746.382500.57  6       .013                                    1
R   12218.522502.00  6       .013                                    1
 R  12223.522502.10  6       .013                                    1
R   12278.592502.16  6       .013
JX  12288.752502.18  6 12    .013   268.0        2504.67        45.0
 R  13556.052505.99  6       .013                                    3
R   13561.052506.01  6       .013
R   13585.592506.08  6       .013
 JX 13590.592509.09  6 25    .013   117.0        2509.09        45.0
 R  13691.612509.41 25       .013
SH                   25

 CD   1  1              8.0     10.0 1.5  1.5
CD   2  3   1  1.0     6.0     21.0
CD   3  3              6.0     12.0
 CD  4  3              6.0      9.0
 CD  5  3              5.0     12.0
CD   6  4              7.50
CD   7  4              7.00
 CD  8  4              4.00
CD   9  4              2.50
CD  10  4              3.00
 CD 11  4              3.50
CD  12  4              5.00
CD  13  4              5.50
 CD 14  4              8.00
 CD 15  4              6.50
CD  16  3              5.00    15.00
CD  17  3   1  1.0     5.00    23.00
 CD 18  3              7.00    10.00
CD  19  5
CD  20  5
 CD 21  5
 CD 22  5
CD  23  3              6.00    21.00
CD  24  3   1  1.0     7.00    19.00
 CD 25  4              4.50
CD  26  4              2.00
CD  27  3              5.00     3.00
 CD 28  4              1.50
PTS19  7 10.0  34.45 20.0  28.06 20.0  26.42 26.0  26.26 35.0  26.42
PTS      35.0  28.06 44.0  34.45
 PTS20  7 10.0  34.47 17.0  29.68 17.0  26.40 24.5  26.28 37.0  26.40
 PTS      37.0  29.68 44.0  34.47
PTS21  7 10.0  34.50 14.5  31.30 14.5  26.38 23.0  26.30 35.0  26.30
PTS      35.0  31.30 44.0  34.50
 PTS22  7 10.0  34.52 12.0  32.92 12.0  26.36 22.0  26.32 32.0  26.36
PTS      32.0  32.92 44.0  34.52


Q            60.0
```

STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
Portions Copyrighted by CIVILSOFT, 1986, 1987, 1989

Version □□□□□
Serial Number □□□□□□□□

Mar 31, 1999 13:37:23

Input file : nbuff.dat
Output file: nbuff.out

INPUT FILE LISTING

```
T1 WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
T2 RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
T3 FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
SO      0.002425.61  1       .013
R     313.762426.24  1       .013
TS    323.762426.26 19       .013
TS    333.762426.28 20       .013
TS    343.762426.30 21       .013
TS    353.762426.32 22       .013
TS    363.762426.34 23       .013
WX                   2       .013
R    1328.092428.75  2       .013
R    1341.092428.79  2       .013
TS   1349.092428.82 17       .013
R    1367.092428.87 17       .013
TS   1375.092428.90 24       .013
R    1380.092428.93 24       .013
JX   1385.092429.05 24 11    .013   105.0         2429.34        60.0
R    1435.092429.10 24       .013
JX   1437.092429.11 24 11    .013    20.0         2431.43        60.0
R    2704.592433.20 24       .013                                       3
JX   2708.092433.21 24 11    .013    48.6         2435.69        90.0
R    2723.092433.37 24       .013
JX   2726.592433.39 24 11    .013    48.6         2435.75        62.0
R    2762.092433.47 24       .013                                       1
JX   2768.092433.49 24 8     .013    30.8         2435.39        60.0
R    4002.112437.29 24       .013                                       3
JX   4014.112439.18  3 8     .013    73.0         2441.71        30.0
R    4682.122441.32  3       .013
TS   4690.122441.35  3       .013                                       1
R    4732.122442.76 18       .013                                       1
R    4982.122444.52 18       .013
JX   4985.622444.62 18 10    .013    19.0         2447.58        60.0
R    5705.122446.92 18       .013                                       1
JX   5706.622446.93 18 28    .013     3.0         2451.39        90.0
R    6360.762449.01 18       .013                                       1
TS   6368.762449.11 18       .013
R    6699.762452.81 18       .013                                       1
JX   6709.062452.82 18 26    .013    17.0         2456.23        90.0
R    6713.062453.30 18       .013
TS   6721.062453.40 18       .013
R    7133.062458.51 18       .013                                       1
R    7172.062458.65 18       .013
JX   7174.062458.66 18 28    .013    17.0         2463.16        45.0
R    7651.682460.17 18       .013                                       1
JX   7654.442460.21  5 25    .013   255.0         2461.86        45.0
R    7706.402461.14  5       .013
TS   7714.402461.30 14       .013
R    8400.872475.03 14       .013                                       1
R    8782.872478.28 14       .013
TS   8790.872478.36  4       .013
R    8953.002480.00  4       .013
JX   8956.002480.10  4 10    .013    55.0         2483.00        72.0
R    9009.982480.58  4       .013
R    9114.002481.50  4       .013
TS   9122.002481.54 14       .013
R    9577.422483.70 14       .013
JX   9582.422483.72 14 10    .013    63.0         2487.21        60.0
R   10234.732489.63 14       .013                                       1
JX  10239.732490.13  6  9    .013    46.0         2495.13        60.0
R   10413.872491.72  6       .013                                       1
R   10815.432493.74  6       .013
R   11216.992496.34  6       .013
R   11616.042499.55  6       .013                                       1
JX  11621.042499.65  6 12    .013   180.0         2502.05        45.0
R   11746.382500.57  6       .013                                       1
R   12218.522502.00  6       .013                                       1
R   12223.522502.10  6       .013                                       1
R   12278.592502.16  6       .013
JX  12288.752502.18  6 12    .013   268.0         2504.67        45.0
R   13556.052505.99  6       .013                                       3
R   13561.052506.01  6       .013
R   13585.592506.08  6       .013
JX  13590.592509.09  6 25    .013   117.0         2509.09        45.0
R   13691.612509.41 25       .013
SH                   25
ERROR MESSAGE NUMBER  3 IN SEQUENCE CHECKING THRU CHANNEL DEFINITION DATA
NO CHANNEL DEFINITION (CD) OR CROSS SECTION POINT CARDS (PTS) WERE RECOGNIZED - CHECK DATA
                                                                SP
                                WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING                                  PAGE    1
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR    INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH              DROP
```

1 PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL

HEADING LINE NO 2 IS -

RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6

HEADING LINE NO 3 IS -

FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	.00	2425.61	1	.00

ELEMENT NO 2 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	313.76	2426.24	1	.013	.00	.00	.00	0

ELEMENT NO 3 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	323.76	2426.26	19	.013

ELEMENT NO 4 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	333.76	2426.28	20	.013

ELEMENT NO 5 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	343.76	2426.30	21	.013

ELEMENT NO 6 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	353.76	2426.32	22	.013

ELEMENT NO 7 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	363.76	2426.34	23	.013

ELEMENT NO 8 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	363.76	2426.34	2

ELEMENT NO 9 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1328.09	2428.75	2	.013	.00	.00	.00	0

ELEMENT NO 10 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1341.09	2428.79	2	.013	.00	.00	.00	0

ELEMENT NO 11 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	1349.09	2428.82	17	.013

ELEMENT NO 12 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1367.09	2428.87	17	.013	.00	.00	.00	0

ELEMENT NO 13 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	1375.09	2428.90	24	.013

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 14 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1380.09	2428.93	24	.013	.00	.00	.00	0

ELEMENT NO 15 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	~~1385.09~~	~~2429.05~~	~~24~~	~~11~~	~~0~~	~~.013~~	~~105.0~~	~~.0~~	~~2429.34~~	.00	~~60.00~~	.00

ELEMENT NO 16 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1435.09	2429.10	24	.013	.00	.00	.00	0

ELEMENT NO 17 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1437.09	2429.11	24	11	0	.013	20.0	.0	2431.43	.00	60.00	.00

ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2704.59	2433.20	24	.013	.00	.00	.00	3

ELEMENT NO 19 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2708.09	2433.21	24	11	0	.013	48.6	.0	2435.69	.00	90.00	.00

ELEMENT NO 20 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2723.09	2433.37	24	.013	.00	.00	.00	0

ELEMENT NO 21 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2726.59	2433.39	24	11	0	.013	48.6	.0	2435.75	.00	62.00	.00

ELEMENT NO 22 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2762.09	2433.47	24	.013	.00	.00	.00	1

ELEMENT NO 23 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2768.09	2433.49	24	8	0	.013	30.8	.0	2435.39	.00	60.00	.00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 24 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4002.11	2437.29	24	.013	.00	.00	.00	3

ELEMENT NO 25 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4014.11	2439.18	3	8	0	.013	73.0	.0	2441.71	.00	30.00	.00

ELEMENT NO 26 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4682.12	2441.32	3	.013	.00	.00	.00	0

ELEMENT NO 27 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	4690.12	2441.35	3	.013

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 28 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4732.12	2442.76	18	.013	.00	.00	.00	1

ELEMENT NO 29 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4982.12	2444.52	18	.013	.00	.00	.00	0

ELEMENT NO 30 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4985.62	2444.62	18	10	0	.013	19.0	.0	2447.58	.00	60.00	.00

ELEMENT NO 31 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5705.12	2446.92	18	.013	.00	.00	.00	1

ELEMENT NO 32 IS A JUNCTION

U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
5706.62 2446.93 18 28 0 .013 3.0 .0 2451.39 .00 90.00 .00

ELEMENT NO 33 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6360.76 2449.01 18 .013 .00 .00 .00 1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 34 IS A TRANSITION
U/S DATA STATION INVERT SECT N
6368.76 2449.11 18 .013

ELEMENT NO 35 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6699.76 2452.81 18 .013 .00 .00 .00 1

ELEMENT NO 36 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
6709.06 2452.82 18 26 0 .013 17.0 .0 2456.23 .00 90.00 .00

ELEMENT NO 37 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6713.06 2453.30 18 .013 .00 .00 .00 0

ELEMENT NO 38 IS A TRANSITION
U/S DATA STATION INVERT SECT N
6721.06 2453.40 18 .013

ELEMENT NO 39 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7133.06 2458.51 18 .013 .00 .00 .00 1

ELEMENT NO 40 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7172.06 2458.65 18 .013 .00 .00 .00 0

ELEMENT NO 41 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
7174.06 2458.66 18 28 0 .013 17.0 .0 2463.16 .00 45.00 .00

ELEMENT NO 42 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7651.68 2460.17 18 .013 .00 .00 .00 1

ELEMENT NO 43 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
7654.44 2460.21 5 25 0 .013 255.0 .0 2461.86 .00 45.00 .00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 44 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7706.40 2461.14 5 .013 .00 .00 .00 0

ELEMENT NO 45 IS A TRANSITION
U/S DATA STATION INVERT SECT N
7714.40 2461.30 14 .013

ELEMENT NO 46 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
8400.87 2475.03 14 .013 .00 .00 .00 1

ELEMENT NO 47 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
8782.87 2478.28 14 .013 .00 .00 .00 0

ELEMENT NO 48 IS A TRANSITION
U/S DATA STATION INVERT SECT N
8790.87 2478.36 4 .013

ELEMENT NO 49 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
8953.00 2480.00 4 .013 .00 .00 .00 0

ELEMENT NO 50 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
8956.00 2480.10 4 10 0 .013 55.0 .0 2483.00 .00 72.00 .00

ELEMENT NO 51 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
9009.98 2480.58 4 .013 .00 .00 .00 0

ELEMENT NO 52 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
9114.00 2481.50 4 .013 .00 .00 .00 0

ELEMENT NO 53 IS A TRANSITION
U/S DATA STATION INVERT SECT N
9122.00 2481.54 14 .013

ELEMENT NO 54 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
9577.42 2483.70 14 .013 .00 .00 .00 0

ELEMENT NO 55 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
9582.42 2483.72 14 10 0 .013 63.0 .0 2487.21 .00 60.00 .00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 56 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
10234.73 2489.63 14 .013 .00 .00 .00 1

ELEMENT NO 57 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
10239.73 2490.13 6 9 0 .013 46.0 .0 2495.13 .00 60.00 .00

ELEMENT NO 58 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
10413.87 2491.72 6 .013 .00 .00 .00 1

ELEMENT NO 59 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
10815.43 2493.74 6 .013 .00 .00 .00 0

ELEMENT NO 60 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
11216.99 2496.34 6 .013 .00 .00 .00 0

ELEMENT NO 61 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
11616.04 2499.55 6 .013 .00 .00 .00 1

ELEMENT NO 62 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
11621.04 2499.65 6 12 0 .013 180.0 .0 2502.05 .00 45.00 .00

ELEMENT NO 63 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
11746.38 2500.57 6 .013 .00 .00 .00 1

ELEMENT NO 64 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
12218.52 2502.00 6 .013 .00 .00 .00 1

ELEMENT NO 65 IS A REACH

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                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               12223.52 2502.10    6              .013                                      .00    .00     .00      1
 0 ELEMENT NO  66 IS A REACH          *        *     *
                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               12278.59 2502.16    6              .013                                      .00    .00     .00      0
 0 ELEMENT NO  67 IS A JUNCTION       *        *     *     *                 *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3      Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                               12288.75 2502.18    6    12     0   .013   268.0      .0  2504.67      .00  45.00     .00
0                                                                                                          PAGE NO    8
 0 ELEMENT NO  68 IS A REACH          *        *     *
                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               13556.05 2505.99    6              .013                                      .00    .00     .00      3
 0 ELEMENT NO  69 IS A REACH          *        *     *
                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               13561.05 2506.01    6              .013                                      .00    .00     .00      0
 0 ELEMENT NO  70 IS A REACH          *        *     *
                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               13585.59 2506.08    6              .013                                      .00    .00     .00      0
 0 ELEMENT NO  71 IS A JUNCTION       *        *     *     *                 *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3      Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                               13590.59 2509.09    6    25     0   .013   117.0      .0  2509.09      .00  45.00     .00
 WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 0 ELEMENT NO  72 IS A REACH          *        *     *
                    U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN H
                               13691.61 2509.41   25              .013                                      .00    .00     .00      0
 0 ELEMENT NO  73 IS A SYSTEM HEADWORKS                *                 *
                    U/S DATA   STATION    INVERT  SECT                                          W S ELEV
                               13691.61 2509.41   25                                               .00
 NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

 ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
 ** WARNING NO. 11 ** - THE VALUE TO SOLVE FOR DEPTH IN BERNLI IS NOT BETWEEN THE UPPER AND LOWER VALUE LIMITS
   DESIRED VALUE =       .94958E+01  UPPER LIMIT VALUE =       .94780E+01  LOWER LIMIT VALUE =       .92317E+01
      UPPER LIMIT DEPTH =       .75000E+01   LOWER LIMIT DEPTH =       .67951E+01
0BERNLI SUBROUTINE PAR.NO.  FACTF     DF      DNORM     CONSTF     D(1)     CONST(1)     D(2)     CONST(2)
                    903      1.0    6.795     7.500      9.496    6.795      9.232     7.500      9.478
1                                                                                                  PAGE     1

                                                WATER SURFACE PROFILE LISTING
                                WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
                                RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
                                FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
 0 STATION     INVERT   DEPTH     W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL          HGT/   BASE/    ZL    NO  AVBPR
             ELEV    OF FLOW    ELEV                          HEAD    GRD.EL.   ELEV   DEPTH              DIA    ID NO.         PIER
 0 L/ELEM     SO                                          SF AVE      HF                    NORM DEPTH                ZR
 ***********************************************************************************************************************************
0      .00  2425.61     6.11   2431.73    1426.0    12.16     2.30   2434.02    .00     6.29              8.00    10.00   1.50    0    .00
 0   223.50   .00201                                      .00201      .45                      6.11                      1.50
 0   223.50  2426.06     6.11   2432.17    1426.0    12.16     2.30   2434.47    .00     6.29              8.00    10.00   1.50    0    .00
 0    90.26   .00201                                      .00190      .17                      6.11                      1.50
 0   313.76  2426.24     6.29   2432.53    1426.0    11.67     2.12   2434.64    .00     6.29              8.00    10.00   1.50    0    .00
0TRANS STR   .00200                                      .00161      .02                                                1.50
 0   323.76  2426.26     6.73   2432.99    1426.0    10.49     1.71   2434.70           6.22                      19              0    .00
0TRANS STR   .00200                                      .00111      .01
 0   333.76  2426.28     7.41   2433.69    1426.0     8.37     1.09   2434.78           5.64                      20              0    .00
0TRANS STR   .00200                                      .00090      .01
 0   343.76  2426.30     7.28   2433.58    1426.0     8.93     1.24   2434.81           5.48                      21              0    .00
0TRANS STR   .00200                                      .00117      .01
 0   353.76  2426.32     6.95   2433.28    1426.0    10.24     1.63   2434.90           5.43                      22              0    .00
0TRANS STR   .00200                                      .00226      .02
 0   363.76  2426.34     6.66   2433.00    1426.0    11.34     2.00   2435.00    .00     5.23              6.00    21.00    .00    0    .00
 0  WALL EXIT                                                                                                             .00
 0   363.76  2426.34     6.66   2433.00    1426.0    11.93     2.21   2435.22    .00     5.41              6.00    21.00    .00    1   1.00
 0   964.33   .00250                                      .00474      4.57                     6.00                       .00
 0  1328.09  2428.75     8.82   2437.57    1426.0    11.93     2.21   2439.79    .00     5.41              6.00    21.00    .00    1   1.00
 0    13.00   .00308                                      .00474      .06                      5.81                      .00
 0  1341.09  2428.79     8.85   2437.64    1426.0    11.93     2.21   2439.85    .00     5.41              6.00    21.00    .00    1   1.00
0TRANS STR   .00375                                      .00554      .04                                                .00
                                                                                                                         PAGE     2

                                                WATER SURFACE PROFILE LISTING
                                WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
                                RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
                                FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
 0 STATION     INVERT   DEPTH     W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL          HGT/   BASE/    ZL    NO  AVBPR
             ELEV    OF FLOW    ELEV                          HEAD    GRD.EL.   ELEV   DEPTH              DIA    ID NO.         PIER
   L/ELEM     SO                                          SF AVE      HF                    NORM DEPTH                ZR
 ***********************************************************************************************************************************
 0  1349.09  2428.82     8.52   2437.34    1426.0    13.02     2.64   2439.98    .00     5.00              5.00    23.00    .00    1   1.00
 0    18.00   .00278                                      .00634      .11                      5.00                      .00
 0  1367.09  2428.87     8.59   2437.46    1426.0    13.02     2.64   2440.09    .00     5.00              5.00    23.00    .00    1   1.00
0TRANS STR   .00372                                      .00518      .04                                                .00
 0  1375.09  2428.90     9.29   2438.19    1426.0    11.36     2.01   2440.20    .00     5.80              7.00    19.00    .00    1   1.00
 0     5.00   .00601                                      .00403      .02                      5.03                      .00
 0  1380.09  2428.93     9.28   2438.21    1426.0    11.36     2.01   2440.22    .00     5.80              7.00    19.00    .00    1   1.00
0JUNCT STR   .02402                                      .00374      .02                                                .00
 0  1385.09  2429.05     9.61   2438.66    1321.0    10.53     1.72   2440.38    .00     5.51              7.00    19.00    .00    1   1.00
 0    50.00   .00100                                      .00345      .17                      7.00                      .00
 0  1435.09  2429.10     9.73   2438.83    1321.0    10.53     1.72   2440.55    .00     5.51              7.00    19.00    .00    1   1.00
0JUNCT STR   .00501                                      .00340      .01                                                .00
 0  1437.09  2429.11     9.82   2438.93    1301.0    10.37     1.67   2440.60    .00     5.45              7.00    19.00    .00    1   1.00
 0  1267.50   .00323                                      .00335     4.25                      5.95                      .00
 0  2704.59  2433.20    10.23   2443.43    1301.0    10.37     1.67   2445.10    .00     5.45              7.00    19.00    .00    1   1.00
0JUNCT STR   .00286                                      .00323      .01                                                .00
 0  2708.09  2433.21    10.48   2443.69    1252.4     9.98     1.55   2445.24    .00     5.32              7.00    19.00    .00    1   1.00
 0    15.00   .01068                                      .00311      .05                      3.68                      .00
 0  2723.09  2433.37    10.36   2443.73    1252.4     9.98     1.55   2445.28    .00     5.32              7.00    19.00    .00    1   1.00
0JUNCT STR   .00565                                      .00299      .01                                                .00
 0  2726.59  2433.39    10.56   2443.95    1203.8     9.59     1.43   2445.38    .00     5.18              7.00    19.00    .00    1   1.00
 0    35.50   .00226                                      .00287      .10                      6.43                      .00
1                                                                                                          PAGE     3

                                                WATER SURFACE PROFILE LISTING
                                WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
                                RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
                                FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.
 0 STATION     INVERT   DEPTH     W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL          HGT/   BASE/    ZL    NO  AVBPR
```

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
	2762.09	2433.47	10.66	2444.13	1203.8	9.59	1.43	2445.56	.00	5.18		7.00	19.00	.00	1	1.00
J	UNCT STR	.00334					.00280	.02						.00		
	2768.09	2433.49	10.79	2444.28	1173.0	9.35	1.36	2445.63	.00	5.09		7.00	19.00	.00	1	1.00
	1234.02	.00308					.00272	3.36			5.59			.00		
	4002.11	2437.29	10.55	2447.84	1173.0	9.35	1.36	2449.20	.00	5.09		7.00	19.00	.00	1	1.00
J	UNCT STR	.15749					.00495	.06						.00		
	4014.11	2439.18	6.75	2445.93	1100.0	15.33	3.65	2449.58	.00	6.00		6.00	12.00	.00	0	.00
	668.01	.00320					.00717	4.79			6.00			.00		
	4682.12	2441.32	9.40	2450.72	1100.0	15.33	3.65	2454.37	.00	6.00		6.00	12.00	.00	0	.00
T	RANS STR	.00375					.00717	.06						.00		
	4690.12	2441.35	9.42	2450.77	1100.0	15.77	3.87	2454.64	.00	7.00		7.00	10.00	.00	0	.00
	42.00	.03357					.00730	.31			3.32			.00		
	4732.12	2442.76	8.51	2451.27	1100.0	15.77	3.87	2455.14	.00	7.00		7.00	10.00	.00	0	.00
	250.00	.00704					.00730	1.83			5.90			.00		
	4982.12	2444.52	8.58	2453.10	1100.0	15.77	3.87	2456.97	.00	7.00		7.00	10.00	.00	0	.00
J	UNCT STR	.02860					.00718	.03						.00		
	4985.62	2444.62	8.76	2453.38	1081.0	15.50	3.73	2457.11	.00	7.00		7.00	10.00	.00	0	.00
	719.50	.00320					.00705	5.07			7.00			.00		
	5705.12	2446.92	11.72	2458.64	1081.0	15.50	3.73	2462.37	.00	7.00		7.00	10.00	.00	0	.00
J	UNCT STR	.00667					.00703	.01						.00		
	5706.62	2446.93	11.76	2458.69	1078.0	15.46	3.71	2462.40	.00	7.00		7.00	10.00	.00	0	.00
	654.14	.00318					.00701	4.59			7.00			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
	6360.76	2449.01	14.45	2463.46	1078.0	15.46	3.71	2467.18	.00	7.00		7.00	10.00	.00	0	.00
T	RANS STR	.01251					.00701	.06						.00		
	6368.76	2449.11	14.41	2463.52	1078.0	15.46	3.71	2467.23	.00	7.00		7.00	10.00	.00	0	.00
	331.00	.01118					.00701	2.32			4.88			.00		
	6699.76	2452.81	13.22	2466.03	1078.0	15.46	3.71	2469.74	.00	7.00		7.00	10.00	.00	0	.00
J	UNCT STR	.00108					.00690	.06						.00		
	6709.06	2452.82	13.50	2466.32	1061.0	15.21	3.60	2469.92	.00	7.00		7.00	10.00	.00	0	.00
	4.00	.11999					.00679	.03			2.08			.00		
	6713.06	2453.30	13.05	2466.35	1061.0	15.21	3.60	2469.95	.00	7.00		7.00	10.00	.00	0	.00
T	RANS STR	.01248					.00679	.05						.00		
	6721.06	2453.40	13.01	2466.41	1061.0	15.21	3.60	2470.00	.00	7.00		7.00	10.00	.00	0	.00
	412.00	.01240					.00679	2.80			4.64			.00		
	7133.06	2458.51	10.87	2469.38	1061.0	15.21	3.60	2472.98	.00	7.00		7.00	10.00	.00	0	.00
	39.00	.00359					.00679	.26			7.00			.00		
	7172.06	2458.65	11.00	2469.65	1061.0	15.21	3.60	2473.25	.00	7.00		7.00	10.00	.00	0	.00
J	UNCT STR	.00501					.00669	.01						.00		
	7174.06	2458.66	11.18	2469.84	1044.0	14.97	3.48	2473.32	.00	6.97		7.00	10.00	.00	0	.00
	477.62	.00316					.00658	3.14			7.00			.00		
	~~7651.68~~	~~2460.17~~	~~12.99~~	~~2473.16~~	~~1044.0~~	~~14.97~~	~~3.48~~	~~2476.64~~	~~.00~~	~~6.97~~		~~7.00~~	~~10.00~~	~~.00~~	~~0~~	~~.00~~
J	UNCT STR	.01451					.00644	.02						.00		
	7654.44	2460.21	14.08	2474.29	789.0	13.21	2.71	2477.00	.00	5.00		5.00	12.00	.00	0	.00
	51.96	.01790					.00629	.33			2.80			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
	7706.40	2461.14	13.47	2474.61	789.0	13.21	2.71	2477.32	.00	5.00		5.00	12.00	.00	0	.00
T	RANS STR	.02002					.00689	.06						.00		
	7714.40	2461.30	12.47	2473.77	789.0	15.70	3.83	2477.60	.00	7.01		8.00	.00	.00	0	.00
	206.59	.02000					.00748	1.55			4.52			.00		
	7920.99	2465.43	9.94	2475.37	789.0	15.70	3.83	2479.20	.00	7.01		8.00	.00	.00	0	.00
H	YDRAULIC JUMP													.00		
	7920.99	2465.43	4.77	2470.20	789.0	25.26	9.92	2480.12	.00	7.01		8.00	.00	.00	0	.00
	63.40	.02000					.01670	1.06			4.52			.00		
	7984.39	2466.70	4.81	2471.51	789.0	25.00	9.71	2481.22	.00	7.01		8.00	.00	.00	0	.00
	153.47	.02000					.01554	2.38			4.52			.00		
	8137.86	2469.77	5.01	2474.78	789.0	23.83	8.83	2483.60	.00	7.01		8.00	.00	.00	0	.00
	95.19	.02000					.01378	1.31			4.52			.00		
	8233.05	2471.67	5.22	2476.89	789.0	22.72	8.03	2484.92	.00	7.01		8.00	.00	.00	0	.00
	65.00	.02000					.01224	.80			4.52			.00		
	8298.05	2472.97	5.44	2478.42	789.0	21.67	7.30	2485.71	.00	7.01		8.00	.00	.00	0	.00
	46.39	.02000					.01090	.51			4.52			.00		
	8344.43	2473.90	5.68	2479.58	789.0	20.66	6.63	2486.22	.00	7.01		8.00	.00	.00	0	.00
	33.31	.02000					.00973	.32			4.52			.00		
	8377.74	2474.57	5.94	2480.51	789.0	19.70	6.03	2486.54	.00	7.01		8.00	.00	.00	0	.00
	23.13	.02000					.00873	.20			4.52			.00		
	8400.87	2475.03	6.23	2481.26	789.0	18.78	5.48	2486.74	.00	7.01		8.00	.00	.00	0	.00
	139.57	.00851					.00818	1.14			6.15			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
	8540.44	2476.22	6.30	2482.51	789.0	18.59	5.37	2487.88	.00	7.01		8.00	.00	.00	0	.00
	201.21	.00851					.00772	1.55			6.15			.00		
	8741.65	2477.93	6.63	2484.56	789.0	17.72	4.88	2489.44	.00	7.01		8.00	.00	.00	0	.00
	41.22	.00851					.00706	.29			6.15			.00		
	8782.87	2478.28	7.01	2485.29	789.0	16.90	4.44	2489.73	.00	7.01		8.00	.00	.00	0	.00
T	RANS STR	.01001					.00717	.06						.00		
	8790.87	2478.36	8.18	2486.55	789.0	14.68	3.35	2489.89	.00	6.00		6.00	9.00	.00	0	.00
	162.13	.01012					.00758	1.23			4.46			.00		
	8953.00	2480.00	7.77	2487.77	789.0	14.68	3.35	2491.12	.00	6.00		6.00	9.00	.00	0	.00

0	JUNCT STR	.03337					.00707	.02						.00		
0	8956.00	2480.10	8.52	2488.62	734.0	13.66	2.90	2491.52	.00	5.91		6.00	9.00	.00	0	.00
0	53.98	.00889					.00656	.35			4.43			.00		
0	9009.98	2480.58	8.39	2488.97	734.0	13.66	2.90	2491.87	.00	5.91		6.00	9.00	.00	0	.00
0	104.02	.00884					.00656	.68			4.44			.00		
0	9114.00	2481.50	8.16	2489.66	734.0	13.66	2.90	2492.55	.00	5.91		6.00	9.00	.00	0	.00
0	TRANS STR	.00501					.00615	.05						.00		
0	9122.00	2481.54	7.80	2489.34	734.0	14.70	3.36	2492.70	.00	6.82		8.00	.00	.00	0	.00
0	118.44	.00474					.00608	.72			8.00			.00		
0	9240.44	2482.10	8.00	2490.10	734.0	14.60	3.31	2493.42	.00	6.82		8.00	.00	.00	0	.00
0	336.98	.00474					.00645	2.17			8.00			.00		
0	9577.42	2483.70	8.58	2492.28	734.0	14.60	3.31	2495.60	.00	6.82		8.00	.00	.00	0	.00
0	JUNCT STR	.00400					.00594	.03						.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	9582.42	2483.72	9.51	2493.23	671.0	13.35	2.77	2496.00	.00	6.56		8.00	.00	.00	0	.00
0	439.30	.00906					.00539	2.37			5.28			.00		
0	10021.72	2487.70	8.00	2495.70	671.0	13.35	2.77	2498.47	.00	6.56		8.00	.00	.00	0	.00
0	4.11	.00906					.00527	.02			5.28			.00		
0	10025.84	2487.74	7.98	2495.72	671.0	13.35	2.77	2498.49	.00	6.56		8.00	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		
0	10025.84	2487.74	5.29	2493.02	671.0	19.04	5.63	2498.66	.00	6.56		8.00	.00	.00	0	.00
0	208.89	.00906					.00902	1.88			5.28			.00		
0	10234.73	2489.63	5.29	2494.92	671.0	19.03	5.63	2500.55	.00	6.56		8.00	.00	.00	0	.00
0	JUNCT STR	.10000					.00855	.04						.00		
0	10239.73	2490.13	5.59	2495.72	625.0	17.70	4.87	2500.59	.00	6.39		7.50	.00	.00	0	.00
0	94.03	.00913					.00780	.73			5.32			.00		
0	10333.76	2490.99	5.77	2496.76	625.0	17.14	4.56	2501.32	.00	6.39		7.50	.00	.00	0	.00
0	62.86	.00913					.00716	.45			5.32			.00		
0	10396.63	2491.56	6.06	2497.62	625.0	16.34	4.15	2501.77	.00	6.39		7.50	.00	.00	0	.00
0	17.24	.00913					.00651	.11			5.32			.00		
0	10413.87	2491.72	6.39	2498.11	625.0	15.58	3.77	2501.88	.00	6.39		7.50	.00	.00	0	.00
0	59.73	.00503					.00601	.36			7.50			.00		
0	10473.60	2492.02	6.80	2498.82	625.0	14.85	3.43	2502.24	.00	6.39		7.50	.00	.00	0	.00
0	341.83	.00503					.00621	2.12			7.50			.00		
0	10815.43	2493.74	7.50	2501.24	625.0	14.15	3.11	2504.35	.00	6.39		7.50	.00	.00	0	.00
0	.00	.00503					.00662	.00			7.50			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	10815.43	2493.74	7.50	2501.24	625.0	14.15	3.11	2504.35	.00	6.39		7.50	.00	.00	0	.00
0	401.56	.00648					.00662	2.66			6.23			.00		
0	11216.99	2496.34	7.56	2503.90	625.0	14.15	3.11	2507.01	.00	6.39		7.50	.00	.00	0	.00
0	58.58	.00804					.00659	.39			5.60			.00		
0	11275.58	2496.81	7.50	2504.31	625.0	14.15	3.11	2507.42	.00	6.39		7.50	.00	.00	0	.00
0	156.42	.00804					.00614	.96			5.60			.00		
0	11431.99	2498.07	7.05	2505.12	625.0	14.50	3.27	2508.39	.00	6.39		7.50	.00	.00	0	.00
0	HYDRAULIC JUMP													.00		
0	11431.99	2498.07	5.76	2503.83	625.0	17.16	4.58	2508.41	.00	6.39		7.50	.00	.00	0	.00
0	14.41	.00804					.00753	.11			5.60			.00		
0	11446.40	2498.19	5.77	2503.96	625.0	17.14	4.56	2508.52	.00	6.39		7.50	.00	.00	0	.00
0	140.20	.00804					.00716	1.00			5.60			.00		
0	11586.61	2499.31	6.06	2505.37	625.0	16.34	4.15	2509.52	.00	6.39		7.50	.00	.00	0	.00
0	29.43	.00804					.00651	.19			5.60			.00		
0	11616.04	2499.55	6.39	2505.94	625.0	15.58	3.77	2509.71	.00	6.39		7.50	.00	.00	0	.00
0	JUNCT STR	.01997					.00479	.02						.00		
0	11621.04	2499.65	9.33	2508.98	445.0	10.07	1.58	2510.56	.00	5.47		7.50	.00	.00	0	.00
0	125.34	.00734					.00336	.42			4.52			.00		
0	11746.38	2500.57	8.91	2509.48	445.0	10.07	1.58	2511.06	.00	5.47		7.50	.00	.00	0	.00
0	472.14	.00303					.00336	1.59			6.59			.00		
0	12218.52	2502.00	9.15	2511.15	445.0	10.07	1.58	2512.72	.00	5.47		7.50	.00	.00	0	.00
0	5.00	.02002					.00336	.02			3.34			.00		

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN BUFFALO TO EXISTING CHANNEL
RUN WITH 50' TRANSITION, FOLDED CHANNEL WALLS, 2-10x6
FILE NAME BUFFALO.DAT REVISED FLOWS WITH NEW CN AND CONTEMP. UNDER PIPE.

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	12223.52	2502.10	9.14	2511.24	445.0	10.07	1.58	2512.82	.00	5.47		7.50	.00	.00	0	.00
0	55.07	.00109					.00336	.18			7.50			.00		
0	12278.59	2502.16	9.27	2511.43	445.0	10.07	1.58	2513.00	.00	5.47		7.50	.00	.00	0	.00
0	JUNCT STR	.00197					.00194	.02						.00		
0	12288.75	2502.18	10.59	2512.77	177.0	4.01	.25	2513.02	.00	3.39		7.50	.00	.00	0	.00
0	1265.02	.00301					.00053	.67			3.39			.00		
0	13553.77	2505.98	7.50	2513.48	177.0	4.01	.25	2513.73	.00	3.39		7.50	.00	.00	0	.00
0	2.28	.00301					.00052	.00			3.39			.00		
0	13556.05	2505.99	7.49	2513.48	177.0	4.01	.25	2513.73	.00	3.39		7.50	.00	.00	0	.00
0	5.00	.00400					.00051	.00			3.13			.00		
0	13561.05	2506.01	7.48	2513.49	177.0	4.01	.25	2513.74	.00	3.39		7.50	.00	.00	0	.00
0	24.54	.00286					.00050	.01			3.44			.00		
0	13585.59	2506.08	7.42	2513.50	177.0	4.01	.25	2513.75	.00	3.39		7.50	.00	.00	0	.00
0	JUNCT STR	.60200					.00031	.00						.00		
0	13590.59	2509.09	4.59	2513.68	60.0	3.77	.22	2513.90	.00	2.25		4.50	.00	.00	0	.00
0	40.48	.00317					.00093	.04			2.36			.00		
0	13631.07	2509.22	4.50	2513.72	60.0	3.77	.22	2513.94	.00	2.25		4.50	.00	.00	0	.00
0	60.54	.00317					.00087	.05			2.36			.00		
0	13691.61	2509.41	4.36	2513.77	60.0	3.81	.23	2513.99	.00	2.25		4.50	.00	.00	0	.00

SAHARA

```
JD  0  0  1
T1 WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES
T2 SAH5.DAT
T3 SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS
SO    128.00 2654.60 10       .013                    2660.66
JX    128.00 2654.60 10  6  3.013    70.0  110.002657.302656.80 60.0    60.0
R     133.00 2655.80  9       .013                                          1
R     562.50 2666.62  9       .013                                          1
R     872.19 2671.30  9       .013                                          1
JX    877.19 2671.88  2  4    .013    45.          2673.38         60.
R    1015.60 2674.00  2       .013                                          1
JX   1020.60 2674.03  2  5    .013     4.          2676.00         60.
R    1787.44 2690.92  2       .013                                          1
R    2555.27 2707.82  2       .013                                          1
JX   2560.27 2708.41  3  5    .013     3.          2710.88         60.
R    3329.65 2730.37  3       .013                                          1
JX   3334.65 2730.50  3  5    .013     2.          2732.95         60.
R    3845.00 2743.06  3       .013                                          1
JX   3850.00 2743.18  3  4    .013    43.          2744.06         60.
R    4050.84 2747.49  3       .013                                          1
JX   4055.84 2747.60  3  7    .013    19.          2749.50         60.
R    4953.34 2766.84  3       .013                                          1
R    5362.50 2773.00  3       .013                                          1
R    5455.00 2777.46  3       .013                                   25.    1
JX   5460.00 2778.14  4  8    .013    38.0         2779.06         60.0
R    5620.00 2785.04  4       .013                                   25.0   1
JX   5625.00 2785.24  4  8    .013    38.0         2785.65         60.
R    5708.50 2788.58  4       .013                                          1
SH                    4       .013
CD   1  4                7.0
CD   2  4                4.5
CD   3  4                4.0
CD   4  4                3.0
CD   5  4                1.5
CD   6  4                3.5
CD   7  4                2.0
CD   8  4                2.5
CD   9  4                5.0
CD  10  4                6.0

Q             83.0
```

STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Oct 14, 1998 14:31:33

Input file : SAH5.DAT
Output file: SAH5.OUT

INPUT FILE LISTING

```
T1 WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES
T2 SAH5.DAT
T3 SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS
SO    128.00 2654.60 10      .013              2660.66
JX    128.00 2654.60 10  6 3.013    70.0  110.002657.302656.80 60.0   60.0
R     133.00 2655.80  9      .013                                        1
R     562.50 2666.62  9      .013                                        1
R     872.19 2671.30  9      .013                                        1
JX    877.19 2671.88  2  4   .013    45.          2673.38        60.
R    1015.60 2674.00  2      .013                                        1
JX   1020.60 2674.03  2  5   .013     4.          2676.00        60.
R    1787.44 2690.92  2      .013                                        1
R    2555.27 2707.82  2      .013                                        1
JX   2560.27 2708.41  3  5   .013     3.          2710.88        60.
R    3329.65 2730.37  3      .013                                        1
JX   3334.65 2730.50  3  5   .013     2.          2732.95        60.
R    3845.00 2743.06  3      .013                                        1
JX   3850.00 2743.18  3  4   .013    43.          2744.06        60.
R    4050.84 2747.49  3      .013                                        1
JX   4055.84 2747.60  3  7   .013    19.          2749.50        60.
R    4953.34 2766.84  3      .013                                        1
R    5362.50 2773.00  3      .013                                        1
R    5455.00 2777.46  3      .013                                  25.   1
JX   5460.00 2778.14  4  8   .013    38.0         2779.06        60.0
R    5620.00 2785.04  4      .013                                  25.0  1
JX   5625.00 2785.24  4  8   .013    38.0         2785.65        60.
R    5708.50 2788.58  4      .013                                        1
SH                    4      .013
                                                      SP
```

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			7.00														
CD	2	4			4.50														
CD	3	4			4.00														
CD	4	4			3.00														
CD	5	4			1.50														
CD	6	4			3.50														
CD	7	4			2.00														
CD	8	4			2.50														
CD	9	4			5.00														
CD	10	4			6.00														

1 PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES

HEADING LINE NO 2 IS -
SAH5.DAT

HEADING LINE NO 3 IS -
SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	128.00	2654.60	10	2660.66

ELEMENT NO 2 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	128.00	2654.60	10	6	3	.013	70.0	110.0	2657.30	2656.80	60.00	60.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	133.00	2655.80	9	.013	.00	.00	.00	1

ELEMENT NO 4 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	562.50	2666.62	9	.013	.00	.00	.00	1

ELEMENT NO 5 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	872.19	2671.30	9	.013	.00	.00	.00	1

ELEMENT NO 6 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	877.19	2671.88	2	4	0	.013	45.0	.0	2673.38	.00	60.00	.00

ELEMENT NO 7 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1015.60	2674.00	2	.013	.00	.00	.00	1

ELEMENT NO 8 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1020.60	2674.03	2	5	0	.013	4.0	.0	2676.00	.00	60.00	.00

ELEMENT NO 9 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1787.44	2690.92	2	.013	.00	.00	.00	1

ELEMENT NO 10 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2555.27	2707.82	2	.013	.00	.00	.00	1

PAGE NO 3

ELEMENT NO 11 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	2560.27	2708.41	3	5	0	.013	3.0	.0	2710.88	.00	60.00	.00

ELEMENT NO 12 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	3329.65	2730.37	3	.013	.00	.00	.00	1

ELEMENT NO 13 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	3334.65	2730.50	3	5	0	.013	2.0	.0	2732.95	.00	60.00	.00

ELEMENT NO 14 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	3845.00	2743.06	3	.013	.00	.00	.00	1

ELEMENT NO 15 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	3850.00	2743.18	3	4	0	.013	43.0	.0	2744.06	.00	60.00	.00

ELEMENT NO 16 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4050.84	2747.49	3	.013	.00	.00	.00	1

ELEMENT NO 17 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	4055.84	2747.60	3	7	0	.013	19.0	.0	2749.50	.00	60.00	.00

ELEMENT NO 18 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	4953.34	2766.84	3	.013	.00	.00	.00	1

ELEMENT NO 19 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	5362.50	2773.00	3	.013	.00	.00	.00	1

ELEMENT NO 20 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	5455.00	2777.46	3	.013	.00	.00	25.00	1

ELEMENT NO 21 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	5460.00	2778.14	4	8	0	.013	38.0	.0	2779.06	.00	60.00	.00

ELEMENT NO 22 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	5620.00	2785.04	4	.013	.00	.00	25.00	1

ELEMENT NO 23 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	5625.00	2785.24	4	8	0	.013	38.0	.0	2785.65	.00	60.00	.00

ELEMENT NO 24 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	5708.50	2788.58	4	.013	.00	.00	.00	1

ELEMENT NO 25 IS A SYSTEM HEADWORKS

	STATION	INVERT	SECT	W S ELEV
U/S DATA	5708.50	2788.58	4	.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES
SAH5.DAT
SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
128.00	2654.60	6.06	2660.66	455.0	16.09	4.02	2664.68	.00	5.55	6.00	.00	.00	0	.00
JUNCT STR	.00000					.00788	.00					.00		
128.00	2654.60	10.36	2664.96	275.0	14.01	3.05	2668.01	.00	4.56	5.00	.00	.00	0	.00
5.00	.23999					.01115	.06		1.58			.00		
133.00	2655.80	9.37	2665.17	275.0	14.01	3.05	2668.22	.00	4.56	5.00	.00	.00	0	.00
210.08	.02519					.01115	2.34		2.98			.00		
343.08	2661.09	6.49	2667.58	275.0	14.01	3.05	2670.63	.00	4.56	5.00	.00	.00	0	.00
HYDRAULIC JUMP												.00		
343.08	2661.09	3.15	2664.24	275.0	21.09	6.91	2671.15	.00	4.56	5.00	.00	.00	0	.00
60.62	.02519					.02075	1.26		2.98			.00		
403.70	2662.62	3.21	2665.83	275.0	20.65	6.63	2672.46	.00	4.56	5.00	.00	.00	0	.00
76.17	.02519					.01908	1.45		2.98			.00		
479.87	2664.54	3.35	2667.88	275.0	19.69	6.03	2673.91	.00	4.56	5.00	.00	.00	0	.00
48.88	.02519					.01697	.83		2.98			.00		
528.76	2665.77	3.49	2669.26	275.0	18.78	5.48	2674.74	.00	4.56	5.00	.00	.00	0	.00
33.74	.02519					.01514	.51		2.98			.00		
562.50	2666.62	3.65	2670.27	275.0	17.90	4.98	2675.25	.00	4.56	5.00	.00	.00	0	.00
80.83	.01511					.01407	1.14		3.57			.00		
643.33	2667.84	3.70	2671.54	275.0	17.66	4.85	2676.39	.00	4.56	5.00	.00	.00	0	.00
134.32	.01511					.01316	1.77		3.57			.00		
777.65	2669.87	3.88	2673.75	275.0	16.84	4.41	2678.15	.00	4.56	5.00	.00	.00	0	.00
62.75	.01511					.01187	.74		3.57			.00		

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES
SAH5.DAT
SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
840.40	2670.82	4.07	2674.89	275.0	16.06	4.01	2678.90	.00	4.56	5.00	.00	.00	0	.00
31.79	.01511					.01080	.34		3.57			.00		
872.19	2671.30	4.30	2675.60	275.0	15.31	3.64	2679.24	.00	4.56	5.00	.00	.00	0	.00
JUNCT STR	.11597					.01395	.07					.00		
877.19	2671.88	3.28	2675.16	230.0	18.50	5.32	2680.48	.00	4.20	4.50	.00	.00	0	.00
JUNCT STR	.11597					.01758	.00					.00		
877.19	2671.88	3.28	2675.16	230.0	18.50	5.32	2680.48	.00	4.20	4.50	.00	.00	0	.00
30.46	.01532					.01778	.54		3.48			.00		
907.65	2672.35	3.25	2675.60	230.0	18.68	5.42	2681.02	.00	4.20	4.50	.00	.00	0	.00
107.95	.01532					.01905	2.06		3.48			.00		
1015.60	2674.00	3.11	2677.11	230.0	19.59	5.97	2683.08	.00	4.20	4.50	.00	.00	0	.00
JUNCT STR	.00601					.02108	.11					.00		
1020.60	2674.03	2.97	2677.00	226.0	20.26	6.38	2683.39	.00	4.18	4.50	.00	.00	0	.00
766.84	.02203					.02202	16.89		2.97			.00		

0	1787.44	2690.92	2.97	2693.89	226.0	20.26	6.38	2700.28	.00	4.18		4.50	.00	.00	0	.00
0	139.67	.02201					.02202	3.08			2.97			.00		
0	1927.11	2693.99	2.97	2696.97	226.0	20.26	6.38	2703.35	.00	4.18		4.50	.00	.00	0	.00
0	367.38	.02201					.02297	8.44			2.97			.00		
0	2294.49	2702.08	2.89	2704.97	226.0	20.95	6.82	2711.79	.00	4.18		4.50	.00	.00	0	.00
0	165.03	.02201					.02544	4.20			2.97			.00		
0	2459.52	2705.71	2.77	2708.49	226.0	21.97	7.50	2715.99	.00	4.18		4.50	.00	.00	0	.00
0	95.75	.02201					.02871	2.75			2.97			.00		
1															PAGE	3

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES

SAH5.DAT

SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 2555.27	2707.82	2.66	2710.49	226.0	23.04	8.25	2718.74	.00	4.18		4.50	.00	.00	0	.00
0JUNCT STR	.11797					.02950	.15						.00		
0 2560.27	2708.41	3.02	2711.43	223.0	21.91	7.46	2718.89	.00	3.90		4.00	.00	.00	0	.00
0 260.71	.02854					.02854	7.44			3.02			.00		
0 2820.98	2715.85	3.02	2718.87	223.0	21.91	7.46	2726.33	.00	3.90		4.00	.00	.00	0	.00
0 375.79	.02854					.02740	10.30			3.02			.00		
0 3196.77	2726.58	3.14	2729.71	223.0	21.09	6.91	2736.63	.00	3.90		4.00	.00	.00	0	.00
0 132.88	.02854					.02504	3.33			3.02			.00		
0 3329.65	2730.37	3.30	2733.67	223.0	20.11	6.28	2739.95	.00	3.90		4.00	.00	.00	0	.00
0JUNCT STR	.02598					.02416	.12						.00		
0 3334.65	2730.50	3.22	2733.72	221.0	20.40	6.47	2740.18	.00	3.89		4.00	.00	.00	0	.00
0 349.11	.02461					.02347	8.19			3.21			.00		
0 3683.76	2739.09	3.38	2742.48	221.0	19.49	5.90	2748.38	.00	3.89		4.00	.00	.00	0	.00
0 111.05	.02461					.02165	2.40			3.21			.00		
0 3794.82	2741.82	3.59	2745.42	221.0	18.58	5.36	2750.78	.00	3.89		4.00	.00	.00	0	.00
0 50.18	.02461					.02091	1.05			3.21			.00		
0 3845.00	2743.06	3.89	2746.96	221.0	17.71	4.88	2751.83	.00	3.89		4.00	.00	.00	0	.00
0JUNCT STR	.02397					.01816	.09						.00		
0 3850.00	2743.18	7.00	2750.18	178.0	14.16	3.12	2753.30	.00	3.77		4.00	.00	.00	0	.00
0 200.84	.02146					.01536	3.08			2.82			.00		
0 4050.84	2747.49	5.93	2753.42	178.0	14.16	3.12	2756.54	.00	3.77		4.00	.00	.00	0	.00
0JUNCT STR	.02202					.01380	.07						.00		
1														PAGE	4

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES

SAH5.DAT

SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 4055.84	2747.60	7.01	2754.61	159.0	12.65	2.49	2757.10	.00	3.66		4.00	.00	.00	0	.00
0 217.51	.02144					.01225	2.67			2.60			.00		
0 4273.35	2752.26	5.04	2757.30	159.0	12.65	2.49	2759.79	.00	3.66		4.00	.00	.00	0	.00
0HYDRAULIC JUMP													.00		
0 4273.35	2752.26	2.60	2754.86	159.0	18.40	5.26	2760.12	.00	3.66		4.00	.00	.00	0	.00
0 144.07	.02144					.02144	3.09			2.60			.00		
0 4417.42	2755.35	2.60	2757.95	159.0	18.40	5.26	2763.21	.00	3.66		4.00	.00	.00	0	.00
0 309.57	.02144					.02091	6.47			2.60			.00		
0 4726.99	2761.99	2.65	2764.63	159.0	18.03	5.05	2769.68	.00	3.66		4.00	.00	.00	0	.00
0 157.80	.02144					.01926	3.04			2.60			.00		
0 4884.79	2765.37	2.76	2768.13	159.0	17.19	4.59	2772.72	.00	3.66		4.00	.00	.00	0	.00
0 68.55	.02144					.01717	1.18			2.60			.00		
0 4953.34	2766.84	2.88	2769.72	159.0	16.39	4.17	2773.90	.00	3.66		4.00	.00	.00	0	.00
0 .00	.02144					.01620	.00			2.60			.00		
0 4953.34	2766.84	2.88	2769.73	159.0	16.39	4.17	2773.90	.00	3.66		4.00	.00	.00	0	.00
0 7.48	.01505					.01622	.12			2.97			.00		
0 4960.82	2766.95	2.88	2769.83	159.0	16.41	4.19	2774.02	.00	3.66		4.00	.00	.00	0	.00
0 136.00	.01505					.01723	2.34			2.97			.00		
0 5096.81	2769.00	2.76	2771.76	159.0	17.21	4.60	2776.36	.00	3.66		4.00	.00	.00	0	.00
0 80.78	.01505					.01933	1.56			2.97			.00		
0 5177.60	2770.22	2.64	2772.86	159.0	18.05	5.06	2777.92	.00	3.66		4.00	.00	.00	0	.00
0 59.70	.01505					.02175	1.30			2.97			.00		
														PAGE	5

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES

SAH5.DAT

SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

0 STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0 L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0 5237.30	2771.12	2.54	2773.65	159.0	18.93	5.57	2779.22	.00	3.66		4.00	.00	.00	0	.00
0 48.22	.01505					.02451	1.18			2.97			.00		
0 5285.52	2771.84	2.43	2774.28	159.0	19.86	6.13	2780.40	.00	3.66		4.00	.00	.00	0	.00
0 41.01	.01505					.02768	1.14			2.97			.00		
0 5326.53	2772.46	2.34	2774.80	159.0	20.83	6.74	2781.54	.00	3.66		4.00	.00	.00	0	.00
0 35.97	.01505					.03131	1.13			2.97			.00		
0 5362.50	2773.00	2.25	2775.25	159.0	21.84	7.41	2782.66	.00	3.66		4.00	.00	.00	0	.00
0 31.32	.04822					.03149	.99			2.01			.00		
0 5393.82	2774.51	2.33	2776.84	159.0	20.93	6.81	2783.65	.00	3.66		4.00	.00	.00	0	.00
0 25.96	.04822					.02803	.73			2.01			.00		
0 5419.78	2775.76	2.42	2778.19	159.0	19.96	6.19	2784.37	.00	3.66		4.00	.00	.00	0	.00
0 19.78	.04822					.02482	.49			2.01			.00		
0 5439.55	2776.72	2.52	2779.24	159.0	19.03	5.63	2784.87	.00	3.66		4.00	.00	.00	0	.00
0 15.45	.04822					.02202	.34			2.01			.00		
0 5455.00	2777.46	2.63	2780.09	159.0	18.14	5.11	2785.21	.00	3.66		4.00	.00	.00	0	.00
0JUNCT STR	.13599					.02938	.15						.00		
0 5460.00	2778.14	2.29	2780.43	121.0	20.91	6.79	2787.22	.00	2.95		3.00	.00	.00	0	.00
0JUNCT STR	.13599					.03805	.00						.00		
0 5460.00	2778.14	2.29	2780.43	121.0	20.91	6.79	2787.22	.00	2.95		3.00	.00	.00	0	.00
0 11.07	.04313					.03781	.42			2.17			.00		
0 5471.07	2778.62	2.30	2780.92	121.0	20.79	6.72	2787.64	.00	2.95		3.00	.00	.00	0	.00
0 67.18	.04313					.03576	2.40			2.17			.00		
1														PAGE	6

WATER SURFACE PROFILE LISTING

WSPG FOR SAHARA AVENUE FLOWS AT THE LAKES

SAH5.DAT

SYSTEM WITH 10-YEAR FLOWS TO DROP INLETS

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
5538.25	2781.51	2.42	2783.93	121.0	19.82	6.11	2790.04	.00	2.95	3.00	.00	.00	0	.00
39.76	.04313					.03248	1.29		2.17			.00		
5578.01	2783.23	2.55	2785.78	121.0	18.90	5.55	2791.33	.00	2.95	3.00	.00	.00	0	.00
26.32	.04313					.02995	.79		2.17			.00		
5604.32	2784.36	2.71	2787.07	121.0	18.02	5.05	2792.12	.00	2.95	3.00	.00	.00	0	.00
15.68	.04313					.02930	.46		2.17			.00		
5620.00	2785.04	2.95	2787.99	121.0	17.18	4.59	2792.58	.00	2.95	3.00	.00	.00	0	.00
JUNCT STR	.03999					.02259	.11					.00		
5625.00	2785.24	7.08	2792.32	83.0	11.74	2.14	2794.46	.00	2.80	3.00	.00	.00	0	.00
83.50	.04000					.01549	1.29		1.71			.00		
5708.50	2788.58	5.14	2793.72	83.0	11.74	2.14	2795.86	.00	2.80	3.00	.00	.00	0	.00

SPRING MOUNTAIN

```
JD  0  0  1
 T1 WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO
SO      0.00 2460.71  2       .013                2460.21
R      56.85 2462.45  2       .013
 R     61.85 2462.66  2       .013                                          44.0  1
R     353.93 2471.50  2       .013
JX    358.93 2471.75  2  6    .013      8.0       2474.53        90.0
R     592.74 2478.70  2       .013
 JX   597.74 2478.90  2  4    .013      2.0       2481.26        60.0
R    1100.56 2493.33  2       .013
JX   1105.56 2495.50  2  4    .013     12.0       2495.91        60.0
 R   1540.56 2506.10  2       .013                                              1
R    1996.16 2513.40  2       .013
JX   2001.16 2513.65  2  4    .013     10.0       2516.15        90.0
 R   2311.51 2522.36  2       .013
 TS  2316.51 2522.50  1       .013
R    2626.87 2531.35  1       .013
JX   2631.87 2532.00  2  1    .013    140.0       2531.41        57.0
 R   2693.34 2533.30  2       .013
JX   2698.34 2534.80  3       .013
R    3091.81 2542.35  3       .013                                              1
 JX  3096.81 2542.50  3  6    .013      4.0       2545.40        60.0
R    3886.81 2562.60  3       .013                                              2
R    4283.06 2571.66  3       .013                                              1
R    4714.71 2573.33  3       .013                                              1
 R   5128.71 2575.00  3       .013                                          45.0  1
JX   5133.71 2575.10  7  5    .013      7.0       2575.10        60.0
R    5631.21 2577.00  7       .013                                          45.0
 SH                    3       .013
 CD   1  4              5.0
 CD   2  4              4.5
 CD   3  4              3.0
 CD   4  4              2.0
 CD   5  4              4.0
 CD   6  4              1.5
 CD   7  4              3.5

Q              82.0
```

STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Jul 22, 1998 13: 3: 2

Input file : SMWSPG.DAT
Output file: SMWSPG.OUT

INPUT FILE LISTING

```
T1 WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO
SO     0.00 2460.71  2      .013                2460.21
R     56.85 2462.45  2      .013
R     61.85 2462.66  2      .013                                      44.0  1
R    353.93 2471.50  2      .013
JX   358.93 2471.75  2  6   .013     8.0        2474.53        90.0
R    592.74 2478.70  2      .013
JX   597.74 2478.90  2  4   .013     2.0        2481.26        60.0
R   1100.56 2493.33  2      .013
JX  1105.56 2495.50  2  4   .013    12.0        2495.91        60.0
R   1540.56 2506.10  2      .013                                       1
R   1996.16 2513.40  2      .013
JX  2001.16 2513.65  2  4   .013    10.0        2516.15        90.0
R   2311.51 2522.36  2      .013
TS  2316.51 2522.50  1      .013
R   2626.87 2531.35  1      .013
JX  2631.87 2532.00  2  1   .013   140.0        2531.41        57.0
R   2693.34 2533.30  2      .013
JX  2698.34 2534.80  3      .013
R   3091.81 2542.35  3      .013                                       1
JX  3096.81 2542.50  3  6   .013     4.0        2545.40        60.0
R   3886.81 2562.60  3      .013                                       2
R   4283.06 2571.66  3      .013                                       1
R   4714.71 2573.33  3      .013                                       1
R   5128.71 2575.00  3      .013                                  45.0 1
JX  5133.71 2575.10  7  5   .013     7.0        2575.10        60.0
R   5631.21 2577.00  7      .013                                  45.0
SH                    3      .013
1                                                      SP
```

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			5.00														
CD	2	4			4.50														
CD	3	4			3.00														
CD	4	4			2.00														
CD	5	4			4.00														
CD	6	4			1.50														
CD	7	4			3.50														

1 PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

HEADING LINE NO 2 IS -

HEADING LINE NO 3 IS -

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA STATION	INVERT	SECT	W S ELEV
.00	2460.71	2	2460.21

ELEMENT NO 2 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
56.85	2462.45	2	.013	.00	.00	.00	0

ELEMENT NO 3 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
61.85	2462.66	2	.013	.00	.00	44.00	1

ELEMENT NO 4 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
353.93	2471.50	2	.013	.00	.00	.00	0

ELEMENT NO 5 IS A JUNCTION

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
358.93	2471.75	2	6	0	.013	8.0	.0	2474.53	.00	90.00	.00

ELEMENT NO 6 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
592.74	2478.70	2	.013	.00	.00	.00	0

ELEMENT NO 7 IS A JUNCTION

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
597.74	2478.90	2	4	0	.013	2.0	.0	2481.26	.00	60.00	.00

ELEMENT NO 8 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1100.56	2493.33	2	.013	.00	.00	.00	0

ELEMENT NO 9 IS A JUNCTION

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
1105.56	2495.50	2	4	0	.013	12.0	.0	2495.91	.00	60.00	.00

ELEMENT NO 10 IS A REACH

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1540.56	2506.10	2	.013	.00	.00	.00	1

1 PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH

```
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               1996.16 2513.40    2               .013                                          .00    .00     .00      0
 0 ELEMENT NO  12 IS A JUNCTION      *       *       *       *                       *                                *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2001.16 2513.65    2     4     0   .013     10.0       .0  2516.15      .00   90.00     .00
 0 ELEMENT NO  13 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               2311.51 2522.36    2               .013                                          .00    .00     .00      0
 0 ELEMENT NO  14 IS A TRANSITION    *       *       *
                    U/S DATA   STATION    INVERT  SECT              N
                               2316.51 2522.50    1               .013
 0 ELEMENT NO  15 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               2626.87 2531.35    1               .013                                          .00    .00     .00      0
 0 ELEMENT NO  16 IS A JUNCTION      *       *       *       *                       *                                *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2631.87 2532.00    2     1     0   .013    140.0       .0  2531.41      .00   57.00     .00
 0 ELEMENT NO  17 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               2693.34 2533.30    2               .013                                          .00    .00     .00      0
 0 ELEMENT NO  18 IS A JUNCTION      *       *       *       *                       *                                *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2698.34 2534.80    3     0     0   .013       .0       .0       .00      .00     .00     .00
 0 ELEMENT NO  19 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               3091.81 2542.35    3               .013                                          .00    .00     .00      1
 0 ELEMENT NO  20 IS A JUNCTION      *       *       *       *                       *                                *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               3096.81 2542.50    3     6     0   .013       4.0       .0  2545.40      .00   60.00     .00
1                                                                                                                 PAGE NO    4
0                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 0 ELEMENT NO  21 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               3886.81 2562.60    3               .013                                          .00    .00     .00      2
 0 ELEMENT NO  22 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               4283.06 2571.66    3               .013                                          .00    .00     .00      1
 0 ELEMENT NO  23 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               4714.71 2573.33    3               .013                                          .00    .00     .00      1
 0 ELEMENT NO  24 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               5128.71 2575.00    3               .013                                          .00    .00   45.00      1
 0 ELEMENT NO  25 IS A JUNCTION      *       *       *       *                       *                                *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N       Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               5133.71 2575.10    7     5     0   .013       7.0       .0  2575.10      .00   60.00     .00
 0 ELEMENT NO  26 IS A REACH         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N                                        RADIUS  ANGLE  ANG PT  MAN H
                               5631.21 2577.00    7               .013                                          .00    .00   45.00      0
 WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 0 ELEMENT NO  27 IS A SYSTEM HEADWORKS                  *                                       *
                    U/S DATA   STATION    INVERT  SECT                                                W S ELEV
                               5631.21 2577.00    3                                                     .00
  NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

 ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
 ERROR MESSAGE NO. 2 - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN OTLTUS, W.S.ELEV = INV + DC
                                                                                                                  PAGE     1

                                  WATER SURFACE PROFILE LISTING
                          WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

  STATION     INVERT   DEPTH      W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL            HGT/   BASE/     ZL    NO  AVBPR
                ELEV  OF FLOW     ELEV                            HEAD   GRD.EL.   ELEV    DEPTH             DIA    ID NO.          PIER
 0 L/ELEM       SO                                           SF AVE      HF                NORM DEPTH                          ZR
 ************************************************************************************************************************************
 0      .00  2460.71     2.98  2463.69     265.0    23.71     8.74  2472.43    .00     4.32                4.50      .00    .00   0    .00
       56.85   .03061                                        .03005     1.71                    2.96                          .00
       56.85  2462.45     2.98  2465.43     265.0    23.66     8.70  2474.14    .00     4.32                4.50      .00    .00   0    .00
 0     5.00   .04199                                        .02983      .15                    2.66                          .00
 0     61.85  2462.66     3.00  2465.66     265.0    23.57     8.63  2474.29    .00     4.32                4.50      .00    .00   0    .00
       .00    .04199                                        .02968      .00                    2.66                          .00
       61.85  2462.66     3.00  2465.66     265.0    23.57     8.63  2474.29    .00     4.32                4.50      .00    .00   0    .00
      292.08   .03027                                        .02813     8.22                    2.97                          .00
 0    353.93  2471.50     3.12  2474.62     265.0    22.52     7.88  2482.50    .00     4.32                4.50      .00    .00   0    .00
 0JUNCT STR    .05000                                        .02795      .14                                                  .00
 0    358.93  2471.75     2.94  2474.69     257.0    23.32     8.45  2483.14    .00     4.30                4.50      .00    .00   0    .00
      233.81   .02973                                        .02875     6.72                    2.93                          .00
      592.74  2478.70     2.99  2481.69     257.0    22.94     8.18  2489.86    .00     4.30                4.50      .00    .00   0    .00
 JUNCT STR     .03999                                        .02843      .14                                                  .00
 0    597.74  2478.90     2.95  2481.85     255.0    23.08     8.28  2490.13    .00     4.29                4.50      .00    .00   0    .00
 0JUNCT STR    .03999                                        .02869      .00                                                  .00
      597.74  2478.90     2.95  2481.85     255.0    23.08     8.28  2490.13    .00     4.29                4.50      .00    .00   0    .00
       98.69   .02870                                        .02869     2.83                    2.95                          .00
      696.43  2481.73     2.95  2484.68     255.0    23.08     8.28  2492.96    .00     4.29                4.50      .00    .00   0    .00
 0    404.13   .02870                                        .02908    11.75                    2.95                          .00
 0   1100.56  2493.33     2.92  2496.25     255.0    23.33     8.46  2504.71    .00     4.29                4.50      .00    .00   0    .00
 0JUNCT STR    .43398                                        .02656      .13                                                  .00
                                                                                                                  PAGE     2

                                  WATER SURFACE PROFILE LISTING
                          WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

  STATION     INVERT   DEPTH      W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL            HGT/   BASE/     ZL    NO  AVBPR
                ELEV  OF FLOW     ELEV                            HEAD   GRD.EL.   ELEV    DEPTH             DIA    ID NO.          PIER
 0 L/ELEM       SO                                           SF AVE      HF                NORM DEPTH                          ZR
 ************************************************************************************************************************************
 0   1105.56  2495.50     3.05  2498.55     243.0    21.14     6.95  2505.50    .00     4.25                4.50      .00    .00   0    .00
 0JUNCT STR    .43398                                        .02365      .00                                                  .00
      1105.56  2495.50     3.05  2498.55     243.0    21.14     6.95  2505.50    .00     4.25                4.50      .00    .00   0    .00
```

0	100.00	.02437					.02340	2.34			3.02			.00			
0	1205.56	2497.94	3.08	2501.01	243.0	20.96	6.83	2507.84	.00	4.25		4.50	.00	.00	0	.00	
0	196.74	.02437					.02191	4.31			3.02			.00			
0	1402.30	2502.73	3.22	2505.95	243.0	19.99	6.21	2512.15	.00	4.25		4.50	.00	.00	0	.00	
0	86.76	.02437					.01958	1.70			3.02			.00			
0	1489.06	2504.85	3.36	2508.21	243.0	19.06	5.64	2513.85	.00	4.25		4.50	.00	.00	0	.00	
0	51.50	.02437					.01758	.91			3.02			.00			
0	1540.56	2506.10	3.53	2509.63	243.0	18.17	5.13	2514.76	.00	4.25		4.50	.00	.00	0	.00	
0	.00	.02437					.01666	.00			3.02			.00			
0	1540.56	2506.10	3.53	2509.63	243.0	18.17	5.13	2514.76	.00	4.25		4.50	.00	.00	0	.00	
0	86.28	.01602					.01684	1.45			3.60			.00			
0	1626.84	2507.48	3.49	2510.97	243.0	18.36	5.24	2516.21	.00	4.25		4.50	.00	.00	0	.00	
0	185.20	.01602					.01799	3.33			3.60			.00			
0	1812.04	2510.45	3.33	2513.78	243.0	19.25	5.76	2519.54	.00	4.25		4.50	.00	.00	0	.00	
0	106.59	.01602					.02006	2.14			3.60			.00			
0	1918.62	2512.16	3.18	2515.34	243.0	20.19	6.34	2521.68	.00	4.25		4.50	.00	.00	0	.00	
0	77.54	.01602					.02246	1.74			3.60			.00			
0	1996.16	2513.40	3.05	2516.45	243.0	21.18	6.97	2523.42	.00	4.25		4.50	.00	.00	0	.00	
0	JUNCT STR	.05000					.02559	.13						.00			

1 PAGE 3

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

0	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	2001.16	2513.65	2.82	2516.47	233.0	22.26	7.70	2524.16	.00	4.21		4.50	.00	.00	0	.00
0	81.07	.02807					.02726	2.21			2.79			.00		
0	2082.23	2515.93	2.83	2518.75	233.0	22.15	7.62	2526.38	.00	4.21		4.50	.00	.00	0	.00
0	229.28	.02807					.02556	5.86			2.79			.00		
0	2311.51	2522.36	2.95	2525.31	233.0	21.12	6.93	2532.24	.00	4.21		4.50	.00	.00	0	.00
0	TRANS STR	.02798					.02442	.12						.00		
0	2316.51	2522.50	2.70	2525.20	233.0	21.55	7.22	2532.42	.00	4.31		5.00	.00	.00	0	.00
0	80.31	.02852					.02378	1.91			2.59			.00		
0	2396.82	2524.79	2.77	2527.56	233.0	20.86	6.76	2534.32	.00	4.31		5.00	.00	.00	0	.00
0	71.26	.02852					.02143	1.53			2.59			.00		
0	2468.08	2526.82	2.88	2529.70	233.0	19.89	6.15	2535.85	.00	4.31		5.00	.00	.00	0	.00
0	46.17	.02852					.01895	.87			2.59			.00		
0	2514.25	2528.14	3.00	2531.14	233.0	18.96	5.59	2536.72	.00	4.31		5.00	.00	.00	0	.00
0	32.78	.02852					.01677	.55			2.59			.00		
0	2547.03	2529.07	3.12	2532.19	233.0	18.08	5.08	2537.27	.00	4.31		5.00	.00	.00	0	.00
0	24.31	.02852					.01486	.36			2.59			.00		
0	2571.34	2529.77	3.25	2533.02	233.0	17.24	4.62	2537.64	.00	4.31		5.00	.00	.00	0	.00
0	18.28	.02852					.01320	.24			2.59			.00		
0	2589.62	2530.29	3.39	2533.68	233.0	16.44	4.20	2537.88	.00	4.31		5.00	.00	.00	0	.00
0	13.82	.02852					.01175	.16			2.59			.00		
0	2603.44	2530.68	3.54	2534.22	233.0	15.67	3.82	2538.04	.00	4.31		5.00	.00	.00	0	.00
0	10.21	.02852					.01050	.11			2.59			.00		

1 PAGE 4

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

0	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	2613.66	2530.97	3.70	2534.68	233.0	14.94	3.47	2538.15	.00	4.31		5.00	.00	.00	0	.00
0	7.25	.02852					.00941	.07			2.59			.00		
0	2620.91	2531.18	3.88	2535.06	233.0	14.25	3.15	2538.21	.00	4.31		5.00	.00	.00	0	.00
0	4.38	.02852					.00849	.04			2.59			.00		
0	2625.29	2531.30	4.08	2535.38	233.0	13.59	2.87	2538.25	.00	4.31		5.00	.00	.00	0	.00
0	1.58	.02852					.00773	.01			2.59			.00		
0	2626.87	2531.35	4.31	2535.66	233.0	12.95	2.61	2538.26	.00	4.31		5.00	.00	.00	0	.00
0	JUNCT STR	.12998					.00482	.02						.00		
0	2631.87	2532.00	7.22	2539.22	93.0	5.85	.53	2539.75	.00	2.83		4.50	.00	.00	0	.00
0	61.47	.02115					.00224	.14			1.76			.00		
0	2693.34	2533.30	6.06	2539.36	93.0	5.85	.53	2539.89	.00	2.83		4.50	.00	.00	0	.00
0	JUNCT STR	.30000												.00		
0	2698.34	2534.80	2.47	2537.28	93.0	14.91	3.45	2540.73	.00	2.86		3.00	.00	.00	0	.00
0	36.78	.01919					.01922	.71			2.47			.00		
0	2735.12	2535.51	2.47	2537.98	93.0	14.91	3.45	2541.44	.00	2.86		3.00	.00	.00	0	.00
0	168.33	.01919					.01931	3.25			2.47			.00		
0	2903.45	2538.74	2.46	2541.20	93.0	14.98	3.49	2544.69	.00	2.86		3.00	.00	.00	0	.00
0	188.36	.01919					.02040	3.84			2.47			.00		
0	3091.81	2542.35	2.34	2544.69	93.0	15.71	3.84	2548.53	.00	2.86		3.00	.00	.00	0	.00
0	JUNCT STR	.02998					.02340	.12						.00		
0	3096.81	2542.50	2.10	2544.60	89.0	16.84	4.41	2549.01	.00	2.84		3.00	.00	.00	0	.00
0	570.76	.02544					.02540	14.50			2.10			.00		

1 PAGE 5

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

0	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	3667.57	2557.02	2.10	2559.12	89.0	16.84	4.41	2563.53	.00	2.84		3.00	.00	.00	0	.00
0	219.24	.02544					.02412	5.29			2.10			.00		
0	3886.81	2562.60	2.19	2564.79	89.0	16.10	4.03	2568.82	.00	2.84		3.00	.00	.00	0	.00
0	.00	.02544					.02284	.00			2.10			.00		
0	3886.81	2562.60	2.19	2564.79	89.0	16.10	4.03	2568.82	.00	2.84		3.00	.00	.00	0	.00
0	24.12	.02286					.02284	.55			2.19			.00		
0	3910.93	2563.15	2.19	2565.34	89.0	16.10	4.03	2569.37	.00	2.84		3.00	.00	.00	0	.00
0	218.63	.02286					.02198	4.81			2.19			.00		
0	4129.56	2568.15	2.26	2570.41	89.0	15.56	3.76	2574.18	.00	2.84		3.00	.00	.00	0	.00
0	83.12	.02286					.02009	1.67			2.19			.00		

0	4212.68	2570.05	2.37	2572.42	89.0	14.83	3.42	2575.84	.00	2.84		3.00	.00	.00	0	.00
0	39.64	.02286					.01818	.72			2.19			.00		
0	4252.32	2570.96	2.50	2573.46	89.0	14.14	3.11	2576.56	.00	2.84		3.00	.00	.00	0	.00
0	21.95	.02286					.01664	.37			2.19			.00		
0	4274.28	2571.46	2.65	2574.10	89.0	13.49	2.83	2576.93	.00	2.84		3.00	.00	.00	0	.00
0	8.78	.02286					.01569	.14			2.19			.00		
0	4283.06	2571.66	2.84	2574.50	89.0	12.86	2.57	2577.07	.00	2.84		3.00	.00	.00	0	.00
0	4.40	.00387					.01647	.07			3.00			.00		
0	4287.46	2571.68	3.00	2574.68	89.0	12.59	2.46	2577.14	.00	2.84		3.00	.00	.00	0	.00
0	427.25	.00387					.01767	7.55			3.00			.00		
0	4714.71	2573.33	9.08	2582.41	89.0	12.59	2.46	2584.87	.00	2.84		3.00	.00	.00	0	.00
0	414.00	.00403					.01781	7.37			3.00			.00		
1															PAGE	6

WATER SURFACE PROFILE LISTING
WSPG RUN FOR LAKES DETENTION BASIN SPRING MTN TO BUFFALO

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
0	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	5128.71	2575.00	15.27	2590.27	89.0	12.59	2.46	2592.73	.00	2.84		3.00	.00	.00	0	.00
0	JUNCT STR	.02002					.01222	.06						.00		
0	5133.71	2575.10	16.79	2591.89	82.0	8.52	1.13	2593.02	.00	2.83		3.50	.00	.00	0	.00
0	497.50	.00382					.00664	3.30			3.50			.00		
0	5631.21	2577.00	18.36	2595.36	82.0	8.52	1.13	2596.49	.00	2.83		3.50	.00	.00	0	.00
1																

LAKES DETENTION BASIN
Discharge/Stage Estimation

0.0

Pipe	Area	C	U/S EGL	D/S HGL	Length	Friction Slope	**Flow**	Velocity	Vh	Bend & Entrance Losses
36	7.069	669	2594.974	2573.58	1144	0.0162	**85.0**	12.03	2.25	2.92
36	7.069	669	2591.563	2572.61	1144	0.0143	**80.0**	11.32	1.99	2.59
36	7.069	669	2588.359	2571.70	1144	0.0126	**75.0**	10.61	1.75	2.27
36	7.069	669	2585.361	2570.85	1144	0.0110	**70.0**	9.90	1.52	1.98
36	7.069	669	2582.57	2570.06	1144	0.0094	**65.0**	9.20	1.31	1.71
36	7.069	669	2579.986	2569.32	1144	0.0080	**60.0**	8.49	1.12	1.45
36	7.069	669	2577.608	2568.65	1144	0.0068	**55.0**	7.78	0.94	1.22
36	7.069	669	2575.437	2568.03	1144	0.0056	**50.0**	7.07	0.78	1.01
36	7.069	669	2573.473	2567.48	1144	0.0045	**45.0**	6.37	0.63	0.82
36	7.069	669	2571.716	2566.98	1144	0.0036	**40.0**	5.66	0.50	0.65

Pipe	Area	C	U/S EGL	D/S HGL	Length	Friction Slope	**Flow**	Velocity	Vh	Contraction Loss
30	4.909	411	2575.821	2565.1	130	0.0427	**85.0**	17.32	4.66	0.51
30	4.909	411	2574.597	2565.1	130	0.0378	**80.0**	16.30	4.12	0.45
30	4.909	411	2573.447	2565.1	130	0.0333	**75.0**	15.28	3.62	0.40
30	4.909	411	2572.371	2565.1	130	0.0290	**70.0**	14.26	3.16	0.35
30	4.909	411	2571.369	2565.1	130	0.0250	**65.0**	13.24	2.72	0.30
30	4.909	411	2570.442	2565.1	130	0.0213	**60.0**	12.22	2.32	0.26
30	4.909	411	2569.589	2565.1	130	0.0179	**55.0**	11.20	1.95	0.21
30	4.909	411	2568.81	2565.1	130	0.0148	**50.0**	10.19	1.61	0.18
30	4.909	411	2568.105	2565.1	130	0.0120	**45.0**	9.17	1.30	0.14
30	4.909	411	2567.474	2565.1	130	0.0095	**40.0**	8.15	1.03	0.11

STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Jul 21, 1999 13:22:11

Input file : BASINOUT.DAT
Output file: BASINOUT.OUT

INPUT FILE LISTING

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T1 WSPG FOR 36" BASIN OUTFALL TO SPRING MOUNTAIN
T2 FILE NAME BASINOUT.DAT
T3 WATER SURFACE AT BASIN SET TO 2595.00 FEET
SO -3467.03 2542.40  1      .013
R  -2679.03 2562.10  1      .013                                    1
JX -2676.53 2562.60  3      .013
R  -2548.04 2563 60  3      .013                              25.0
JX -2543.04 2563.63  1      .013                                    1
R  -2445.40 2564.38  1      .013                                    1
R  -1408.50 2570.66  1      .013                                    2
WE -1408.50 2570.66  2      .013
SH -1401.50 2570.76  2      .013              2595.00
1                                                SP
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WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING — PAGE 1

0 CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			3.00														
CD	2	3	0	.00	5.00	5.00	.00	.00	.00										
CD	3	4			2.50														

1 PAGE NO 1

0 WATER SURFACE PROFILE - TITLE CARD LISTING

0HEADING LINE NO 1 IS -
0 WSPG FOR 36" BASIN OUTFALL TO SPRING MOUNTAIN

0HEADING LINE NO 2 IS -
0 FILE NAME BASINOUT.DAT

0HEADING LINE NO 3 IS -
0 WATER SURFACE AT BASIN SET TO 2595.00 FEET

1 PAGE NO 2

0 WATER SURFACE PROFILE - ELEMENT CARD LISTING

0 ELEMENT NO 1 IS A SYSTEM OUTLET * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	-3467.03	2542.40	1	.00

0 ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-2679.03	2562.10	1	.013	.00	.00	.00	1

0 ELEMENT NO 3 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	-2676.53	2562.60	3	0	0	.013	.0	.0	.00	.00	.00	.00

0 ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-2548.04	2563.60	3	.013	.00	.00	25.00	0

0 ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	-2543.04	2563.63	1	0	0	.013	.0	.0	.00	.00	.00	.00

0 ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-2445.40	2564.38	1	.013	.00	.00	.00	1

0 ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-1408.50	2570.66	1	.013	.00	.00	.00	2

0 ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	-1408.50	2570.66	2	.013

0 ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	-1401.50	2570.76	2	2595.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

PAGE 1

WATER SURFACE PROFILE LISTING
WSPG FOR 36" BASIN OUTFALL TO SPRING MOUNTAIN
FILE NAME BASINOUT.DAT
WATER SURFACE AT BASIN SET TO 2595.00 FEET

0 STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH / NORM DEPTH	HGT/ DIA / ID NO.	BASE/ ZR	ZL	NO PIER	AVBPR
0 -3467.03	2542.40	2.04	2544.44	85.0	16.61	4.29	2548.73	.00	2.81	3.00	.00	.00	0	.00
0 296.75	.02500					.02503	7.43		2.04			.00		
0 -3170.28	2549.82	2.04	2551.86	85.0	16.61	4.29	2556.14	.00	2.81	3.00	.00	.00	0	.00
0 186.16	.02500					.02519	4.69		2.04			.00		
0 -2984.12	2554.47	2.03	2556.50	85.0	16.69	4.33	2560.83	.00	2.81	3.00	.00	.00	0	.00
0 181.23	.02500					.02693	4.88		2.04			.00		
0 -2802.89	2559.00	1.95	2560.95	85.0	17.51	4.76	2565.71	.00	2.81	3.00	.00	.00	0	.00
0 74.91	.02500					.03032	2.27		2.04			.00		
0 -2727.98	2560.88	1.87	2562.74	85.0	18.36	5.24	2567.98	.00	2.81	3.00	.00	.00	0	.00
0 48.95	.02500					.03421	1.67		2.04			.00		
0 -2679.03	2562.10	1.79	2563.90	85.0	19.26	5.76	2569.66	.00	2.81	3.00	.00	.00	0	.00
0JUNCT STR	.20000					.03784	.09					.00		
0 -2676.53	2562.60	2.47	2565.07	85.0	17.35	4.68	2569.75	.00	2.47	2.50	.00	.00	0	.00
0 .28	.00778					.04080	.01		2.50			.00		
0 -2676.25	2562.60	2.50	2565.10	85.0	17.32	4.66	2569.76	.00	2.47	2.50	.00	.00	0	.00

0	128.21	.00778					.04258	5.46			2.50			.00		
0	-2548.04	2563.60	7.01	2570.61	85.0	17.32	4.66	2575.27	.00	2.47		2.50	.00	.00	0	.00
0	JUNCT STR	.00596					.02959	.15						.00		
0	-2543.04	2563.63	9.54	2573.17	85.0	12.03	2.25	2575.42	.00	2.81		3.00	.00	.00	0	.00
0	97.64	.00768					.01624	1.59			3.00			.00		
0	-2445.40	2564.38	10.49	2574.87	85.0	12.03	2.25	2577.11	.00	2.81		3.00	.00	.00	0	.00
0	1036.90	.00606					.01624	16.84			3.00			.00		
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WATER SURFACE PROFILE LISTING

WSPG FOR 36" BASIN OUTFALL TO SPRING MOUNTAIN

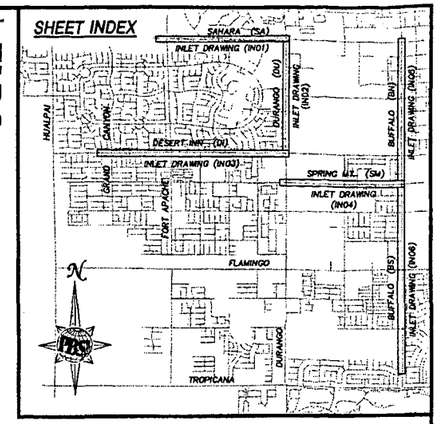
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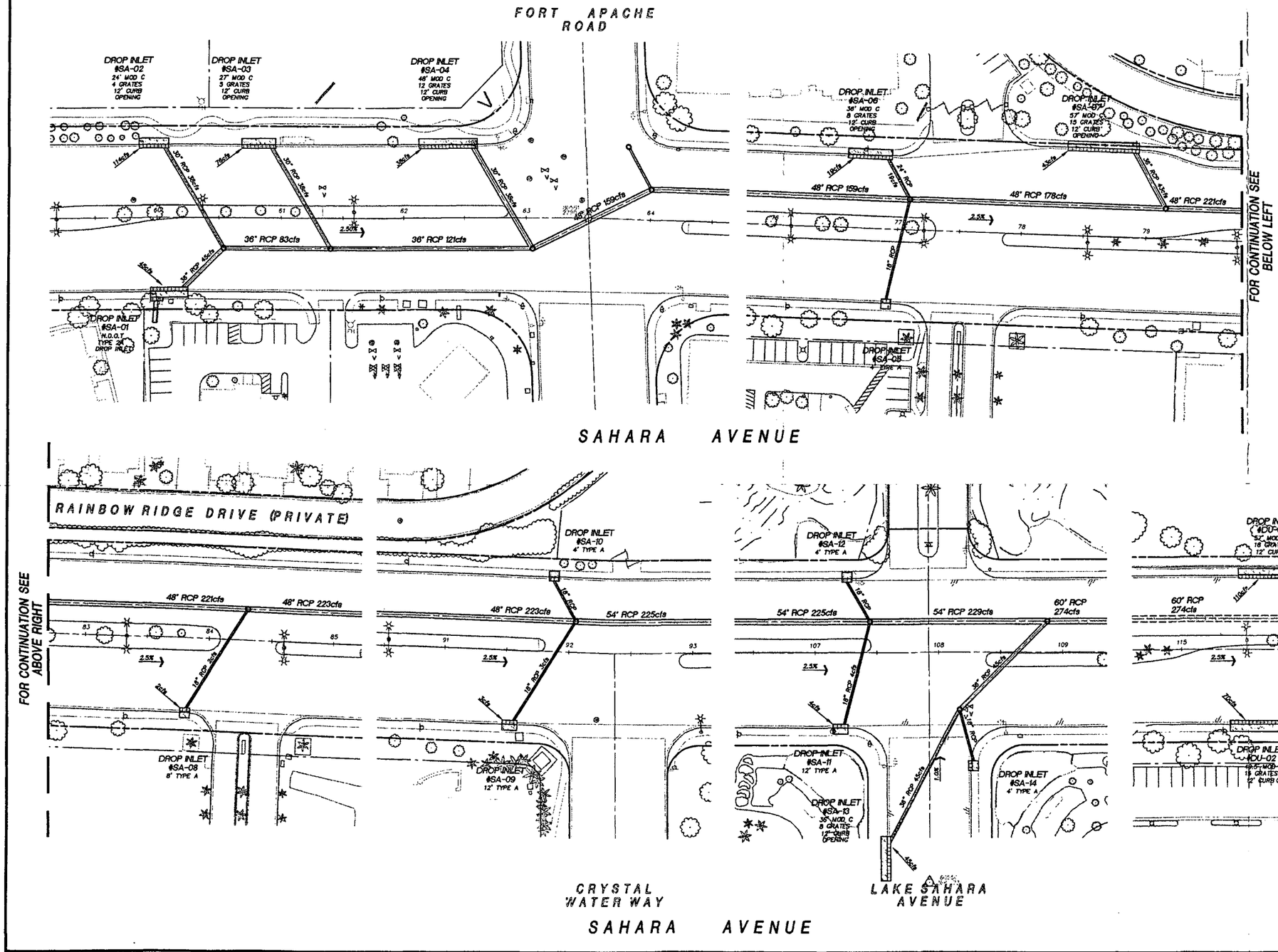
WATER SURFACE AT BASIN SET TO 2595.00 FEET

	STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
0	-1408.50	2570.66	21.27	2591.93	85.0	12.03	2.25	2594.18	.00	2.81		3.00	.00	.00	0	.00
0	WALL ENTRANCE													.00		
0	-1408.50	2570.66	23.36	2594.02	85.0	3.43	.18	2594.21	.00	2.08		5.00	5.00	.00	0	.00
0	WALL ENTRANCE													.00		
0	-1401.50	2570.76	23.36	2594.12	85.0	3.43	.18	2594.31	.00	2.08		5.00	5.00	.00	0	.00
1																

Call before you Dig
1-800-227-2600

SHEET INDEX





GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: J. BOLDEN
CHECKED BY: D. DAVIS
DATE: OCTOBER 29,1998

JOB NO.: 51516
DRAWING NO.: 516-IN01
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
901 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

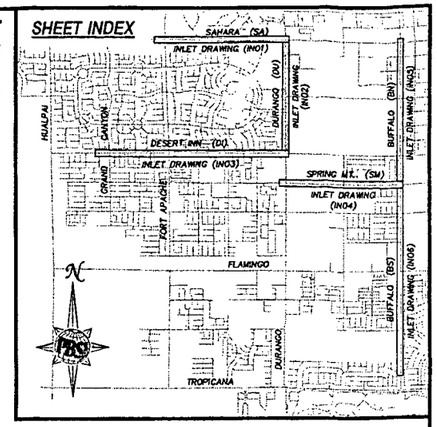
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SAHARA COLLECTION SYSTEM
DROP INLET LAYOUT AND SIZING

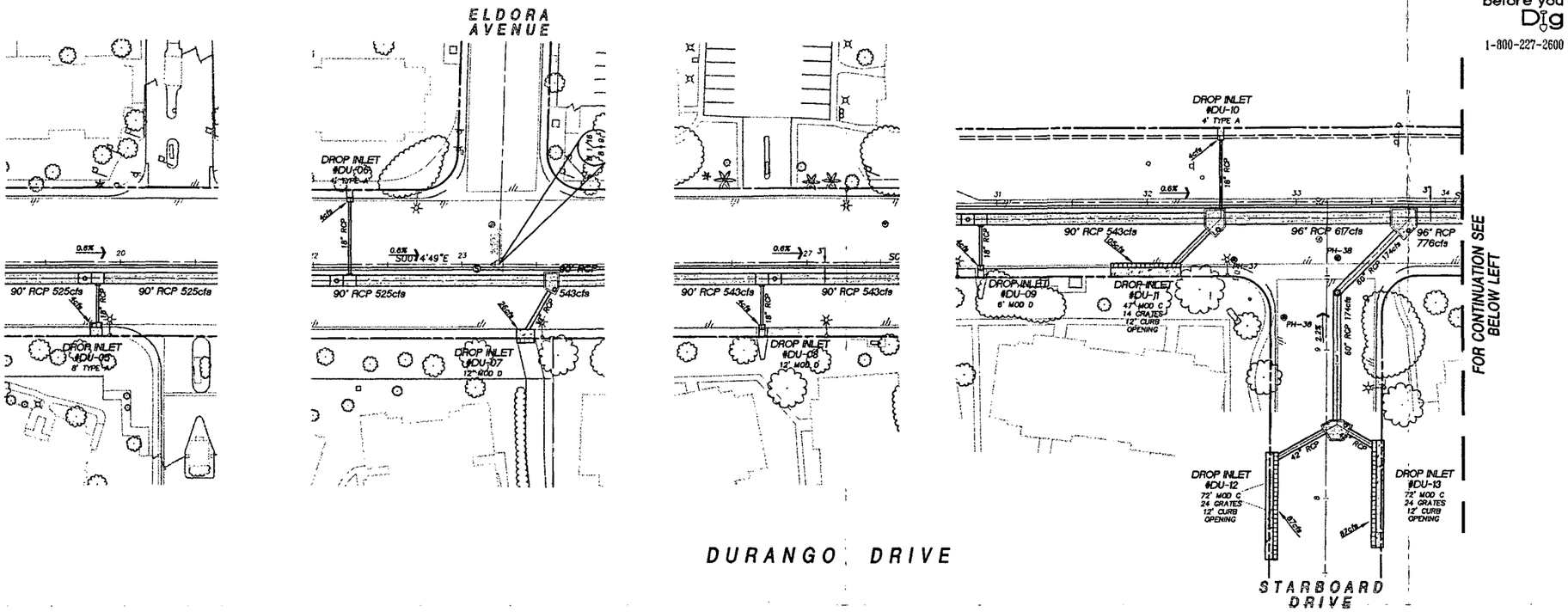
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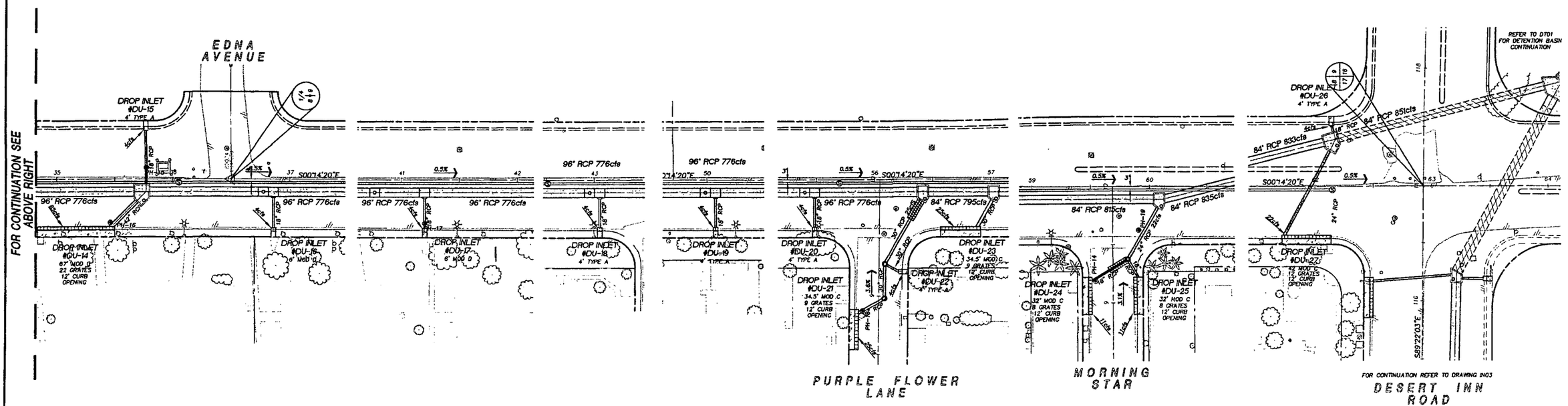
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Call before you Dig
1-800-227-2600







GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: J. BOLDEN
CHECKED BY: D. DAVIS
DATE: JULY 24, 1998

JOB NO.: 51516
DRAWING NO.: 516-IN02
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
921 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7273 Fax: 702/263-7200
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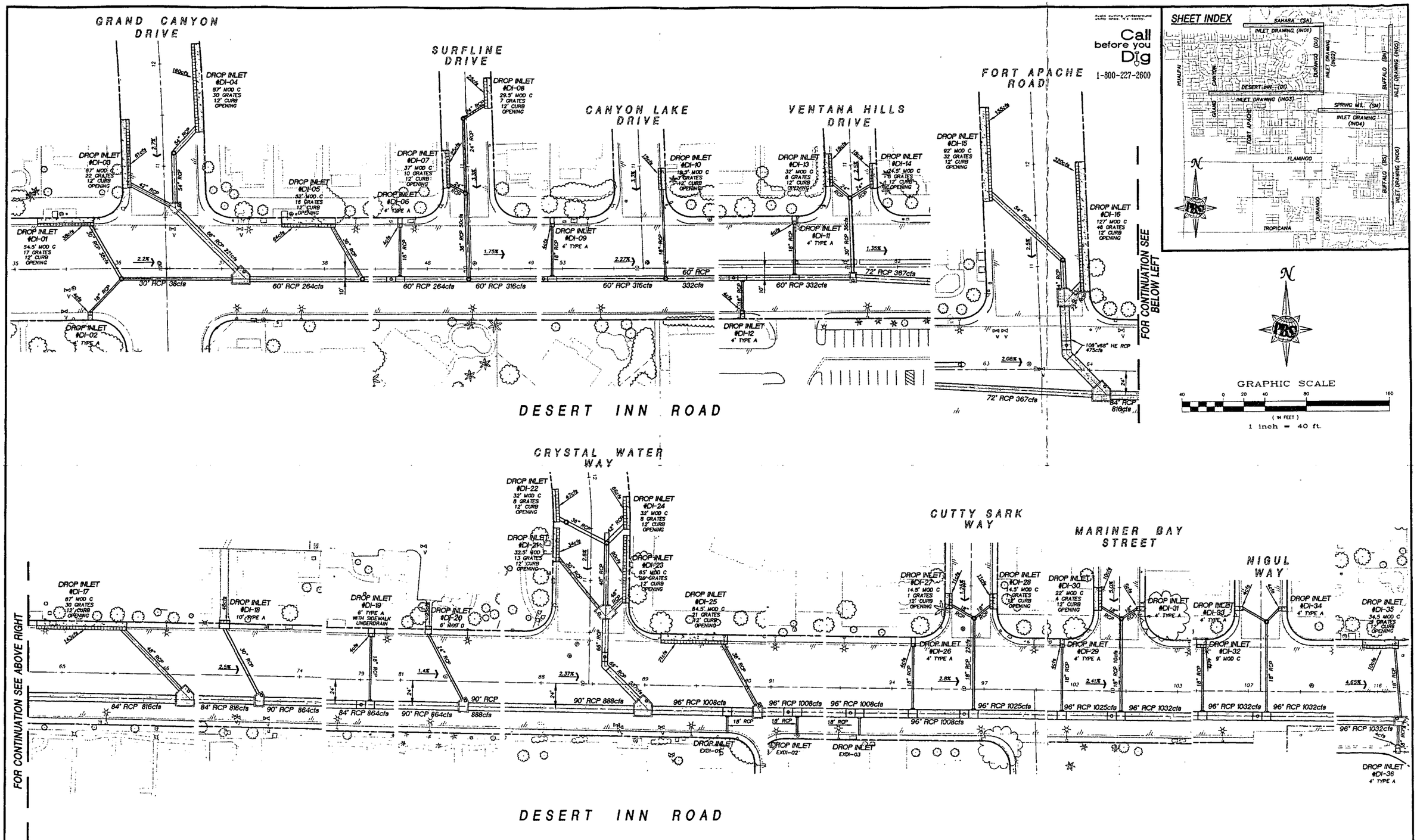
CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES
DURANGO COLLECTION SYSTEM
DROP INLET LAYOUT AND SIZING

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DRAWING NO. IN02 2/6

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REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: JULY 24, 1998

JOB NO.: 51516
DRAWING NO.: 516-IN03
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
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CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

DESERT INN COLLECTION SYSTEM DROP INLET LAYOUT AND SIZING

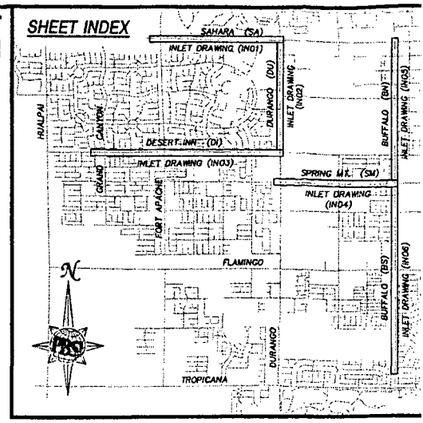
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IN03

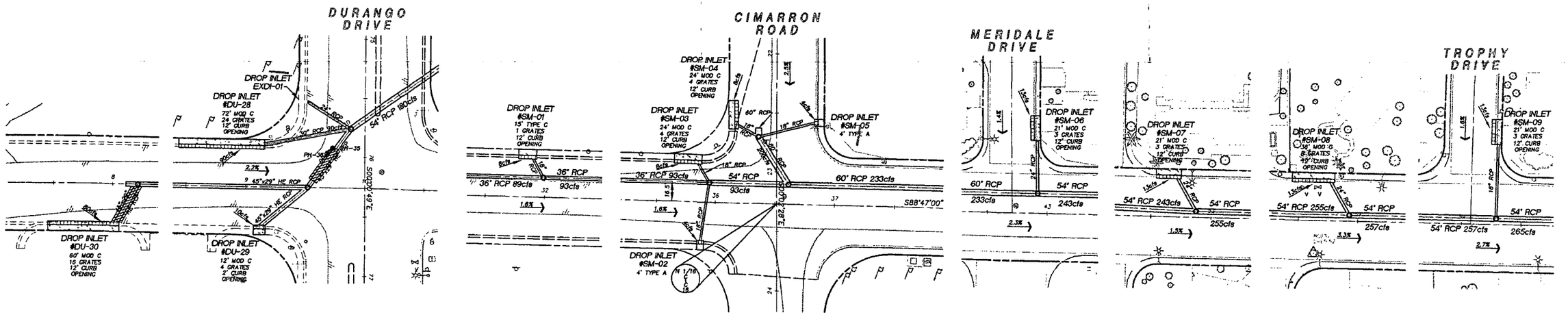
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Call before you Dig
1-800-227-2600



N

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: JULY 24, 1998

JOB NO.: 51516
DRAWING NO.: 516-IN04
SCALE: HORIZ.: 1"=40'
VERT.: 1"=4'

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Henderson, Nevada 89014
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES
SPRING MOUNTAIN OUTFALL/COLLECTION SYSTEM
DROP INLET LAYOUT AND SIZING

L-1582B

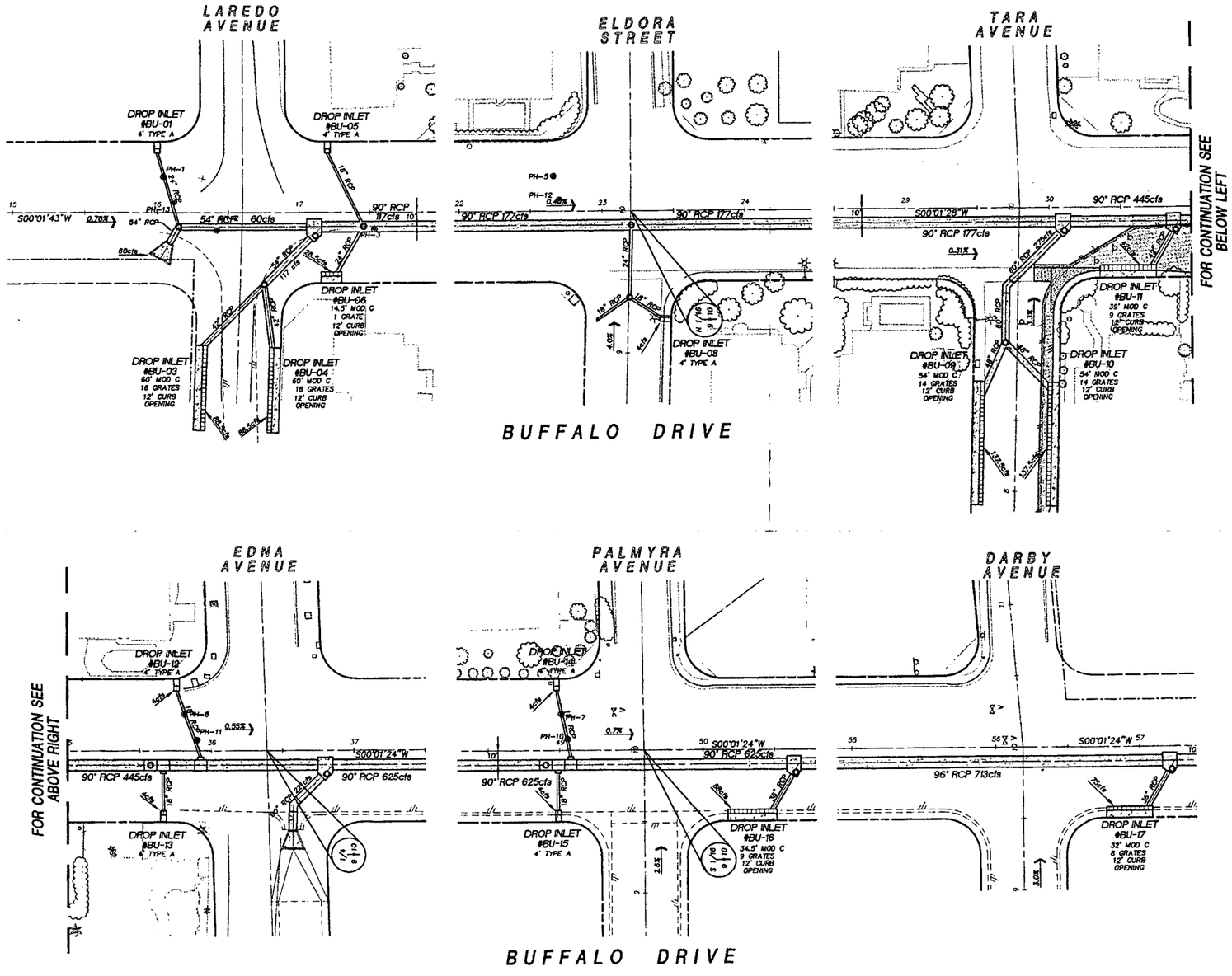
DRAWING NO. IN04 4/6

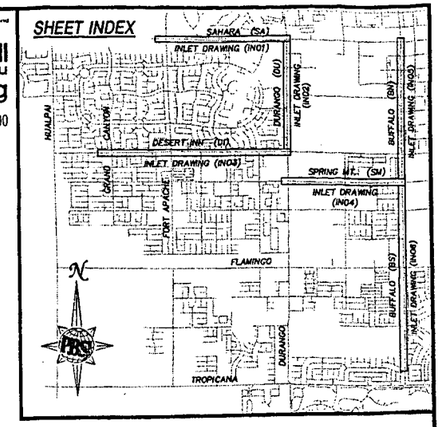
AD File: D:\Dwgs\1516\FIGS\1516-in04.dwg Plotted at Tue Aug 17 14:29:47 1999

Avoid cutting underground utility lines. It's costly.

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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: JULY 24, 1998

JOB NO.: 51516
DRAWING NO.: 516-IN05
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO (NORTH) COLLECTION SYSTEM
DROP INLET LAYOUT AND SIZING

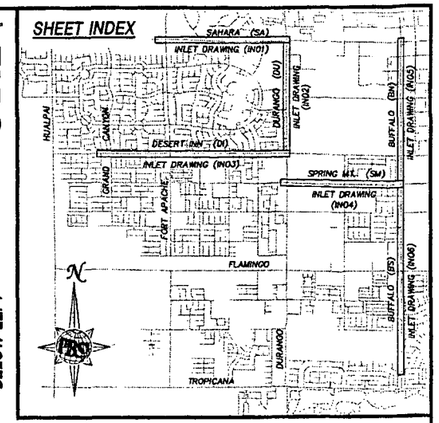
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DRAWING NO. IN05 | 5/6

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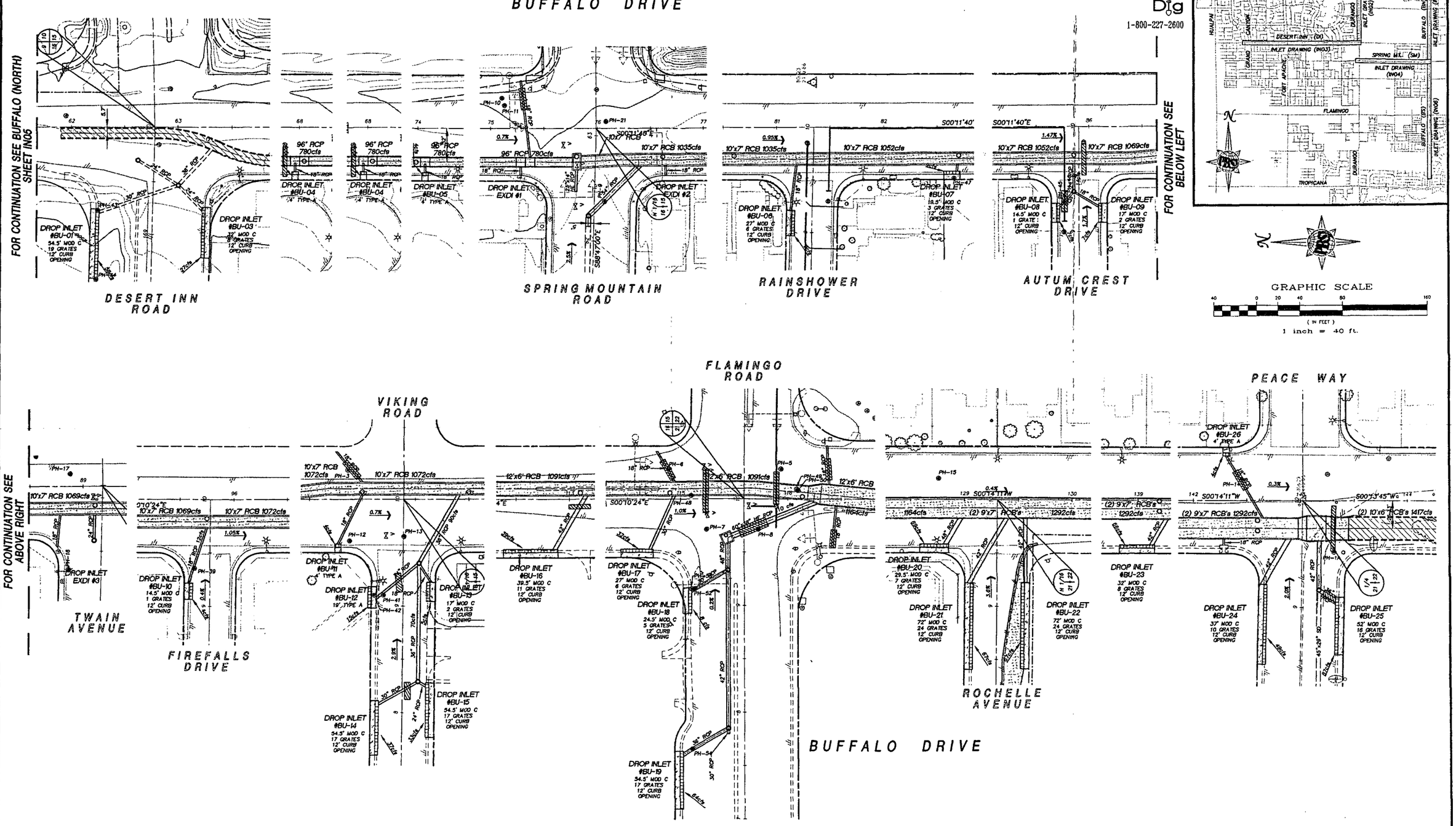
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1-800-227-2600

SHEET INDEX



GRAPHIC SCALE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: JULY 24, 1998

JOB NO.: 51516
DRAWING NO.: 516-IN06
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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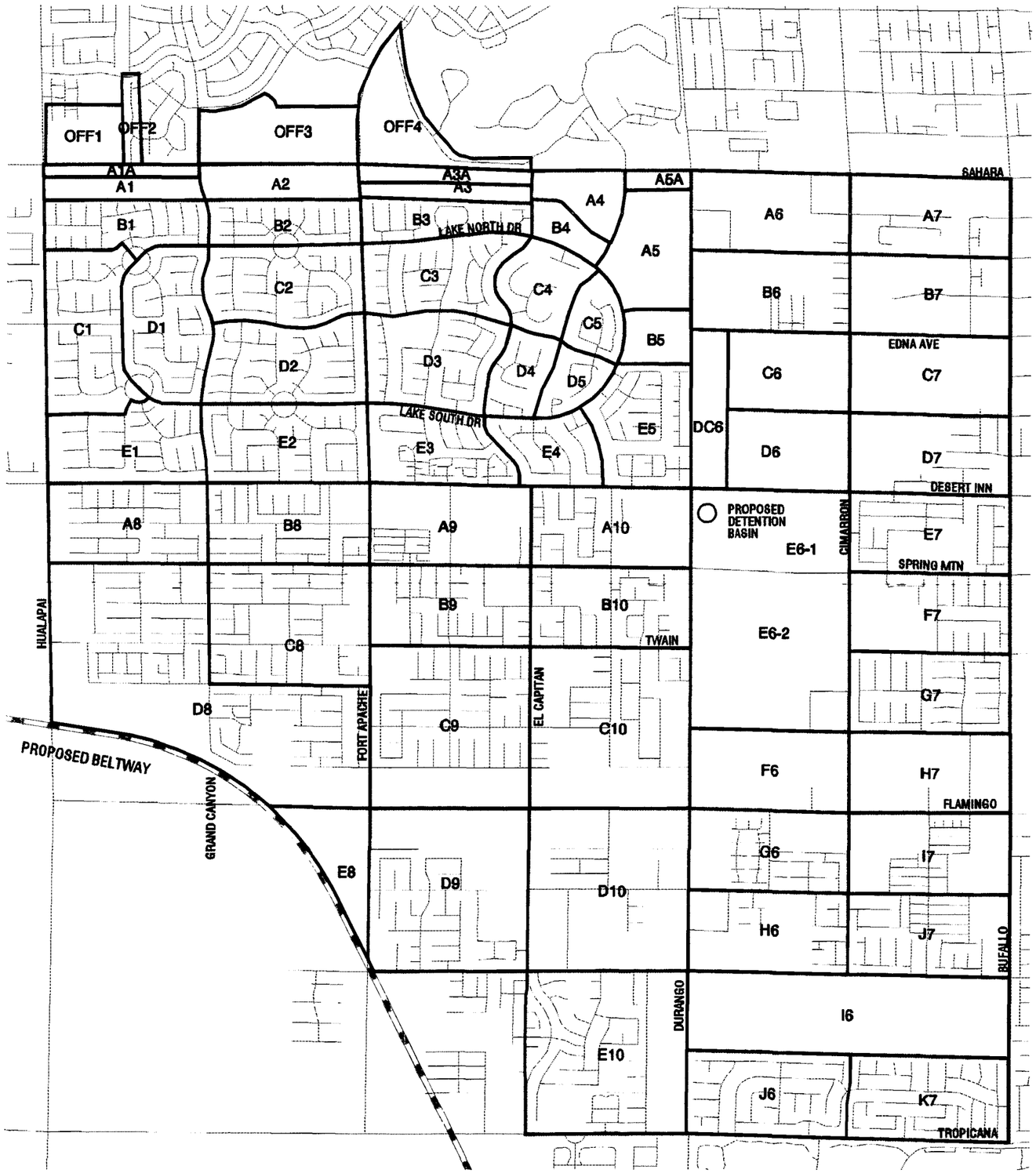
LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO (SOUTH) OUTFALL/COLLECTION SYSTEM DROP INLET LAYOUT AND SIZING

L-1582B

DRAWING NO. IN06 6/6

CAD File D:\Dwgs\516\F1066\516-in06.dwg Plotted at: Tue Aug 17 14:38:44 1999



/files5/lakesdb/newxbpar.aml'

Lakes Detention Basin & Outfall Facilities

FIGURE 1: Sub-basin Parameters

BASINID	AREA	CN	RAIN(IN)	BASINID	AREA	CN	RAIN(IN)
OFF1	0.047	92	3.071	C8	0.195	70.6	2.979
OFF2	0.006	92	3.071	C9	0.258	71.3	2.889
OFF3	0.086	95	2.774	C10	0.256	72.1	2.808
OFF4	0.086	95	2.774	DC6	0.058	89	2.774
A1	0.048	91	3.071	D1	0.123	81.2	3.049
A1A	0.008	91	3.071	D2	0.129	86.3	2.993
A2	0.057	90.9	3.005	D3	0.123	78.9	2.923
A3	0.049	90.8	2.932	D4	0.047	56.9	2.882
A3A	0.008	90.8	2.932	D5	0.034	60.9	2.854
A4	0.043	91	2.859	D6	0.097	78	2.774
A5	0.092	93.7	2.802	D7	0.126	78	2.774
A5A	0.012	93.7	2.802	D8	0.456	70.9	3.027
A6	0.126	91.6	2.774	D9	0.258	72.5	2.882
A7	0.126	90.6	2.774	D10	0.258	68.8	2.801
A8	0.127	72.8	3.067	E1	0.115	74.3	3.067
A9	0.130	79.3	2.902	E2	0.129	78.6	2.993
A10	0.127	76	2.813	E3	0.100	86.2	2.920
B1	0.080	87.7	3.070	E4	0.067	72.4	2.856
B2	0.069	87	3.007	E5	0.113	77.9	2.798
B3	0.064	87	2.935	E6-1	0.121	60.1	2.774
B4	0.027	90.7	2.870	E6-2	0.259	54.9	2.774
B5	0.037	80.3	2.795	E7	0.126	78	2.774
B6	0.126	87.9	2.774	E8	0.065	92.0	2.942
B7	0.126	86.3	2.774	E10	0.259	72.6	2.799
B8	0.131	73.8	2.981	F6	0.128	58.4	2.774
B9	0.130	71.7	2.899	F7	0.126	75.6	2.774
B10	0.128	68.2	2.809	G6	0.129	80.6	2.774
C1	0.132	78.4	3.088	G7	0.127	74.2	2.774
C2	0.120	87	2.995	H6	0.129	74.4	2.774
C3	0.110	80	2.922	H7	0.127	85.2	2.774
C4	0.064	64.9	2.872	I6	0.255	30	2.774
C5	0.039	69.3	2.837	I7	0.130	79.8	2.774
C6	0.097	79.8	2.774	J6	0.134	82	2.774
C7	0.126	79.2	2.774	J7	0.130	80.6	2.774
				K7	0.132	86	2.774

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1 INCH = 2000 FEET

GN-422

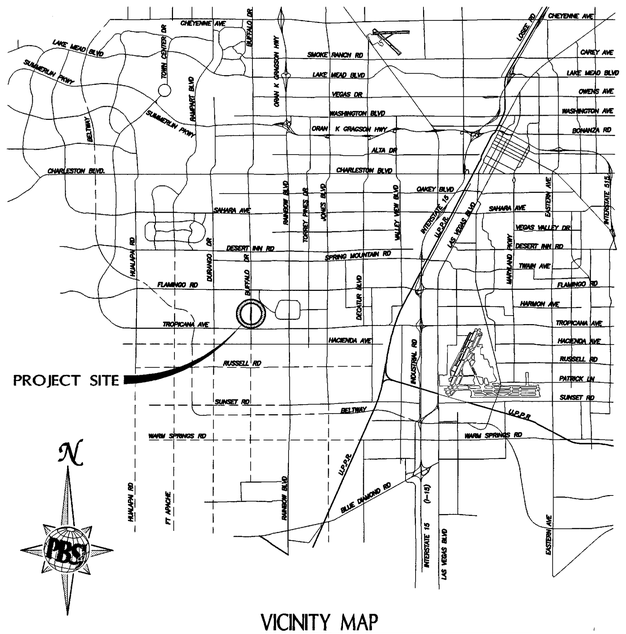
DEPARTMENT OF PUBLIC WORKS

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S4	SECTIONS AND DETAILS
S5	SECTIONS AND DETAILS
S6	DETAILS FOR OPTIONAL PRECAST RCB

CLARK COUNTY NEVADA

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.



VICINITY MAP
Not to scale

1998
IMPROVEMENT PLANS FOR

BUFFALO OUTFALL / COLLECTION SYSTEM

FROM
PEACE WAY TO TROPICANA AVE.
FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

COUNTY COMMISSIONERS

YVONNE ATKINSON GATES, CHAIR
LORRAINE T. HUNT, VICE-CHAIR
ERIN KENNY
MARY J. KINCAID
LANCE M. MALONE
MYRNA WILLIAMS
BRUCE L. WOODBURY

COUNTY MANAGER

DALE W. ASKEW

DIRECTOR OF PUBLIC WORKS

APPROVED:

M.J. MANNING P.E. 7299

GENERAL MANAGER/CHIEF ENGINEER CCRFCD

APPROVED:

GALE WM. FRASER II, 4/22/98 P.E.

PBS&J POST, BUCKLEY, SCHUH & JERNIGAN
901 N. Green Valley Pkwy. Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
ENGINEERING • PLANNING • SURVEYING • CONSTRUCTION SERVICES

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		3.27.98
LAS VEGAS VALLEY WATER DISTRICT		4/7/98
SOUTHWEST GAS COMPANY		3-27-98
NEVADA POWER COMPANY		3-27-98
C.C. SANITATION DISTRICT		4/7/98
PRIME CABLE VISION		4-8-98
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT		

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY:	DATE OF APPROVAL
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		4.28.98
DEPUTY DIRECTOR FOR FIELD OPERATIONS		
COMMUNITY DEVELOPMENT DIVISION		4-28-98
CONSTRUCTION MANAGEMENT DIVISION		4/28/98
DESIGN ENGINEERING DIVISION		4.24.98
MAINTENANCE MANAGEMENT DIVISION		4.28.98
TRAFFIC MANAGEMENT DIVISION		4.24.98
COUNTY SURVEYOR'S OFFICE		4-28-98

REVISIONS					
REVISION NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE

PROFESSIONAL ENGINEER STATE OF NEVADA
DONALD W. DAVIS
CIVIL
No. 8087
4/7/98

DESIGN ENGINEERING D'VISION

COVER SHEET

L-1582A

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", AND SHALL CONFORM TO THE "IMPROVEMENT STANDARDS" AND "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST EDITIONS; AND ANY OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY, THE UNIFORM BUILDING CODE, AND ALL APPLICABLE CODES AND ORDINANCES.
2. EXACT LOCATION OF ALL SAW CUT LINES SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
3. CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
4. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING No. 235. EXACT LOCATIONS OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
5. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
6. LOCATION OF UNDERGROUND UTILITIES SHOWN ON THE DRAWING WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. NEITHER THE OWNER NOR THE ENGINEER ASSUME ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN OR NOT IN THE LOCATION SHOWN ON THE DRAWINGS.
7. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS, WHICH ARE TO REMAIN IN PLACE. SHOULD ANY DAMAGE OCCUR, THE CONTRACTOR SHALL BE LIABLE AND SHALL PROVIDE REPAIR AT HIS EXPENSE, AND TO THE APPROVAL OF THE ENGINEER AND THE APPROVAL OF THE DAMAGED PARTY.
8. ALL WORK DONE WITHIN THE PUBLIC RIGHT-OF-WAY AND OUTSIDE OF THE PROJECT BOUNDARIES REQUIRES A SEPARATE ENCROACHMENT PERMIT ISSUED BY THE CLARK COUNTY DEPARTMENT OF PUBLIC WORKS. TRENCH AND PAVEMENT REPLACEMENT CONDITIONS SHALL BE AS PER THE PERMIT.
9. FINAL A.C. PAVEMENT SURFACES SHALL BE ONE HALF INCH ABOVE THE LIP OF GUTTER (INCLUDING OPEN GRADE).
10. ACCESS TO ARC MATERIAL CORPORATION (CSR) MUST BE MAINTAINED 24 HOURS EACH DAY FOR THE DURATION OF THE CONTRACT UNLESS A SHORT DURATION ACCESS CLOSURE IS AGREED TO AND SCHEDULED WITH THE PROPERTY OWNER. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION AND SCHEDULING OF A TEMPORARY ACCESS WITH THE PROPERTY OWNER. THE PROPERTY OWNER'S ADDRESS IS: CSR, 4511 SOUTH BUFFALO DRIVE, LAS VEGAS, NEVADA, 89117. CSR's CONTACT PERSON IS GALEN STOCKTON, WHO CAN BE REACHED BY TELEPHONE AT 596-9511 OR 876-2966. ALSO REFER TO SPECIAL PROVISIONS SECTION 104.
11. DIMENSIONS SHOWN FOR RCB's WITHIN THIS PROJECT REPRESENT CAST-IN-PLACE UNLESS NOTED OTHERWISE.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH APPLICABLE OSHA STANDARDS.

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GIS STATIONS 822, 838, AND 939.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 2INES
ELEVATION=747.125 METERS (2451.18 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
105.00.01	QUALITY CONTROL	1	LS
107.00.01	TRAFFIC CONTROL	1	LS
109.00.01	CONSTRUCTION CONFLICTS AND ADDITIONAL WORK	1	LS
200.00.01	MOBILIZATION	1	LS
502.00.01	ACCESS RAMP AND CHANNEL TRANSITION	1	LS
502.00.02	REINFORCED CONCRETE TRAPEZOIDAL CHANNEL	314	LF
502.00.03	2 - 10'x8' REINFORCED CONCRETE BOXES	965	LF
603.00.01	42" REINFORCED CONCRETE PIPE (D=1000)	24.5	LF
603.00.02	45"x29" HE REINFORCED CONCRETE PIPE (D=1000)	8.5	LF
609.00.01	STORM DRAIN 36" RCB ACCESS MANHOLE	4	EA
609.00.02	TYPE II (48") STORM DRAIN MANHOLE (60")	1	EA
618.00.01	6' CHAIN LINK FENCE	910	LF
616.00.02	12'-4" CHAIN LINK DOUBLE SWING GATE	1	EA
616.00.03	3' CHAIN LINK SINGLE SWING GATE	1	EA

LEGEND

EXISTING TREE
EXISTING BUSH
EXISTING CHAIN-LINK-FENCE
EXISTING BLOCK WALL
EXISTING POWER — P —
EXISTING SEWER — 10"SS —
EXISTING WATER — 10"W —
EXISTING GAS — 2"G —
EXISTING OVERHEAD ELECTRIC — E —
EXISTING UNDERGROUND ELECTRIC — UE —
EXISTING CABLE T.V. — CATV —
EXISTING STORM DRAIN — EX 24"SD —
EXISTING UNDERGROUND TELEPHONE — EX T —
EXISTING DRIVEWAY
EXISTING CURB AND GUTTER
EXISTING GUARDRAIL
EXISTING FIRE HYDRANT
EXISTING UTILITY VALVE
EXISTING WATER METER
EXISTING ELECTRICAL PULLBOX
EXISTING TRAFFIC SIGNAL PULLBOX
EXISTING SEWER MANHOLE (S)
EXISTING STORM DRAIN MANHOLE (D)
EXISTING ELECTRICAL MANHOLE (E)
EXISTING TELEPHONE MANHOLE (T)
EXISTING STREETLIGHT
EXISTING POWER POLE
EXISTING STREET SIGN
EXISTING DROP INLET
EXISTING WHEELCHAIR RAMP
EXISTING ELEVATION (90.23) TC
EXISTING MONUMENT
EXISTING TRAFFIC CONTROLLER TRAFF
EXISTING MAILBOX
NEW AC PAVEMENT
NEW BLOCK WALL
NEW STORM DRAIN W/MANHOLE 18"SD
NEW UNDERGROUND TELEPHONE — T —
NEW STREETLIGHT CONDUIT
NEW DRIVEWAY
NEW CURB AND GUTTER
NEW FIRE HYDRANT
NEW WATER VALVE
NEW WATER METER WM
NEW ELECTRICAL PULLBOX EPB
NEW TRAFFIC SIGNAL PULLBOX TSPB
NEW STREETLIGHT
NEW STREET SIGN
NEW DROP INLET
NEW WHEELCHAIR RAMP
NEW ELEVATION 90.23 TC
DIRECTION OF FLOW OR SLOPE
NEW MONUMENT
EDGE OF PAVEMENT
CENTERLINE
RIGHT-OF-WAY LINE
PROPERTY LINE
MINIMUM LIMITS OF GRADING
POTHOLE LOCATION (EXISTING UTILITY)

ABBREVIATIONS

@	AT	EVCS	END VERTICAL CURVE STATION	P.T	POINT OF TANGENCY
AB	ABANDONED UTILITY	EVCE	END VERTICAL CURVE ELEVATION	PB	PULLBOX
AC	ASPHALTIC CONCRETE	EW	EACH WAY	℄ OR PL	PROPERTY LINE
A.D.	ALGEBRAIC DIFFERENCE	EXIST., EX.	EXISTING	PVC	POLYVINYL CHLORIDE
AGG.	AGGREGATE	EXP. JT.	EXPANSION JOINT	PVI	POINT OF VERTICAL INTERSECTION
APPROX.	APPROXIMATE	FOC	FACE OF CURB	RCP	REINFORCED CONCRETE PIPE
ASSY.	ASSEMBLY	FL	FLOWLINE	RAD.	RADIUS
BOC, BC	BACK OF CURB	FG	FINISHED GRADE	RCB	RIENFORCED CONCRETE BOX
BCR	BACK OF CURB RADIUS	FH	FIRE HYDRANT	RES	RESIDENTIAL
BLDG.	BUILDING	FT.	FOOT/FEET	RET.	RETAINING
BLK.	BLOCK	FUT.	FUTURE	RT.	RIGHT
BM	BENCHMARK	GB	GRADE BREAK	R-O-W OR R/W	RIGHT OF WAY
BVCS	BEGINNING VERTICAL CURVE STATION	GM	GAS METER	RP	RADIUS POINT
CATV	CABLE T.V.	GV	GAS VALVE	S	SOUTH / SLOPE
CLR	CLEAR	HE	HORIZONTAL ELLIPTICAL	SD	STORM DRAIN
CCRFCD	CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT	HOR.	HORIZONTAL	SDMH	STORM DRAIN MANHOLE
CLV	CITY OF LAS VEGAS	ID	INSIDE DIAMETER	SF	SQUARE FOOT
COMM.	COMMERCIAL	INTX.	INTERSECTION	SHT.	SHEET
CONC., PCC	CONCRETE	INV.	INVERT	SS	SANITARY SEWER
CONST.	CONSTRUCTION	KV	KILOVOLT	ST.	STREET
CCSD	CLARK COUNTY STANDARD DRAWING	K	CURVE COEFFICIENT	STA	STATION
CNDT	CONDUIT	LF	LINEAR FEET	STD.	STANDARD
C & G	CURB & GUTTER	LT.	LEFT	SY	SQUARE YARD
℄	CENTERLINE	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	S/W	SIDEWALK
DET.	DETAIL	MAX.	MAXIMUM	TC	TOP OF CURB
DG	DESIGN GRADE	MH	MANHOLE	TEMP.	TEMPORARY
DIA.	DIAMETER	MIN.	MINIMUM	TMH	TOP OF MANHOLE
DI	DROP INLET	MTL.	MATERIAL	TRANS.	TRANSITION
D/W	DRIVEWAY	N.	NORTH	TW	TOP OF WALL
DWG.	DRAWING	NAP	NOT A PART	TYP.	TYPICAL
E.	EAST	NIC	NOT IN CONTRACT	UDACS	UNIFORM DESIGN AND CONSTRUCTION STD. FOR WATER DISTRIBUTION SYSTEMS
EA.	EACH	NTS	NOT TO SCALE	USD	UNIFORM STANDARD DRAWING
EF	EACH FACE	OC	ON CENTER	UNO	UNLESS NOTED OTHERWISE
EG	EXISTING GROUND	OG	ORIGINAL GROUND	VC	VERTICAL CURVE
EOP, EP	EDGE OF PAVEMENT	OH	OVER HEAD	VG	VALLEY GUTTER
ELEC	UNDERGROUND POWER	OV ELEC	OVERHEAD ELECTRIC	WC	WHEEL CHAIR
ELEV.	ELEVATION	PVMT.	PAVEMENT	W	WEST/WATER
		PC	POINT OF CURVE	WM	WATER METER
		PI	POINT OF INTERSECTION	WPJ	WEAKENED PLANE JOINT
				WV	WATER VALVE
				W/	WITH

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Call before you Overhead
1-702-593-6111
Nevada Power Environment and Safety Services Department

CLARK COUNTY TRAFFIC NOTES

1. All permanent Traffic Control Devices called for hereon shall be in place and in final position PRIOR to allowing any public traffic onto the portions of the road(s) being improved hereunder, regardless of the status of completion of paving or other off-site improvements called for by these plans.
2. Before any work is started in the right-of-way, the Contractor shall install all advance warning signs for the construction zone. The contractor shall install temporary ground mounted stop signs at all new street encroachments into existing County streets immediately after first grading work is accomplished, and shall maintain said signs until permanent signs are installed.
3. All construction signing, barricading and pavement markings shall conform to the Nevada Work Zone Traffic Control Handbook - 1988 and to the Manual on Uniform Traffic Control Devices, current edition.
4. If the improvements necessitate the obliteration, temporary obstruction, temporary removal, or relocation of any existing traffic pavement marking, such pavement marking shall be restored or replaced with like materials to the satisfaction of the County Traffic Manager.
5. The developer shall be responsible to provide and install all permanent signs shown on the plans. Street name signs shall conform in their entirety to Clark County standards. All other signs shall be standard size unless otherwise specified on the plans. All sign posts shall be installed in accordance with Clark County standards. All signs shall use Type III sheeting.
6. If a proposed street light standard is field located to within five (5) feet of any sign shown hereon to be mounted on a sign post, then change sign mounting to one on the streetlight standard.
7. Prior to construction, the street sign contractor shall obtain street names and block numbering from the Current Planning Division of the Department of Comprehensive Planning.
8. All traffic signal pole assemblies, steel pedestals for cabinets, and street light poles shall be galvanized per ASTM A.123.
9. All street lighting installations except as noted on the street lighting plans shall conform to the Improvement Standards, Department of Public Works, Clark County, Nevada, and the Uniform Standard Specifications for Public Works Construction, Off-site Improvements, Clark County Area, Nevada, latest edition of each.
10. The following Clark County underground facilities may be located in your project area: Street Lighting, Traffic Signals, Las Vegas Area Computer Traffic System (LVACTS) Interconnect Cable. You must contact Clark County Traffic Management Division, Operations Unit at 455-7511 for locations at least 48 hours prior to working in the area. Clark County is not a member of Call Before You Dig (Underground Service Alert), and a call to that organization does not relieve you of liability for Clark County facilities.
11. LVACTS Interconnect Cable Policy is in effect. Interconnect cable must be maintained at all times. Developer/contractor shall provide temporary overhead interconnect cable, while permanent cable is being relocated. Temporary aerial installation must be acceptable to the County Traffic Manager and to LVACTS. Any damage to this cable is deemed an emergency by LVACTS, City of Las Vegas, Clark County and NDOT and must be repaired immediately to LVACTS' acceptance. $2,500 per day damages may be assessed after 24 hours has elapsed from time of break or damage.
12. All new or replacement traffic signal loops shall be installed using cable-in-duct wiring, shall have independent lead-in wires for each loop from the controller to the pull-box, and each lead-in shall be individually tagged.
13. Traffic signal pedestrian heads shall be the incandescent type.
14. Electrical power service point location(s) for street lighting and traffic signals must be indicated on the plans. If connecting to an existing circuit, indicate location of existing service point for each circuit.
15. When street lights are to be connected to an existing circuit, the engineer must certify that the existing circuit is capable of handling the additional circuit load.
16. Clark County reserves the right to reject street light and traffic signal poles and assemblies which have a "striped" appearance.
17. Prior to beginning of construction, modification, or relocation of any traffic signal system, written notice shall be submitted to the Clark County Traffic Management Division of the date that work will begin.
18. Three (3) normal working days prior to turn-on or completion of modification(s) to a traffic signal system, written notice shall be submitted to the Clark County Traffic Management Division that work is being completed and the proposed date of completion.

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL
1	QUANTITY CHANGE		6-15-99	KK
2	CHANGE ITEM DESCRIPTION OF 609.00.02		11-19-98	KK

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-C2
SCALE: HORIZ.: N/A VERT.: N/A

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Telephone: 702/263-7275 Fax: 702/263-7200

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PROFESSIONAL ENGINEER - STATE OF NEVADA
DONALD W. DAVIS
CIVIL
No. 8087

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM

GENERAL NOTES, LEGEND, ABBREVIATIONS & QUANTITIES

L-1582A

DRAWING NO. C2

2/14

Avoid cutting underground utility lines. It's costly.

Call before you Dig

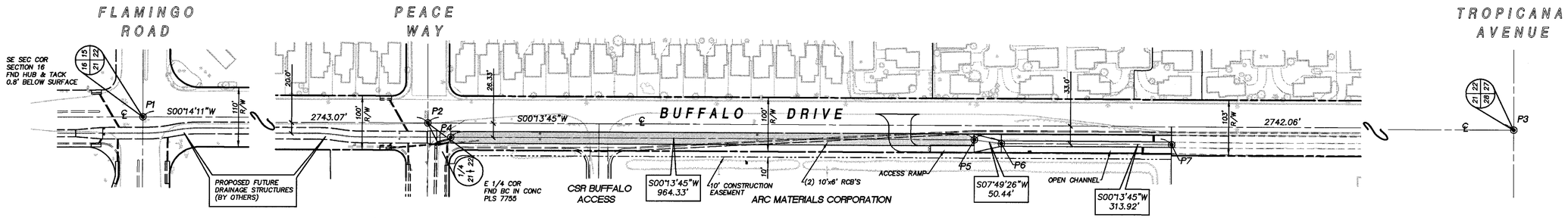
1-800-227-2600

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.



SURVEY CONTROL PLAN

COORDINATE TABLE

#	NORTHING	EASTING	℄ STATION
P1	749249.2708	751530.5671	115+59.17
P2	746506.2280	751519.2486	143+02.24
P3	743764.1894	751508.2793	170+44.30
P4	746463.5725	751492.7445	--
P5	745499.2523	751488.8868	--
P6	745449.2793	751482.0201	--
P7	745135.3604	751480.7643	--

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GS STATIONS 822, 838, AND 939.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-1AC3
SCALE: HORIZ.: 1"=100'
VERT.:

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CLARK COUNTY NEVADA

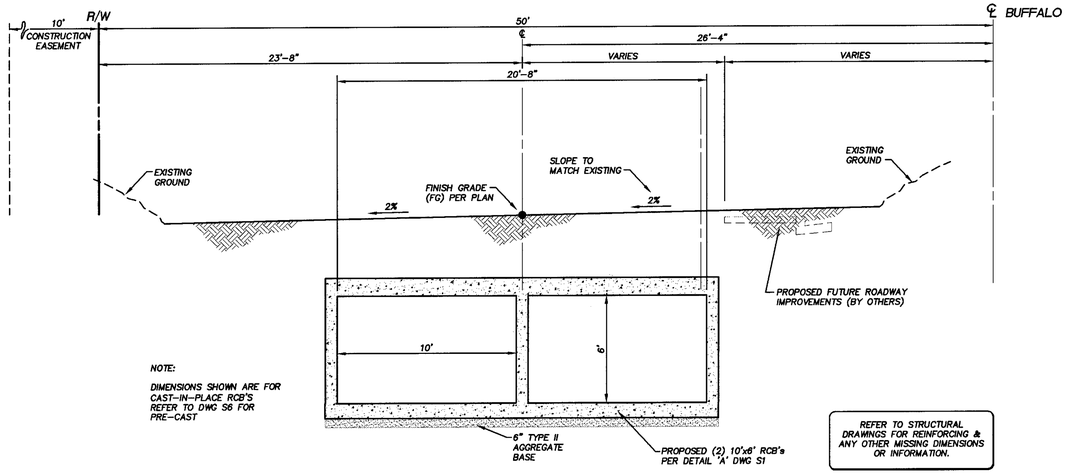
Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM
SURVEY CONTROL PLAN

L-1582A

DRAWING NO. 3
C3
14

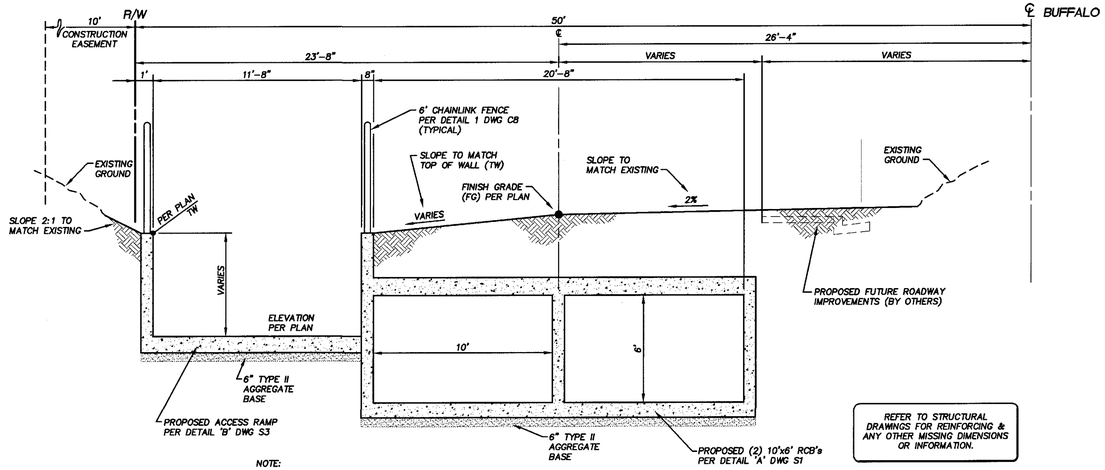


NOTE:

DIMENSIONS SHOWN ARE FOR CAST-IN-PLACE RCB'S REFER TO DWG S6 FOR PRE-CAST

REFER TO STRUCTURAL DRAWINGS FOR REINFORCING & ANY OTHER MISSING DIMENSIONS OR INFORMATION.

SECTION A / C4
LOOKING UPSTREAM



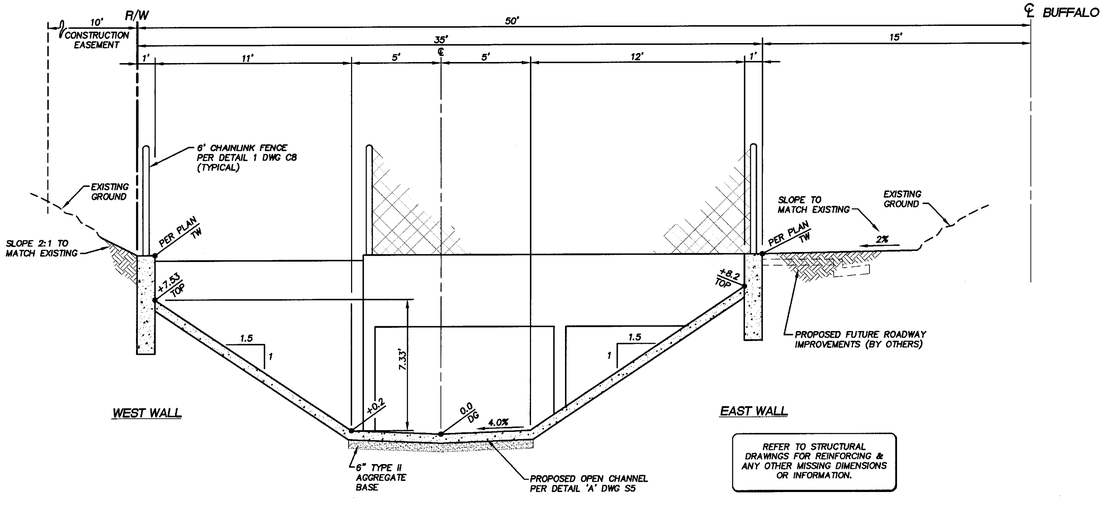
NOTE:

DIMENSIONS SHOWN ARE FOR CAST-IN-PLACE RCB'S REFER TO DWG S6 FOR PRE-CAST

REFER TO STRUCTURAL DRAWINGS FOR REINFORCING & ANY OTHER MISSING DIMENSIONS OR INFORMATION.

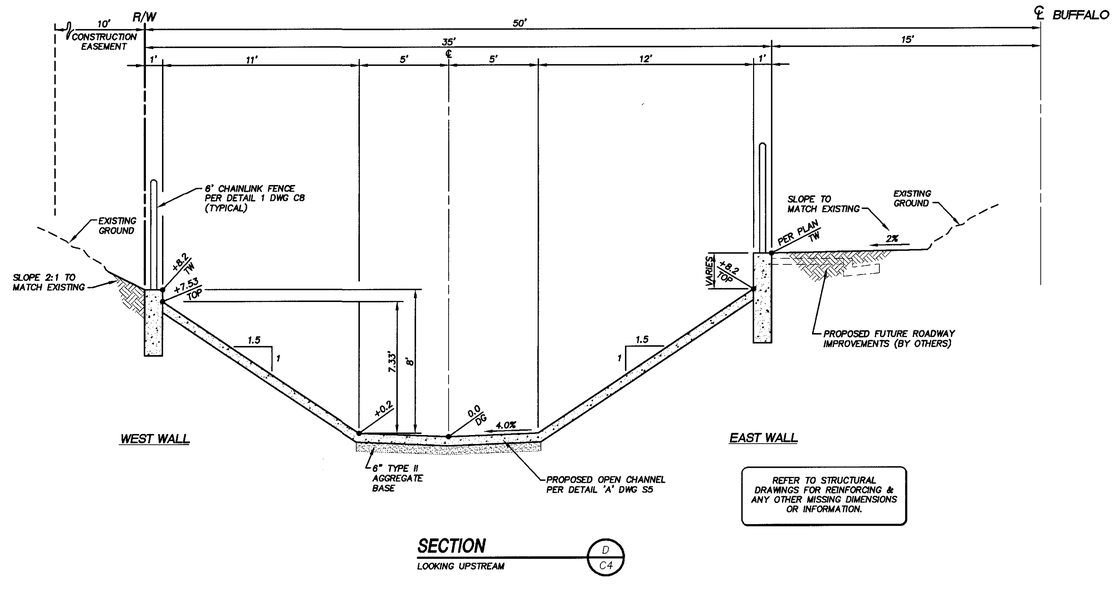
SECTION B / C4
LOOKING UPSTREAM

RECORD DRAWING
This drawing represents any changes from the orginal construction contract drawings, based on recorded field observations and changes of record.



REFER TO STRUCTURAL DRAWINGS FOR REINFORCING & ANY OTHER MISSING DIMENSIONS OR INFORMATION.

SECTION C / C4
LOOKING UPSTREAM



REFER TO STRUCTURAL DRAWINGS FOR REINFORCING & ANY OTHER MISSING DIMENSIONS OR INFORMATION.

SECTION D / C4
LOOKING UPSTREAM

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-1AC4
SCALE: HORIZ.: 1"=4'
VERT.: 1"=4'

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CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM TYPICAL SECTIONS

L-1582A

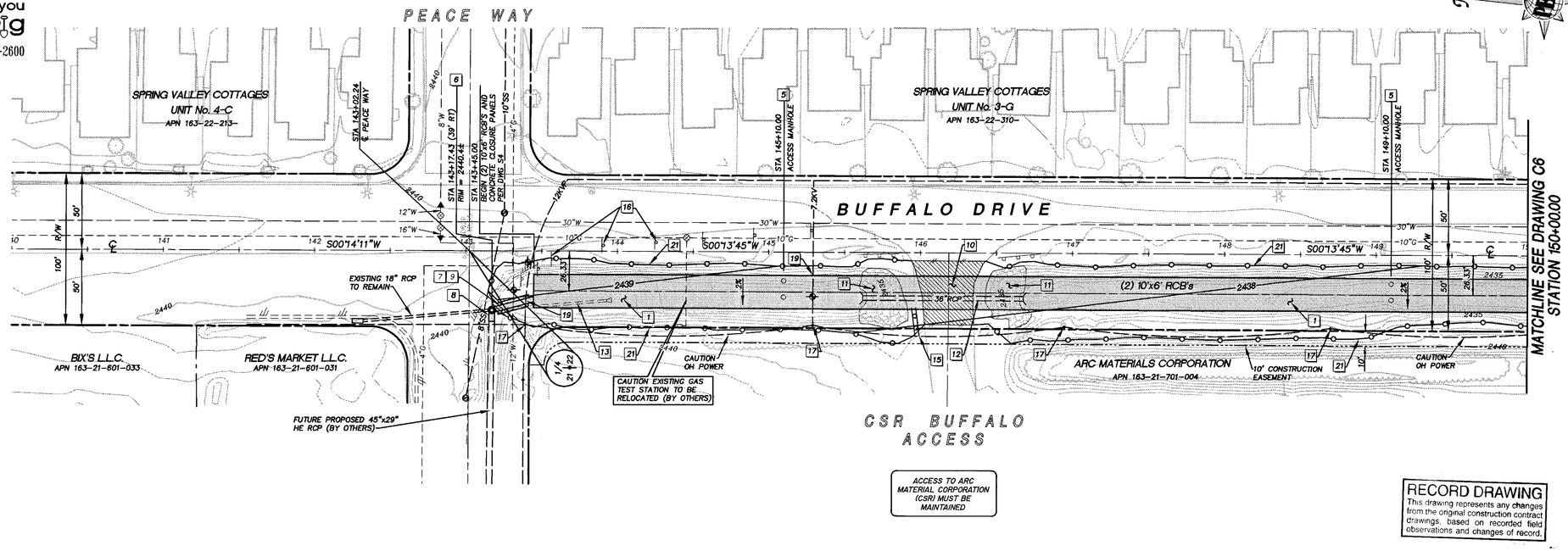
DRAWING NO. 4 / 14

C4

Avoid cutting underground utility lines. It's costly.

Call before you Dig

1-800-227-2600



RECORD DRAWING

This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

KEY NOTES

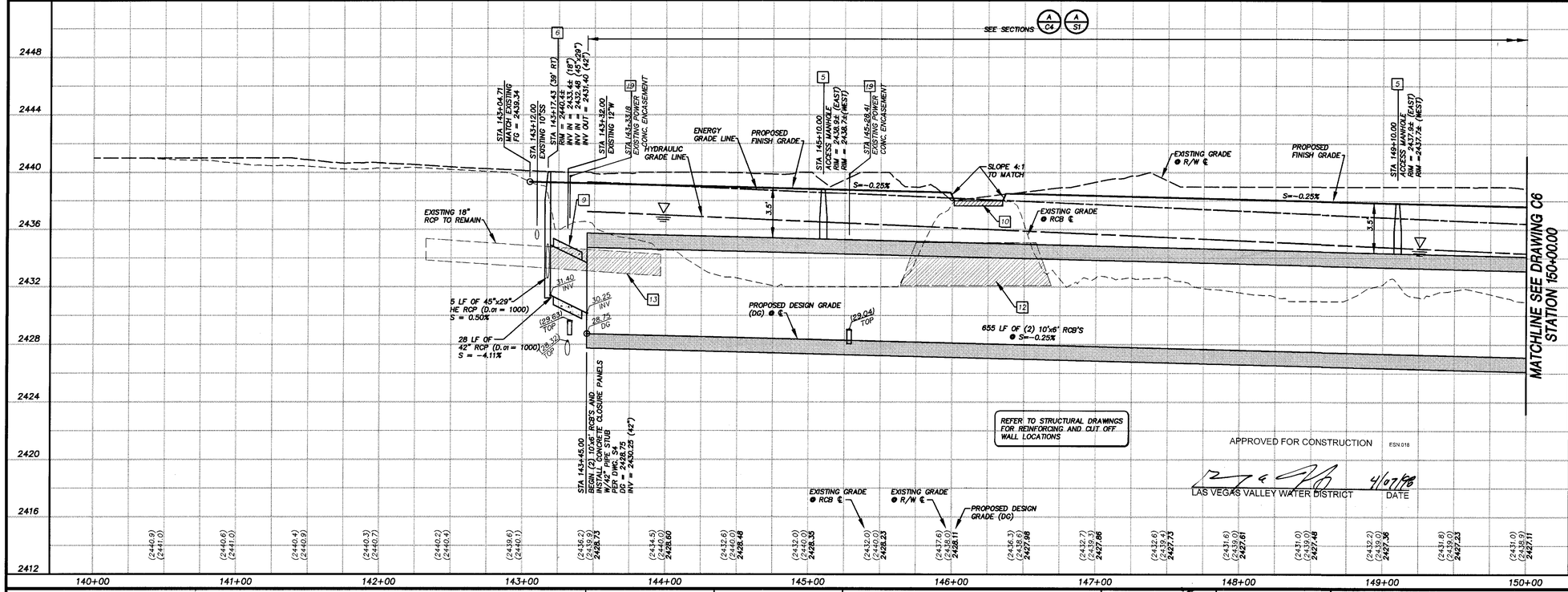
1. CONSTRUCT (2) 10'x6' RCB'S PER SECTION "A" DWG C4, SECTION "A" DWG S1 & PER TRENCH SECTION "3" DWG C8
2. CONSTRUCT TRAPEZOIDAL CHANNEL PER SECTION "D" DWG C4 & SECTION "A" DWG S5
3. CONSTRUCT 6' HIGH CHAIN LINK FENCE PER USD #252 & FENCING PLAN SHOWN ON DWG C7
4. INSTALL SAFETY LADDER & ACCESS GATE PER DETAIL "6" DWG C8
5. INSTALL ACCESS MANHOLE W/ STEPS (2) 1 - EACH RCB (EAST FACE OF RCB) PER DETAIL "4" DWG C8
6. INSTALL TYPE II 48" SDMH PER USD #405
7. INSTALL 28 LF 42" RCP (D.or = 1000) PER TRENCH SECTION "3" DWG C8
8. INSTALL 5 LF 45"x29" RCP (D.or = 1000) STUB PER TRENCH SECTION "3" DWG C8 AND CAP FOR FUTURE CONSTRUCTION WITH 1" THICK PLYWOOD.
9. 20 LF CONCRETE ENCASEMENT 10" EACH SIDE OF EXISTING 12"W PER DETAIL "5" DWG C8
10. REMOVE & REPLACE EXISTING AC PAVEMENT PER SECTION "3" DWG C8
11. REMOVE EXISTING GROUTED RIP-RAP
12. REMOVE 105 LF OF 36" RCP STORM DRAIN
13. REMOVE 80 LF OF EXISTING 18" RCP STORM DRAIN
14. REMOVE & REPLACE ANY CONFLICTING PORTIONS OF EXISTING GUARD RAIL TO ALLOW FOR ANY CONSTRUCTION ACCESS AS NEEDED
15. PROTECT IN PLACE EXISTING CSR BILLBOARD
16. PROTECT IN PLACE EXISTING END OF ROAD MARKERS & OM-3R'S TRAFFIC SIGNS
17. CAUTION EXISTING POWER POLE
18. CAUTION EXISTING POWER POLE - MODIFY OPEN CHANNEL PER DETAIL "D" DWG S3
19. CAUTION EXISTING UNDERGROUND POWER CONDUIT TO BE RELOCATED BY OTHERS
20. NOT USED
21. MINIMUM LIMITS OF GRADING

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.



APPROVED FOR CONSTRUCTION ESN.018

LAS VEGAS VALLEY WATER DISTRICT 4/07/98 DATE

BASIS OF BEARING

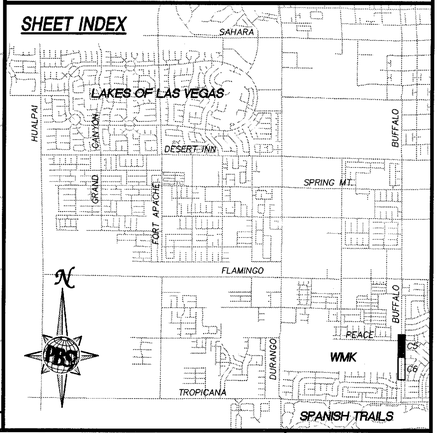
THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GIS STATIONS 822, 838, AND 939.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

CAUTION:
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL
1	ADDENDUM NO. 1: REVISE KEY NOTES 7 & 8.		5-1-98	K K
2	CHANGE 48" TYPE II MH TO 60" TYPE II MH.		11-19-98	K K

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-1AC5
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM
PLAN AND PROFILE STA 140+00.00 TO STA 150+00.00

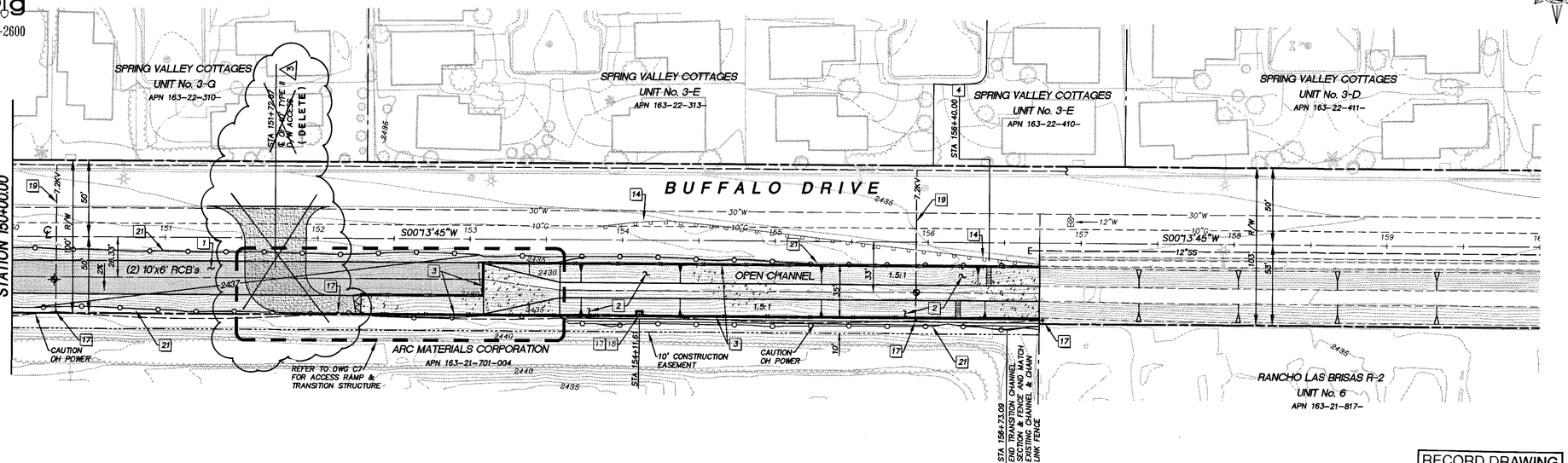
L-1582A

DRAWING NO. 5
C5
14

Avoid cutting underground utility lines. It's costly.

Call before you Dig

1-800-227-2600



RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

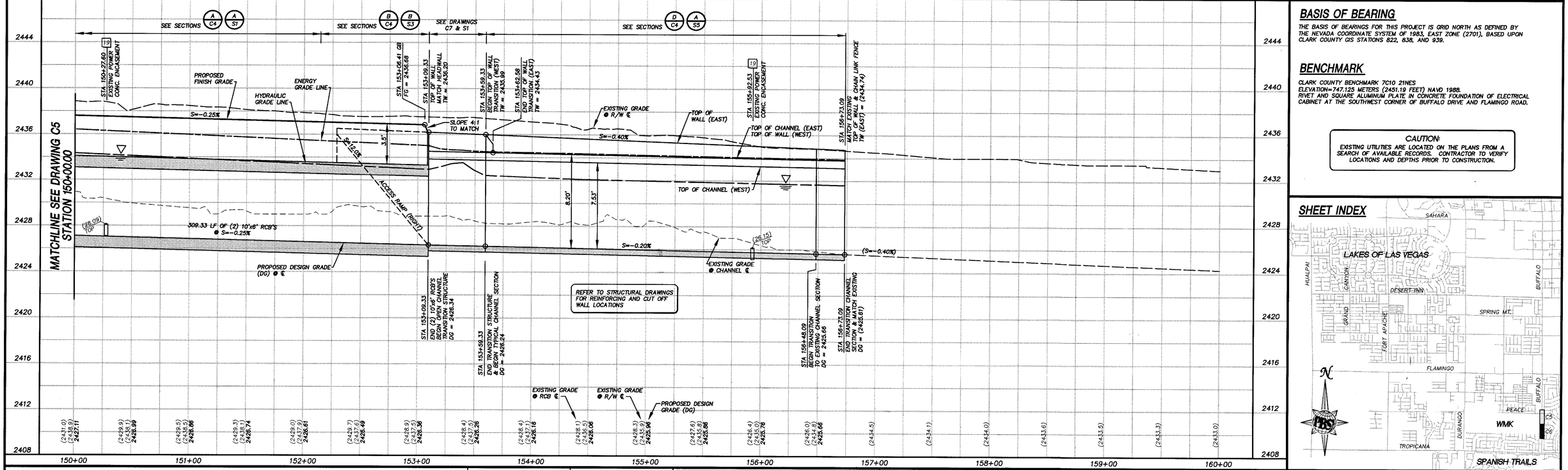
KEY NOTES

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9. 20 LF CONCRETE ENCASEMENT 10' EACH SIDE OF EXISTING 12"W PER DETAIL "5" DWG C8
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19. CAUTION EXISTING UNDERGROUND POWER CONDUIT TO BE RELOCATED BY OTHERS
20. NOT USED
21. MINIMUM LIMITS OF GRADING

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.



BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GIS STATIONS 822, 838, AND 939.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
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SHEET INDEX

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL
1	ADDENDUM NO. I REVISE KEY NOTES NO 7 AND 8		5-1-98	K K
2	CHANGE 48" TYPE II MH TO 60" TYPE II MH.		11-19-98	K K
3	DELETE 40' TYPE II DWY ACCESS. CONST 19' COMM DWY AT STA. 151+37 INTO C&G & SWK BUILT BY SEPARATE CONTRACT. (SEE 98040702 PLANS)		2-1-99	SG

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-1AC6
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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DONALD V. DAVIS
CIVIL
No. 8087

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM
PLAN AND PROFILE STA 150+00.00 TO STA 160+00.00

L-1582A

DRAWING NO. C6

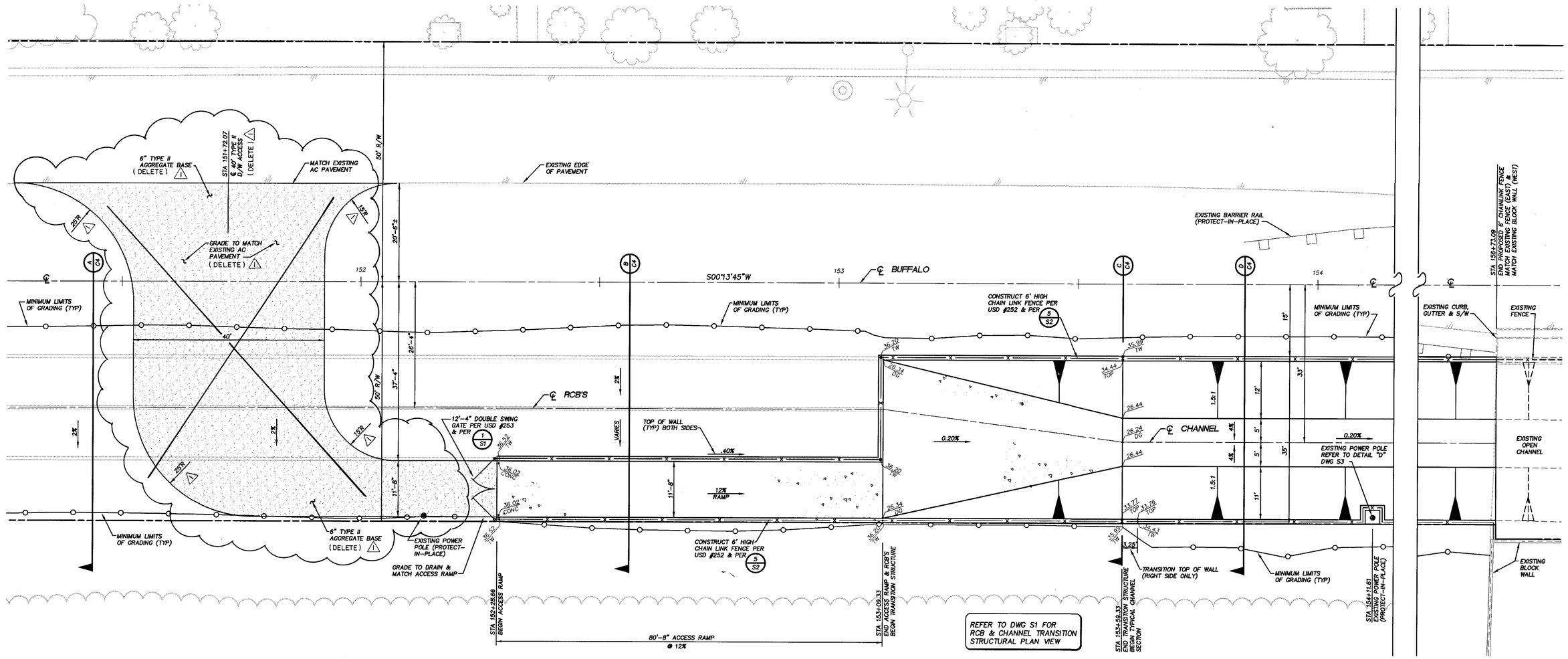
6 / 14

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 inch = 10 ft.



ACCESS RAMP & FENCING PLAN (A C7)

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL
1	DELETE 40' TYPE II DWY ACCESS. CONST 19'COMM DWY AT STA. 151+37 INTO C&G AND SWK BUILT BY SEPARATE CONTRACT. (SEE 98040702 PLANS)		2-1-99	S. G.

DESIGNED BY: A. SPATA
DRAWN BY: L. BOYCE
CHECKED BY: D. DAVIS
DATE: APRIL 03, 1998

JOB NO.: 51516
DRAWING NO.: 516-1AC7
SCALE: HORIZ.: 1" = 10' VERT.: N/A

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901 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
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SEAL — PROFESSIONAL ENGINEER — STATE OF NEVADA — RONALD V. DAVIS — CIVIL — No. 8087 — 5/7/98

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

BUFFALO OUTFALL/COLLECTION SYSTEM ACCESS RAMP ENLARGEMENT & DETAILS

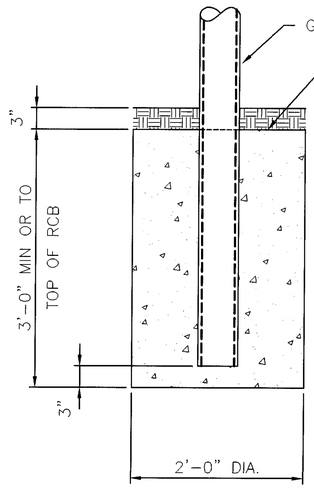
L-1582A

DRAWING NO. C7 7/14

GENERAL NOTES:

1. DESIGN CRITERIA: ACI 318-95, AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 15TH EDITION"
2. DESIGN LIVE LOAD IS AASHTO HS20-44 TRUCK LOADING
3. PORTLAND CEMENT SHALL CONFORM TO A.S.T.M. C-150, TYPE V AGGREGATE SHALL CONFORM TO A.S.T.M. C-33.
4. ALL STRUCTURAL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. ALL REINFORCEMENT STEEL SHALL BE ASTM DESIGNATION A615 GRADE 60.
6. COVERAGE FOR REINFORCING BARS, EXCEPT WHERE OTHERWISE SHOWN, SHALL BE: 3" FOR CONCRETE PLACED AGAINST EARTH; 2" FOR OTHERS.
7. DOWELS, PIPES, WATERSTOPS AND OTHER INSTALLED MATERIALS OR ACCESSORIES SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.
8. ALL KEYWAYS AND CONSTRUCTION JOINTS IN CONCRETE SHALL BE CLEAN FOR BOND. CONSTRUCTION JOINTS BETWEEN FOOTINGS AND WALLS SHALL BE COVERED WITH POLYETHYLENE-COATED BURLAP MATS WHICH SHALL BE KEPT WET WITH WATER UNTIL CONCRETE IN WALLS IS PLACED. NO CURING COMPOUND SHALL BE APPLIED IN CONSTRUCTION JOINTS BETWEEN FOOTINGS AND WALLS.
9. USE 3/4" CHAMFER ON ALL EXPOSED CORNERS.
10. REINFORCING BARS AND ACCRESSORIES SHALL NOT BE IN CONTACT WITH ANY PIPE, PIPE FLANGE OR METAL PART EMBEDDED IN CONCRETE.
11. CONCRETE IN SLABS HAVING 6.00:1 SLOPES OR GREATER SHALL BE PLACED, VIBRATED, AND SCREEDED IN AN UPHILL DIRECTION. (DOWNHILL PLACING SHALL NOT BE PERMITTED)
12. ALL REINFORCEING BAR LAP SPLICES SHALL CONFORM TO AASHTO-15TH ADDITION
13. SPLICE LENGTHS OF DIFFERENT BARS SHALL BE THE SPLICE LENGTH OF THE SMALLER BAR
14. ALL SPLICES SHALL BE TYPE B AND SHALL BE STAGGERED SUCH THAT NO MORE THAN 50% OF THE BARS IN A LAYER ARE SPLICED WITHIN THS REQUIRED LAP LENGTH. IF MORE THAN 50% ARE SPLICED USE THE TYPE C SPLICE.
15. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE BELOW THE BAR.

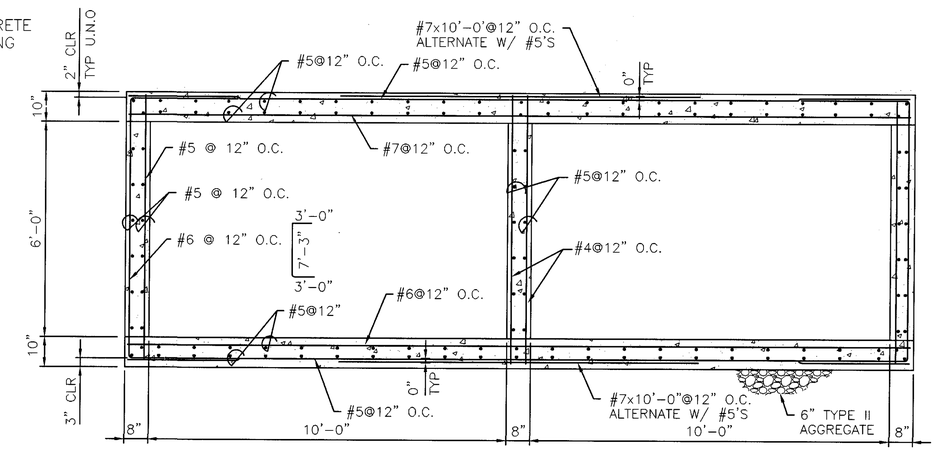
BAR SIZE	LAP CLASS	TOP BARS	OTHER BARS
#3	B	16	12
	C	21	15
#4	B	22	16
	C	29	20
#5	B	27	20
	C	36	26
#6	B	33	23
	C	43	31
#7	B	42	29
	C	55	39
#8	B	55	39
	C	71	51
#9	B	69	49
	C	90	65
#10	B	87	62
	C	114	82



GATE POST DETAIL

1 / S1

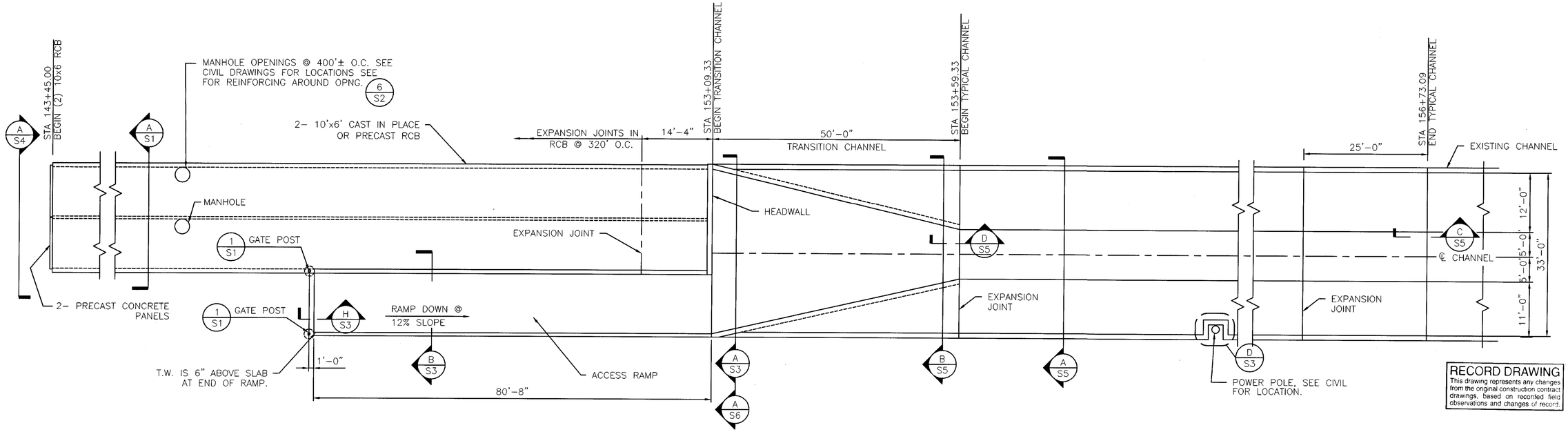
1" = 1'-0"



2-10' x 6' RCB (CAST IN PLACE)

A / S1

1/2" = 1'-0"



RCB AND CHANNEL TRANSITION

1" = 10'

SEE CIVIL DRAWINGS C5 AND C6 FOR PROFILE

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

$R_2H \cdot GB\&L$ ENGINEERING
CONSULTING STRUCTURAL ENGINEERS
840 GRIER DRIVE, SUITE 320
LAS VEGAS, NEVADA 89119
PHONE (702) 260-7000
FAX (702) 260-7070

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: TJ
DRAWN BY: ELY
CHECKED BY: DWS
DATE: APRIL 8, 1998

JOB NO.:
DRAWING NO.:
SCALE: HORIZ.: AS NOTED VERT.:

POST, BUCKLEY, SCHUH & JERNIGAN
901 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
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SEAL: PROFESSIONAL ENGINEER-STATE OF NEVADA — DAVID W. SEELEY — No. 11175 — 4/15/98

CLARK COUNTY NEVADA

Department of Public Works

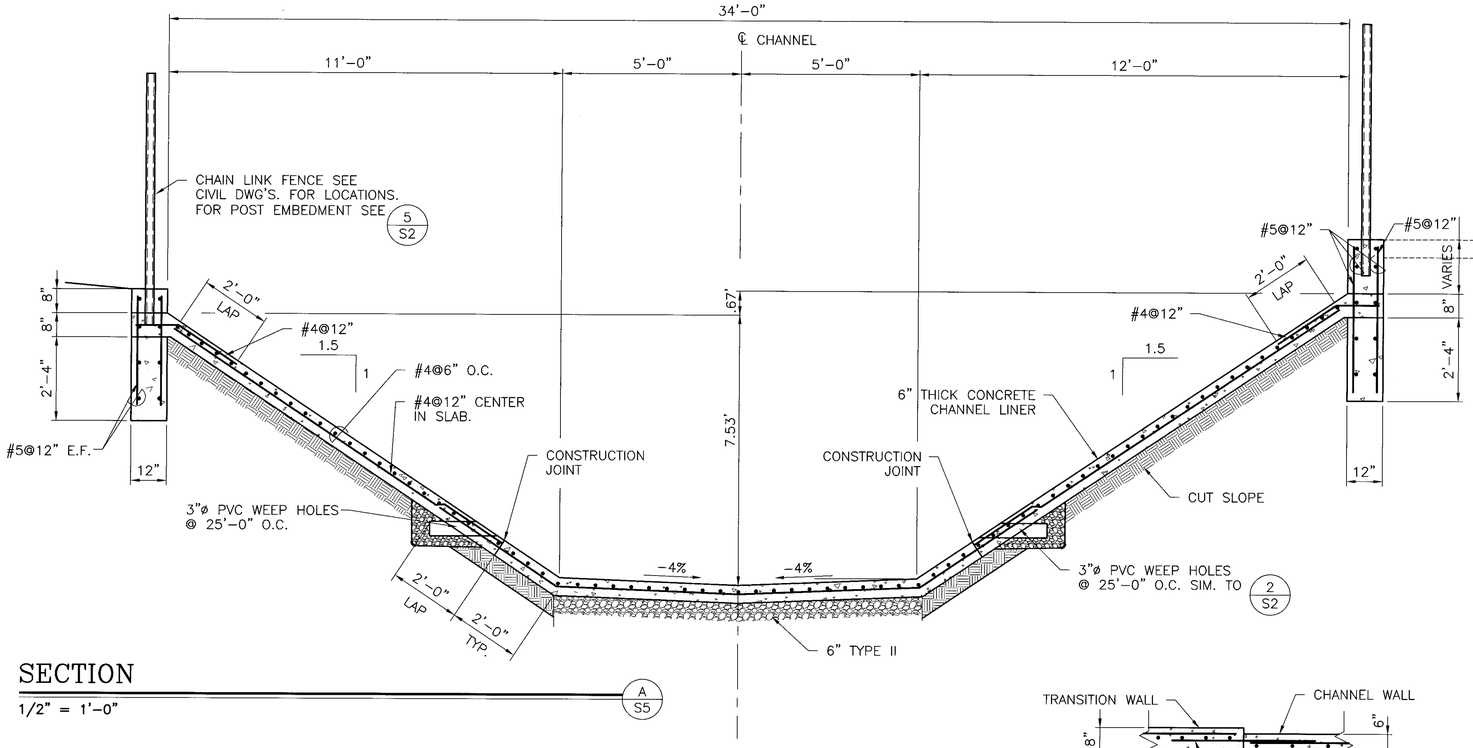
LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES

RCB AND CHANNEL PLAN

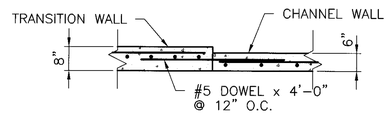
L1582A

DRAWING NO. S1 — 9/14

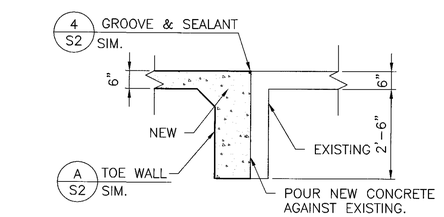
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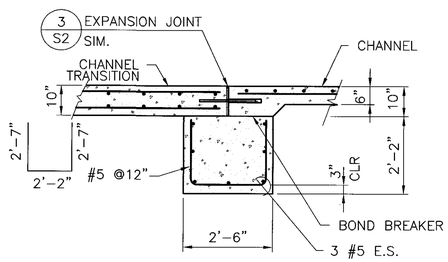
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1/2" = 1'-0" (A S5)



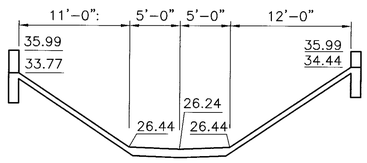
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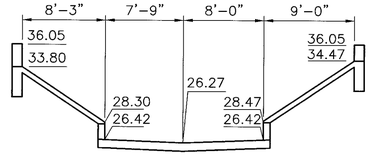
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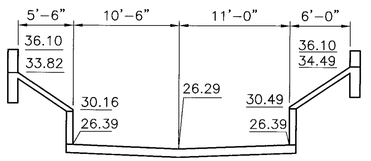
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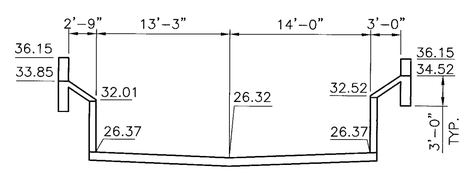
AT END OF TRANSITION CHANNEL SECTION
STA 153+59.33



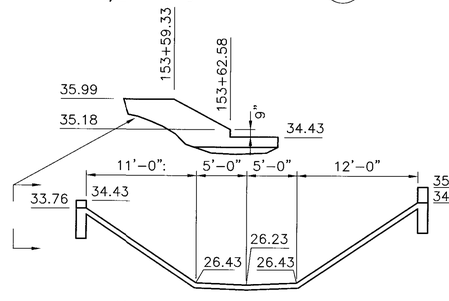
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STA 153+46.83



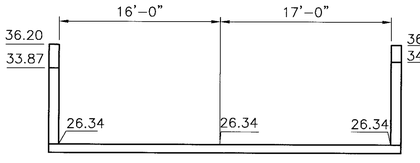
AT 1/2 POINT
STA 153+34.33



AT 1/4 POINT
STA 153+21.83

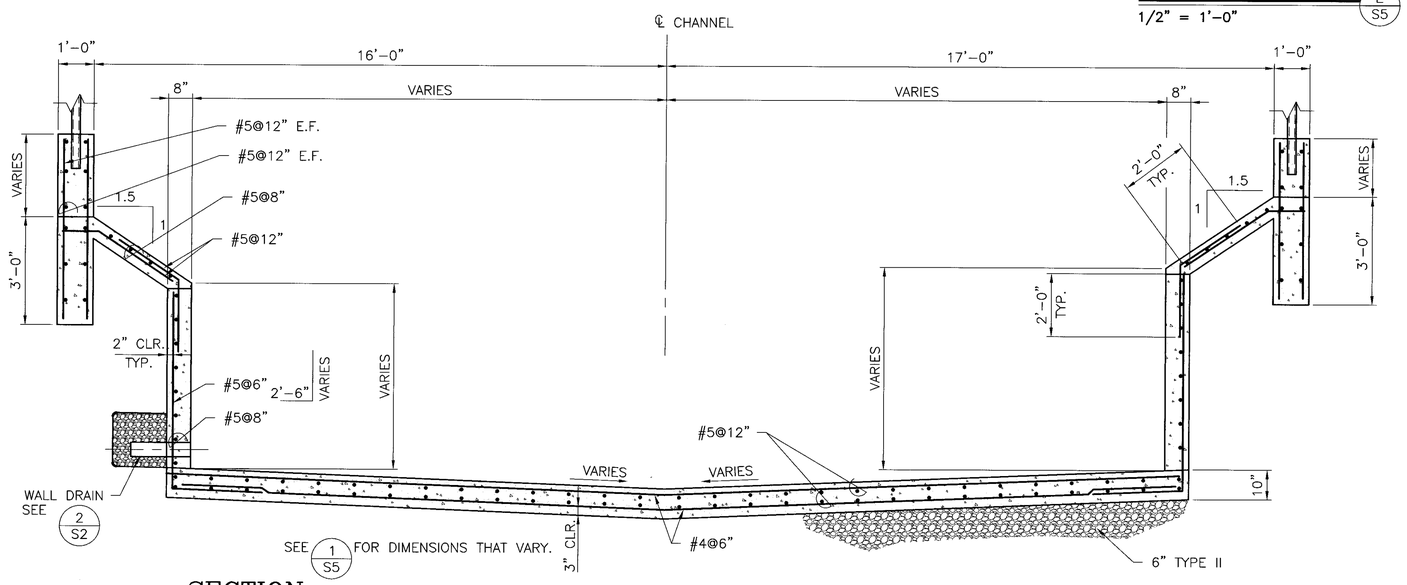


AT END OF WALL TRANSITION SECTION
STA 153+62.58



AT RCB HEADWALL
STA 153+09.33

SECTION
1/2" = 1'-0" (B S5)



TOP OF WALL SECTIONS AT TRANSITION CHANNEL
SCALE: N.T.S. (LOOKING UPSTREAM) (1 S5)

RECORD DRAWING
This drawing represents any changes from the original construction contract drawings, based on recorded field observations and changes of record.

R2H • GB&L ENGINEERING
CONSULTING STRUCTURAL ENGINEERS
840 GRIER DRIVE, SUITE 320
LAS VEGAS, NEVADA 89119
PHONE (702) 260-7000
FAX (702) 260-7070

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: TJ
DRAWN BY: ELY
CHECKED BY: DWS
DATE: APRIL 8, 1998
JOB NO.:
DRAWING NO.:
SCALE: HORIZ.: 1/2"=1'-0" VERT.:

POST, BUCKLEY, SCHUH & JERNIGAN
901 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
ENGINEERING • PLANNING • SURVEYING • CONSTRUCTION SERVICES

SEAL: PROFESSIONAL ENGINEER-STATE OF NEVADA — DAVID W. SEELEY — No. 11175 — 4/8/98

CLARK COUNTY NEVADA

Department of Public Works

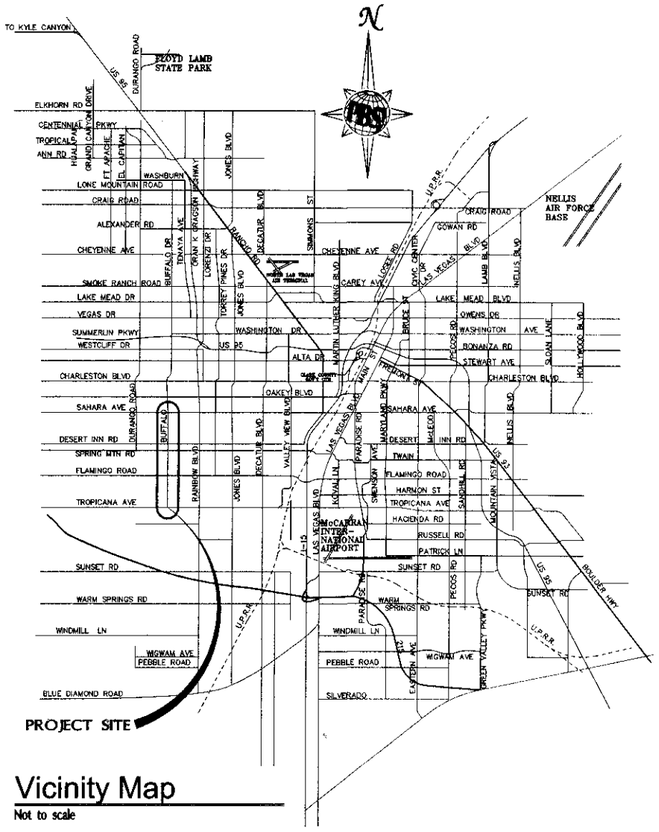
LAKES DETENTION BASIN & ASSOCIATED COLLECTION AND OUTFALL FACILITIES
SECTIONS AND DETAILS

L1582A
DRAWING NO. S5
13/14

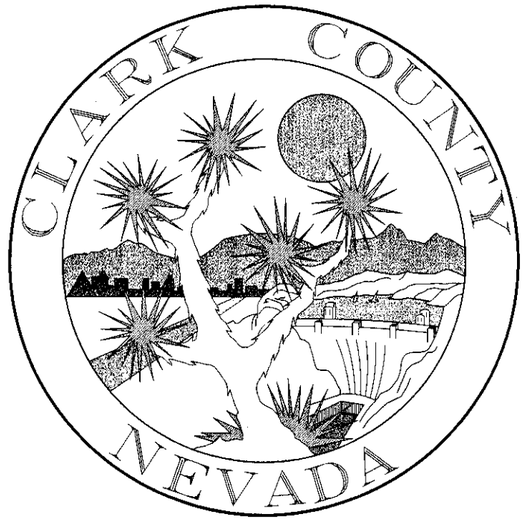
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RFCD
2002 22 AM 9:46

DEPARTMENT OF PUBLIC WORKS



Vicinity Map
Not to scale



"Progress as Promised"

2002
IMPROVEMENT PLANS FOR
BUFFALO DRIVE
SAHARA AVENUE TO
TROPICANA AVENUE

FUNDED BY:
REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA,
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
& S.I.D. # 139

County Commissioners

Dario Herrera, Chairman
Myrna Williams, Vice Chair
Yvonne Atkinson Gates
Erin Kenny
Mary J Kincaid-Chauncey
Chip Maxfield
Bruce L Woodbury

ISSUED FOR CONSTRUCTION

County Manager

Thom F. Reilly

Director of Public Works

Approved:
M.J. Manning R.P.E.

Regional Transportation Commission of Southern Nevada

Approved:
for Jacob L. Snow, General Manager

Clark County Regional Flood Control District

Approved:
Gale WM. Fraser II P.E.
General Manager/Chief Engineer

BUFFALO DRIVE — SAHARA AVE. TO TROPICANA AVE.
BID #5160-02

PBSJ
2270 Corporate Circle
Suite 100
Henderson, Nevada 89074
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

"The attached Sprint Nevada approval does not assume or guarantee validity for known or unknown conflicts with existing or proposed improvements. Resolution of any conflict will be accomplished pursuant to Local Ordinances, Nevada Revised Statutes and/or Public Utility Commission Rules and Regulations."

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		8.7.02
LAS VEGAS VALLEY WATER DISTRICT		9/6/02
SOUTHWEST GAS COMPANY		8.7.02
NEVADA POWER COMPANY – TRANSMISSION		8/6/02
NEVADA POWER COMPANY – DISTRIBUTION		8/6/02
CLARK COUNTY SANITATION DISTRICT		8/9/02
COX COMMUNICATIONS LAS VEGAS, INC.		8-8-02
REGIONAL TRANSPORTATION COMMISSION		

DEPARTMENT OF PUBLIC WORKS	REVIEWED BY:	DATE
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		8/08/02
~~COMMUNITY DEVELOPMENT DIVISION~~		
CONSTRUCTION MANAGEMENT DIVISION		8/8/02
DESIGN ENGINEERING DIVISION		8-8-02
MAINTENANCE MANAGEMENT DIVISION		8-8-02
TRAFFIC MANAGEMENT DIVISION		8/8/02
COUNTY SURVEYOR'S OFFICE		8/8/02
CLARK COUNTY DEPTARTMENT OF PARKS & RECREATION		

REVISIONS NUMBER	DESCRIPTION	DATE

PROFESSIONAL ENGINEER-STATE OF NEVADA
WAYNE HORLACHER
No. 10178
CIVIL
9/5/02

DESIGN ENGINEERING DIVISION

COVER SHEET

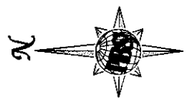
L-1669

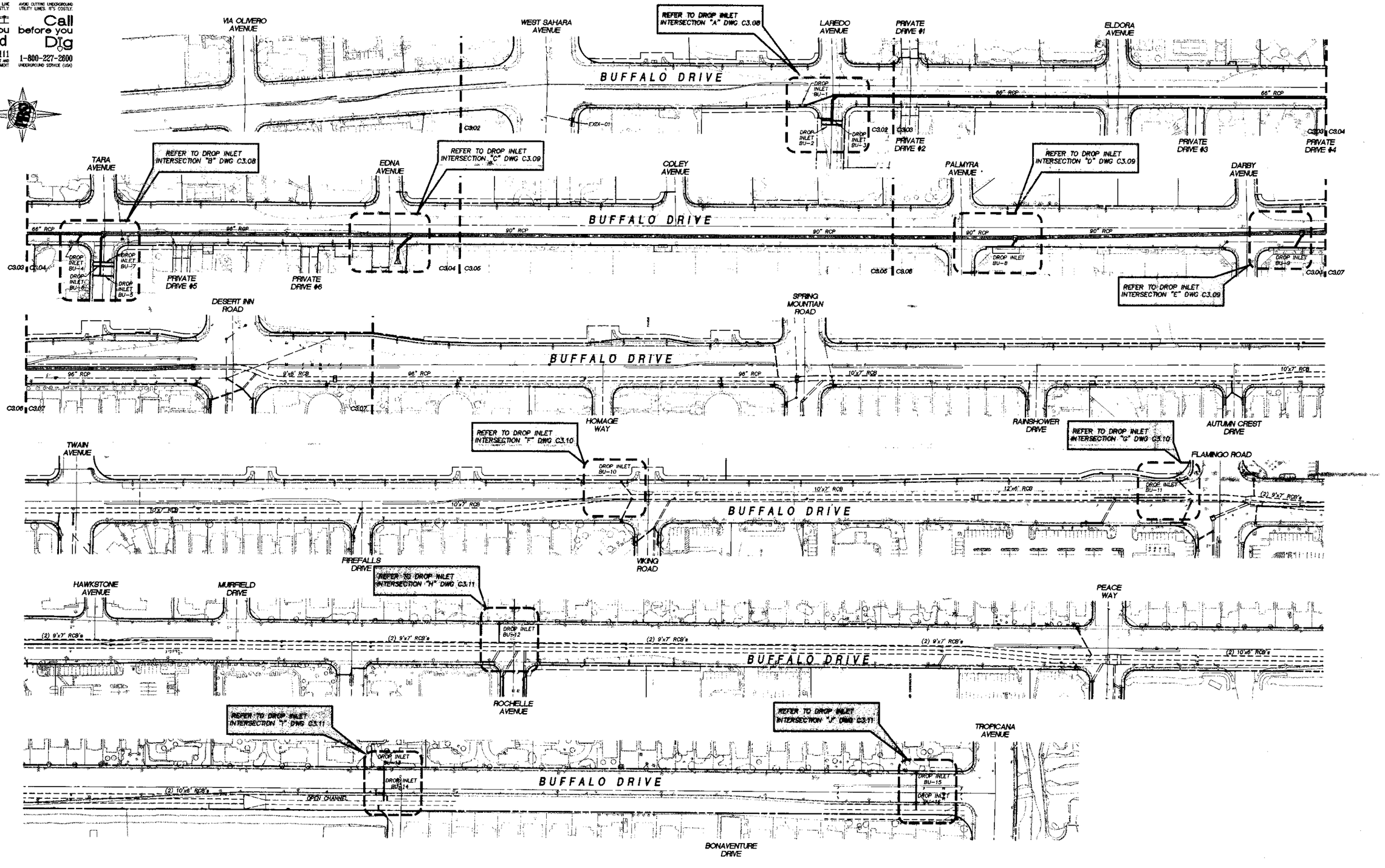
AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY.

Call before you Overhead
1-702-593-6111
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig
1-800-227-2600
UNDERGROUND SERVICE (USA)





REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: C. LUQUETTE
DRAWN BY: C. LUQUETTE
CHECKED BY: W. HORLACHER
DATE: AUGUST 02, 2002

JOB NO.: 511328
DRAWING NO.: 328-301
SCALE: HORIZ.: 1"=100'
VERT.:

PBSJ
2270 Corporate Circle
Suite 100
Henderson, Nevada 89074
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL
PROFESSIONAL ENGINEER - STATE OF NEVADA
MARK A. SORENSEN
8-5-02
CIVIL
No. 9742

CLARK COUNTY NEVADA
"Progress on Principle"

Department of Public Works

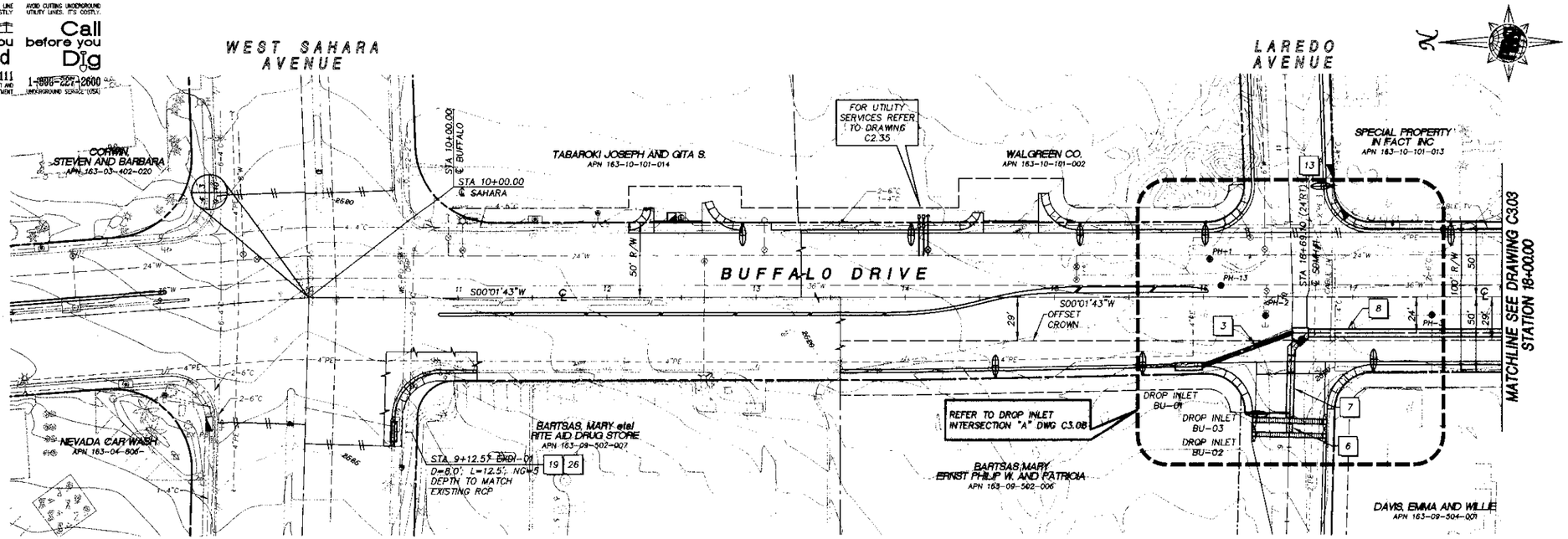
BUFFALO DRIVE ROADWAY IMPROVEMENTS
- WEST SAHARA AVENUE TO TROPICANA AVENUE -
BUFFALO DRIVE
OVERALL DRAINAGE PLAN

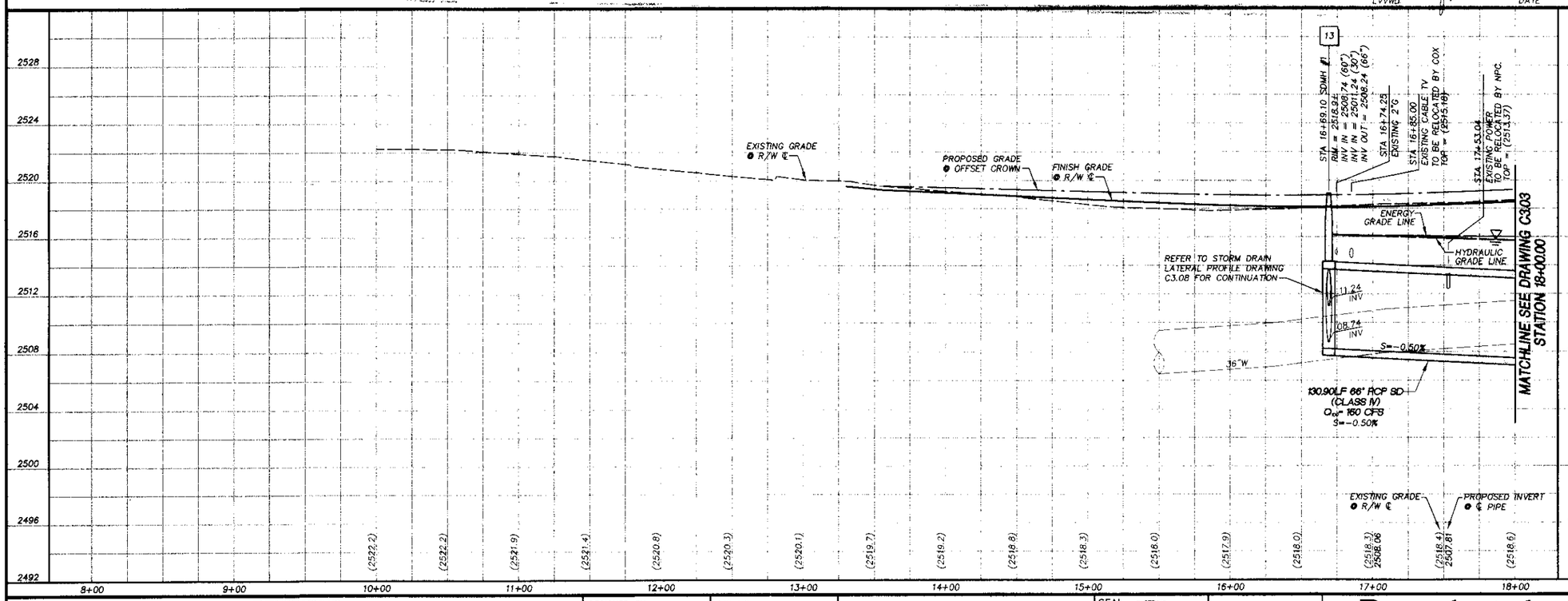
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DRAWING NO. 44
C3.01
92

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY. Call before you Overhead 1-702-593-6111 NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call before you Dig 1-800-227-2600 UNDERGROUND SERVICE (USA)





KEY NOTES

1. INSTALL 18" RCP SD PER TRENCH DETAIL 1 DWG C3.14
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9. INSTALL 90" RCP SD PER TRENCH DETAIL 1 DWG C3.14
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12. INSTALL TYPE II JUNCTION STRUCTURE PER DWG C3.17
13. INSTALL TYPE III JUNCTION STRUCTURE PER DWG C3.18
14. INSTALL 60" RCP DROP STRUCTURE PER DWG C3.19
15. INSTALL TRENCH DRAIN PER DETAIL 1 DWG C3.20
16. INSTALL PRECAST MANHOLE TEE W/ 48" RISER PER DETAIL 1 DWG C3.15 (W/ 30" MIN. ACCESS)
17. INSTALL TYPE "A" DROP INLET PER USD #411
18. INSTALL TYPE "CM" DROP INLET PER DETAIL 1 DWG C3.13
19. INSTALL TYPE "DM" DROP INLET PER DETAIL 2 DWG C3.13
20. INSTALL NDOT TYPE III MODIFIED INLET PER DETAIL 3 DWG C3.13
21. INSTALL 60° 45° PRECAST BEND & BACKFILL WITH CONC. PER USD #407 (SIMILAR)
22. NOT USED
23. PIPE PENETRATION PER DETAIL 4 DWG C3.16
24. PIPE PENETRATION AT CHANNEL PER DETAIL 1 DWG C3.21
25. EXISTING WATERLINE TO BE RELOCATED PER DETAIL 3 DWG C3.14
26. DEMOLISH EXISTING 12' DROP INLET FOR INSTALLATION OF NEW TYPE "DM" MODIFIED

LVVWD 9/6/02 DATE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.

BASIS OF BEARING

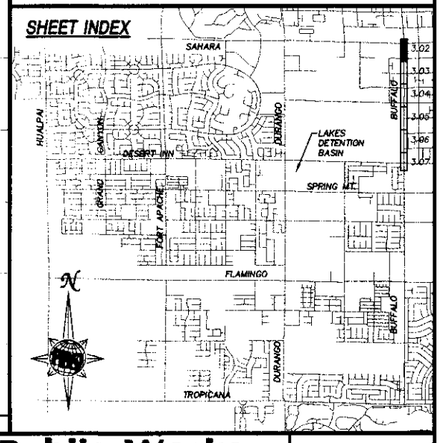
THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GIS STATIONS 822, 838, AND 939, AS SHOWN ON A RECORD OF SURVEY ON FILE IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE, IN FILE 88 OF SURVEYS, AT PAGE 53.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

CAUTION:
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SHEET INDEX



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: C. LUQUETTE
DRAWN BY: C. LUQUETTE
CHECKED BY: W. HORLACHER
DATE: AUGUST 02, 2002

JOB NO.: 511328
DRAWING NO.: 328-302
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ 2270 Corporate Circle Suite 100 Henderson, Nevada 89074 Telephone: 702/263-7275 Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL: PROFESSIONAL ENGINEER-STATE OF NEVADA MARK A. SORENSEN 4-5-02 CIVIL No. 8742

CLARK COUNTY NEVADA "Progress in Promotion"

Department of Public Works

BUFFALO DRIVE ROADWAY IMPROVEMENTS - WEST SAHARA AVENUE TO TROPICANA AVENUE -

BUFFALO DRIVE - DRAINAGE SYSTEM PLAN AND PROFILE STA 8+00.00 TO STA 18+00.00

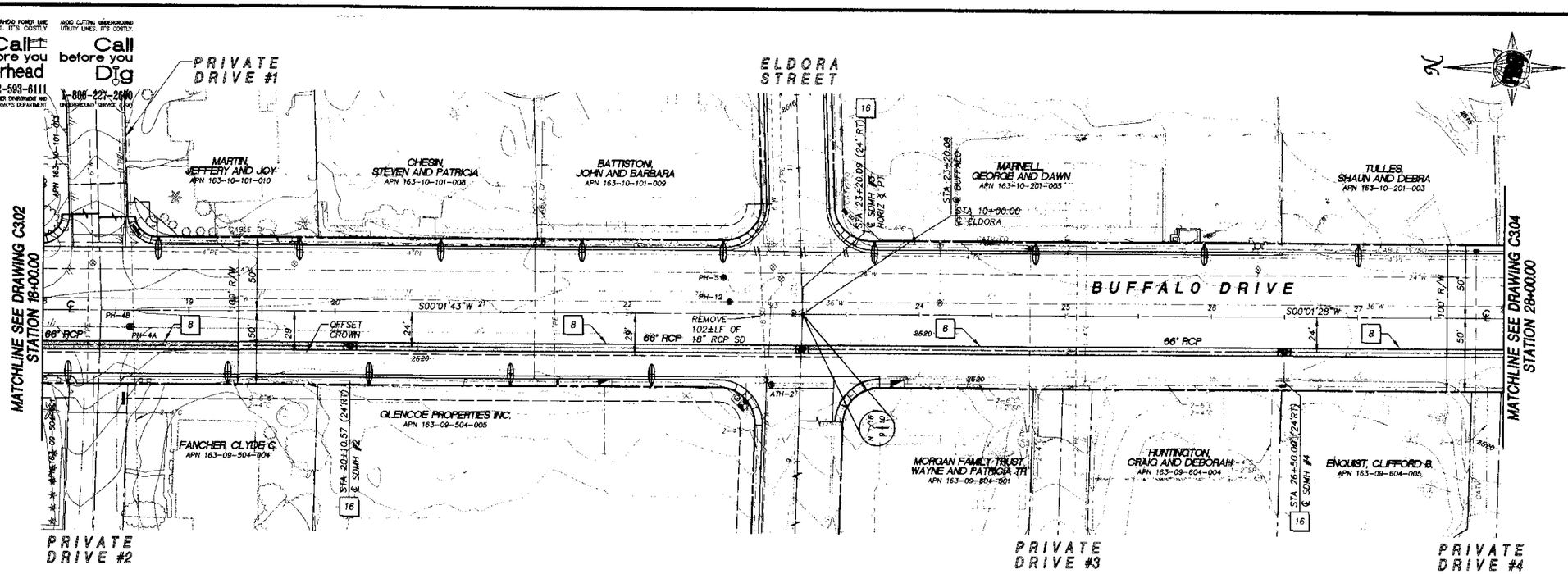
L-1669

DRAWING NO. C3.02

45 / 92

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY
Call before you Overhead
1-702-593-6111
NEVADA POWER ENVIRONMENT and SAFETY SERVICE'S DEPARTMENT

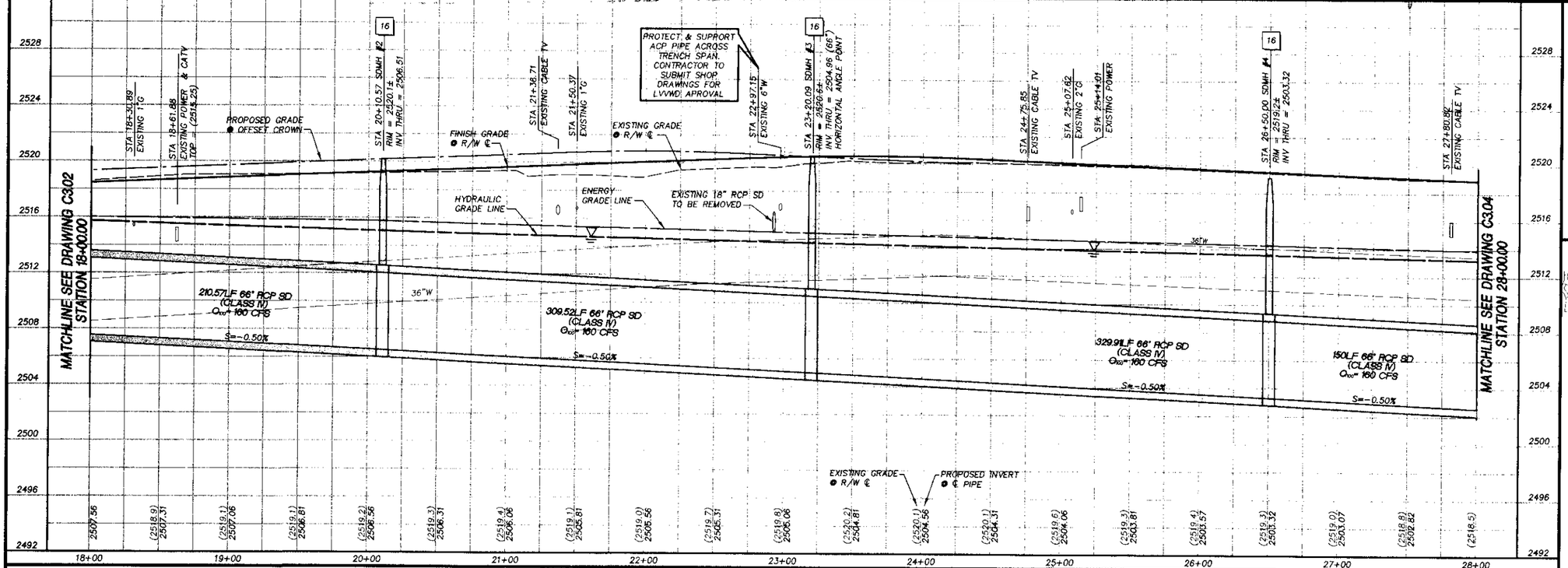
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Call before you Dig
1-800-227-2600
UNDERGROUND SERVICE ALERT



LVVWD DATE 9/6/02

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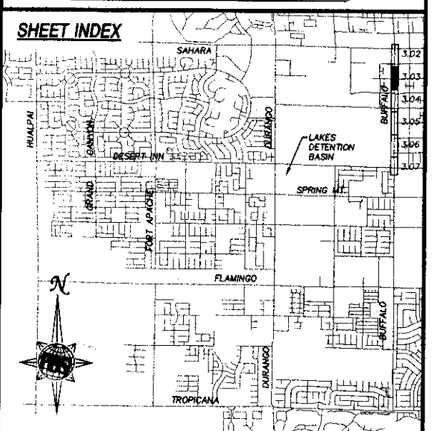
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SHEET INDEX



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DRAWN BY: C. LUQUETTE
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JOB NO.: 511328
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PBSJ
2270 Corporate Circle Suite 100
Henderson, Nevada 89074
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL: PROFESSIONAL ENGINEER - STATE OF NEVADA - MARK A. SORENSEN - 8-5-02 - CIVIL - No. 8742

CLARK COUNTY NEVADA

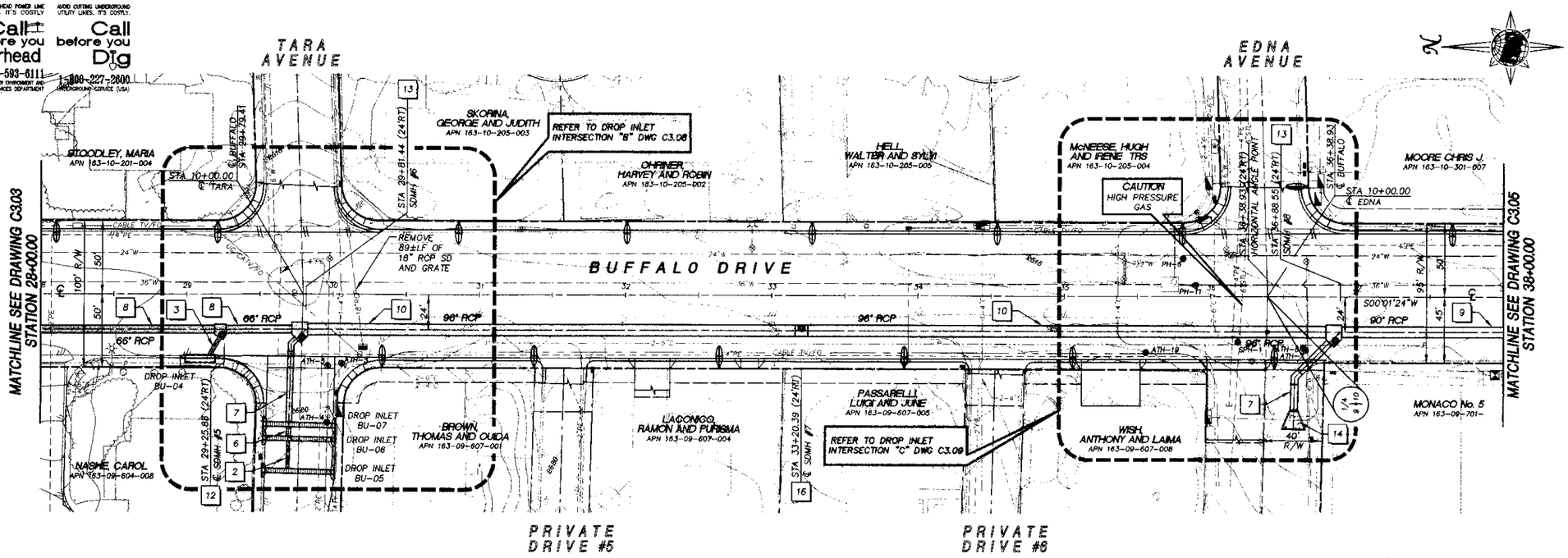
Department of Public Works

BUFFALO DRIVE ROADWAY IMPROVEMENTS
- WEST SAHARA AVENUE TO TROPICANA AVENUE -
BUFFALO DRIVE - DRAINAGE SYSTEM
PLAN AND PROFILE STA 18+00.00 TO STA 28+00.00

L-1669
DRAWING NO. 46
C3.03
92

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY. Call before you Overhead 1-702-593-6111 NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

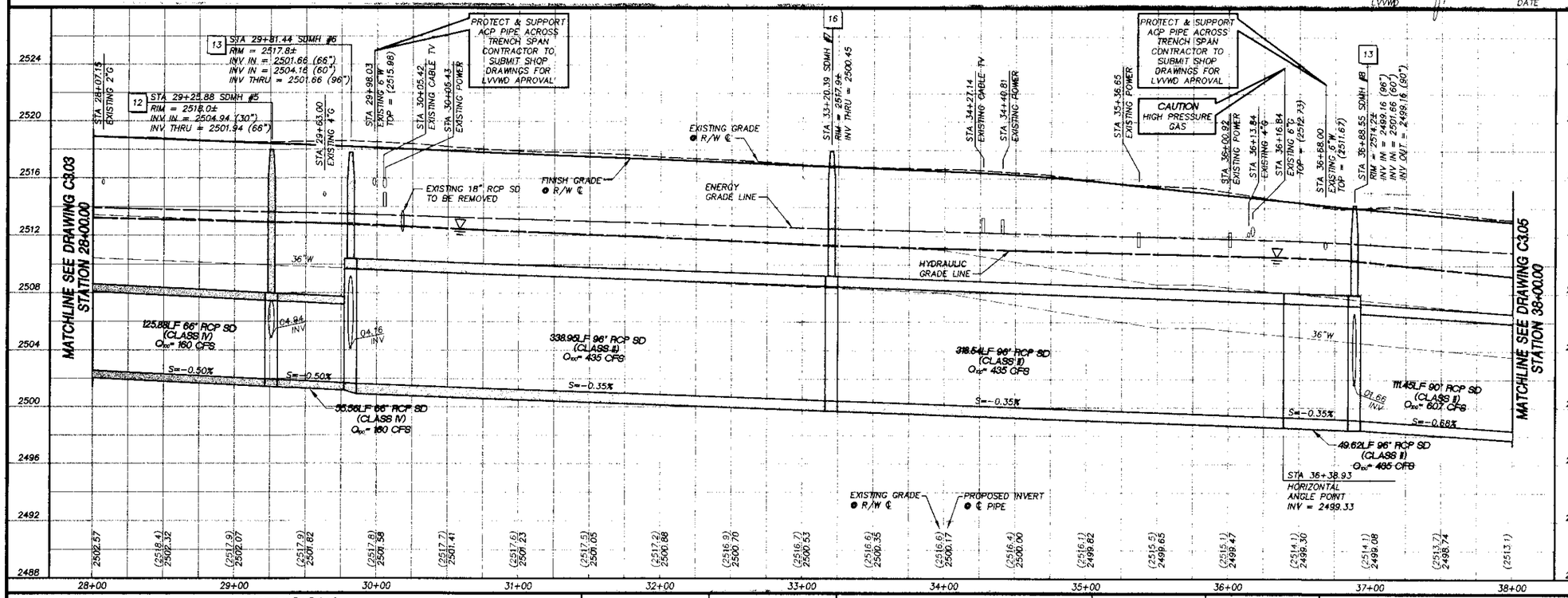
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9/6/02
LVVWD DATE

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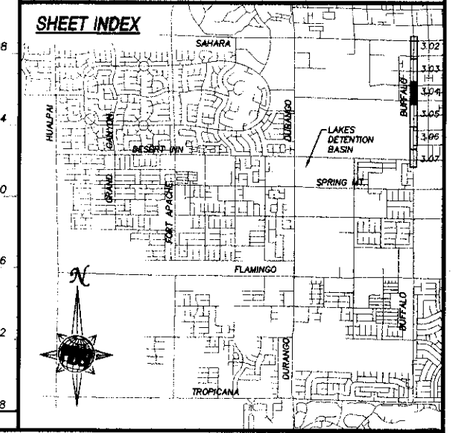
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: C. LUQUETTE
DRAWN BY: C. LUQUETTE
CHECKED BY: W. HORLACHER
DATE: AUGUST 02, 2002

JOB NO.: 511328
DRAWING NO.: 328-304
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
2270 Corporate Circle Suite 100 Henderson, Nevada 89074 Telephone: 702/263-7275 Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL: PROFESSIONAL ENGINEER - STATE OF NEVADA - MARK W. SORENSEN - 8-5-02 - CIVIL - No. 8742

CLARK COUNTY NEVADA "Progress on Principles"

Department of Public Works

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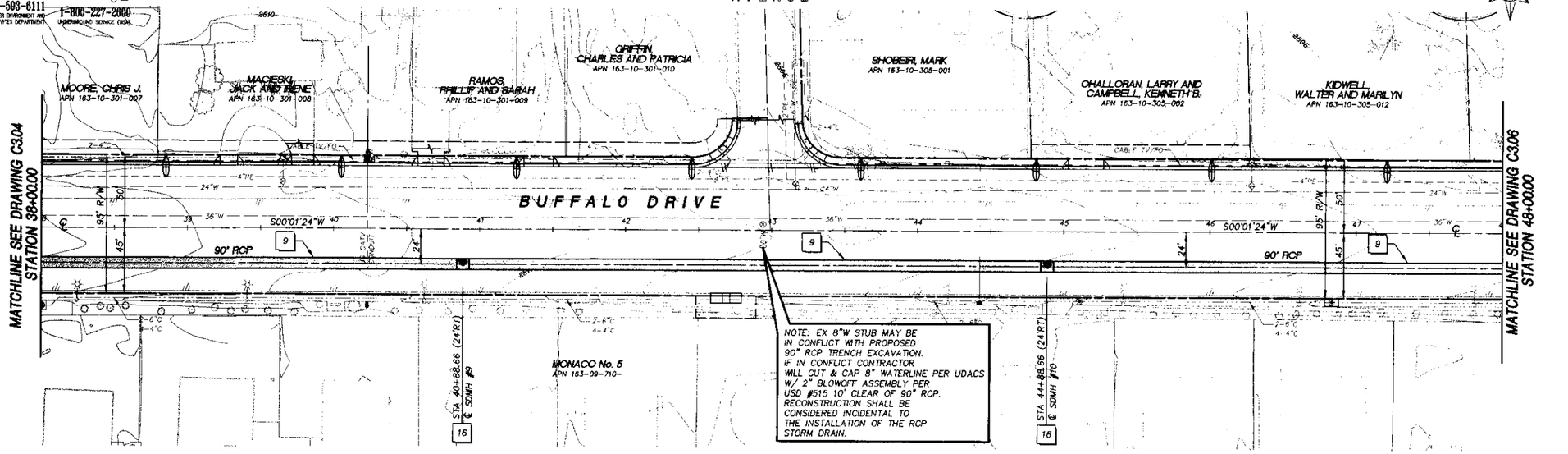
BUFFALO DRIVE - DRAINAGE SYSTEM PLAN AND PROFILE STA 28+00.00 TO STA 38+00.00

L-1669

DRAWING NO. C3.04 47/92

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY.
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NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

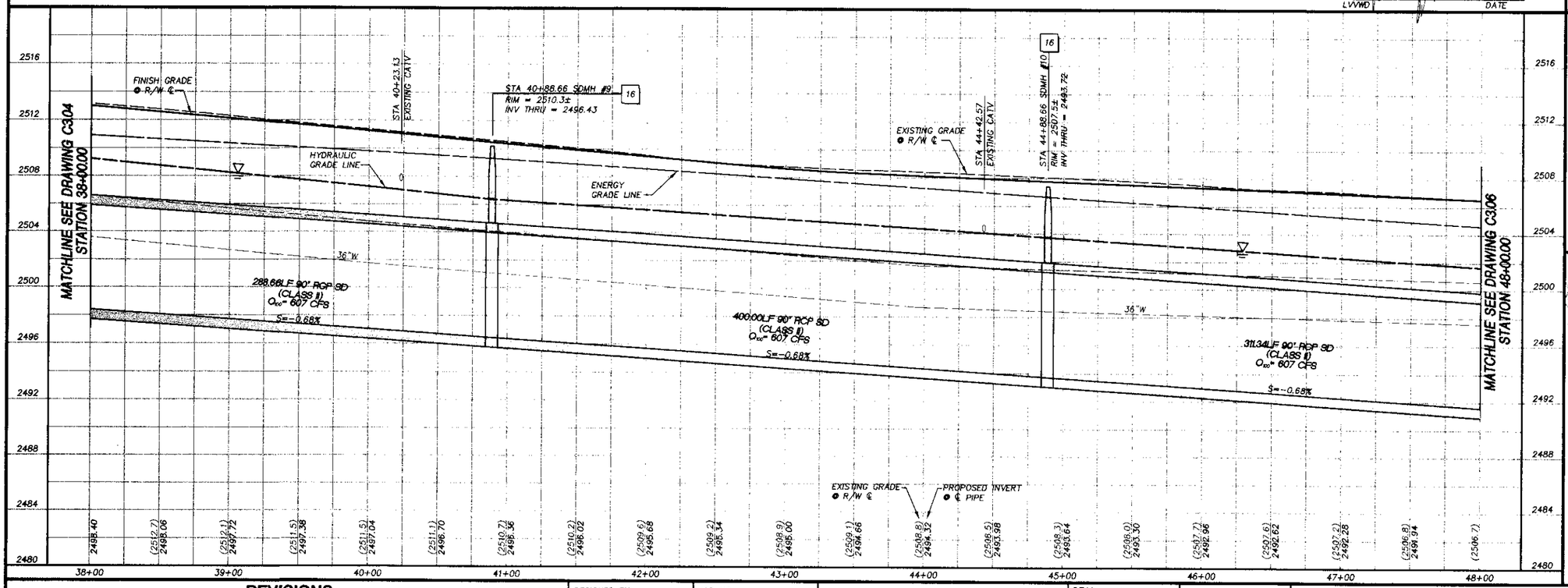
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LVVWD _____ DATE 9/6/02

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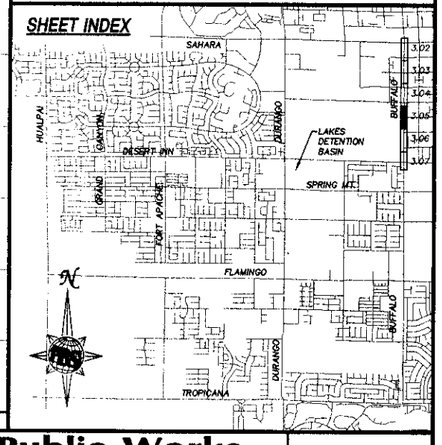
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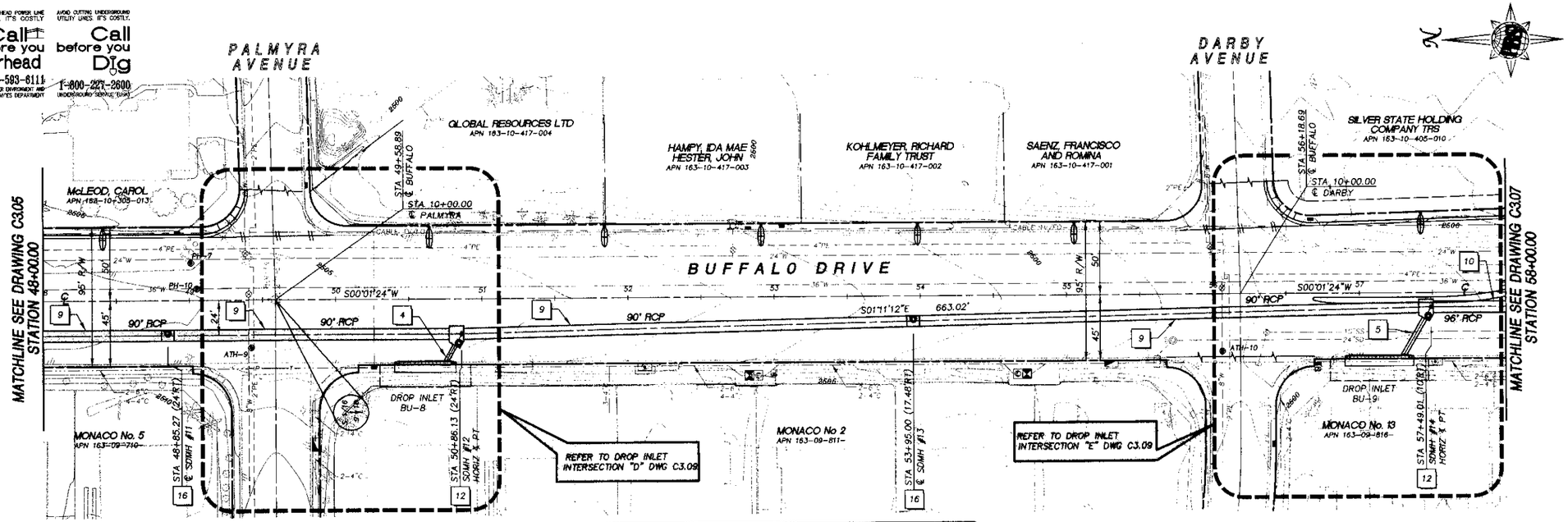
L-1669

DRAWING NO. C3.05

48 / 92

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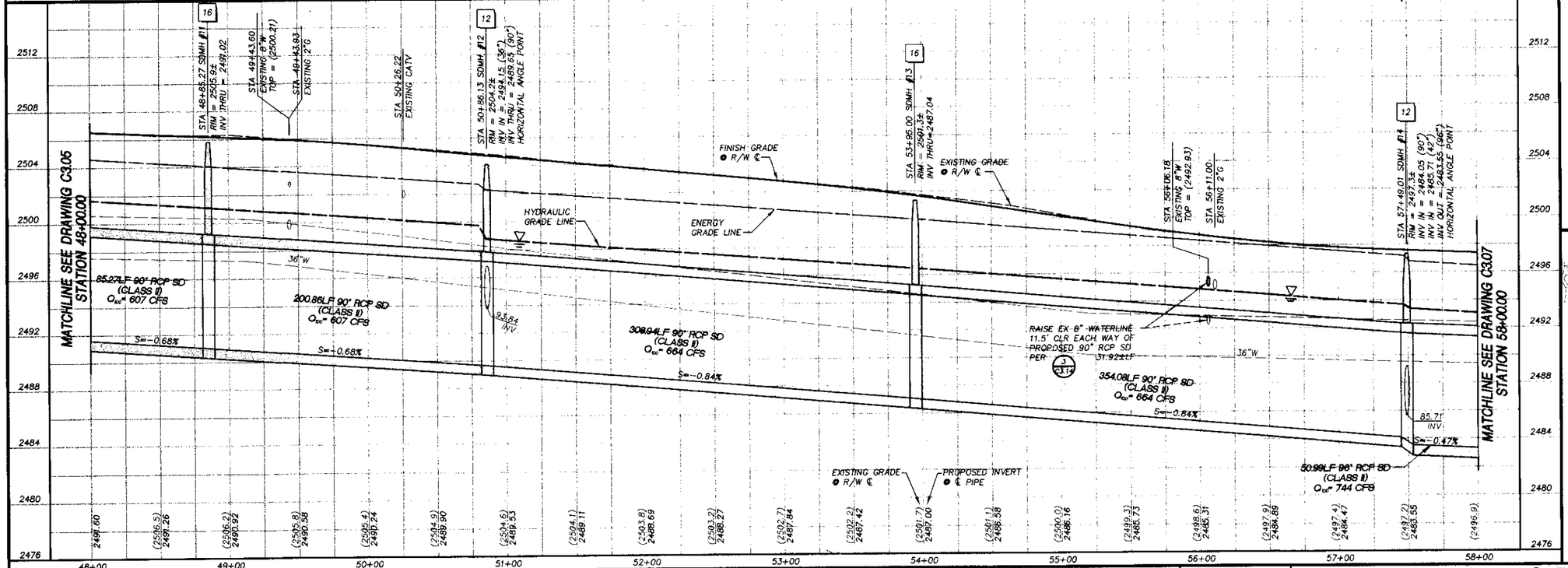


PROTECT WATERLINES IN PLACE. WHEREVER A WATERLINE IS WITHIN 18" ABOVE A STORM DRAIN OR SEWER, OR WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CONTROL LOW STRENGTH MATERIAL (CLSM) TO SPRINGLINE OF THE WATERLINE. THIS REQUIREMENT IS FOR STRUCTURAL SUPPORT ONLY, ADDITIONAL HEALTH REGULATIONS MAY APPLY PER UDACS 2.19.

LVVWD — DATE 9/6/02

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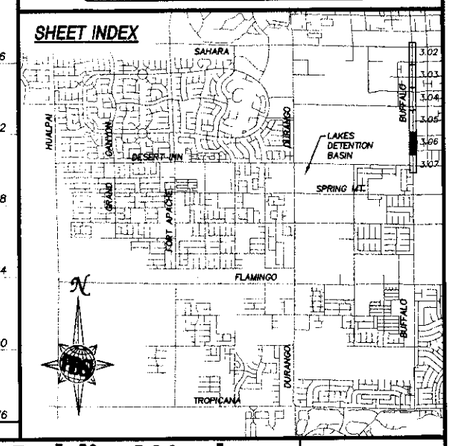
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DRAWN BY: C. LUQUETTE
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SEAL — PROFESSIONAL ENGINEER-STATE OF NEVADA — MARK A. SCHNEIDER — CIVIL — No. 8742

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BUFFALO DRIVE - DRAINAGE SYSTEM PLAN AND PROFILE STA 48+00.00 TO STA 58+00.00

L-1669

DRAWING NO. 49 / 92

C3.06

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1-702-593-6111

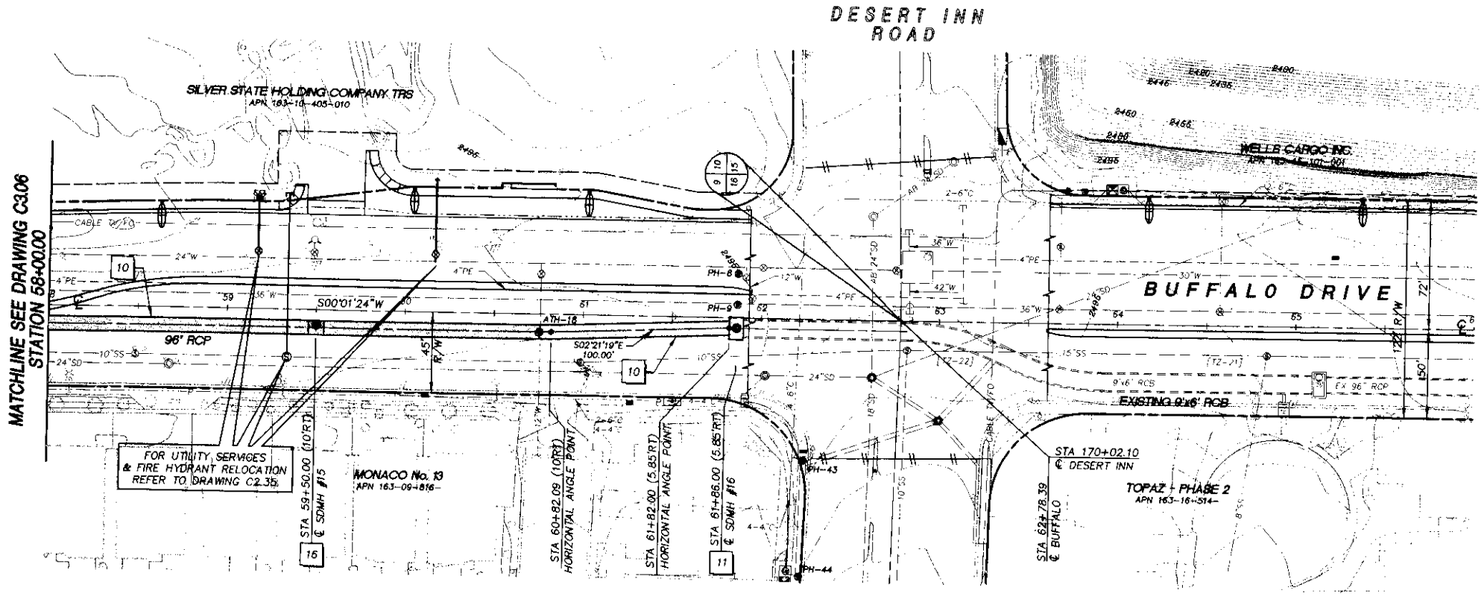
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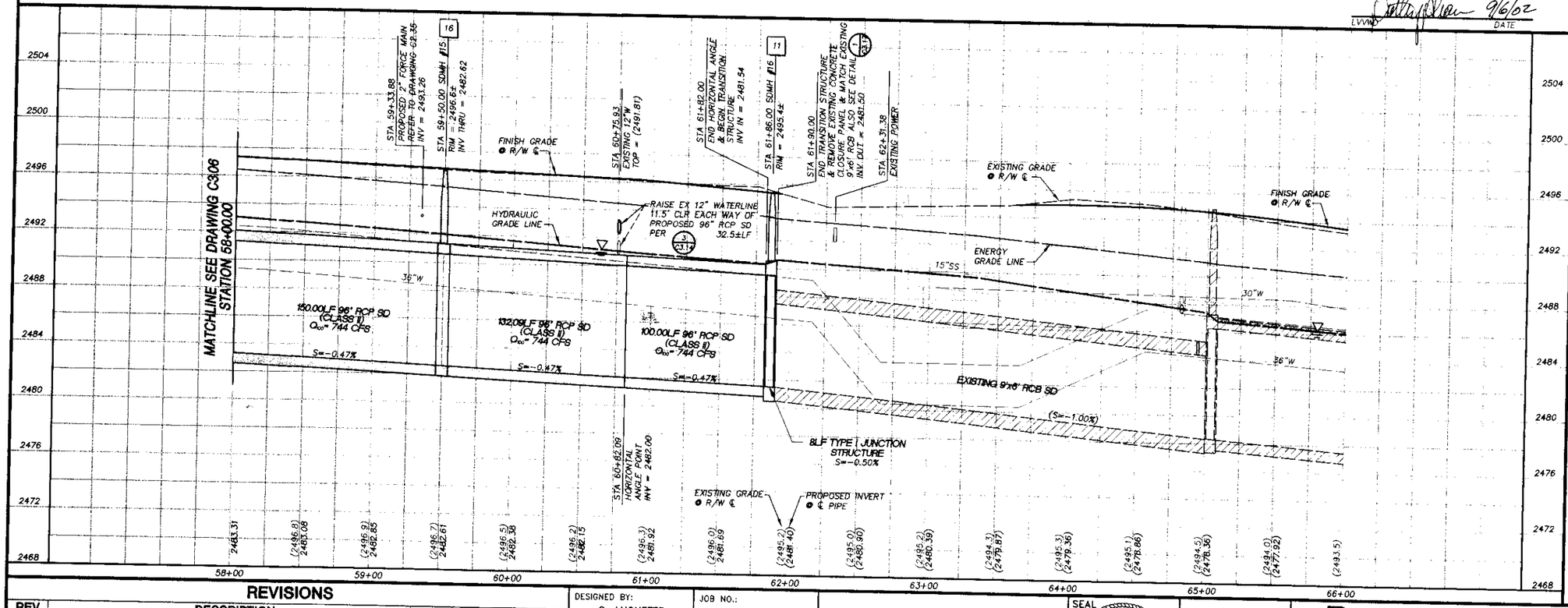
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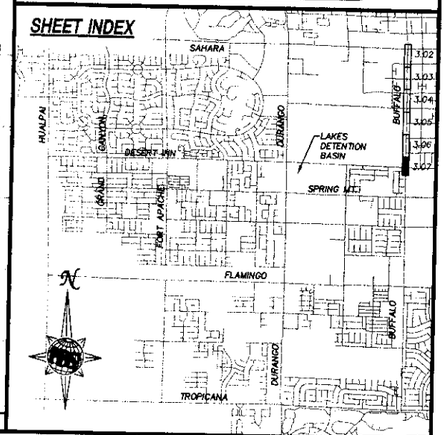
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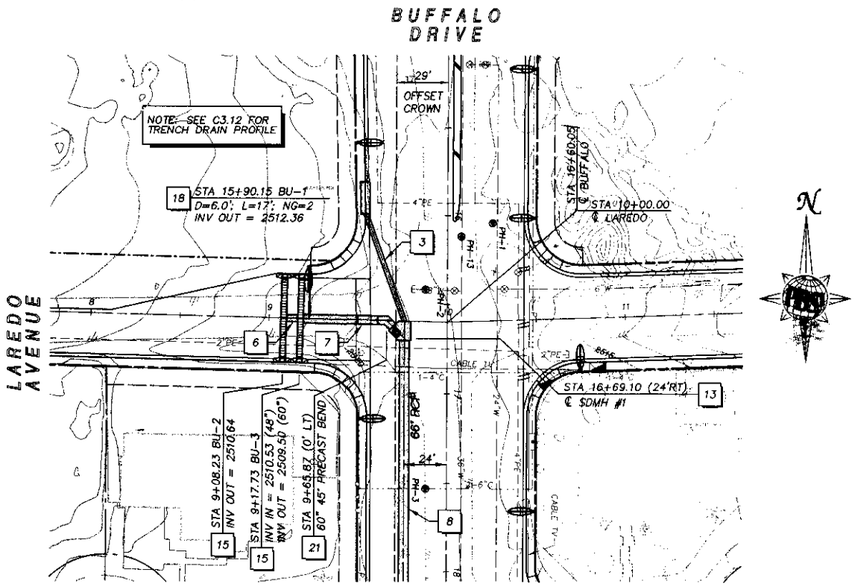
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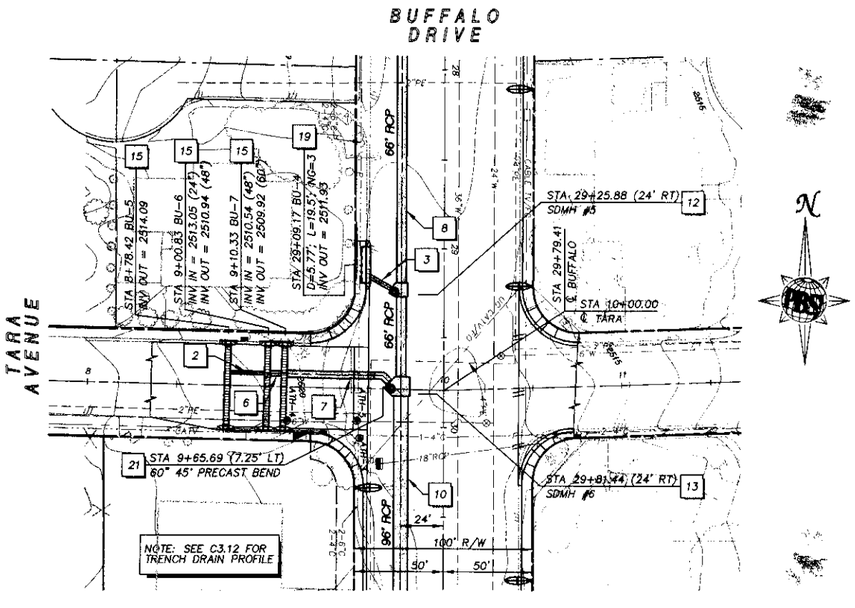
50 / 92

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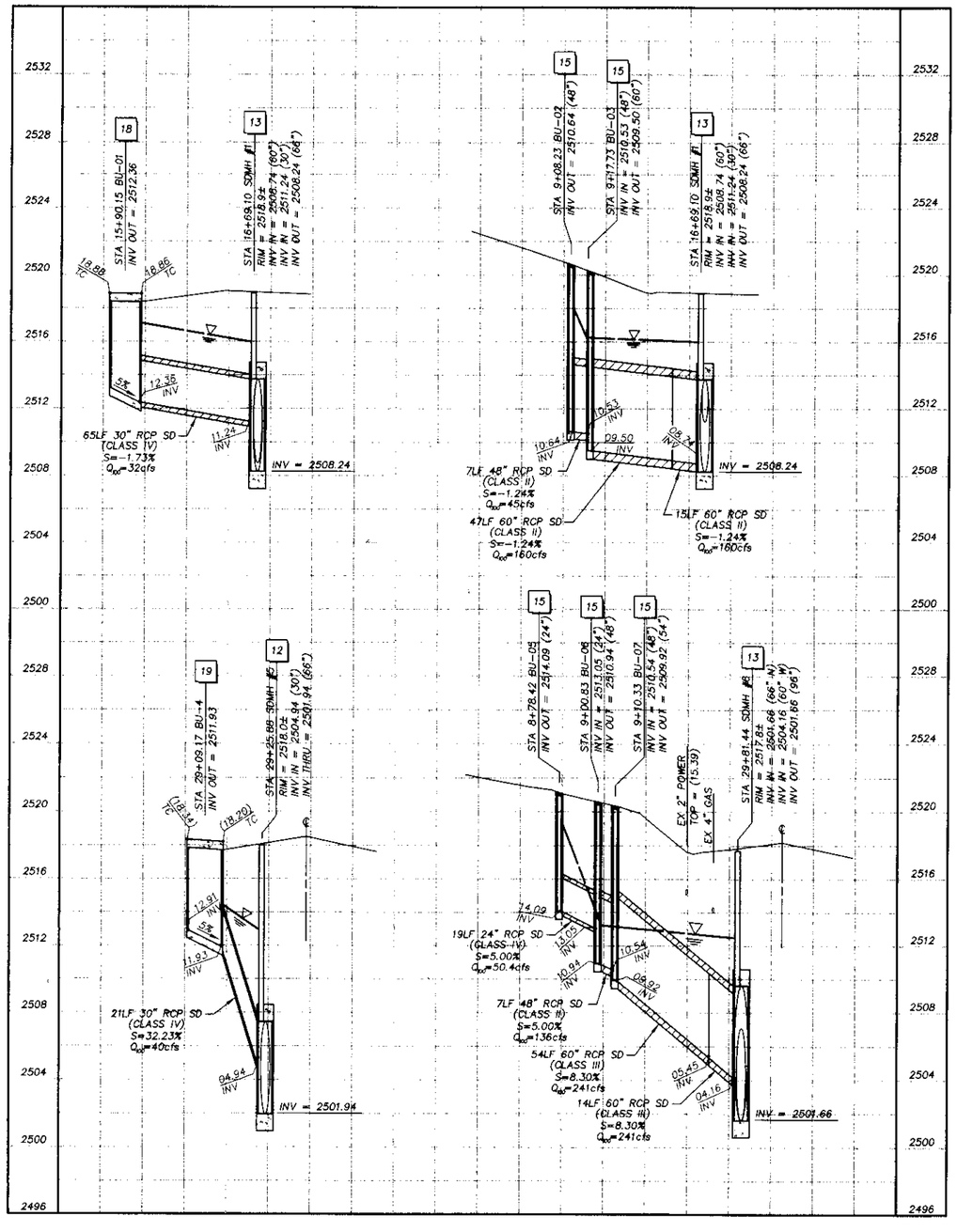
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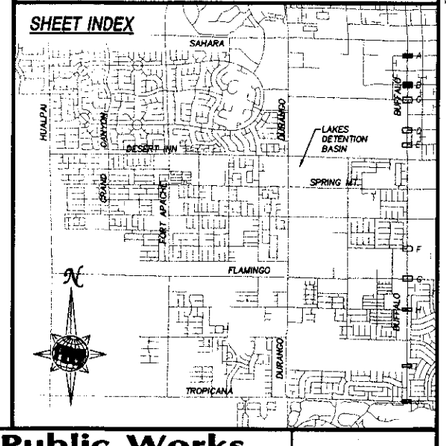
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DRAWN BY: C. LUQUETTE
CHECKED BY: W. HORLACHER
DATE: AUGUST 02, 2002

JOB NO.: 511328
DRAWING NO.: 328-308
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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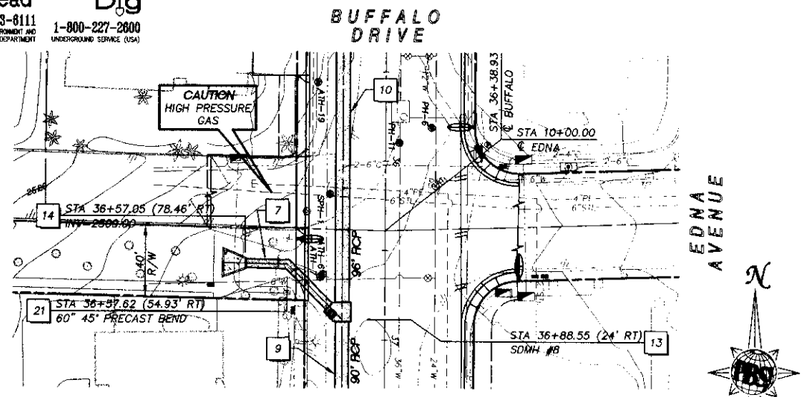
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DRAWING NO. 51 / 92

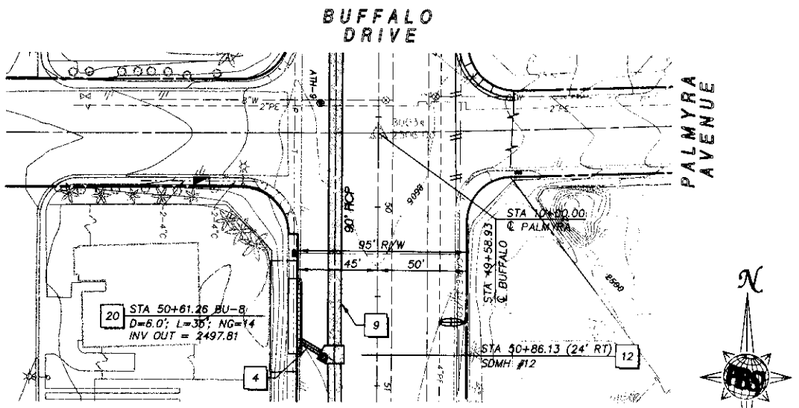
C3.08

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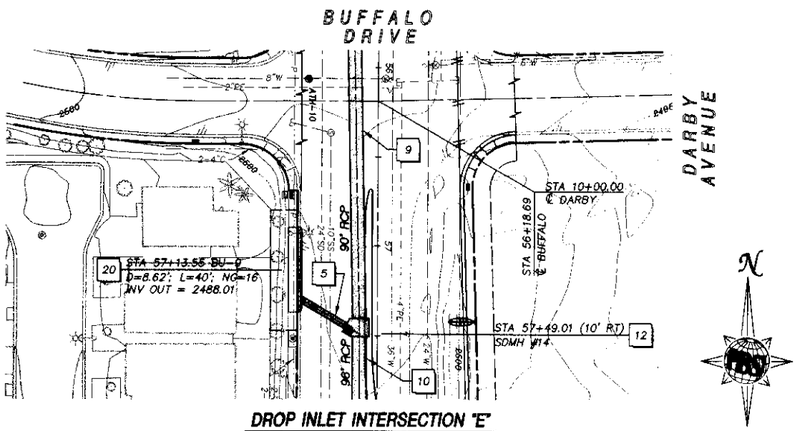
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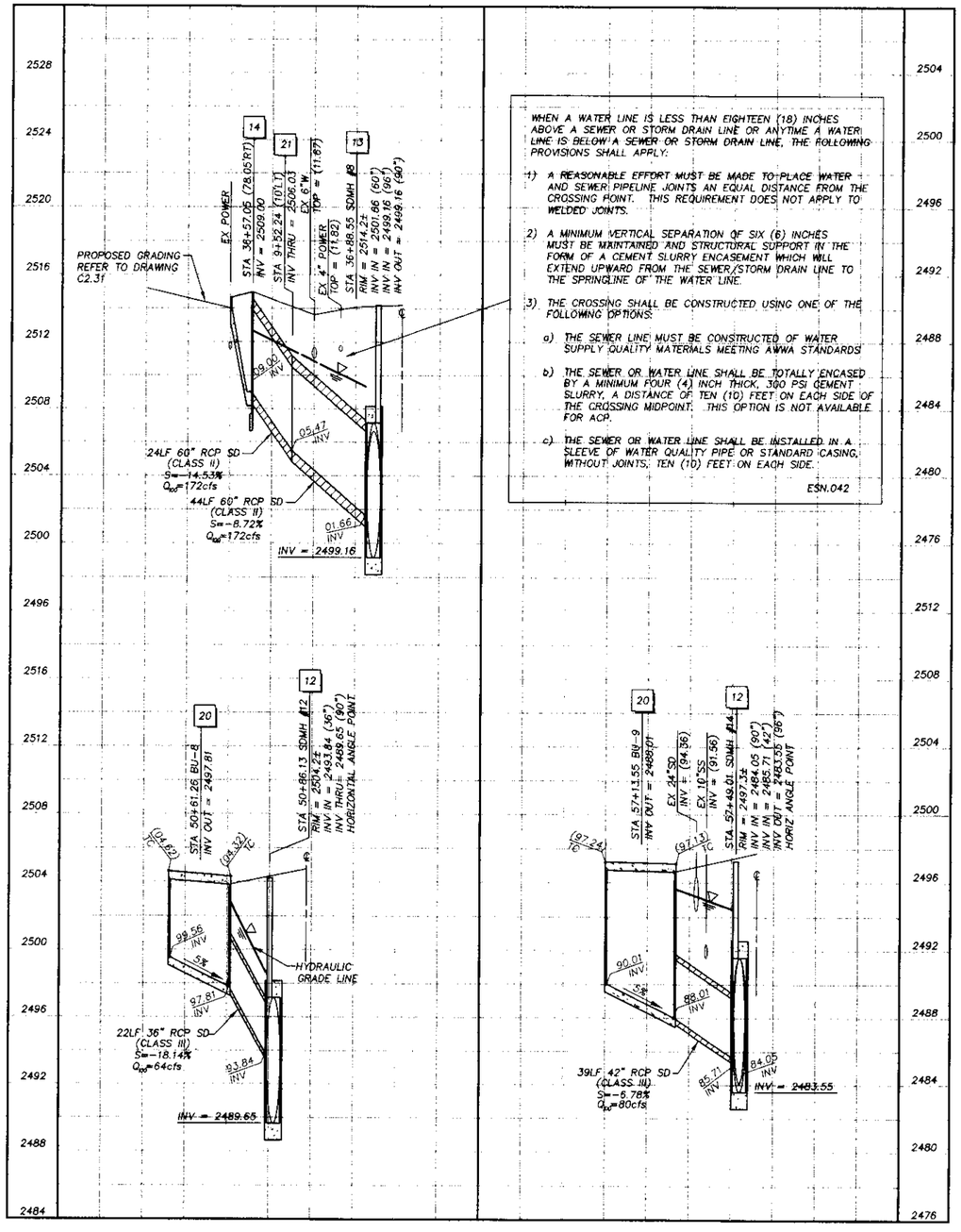
DROP INLET INTERSECTION "C"



DROP INLET INTERSECTION "D"



DROP INLET INTERSECTION "E"



WHEN A WATER LINE IS LESS THAN EIGHTEEN (18) INCHES ABOVE A SEWER OR STORM DRAIN LINE OR ANYTIME A WATER LINE IS BELOW A SEWER OR STORM DRAIN LINE, THE FOLLOWING PROVISIONS SHALL APPLY:

1) A REASONABLE EFFORT MUST BE MADE TO PLACE WATER AND SEWER PIPELINE JOINTS AN EQUAL DISTANCE FROM THE CROSSING POINT. THIS REQUIREMENT DOES NOT APPLY TO WELDED JOINTS.

2) A MINIMUM VERTICAL SEPARATION OF SIX (6) INCHES MUST BE MAINTAINED AND STRUCTURAL SUPPORT IN THE FORM OF A CEMENT SLURRY ENCASEMENT WHICH WILL EXTEND UPWARD FROM THE SEWER/STORM DRAIN LINE TO THE SPRINGLINE OF THE WATER LINE.

3) THE CROSSING SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING OPTIONS:

   a) THE SEWER LINE MUST BE CONSTRUCTED OF WATER SUPPLY QUALITY MATERIALS MEETING AWWA STANDARDS.

   b) THE SEWER OR WATER LINE SHALL BE TOTALLY ENCASED BY A MINIMUM FOUR (4) INCH THICK, 300 PSI CEMENT SLURRY, A DISTANCE OF TEN (10) FEET ON EACH SIDE OF THE CROSSING MIDPOINT. THIS OPTION IS NOT AVAILABLE FOR ACP.

   c) THE SEWER OR WATER LINE SHALL BE INSTALLED IN A SLEEVE OF WATER QUALITY PIPE OR STANDARD CASING, WITHOUT JOINTS, TEN (10) FEET ON EACH SIDE.

ESN.042

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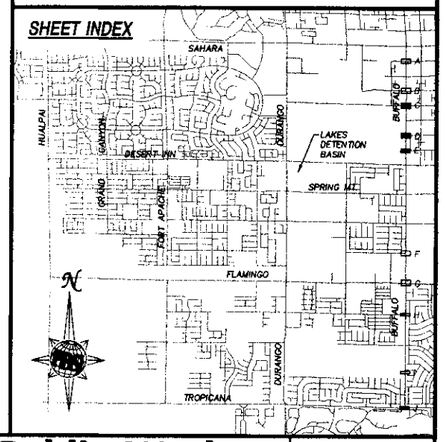
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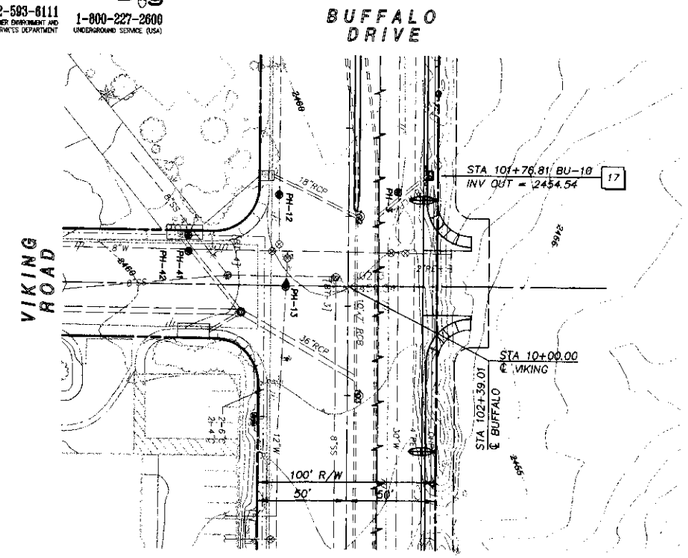
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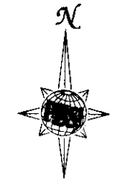
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DRAWING NO. C3.09
52 / 92

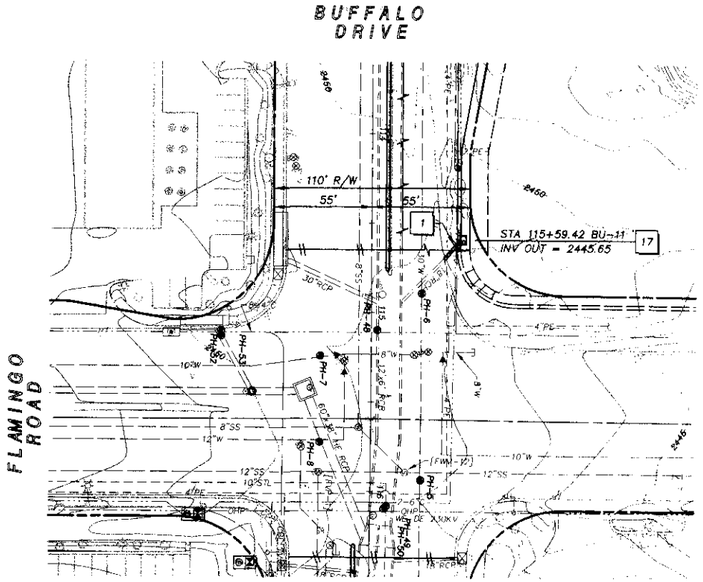
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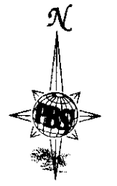


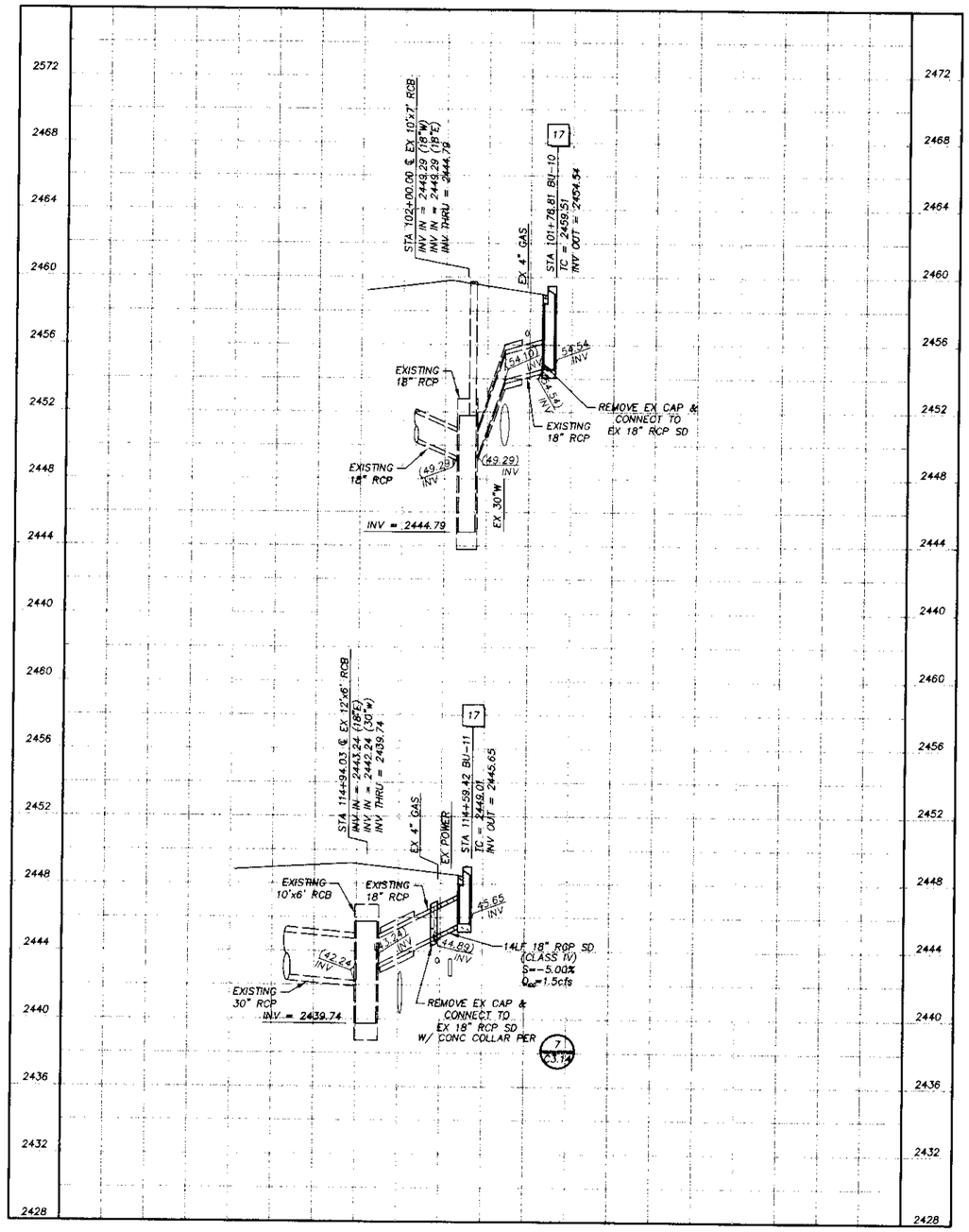
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DROP INLET INTERSECTION "G"



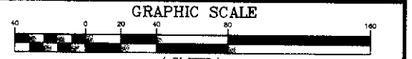


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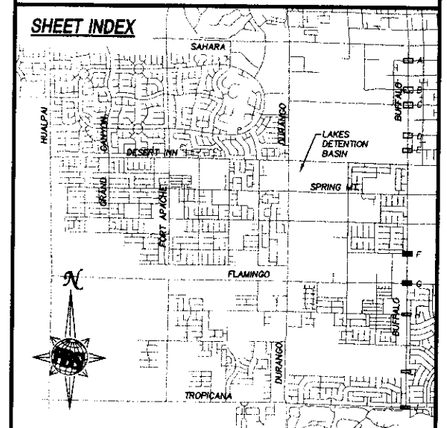
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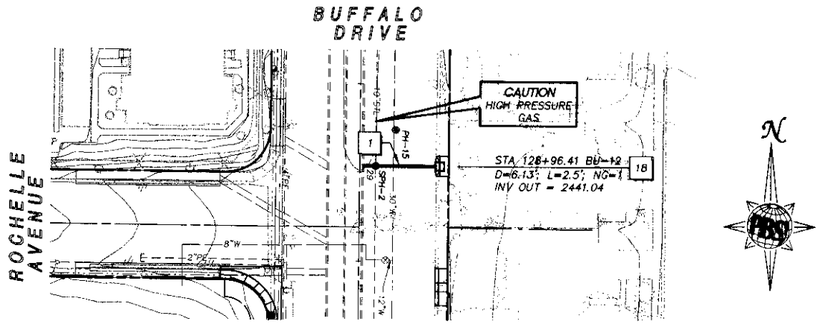
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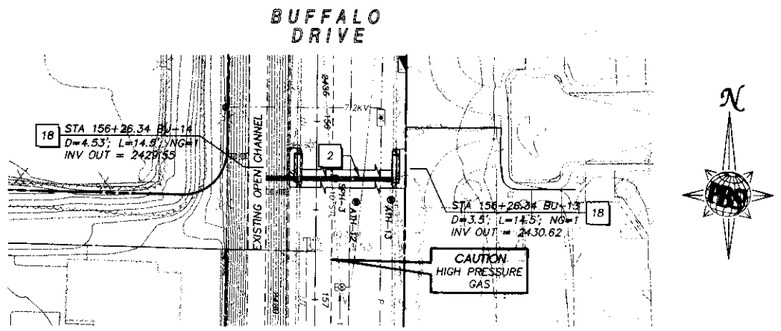
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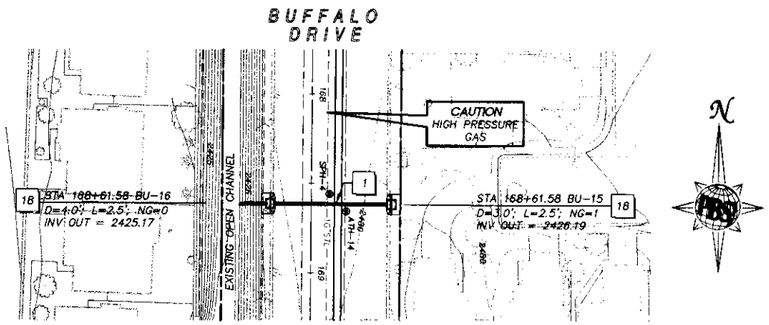
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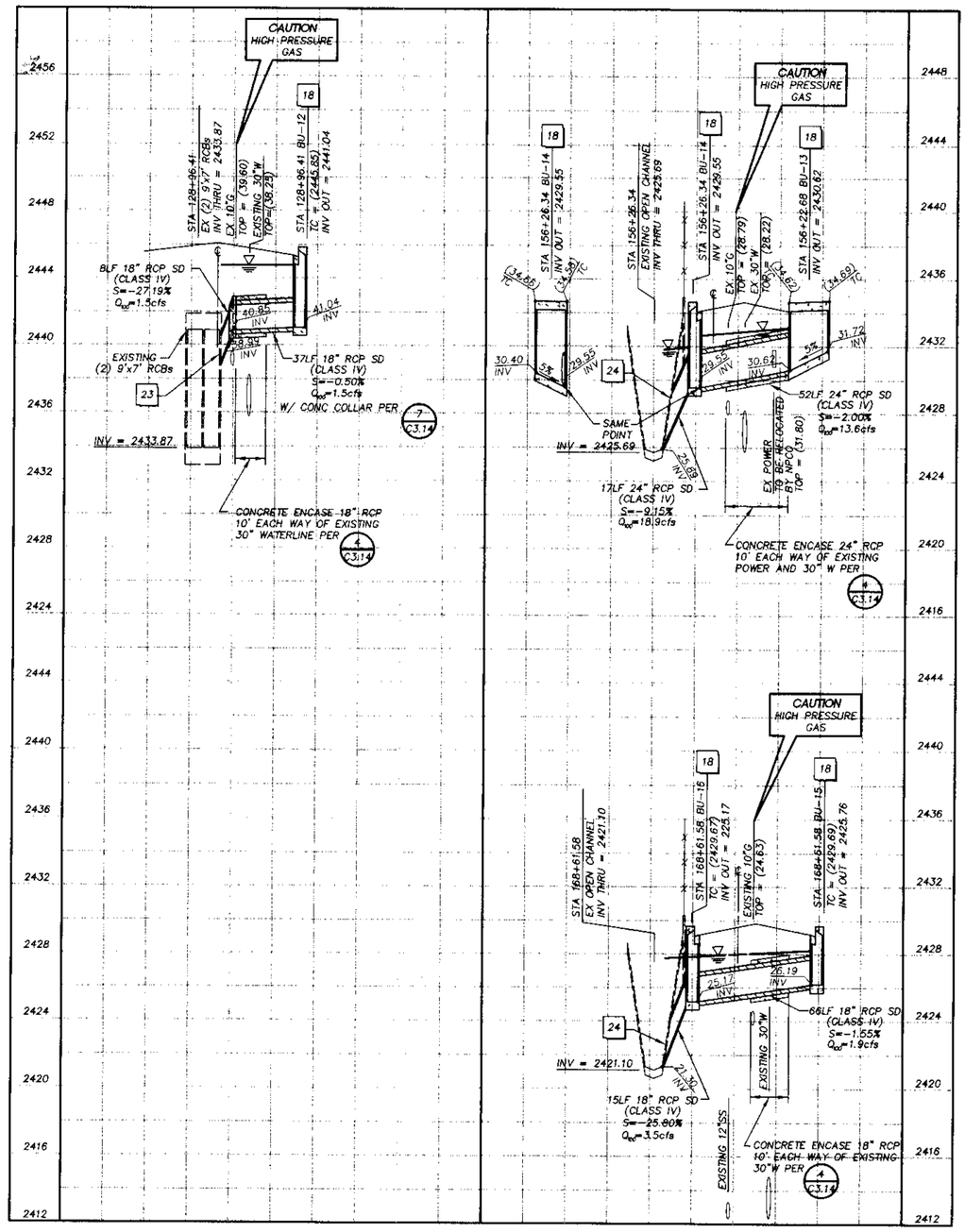
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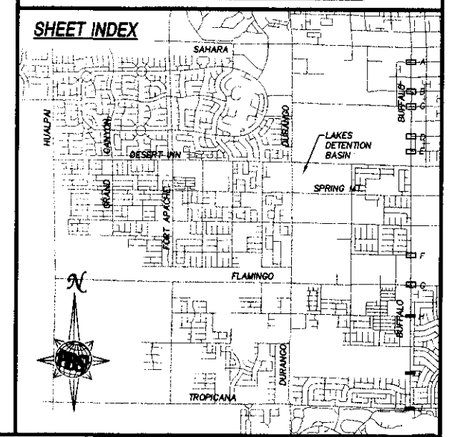
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DRAWING NO. C3.11 | 54 / 92

DEPARTMENT OF PUBLIC WORKS

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C10	STORM DRAIN PLAN AND PROFILE STA 114+00.00 TO STA 124+00.00
C11	STORM DRAIN PLAN AND PROFILE STA 124+00.00 TO STA 134+00.00
C12	STORM DRAIN PLAN AND PROFILE STA 134+00.00 TO STA 144+00.00
C13	DROP INLET INTERSECTION ENLARGEMENTS "A" & "B"
C14	DROP INLET INTERSECTION ENLARGEMENTS "C" & "D"
C15	DROP INLET INTERSECTION ENLARGEMENTS "E" & "F"
C16	DROP INLET INTERSECTION ENLARGEMENTS "G" THRU "J"
C17	DROP INLET INTERSECTION ENLARGEMENTS "J" & "K"
C18	DROP INLET INTERSECTION ENLARGEMENTS "L" & "M"
C19	SANITARY SEWER RELOCATION PLAN & PROFILE – FLAMINGO & RAINSHOWER
C20	ENLARGEMENT DETAILS
C21	DROP INLET DETAILS
C22	MISCELLANEOUS DETAILS
C23	MISCELLANEOUS DETAILS
S1	GENERAL NOTES AND DETAILS
S2	MISCELLANEOUS DETAILS AND RCB'S
S3	VARIOUS RCB'S
S4	TYPE I & II TRANSITION STRUCTURE
S5	TYPE III TRANSITION STRUCTURE
S6	TYPE IV TRANSITION STRUCTURE
S7	TYPE I JUNCTION STRUCTURE AND MISCELLANEOUS DETAILS AND SECTIONS

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 02/17/99 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

COUNTY COMMISSIONERS

BRUCE L. WOODBURY, CHAIR
ERIN KENNY, VICE-CHAIR
DARIO HERRERA
MYRNA WILLIAMS
LANCE M. MALONE
MARY J. KINCAID
YVONNE ATKINSON GATES

CLARK COUNTY NEVADA

1999

IMPROVEMENT PLANS FOR

BUFFALO OUTFALL / COLLECTION SYSTEM PHASE 2

FROM

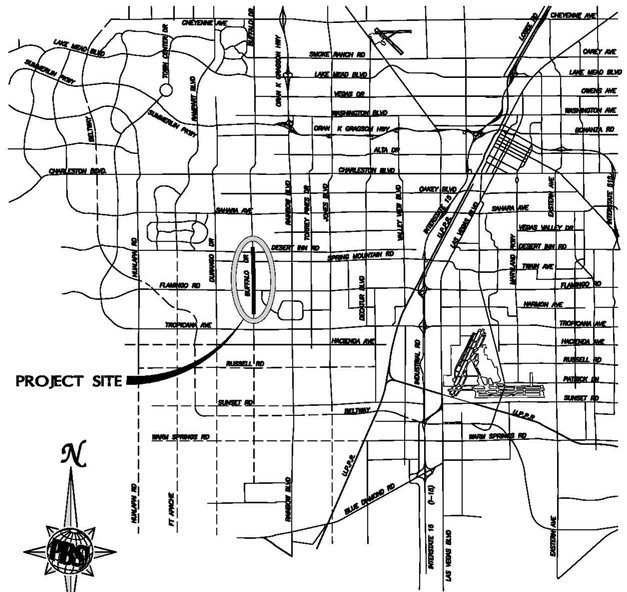
DESERT INN ROAD TO PEACE WAY

BID # 4372-99

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES



VICINITY MAP
Not to scale

COUNTY MANAGER

DALE W. ASKEW

DIRECTOR OF PUBLIC WORKS

APPROVED:

M.J. MANNING *P.E. 7299*

GENERAL MANAGER/CHIEF ENGINEER CCRFCD

APPROVED:

GALE WM. FRASER II, *P.E.*

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHWEST GAS COMPANY		
NEVADA POWER COMPANY		
C.C. SANITATION DISTRICT		
COX COMMUNICATIONS LAS VEGAS, INC.		

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY:	DATE OF APPROVAL
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		
COMMUNITY DEVELOPMENT DIVISION		
CONSTRUCTION MANAGEMENT DIVISION		
DESIGN ENGINEERING DIVISION		
MAINTENANCE MANAGEMENT DIVISION		
TRAFFIC MANAGEMENT DIVISION		
COUNTY SURVEYOR'S OFFICE		

REVISIONS					
REVISION NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE

DESIGN ENGINEERING DIVISION

COVER SHEET

L-1582B

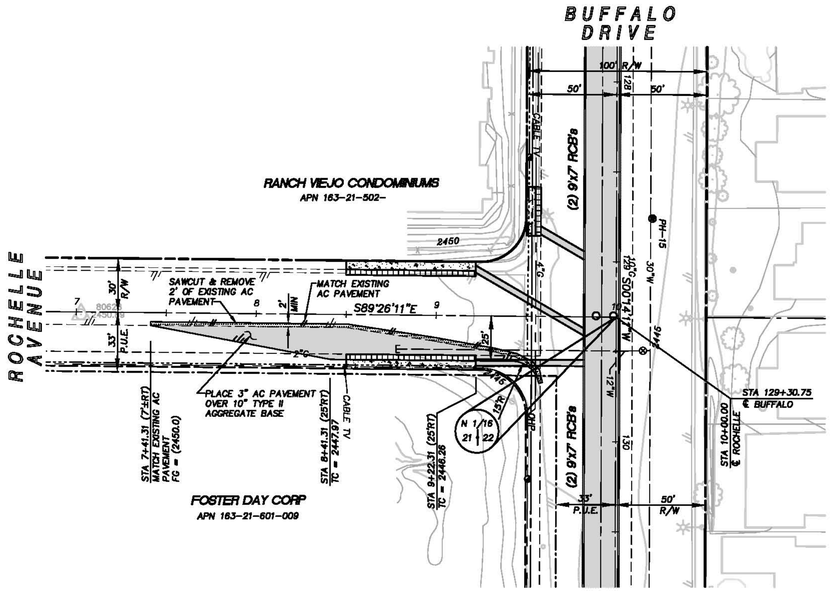
BUFFALO - PHASE 2 DESERT INN ROAD TO PEACE WAY

BID #4372-99

Avoid cutting underground Utility lines. It's costly.

Call before you Dig

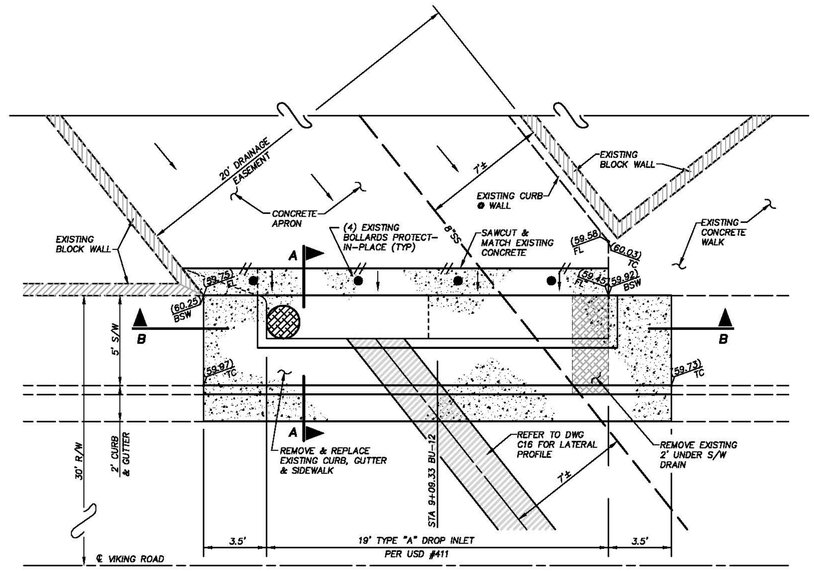
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ROCHELLE HALF STREET IMPROVEMENTS

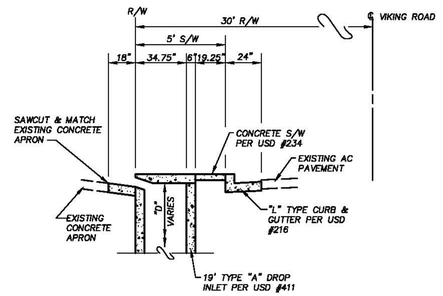
SCALE: 1" = 40'

1 / C20

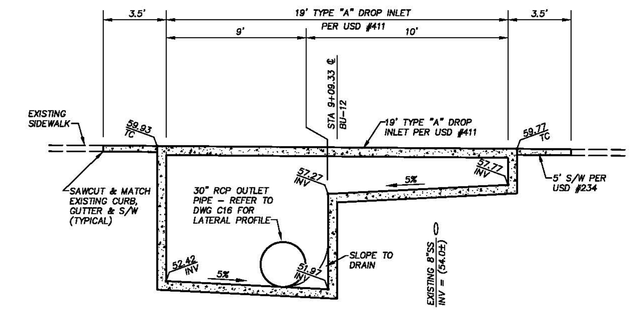


DRAINAGE EASEMENT @ VIKING ROAD

2 / C20



SECTION A-A



SECTION B-B

-RECORD DRAWING-

COMPLETED ON: 05/08/2002
BY: PBS&J
PROJECT ACCEPTANCE DATE: 05/05/2000
CONST. MANAGER: POGGEMEYER
CONTRACTOR: WELLS CARGO, INC.

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REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1998

JOB NO.: 51516
DRAWING NO.: 516-220
SCALE: HORIZ.: AS SHOWN
VERT.:

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

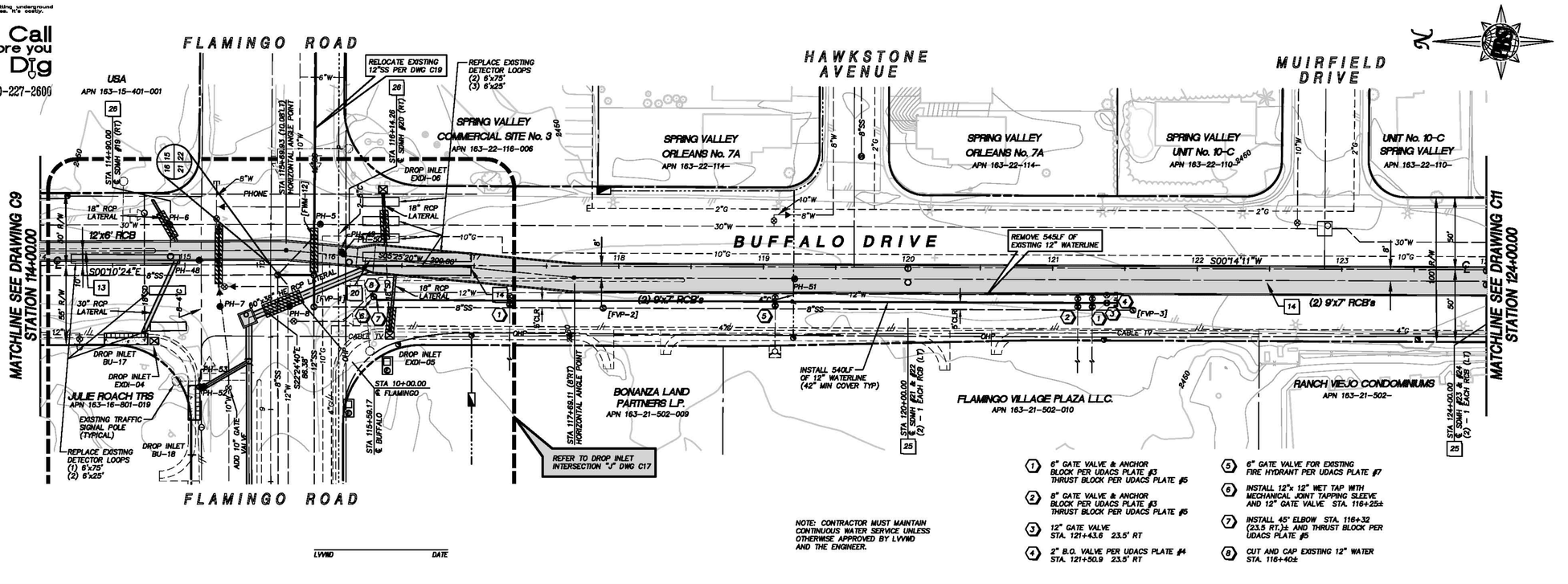
BUFFALO COLLECTION SYSTEM ENLARGEMENT DETAILS

L-1582B

DRAWING NO. C20

Avoid cutting underground utility lines. It's easy.

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1-800-227-2600

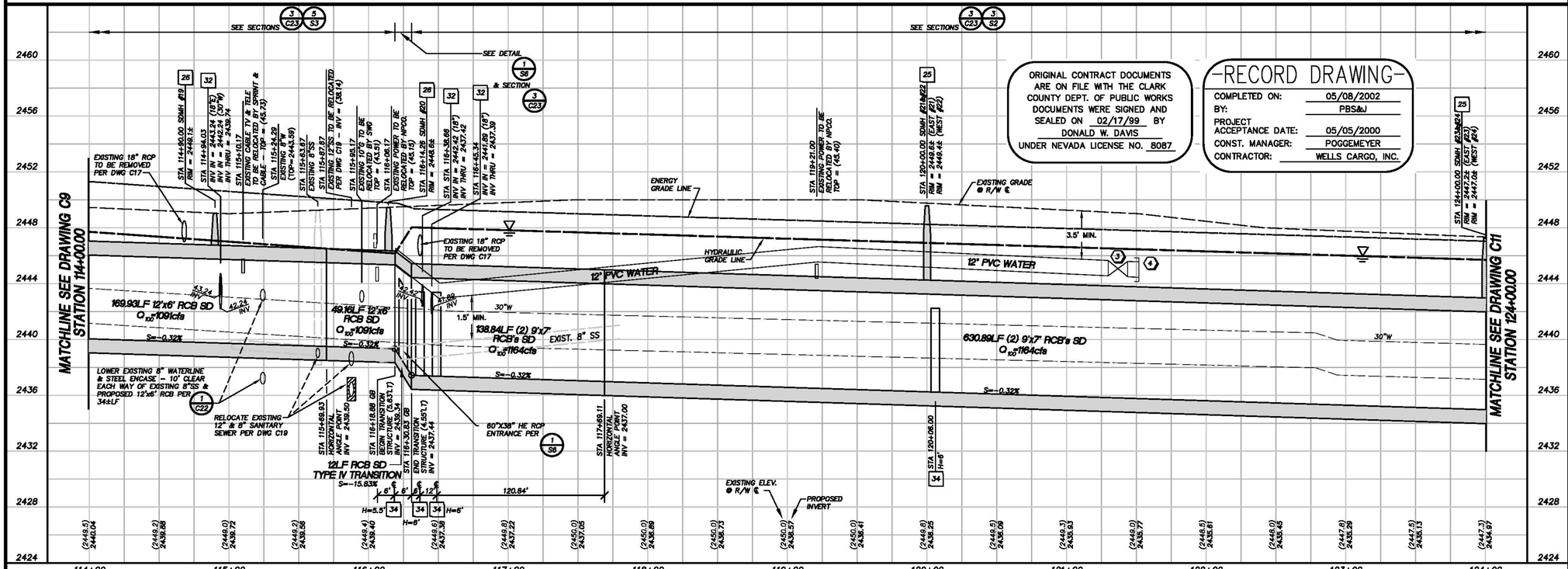


NOTE: CONTRACTOR MUST MAINTAIN CONTINUOUS WATER SERVICE UNLESS OTHERWISE APPROVED BY LVVWD AND THE ENGINEER.

1. 6" GATE VALVE & ANCHOR BLOCK PER UDACS PLATE #3 THRUST BLOCK PER UDACS PLATE #5
2. 8" GATE VALVE & ANCHOR BLOCK PER UDACS PLATE #3 THRUST BLOCK PER UDACS PLATE #5
3. 12" GATE VALVE STA. 121+43.6 23.5' RT
4. 2" B.O. VALVE PER UDACS PLATE #4 STA. 121+50.9 23.5' RT
5. 6" GATE VALVE FOR EXISTING FIRE HYDRANT PER UDACS PLATE #7
6. INSTALL 12"x 12" WET TAP WITH MECHANICAL JOINT TAPPING SLEEVE AND 12" GATE VALVE STA. 116+25±
7. INSTALL 45° ELBOW STA. 116+32 (23.5 RT.)± AND THRUST BLOCK PER UDACS PLATE #5
8. CUT AND CAP EXISTING 12" WATER STA. 116+40±

KEY NOTES

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RECORD DRAWING

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.

BASIS OF BEARING

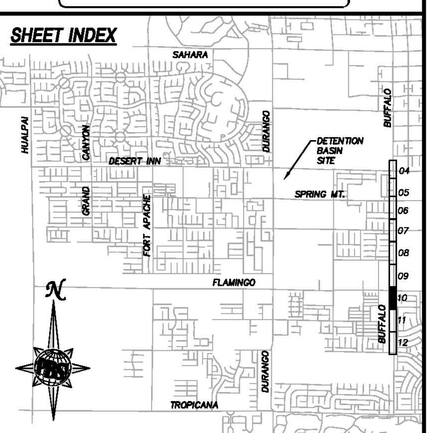
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BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

CAUTION:
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-210
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/253-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM PLAN AND PROFILE STA 114+00.00 TO STA 124+00.00

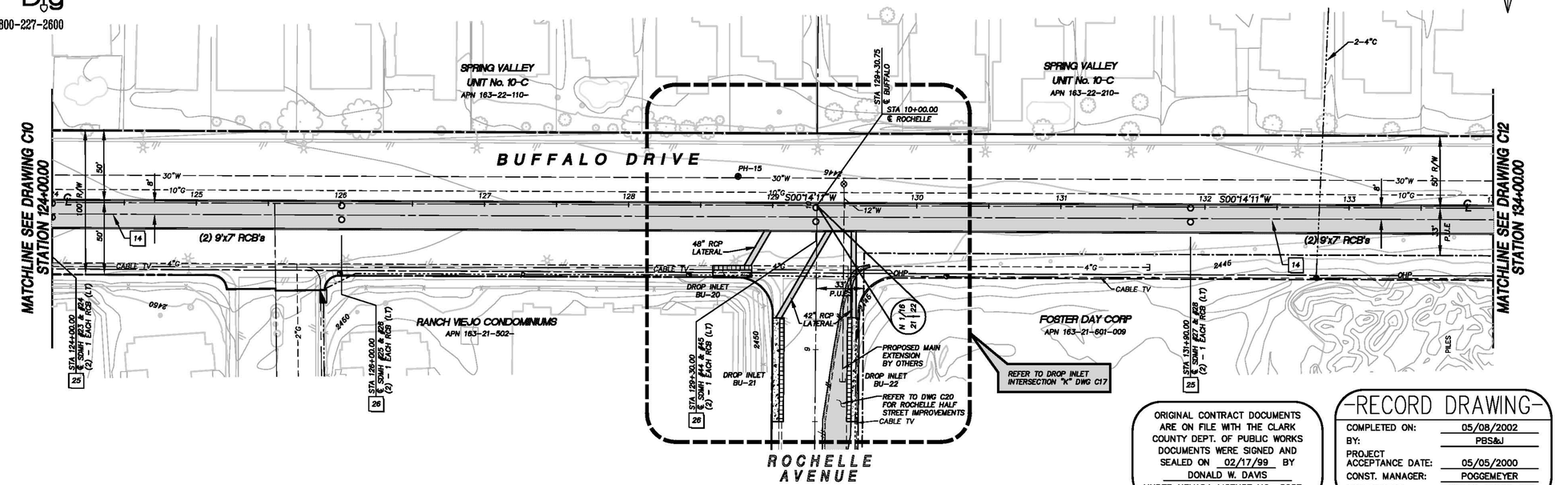
L-1582B

DRAWING NO. 10
C10
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Avoid cutting underground utility lines. It's easy.

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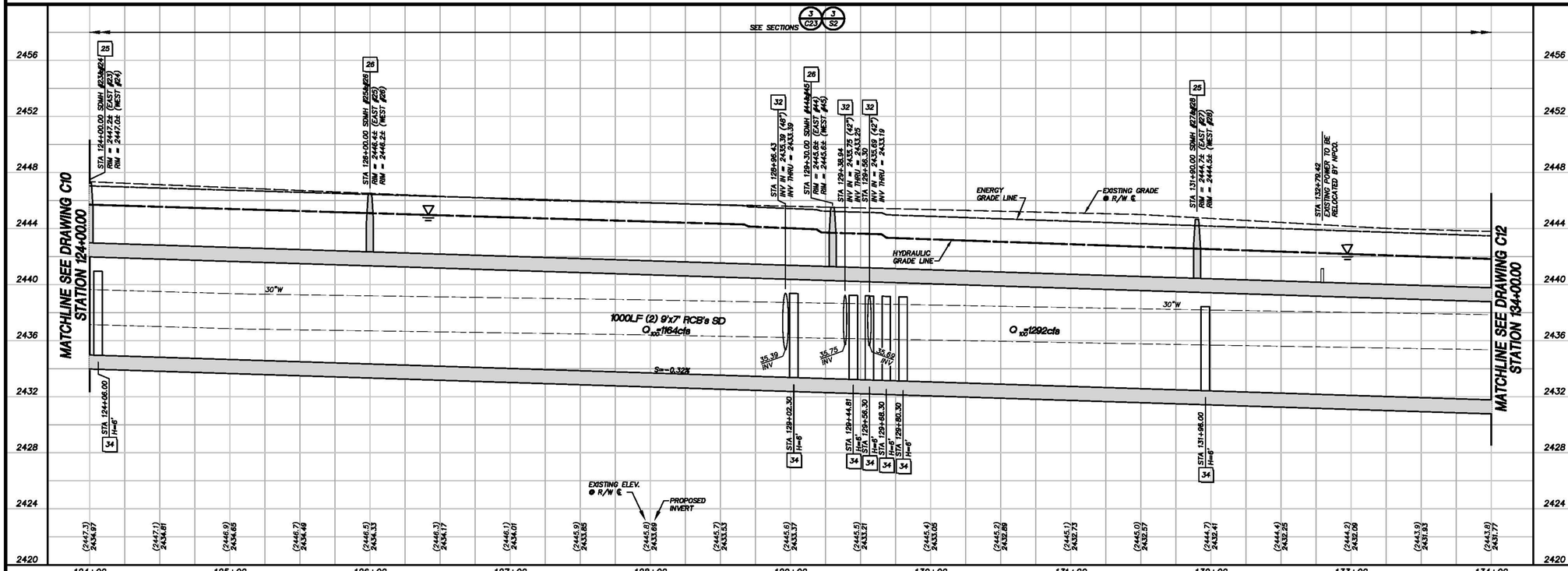
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BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
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CONTRACTOR:	WELLS CARGO, INC.



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40 0 20 40 80 160

(IN FEET)

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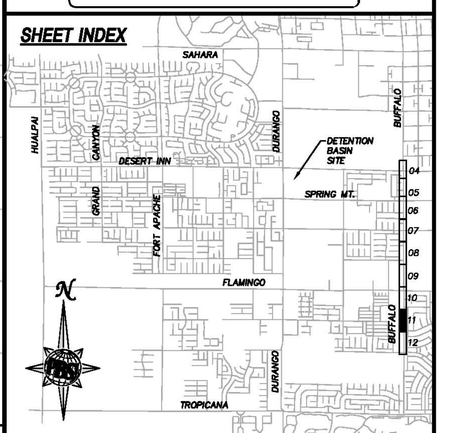
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DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

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DRAWING NO.: 516-211
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PBSJ
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM PLAN AND PROFILE STA 124+00.00 TO STA 134+00.00

L-1582B

DRAWING NO. C11 | 11/30

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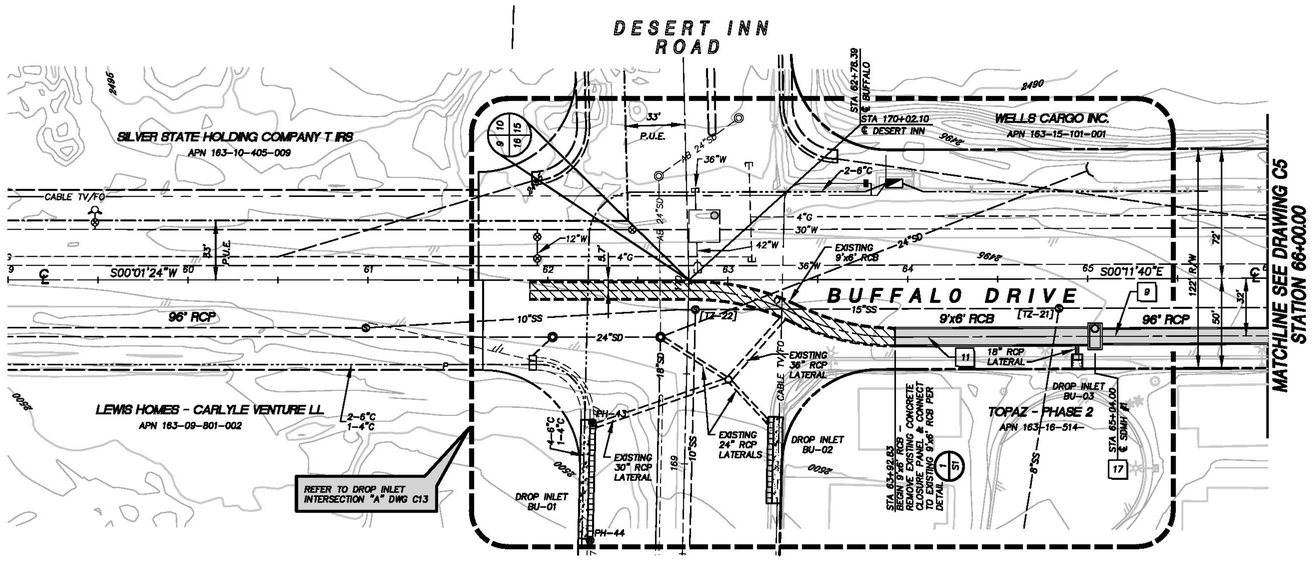
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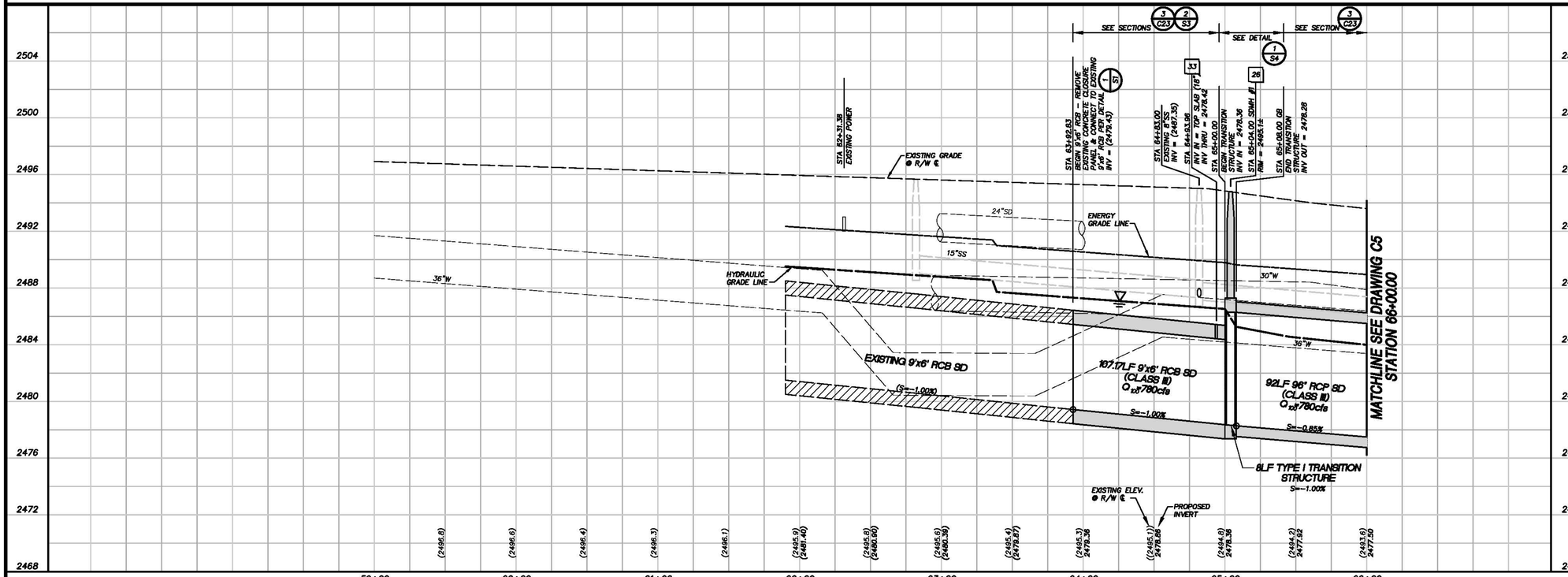
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(IN FEET)

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BASIS OF BEARING

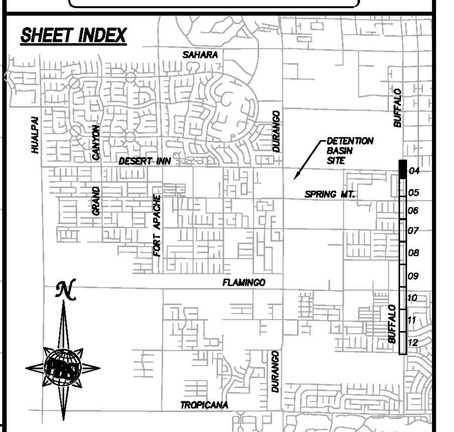
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-204
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

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L-1582B

DRAWING NO. C4

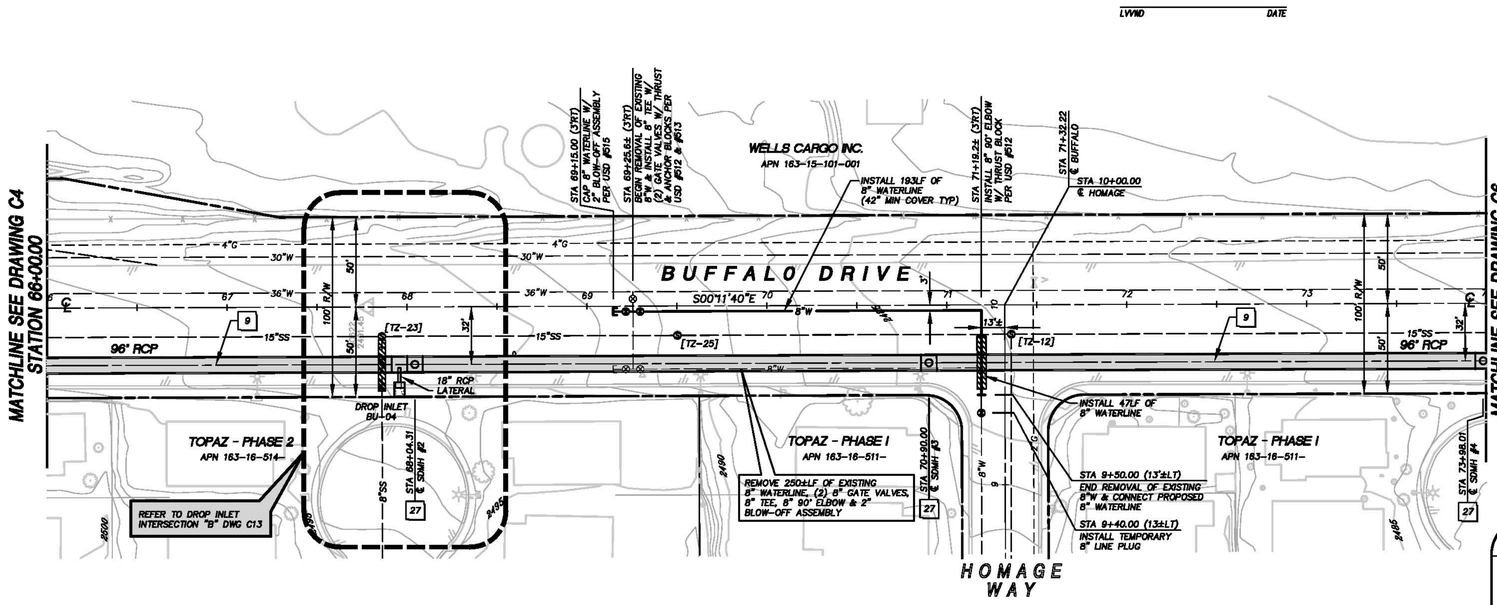
4 / 30

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LVVWD DATE



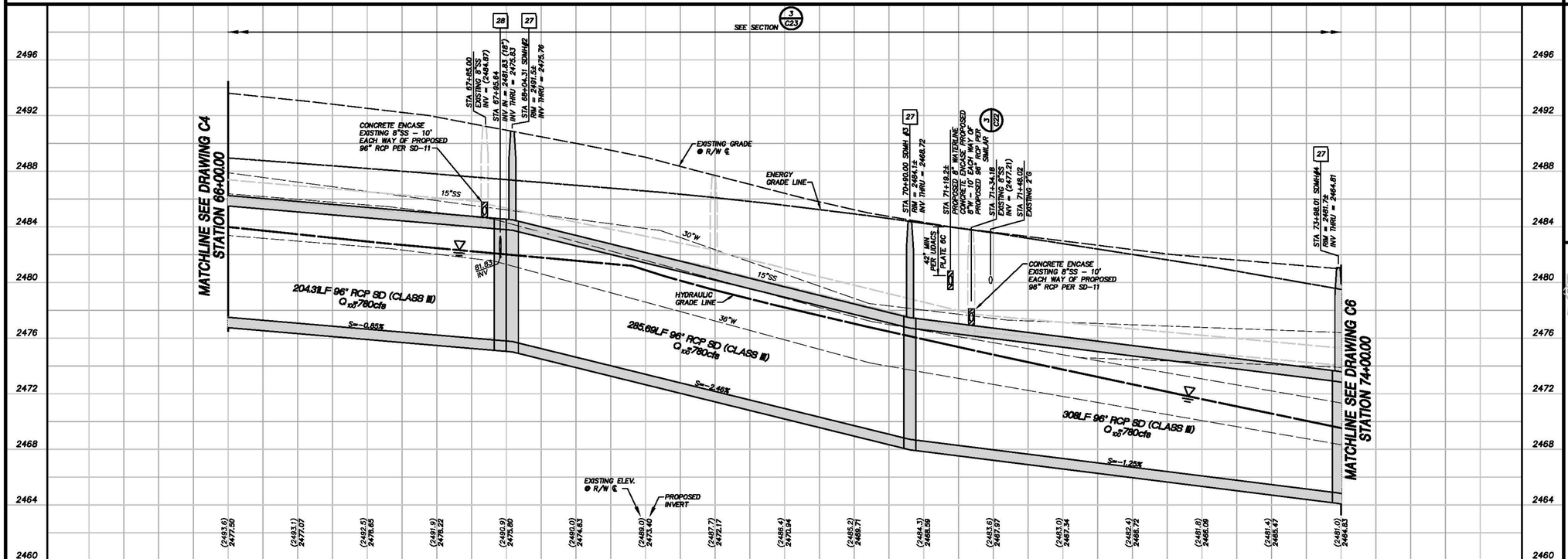
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PROJECT ACCEPTANCE DATE:	05/05/2000
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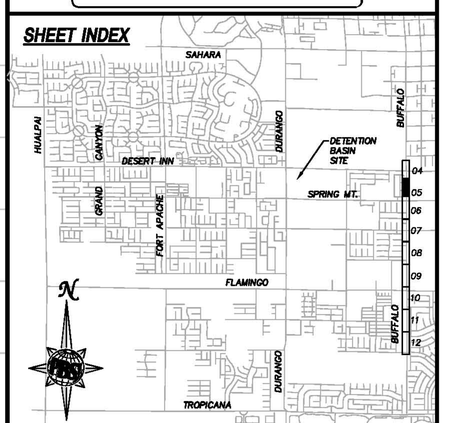
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-205
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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CLARK COUNTY NEVADA

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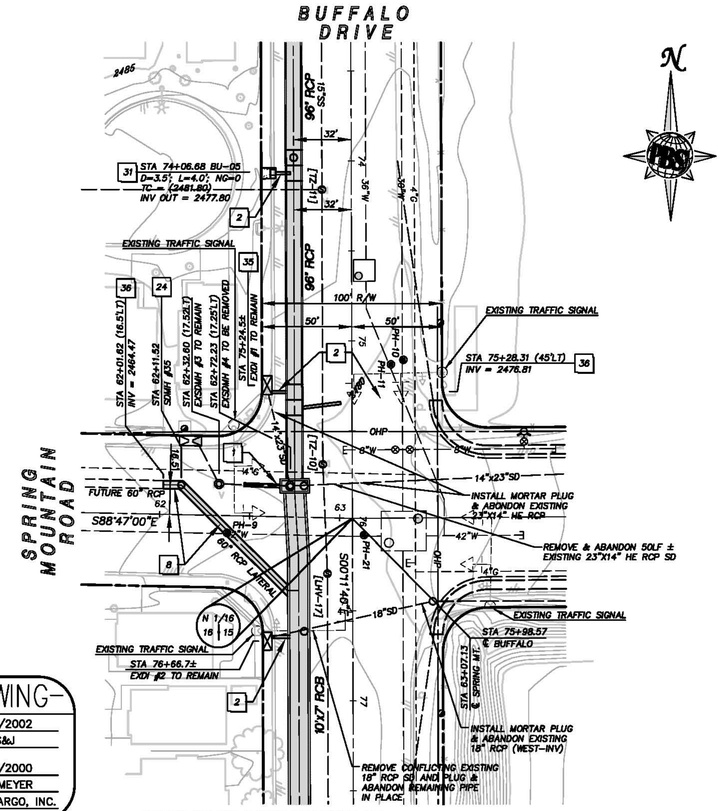
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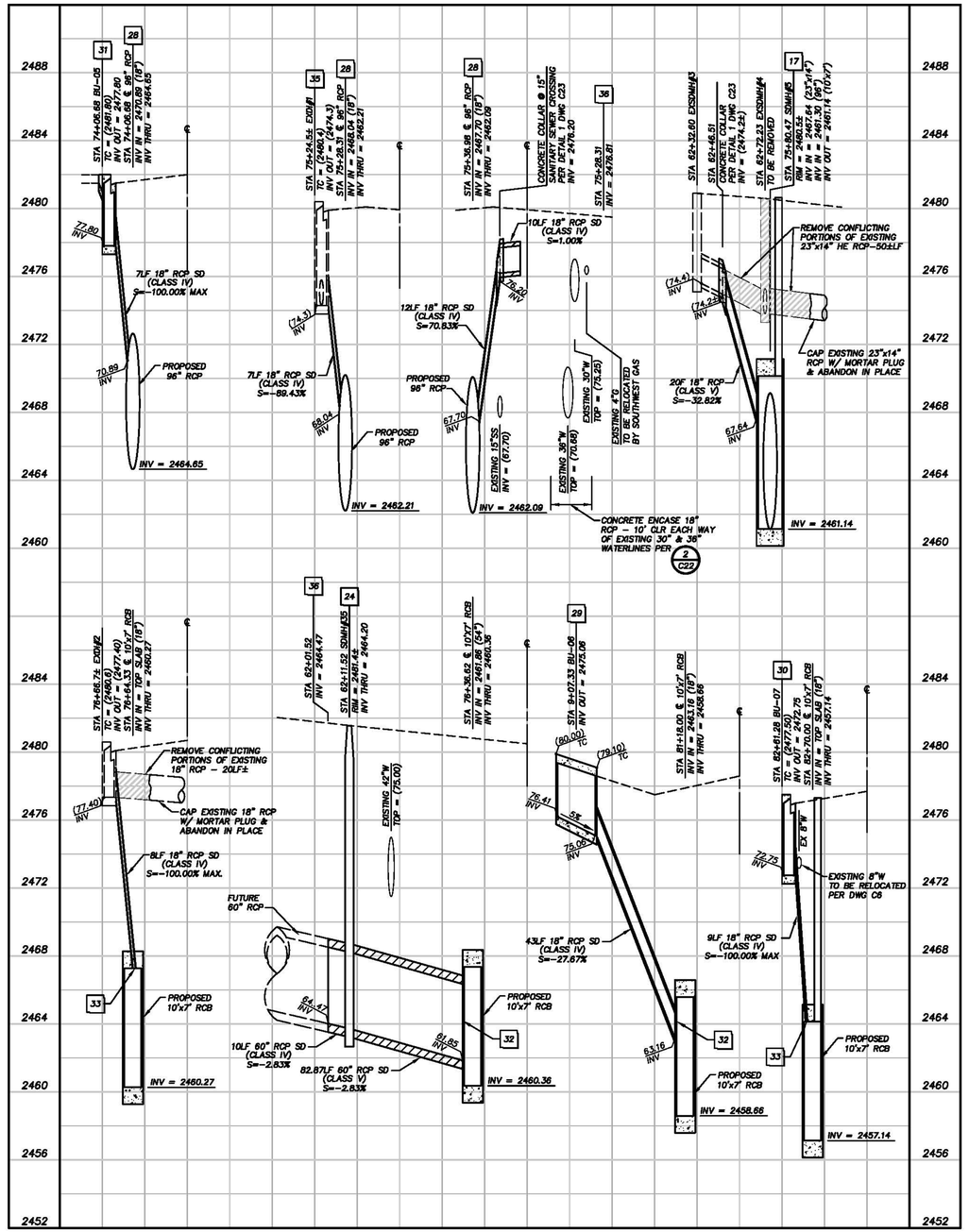
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DROP INLET INTERSECTION "C"



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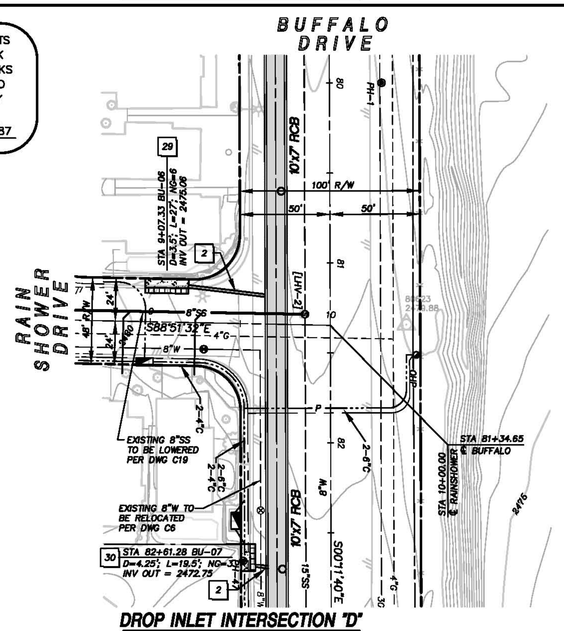
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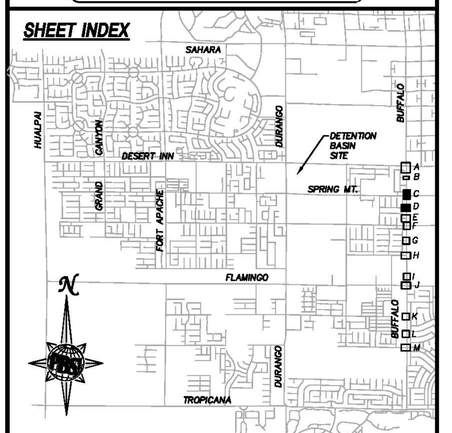
COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

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DROP INLET INTERSECTION "D"

SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-214
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2
- DESERT INN ROAD TO PEACE WAY -
BUFFALO OUTFALL/COLLECTION SYSTEM
DROP INLET INTERSECTIONS "C" & "D"

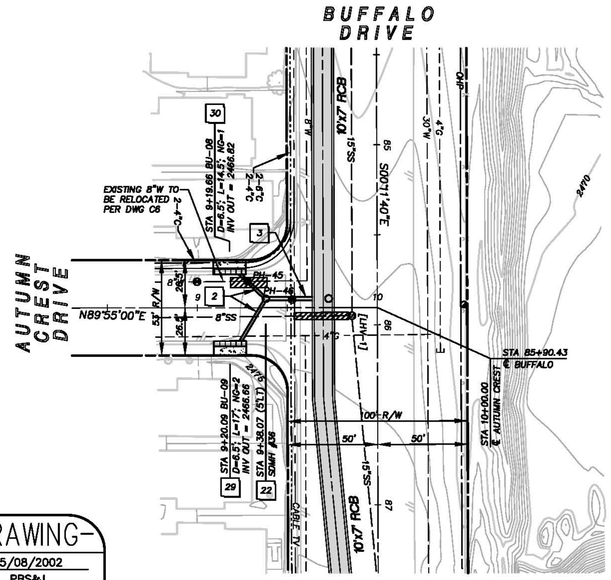
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DRAWING NO. C14 14/30

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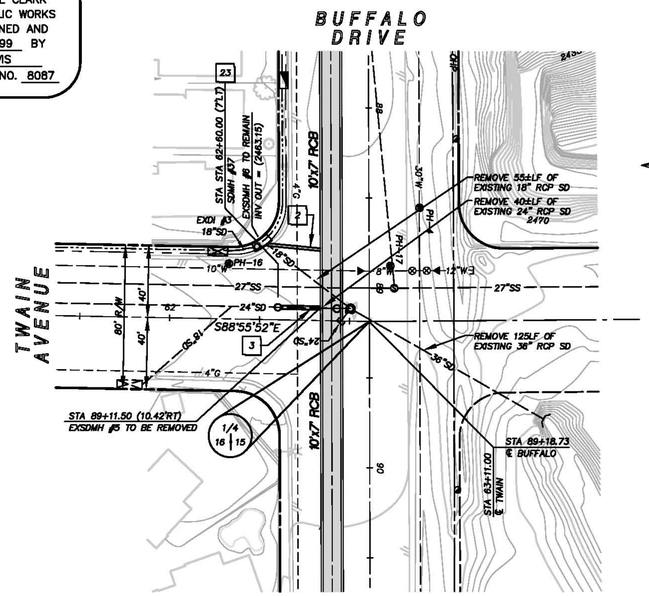


DROP INLET INTERSECTION "E"

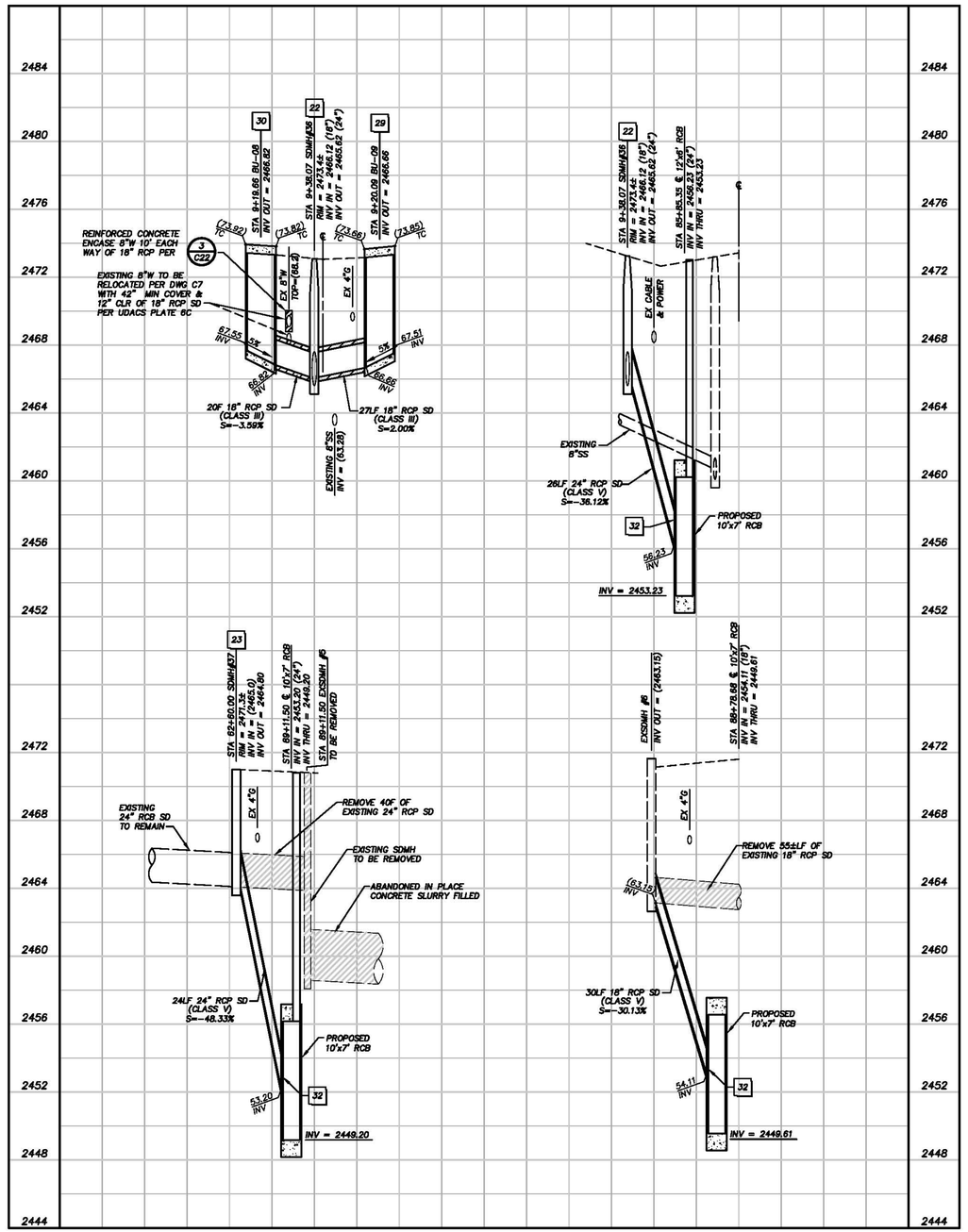
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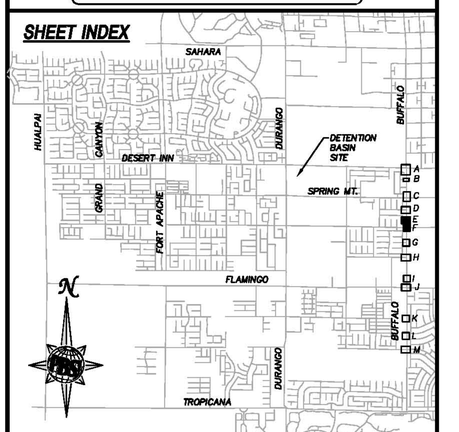
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DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

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DRAWING NO.: 516-215
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PBSJ
901 North Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Telephone: 702/253-7275 Fax: 702/263-7200
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CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

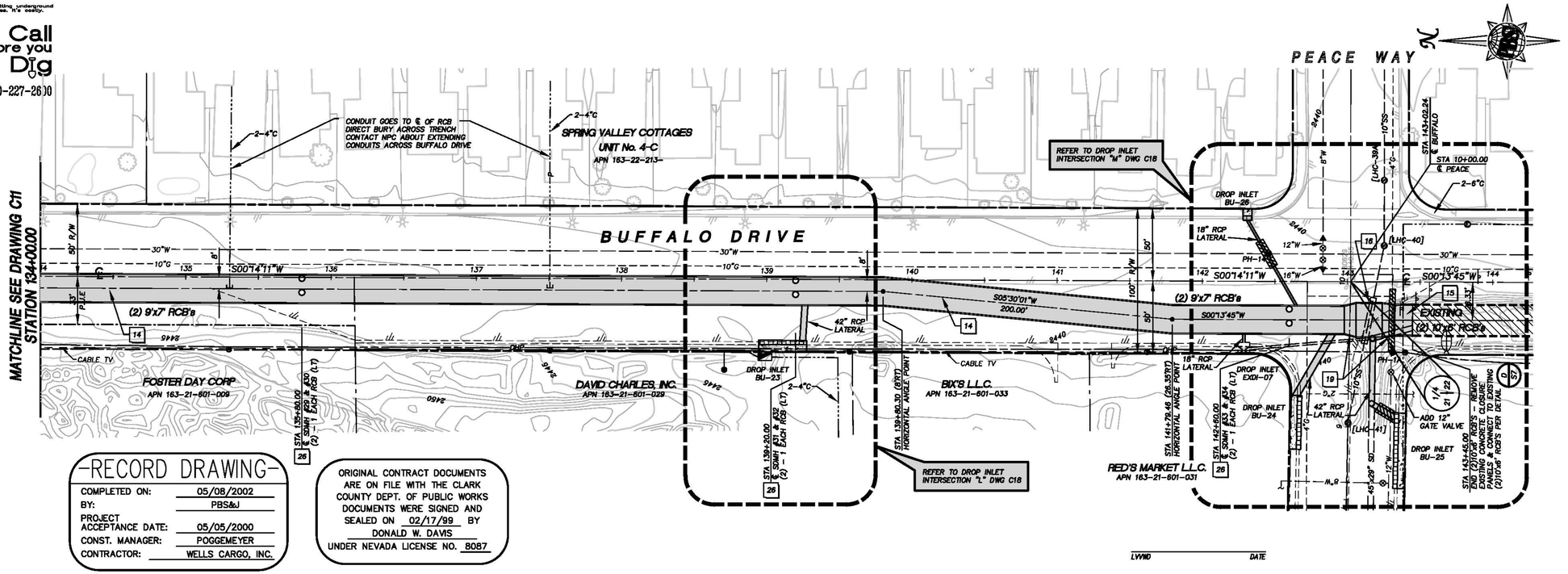
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L-1582B

DRAWING NO. C15 15/30

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-RECORD DRAWING-

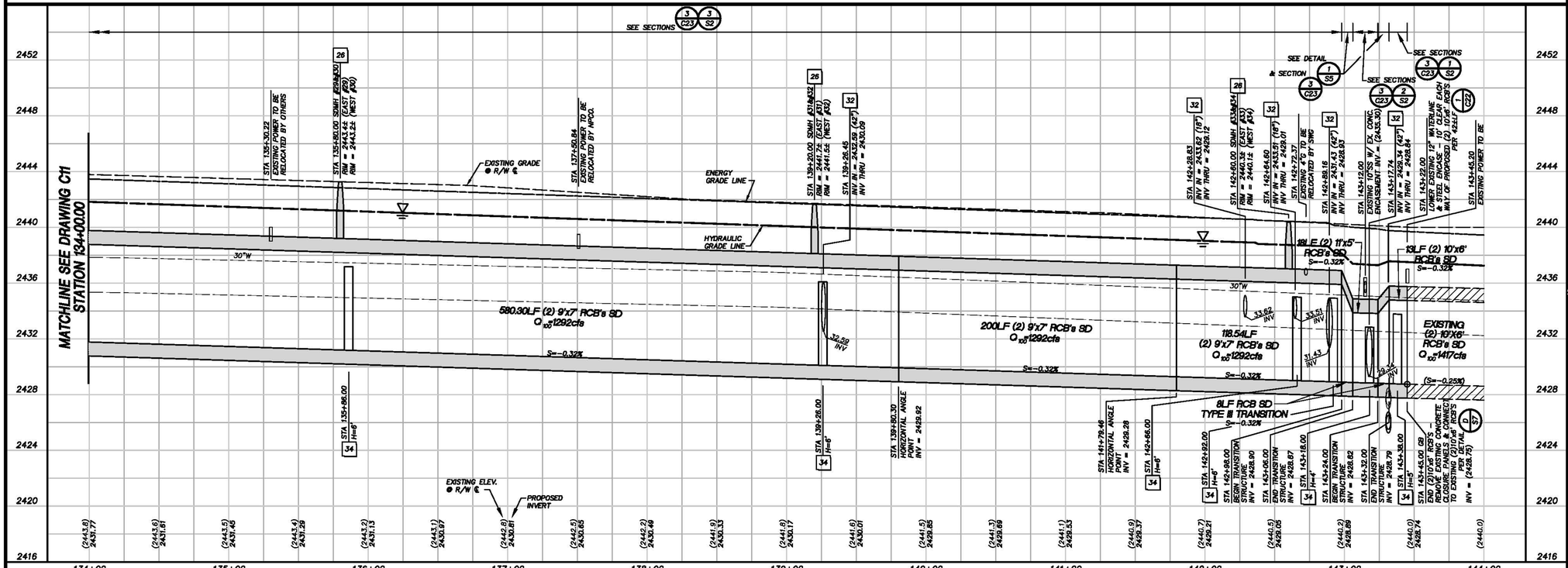
COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
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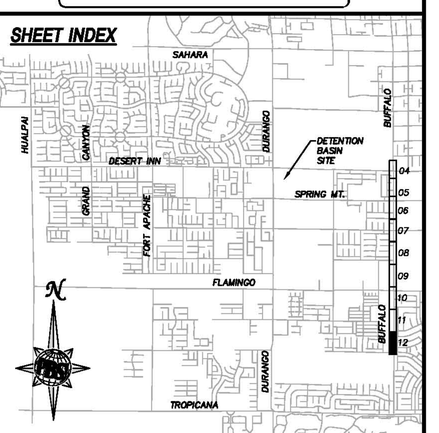
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-212
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 900
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

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CLARK COUNTY NEVADA

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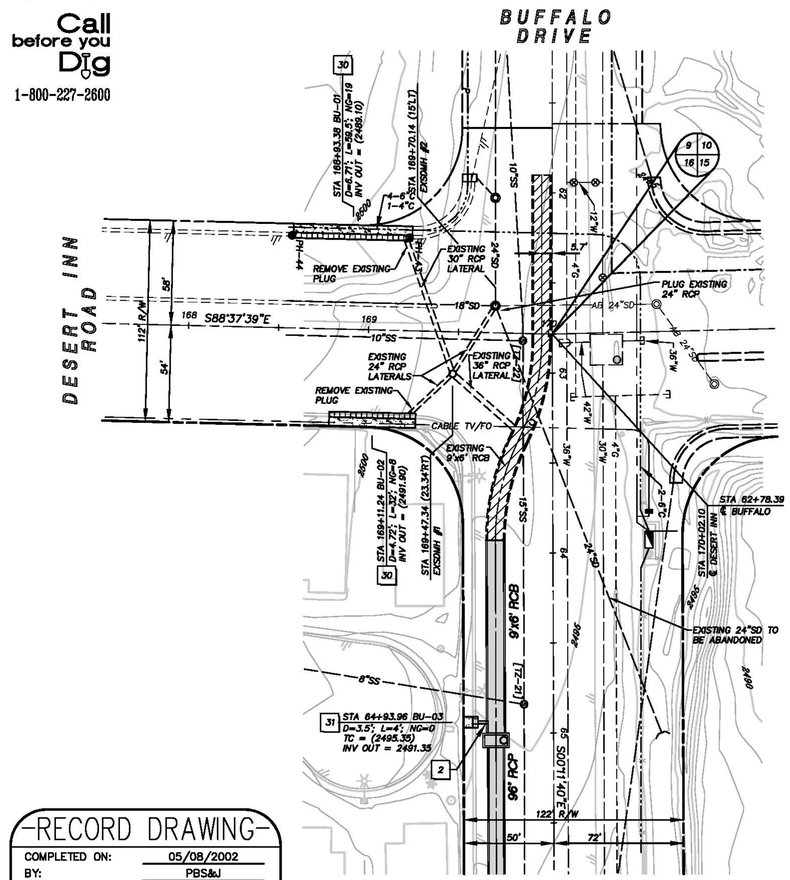
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DRAWING NO. C12 | 12/30

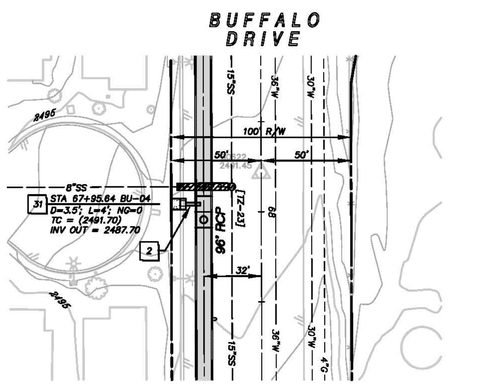
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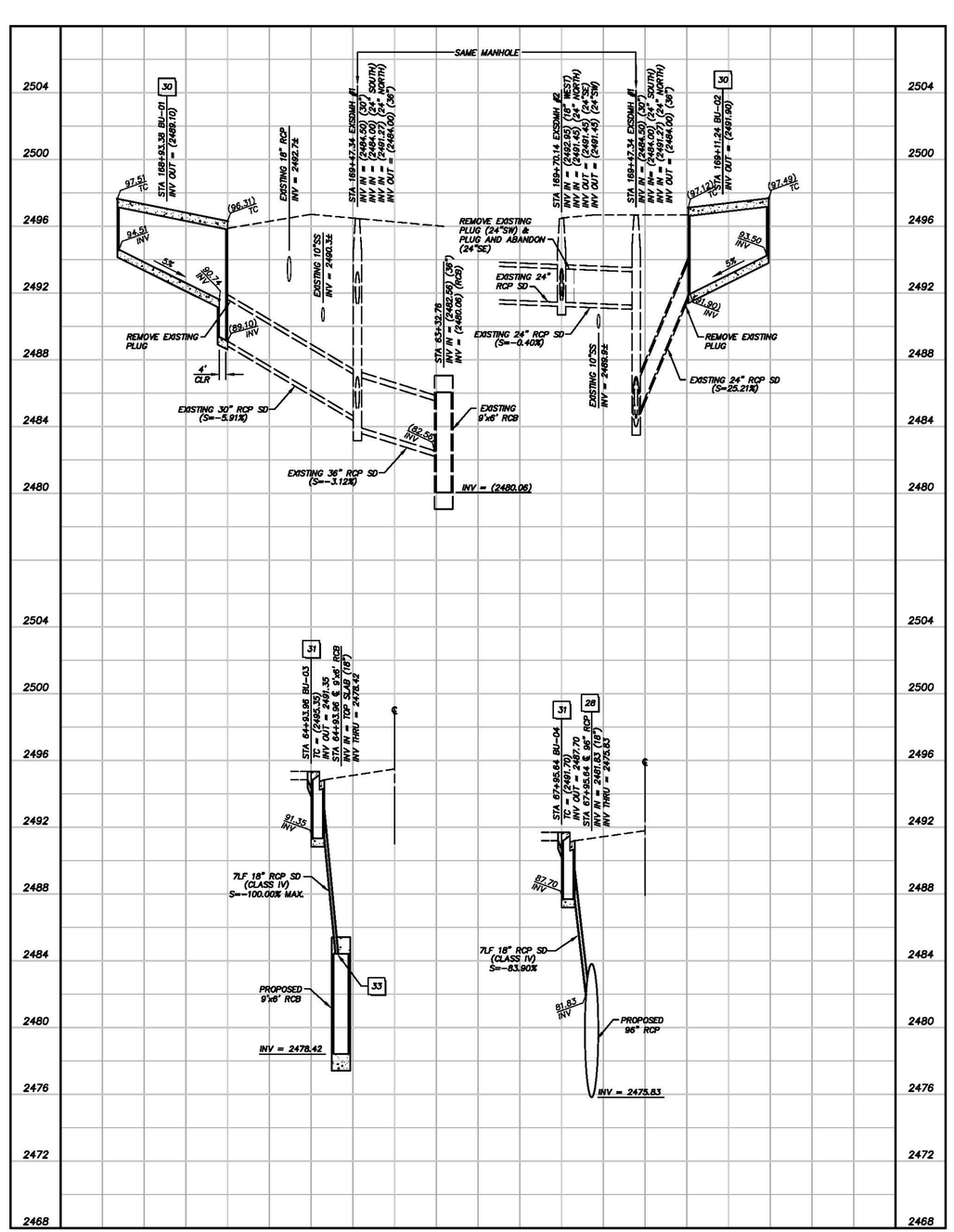
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DROP INLET INTERSECTION "A"



DROP INLET INTERSECTION "B"



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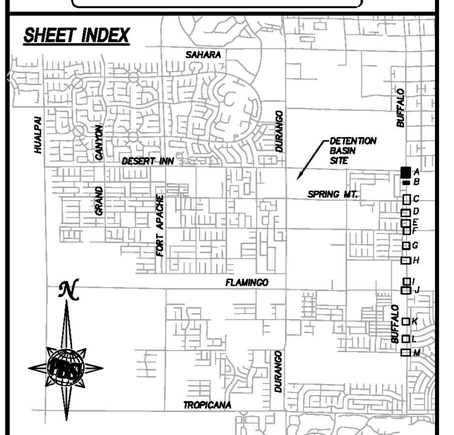
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REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-213
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO COLLECTION SYSTEM DROP INLET INTERSECTIONS "A" & "B"

L-1582B

DRAWING NO. C13 13/30

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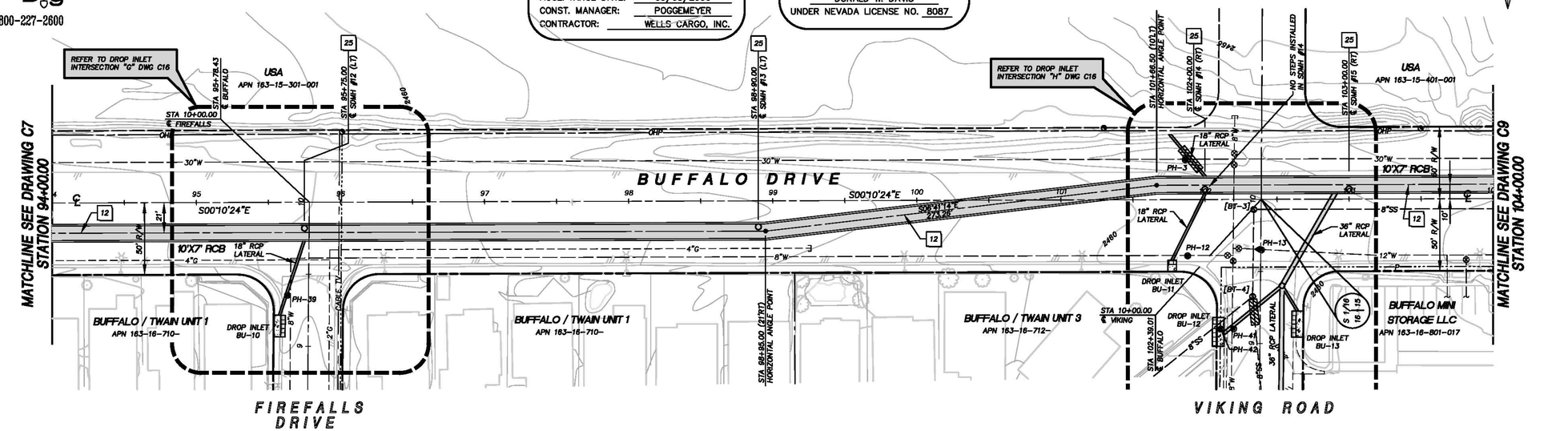
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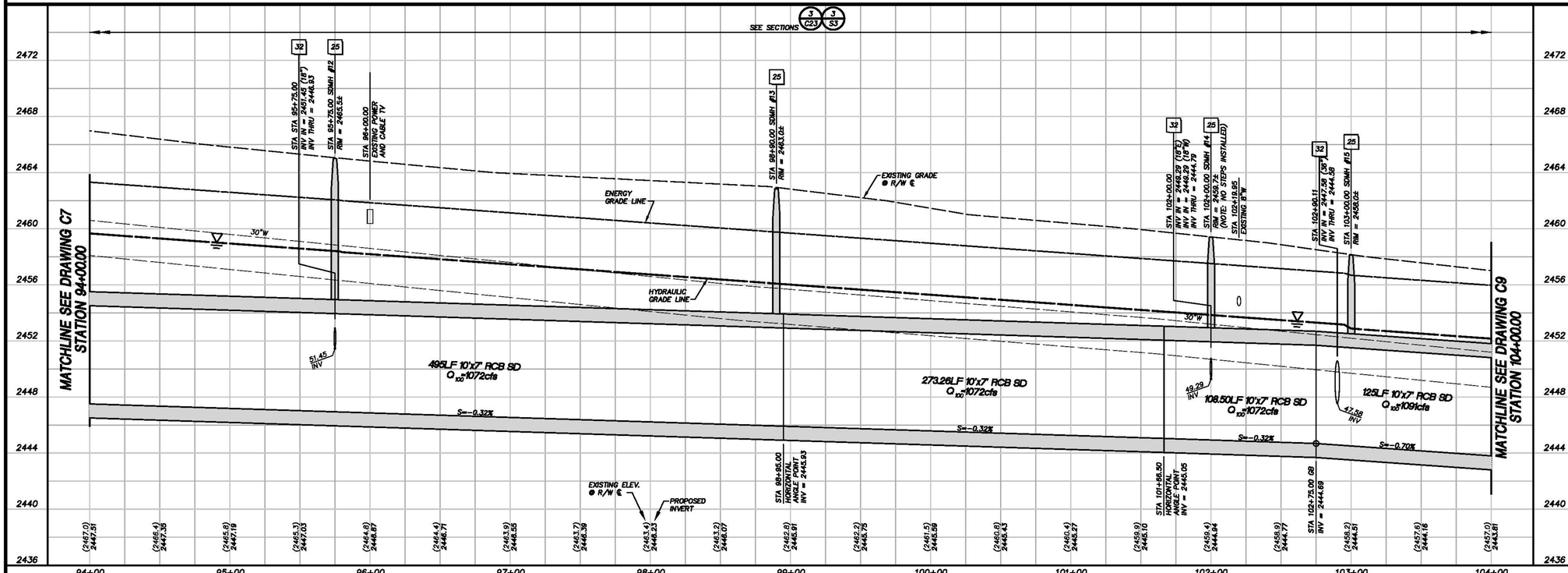
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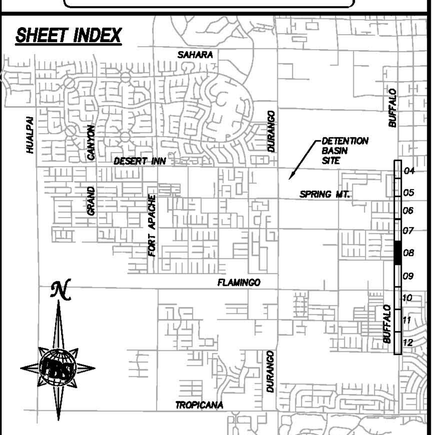
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-208
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 900
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM PLAN AND PROFILE STA 94+00.00 TO STA 104+00.00

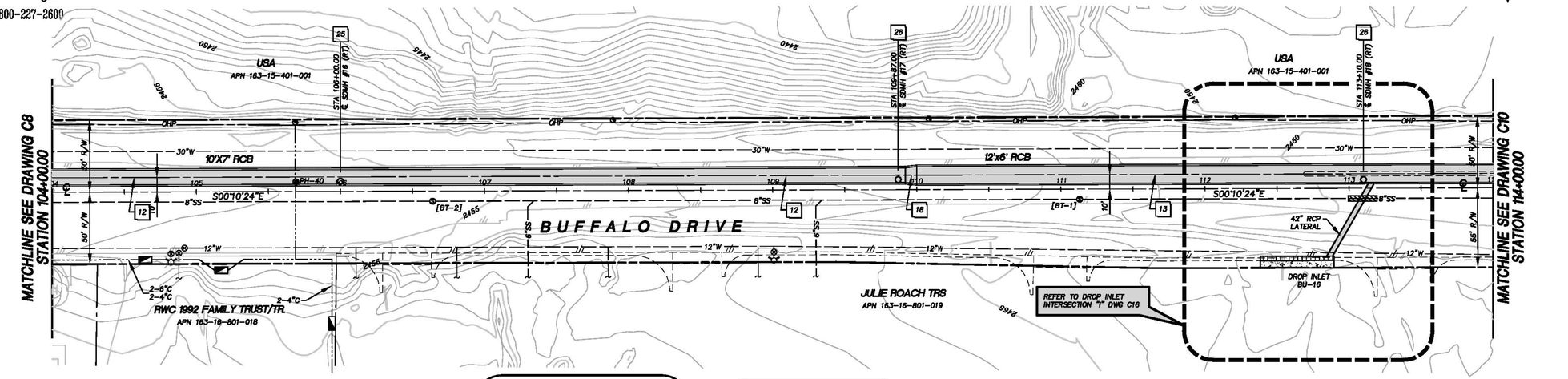
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DRAWING NO. C8 8/30

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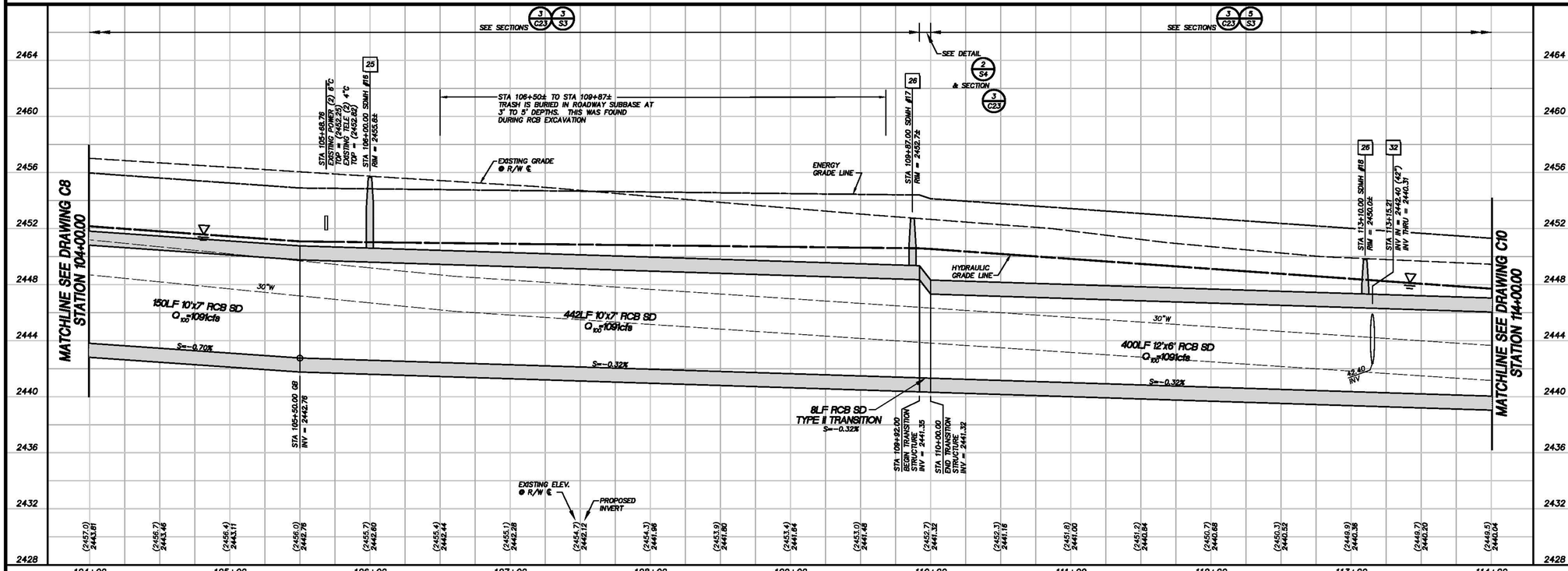
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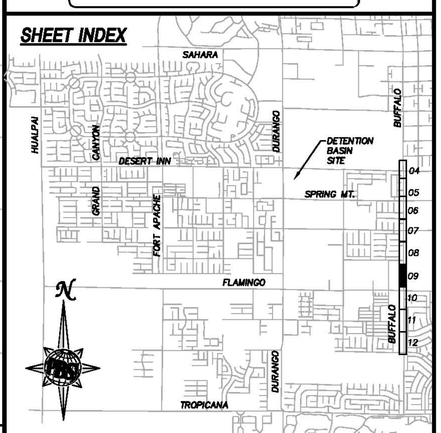
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CAUTION:
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-209
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/253-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

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L-1582B

DRAWING NO. 9 / C9 / 30

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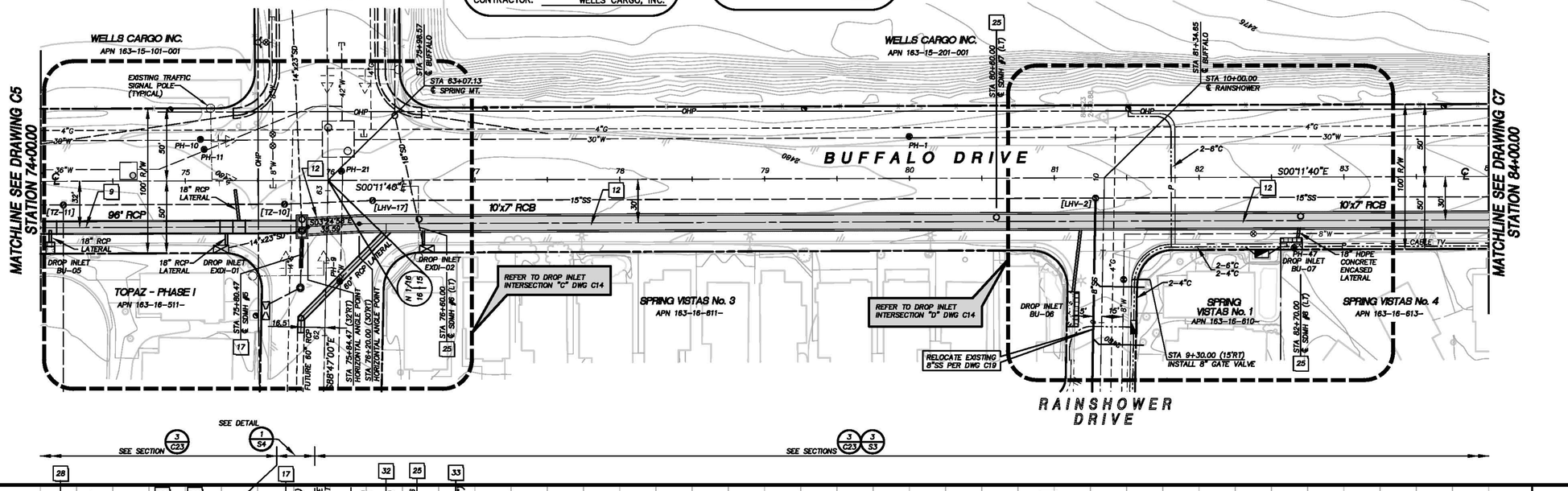
COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
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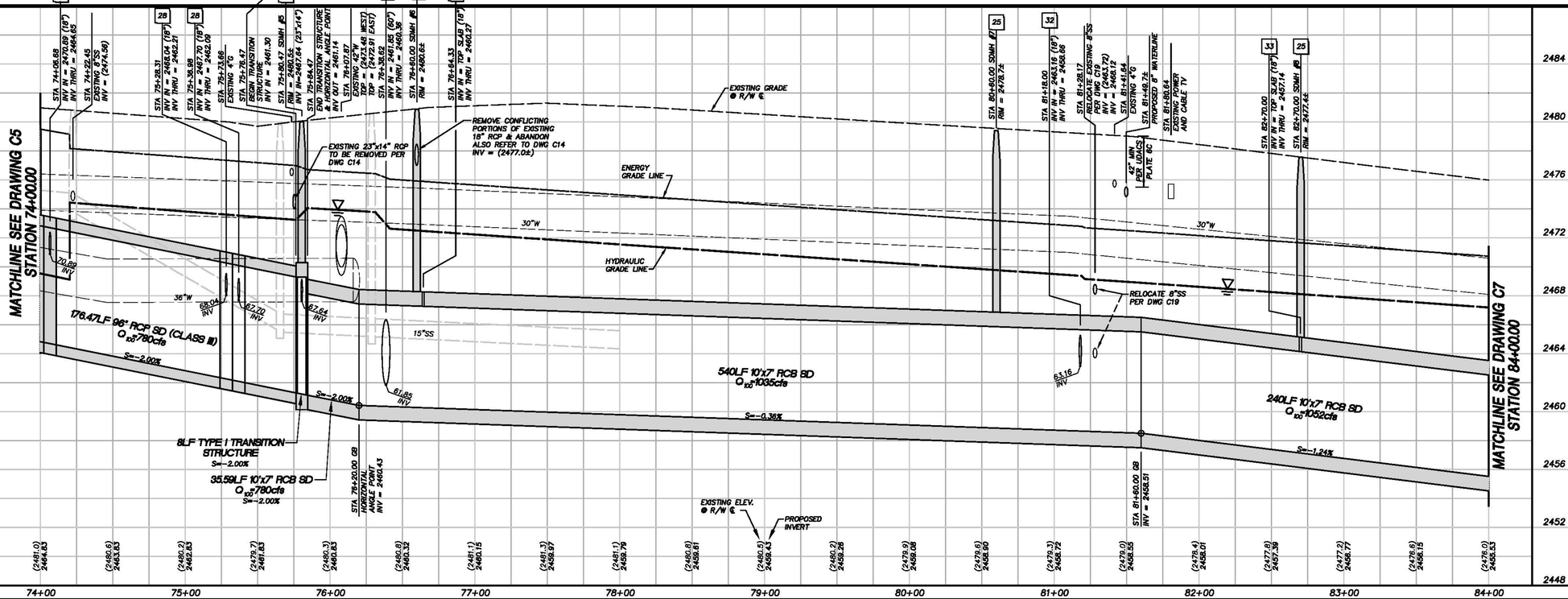
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CLARK COUNTY SANITATION DISTRICT DATE

SIGNATURE OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR ANY APPROVAL OF ANY VIOLATION OF CLARK COUNTY SANITATION DISTRICT RULES,M REGULATIONS, OR DESIGN AND CONSTRUCTION STANDARDS. THE APPROVAL OF THESE DRAWINGS DOES NOT GUARANTEE CAPACITY IN THE DISTRICT'S COLLECTION OR TREATMENT SYSTEM.

LVWD DATE





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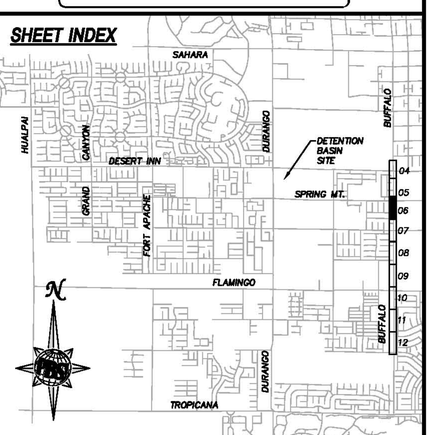
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REVISIONS

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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-206
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES
901 North Green Valley Pkwy
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CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM PLAN AND PROFILE STA 74+00.00 TO STA 84+00.00

L-1582B

DRAWING NO. 6 / C6 / 30

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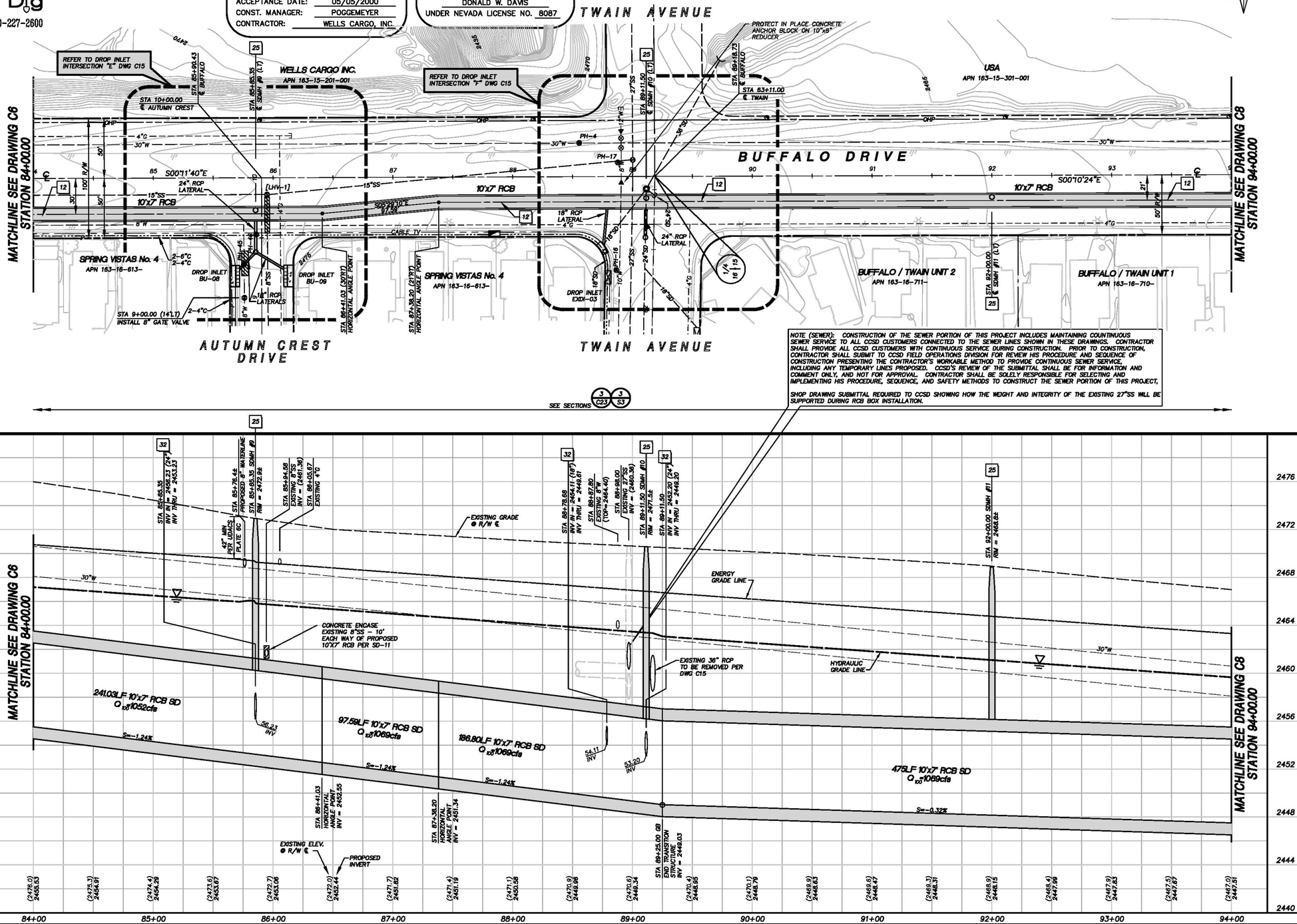
1-800-227-2600

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
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CONTRACTOR:	WELLS CARGO, INC.

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NOTE (SEWER): CONSTRUCTION OF THE SEWER PORTION OF THIS PROJECT INCLUDES MAINTAINING COUNTINUOUS SEWER SERVICE TO ALL CCSD CUSTOMERS CONNECTED TO THE SEWER LINES SHOWN IN THESE DRAWINGS. CONTRACTOR SHALL PROVIDE ALL CCSD CUSTOMERS WITH CONTINUOUS SERVICE DURING CONSTRUCTION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO CCSD FIELD OPERATIONS DIVISION FOR REVIEW HIS PROCEDURE AND SEQUENCE OF CONSTRUCTION PRESENTING THE CONTRACTOR'S WORKABLE METHOD TO PROVIDE CONTINUOUS SEWER SERVICE, INCLUDING ANY TEMPORARY LINES PROPOSED. CCSD'S REVIEW OF THE SUBMITTAL SHALL BE FOR INFORMATION AND COMMENT ONLY, AND NOT FOR APPROVAL. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SELECTING AND IMPLEMENTING HIS PROCEDURE, SEQUENCE, AND SAFETY METHODS TO CONSTRUCT THE SEWER PORTION OF THIS PROJECT.

SHOP DRAWING SUBMITTAL REQUIRED TO CCSD SHOWING HOW THE WEIGHT AND INTEGRITY OF THE EXISTING 27"SS WILL BE SUPPORTED DURING RCB BOX INSTALLATION.

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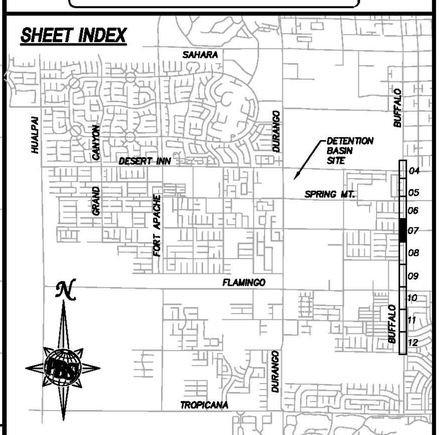
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-207
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
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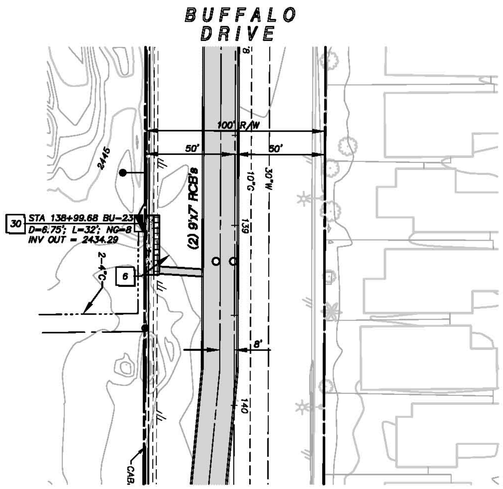
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DRAWING NO. 7 C7 / 30

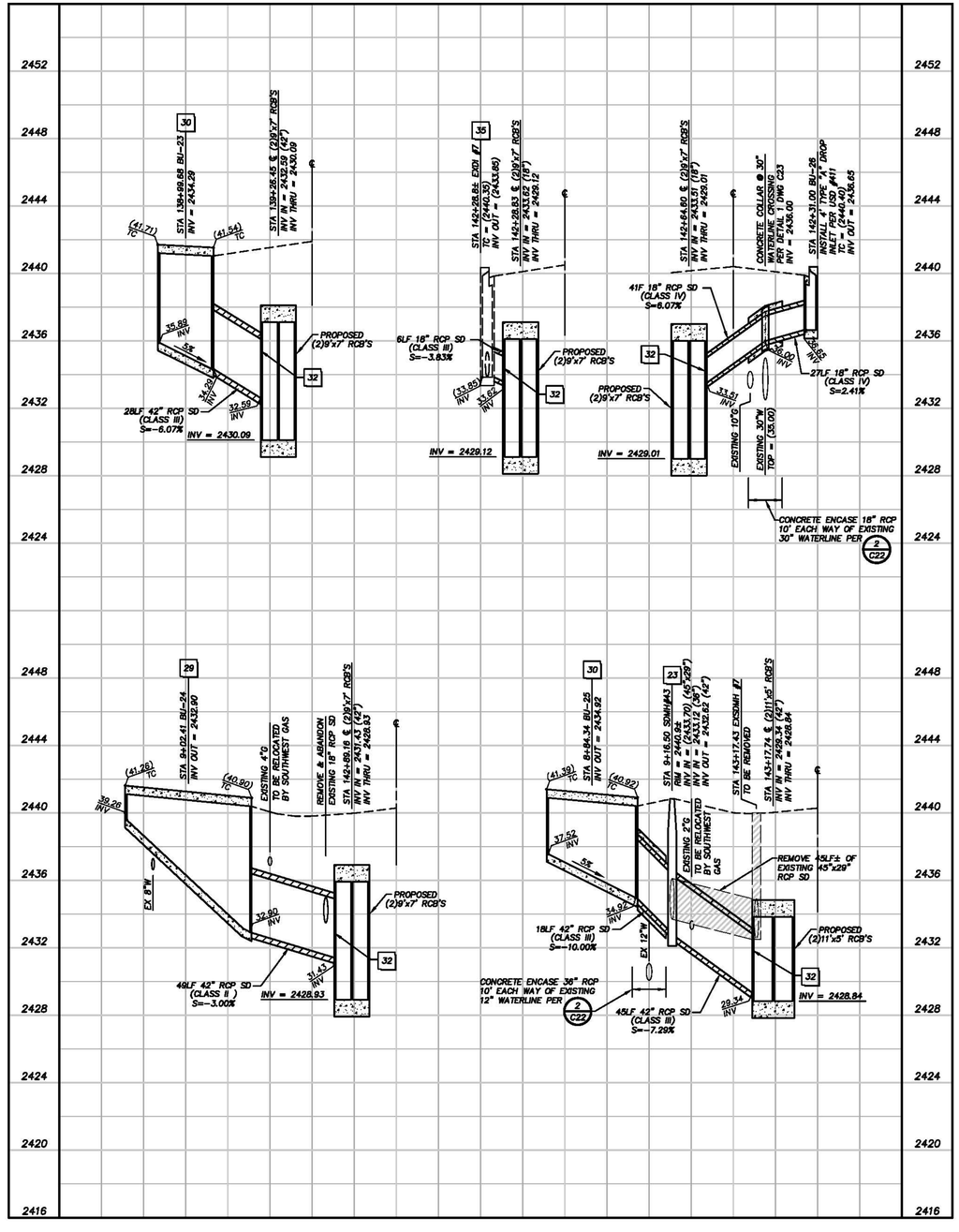
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DROP INLET INTERSECTION "L"



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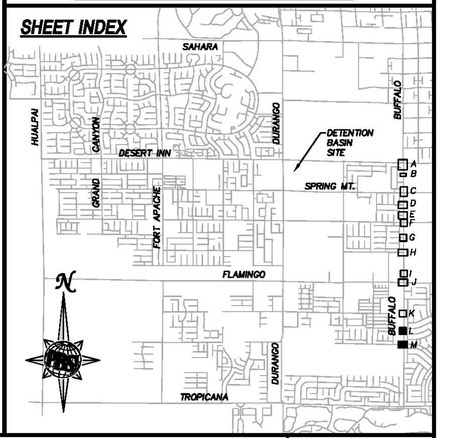
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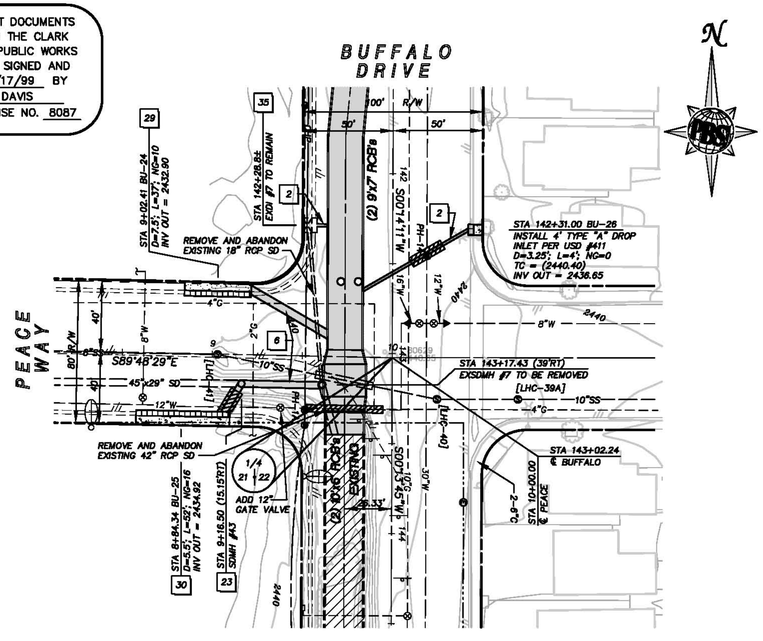
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-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

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DROP INLET INTERSECTION "M"

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-218
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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901 North Green Valley Pkwy
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Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM DROP INLET INTERSECTIONS "L" & "M"

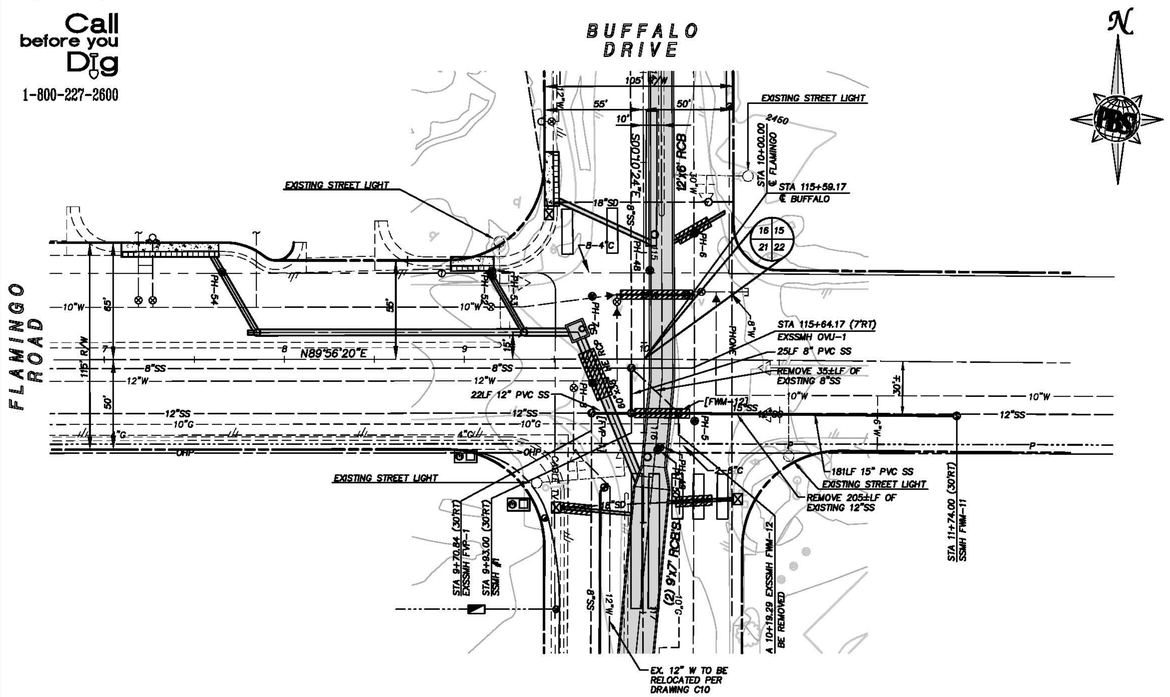
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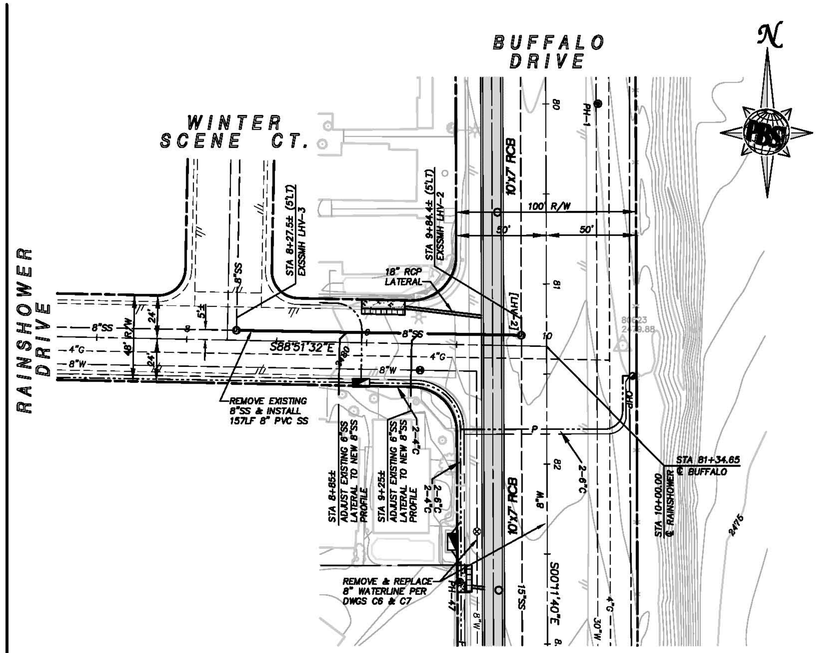
DRAWING NO. C18 | 18/30

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KEY NOTES

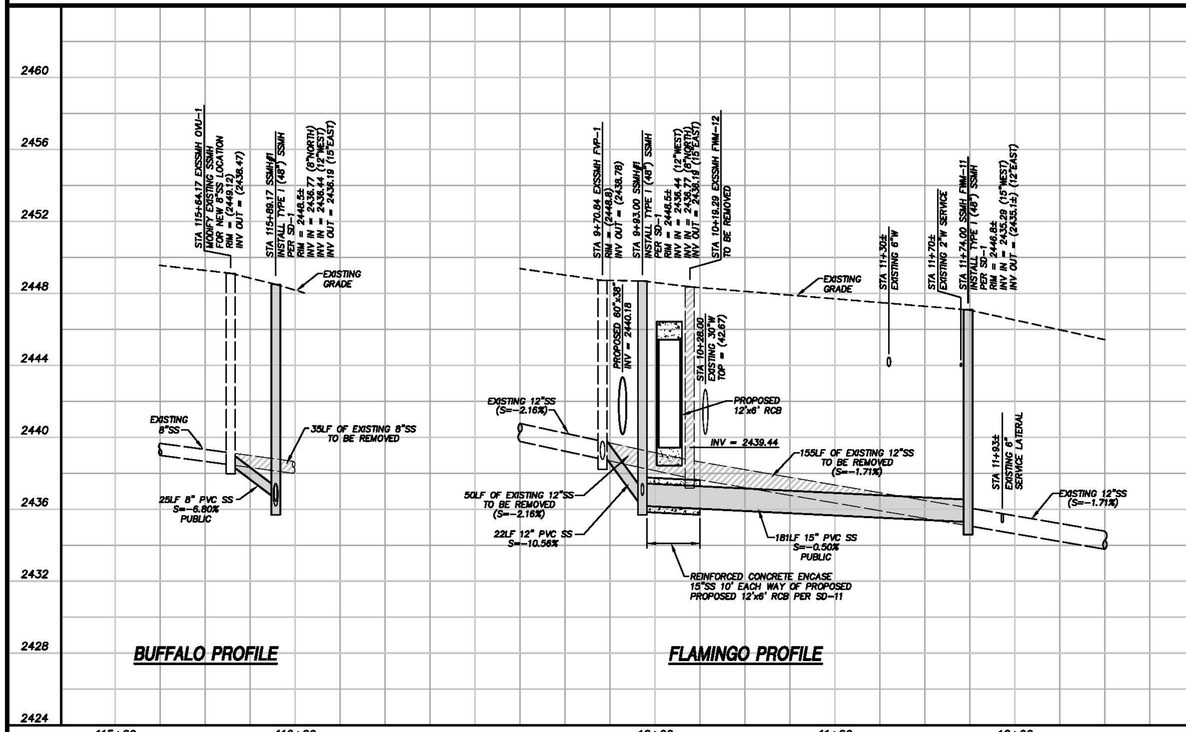
NOTE (SEWER): CONTRACTOR SHALL MAINTAIN CONTINUOUS SEWER SERVICE TO ALL CCSD CUSTOMERS. SEWER LATERALS CUT DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR PER CCSD DESIGN AND CONSTRUCTION STANDARDS.

RECORD DRAWING

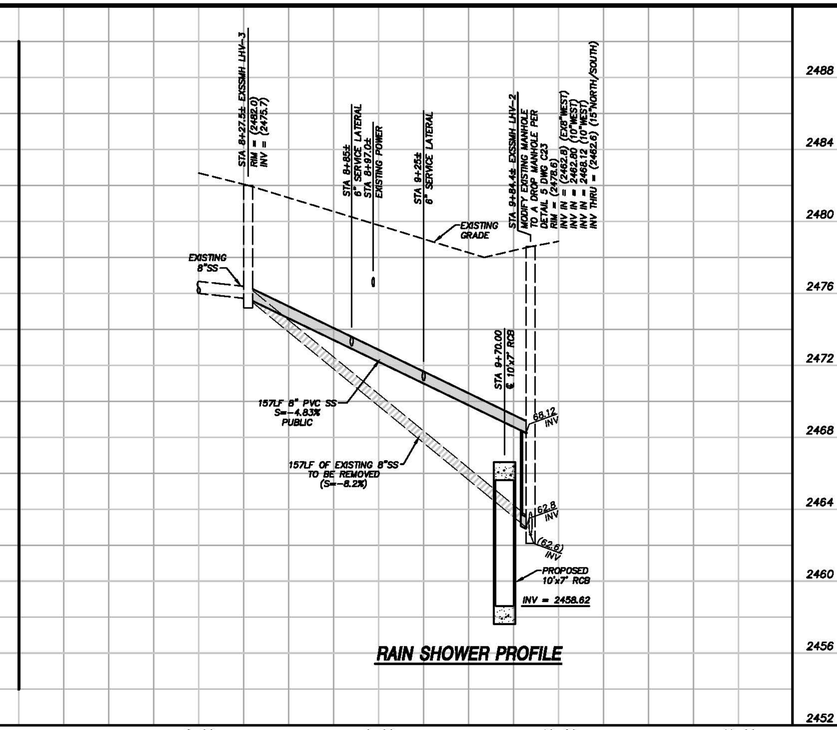
COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 02/17/99 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

LVWMD DATE



BUFFALO PROFILE **FLAMINGO PROFILE**



RAIN SHOWER PROFILE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

HORZ: 1 inch = 40 ft.

VERT: 1 inch = 4 ft.

BASIS OF BEARING

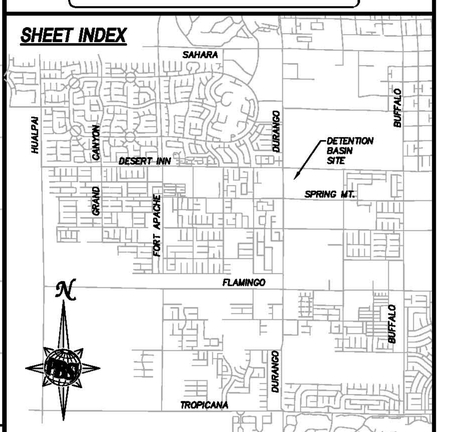
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1998

JOB NO.: 51516
DRAWING NO.: 516-219
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBSJ
901 North Green Valley Pkwy Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/253-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2
- DESERT INN ROAD TO PEACE WAY -
SANITARY SEWER RELOCATION PLAN & PROFILE
- FLAMINGO ROAD & RAINSHOWER DRIVE -

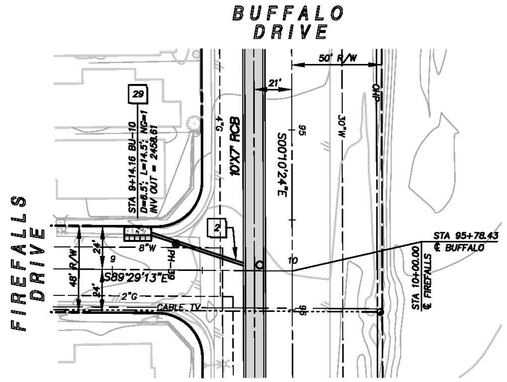
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DRAWING NO. C19 | 19/30

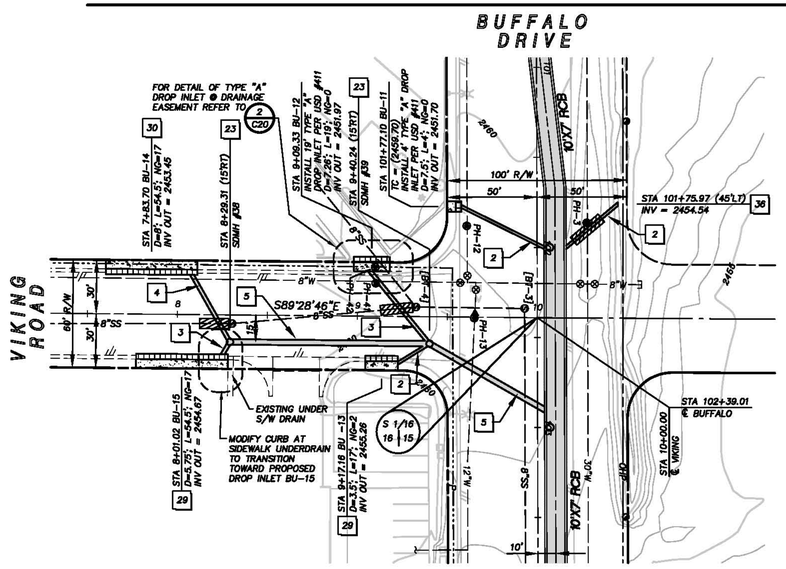
Avoid cutting underground utility lines. It's easy.

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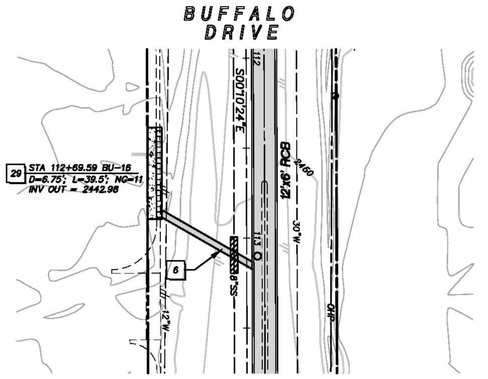
1-800-227-2600



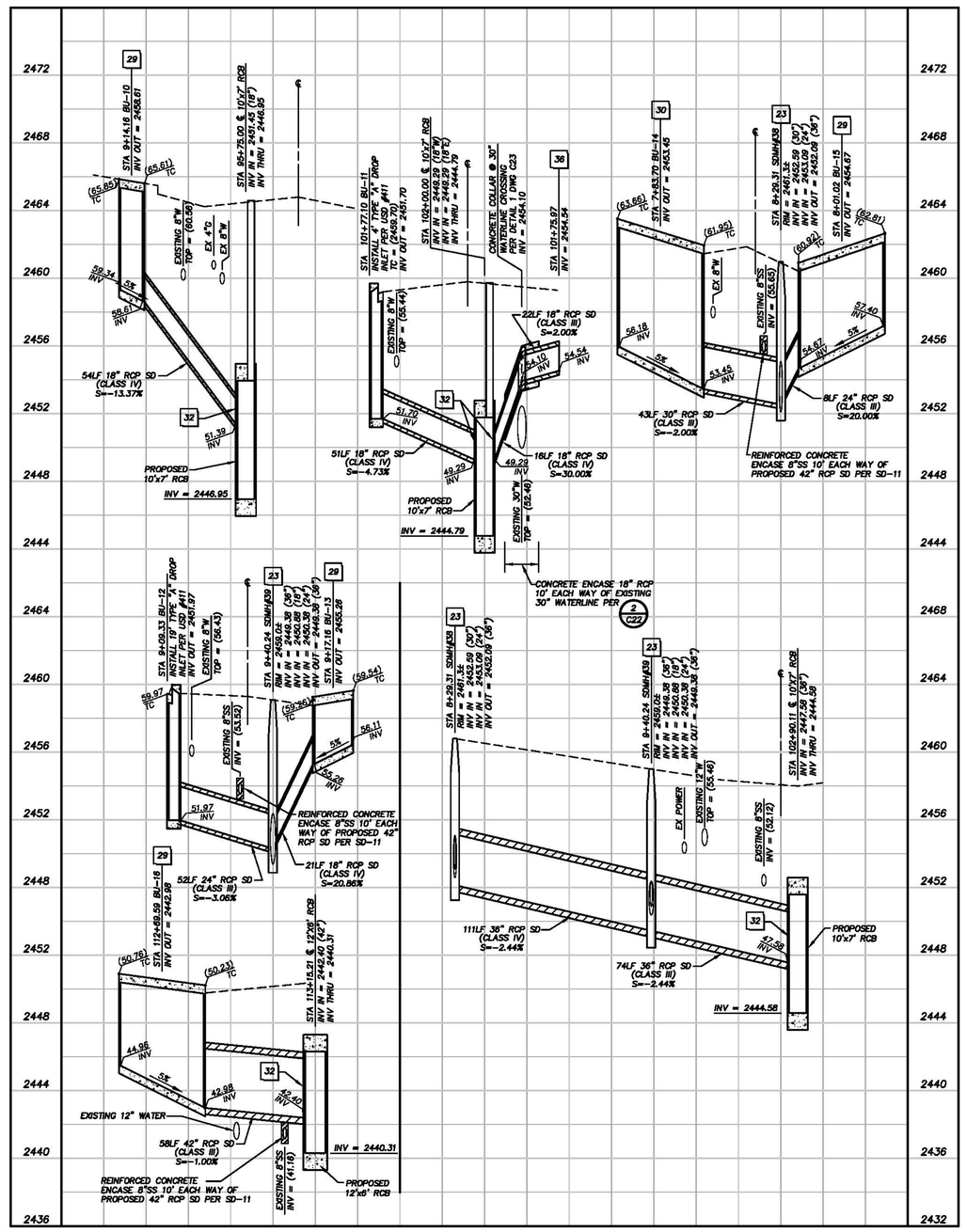
DROP INLET INTERSECTION "G"



DROP INLET INTERSECTION "H"



DROP INLET INTERSECTION "I"



KEY NOTES

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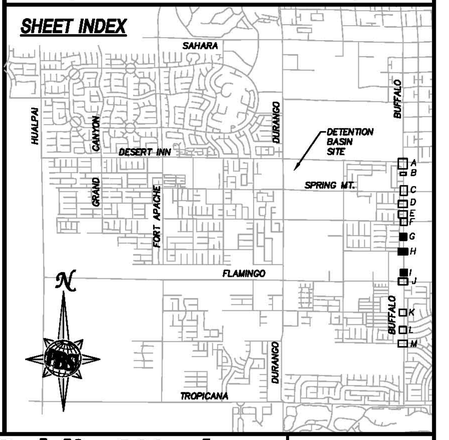
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RECORD DRAWING

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	05/05/2000
CONST. MANAGER:	POGGEMEYER
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 02/17/99 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-216
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2
- DESERT INN ROAD TO PEACE WAY -
BUFFALO OUTFALL/COLLECTION SYSTEM
DROP INLET INTERSECTIONS "G" THRU "I"

L-1582B

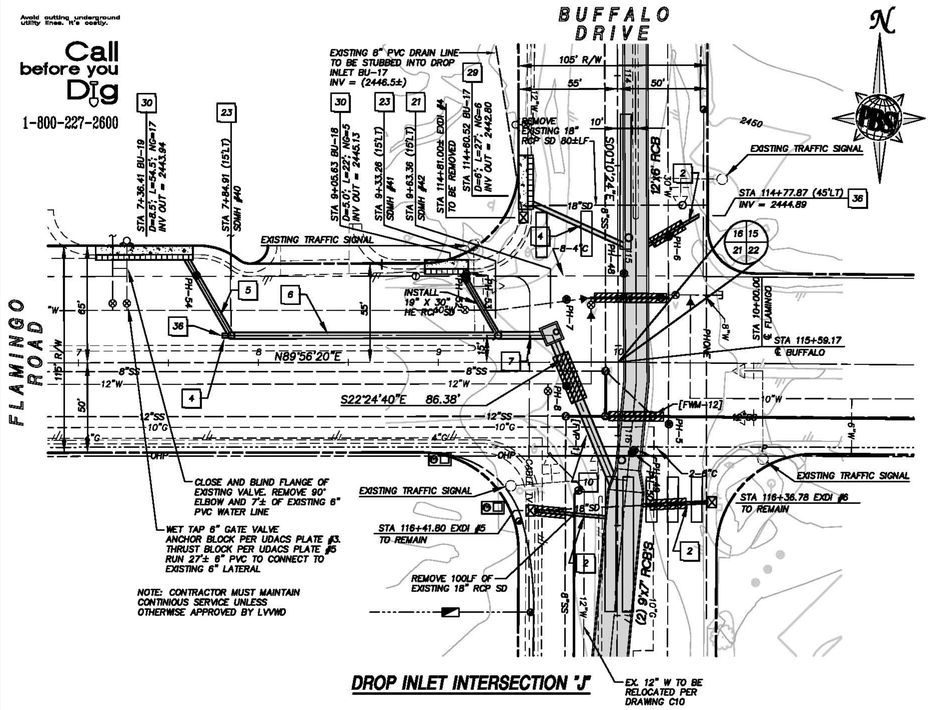
DRAWING NO. C16

16 / 30

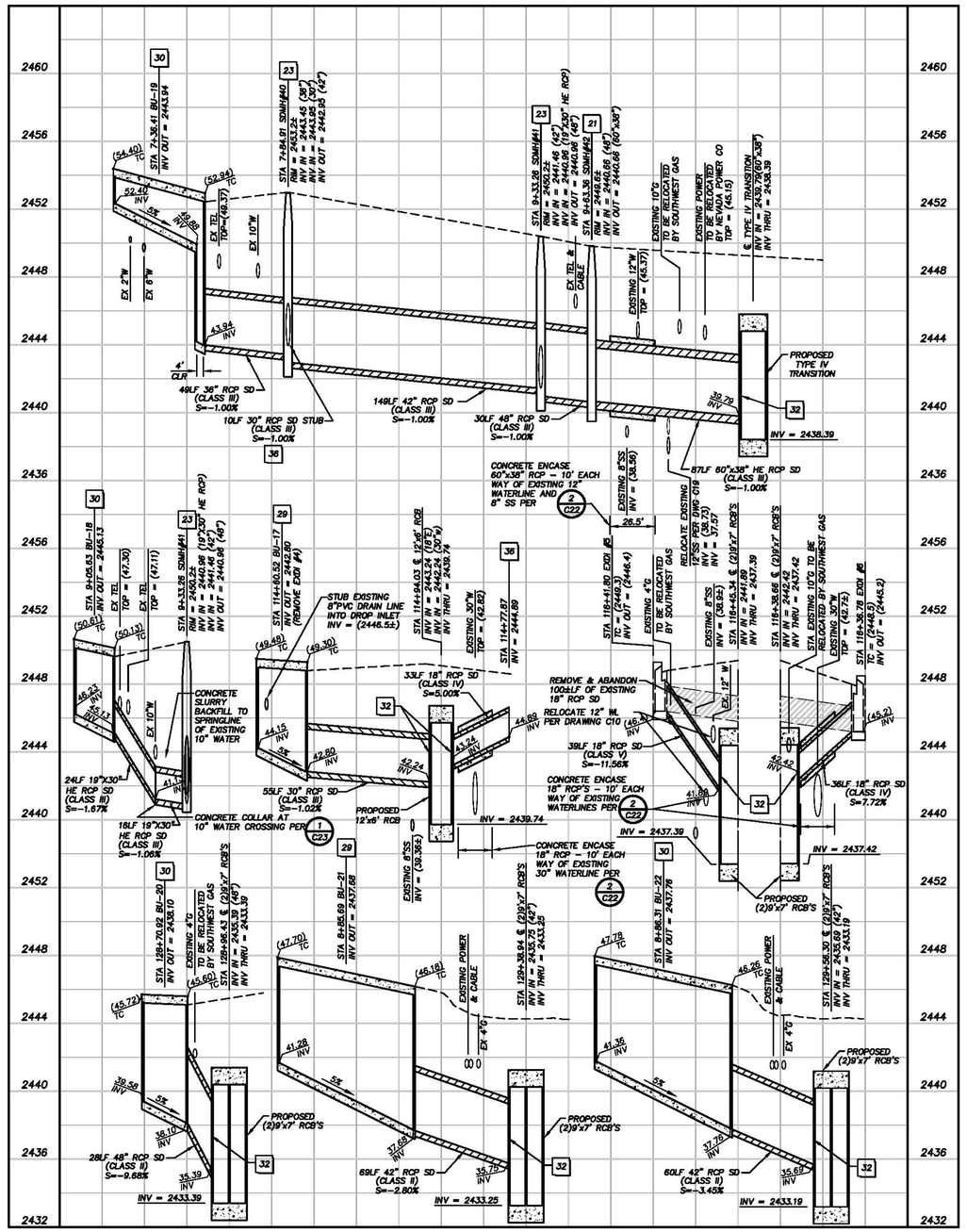
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DROP INLET INTERSECTION "J"



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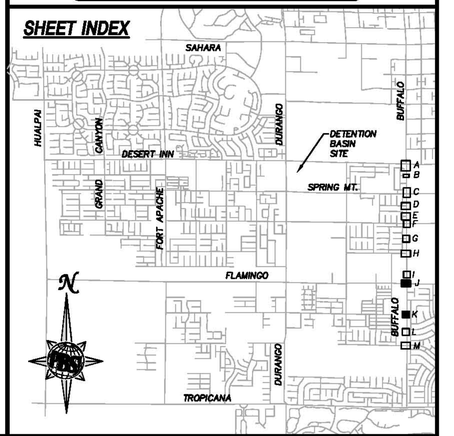
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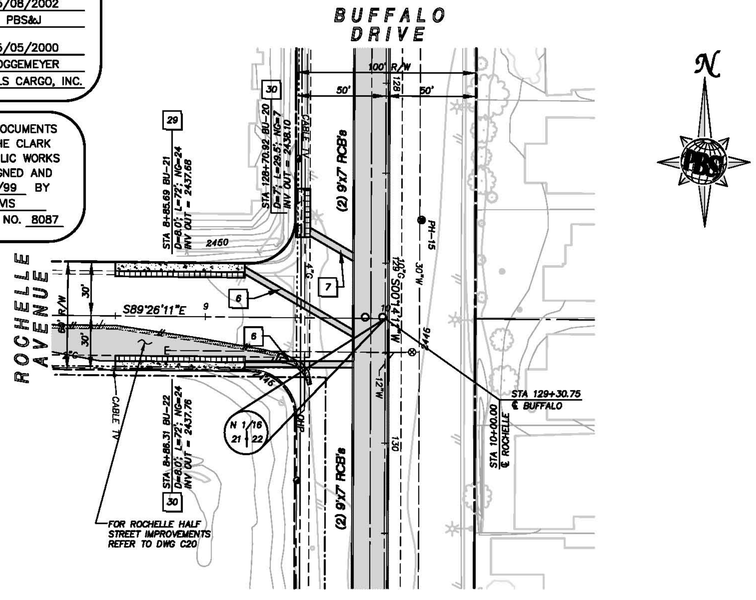
SHEET INDEX



-RECORD DRAWING-

COMPLETED ON: 05/08/2002
BY: PBS&J
PROJECT ACCEPTANCE DATE: 05/05/2000
CONST. MANAGER: POGGEMEYER
CONTRACTOR: WELLS CARGO, INC.

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DROP INLET INTERSECTION "K"

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: FEBRUARY 17, 1999

JOB NO.: 51516
DRAWING NO.: 516-217
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

BUFFALO OUTFALL / COLLECTION SYSTEM - PHASE 2 - DESERT INN ROAD TO PEACE WAY -

BUFFALO OUTFALL/COLLECTION SYSTEM DROP INLET INTERSECTIONS "J" & "K"

L-1582B

DRAWING NO. C17 17/30

DEPARTMENT OF PUBLIC WORKS

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C1.02 GENERAL NOTES, QUANTITIES, LEGEND & ABBREVIATIONS
C1.03 GENERAL NOTES & DRAWING INDEX
C1.04 WATERSHED BOUNDARY MAP
C1.05 CAPACITY CURVES & HYDROLOGIC INFORMATION
C1.06 SURVEY CONTROL MAP
C1.07 SURVEY CONTROL MAP

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S1.04 STRUCTURAL DETAILS
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S1.06 STRUCTURAL DETAILS
S1.07 STRUCTURAL DETAILS
S1.08 STRUCTURAL DETAILS
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S1.10 STRUCTURAL DETAILS

LANDSCAPING, IRRIGATION, ELETRICAL (DRAWINGS-C5.xx)

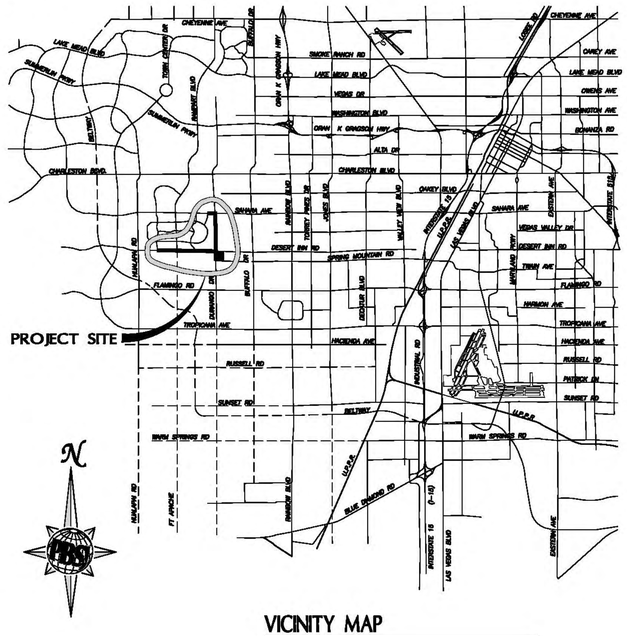
SHEETS DELETED
C5.01 LANDSCAPING HORIZONTAL CONTROL PLAN
C5.02 LANDSCAPING HORIZONTAL CONTROL PLAN
C5.03 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.04 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.05 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.06 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.07 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.08 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.09 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.10 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.11 LANDSCAPE IRRIGATION PLANS
C5.12 LANDSCAPE IRRIGATION PLANS
C5.13 LANDSCAPE IRRIGATION PLANS
C5.14 LANDSCAPE IRRIGATION PLANS W/ PUMP STATION & P.O.C.
C5.15 LANDSCAPE IRRIGATION PLANS
C5.16 LANDSCAPE IRRIGATION PLANS
C5.17 LANDSCAPE IRRIGATION PLANS
C5.18 LANDSCAPE IRRIGATION PLANS
C5.19 ELECTRICAL SITE PLAN
C5.20 MISCELLANEOUS DETAILS
C5.21 PUMP STATION PLANS & DETAILS
C5.22 PUMP STATION MISCELLANEOUS DETAILS
C5.23 LANDSCAPE IRRIGATION DETAILS
C5.24 LANDSCAPE IRRIGATION DETAILS

CLARK COUNTY NEVADA

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087



VICINITY MAP
Not to scale

1999
IMPROVEMENT PLANS FOR

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES PHASE 3

BID #4500-99
DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT,
CLARK COUNTY REGIONAL TRANSPORTATION COMMISSION,
CLARK COUNTY SANITATION DISTRICT, &
CLARK COUNTY DEPARTMENT OF PARKS AND RECREATION

COUNTY COMMISSIONERS

BRUCE WOODBURY, CHAIRMAN
ERIN KENNY, VICE-CHAIR
YVONNE ATKINSON GATES
DARIO HERRERA
MARY J. KINCAID
LANCE MALONE
MYRNA WILLIAMS

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7273
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

COUNTY MANAGER

DALE W. ASKEW

DIRECTOR OF PUBLIC WORKS

APPROVED:

M.J. MANNING P.E. 7299

GENERAL MANAGER/CHIEF ENGINEER CCRFCD

APPROVED:

GALE WM. FRASER II, P.E.

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHWEST GAS COMPANY		
NEVADA POWER COMPANY		
C.C. SANITATION DISTRICT		
COX COMMUNICATIONS LAS VEGAS, INC.		
REGIONAL TRANSPORTATION COMMISSION		

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY:	DATE OF APPROVAL
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		
COMMUNITY DEVELOPMENT DIVISION		
CONSTRUCTION MANAGEMENT DIVISION		
DESIGN ENGINEERING DIVISION		
MAINTENANCE MANAGEMENT DIVISION		
TRAFFIC MANAGEMENT DIVISION		
COUNTY SURVEYOR'S OFFICE		
CLARK COUNTY DEPTARTMENT OF PARKS & RECREATION		

REVISIONS					
REVISION NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE

DESIGN ENGINEERING DIVISION

COVER SHEET

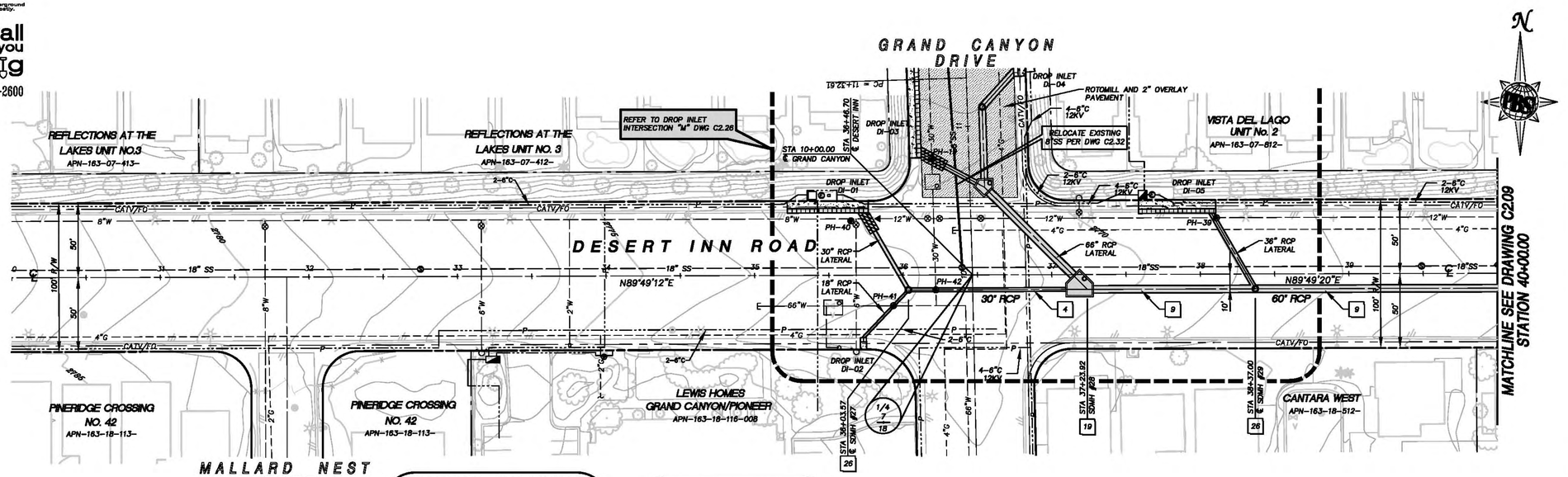
L-1583

BID #4500-99 LAKES DETENTION BASIN PHASE 3 - DESERT INN, DURANGO, & SPRING MOUNTAIN COLLECTION

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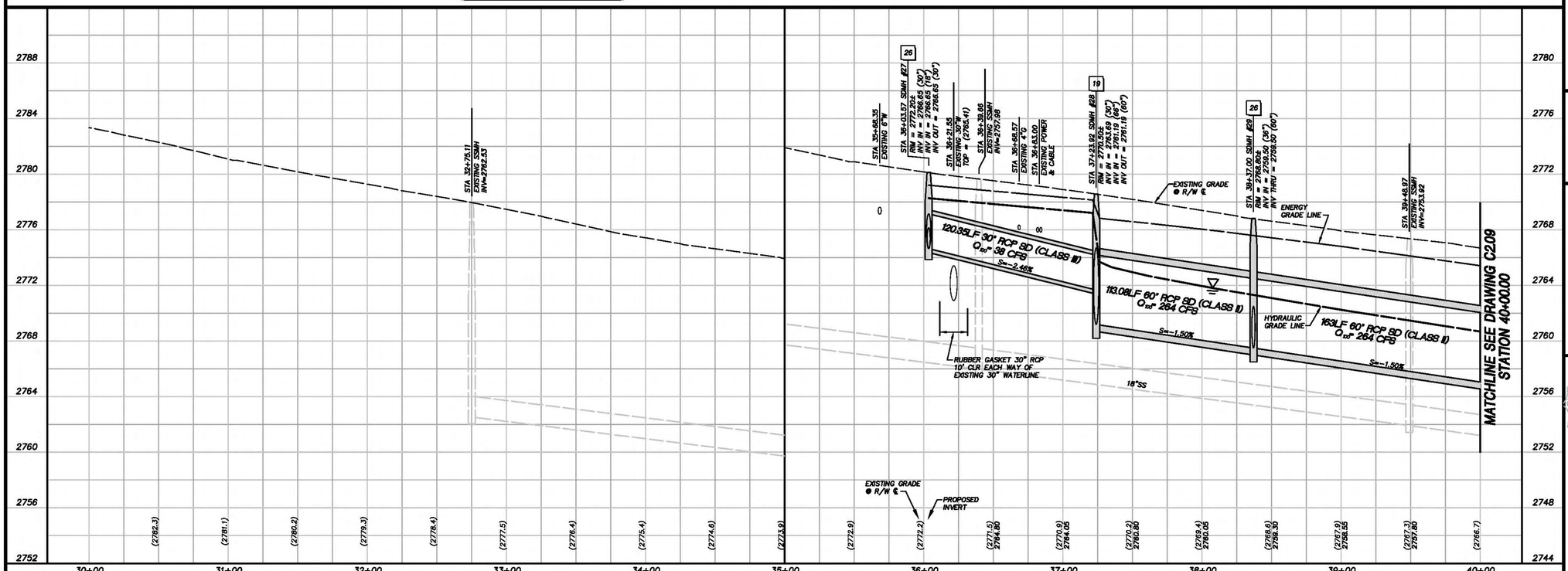
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(IN FEET)

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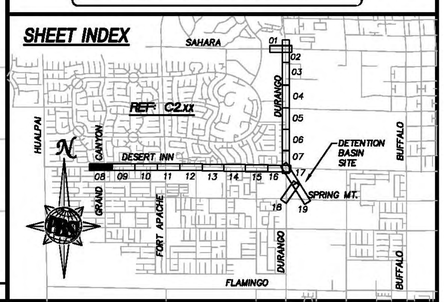
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3208
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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901 North Green Valley Pkwy.
Suite 100
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Telephone: 702/263-7275
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CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 30+00.00 TO STA 40+00.00

L-1583

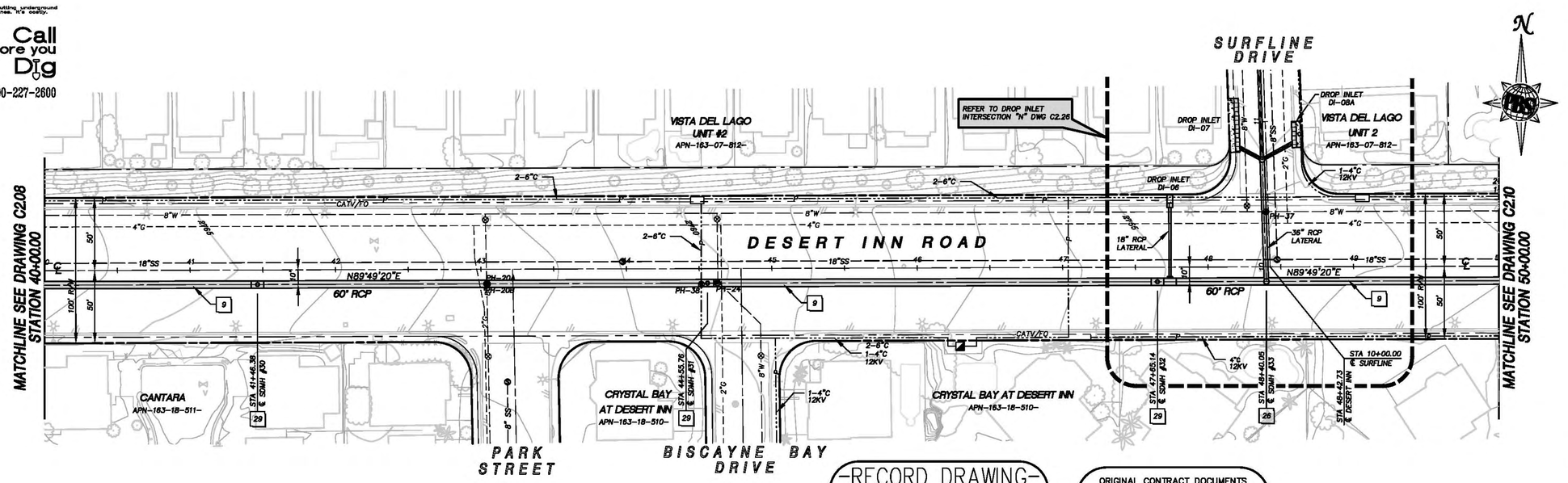
DRAWING NO. C2.08

15 / 77

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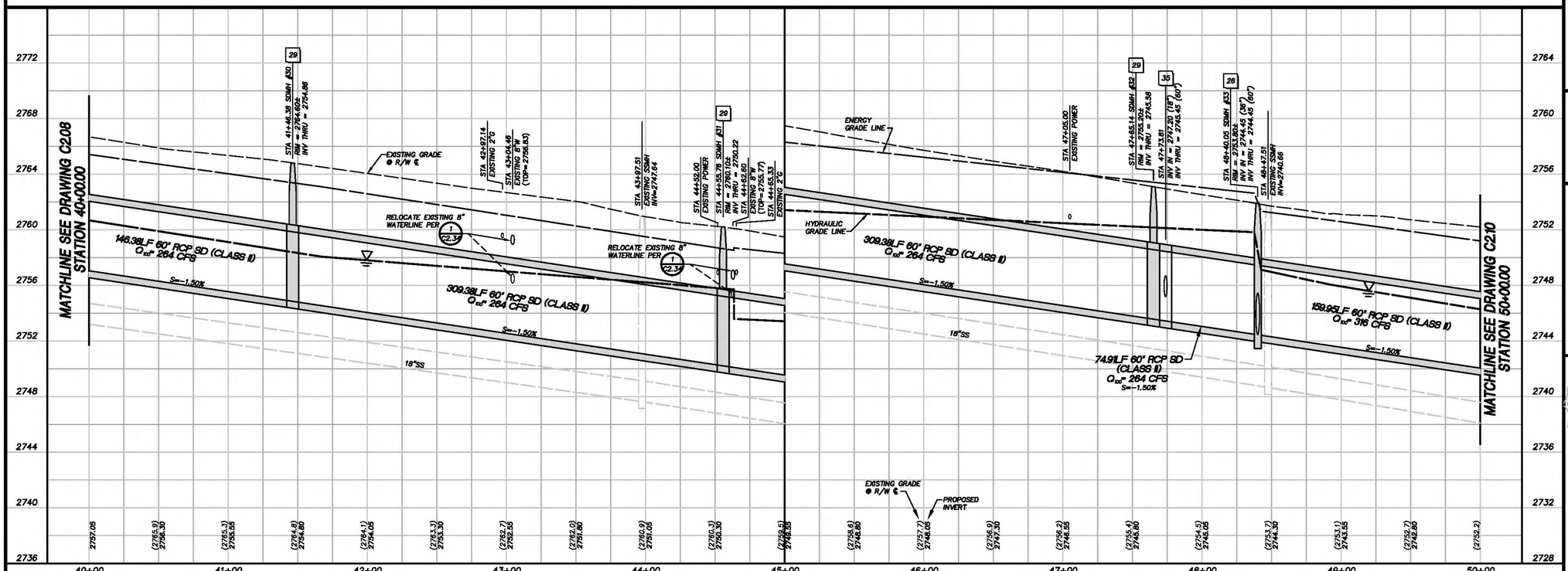


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BY:	PBS&J
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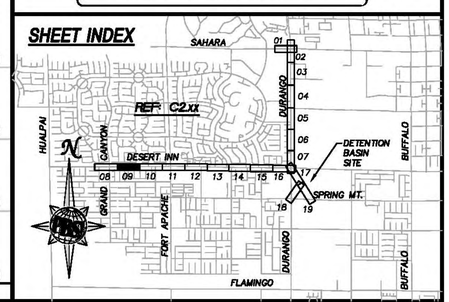
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3209
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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CLARK COUNTY NEVADA

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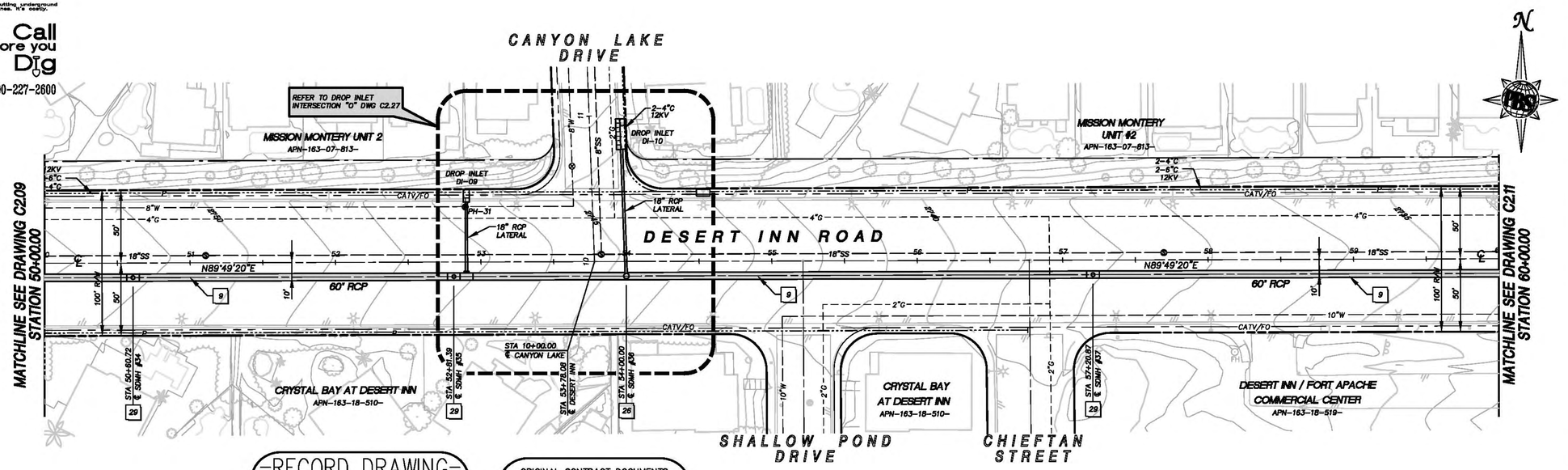
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16 / 77

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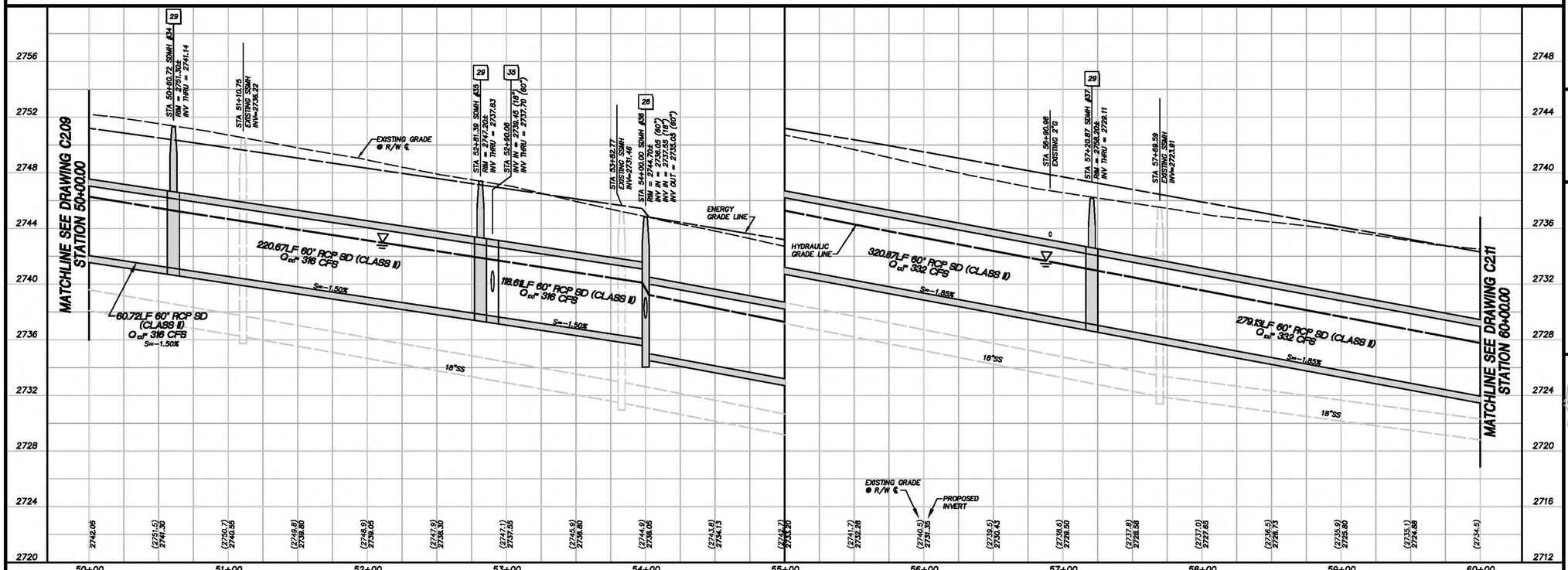
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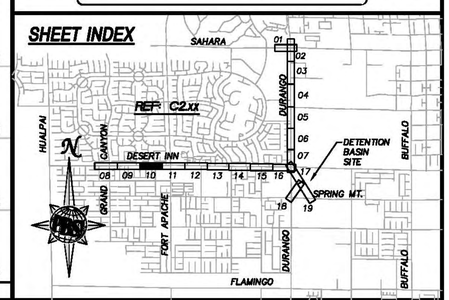
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Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

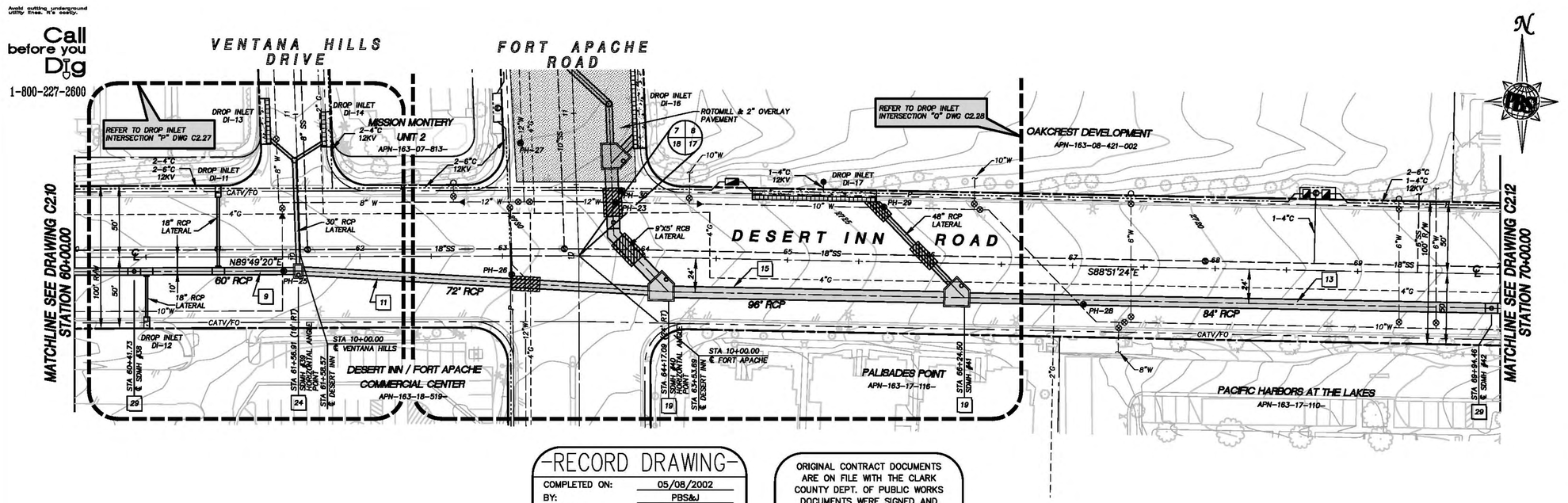
DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 50+00.00 TO STA 60+00.00

L-1583

DRAWING NO. C2.10 17/77

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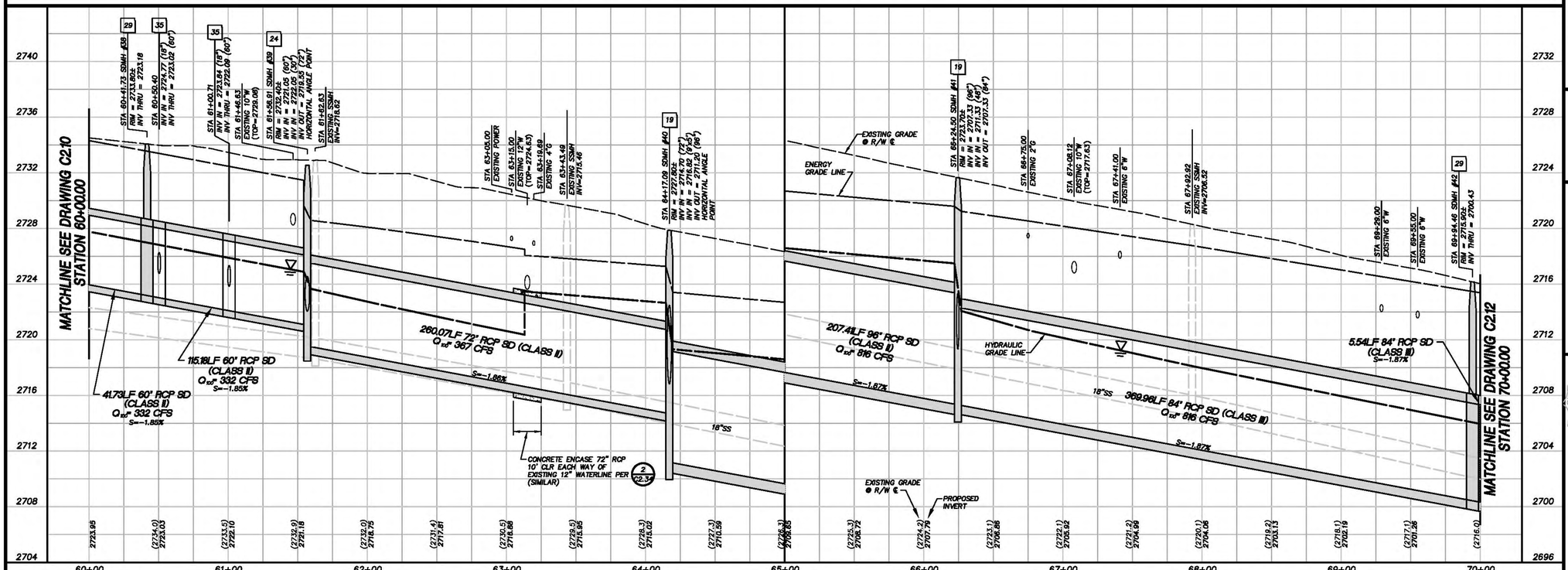
Call before you Dig 1-800-227-2600



-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING

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(IN FEET)

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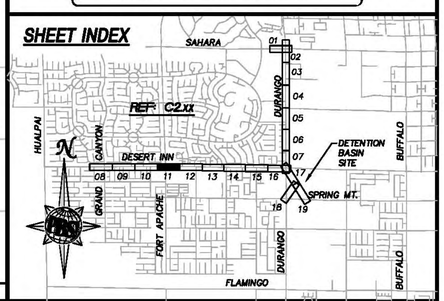
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REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3211
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 60+00.00 TO STA 70+00.00

L-1583

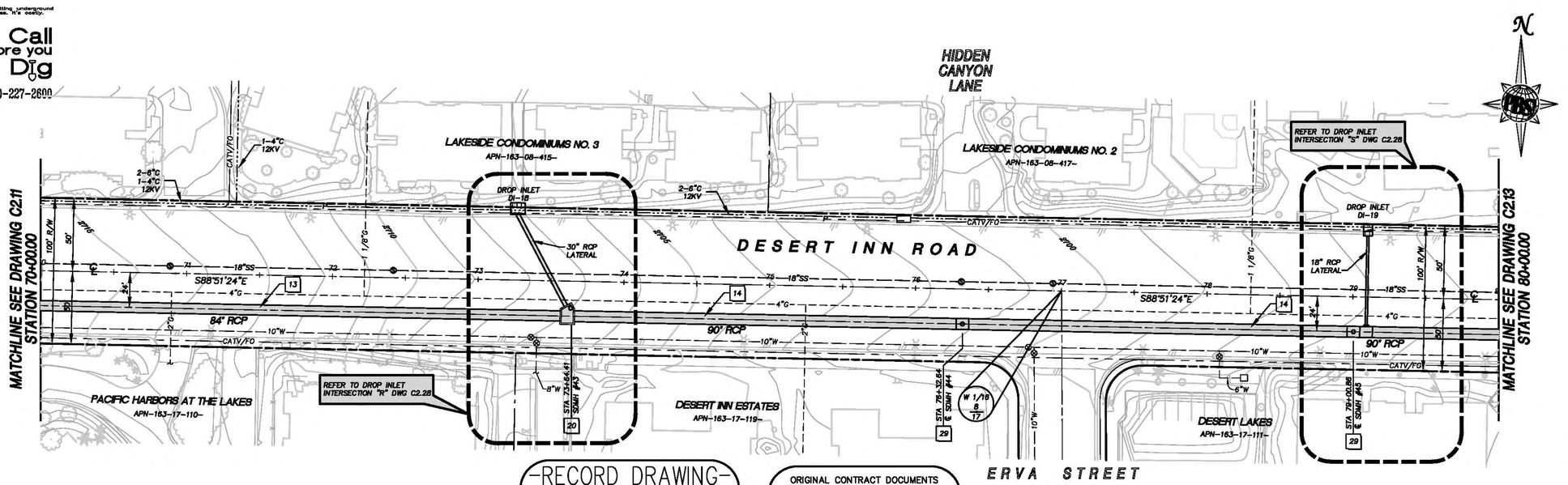
DRAWING NO. C2.11

18 / 77

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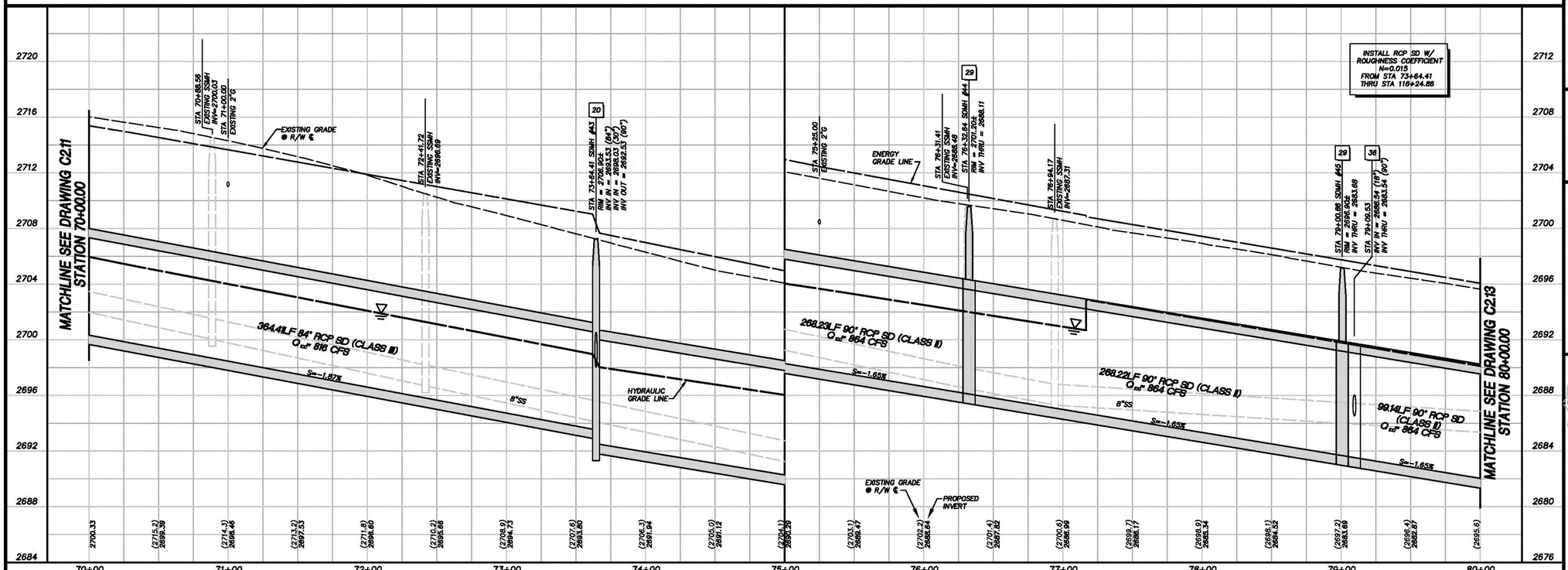
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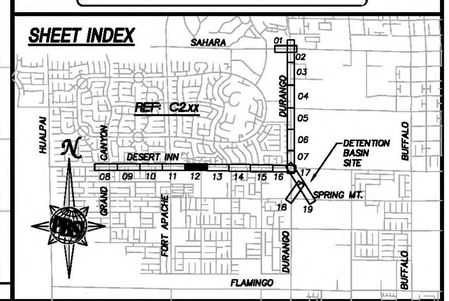
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REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3212
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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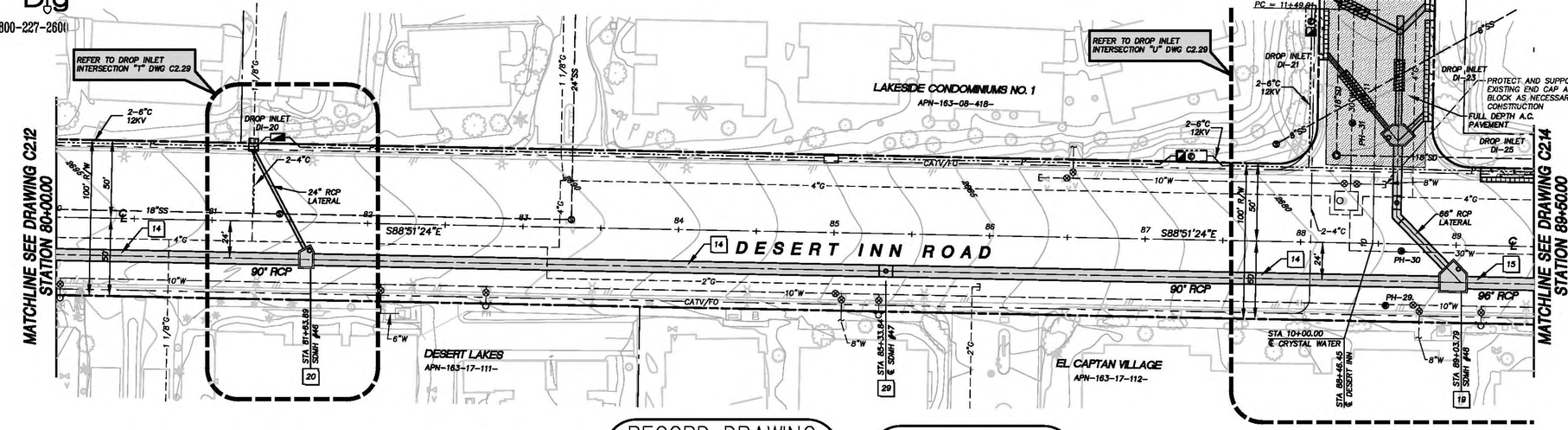
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19 / 77

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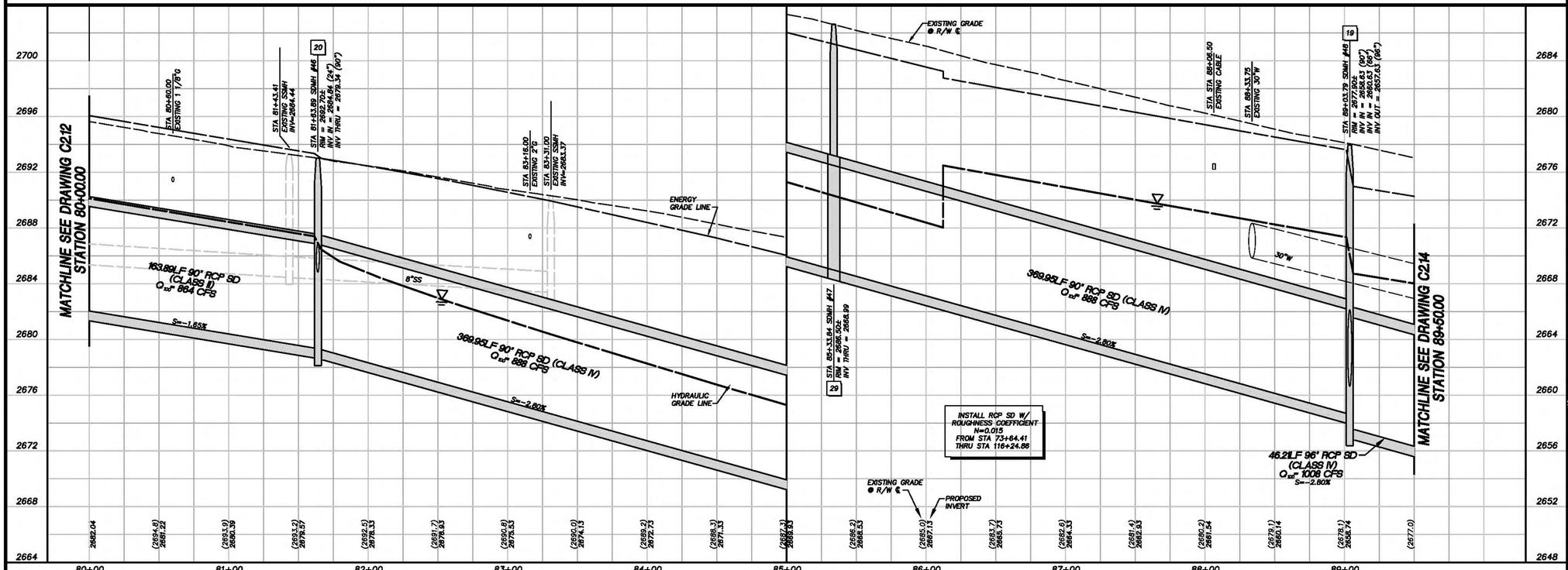
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COMPLETED ON:	05/08/2002
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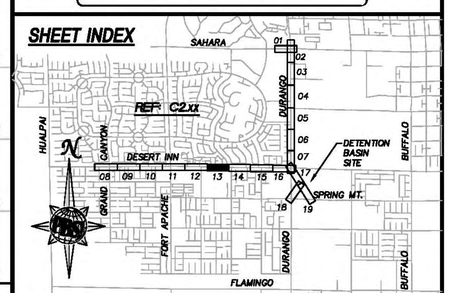
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3213
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

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L-1583

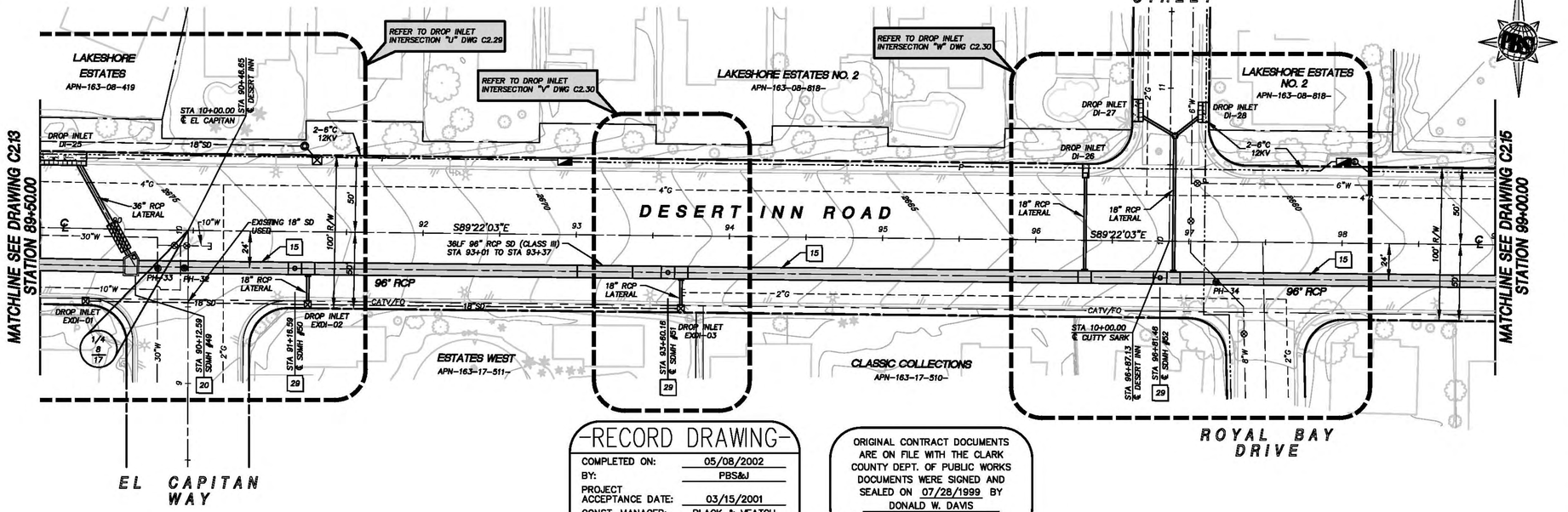
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20 / 77

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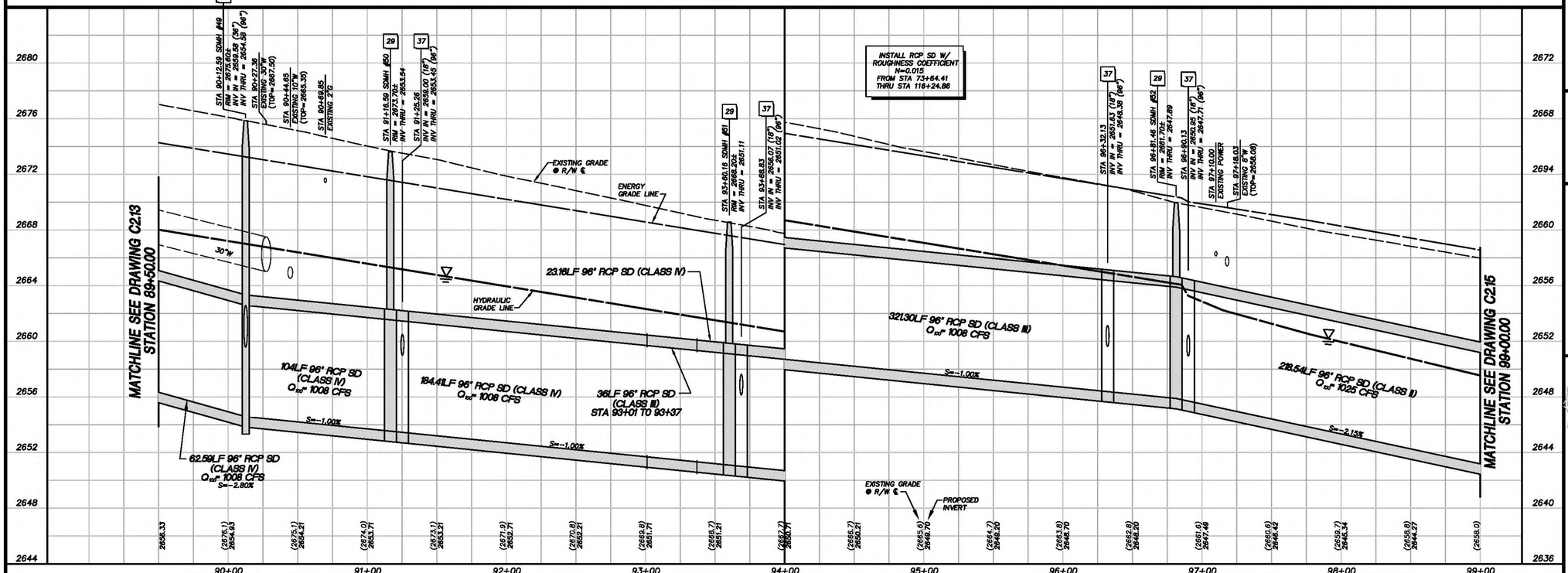
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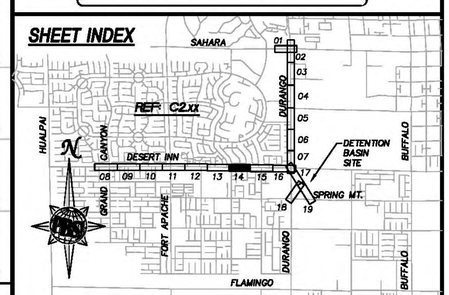
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DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
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PBS&J
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Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
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SEAL

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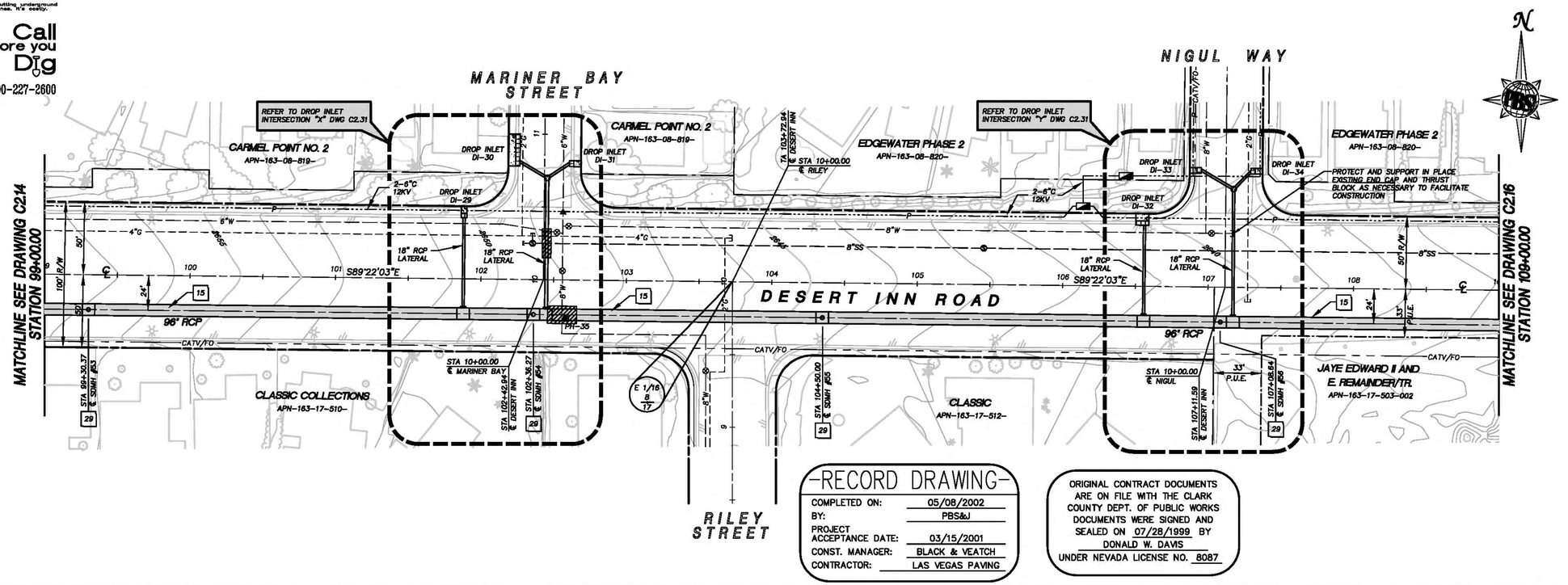
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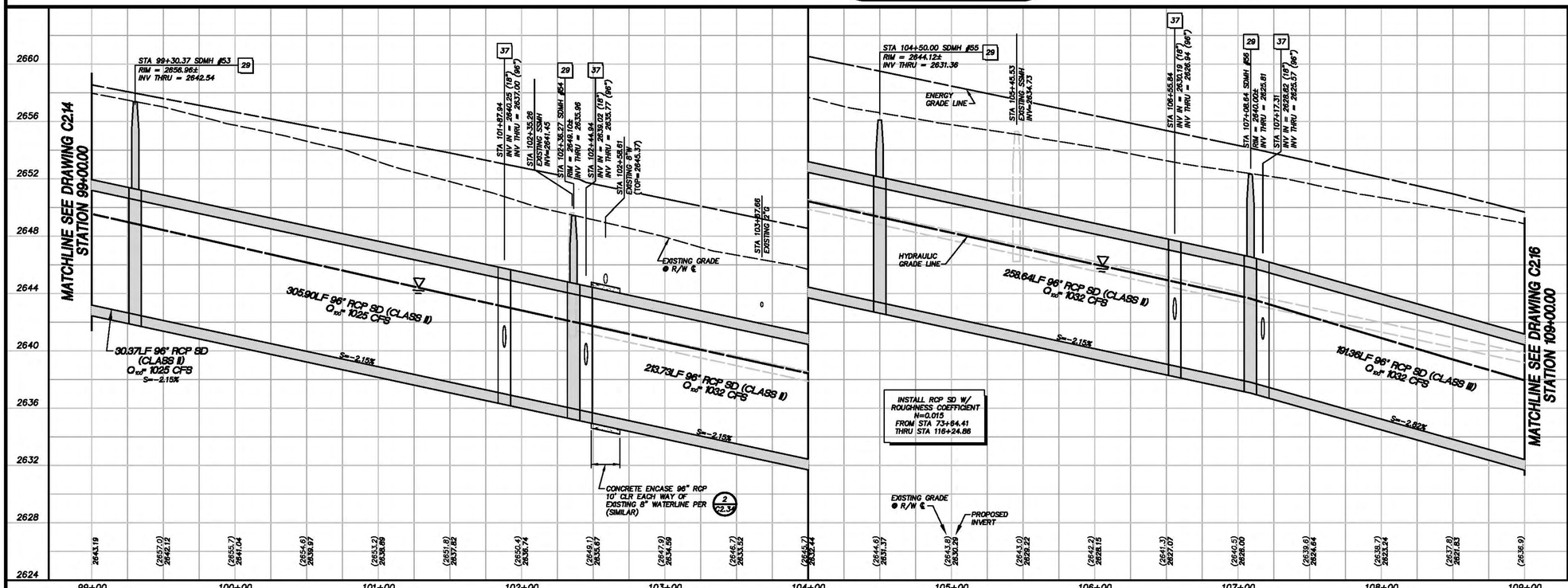
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COMPLETED ON:	05/08/2002
BY:	PBS&J
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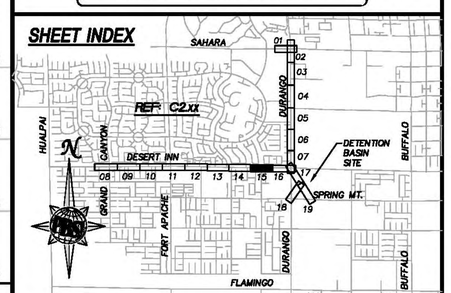
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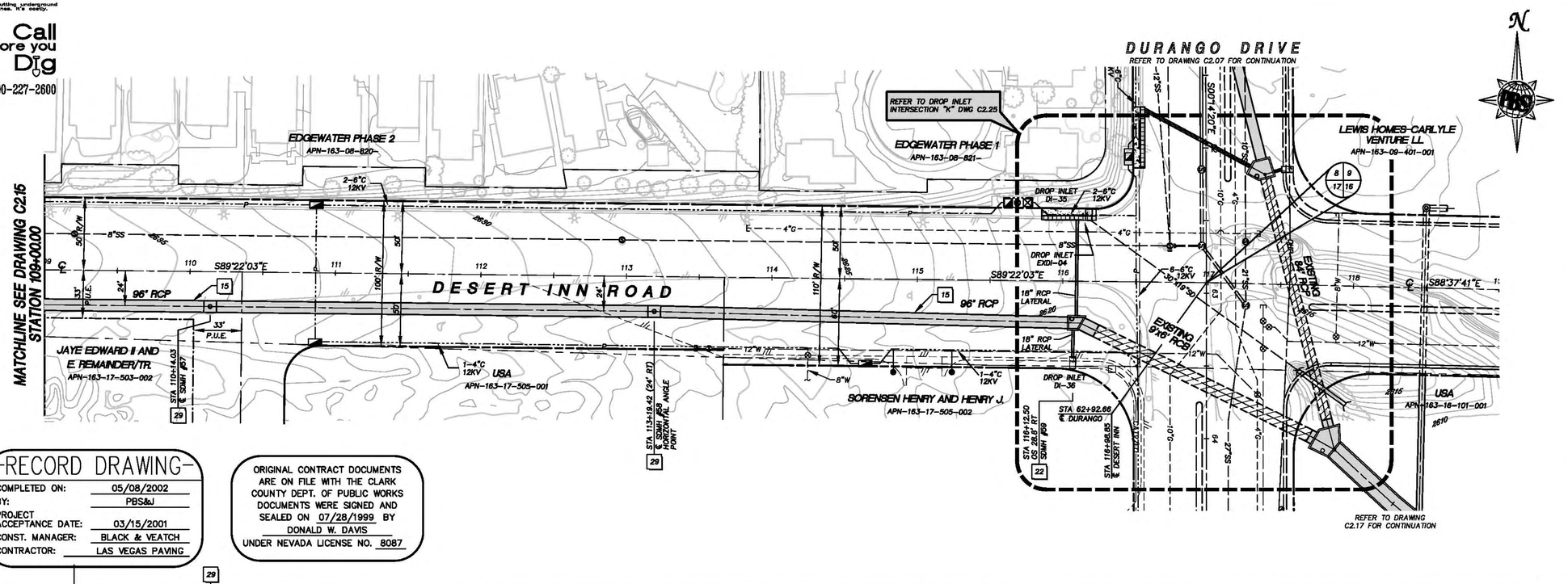
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22 / 77

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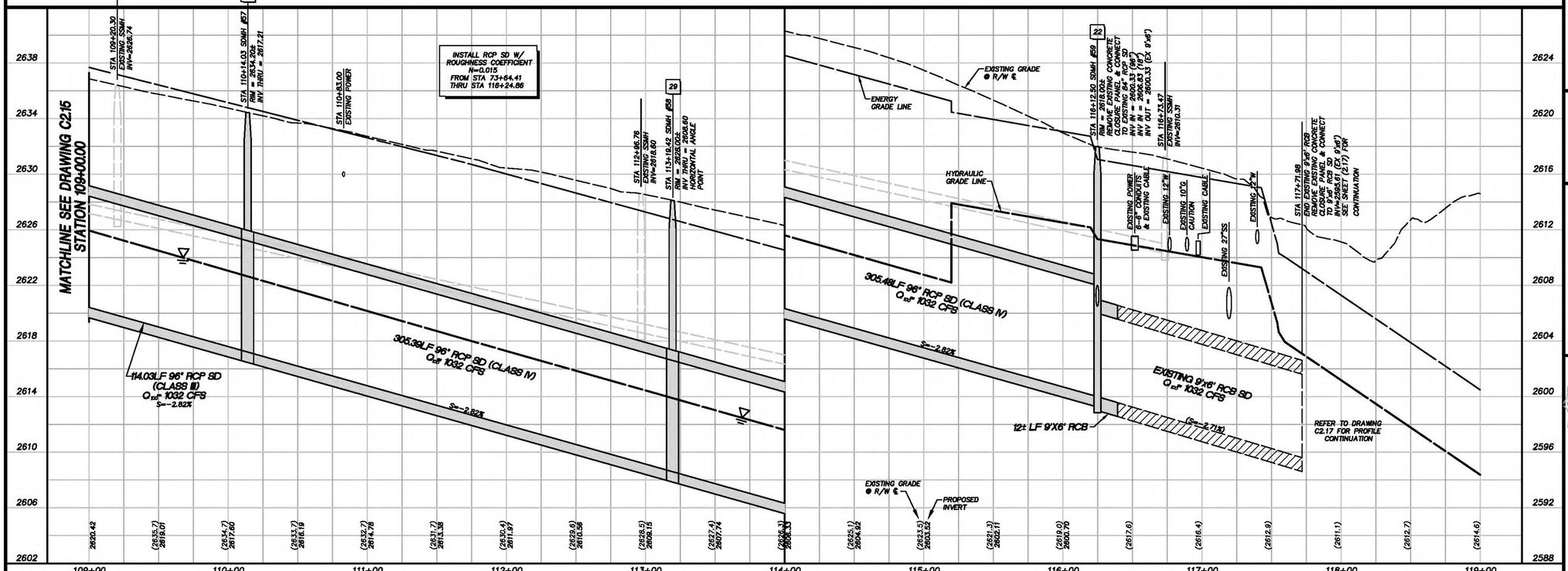
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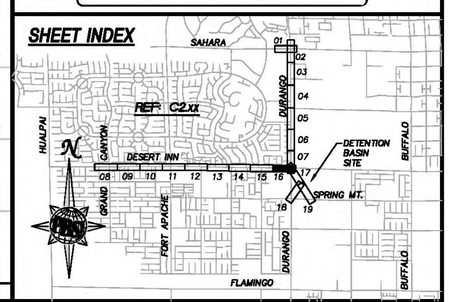
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

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L-1583

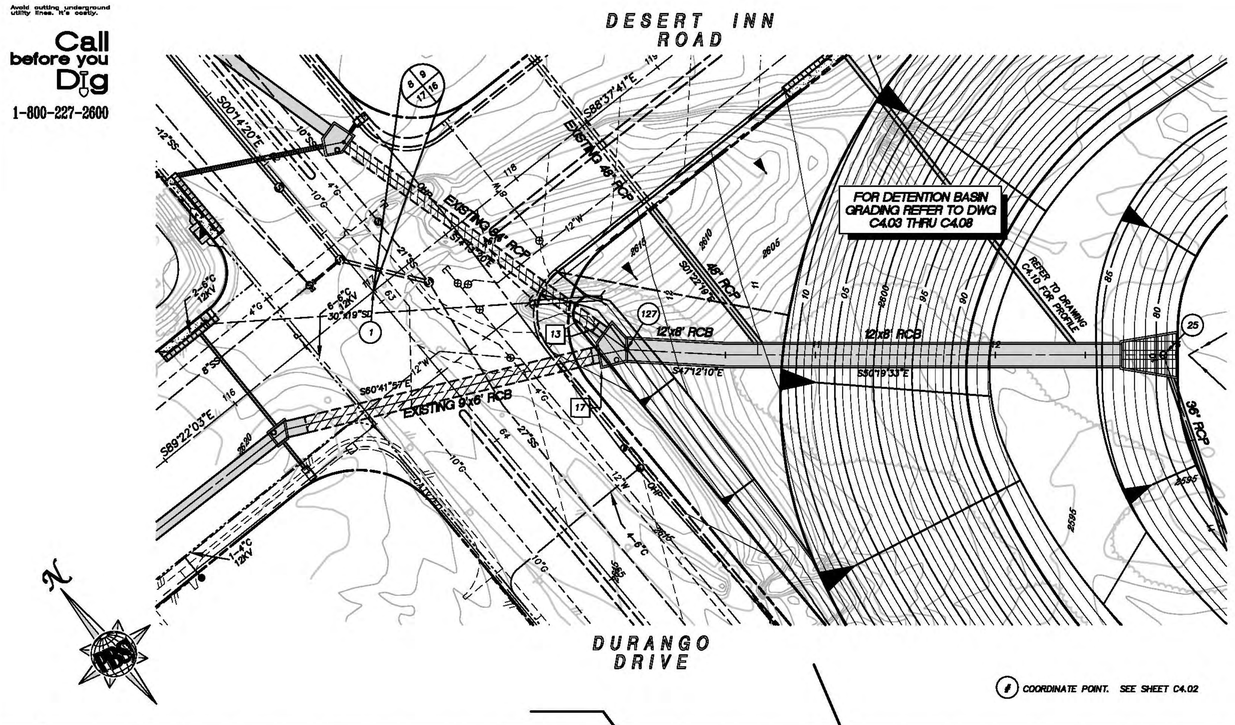
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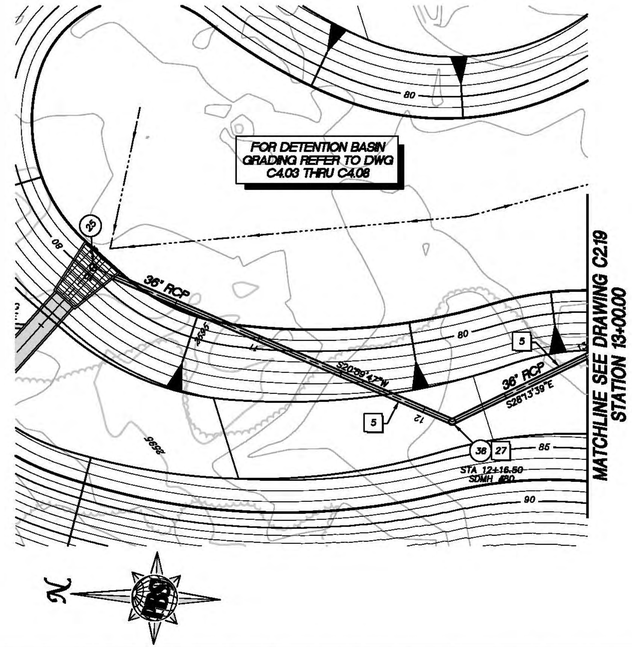
23 / 77

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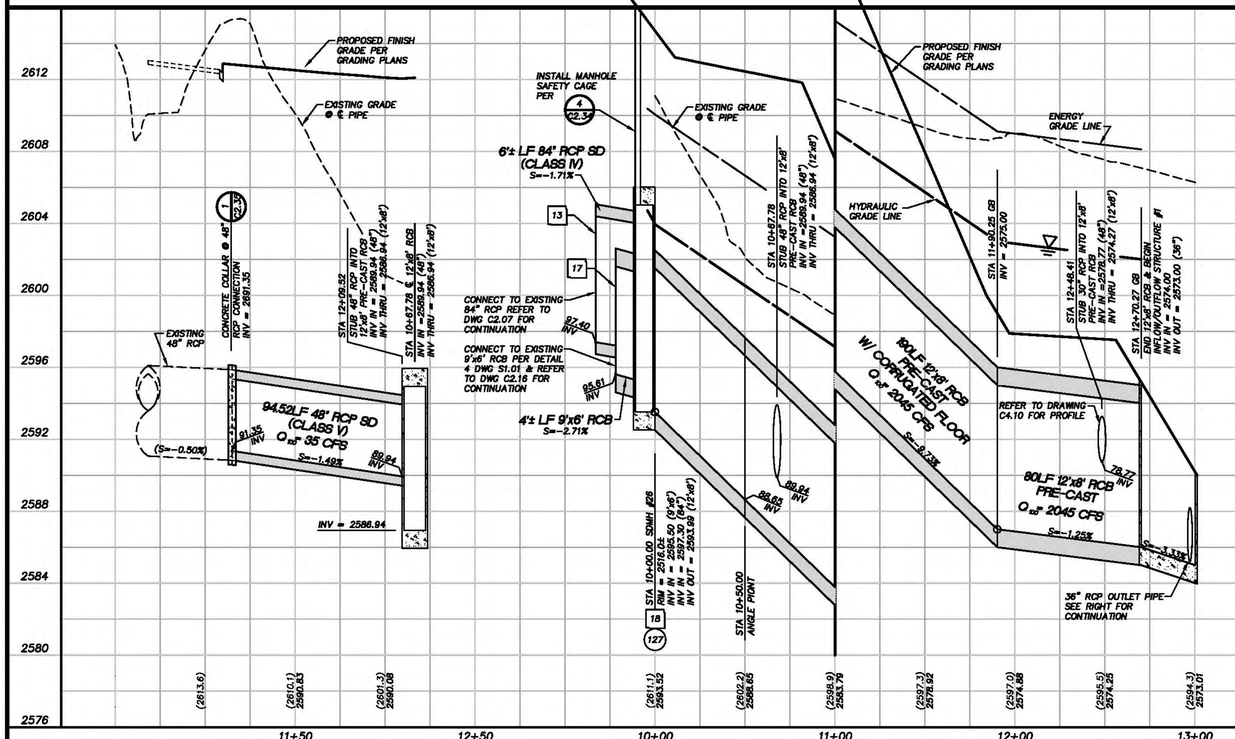
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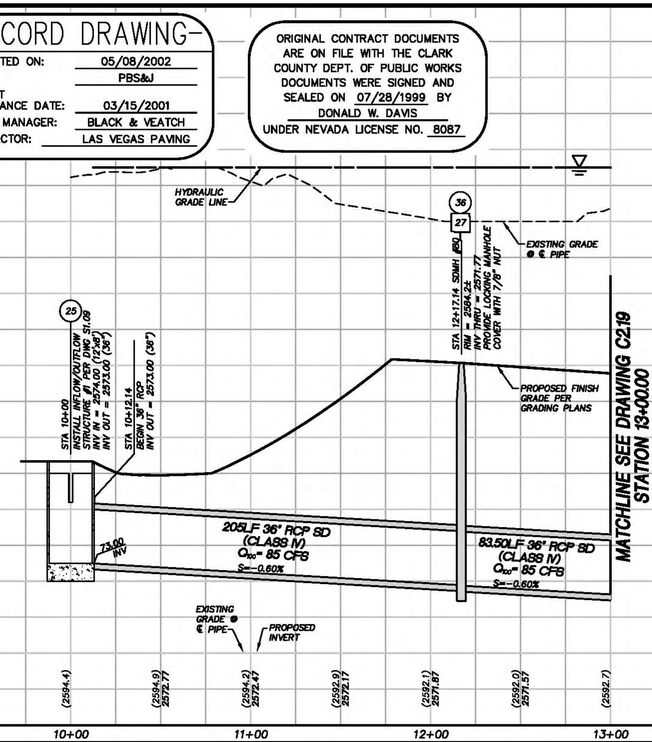




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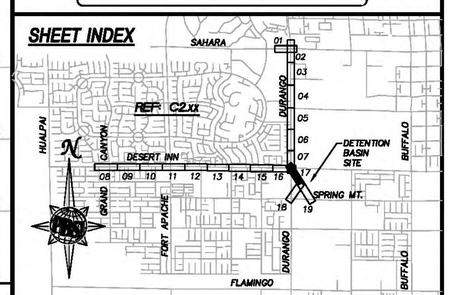
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DETENTION BASIN INLET PIPE (DESERT INN) PLAN AND PROFILE

L-1583

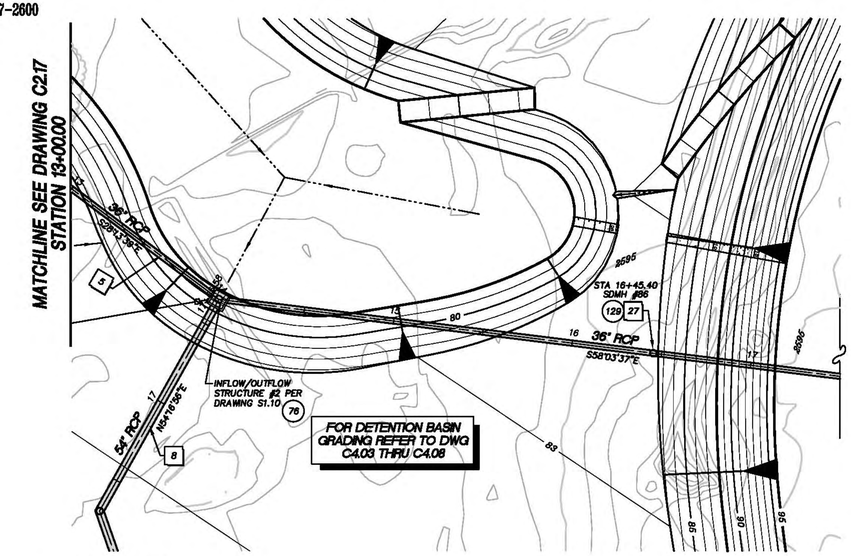
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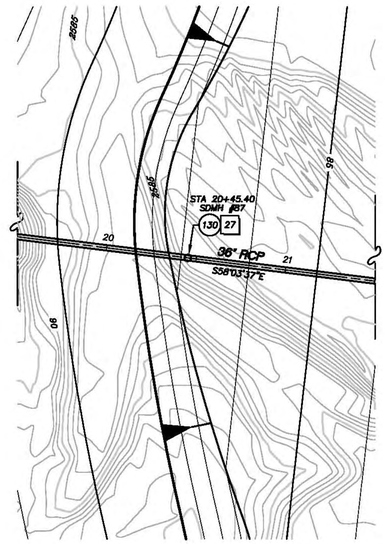
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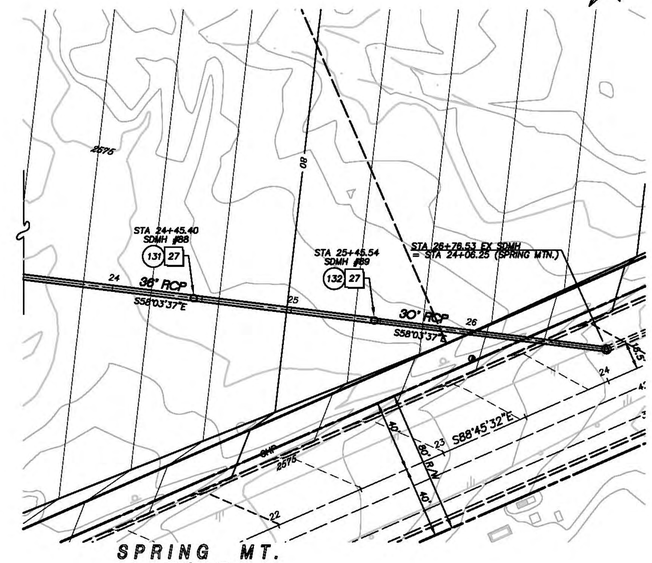
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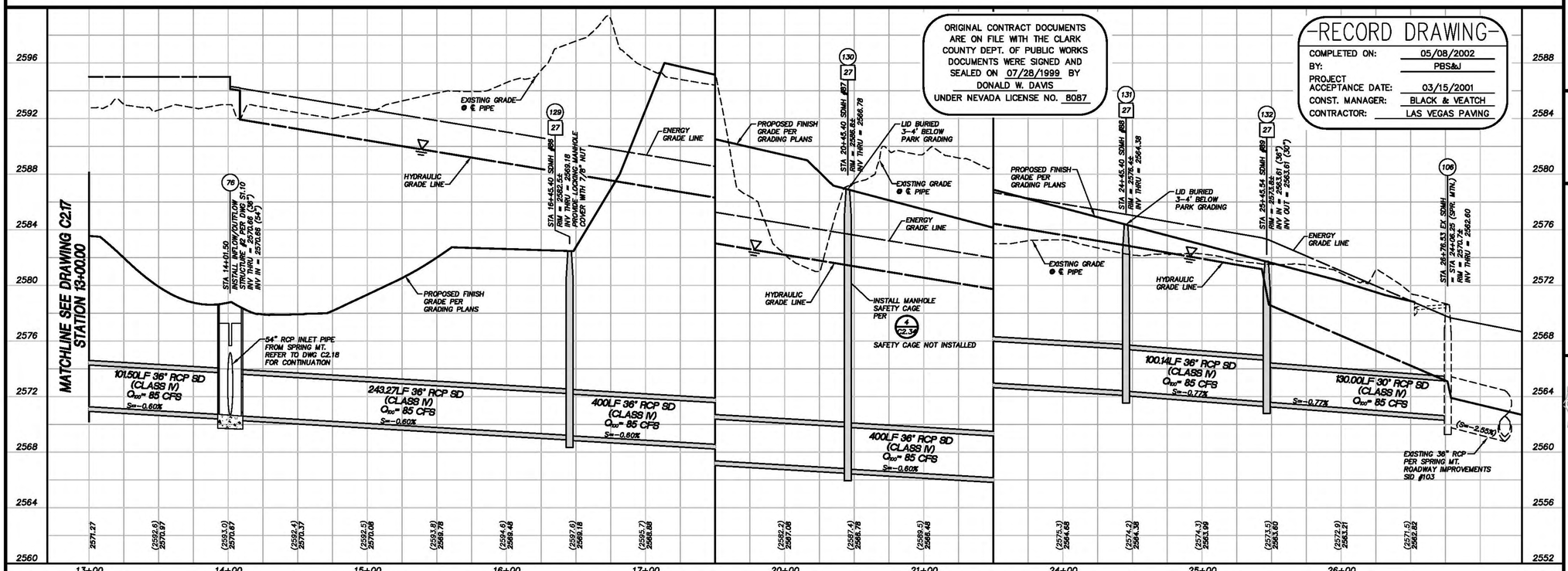
Call before you Dig

1-800-227-2600









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RECORD DRAWING

COMPLETED ON: 05/08/2002
BY: PBS&J
PROJECT ACCEPTANCE DATE: 03/15/2001
CONST. MANAGER: BLACK & VEATCH
CONTRACTOR: LAS VEGAS PAVING

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
HORZ: 1 inch = 40 ft.
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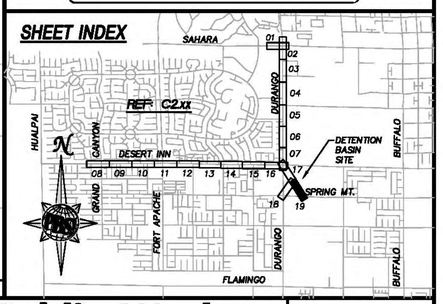
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3219
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DETENTION BASIN OUTLET PIPE (SPRING MOUNTAIN) PLAN AND PROFILE

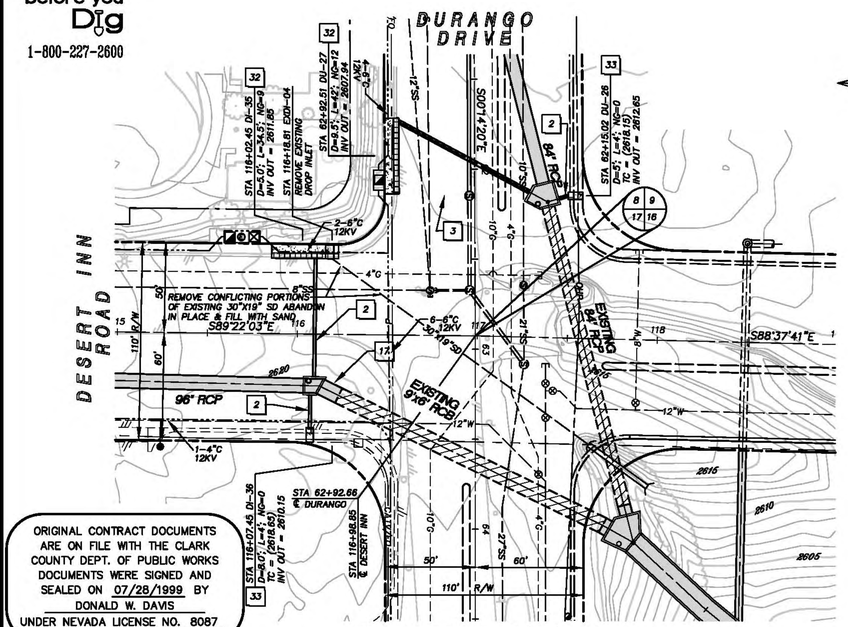
L-1583

DRAWING NO. C2.19

26 / 77

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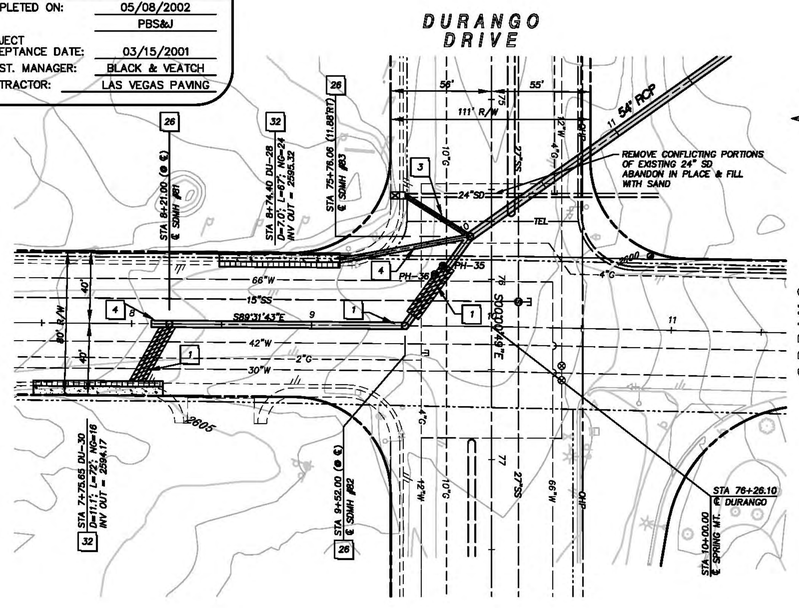


DROP INLET INTERSECTION "K"

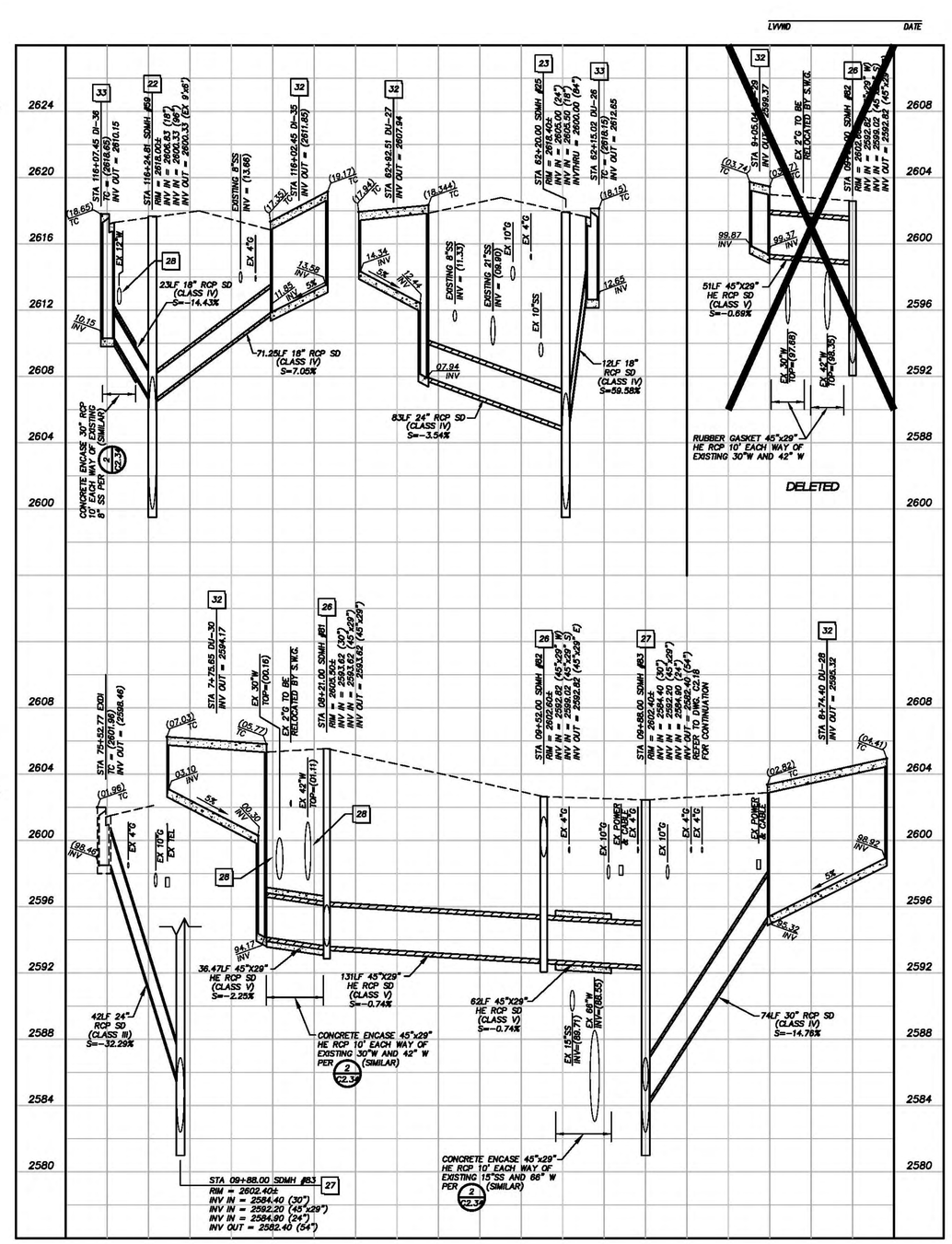
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-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING



DROP INLET INTERSECTION "L"



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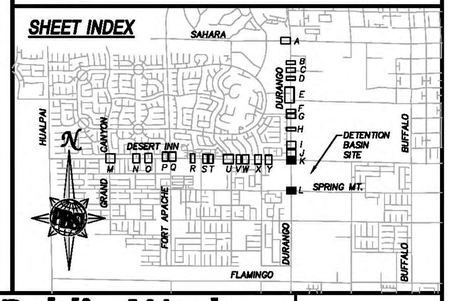
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SHEET INDEX



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3225
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy. Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

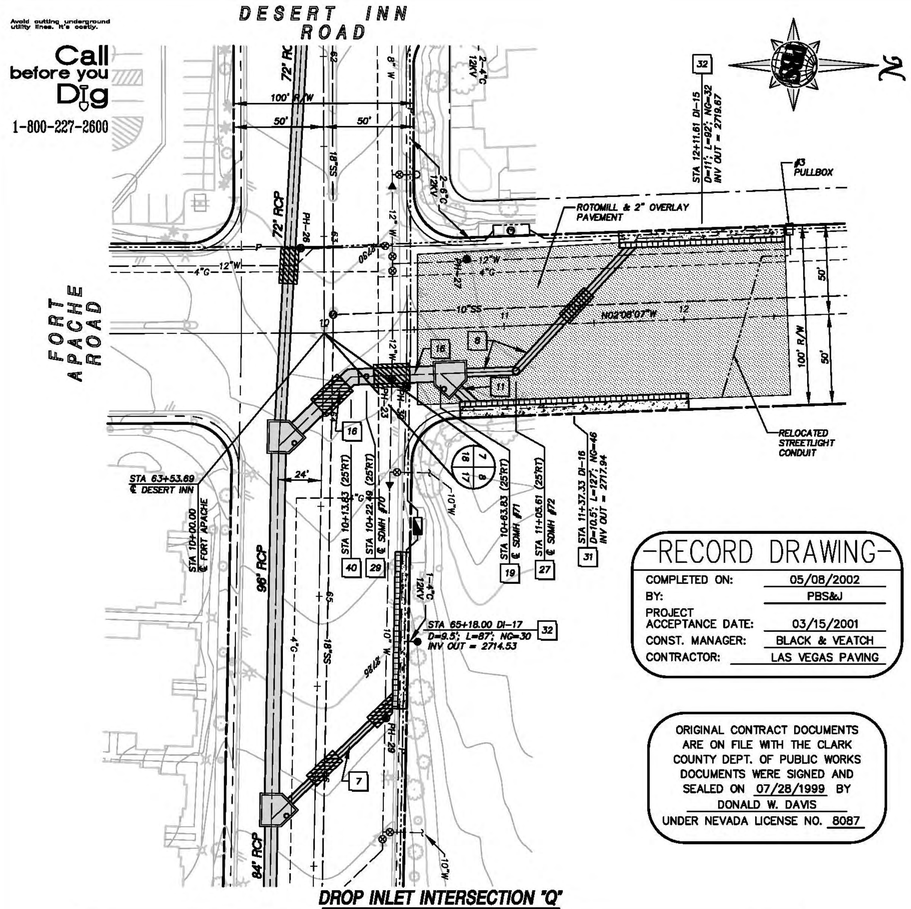
LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3
DURANGO COLLECTION SYSTEM
DROP INLET INTERSECTIONS "K" & "L"

L-1583

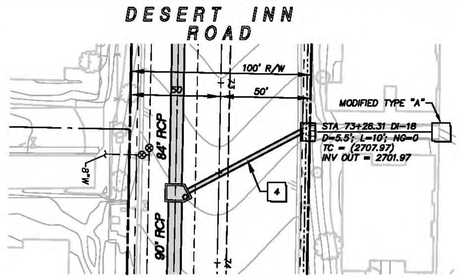
DRAWING NO. C2.25 | 32/77

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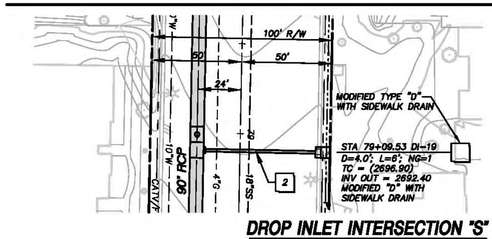
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DROP INLET INTERSECTION "Q"



DROP INLET INTERSECTION "R"

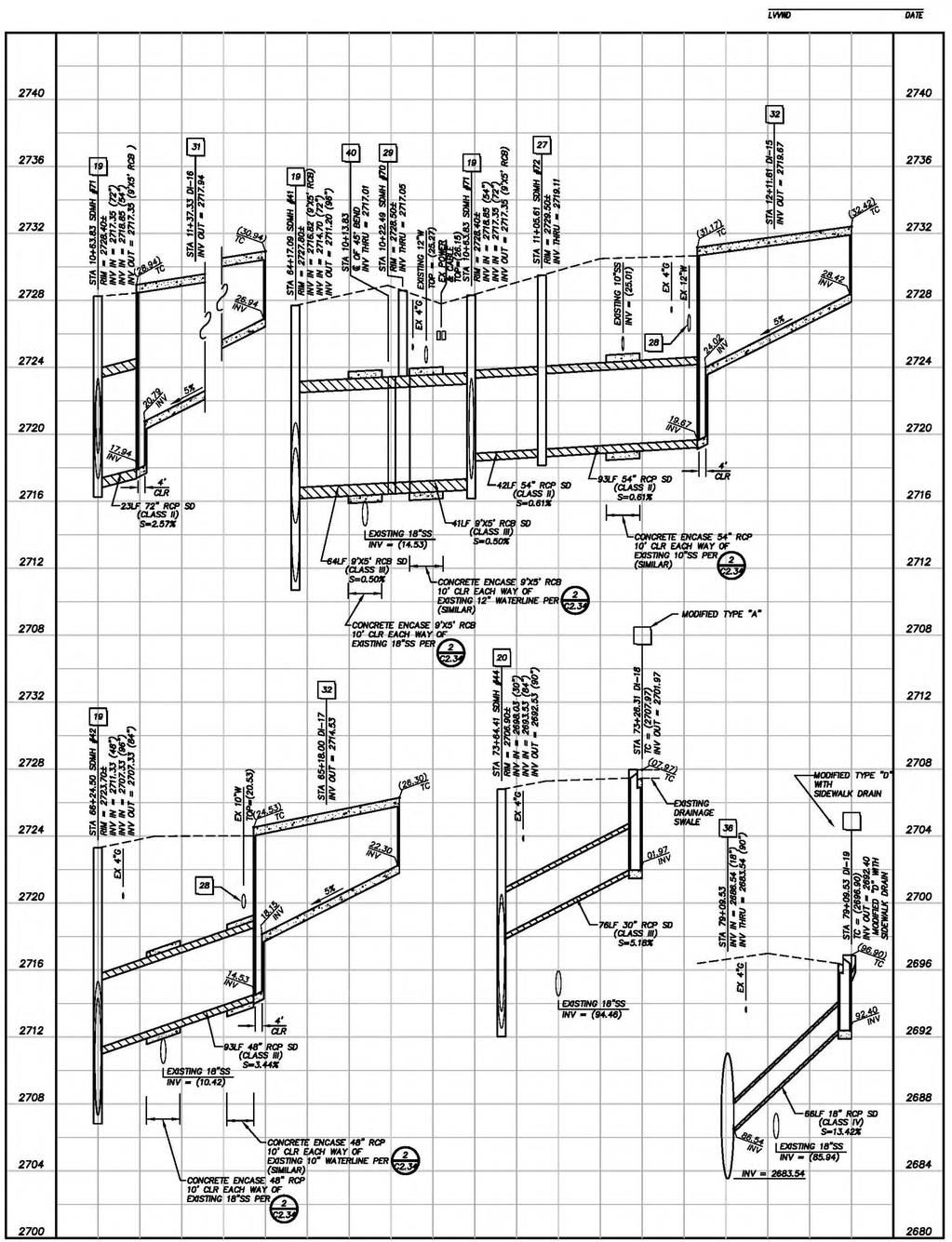


DROP INLET INTERSECTION "S"

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COMPLETED ON:	05/08/2002
BY:	PBS&J
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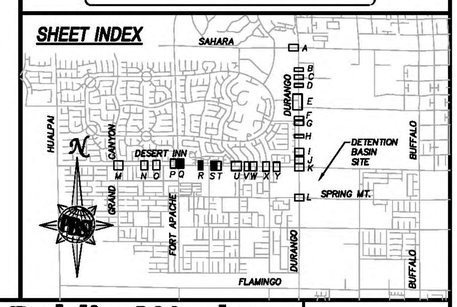
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
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SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

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CLARK COUNTY NEVADA

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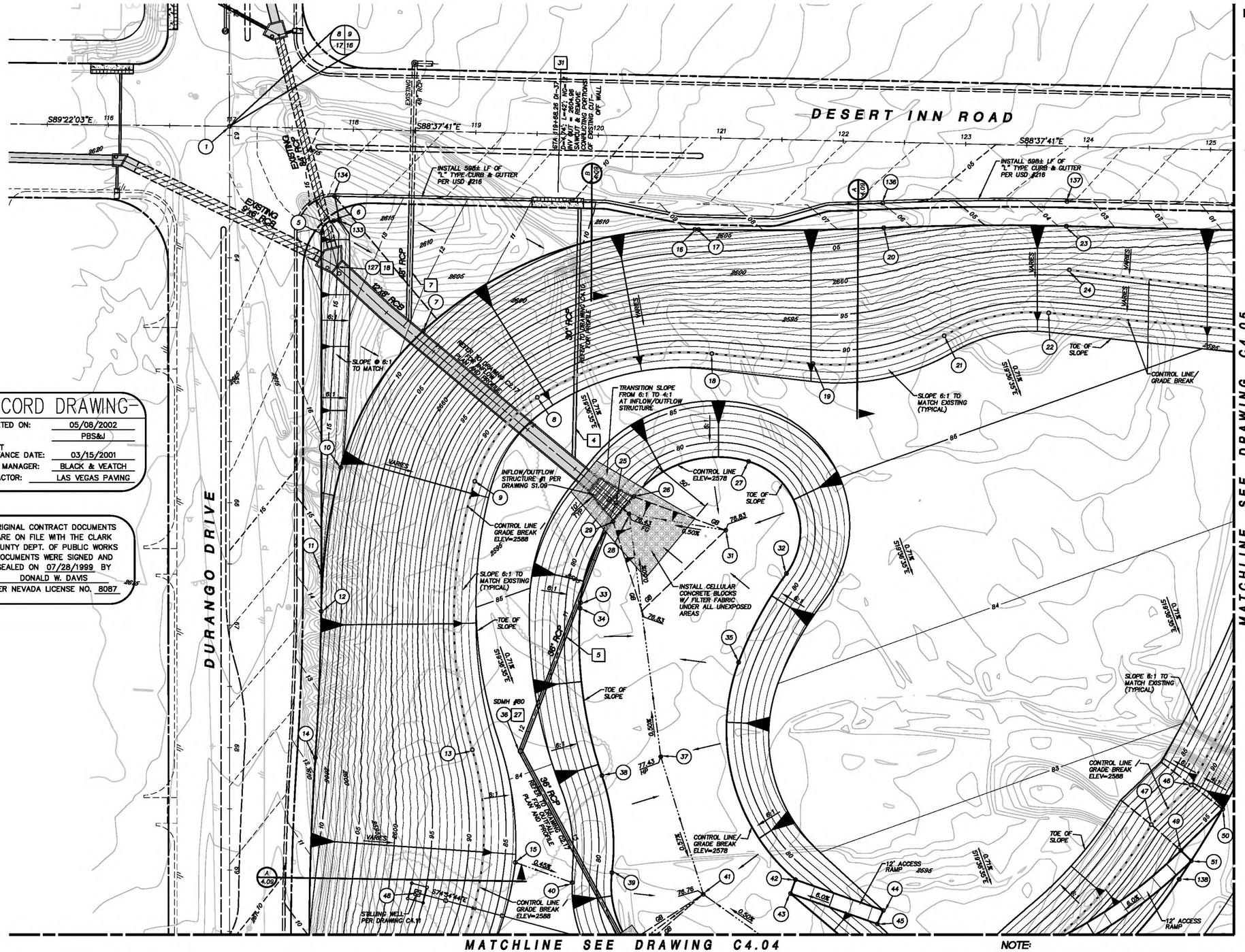
LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DESERT INN COLLECTION SYSTEM
DROP INLET INTERSECTIONS "Q" THRU "S"

L-1583

DRAWING NO. C2.28

35 / 77



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Call before you Dig 1-800-227-2600

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RECORD DRAWING

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

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(IN FEET)

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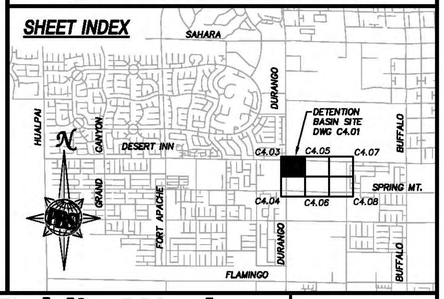
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3403
SCALE: HORIZ.: 1"=40' VERT.:

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901 North Green Valley Pkwy. Suite 100 Henderson, Nevada 89014 Telephone: 702/263-7275 Fax: 702/263-7200
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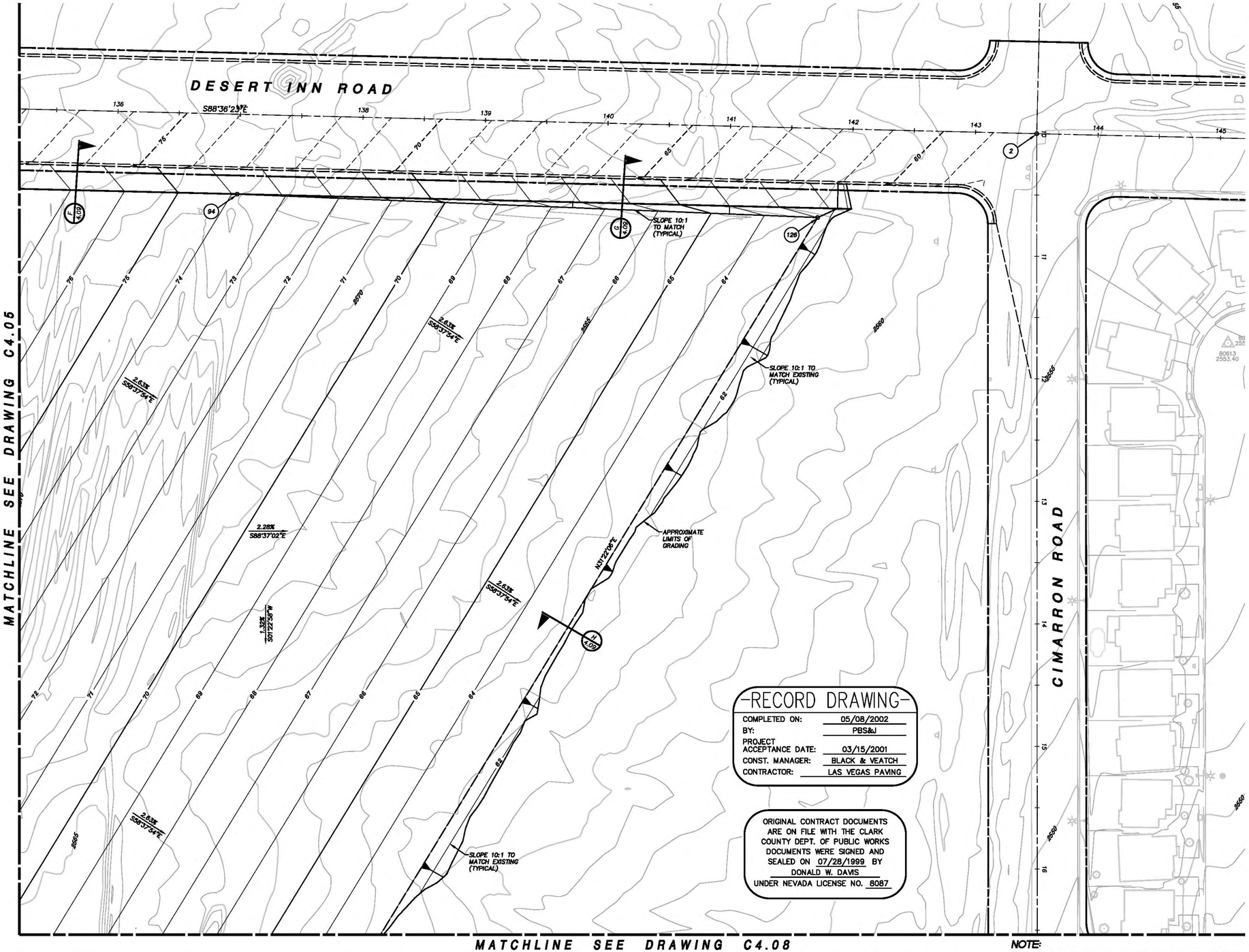
LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 1

L-1583

DRAWING NO. C4.03

52 / 77



Avoid cutting underground utility lines. It's costly.

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1-800-227-2600

RECORD DRAWING

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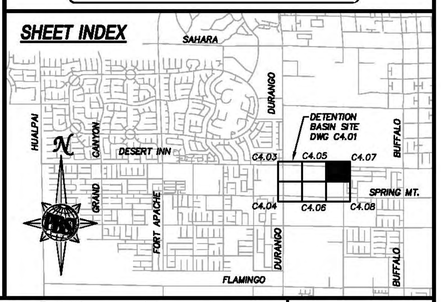
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3407
SCALE: HORIZ.: 1"=40' VERT.:

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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 5

L-1583

DRAWING NO. C4.07

56 / 77

MATCHLINE SEE DRAWING C4.03

MATCHLINE SEE DRAWING C4.06

DURANGO DRIVE

SPRING MOUNTAIN ROAD

INFLOW/OUTFLOW STRUCTURE #2 PER DRAWING S1.10

CONTROL LINE / GRADE BREAK ELEV=2588

54" RCP

INSTALL CELLULAR CONCRETE BLOCKS 10' CLR OF INFLOW/ OUTFLOW STRUCTURE #2 W/ FILTER FABRIC UNDER ALL UNEXPOSED AREAS

SDMH #85

SLOPE 6:1 TO MATCH EXISTING (TYPICAL)

TOE OF SLOPE

CONTROL LINE/ GRADE BREAK ELEV=2578

12' ACCESS RAMP

SDMH #86

TOP OF BERM =2596

CONCRETE DEPTH GAGE PER DETAIL 1/DRAWING C4.10 (TYPICAL)

CONTROL LINE/ GRADE BREAK ELEV=2588

36" RCP

REFER TO DRAWING C2.19 FOR OUTFALL PLAN AND PROFILE

0.71% N58°43'33"E

VARIES

REFER TO DRAWING C2.18 FOR INFLOW PLAN AND PROFILE

SDMH #84

CONTROL LINE / GRADE BREAK ELEV=2588

REFER TO DROP INLET INTERSECTION "L" DWG C2.25

SDMH #83

DU-25

PH-36

PH-35

S00°01'49"E

S88°45'32"E

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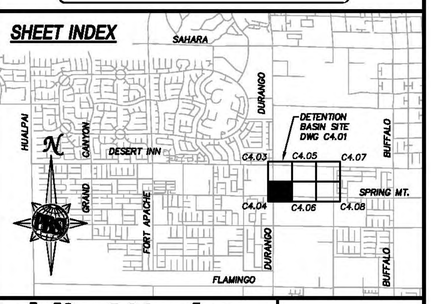
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REVISIONS

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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3404
SCALE: HORIZ.: 1"=40' VERT.:

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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 2

L-1583

DRAWING NO. C4.04

53 / 77

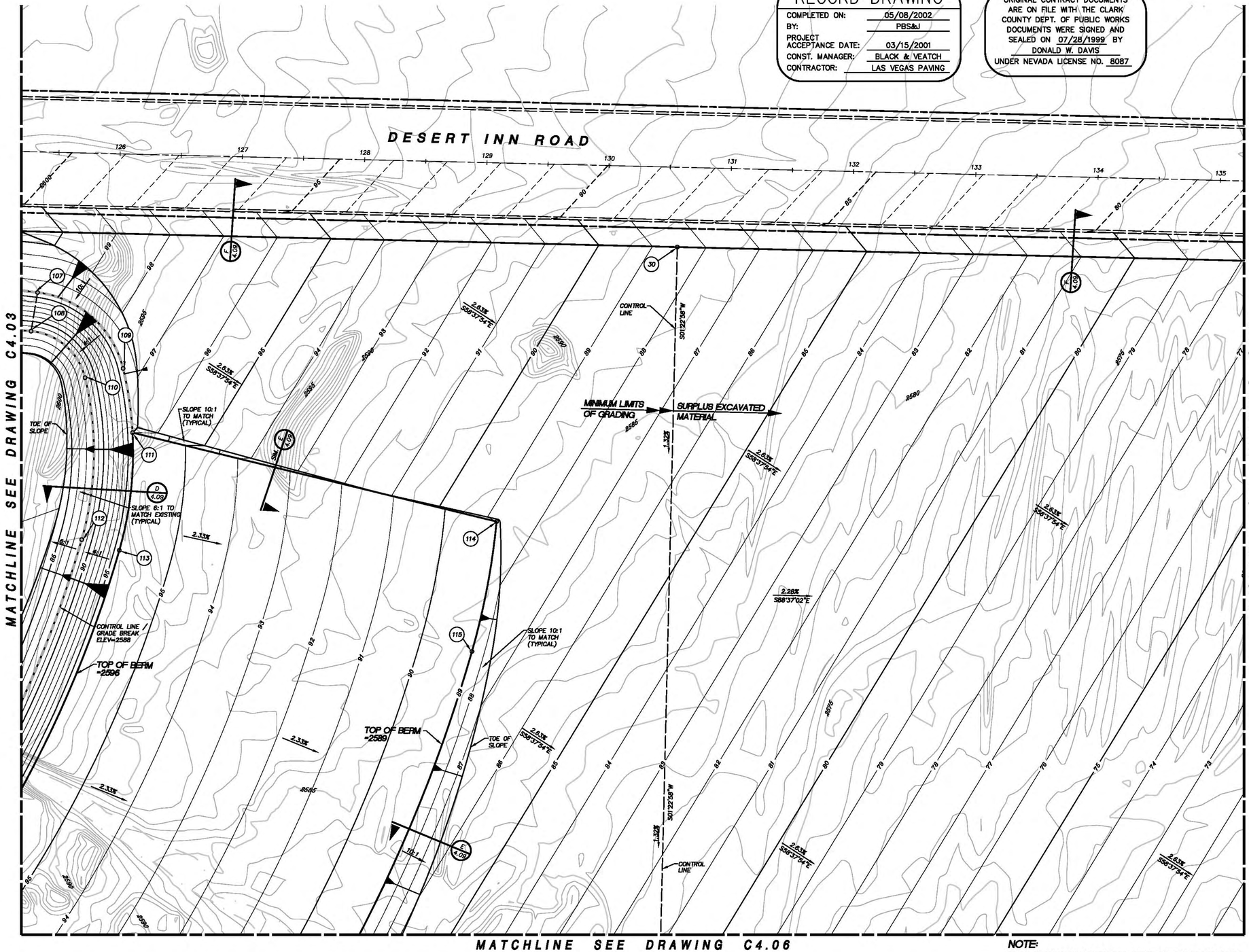
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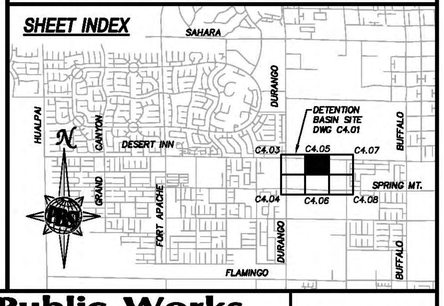
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DRAWN BY: A. SPATA
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DATE: JULY 28, 1999

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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 3

L-1583

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54 / 77

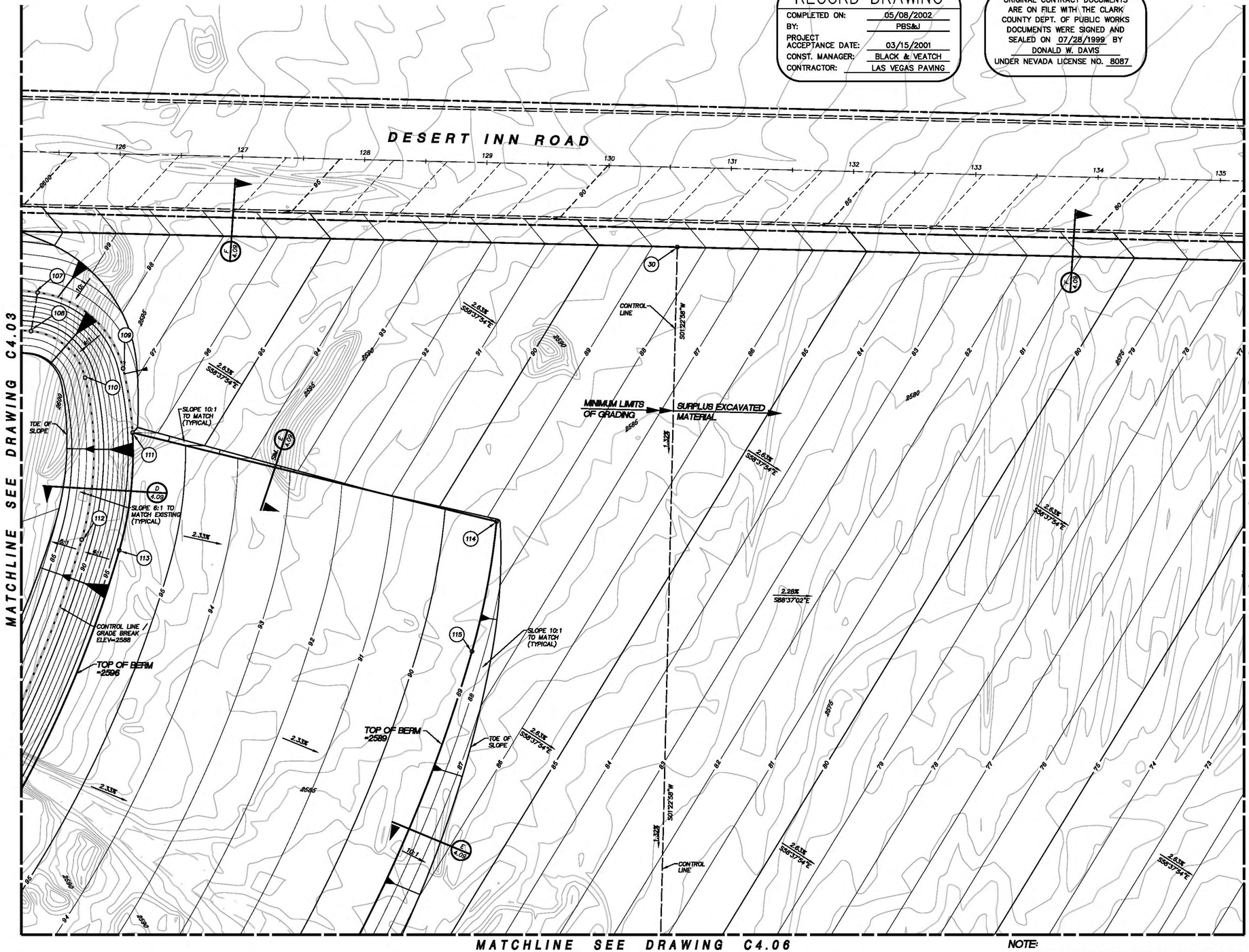
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GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.

BASIS OF BEARING

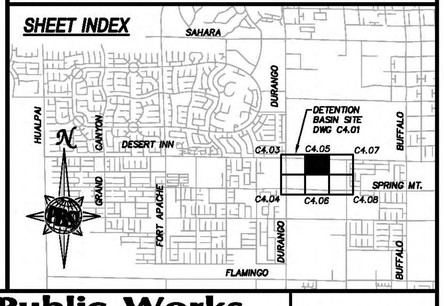
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BENCHMARK

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RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3405
SCALE: HORIZ.: 1"=40'
VERT.:

PBS&J
901 North Green Valley Pkwy. Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 3

L-1583

DRAWING NO. 54 / 77

C4.05

MATCHLINE SEE DRAWING C4.05

MATCHLINE SEE DRAWING C4.04

MATCHLINE SEE DRAWING C4.08

Avoid cutting underground utility lines. It's costly.

Call before you Dig 1-800-227-2600

N

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

MINIMUM LIMITS OF GRADING

SURPLUS EXCAVATED MATERIAL

CONTROL LINE

TOP OF BERM 2589

TOE OF SLOPE

SLOPE 10:1 TO MATCH (TYPICAL)

12' ACCESS RAMP

SDMH #87

SDMH #88

SDMH #89

36" RCP

REFER TO DRAWING C2.19 FOR INSTALL PLAN AND PROFILE

30" RCP

APPROXIMATE LIMITS OF GRADING

SLOPE 10:1 TO MATCH EXISTING (TYPICAL)

SPRING MOUNTAIN ROAD

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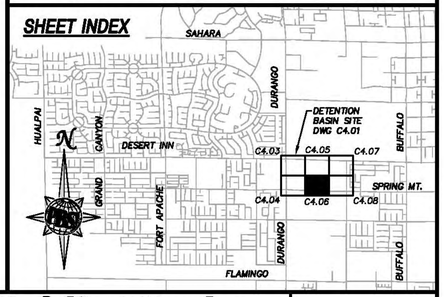
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3406
SCALE: HORIZ.: 1"=40'
VERT.:

PBS&J
901 North Green Valley Pkwy. Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 4

L-1583

DRAWING NO. 55 / 77

C4.06

MATCHLINE SEE DRAWING C4.07

MATCHLINE SEE DRAWING C4.06

Avoid cutting underground utility lines. It's costly.

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N

2.63% S88°37'04"E

2.28% S88°37'02"E

N31°22'08"E

APPROXIMATE LIMITS OF GRADING

H 4.00

SLOPE 10:1 TO MATCH EXISTING (TYPICAL)

S88°45'32"E

S88°47'00"E

SPRING MOUNTAIN ROAD

CIMARRON ROAD

UNDER CONSTRUCTION

N 1/16 CORNER

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	03/15/2001
CONST. MANAGER:	BLACK & VEATCH
CONTRACTOR:	LAS VEGAS PAVING

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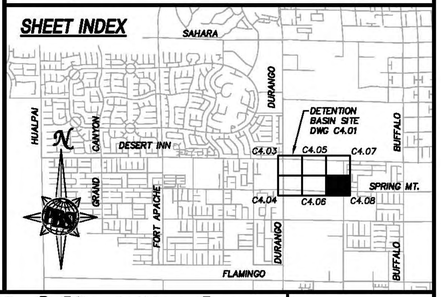
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3408
SCALE: HORIZ.: 1"=40'
VERT.:

PBS&J
901 North Green Valley Pkwy. Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

LAKES DETENTION BASIN GRADING PLAN - 6

L-1583

DRAWING NO. C4.08

57 / 77

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- C1.02 GENERAL NOTES, LEGEND, ABBREVIATIONS & QUANTITIES
- C1.03 GENERAL NOTES & DRAWING INDEX
- C1.04 WATERSHED BOUNDARY MAP
- C1.05 CAPACITY CURVES & HYDROLOGIC INFORMATION
- C1.06 HORIZONTAL CONTROL PLAN AREA – 1
- C1.07 HORIZONTAL CONTROL PLAN AREA – 2

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- C2.02 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 9+69.63 TO STA 16+00.00
- C2.03 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 16+00.00 TO STA 26+00.00
- C2.04 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 26+00.00 TO STA 36+00.00
- C2.05 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 36+00.00 TO STA 45+50.00
- C2.06 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 45+50.00 TO STA 55+00.00
- C2.07 DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 55+00.00 TO STA 65+00.00

SHEETS DELETED
- C2.08 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 30+00.00 TO STA 40+00.00
- C2.09 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 40+00.00 TO STA 50+00.00
- C2.10 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 50+00.00 TO STA 60+00.00
- C2.11 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 60+00.00 TO STA 70+00.00
- C2.12 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 70+00.00 TO STA 80+00.00
- C2.13 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 80+00.00 TO STA 89+50.00
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- C2.15 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 99+00.00 TO STA 109+00.00
- C2.16 DESERT INN COLLECTION SYSTEM PLAN AND PROFILE STA 109+00.00 TO STA 119+00.00
- C2.17 DETENTION BASIN INLET PIPE(DESERT INN) PLAN & PROFILE
- C2.18 DETENTION BASIN INLET PIPE(SPRING MOUNTAIN) PLAN & PROFILE
- C2.19 DETENTION BASIN OUTLET PIPE(SPRING MOUNTAIN) PLAN & PROFILE

- C2.20 DURANGO (@ SAHARA) COLLECTION SYSTEM DROP INLET INTERSECTION "A"

SHEETS DELETED
- C2.21 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "B" THRU "D"
- C2.22 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTION "E"
- C2.23 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "F" THRU "H"
- C2.24 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "I" & "J"
- C2.25 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "K" & "L"
- C2.26 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "M" & "N"
- C2.27 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "O" & "P"
- C2.28 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "Q" THRU "S"
- C2.29 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "T" & "U"
- C2.30 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "V" & "W"
- C2.31 DURANGO COLLECTION SYSTEM DROP INLET INTERSECTIONS "X" & "Y"
- C2.32 ENLARGEMENT DETAILS & UTILITY RELOCATIONS
- C2.33 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION DROP INLET DETAILS
- C2.34 LAKES DETENTION BASIN COLLECTION SYSTEM MISCELLANEOUS DETAILS
- C2.35 LAKES DETENTION BASIN COLLECTION SYSTEM MISCELLANEOUS DETAILS

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- C3.02 DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 16+00.00 TO STA 26+00.00
- C3.03 DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 26+00.00 TO STA 36+00.00
- C3.04 DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 36+00.00 TO STA 45+50.00
- C3.05 DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 45+50.00 TO STA 55+00.00
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SHEETS DELETED
- C4.01 DETENTION BASIN HORIZONTAL CONTROL PLAN
- C4.02 COORDINATE TABLE
- C4.03 DETENTION BASIN GRADING–PLAN 1
- C4.04 DETENTION BASIN GRADING–PLAN 2
- C4.05 DETENTION BASIN GRADING–PLAN 3
- C4.06 DETENTION BASIN GRADING–PLAN 4
- C4.07 DETENTION BASIN GRADING–PLAN 5
- C4.08 DETENTION BASIN GRADING–PLAN 6
- C4.09 TYPICAL SECTIONS
- C4.10 MISCELLANEOUS DETAILS
- C4.11 MISCELLANEOUS DETAILS
- C4.12 DETENTION BASIN CROSS SECTIONS PLAN VIEW
- C4.13 DETENTION BASIN CROSS SECTIONS DURANGO STA 64+00.00 & STA 65+00.00
- C4.14 DETENTION BASIN CROSS SECTIONS DURANGO STA 66+00.00 & STA 67+00.00
- C4.15 DETENTION BASIN CROSS SECTIONS DURANGO STA 68+00.00 & STA 69+00.00
- C4.16 DETENTION BASIN CROSS SECTIONS DURANGO STA 70+00.00 & STA 71+00.00
- C4.17 DETENTION BASIN CROSS SECTIONS DURANGO STA 72+00.00 & STA 73+00.00
- C4.18 DETENTION BASIN CROSS SECTIONS DURANGO STA 74+00.00 & STA 75+00.00

STRUCTURAL (DRAWINGS-S1.xx)

SHEETS DELETED
- S1.01 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION GENERAL NOTES AND DETAILS
- S1.02 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
- S1.03 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION TYPE II JUNCTION STRUCTURE
- S1.04 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION TYPE III JUNCTION STRUCTURE
- S1.05 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
- S1.06 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
- S1.07 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION TYPE IV JUNCTION STRUCTURE
- S1.08 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
- S1.09 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
- S1.10 DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION

LANDSCAPING, IRRIGATION, ELETRICAL (DRAWINGS-C5.xx)

SHEETS DELETED
- C5.01 LANDSCAPING HORIZONTAL CONTROL PLAN
- C5.02 LANDSCAPING HORIZONTAL CONTROL PLAN
- C5.03 LANDSCAPE BUFFER & TURF IMPROVEMENTS
- C5.04 LANDSCAPE BUFFER & TURF IMPROVEMENTS
- C5.05 LANDSCAPE BUFFER & TURF IMPROVEMENTS
- C5.06 LANDSCAPE BUFFER & TURF IMPROVEMENTS
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- C5.09 LANDSCAPE BUFFER & TURF IMPROVEMENTS
- C5.10 LANDSCAPE BUFFER & TURF IMPROVEMENTS
- C5.11 LANDSCAPE IRRIGATION PLANS
- C5.12 LANDSCAPE IRRIGATION PLANS
- C5.13 LANDSCAPE IRRIGATION PLANS
- C5.14 LANDSCAPE IRRIGATION PLANS W/ PUMP STATION & P.O.C.
- C5.15 LANDSCAPE IRRIGATION PLANS
- C5.16 LANDSCAPE IRRIGATION PLANS
- C5.17 LANDSCAPE IRRIGATION PLANS
- C5.18 LANDSCAPE IRRIGATION PLANS
- C5.19 ELECTRICAL SITE PLAN
- C5.20 MISCELLANEOUS DETAILS
- C5.21 PUMP STATION PLANS & DETAILS
- C5.22 PUMP STATION MISCELLANEOUS DETAILS
- C5.23 LANDSCAPE IRRIGATION DETAILS
- C5.24 LANDSCAPE IRRIGATION DETAILS

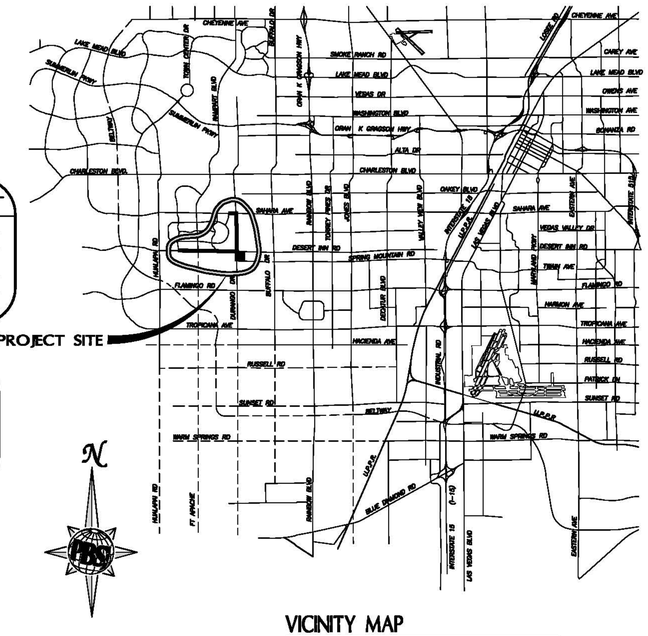
DEPARTMENT OF PUBLIC WORKS

CLARK COUNTY NEVADA

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087



VICINITY MAP
Not to scale

2000
IMPROVEMENT PLANS FOR

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES PHASE 3B

BID #4722-00

DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT,
CLARK COUNTY REGIONAL TRANSPORTATION COMMISSION,
CLARK COUNTY SANITATION DISTRICT

COUNTY COMMISSIONERS

BRUCE WOODBURY, CHAIRMAN
ERIN KENNY, VICE-CHAIR
YVONNE ATKINSON GATES
DARIO HERRERA
MARY J. KINCAID
LANCE MALONE
MYRNA WILLIAMS

PBS&J
901 North Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

COUNTY MANAGER

DALE W. ASKEW

DIRECTOR OF PUBLIC WORKS

APPROVED:

M.J. MANNING P.E. 7299

GENERAL MANAGER/CHIEF ENGINEER CCRFCD

APPROVED:

GALE WM. FRASER II, P.E.

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHWEST GAS COMPANY		
NEVADA POWER COMPANY		
C.C. SANITATION DISTRICT		
COX COMMUNICATIONS LAS VEGAS, INC.		
REGIONAL TRANSPORTATION COMMISSION		

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY:	DATE OF APPROVAL
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		
COMMUNITY DEVELOPMENT DIVISION		
CONSTRUCTION MANAGEMENT DIVISION		
DESIGN ENGINEERING DIVISION		
MAINTENANCE MANAGEMENT DIVISION		
TRAFFIC MANAGEMENT DIVISION		
COUNTY SURVEYOR'S OFFICE		
CLARK COUNTY DEPTARTMENT OF PARKS & RECREATION		

REVISIONS					
REVISION NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE

DESIGN ENGINEERING DIVISION

COVER SHEET

L-1583

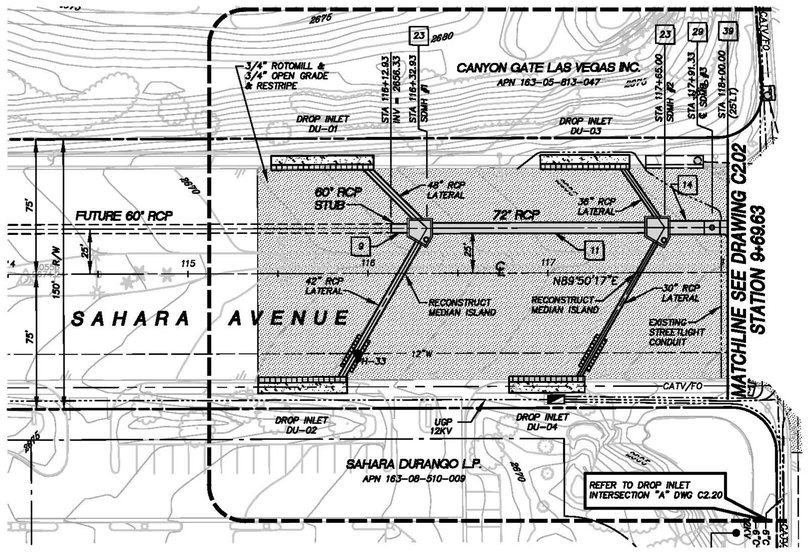
LAKES DETENTION BASIN PHASE 3 – DESERT INN, DURANGO, & SPRING MOUNTAIN COLLECTION

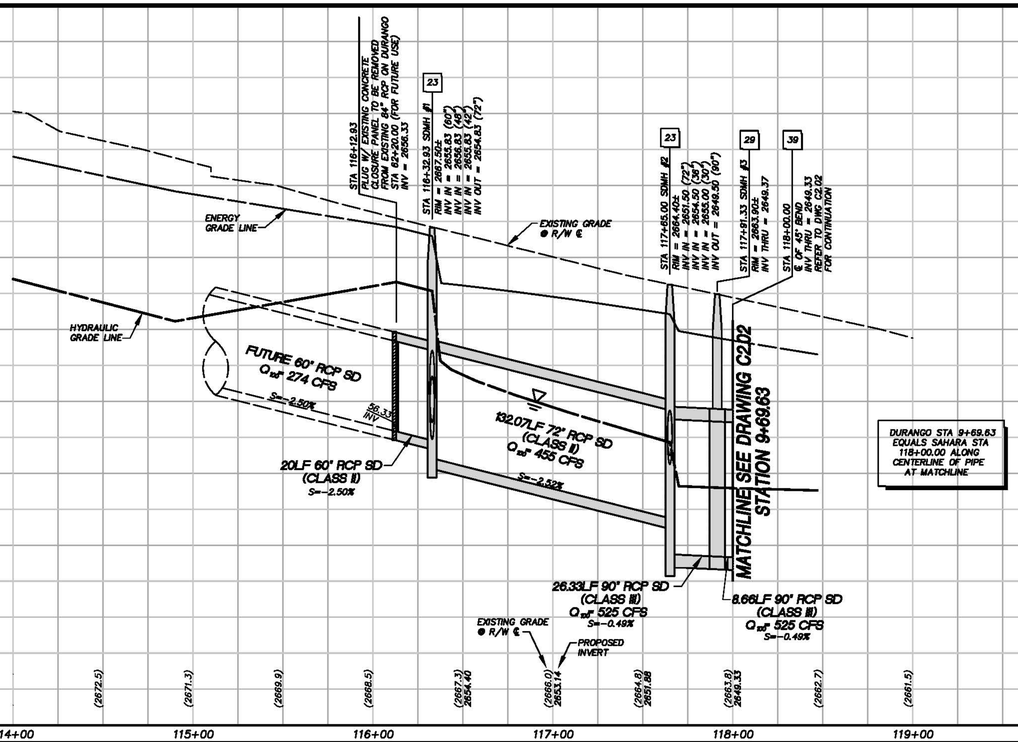
BID #4500-99

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N

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COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

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GRAPHIC SCALE

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(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.

BASIS OF BEARING

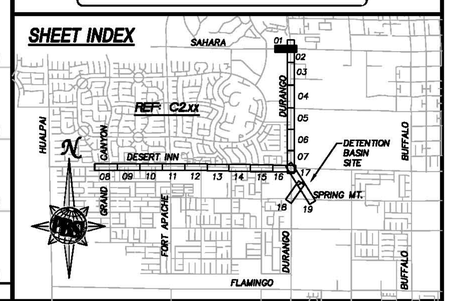
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BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
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CAUTION:
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SHEET INDEX



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3201
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3
DURANGO (@ SAHARA) COLLECTION SYSTEM
PLAN AND PROFILE STA 116+00.00 TO STA 118+00.00

L-1583

DRAWING NO. C2.01

8 / 77

Avoid cutting underground utility lines. It's costly.

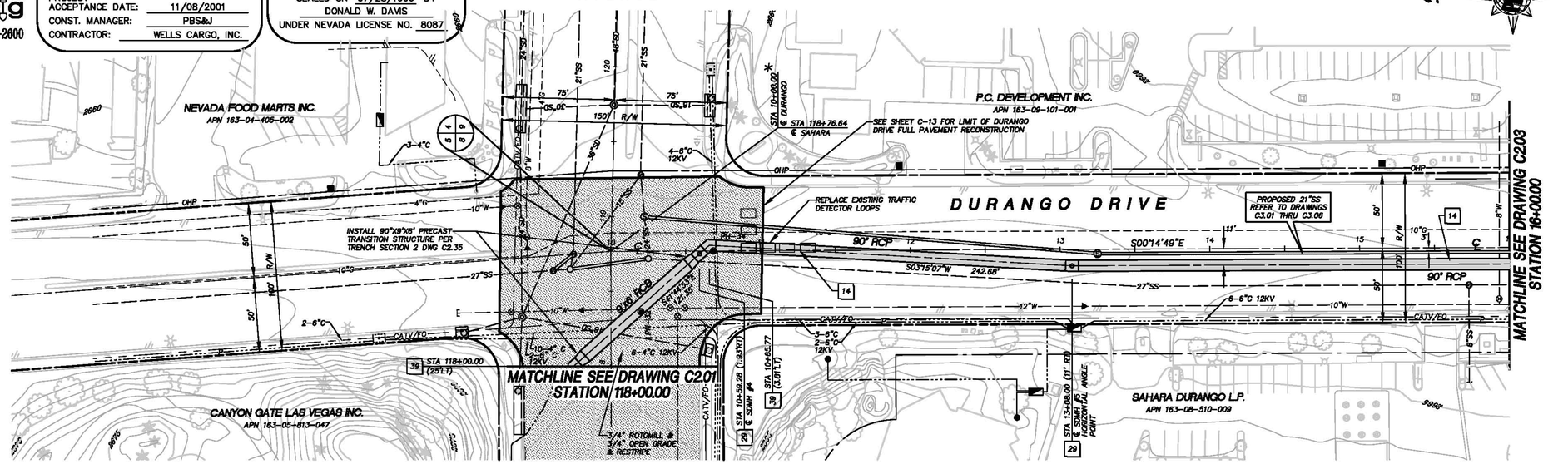
Call before you Dig
1-800-227-2600

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

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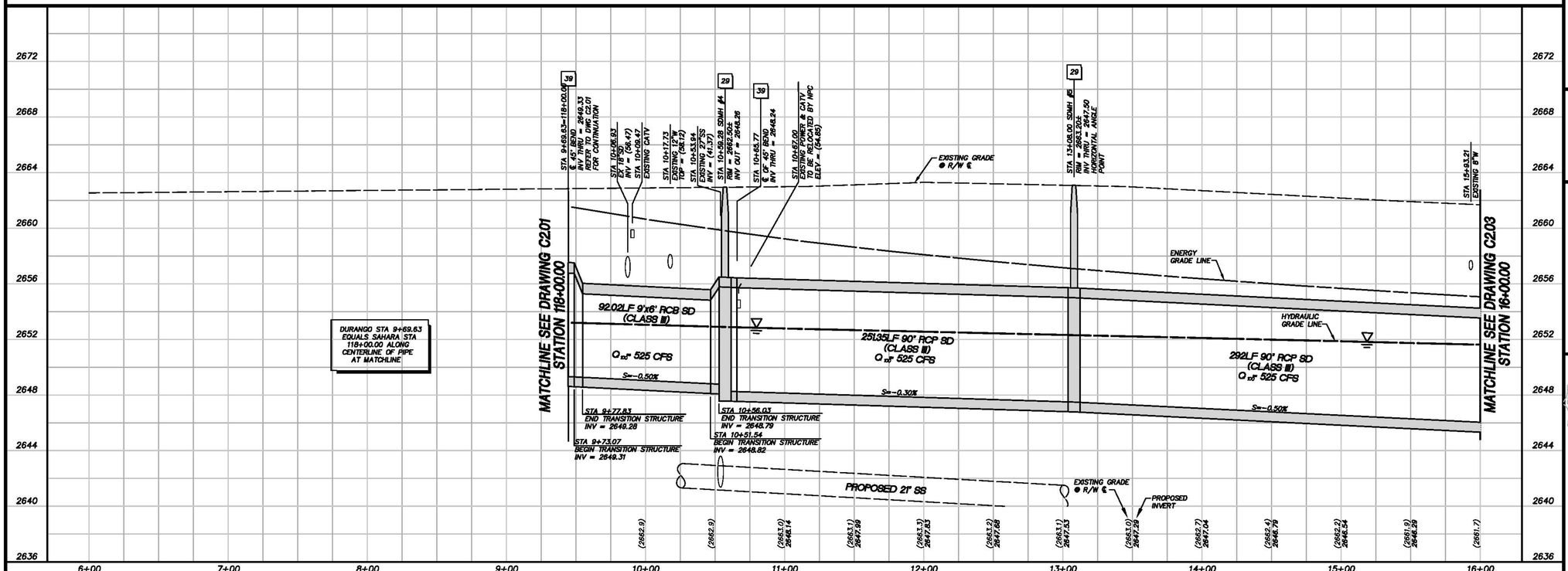
* NOTE: DURANGO STATION 10+00 FOR THE STORM DRAIN PLANS FOR PROJECT L1583 IS EQUIVALENT TO STATION 126+30.98 FOR THE ROADWAY PLANS FOR PROJECT L1568.



LVVWD DATE

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(IN FEET)
HORZ: 1 inch = 40 ft.
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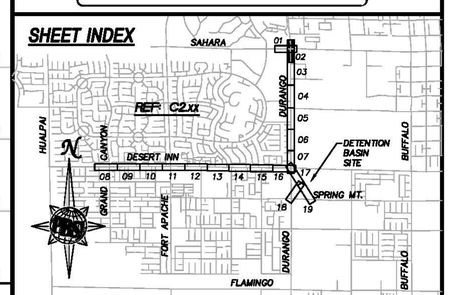
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3202
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 9+69.63 TO STA 16+00.00

L-1583

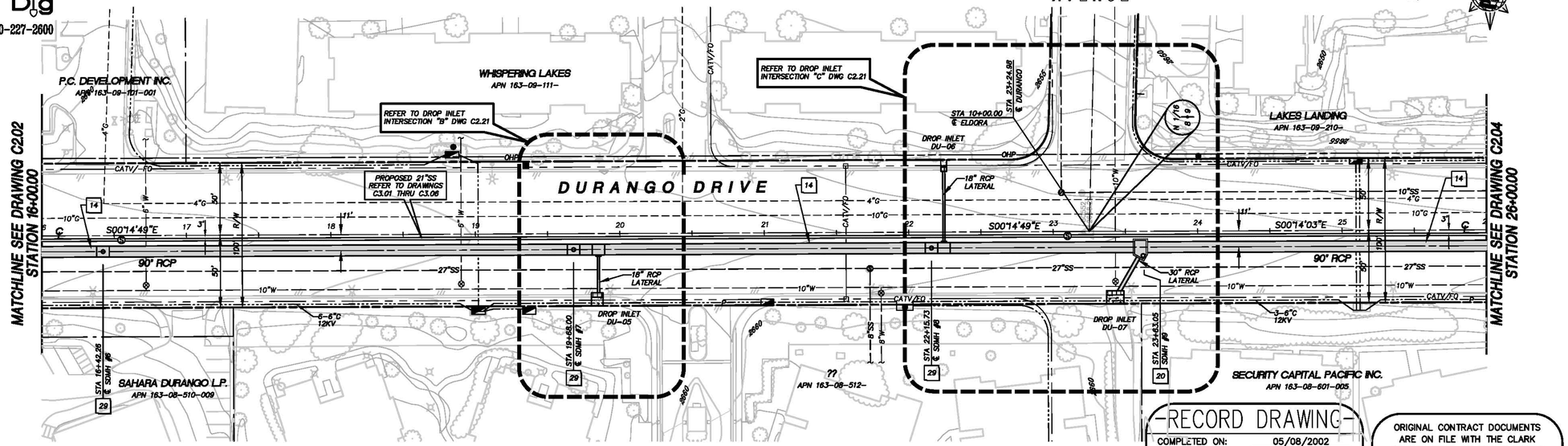
DRAWING NO. C2.02

9 / 77

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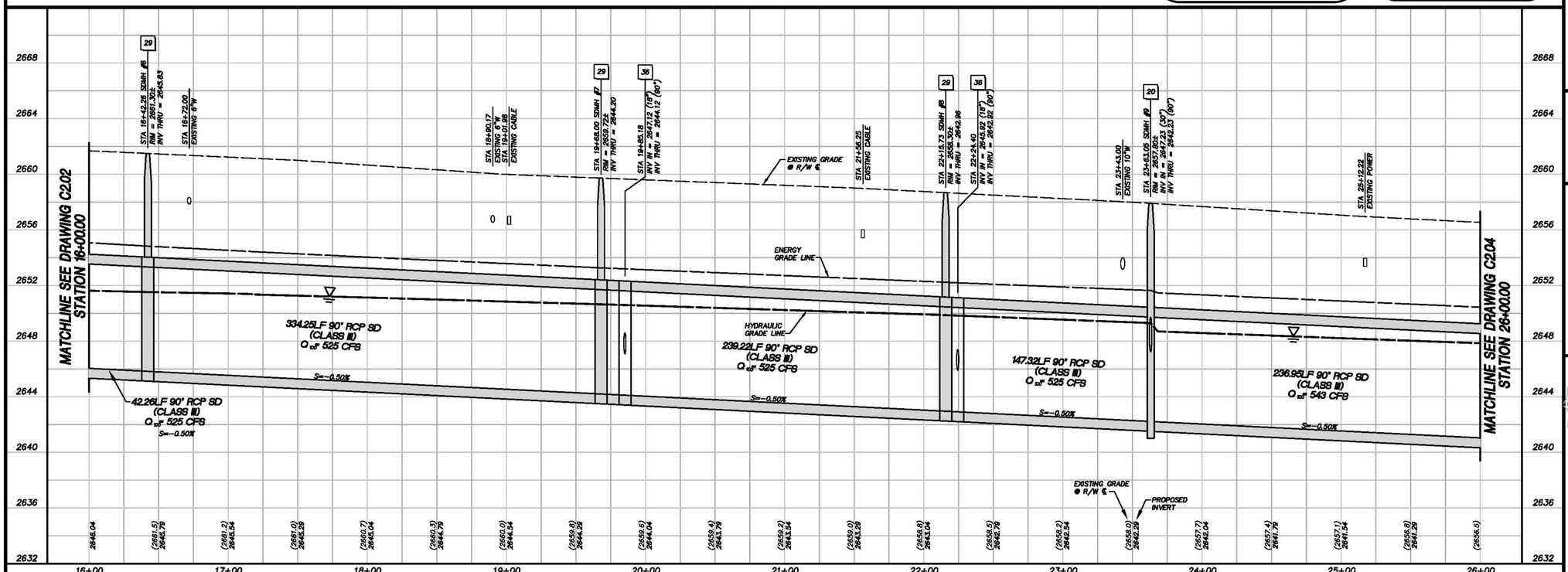
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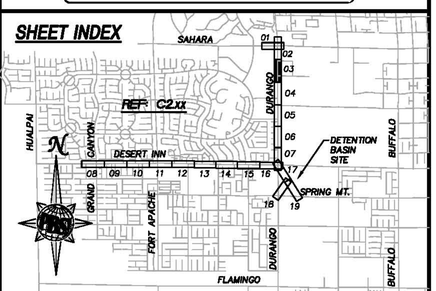
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3203
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

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DURANGO COLLECTION SYSTEM PLAN AND PROFILE STA 16+00.00 TO STA 26+00.00

L-1583

DRAWING NO. C2.03

10 / 77

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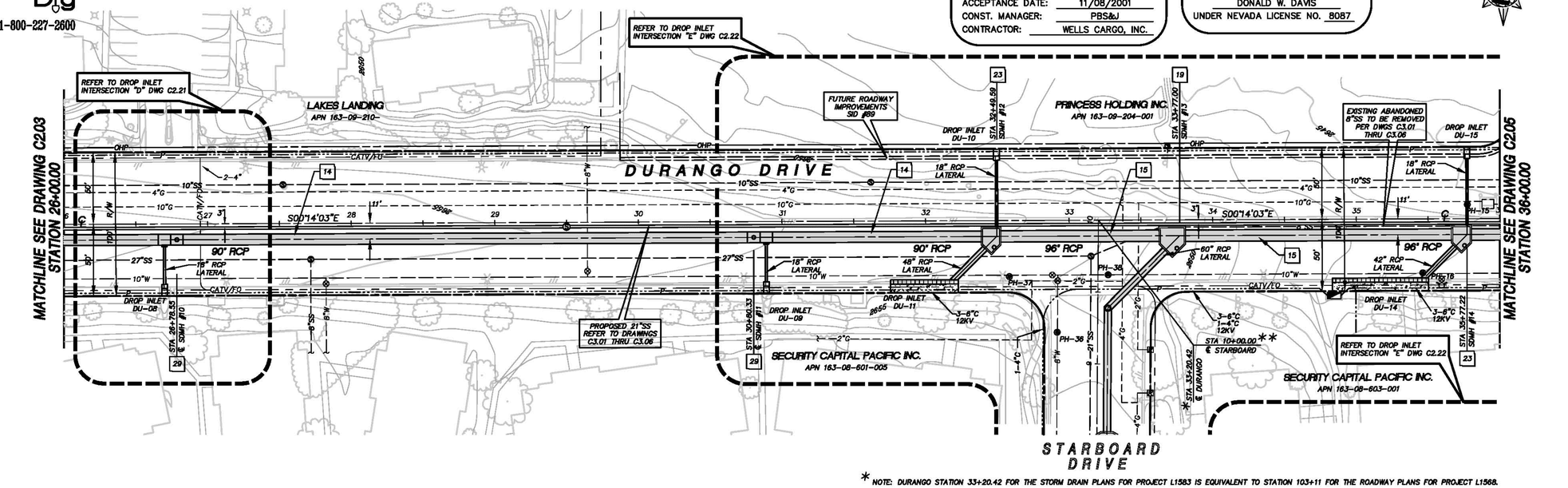
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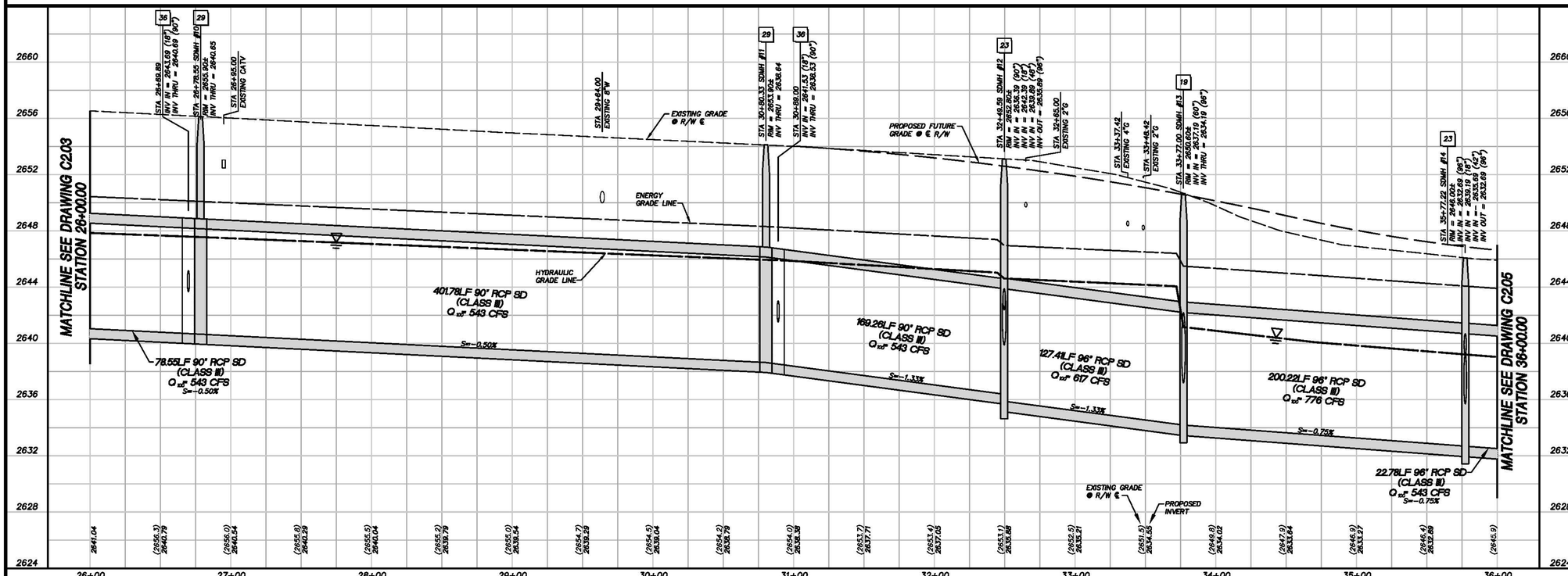
COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
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* NOTE: DURANGO STATION 33+20.42 FOR THE STORM DRAIN PLANS FOR PROJECT L1583 IS EQUIVALENT TO STATION 103+11 FOR THE ROADWAY PLANS FOR PROJECT L1568.

** NOTE: STARBOARD STATION 10+00 FOR THE STORM DRAIN PLANS FOR PROJECT L1583 IS EQUIVALENT TO STATION 700+00 FOR THE ROADWAY PLANS FOR PROJECT L1568.



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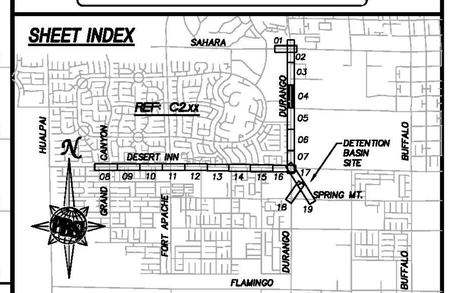
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DRAWN BY: A. SPATA
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L-1583

DRAWING NO. C2.04

11 / 77

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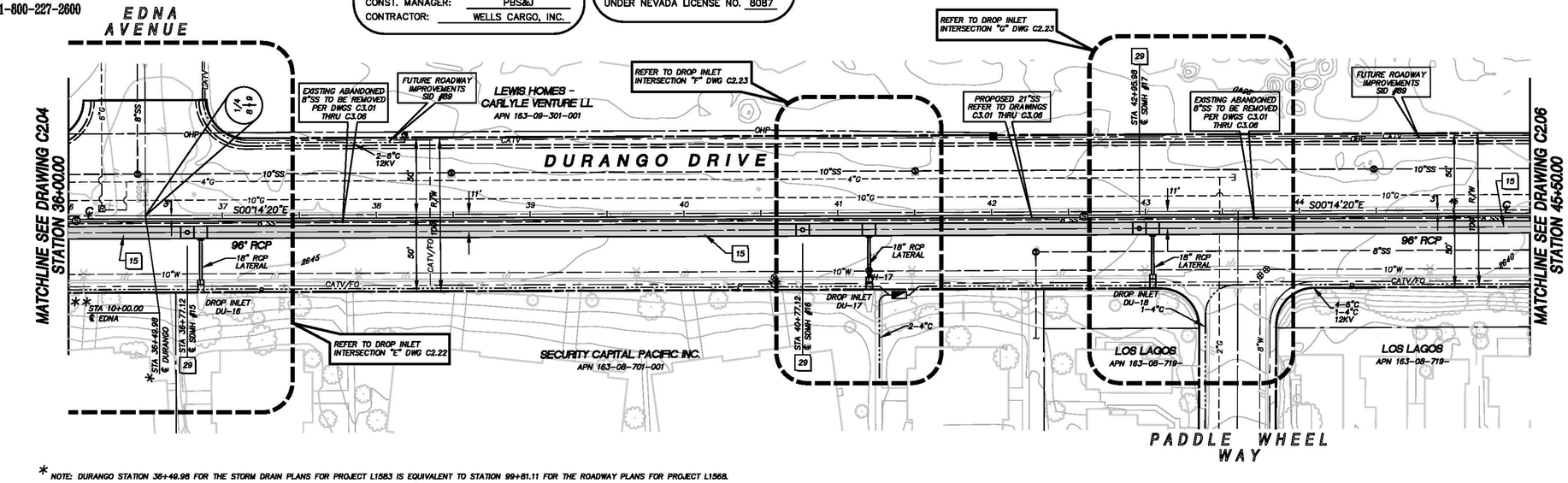
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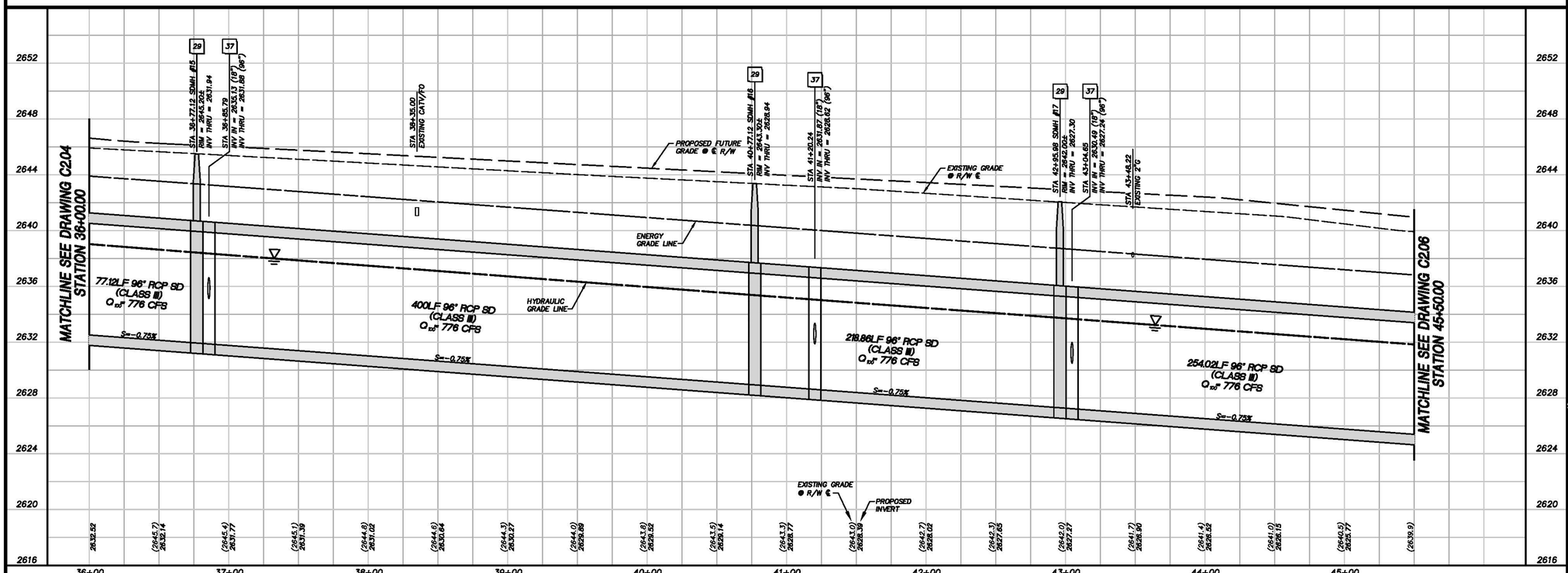
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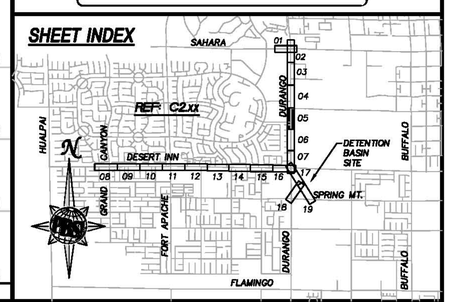
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L-1583

DRAWING NO. C2.05

12 / 77

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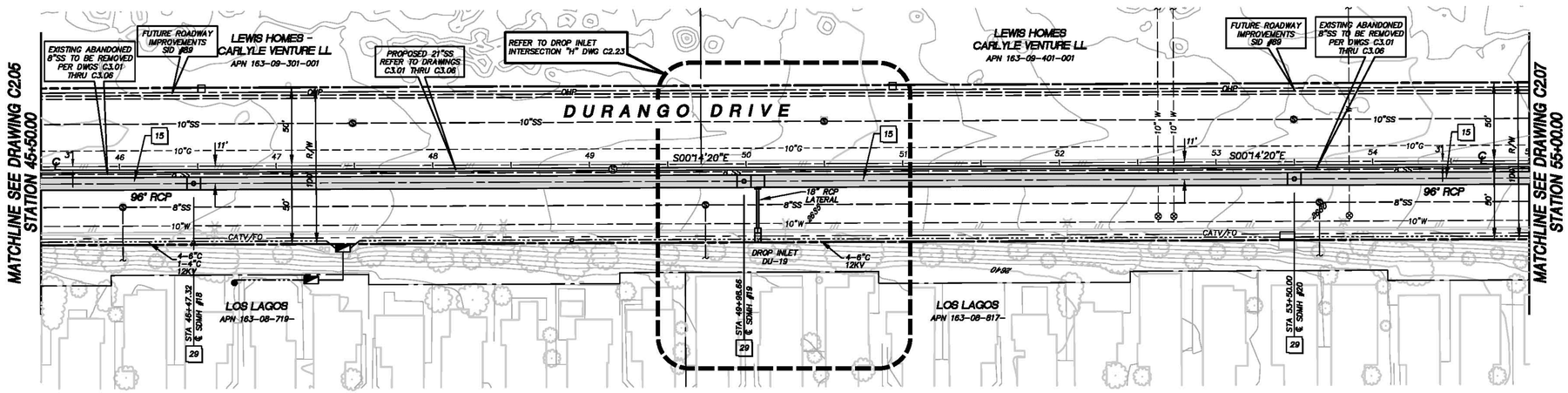
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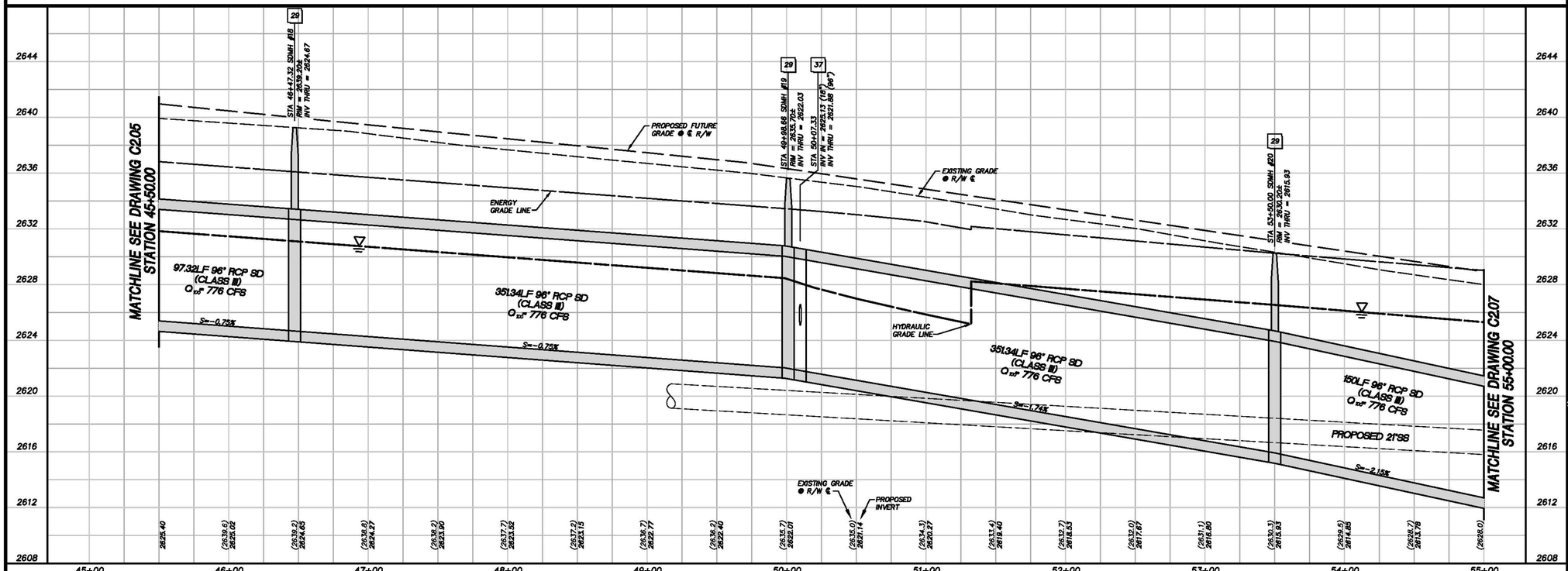
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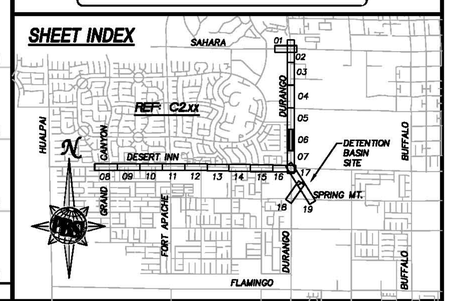
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DRAWN BY: A, SPATA
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L-1583

DRAWING NO. 13

C2.06

77

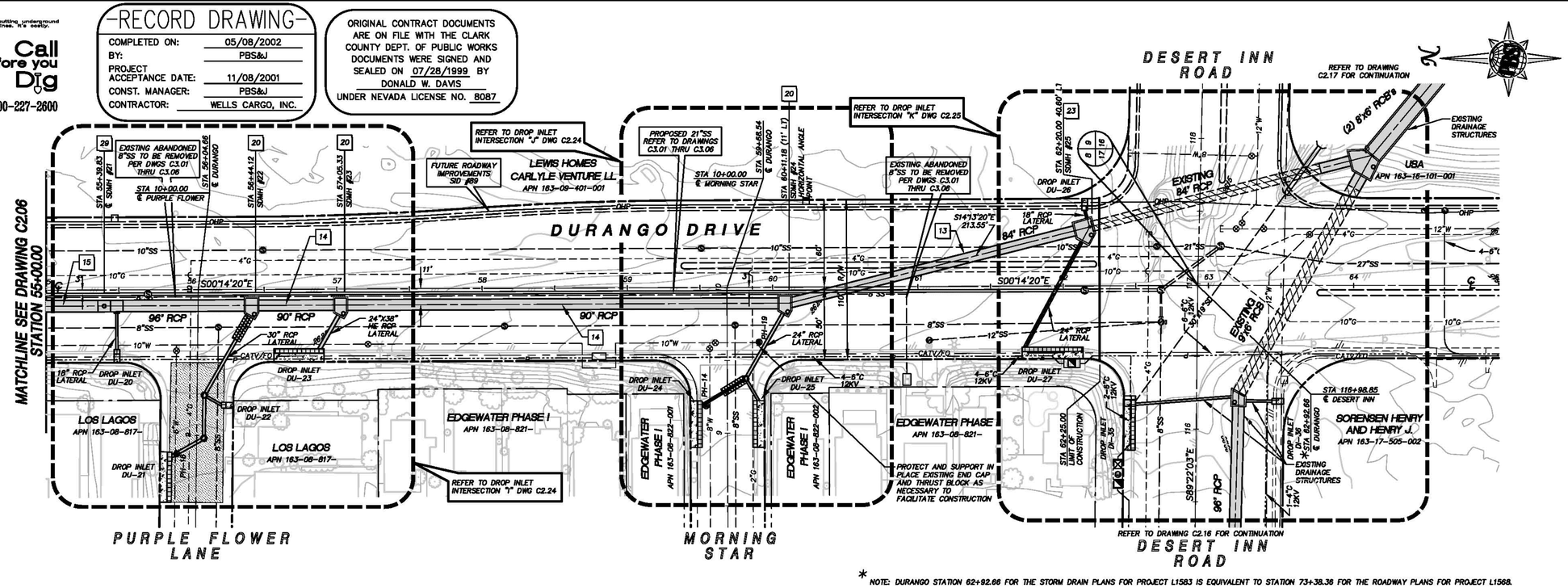
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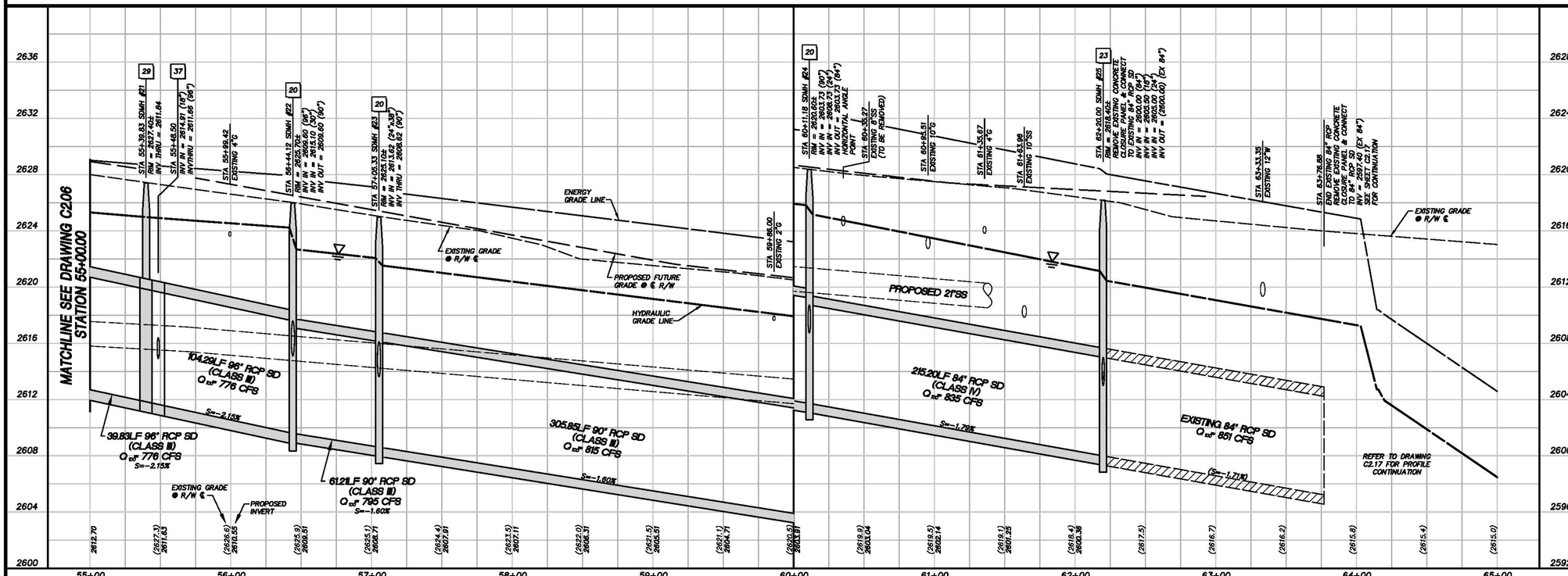
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16. INSTALL 106"x68" HE RCP SD PER TRENCH SECTION 2 DWG C2.35
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19. INSTALL TYPE II JUNCTION STRUCTURE PER DWG S1.03
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29. INSTALL PRECAST MANHOLE TEE W/48" RISER PER USD #407 (W/30" MIN. ACCESS)
30. INSTALL (48") ACCESS MANHOLE W/STEPS PER DETAIL 3 DWG S1.01 (IN EACH RCB)
31. INSTALL TYPE "CM" DROP INLET PER DETAIL 1 DWG C2.33
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GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
HORZ: 1 inch = 40 ft.
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BASIS OF BEARING

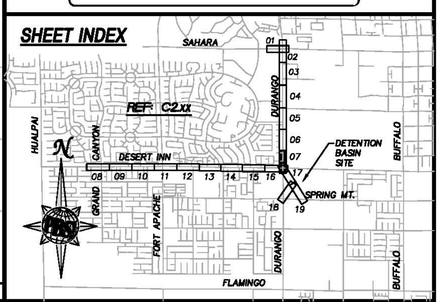
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SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3207
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
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CLARK COUNTY NEVADA

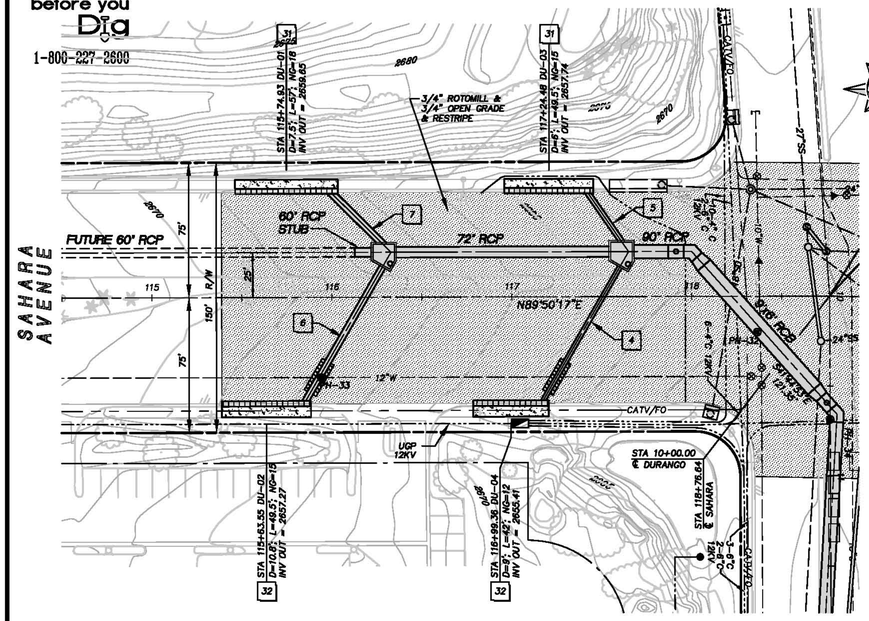
Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3
DURANGO COLLECTION SYSTEM
PLAN AND PROFILE STA 55+00.00 TO STA 65+00.00

L-1583
DRAWING NO. 14
C2.07
77

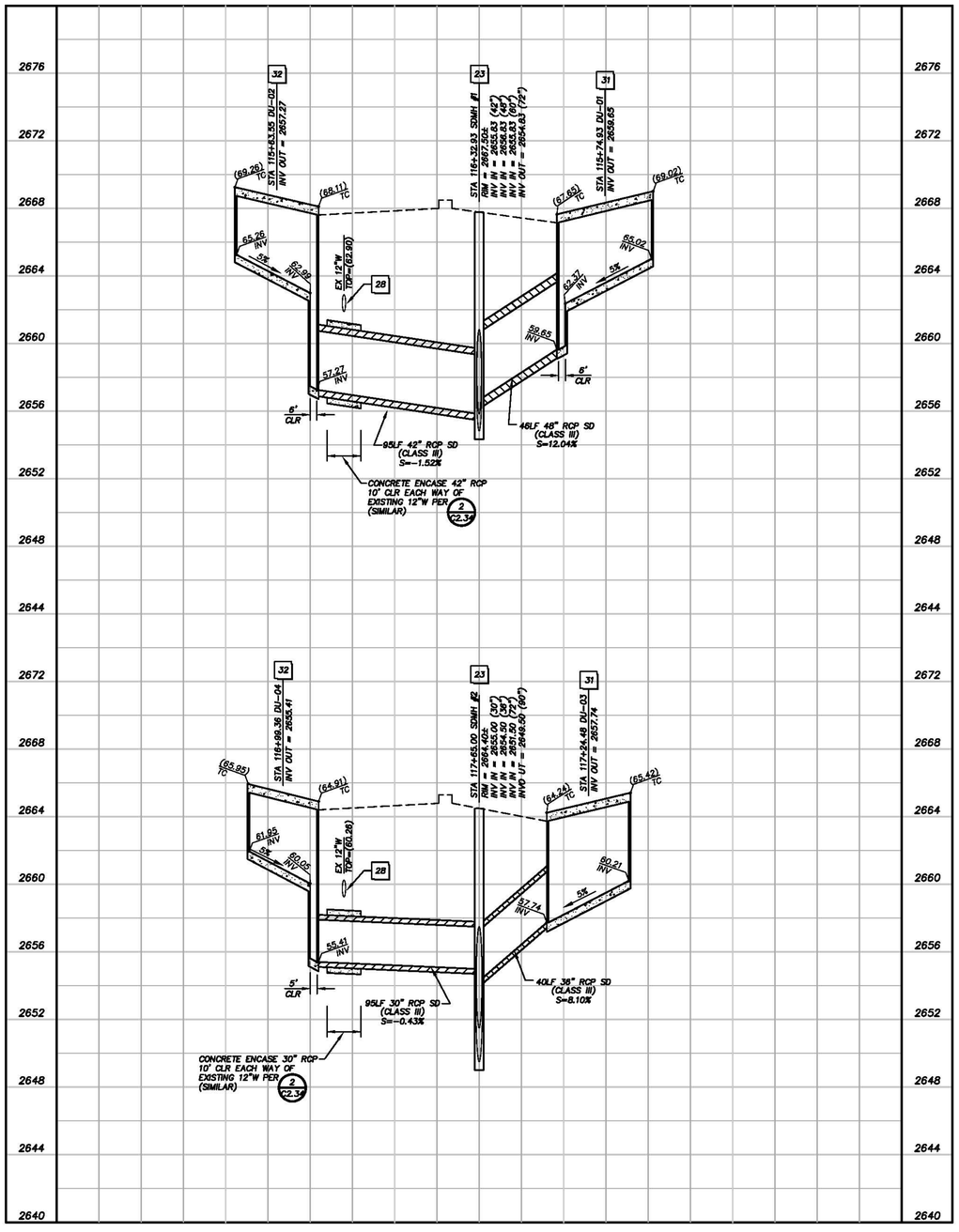
Avoid cutting underground utility lines. It's easy.

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DROP INLET INTERSECTION "A"

LVWD DATE



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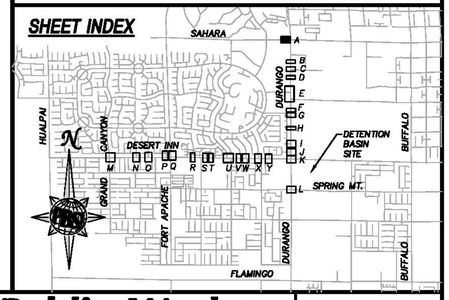
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-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3220
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DURANGO (@ SAHARA) COLLECTION SYSTEM
DROP INLET INTERSECTION "A"

L-1583

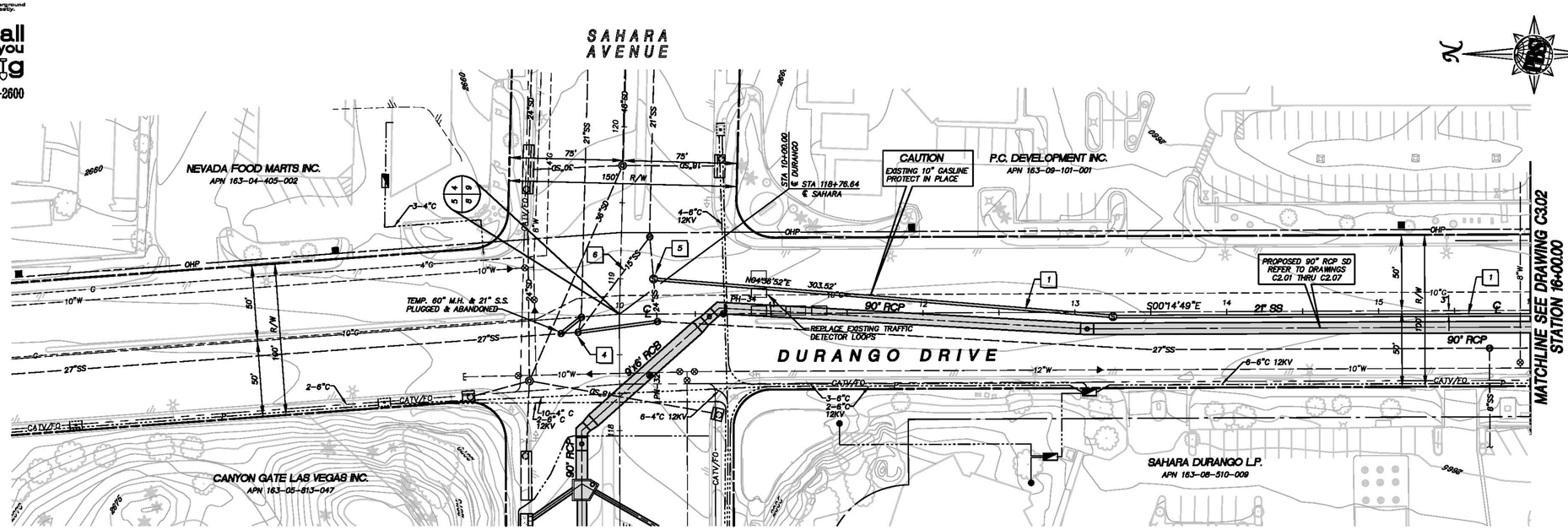
DRAWING NO. C2.20

27 / 77

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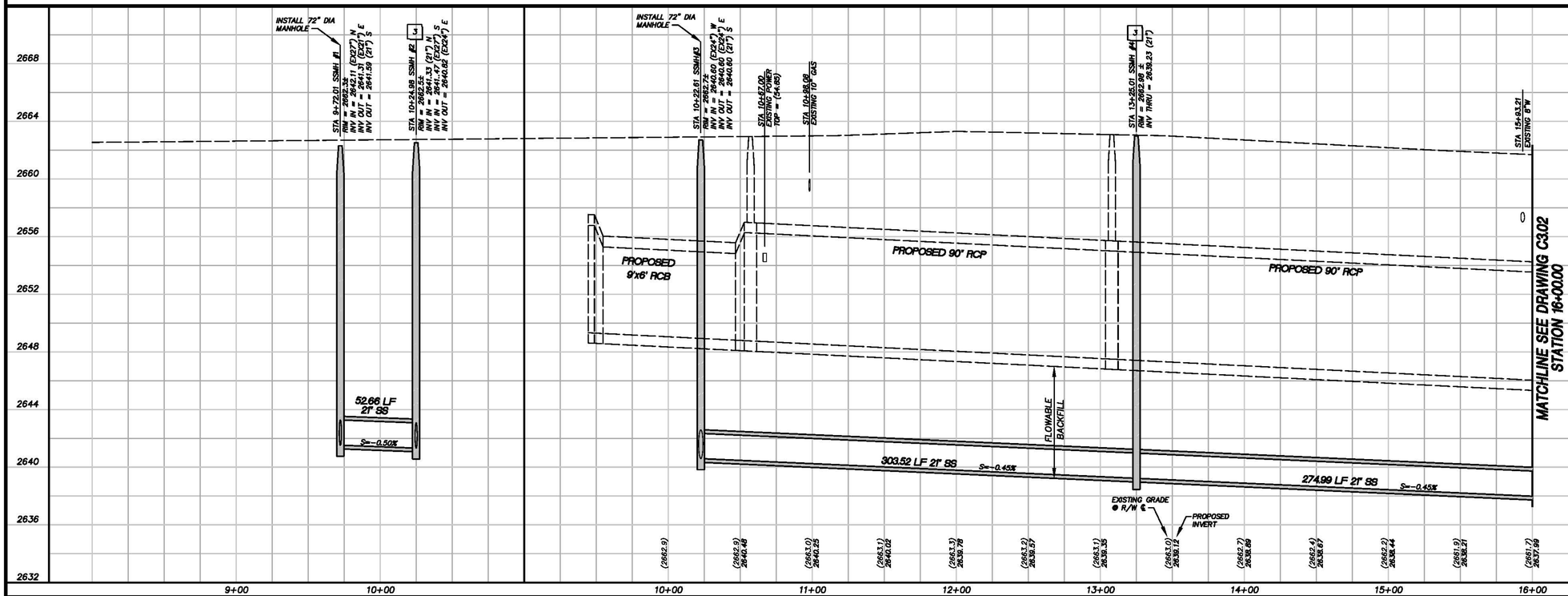
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BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
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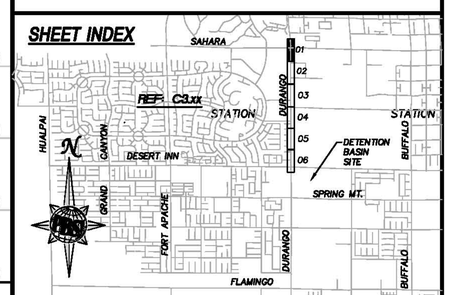
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-C3.01
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DURANGO SANITARY SEWER SYSTEM

PLAN AND PROFILE STA 6+00.00 TO STA 16+00.00

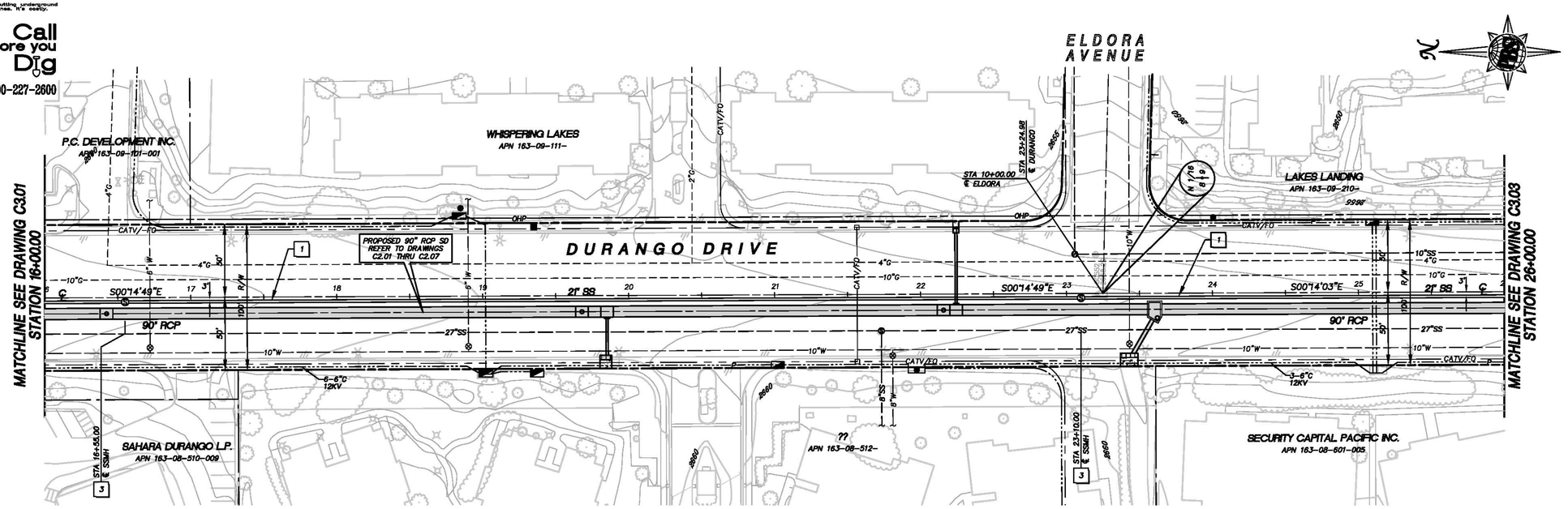
L-1583

DRAWING NO. 43

C3.01 / 77

Avoid cutting underground utility lines. It's costly.

Call before you Dig
1-800-227-2600



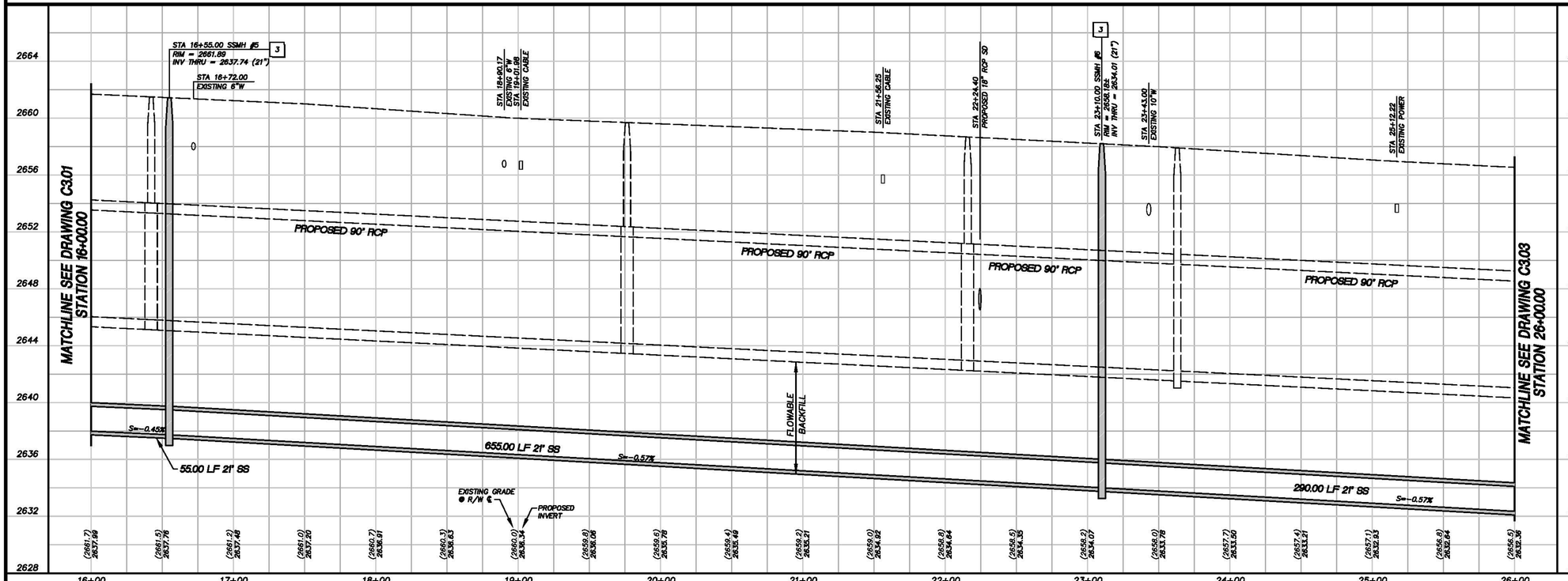
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COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

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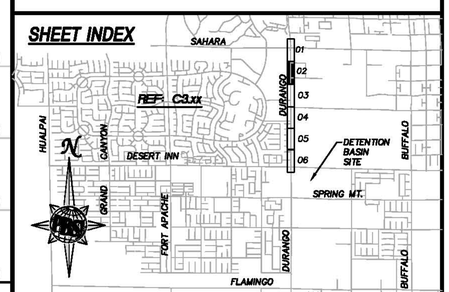
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-C3.02
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PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

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DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 16+00.00 TO STA 26+00.00

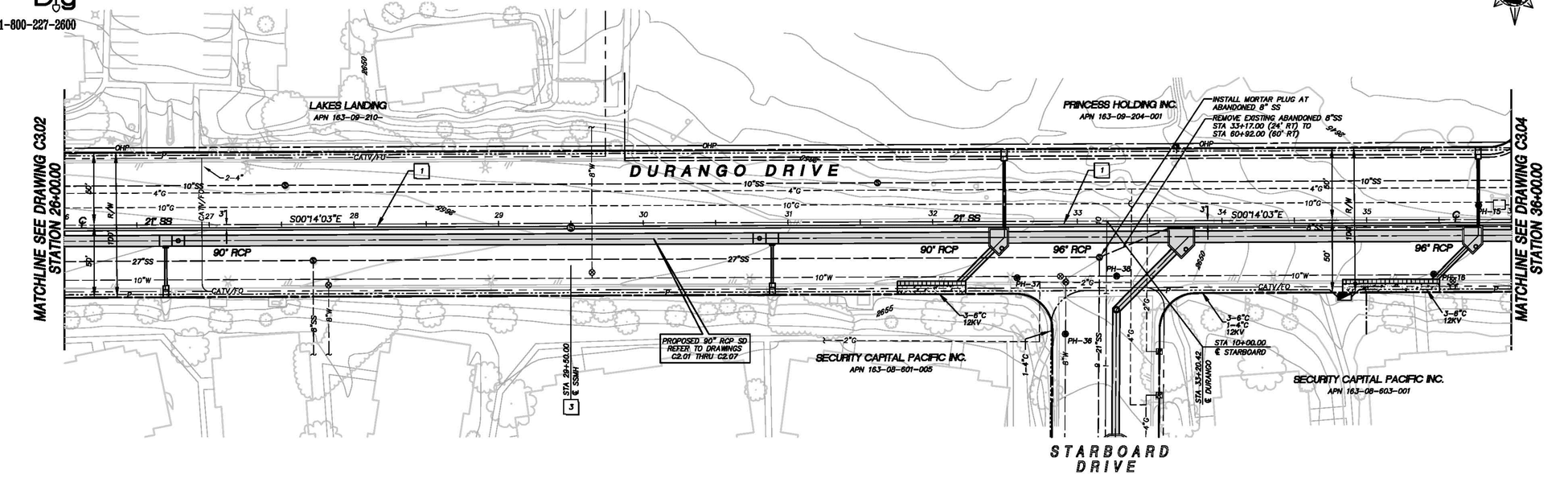
L-1583

DRAWING NO. C3.02

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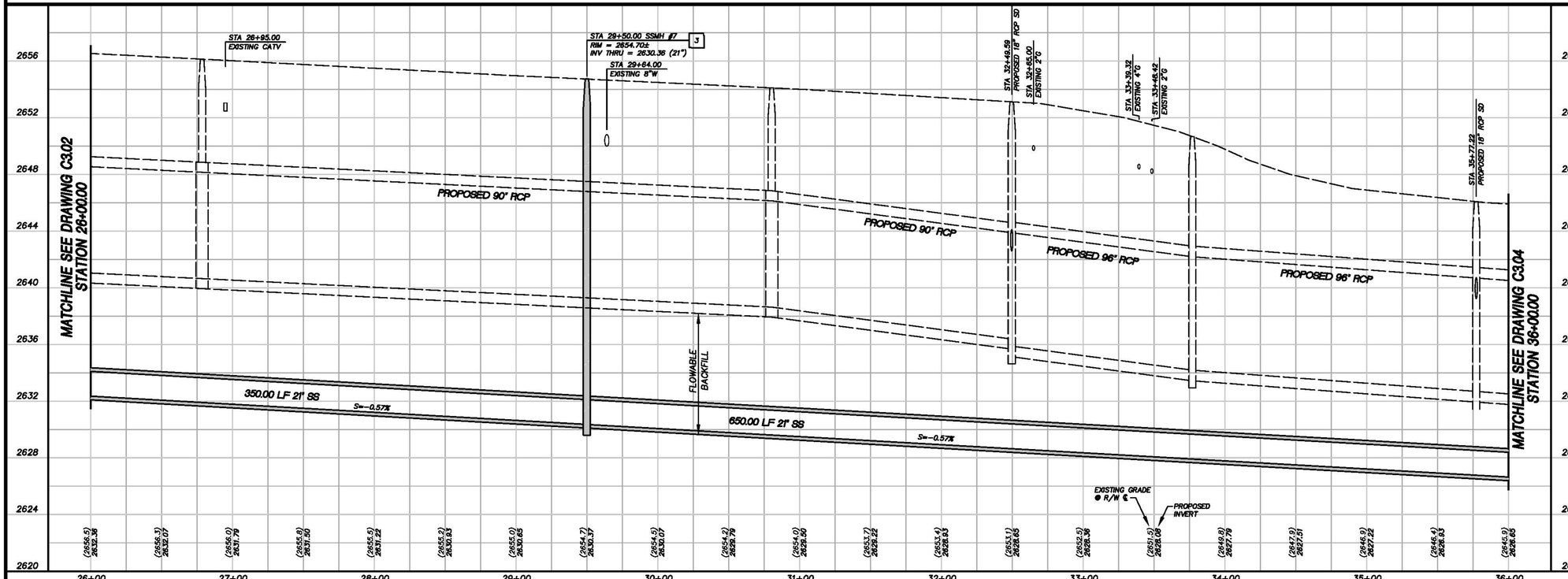
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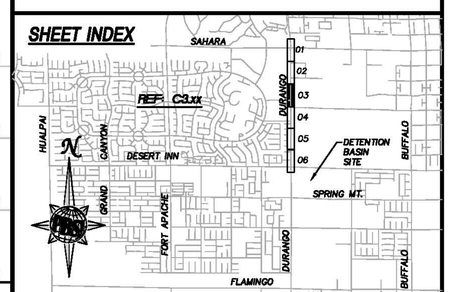
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PLAN AND PROFILE STA 26+00.00 TO STA 36+00.00

L-1583

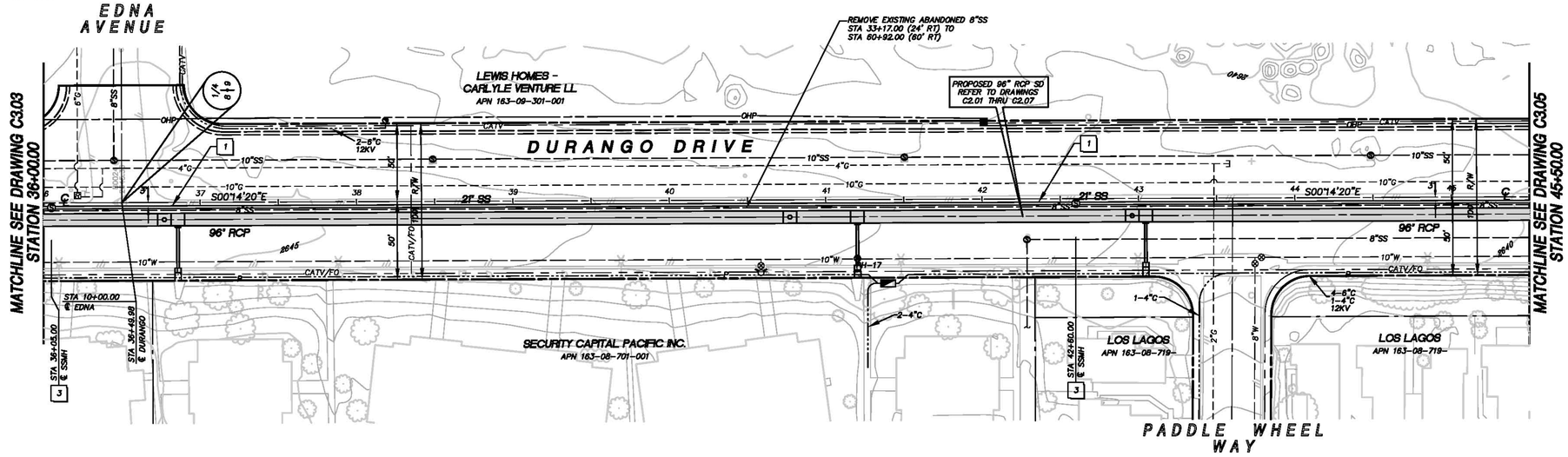
DRAWING NO. C3.03

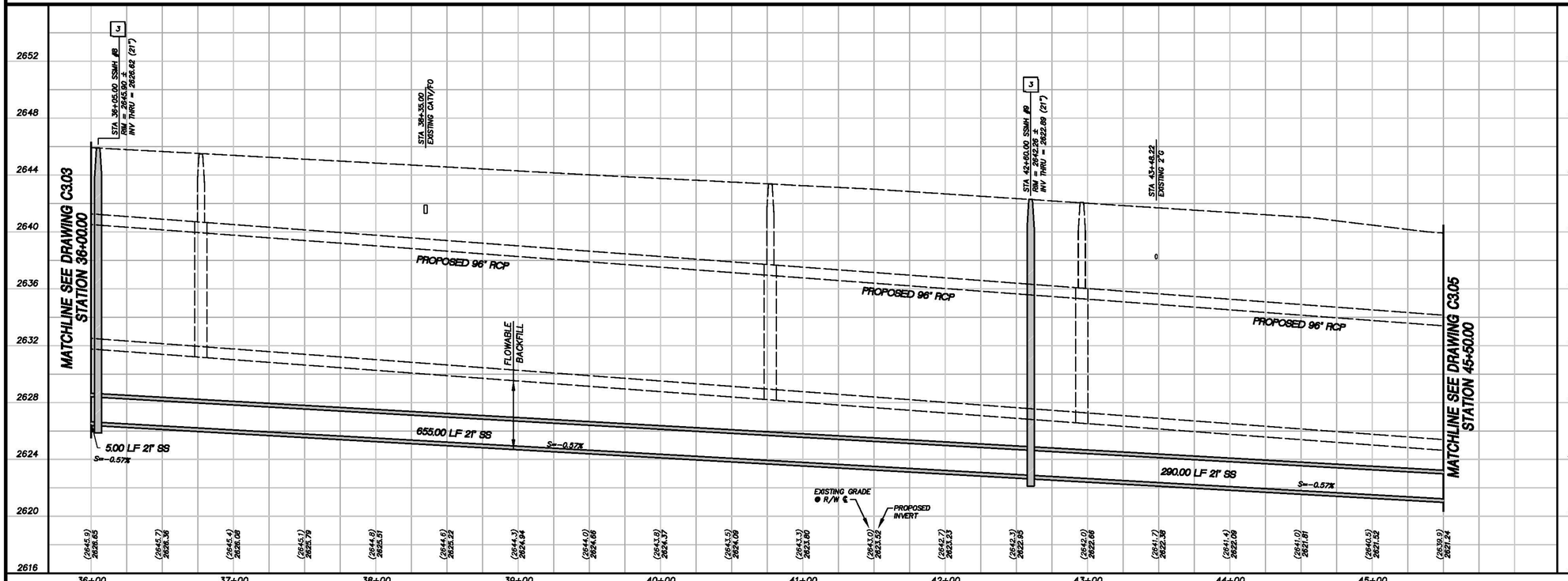
45 / 77

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KEY NOTES

1. INSTALL 21" SS PER TRENCH SECTION 1 DWG C3.07
2. INSTALL (2)-2" CONDUITS 12" MIN ABOVE 21"SS PER DETAIL 2 DWG C3.07
3. INSTALL 60" SSMH PER CCSD SD-1
4. SSMH#1: INSTALL ADJUSTABLE SLIDE GATES PER DETAIL 3 DWG C3.07
5. SSMH#3: INSTALL ADJUSTABLE SLIDE GATES PER DETAIL 4 DWG C3.07
6. FILL WITH SAND, INSTALL MORTAR PLUGS IN ENDS OF EXISTING 15"SS & ABANDON IN PLACE

-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
HORZ: 1 inch = 40 ft.
VERT: 1 inch = 4 ft.

BASIS OF BEARING

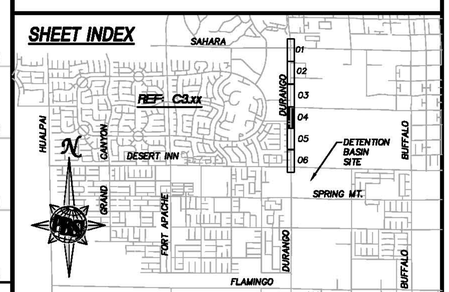
THE BASIS OF BEARINGS FOR THIS PROJECT IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE (2701), BASED UPON CLARK COUNTY GIS STATIONS 822, 838, AND 939, AS SHOWN ON A RECORD OF SURVEY ON FILE IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE, IN FILE 88 OF SURVEYS, AT PAGE 53.

BENCHMARK

CLARK COUNTY BENCHMARK 7C10 21NES
ELEVATION=747.125 METERS (2451.19 FEET) NAVD 1988.
RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE FOUNDATION OF ELECTRICAL CABINET AT THE SOUTHWEST CORNER OF BUFFALO DRIVE AND FLAMINGO ROAD.

CAUTION:
EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.

SHEET INDEX



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-C3.04
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy. Suite 100 Henderson, Nevada 89014 Telephone: 702/253-7275 Fax: 702/253-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3
DURANGO SANITARY SEWER SYSTEM
PLAN AND PROFILE STA 36+00.00 TO STA 45+50.00

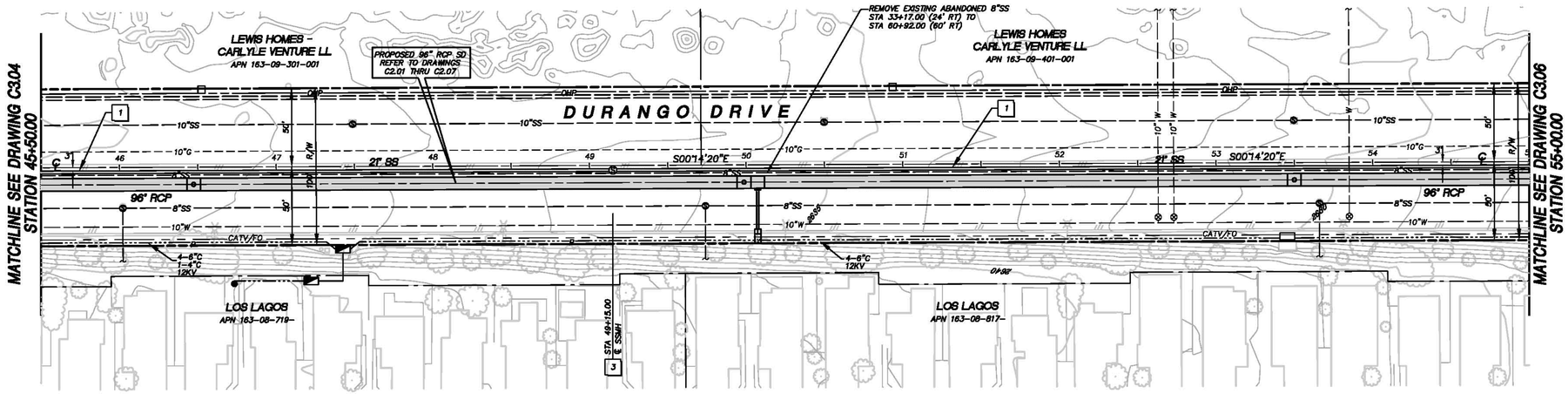
L-1583

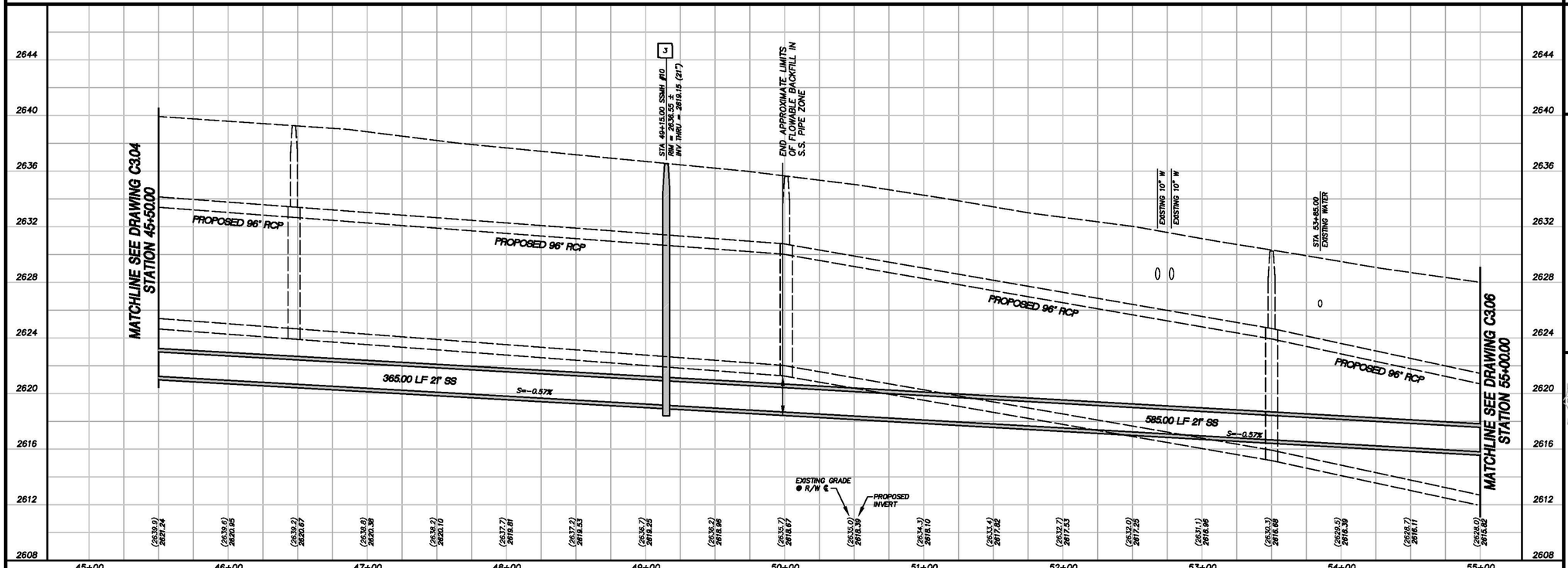
DRAWING NO. C3.04 | 46/77

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-RECORD DRAWING-

COMPLETED ON:	05/08/2002
BY:	PBS&J
PROJECT ACCEPTANCE DATE:	11/08/2001
CONST. MANAGER:	PBS&J
CONTRACTOR:	WELLS CARGO, INC.

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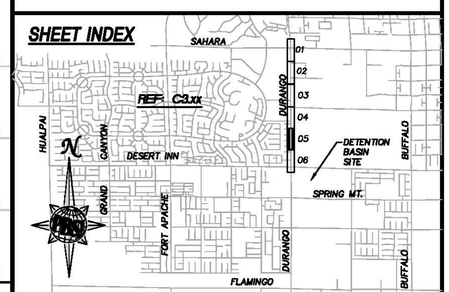
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REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A, SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-C3.05
SCALE: HORIZ.: 1"=40'
VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/253-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DURANGO SANITARY SEWER SYSTEM

PLAN AND PROFILE STA 45+50.00 TO STA 55+00.00

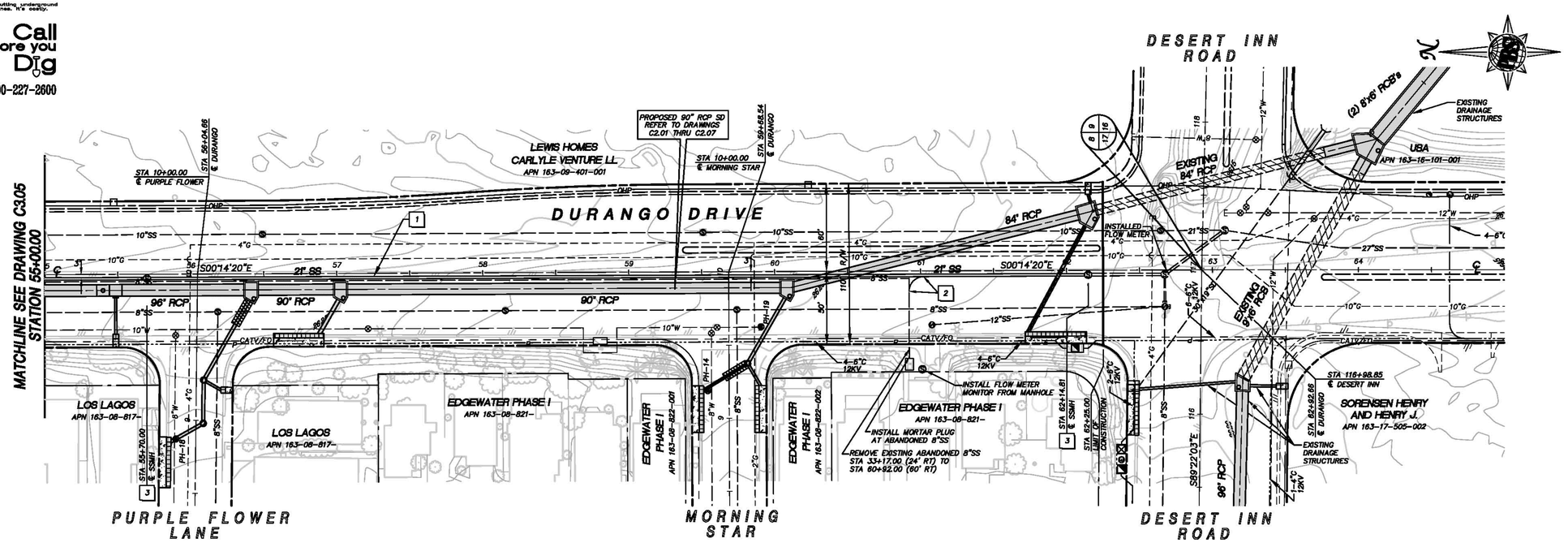
L-1583

DRAWING NO. C3.05

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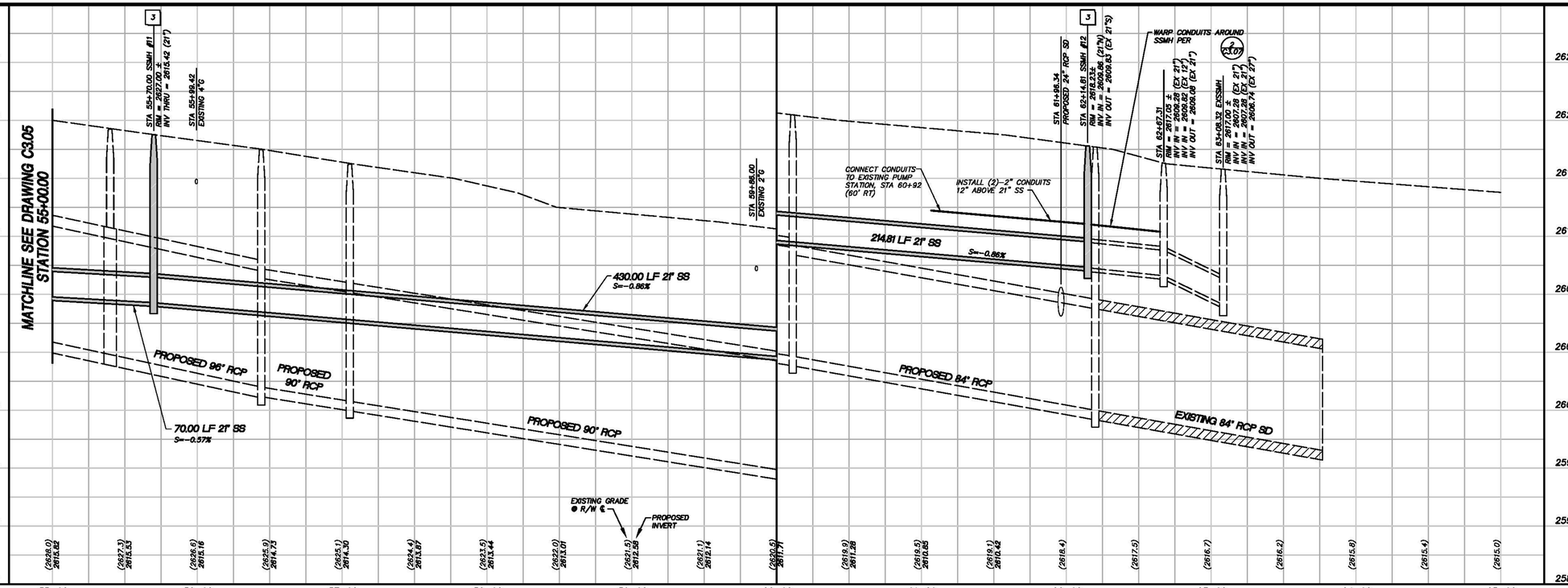
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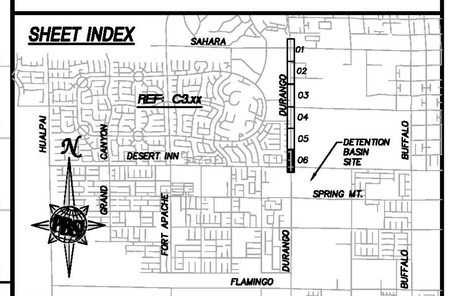
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DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-C3.06
SCALE: HORIZ.: 1"=40' VERT.: 1"=4'

PBS&J
901 North Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/253-7275
Fax: 702/263-7200
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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

DURANGO SANITARY SEWER SYSTEM PLAN AND PROFILE STA 55+00.00 TO STA 65+00.00

L-1583

DRAWING NO. C3.06

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APPENDIX I

Data CDs

THE Louis Berger Group, INC.

APPENDIX J

Separate Full-Scale Drawing Sets

THE Louis Berger Group INC

500 Amigo Court, Suite 100, Las Vegas, NV 89119
Tel 702.736.6632 • Fax 702.736.0704

January 25, 2007

Ms. Sheila M. Norlin, CFM
National LOMC Manager
Federal Emergency Management Agency
PO Box 22787
Alexandria, VA 22304

RE: Response to Comments, Request for Letter of Map Revision for Spanish Trail Country Club
Case No.: 07-09-0267P

Ms. Norlin:

The Louis Berger Group, Inc. (Berger) has received your comment letter, dated November 17, 2006, requesting additional information concerning the above-referenced project, and has prepared this response package for your use.

Since receipt of the comment letter, coordination has taken place between our firm, Mr. Kevin Eubanks of Clark County Regional Flood Control District, and Ms. Emily Hill of your staff, either by telephone, meeting, or email. The most important issues have been resolved and following is a restatement of the comments, along with a response to each.

1. Our preliminary review revealed that Application/Certification Form 3, entitled, "Riverine Structures Form", was not included with the submittal entitled, "Request for Letter of Map Revision for Flamingo Wash, Spanish Trail Country Club," prepared by Louis Berger Group, Inc., dated November 2, 2006. Please provide Form 3 for all proposed structures.

All of the structures in this request package are existing and are listed on Form 3 as "new analysis". See Appendix B.

2. Our preliminary review revealed an increase in the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), for Flamingo Wash. Please submit documentation of the individual legal notice distributed by Clark County to all property owners affected by the increase in SFHA width, or a signed letter from Clark County stating that it has notified the affected property owners.

Legal notice was distributed by Clark County to the affected property owner, Spanish Trail Country Club, by means of a certified letter. A copy of the letter is included in this submittal in Appendix C.

3. The submitted plans entitled, "Buffalo Drive", prepared by G. C. Wallace, Inc., dated December 13, 1989, were not certified as representing as-built conditions. Please provide "as-built" plans for Buffalo Drive at full scale, certified by a registered professional engineer, or a letter certifying that the plans represent as-built conditions.

The plans entitled "Buffalo Drive" which include the Buffalo Channel, were certified by our firm in a letter that states the plans represent as-built conditions. A copy of the letter is included in this request package in Appendix D.

4. Our preliminary review revealed that the submitted undated topographic work map entitled, "Hydraulic Cross Section Map – Buffalo Channel," prepared by Louis Berger Group, Inc., is not certified by a registered professional engineer or licensed land surveyor. Please provide a topographic work map certified by a registered professional engineer or licensed land surveyor.

The work map entitled, "Hydraulic Cross Section Map—Buffalo Channel", has been certified by a registered professional engineer of our firm, and is included in this submittal in Appendix E.

5. The submitted HEC-RAS hydraulic model for Flamingo Wash entitled "FWSPTR" indicates extended cross sections 12602.8, 14219.9, and 16999.0. Please revise the submitted hydraulic analysis to include additional ground elevation data at these cross sections to eliminate all extended cross sections.

The cross sections were eliminated from the model due to the fact that the extended sections were located at horizontal bends in the golf-course channel and gave no additional information to the model. The revised HEC-RAS model and associated revised Figures 8A and 8B are included in this submittal in Appendix F. The revised HEC-RAS analysis is included on the data CD in this submittal package in Appendix I.

6. The submitted plans entitled, "Lakes Detention Basin & Associated Collection and Outfall Facilities", dated October 29, 1998; "Buffalo Drive Roadway Improvements," dated August 2, 2002,; "Buffalo Outfall / Collection System –Phase 2," dated February 17, 1999, and "Lakes Detention Basin & Associated Collection Facilities—Phase 3," dated July 28, 1999, all prepared by PBS&J, were not certified as representing as-built conditions. Please provide "as-built" plans at full scale, certified by a registered professional engineer, or a letter certifying that the plans represent as-built conditions.

The plans have been certified by Clark County Department of Public Works. Copies of the certification letters for these projects is included in this submittal in Appendix G. Also included are a map and a table which helps to identify each project that has been certified.

7. Our preliminary review revealed that the submitted report entitled, "Request for Letter of Map Revision for Flamingo Wash, Spanish Trail Country Club," prepared by Louis Berger Group, Inc., dated November 2, 2006, did not include rating curves for the Lakes Detention Basin. Please submit rating curves and all other applicable backup calculations for the Lakes Detention Basin.

The rating curves for the Lakes Detention Basin are given on the design drawings. The information has been copied and included in this submittal package in Appendix H.

8. Our preliminary review revealed that the submitted annotated flood Insurance Rate Map (FIRM) did not show the delineation of the Lakes Detention Basin or the culvert between the Lakes Detention Basin and Buffalo Channel. Please provide an annotated FIRM, at the scale of the effective FIRM, showing the revised conditions floodplain boundary delineations, including the delineations of the basin and culvert.

The delineation of the Lakes Detention Basin and culvert outlet are provided in this submittal in digital form on the included data CD in Appendix I.

We hope that this submittal satisfies your request for additional information. If you have questions or need additional information please contact me at 702-376-8801.

Sincerely,

THE LOUIS BERGER GROUP, INC.

Barbara M. Brown

Barbara M. Brown, P.E.
Senior Project Engineer

APPENDIX A

Comment Letter

NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

November 17, 2006

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District
Las Vegas, NV 89106-4511

IN REPLY REFER TO:
Case No.: 07-09-0267P
Community: Clark County, NV
Community No.: 320003

316-AD

Dear Mr. Eubanks:

This responds to your request dated November 2, 2006, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Spanish Trail Country Club
Flooding Source:	Flamingo Wash
FIRM Panel(s) Affected:	32003C2145 E, 2535 E, 2551 E, and 2553 E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee must be submitted within 90 days of the date of the letter.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program (NFIP), please call the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

If you have specific questions concerning your request, please call the Revisions Coordinator for your State, Mr. Sacha Tohme, CFM, who may be reached at (703) 960-8800, ext. 3028.

Sincerely,

Sheila M. Norlin, CFM
National LOMC Manager
Michael Baker Jr., Inc.

Enclosures

cc: Mr. Robert Thompson, P.E.
Principal Engineer
Civil Engineering Division
Clark County Department of Development Services

Mr. Dave Betley, P.E.
Senior Civil Engineer
Civil Engineering Division
Clark County Department of Development Services

Ms. Barbara M. Brown, P.E.
Senior Project Engineer
Louis Berger Group, Inc.

NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

Summary of Additional Data Required to Support a
Letter of Map Revision

Case No.: 07-09-0267P

Requester: Mr. Kevin Eubanks, P.E., CFM

Community: Clark County, NV

Community No.: 320003

The issues listed below must be addressed before we can continue the review of your request.

1. Our preliminary review revealed that Application/Certification Form 3, entitled "Riverine Structures Form," was not included with the submittal entitled "Request for Letter of Map Revision for Flamingo Wash, Spanish Trail Country Club," prepared by Louis Berger Group, Inc, dated November 2, 2006. Please provide Form 3 for all proposed structures.

2. Our preliminary review revealed an increase in the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), for Flamingo Wash. Please submit documentation of the individual legal notice distributed by Clark County to all property owners affected by the increase in SFHA width, or a signed letter from Clark County stating that it has notified the affected property owners.

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5. The submitted HEC-RAS hydraulic model for Flamingo Wash entitled "FWSPTR" indicates extended cross sections at Cross Sections 12602.8, 14219.9, and 16999.0. Please revise the submitted hydraulic analysis to include additional ground elevation data at these cross sections to eliminate all extended cross sections.

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Please send the required data directly to us at the address shown at the bottom of the first page. For identification purposes, please include the case number referenced above on all correspondence.

Effective October 30, 2005, the Federal Emergency Management Agency (FEMA) revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is enclosed for your information. In accordance with this schedule, the fee for your request is $6,000 and must be submitted before we can continue processing your request. Payment of this fee must be made in the form of a check or money order, payable in U.S. funds to the National Flood Insurance Program, or a credit card payment. For identification purposes, the case number referenced above must be included on the check or money order. We will not perform a detailed technical review of your request until we receive this payment.

Payment must be forwarded to one of the addresses listed below.

Using U.S. Postal Service:
Federal Emergency Management Agency
Fee-Charge System Administrator
P.O. Box 22787
Alexandria, VA 22304

Using overnight service:
FEMA Fee-Charge System Administrator
c/o Michael Baker Jr., Inc.
3601 Eisenhower Avenue
Alexandria, VA 22304

APPENDIX B

FEMA Form 3

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Flamingo Wash
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization..... complete Section B
Bridge/Culvert..... complete Section C
Dam..... complete Section D
Levee/Floodwall..... complete Section E
Sediment Transport ..... complete Section F (if required)

Description Of Structure

1. **Name of Structure: Buffalo Drive Channel**

   Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: Buffalo Drive extending 1300' upstream (north) of Tropicana Avenue

   Downstream Limit/Cross Section: 18220.9

   Upstream Limit/Cross Section: 19506.9

2. ***Name of Structure: Bridge at Buffalo Channel and Tropicana Avenue***

   Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: Buffalo Drive/Tropicana Avenue

   Downstream Limit/Cross Section: 18060.5

   Upstream Limit/Cross Section: 18220.9

3. **Name of Structure: Flamingo Wash, Spanish Trail Golf Course**

   Type (check one) ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: Within Spanish Trail Country Club

   Downstream Limit/Cross Section: 10120.0

   Upstream Limit/Cross Section: 18006.6

4. **Name of Structure: Bridge at Flamingo Wash Spanish Trail Golf Course and Spanish Gate Drive**

Type (check one) ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Within Spanish Trail Country Club

Downstream Limit/Cross Section: 18006.6

Upstream Limit/Cross Section: 18045.5

5. **Name of Structure: Bridge at Flamingo Wash, Spanish Trail Golf Course and Spanish Trail Lane**

Type (check one) ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Within Spanish Trail Country Club

Downstream Limit/Cross Section: 13896.6

Upstream Limit/Cross Section: 13928.6

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Flamingo Wash

Name of Structure: Buffalo Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Concrete Lined trapezoidal Channel
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 1494 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **ALL FACILITIES UPSTREAM ARE CONCRETE LINED**

Flooding Source: Flamingo Wash

Name of Structure: Spanish Trail Golf Course Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Grass-Lined golf course channel
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 1577 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **ALL FACILITIES UPSTREAM ARE CONCRETE LINED**

C. BRIDGE/CULVERT

Flooding Source: Flamingo Wash

Name of Structure: Buffalo Channel Bridge at Tropicana Avenue

1. This revision reflects (check one):

☐ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☒ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☒ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☒ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **All upstream facilities are concrete lined**

Flooding Source: Flamingo Wash

Name of Structure: **Bridge at Flamingo Wash Spanish Trail Golf Course and Spanish Gate Drive**

3. This revision reflects (check one):

☐ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☒ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☒ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☒ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **All upstream facilities are concrete lined**

Flooding Source: Flamingo Wash

lame of Structure: **Bridge at Flamingo Wash, Spanish Trail Golf Course and Spanish Trail Lane**

5. This revision reflects (check one):

☐ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☒ New analysis of bridge/culvert previously modeled in the FIS

6. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☒ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☒ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **All upstream facilities are concrete lined**

Flooding Source: Flamingo Wash

Name of Structure: **Bridge at Flamingo Wash, Spanish Trail Golf Course and Spanish Trail Lane**

7. This revision reflects (check one):

☐ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☒ New analysis of bridge/culvert previously modeled in the FIS

8. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ *Dimensions (height, width, span, radius, length)*
☒ Shape (culverts only)
☒ Material
☒ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☒ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered. **All upstream facilities are concrete lined**

D. DAM

Flooding Source:

Name of Structure:

1. This request is for (check one): ☐ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ *Local government agency* ☐ *Private organization*

   Name of the agency or organization:

3. The Dam was permitted as (check one) ☐ Federal Dam ☐ State Dam ☐ Local Government Dam ☐ None

   Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

   Permit or ID number _____ Permitting Agency or Organization _____

4. Does the project involve revised hydrology? ☐ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

5. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

6. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

	Stillwater Elevation Behind the Dam	
FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

7. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- ☐ upgrading of an existing levee/floodwall system
- ☐ a newly constructed levee/floodwall system
- ☒ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☐ earthen embankment, dike, berm, etc.	Station	to
☐ structural floodwall	Station	to
☐ Other (describe):	Station	to

c. Structural Type (check one):

- ☒ monolithic cast-in place reinforced concrete
- ☐ reinforced concrete masonry block
- ☐ sheet piling
- ☐ Other (describe):

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☐ No

If Yes, by which agency?

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures. Sheet Numbers:
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system. Sheet Numbers:
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure. Sheet Numbers:
4. A layout detail for the embankment protection measures. Sheet Numbers:
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations. Sheet Numbers:

2. Freeboard

a. The minimum freeboard provided above the BFE 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 within 100 feet upstream of all structures and/or constrictions	☐ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☐ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☒ Yes	☐ No

E. LEVEE/FLOODWALL (CONTINUED)

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☐ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☐ does not exist

If opening exists, 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 needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is:

b. The maximum levee slope floodside is:

c. The range of velocities along the levee during the base flood is: (min.) to (max.)

d. Embankment material is protected by (describe what kind):

e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D_{100}	D_{50}	Thickness	
Sta to								
Sta to								
Sta to								

Sta to								
Sta to								
Sta to								
(Extend table on an added sheet as needed and reference each entry)								

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☐ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:

☐ Overall height: Sta. ; height ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

c. Summary of stability analysis results:

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: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☐ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☐ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☐ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☐ No

h. The duration of the base flood hydrograph against the embankment is hours.

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☐ Other (specify):

b. Stability analysis submitted provides for:

☐ *Overturning* ☐ *Sliding* If not, explain:

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☐ Wind @ P_w = psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☐ 1%-annual-chance significant wave height: ft.

☐ 1%-annual-chance significant wave period: sec.

d. 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)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
ead & 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; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection ☐ is, ☐ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☐ Yes ☐ No

b. The computed range of settlement is ft. to ft.

c. Settlement of the levee crest is determined to be primarily from :

☐ Foundation consolidation
☐ Embankment compression
☐ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☐ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: acres
Draining to ponding area: acres

b. Relationships Established

Ponding elevation vs. storage	☐ Yes	☐ No
Ponding elevation vs. gravity flow	☐ Yes	☐ No
Differential head vs. gravity flow	☐ Yes	☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☐ No

d. Specify the discharge capacity of the head pressure conduit: cfs

e. 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 for any of the above, attach explanation.

f. 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, attach explanation.

g. The rate of seepage through the levee system for the base flood is cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

8. Interior Drainage (continued)

i. Will pumping plants 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 operation be automatic? ☐ Yes ☐ No

If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

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.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ 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

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. 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

Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☐ Yes ☐ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
☐ Yes ☐ No

If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No
If No, please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source:

Name of Structure:

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume acre-feet

Debris load associated with the base flood discharge: Volume acre-feet

Sediment transport rate (percent concentration by volume)

Method used to estimate sediment transport:

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition:

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

APPENDIX C

Legal Notice to Spanish Trail Country Club

REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

Larry Brown
Chairman
City of Las Vegas

Chip Maxfield
Vice-Chairman
Clark County

Robert L. Eliason
City of North Las Vegas

Mayor Oscar Goodman
City of Las Vegas

Andy Hafen
City of Henderson

Mayor Bill Nicholes
City of Mesquite

Roger Tobler
City of Boulder City

Bruce L. Woodbury
Clark County

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 15, 2006

Spanish Trail Country Club, Inc.
14 Spanish Trail Lane
Las Vegas, NV 89113-1319

APN 163-27-116-003

RE: Increase in Flood Plain Area

This letter is being sent to inform you that the Clark County Regional Flood Control District, on behalf of Clark County, has submitted a flood map revision request to the Federal Emergency Management Agency (FEMA) to change the floodplain within the area bounded by Tropicana Avenue, Buffalo Drive, Hacienda Avenue and Rainbow Boulevard (Spanish Trail Golf Course Community).

You have been identified as the owner of the property referenced above which is expected to be affected by an increase in flood plain area as a result of this map revision request. The changes result from an analysis of the flood plain based on new topographic information and the construction of flood control facilities north and west of the inflow to this area at Buffalo Drive and Tropicana Avenue and construction of flood control facilities that eliminate the inflow to the area at Hacienda and Buffalo. As a result of this study, an overall reduction in the flood plain area will occur with some minor increases within the golf course terrain when compared with the currently published FEMA Flood Insurance Rate Maps.

If you should have any questions please contact me at 455-3139.

Sincerely,

Kevin Eubanks, P.E.
Assistant General Manager

KLE:jb

c: Layne Weber, Clark County Development Services
Emily Hill, Michael Baker, Jr., Inc.

I:\Kevin's Projects\CLOMR 2005\Spanish Trail\Public Notice added.doc

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.regionalflood.org*

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

SPANISH TRAIL COUNTRY CLUB
C/O SPANISH TRAIL LANE
5000
LAS VEGAS, NV 89113-1319

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Tracy Flowers

C. Date of Delivery 12-19-06

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7005 1820 0001 5677 2896

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

APPENDIX D

As-Built Certification for Buffalo Channel

THE Louis Berger Group INC

500 Amigo Court, Suite 100, Las Vegas, NV 89119
Tel 702.736.6632 • Fax 702.736.0704

January 30, 2007

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

Re: Spanish Trail Country Club
FEMA Case No. 07-09-0267P

This letter is written to certify as-built conditions for the Buffalo Drive Channel as depicted on the improvement plans for Buffalo Drive (Tropicana Avenue to Sta. 43+69.00) Pardee Construction Company by G.C. Wallace, Inc. Based on a field assessment of the channel structure, the channel structure appears to have been constructed in substantial conformance with the project improvement plans sealed by the design engineer on December 13, 1989. The flood control channel is currently functioning.

If you have any questions regarding this certification, please do not hesitate to call me.

Sincerely,

THE LOUIS BERGER GROUP, INC.

Syndi Dudley

Syndi J. Dudley, Ph.D., P.E.
Director of Water Resources

APPENDIX E

Certified Hydraulic Cross Section Map—Buffalo Channel



LEGEND

9939.90	-	HEC-RAS River Station
WSE=2344.7	-	100-yr Water Surface Elevation, feet
VEL.=9.3	-	100-yr Flow Velocity, feet per second
	-	100-yr floodplain
1	-	Photograph Locations

50 25 0 50 100 200

1 INCH = 100 FEET
CONTOUR INTERVAL = 5 FEET
PHOTOGRAPHIC IMAGE IS APPROXIMATE ONLY

N

PROFESSIONAL ENGINEER STATE OF NEVADA
SYNDI J. FLIPPIN-DUDLEY
EXP 6/30/07
CIVIL
No. 11070
1/30/07

CORRELATION OF STATIONING BUFFALO CHANNEL	
RECORD DWG. STATION	HEC-RAS STATION
59+00.0	182+20.9
58+70.2	182+50.7
56+12.0	185+08.9
53+67.0	187+53.9
46+14.0	195+06.9

Prepared by:
The Louis Berger Group, Inc.
500 Amigo Court, Suite 100
Las Vegas, Nevada

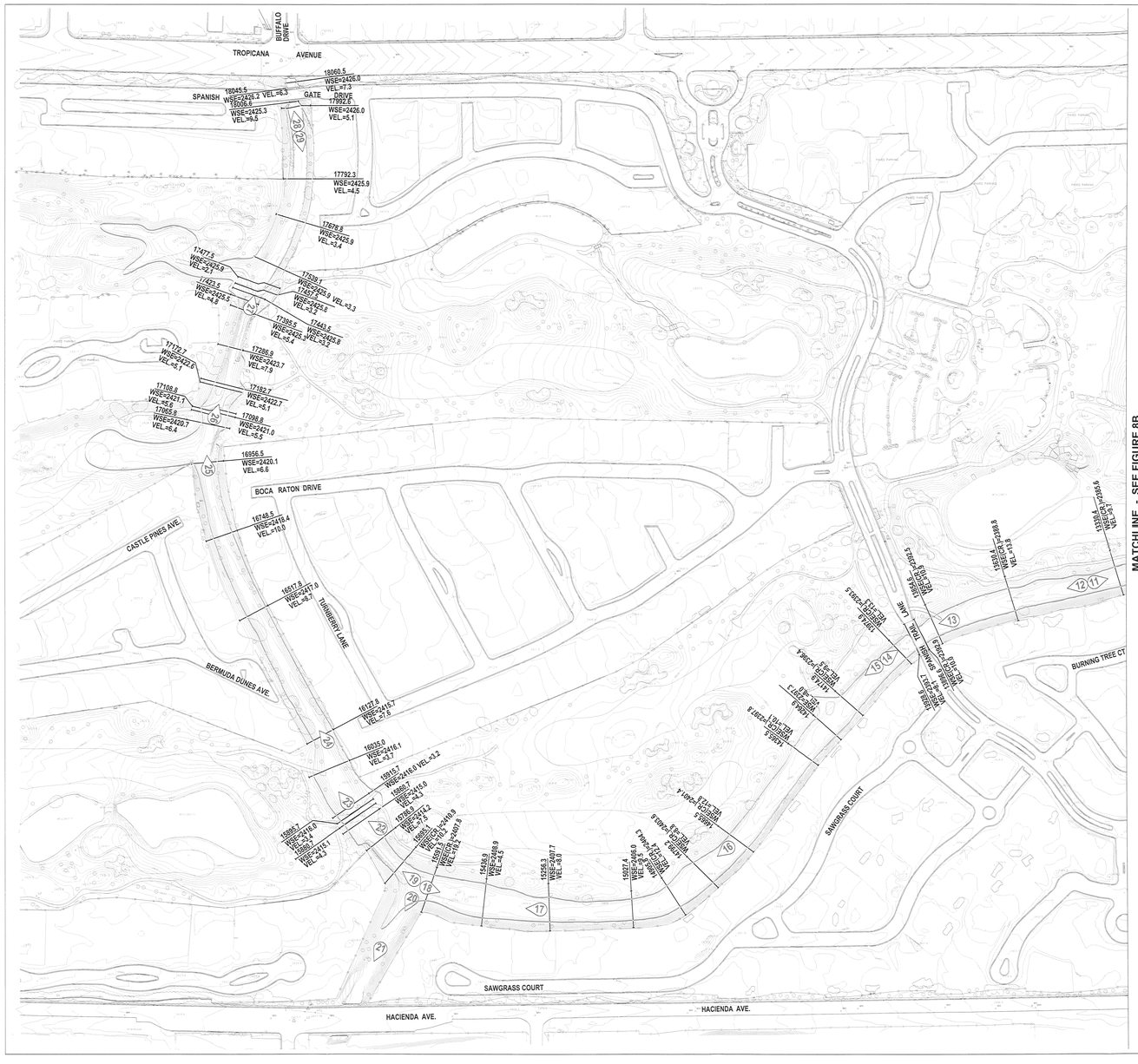
LOMR FOR FLAMINGO WASH AT SPANISH TRAIL COUNTRY CLUB

Hydraulic Cross Section Map - Buffalo Channel

FIGURE 7

APPENDIX F

Revised HEC-RAS Model
Revised Figures 8A and 8B



1 INCH = 100 FEET
CONTOUR INTERVAL = 1 FOOT
VERTICAL DATUM - NAVD 88

LEGEND

9939.90 - HEC-RAS River Station
WSE=2344.7 - 100-yr Water Surface Elevation, feet
VEL=9.3 - 100-yr Flow Velocity, feet per second
- 100-yr floodplain
1 - Photograph Locations

Hydraulic Cross Sections Map-Spanish Trail Country Club

FIGURE 8A

Prepared by:
The Louis Berger Group, Inc.
320 Arroja Court, Suite 100
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LOMR FOR FLAMINGO WASH SPANISH TRAIL COUNTRY CLUB



Hydraulic Cross Sections Map-Spanish Trail Country Club

FIGURE 8B

Prepared by
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LOMR FOR FLAMINGO WASH SPANISH TRAIL COUNTRY CLUB

HEC-RAS Version 3.1 November 2002
U.S. Army Corp of Engineers
Hydrologic Engineering Center
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Davis, California 95616-4687
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```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****

PROJECT DATA
Project Title: flamingo wash sp trail
Project File : FWSPTR.prj
Run Date and Time: 1/25/2007 12:05:02 PM

Project in English units

****

PLAN DATA

Plan Title: Plan 01
Plan File : C:\Louis Berger Projects\spanish trail\Spanish Trail LCMR Data CD 1\c. HEC-RAS Computer Hydraulic Models\FWSPTR.p01

Geometry Title: existing conditions
Geometry File : C:\Louis Berger Projects\spanish trail\Spanish Trail LCMR Data CD 1\c. HEC-RAS Computer Hydraulic Models\FWSPTR.g01

Flow Title : 100-year storm
Flow File : C:\Louis Berger Projects\spanish trail\Spanish Trail LCMR Data CD 1\c. HEC-RAS Computer Hydraulic Models\FWSPTR.f01

Plan Summary Information:
Number of: Cross Sections = 81 Mulitple Openings = 0
Culverts = 5 Inline Structures = 0
Bridges = 3 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****

FLOW DATA

Flow Title: 100-year storm
Flow File : C:\Louis Berger Projects\spanish trail\Spanish Trail LCMR Data CD 1\c. HEC-RAS Computer Hydraulic Models\FWSPTR.f01

Flow Data (cfs)
****
* River Reach RS * PF 1 *

* Flamingo Wash SpUpper	18060.5 *	1577 *	
* Flamingo Wash Splower	15591.5 *	1577 *	
* Old input channeobsolete	1100.0 *	25 *	

Boundary Conditions

* River	Reach	Profile	* Upstream	Downstream *
* Flamingo Wash SpUpper		PF 1	* Normal S = 0.004	*
* Flamingo Wash Splower		PF 1	*	Normal S = 0.01 *
* Old input channeobsolete		PF 1	*	Normal S = 0.01 *

GEOMETRY DATA

Geometry Title: existing conditions
Geometry File : C:\Louis Berger Projects\spanish trail\Spanish Trail LOMR Data CD 1\c. HEC-RAS Computer Hydraulic Models\FWSPTR.g01

Reach Connection Table

* River	Reach	* Upstream Boundary	* Downstream Boundary *
* Flamingo Wash Sp Upper		*	* Buffalo *
* Flamingo Wash Sp lower		* Buffalo	* *
* Old input channe obsolete		* Buffalo	* *

JUNCTION INFORMATION

Name: Buffalo
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Flamingo Wash SpUpper		to Flamingo Wash Splower		0	0
Flamingo Wash SpUpper		to Old input channeobsolete		0	0

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18060.5

INPUT
Description: open channel between culverts
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2429	.1	2418.8	30.1	2418.8	30.2	2430

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	30.2	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	30.2	15	15	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2426.88	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.81	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2426.07	* Reach Len. (ft)	* 15.00	* 15.00	* 15.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 218.53	* *
* E.G. Slope (ft/ft)	*0.000636	* Area (sq ft)	*	* 218.53	* *

Q Total	1577.00	Flow (cfs)			1577.00			
Top Width (ft)	30.14	Top Width (ft)			30.14			
Vel Total (ft/s)	7.22	Avg. Vel. (ft/s)			7.22			
Max Chl Dpth (ft)	7.27	Hydr. Depth (ft)			7.25			
Conv. Total (cfs)	62509.3	Conv. (cfs)			62509.3			
Length Wtd. (ft)	15.00	Wetted Per. (ft)			44.54			
Min Ch El (ft)	2418.80	Shear (lb/sq ft)			0.19			
Alpha	1.00	Stream Power (lb/ft s)			1.41			
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		0.05	16.85			
C & E Loss (ft)	0.06	Cum SA (acres)		0.12	4.06			

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18045.5

INPUT
Description: culvert u/s face
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2429	.1	2418.7	33.4	2418.7	33.5	2430

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	33.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	33.5	38.9	38.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.		0.015	
W.S. Elev (ft)	2426.19	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2422.80	Flow Area (sq ft)		250.06	
E.G. Slope (ft/ft)	0.000452	Area (sq ft)		250.06	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	33.44	Top Width (ft)		33.44	
Vel Total (ft/s)	6.31	Avg. Vel. (ft/s)		6.31	
Max Chl Dpth (ft)	7.49	Hydr. Depth (ft)		7.48	
Conv. Total (cfs)	74145.4	Conv. (cfs)		74145.4	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		48.29	
Min Ch El (ft)	2418.70	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.92	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	0.05	16.77	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	4.05	

BRIDGE

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18026.05

INPUT
Description: bridge at spanish gate street
Distance from Upstream XS = .1
Deck/Roadway Width = 38.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2431	2428.7	33.5	2432	2428.7

```
Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************
       0    2429      .1  2418.7    33.4  2418.7    33.5    2430

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
       0    .015       0    .015     33.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    33.5             .1       .3

Downstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***************************************************
       0    2431  2428.7    33.5    2432  2428.7

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************
       0  2426.6      .1  2418.6    24.9  2418.6      25  2426.6

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
       0    .015       0    .015      25    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0      25             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. US. (ft)          *    2426.81  * Element               *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    2426.19  * E.G. Elev (ft)        *    2426.81  *    2426.71  *
* Q Total (cfs)          *    1577.00  * W.S. Elev (ft)        *    2426.19  *    2425.33  *
* Q Bridge (cfs)         *    1577.00  * Crit W.S. (ft)        *    2422.84  *    2423.61  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)     *       7.49  *       6.73  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)      *       6.31  *       9.41  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)     *     250.06  *     167.51  *
* Weir Submerg           *             * Froude # Chl          *       0.41  *       0.64  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)  *    1245.14  *    1024.22  *
```

* Min El W[illegible]low (ft)	* 2431.01	* Hydr Depth (ft)	* 7.48	* 71	*
* Min El Pr[illegible] (ft)	* 2428.70	* W.P. Total (ft)	* 48.29	* [illegible].26	*
* Delta EG (ft)	* 0.10	* Conv. Total (cfs)	* 74145.4	* 44404.7	*
* Delta WS (ft)	* 0.86	* Top Width (ft)	* 33.44	* 24.97	*
* BR Open Area (sq ft)	* 251.70	* Frctn Loss (ft)	* 0.03	* 0.00	*
* BR Open Vel (ft/s)	* 9.41	* C & E Loss (ft)	* 0.08	* 0.00	*
* Coef of Q	*	* Shear Total (lb/sq ft)	* 0.15	* 0.34	*
* Br Sel Method	*Energy only	* Power Total (lb/ft s)	* 0.92	* 3.25	*

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy. This is not physically possible, the momentum answer has been disregarded.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 18006.6

INPUT
Description: culvert d/s face
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426.6	.1	2418.6	24.9	2418.6	25	2426.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	25	13.1	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2426.71	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.38	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2425.33	* Reach Len. (ft)	* 13.10	* 14.00	* 14.70 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 167.50	* *
* E.G. Slope (ft/ft)	*0.001261	* Area (sq ft)	*	* 167.50	* *
* Q Total (cfs)	* 1577.00	* Flow (cfs)	*	* 1577.00	* *
* Top Width (ft)	* 24.97	* Top Width (ft)	*	* 24.97	* *
* Vel Total (ft/s)	* 9.41	* Avg. Vel. (ft/s)	*	* 9.41	* *
* Max Chl Dpth (ft)	* 6.73	* Hydr. Depth (ft)	*	* 6.71	* *
* Conv. Total (cfs)	* 44402.4	* Conv. (cfs)	*	* 44402.4	* *
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 38.26	* *
* Min Ch El (ft)	* 2418.60	* Shear (lb/sq ft)	*	* 0.34	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.25	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	* 0.05	* 16.58	* *
* C & E Loss (ft)	* 0.29	* Cum SA (acres)	* 0.12	* 4.02	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17992.6

INPUT

Description: culvert headwall d/s end
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2427	16.4	2425	23.6	2423	26.1	2419	42.9	2418.5
62.6	2419	63.3	2423	80.8	2429.2				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	23.6	.015	62.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	80.8	205.3	200.3	197.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.019	
W.S. Elev (ft)	2426.01	Reach Len. (ft)	205.30	200.30	197.30
Crit W.S. (ft)		Flow Area (sq ft)		312.18	
E.G. Slope (ft/ft)	0.000595	Area (sq ft)		312.18	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	63.63	Top Width (ft)		63.63	
Vel Total (ft/s)	5.05	Avg. Vel. (ft/s)		5.05	
Max Chl Dpth (ft)	7.51	Hydr. Depth (ft)		4.91	
Conv. Total (cfs)	64648.6	Conv. (cfs)		64648.6	
Length Wtd. (ft)	200.30	Wetted Per. (ft)		70.07	
Min Ch El (ft)	2418.50	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.84	
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	0.05	16.51	
C & E Loss (ft)	0.03	Cum SA (acres)	0.12	4.01	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17792.3

INPUT
Description: short gabion sides, weeds bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	16.8	2420	18.8	2418	21.4	2417.5	30.4	2417.5
36.7	2418	39.1	2420	56.4	2422	79.9	2426.5		

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	79.9	124.2	113.5	100.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.025	
W.S. Elev (ft)	2425.93	Reach Len. (ft)	124.20	113.50	100.10
Crit W.S. (ft)		Flow Area (sq ft)		354.21	
E.G. Slope (ft/ft)	0.000770	Area (sq ft)		354.21	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	76.75	Top Width (ft)		76.75	
Vel Total (ft/s)	4.45	Avg. Vel. (ft/s)		4.45	
Max Chl Dpth (ft)	8.43	Hydr. Depth (ft)		4.62	

* Conv. Tc (cfs)	* 56822.7	* Conv. (cfs)	*		* 56822.7				
* Length Wtd. (ft)	* 113.50	* Wetted Per. (ft)	*		* 79.88	*			
* Min Ch El (ft)	* 2417.50	* Shear (lb/sq ft)	*		* 0.21	*			
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		* 0.95	*			
* Frctn Loss (ft)	* 0.06	* Cum Volume (acre-ft)	*	0.05	* 14.97	*			
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	0.12	* 3.68	*			

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17678.8

INPUT
Description: short gabion lt side, weeds bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	16.6	2420	19.8	2417.3	42.9	2417.3	50	2418
60.3	2420	79.3	2425	82.9	2426				

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	82.9	144.1	139.7	132.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2426.14	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.17	* Wt. n-Val.	*	* 0.027	*	*
* W.S. Elev (ft)	* 2425.97	* Reach Len. (ft)	* 144.10	* 139.70	* 132.60	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 471.20	*	*
* E.G. Slope (ft/ft)	*0.000381	* Area (sq ft)	*	* 471.20	*	*
* Q Total (cfs)	* 1577.00	* Flow (cfs)	*	* 1577.00	*	*
* Top Width (ft)	* 82.69	* Top Width (ft)	*	* 82.69	*	*
* Vel Total (ft/s)	* 3.35	* Avg. Vel. (ft/s)	*	* 3.35	*	*
* Max Chl Dpth (ft)	* 8.67	* Hydr. Depth (ft)	*	* 5.70	*	*
* Conv. Total (cfs)	* 80768.8	* Conv. (cfs)	*	* 80768.8	*	*
* Length Wtd. (ft)	* 139.70	* Wetted Per. (ft)	*	* 85.72	*	*
* Min Ch El (ft)	* 2417.30	* Shear (lb/sq ft)	*	* 0.13	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.44	*	*
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	* 0.05	* 13.90	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.12	* 3.48	*	*

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17539.1

INPUT
Description: short gabion lt side, weeds bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	18.3	2420	22.1	2418	24.3	2417.2	49.8	2417.2
55.7	2418	79.9	2425	92	2426				

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

```
            0      92             61.6    61.6    61.6             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2426.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.		0.027	
W.S. Elev (ft)	2425.92	Reach Len. (ft)	61.60	61.60	61.60
Crit W.S. (ft)		Flow Area (sq ft)		481.33	
E.G. Slope (ft/ft)	*0.000398	Area (sq ft)		481.33	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	90.75	Top Width (ft)		90.75	
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)		3.28	
Max Chl Dpth (ft)	8.72	Hydr. Depth (ft)		5.30	
Conv. Total (cfs)	79026.2	Conv. (cfs)		79026.2	
Length Wtd. (ft)	61.60	Wetted Per. (ft)		93.41	
Min Ch El (ft)	2417.20	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.42	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	0.05	12.37	
C & E Loss (ft)	0.03	Cum SA (acres)	0.12	3.20	

```
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17477.5

INPUT
Description: short gabion lt side, weeds bottom & sides
Station Elevation Data    num=      15
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	5	2424	19.4	2421.3	29.3	2421	33.1	2420
36.9	2419	38.4	2417.5	48.3	2417.1	66.1	2418	82.8	2420
100.6	2421	113	2422	117.4	2423	150	2425	170	2426

```
Manning's n Values        num=      3
```

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	19.4	.015	29.3	.027

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     170               20      20      20             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2426.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.026	
W.S. Elev (ft)	2425.97	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)		751.04	
E.G. Slope (ft/ft)	*0.000190	Area (sq ft)		751.04	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	169.31	Top Width (ft)		169.31	
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)		2.10	
Max Chl Dpth (ft)	8.87	Hydr. Depth (ft)		4.44	
Conv. Total (cfs)	*114324.8	Conv. (cfs)		*114324.8	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		171.24	
Min Ch El (ft)	2417.10	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.11	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.05	11.50	
C & E Loss (ft)	0.01	Cum SA (acres)	0.12	3.01	

```
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.
```

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17457.5

INPUT
Description: u/s face of cart path culvert
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	10	2424	13.4	2417.1	16.9	2417	32	2417
47.7	2418.1	94.1	2426						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	10	.15	13.4	.015	47.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	94.1	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2426.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.038	
W.S. Elev (ft)	2425.87	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)	2421.06	Flow Area (sq ft)		499.34	
E.G. Slope (ft/ft)	0.000750	Area (sq ft)		499.34	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	92.66	Top Width (ft)		92.66	
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	
Max Chl Dpth (ft)	8.87	Hydr. Depth (ft)		5.39	
Conv. Total (cfs)	57574.2	Conv. (cfs)		57574.2	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		97.83	
Min Ch El (ft)	2417.00	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.75	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.05	11.21	
C & E Loss (ft)		Cum SA (acres)	0.12	2.95	

CULVERT

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17450.5

INPUT
Description: cart path crossing 5
Distance from Upstream XS = .1
Deck/Roadway Width = 13.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 4

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
11.7	2419.8		13.8	2419.3		19.5	2419.1	
56	2419.3							

Upstream Bridge Cross Section Data
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	10	2424	13.4	2417.1	16.9	2417	32	2417
47.7	2418.1	94.1	2426						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

```
**********************************************************************
       0    .025      10     .15    13.4    .015    47.7    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    94.1             .1       .3

Downstream  Deck/Roadway Coordinates
    num=      4
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
**********************************************************************
    11.7  2419.8            13.8  2419.3            19.5  2419.1
      56  2419.3

Downstream Bridge Cross Section Data
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************
       0    2426      10    2425    13.4    2417    16.9  2416.9      32  2416.9
    47.7    2418    94.1    2426

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************************************
       0    .025      10     .15    13.4    .015    47.7    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0    94.1             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     1.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0    13.9     .013     .013        0                  .2                1
Number of Barrels =  6
Upstream   Elevation =  2417
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
      16      18      20      22      24      26
Downstream Elevation =  2416.9
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
      16      18      20      22      24      26

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1
**********************************************************************
* Q Culv Group (cfs)     *   35.38  * Culv Full Len (ft)     *   13.90  *
* # Barrels              *       6  * Culv Vel US (ft/s)     *    3.34  *
* Q Barrel (cfs)         *    5.90  * Culv Vel DS (ft/s)     *    3.34  *
* E.G. US. (ft)          * 2426.03  * Culv Inv El Up (ft)    * 2417.00  *
* W.S. US. (ft)          * 2425.87  * Culv Inv El Dn (ft)    * 2416.90  *
* E.G. DS (ft)           * 2425.94  * Culv Frctn Ls (ft)     *    0.04  *
* W.S. DS (ft)           * 2425.77  * Culv Exit Loss (ft)    *    0.01  *
* Delta EG (ft)          *    0.09  * Culv Entr Loss (ft)    *    0.03  *
* Delta WS (ft)          *    0.09  * Q Weir (cfs)           * 1561.68  *
* E.G. IC (ft)           * 2426.00  * Weir Sta Lft (ft)      *    0.00  *
* E.G. OC (ft)           * 2426.03  * Weir Sta Rgt (ft)      *   94.10  *
* Culvert Control        *  Outlet  * Weir Submerg          *    0.97  *
```

Culv WS . (ft)	2418.50	Weir Max Depth (ft)	6.93		
Culv WS Outlet (ft)	2418.40	Weir Avg Depth (ft)	4.70		
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	442.48		
Culv Crt Depth (ft)	0.94	Min El Weir Flow (ft)	2419.11		

Warning: The weir over culvert is submerged.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17443.5

INPUT
Description: d/s face of cart path culvert
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	10	2425	13.4	2417	16.9	2416.9	32	2416.9
47.7	2418	94.1	2426						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	10	.15	13.4	.015	47.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	94.1	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.94	Element			
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	2425.77	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)		490.05	
E.G. Slope (ft/ft)	*0.000871	Area (sq ft)		490.05	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	90.53	Top Width (ft)		90.53	
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)		3.22	
Max Chl Dpth (ft)	8.87	Hydr. Depth (ft)		5.41	
Conv. Total (cfs)	53430.5	Conv. (cfs)		53430.5	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		96.56	
Min Ch El (ft)	2416.90	Shear (lb/sq ft)		0.28	
Alpha	1.00	Stream Power (lb/ft s)		0.89	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	0.05	11.05	
C & E Loss (ft)	0.02	Cum SA (acres)	0.12	2.92	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17423.5

INPUT
Description: lt side shrubs, gravel bottom, rt side grass
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426	3.4	2417	7.2	2416.8	33.6	2416.8	35.6	2417
37.7	2422	53.1	2427	70.7	2429.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
**************************************************
       0     .15     3.4     .027    37.7     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    70.7              28      28      28             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2425.89  * Element                * Left OB * Channel * Right OB *
* Vel Head (ft)          *    0.36  * Wt. n-Val.            *         *   0.055 *          *
* W.S. Elev (ft)         * 2425.52  * Reach Len. (ft)       *   28.00  *   28.00 *   28.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  325.65 *          *
* E.G. Slope (ft/ft)     *0.003180  * Area (sq ft)          *          *  325.65 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00 *          *
* Top Width (ft)         *   48.36  * Top Width (ft)        *          *   48.36 *          *
* Vel Total (ft/s)       *    4.84  * Avg. Vel. (ft/s)      *          *    4.84 *          *
* Max Chl Dpth (ft)      *    8.72  * Hydr. Depth (ft)      *          *    6.73 *          *
* Conv. Total (cfs)      * 27966.3  * Conv. (cfs)           *          * 27966.3 *          *
* Length Wtd. (ft)       *   28.00  * Wetted Per. (ft)      *          *   58.15 *          *
* Min Ch El (ft)         * 2416.80  * Shear (lb/sq ft)      *          *    1.11 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.38 *          *
* Frctn Loss (ft)        *    0.12  * Cum Volume (acre-ft)  *    0.05  *   10.87 *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.12  *    2.89 *          *
************************************************************************************************

Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper             RS: 17395.5

INPUT
Description: lt side shrubs, gravel bottom, rt side grass
Station Elevation Data    num=       8
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
**********************************************************************************
       0     2426     6.6     2417       8   2416.7    27.9   2416.7    30.6     2417
      38     2422    46.5     2425    69.9   2429.5

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
************************************************
       0     .15       8     .027    30.6     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    69.9            106.5   108.6   115.1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2425.76  * Element                *  Left OB * Channel * Right OB *
* Vel Head (ft)          *    0.46  * Wt. n-Val.            *          *   0.063 *          *
* W.S. Elev (ft)         * 2425.30  * Reach Len. (ft)       *  106.50  *  108.60 *  115.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  289.33 *          *
* E.G. Slope (ft/ft)     *0.005736  * Area (sq ft)          *          *  289.33 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00 *          *
* Top Width (ft)         *   47.53  * Top Width (ft)        *          *   47.53 *          *
* Vel Total (ft/s)       *    5.45  * Avg. Vel. (ft/s)      *          *    5.45 *          *
* Max Chl Dpth (ft)      *    8.60  * Hydr. Depth (ft)      *          *    6.09 *          *
* Conv. Total (cfs)      * 20822.8  * Conv. (cfs)           *          * 20822.8 *          *
* Length Wtd. (ft)       *  108.60  * Wetted Per. (ft)      *          *   53.85 *          *
* Min Ch El (ft)         * 2416.70  * Shear (lb/sq ft)      *          *    1.92 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   10.49 *          *
* Frctn Loss (ft)        *    1.01  * Cum Volume (acre-ft)  *    0.05  *   10.67 *          *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *    0.12  *    2.86 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
```

```
        :      onal cross sections.
Warning: T.    onveyance ratio (upstream conveyance divided by downstream conveyance,    less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17286.9

INPUT
Description: lt side shrubs, gravel bottom, rt side grass
Station Elevation Data    num=      8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2425.2    10.8    2417    14.8  2416.5    26.9  2416.5    29.6    2417
      37    2422    45.7    2425    64.8    2429

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0     .15    10.8    .027      37    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    64.8             104.2   104.2   104.2             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2424.69  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.97  * Wt. n-Val.           *          *    0.068  *          *
* W.S. Elev (ft)        * 2423.72  * Reach Len. (ft)      *  104.20  *  104.20  *  104.20  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *  199.37  *          *
* E.G. Slope (ft/ft)    *0.017768  * Area (sq ft)         *          *  199.37  *          *
* Q Total (cfs)         * 1577.00  * Flow (cfs)           *          * 1577.00  *          *
* Top Width (ft)        *   40.04  * Top Width (ft)       *          *   40.04  *          *
* Vel Total (ft/s)      *    7.91  * Avg. Vel. (ft/s)     *          *    7.91  *          *
* Max Chl Dpth (ft)     *    7.22  * Hydr. Depth (ft)     *          *    4.98  *          *
* Conv. Total (cfs)     * 11830.7  * Conv. (cfs)          *          * 11830.7  *          *
* Length Wtd. (ft)      *  104.20  * Wetted Per. (ft)     *          *   44.20  *          *
* Min Ch El (ft)        * 2416.50  * Shear (lb/sq ft)     *          *    5.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *        *   39.58  *          *
* Frctn Loss (ft)       *    1.48  * Cum Volume (acre-ft)  *    0.05 *   10.06  *          *
* C & E Loss (ft)       *    0.17  * Cum SA (acres)        *    0.12 *    2.75  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17182.7

INPUT
Description: lt side grass, gravel bottom & shrubs rt side
Station Elevation Data    num=      9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2423.1    13.4  2421.1    33.6  2417.1    41.4  2416.2    54.6  2416.2
    58.3  2417.1      65  2418.1    92.4  2425.1   116.2  2430.1

Manning's n Values        num=      4
```

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	33.6	.027	58.3	.15	92.4	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	116.2	10	10	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2423.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.076	
W.S. Elev (ft)	2422.63	Reach Len. (ft)	10.00	10.00	10.00
Crit W.S. (ft)		Flow Area (sq ft)		306.92	
E.G. Slope (ft/ft)	0.011629	Area (sq ft)		306.92	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	79.62	Top Width (ft)		79.62	
Vel Total (ft/s)	5.14	Avg. Vel. (ft/s)		5.14	
Max Chl Dpth (ft)	6.43	Hydr. Depth (ft)		3.85	
Conv. Total (cfs)	14623.8	Conv. (cfs)		14623.8	
Length Wtd. (ft)	10.00	Wetted Per. (ft)		80.93	
Min Ch El (ft)	2416.20	Shear (lb/sq ft)		2.75	
Alpha	1.00	Stream Power (lb/ft s)		14.15	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	0.05	9.45	
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	2.61	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17172.7

INPUT
Description: u/s face of cart path culvert
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423	13.4	2421	33.6	2417	41.4	2416.1	54.6	2416.1
58.3	2417	65	2418	92.4	2425	116.2	2430		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	58.3	.15	92.4	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	116.2	63.9	63.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2422.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.075	
W.S. Elev (ft)	2422.51	Reach Len. (ft)	63.90	63.90	63.90
Crit W.S. (ft)	2420.47	Flow Area (sq ft)		305.36	
E.G. Slope (ft/ft)	0.011668	Area (sq ft)		305.36	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	79.41	Top Width (ft)		79.41	
Vel Total (ft/s)	5.16	Avg. Vel. (ft/s)		5.16	
Max Chl Dpth (ft)	6.41	Hydr. Depth (ft)		3.85	
Conv. Total (cfs)	14599.1	Conv. (cfs)		14599.1	
Length Wtd. (ft)	63.90	Wetted Per. (ft)		80.72	
Min Ch El (ft)	2416.10	Shear (lb/sq ft)		2.76	
Alpha	1.00	Stream Power (lb/ft s)		14.23	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.05	9.38	
C & E Loss (ft)		Cum SA (acres)	0.12	2.59	

CULVERT

RIVER: Flamingo Wash Sp
REACH: Upper RS: 17140.8

INPUT
Description: cart path crossing 4
Distance from Upstream XS = .1
Deck/Roadway Width = 63.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
27.6	2418.2	65.3	2417.9

Upstream Bridge Cross Section Data
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423	13.4	2421	33.6	2417	41.4	2416.1	54.6	2416.1
58.3	2417	65	2418	92.4	2425	116.2	2430		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	58.3	.15	92.4	.027

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	116.2	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
29.6	2417.6	75.8	2417.6

Downstream Bridge Cross Section Data
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2423.4	10.3	2420.1	33.7	2417.1	56.7	2416.1	62.9	2416
68.5	2416.1	88.1	2420.1	110.7	2423.1	123	2424.1		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	68.5	.027

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	123	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Circular	1.5	

FHWA Chart # 55- Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef

```
                0    63.8     .013     .013        0                  .2               1
Number of Barrels =  6
Upstream   Elevation =  2416
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    41.9    43.9    45.9    47.9    49.9    51.9
Downstream Elevation =  2415.9
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    57.9    59.9    61.9    63.9    65.9    67.9

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1
*********************************************************************
* Q Culv Group (cfs)      *   76.21  * Culv Full Len (ft)     *   63.80  *
* # Barrels               *       6  * Culv Vel US (ft/s)     *    7.19  *
* Q Barrel (cfs)          *   12.70  * Culv Vel DS (ft/s)     *    7.19  *
* E.G. US. (ft)           * 2422.93  * Culv Inv El Up (ft)    * 2416.00  *
* W.S. US. (ft)           * 2422.51  * Culv Inv El Dn (ft)    * 2415.90  *
* E.G. DS (ft)            * 2421.53  * Culv Frctn Ls (ft)     *    0.93  *
* W.S. DS (ft)            * 2421.03  * Culv Exit Loss (ft)    *    0.31  *
* Delta EG (ft)           *    1.40  * Culv Entr Loss (ft)    *    0.16  *
* Delta WS (ft)           *    1.48  * Q Weir (cfs)           * 1500.79  *
* E.G. IC (ft)            * 2422.78  * Weir Sta Lft (ft)      *    0.44  *
* E.G. OC (ft)            * 2422.93  * Weir Sta Rgt (ft)      *   84.31  *
* Culvert Control         *  Outlet  * Weir Submerg           *    0.52  *
* Culv WS Inlet (ft)      * 2417.50  * Weir Max Depth (ft)    *    5.03  *
* Culv WS Outlet (ft)     * 2417.40  * Weir Avg Depth (ft)    *    3.46  *
* Culv Nml Depth (ft)     *          * Weir Flow Area (sq ft) *  290.17  *
* Culv Crt Depth (ft)     *    1.34  * Min El Weir Flow (ft)  * 2417.92  *
*********************************************************************

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17108.8

INPUT
Description: d/s face of cart path culvert
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2423.4    10.3  2420.1    33.7  2417.1    56.7  2416.1    62.9    2416
    68.5  2416.1    88.1  2420.1   110.7  2423.1     123  2424.1

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
*********************************
       0    .025    68.5    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     123               33      33      33             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2421.53  * Element                *  Left OB *  Channel *  Right OB *
* Vel Head (ft)           *    0.49  * Wt. n-Val.             *          *    0.025  *           *
* W.S. Elev (ft)          * 2421.03  * Reach Len. (ft)        *   33.00  *   33.00  *   33.00   *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  279.72  *           *
* E.G. Slope (ft/ft)      *0.001910  * Area (sq ft)           *          *  279.72  *           *
* Q Total (cfs)           * 1577.00  * Flow (cfs)             *          * 1577.00  *           *
* Top Width (ft)          *   87.73  * Top Width (ft)         *          *   87.73  *           *
* Vel Total (ft/s)        *    5.64  * Avg. Vel. (ft/s)       *          *    5.64  *           *
* Max Chl Dpth (ft)       *    5.03  * Hydr. Depth (ft)       *          *    3.19  *           *
* Conv. Total (cfs)       * 36085.9  * Conv. (cfs)           *          * 36085.9  *           *
* Length Wtd. (ft)        *   33.00  * Wetted Per. (ft)       *          *   88.56  *           *
* Min Ch El (ft)          * 2416.00  * Shear (lb/sq ft)       *          *    0.38  *           *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.12  *           *
* Frctn Loss (ft)         *    0.06  * Cum Volume (acre-ft)   *    0.05  *    8.95  *           *
```

```
* C & E Lo.     t)        *    0.00  * Cum SA (acres)         *    0.12  *    2.47            *
**********.-**********************************************************************************.*********

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17098.8

INPUT
Description: lt side grass, gravel bottom & rt side
Station Elevation Data    num=       9
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************************
       0  2423.3    10.3     2420    33.7     2417    56.7     2416    62.9  2415.9
    68.5     2416    88.1     2420   110.7     2423     123     2424

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
*********************************
       0    .025    56.7    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     123                33      33      33             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************************
* E.G. Elev (ft)          * 2421.46  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.48  * Wt. n-Val.             *          *    0.026 *          *
* W.S. Elev (ft)          * 2420.98  * Reach Len. (ft)        *   33.00  *    33.00 *   33.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   283.82 *          *
* E.G. Slope (ft/ft)      *0.001983  * Area (sq ft)           *          *   283.82 *          *
* Q Total (cfs)           * 1577.00  * Flow (cfs)             *          *  1577.00 *          *
* Top Width (ft)          *   88.23  * Top Width (ft)         *          *    88.23 *          *
* Vel Total (ft/s)        *    5.56  * Avg. Vel. (ft/s)       *          *     5.56 *          *
* Max Chl Dpth (ft)       *    5.08  * Hydr. Depth (ft)       *          *     3.22 *          *
* Conv. Total (cfs)       * 35411.9  * Conv. (cfs)           *          *  35411.9 *          *
* Length Wtd. (ft)        *   33.00  * Wetted Per. (ft)      *          *    89.06 *          *
* Min Ch El (ft)          * 2415.90  * Shear (lb/sq ft)      *          *     0.39 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *     2.19 *          *
* Frctn Loss (ft)         *    0.14  * Cum Volume (acre-ft)   *    0.05  *     8.74 *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *    0.12  *     2.40 *          *
*********************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper              RS: 17065.8

INPUT
Description: shrubs left side, gravel bottom, grass right side
Station Elevation Data    num=       8
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************
       0     2423    11.3  2420.3    25.4     2417      40     2416    51.8  2415.5
    61.8     2416    96.3     2424     123   2424.7

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************
       0    .027    11.3     .15    25.4    .027    61.8    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     123               93.5   109.3   127.9             .1       .3
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2421.30	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.66	Wt. n-Val.		0.061		
W.S. Elev (ft)	2420.64	Reach Len. (ft)	93.50	109.30	127.90	
Crit W.S. (ft)		Flow Area (sq ft)		241.76		
E.G. Slope (ft/ft)	*0.014365	Area (sq ft)		241.76		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	71.93	Top Width (ft)		71.93		
Vel Total (ft/s)	6.52	Avg. Vel. (ft/s)		6.52		
Max Chl Dpth (ft)	5.14	Hydr. Depth (ft)		3.36		
Conv. Total (cfs)	13157.5	Conv. (cfs)		13157.5		
Length Wtd. (ft)	109.30	Wetted Per. (ft)		72.94		
Min Ch El (ft)	2415.50	Shear (lb/sq ft)		2.97		
Alpha	1.00	Stream Power (lb/ft s)		19.39		
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	0.05	8.54		
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	2.34		

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16956.5

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2426.5	25.6	2417	34.5	2416	47.6	2415	53.6	2414.9
62.3	2415	68.8	2416	89	2422				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47.6	.027	62.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	89	196.6	208	217.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2420.79	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.67	Wt. n-Val.		0.025		
W.S. Elev (ft)	2420.12	Reach Len. (ft)	196.60	208.00	217.70	
Crit W.S. (ft)		Flow Area (sq ft)		240.69		
E.G. Slope (ft/ft)	*0.002281	Area (sq ft)		240.69		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	65.50	Top Width (ft)		65.50		
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)		6.55		
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)		3.67		
Conv. Total (cfs)	33022.3	Conv. (cfs)		33022.3		
Length Wtd. (ft)	208.00	Wetted Per. (ft)		66.83		
Min Ch El (ft)	2414.90	Shear (lb/sq ft)		0.51		
Alpha	1.00	Stream Power (lb/ft s)		3.36		
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	0.05	7.94		
C & E Loss (ft)	0.09	Cum SA (acres)	0.12	2.17		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECT_ .

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16748.5

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2422.5	34.4	2415	35	2414	41.2	2413.3	51.1	2413.3
54.1	2414	90.4	2424						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	41.2	.027	51.1	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	90.4	225.8	230.7	239.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2419.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.55	Wt. n-Val.		0.025	
W.S. Elev (ft)	2418.40	Reach Len. (ft)	225.80	230.70	239.80
Crit W.S. (ft)	2418.40	Flow Area (sq ft)		158.06	
E.G. Slope (ft/ft)	0.006747	Area (sq ft)		158.06	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	51.25	Top Width (ft)		51.25	
Vel Total (ft/s)	9.98	Avg. Vel. (ft/s)		9.98	
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)		3.08	
Conv. Total (cfs)	19198.4	Conv. (cfs)		19198.4	
Length Wtd. (ft)	230.70	Wetted Per. (ft)		52.89	
Min Ch El (ft)	2413.30	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)		12.56	
Frctn Loss (ft)	1.27	Cum Volume (acre-ft)	0.05	6.98	
C & E Loss (ft)	0.11	Cum SA (acres)	0.12	1.89	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16517.8

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2420	25.2	2413	32.5	2412	36.6	2411.9	40.7	2412
52.5	2413	71.1	2419	88.2	2422				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	32.5	.027	40.7	.025

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    88.2             390     390     390             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2418.18  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.18  * Wt. n-Val.            *          *    0.025 *          *
* W.S. Elev (ft)         * 2417.00  * Reach Len. (ft)       *  390.00  *   390.00 *  390.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *   180.89 *          *
* E.G. Slope (ft/ft)     *0.004546  * Area (sq ft)          *          *   180.89 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          *  1577.00 *          *
* Top Width (ft)         *   54.09  * Top Width (ft)        *          *    54.09 *          *
* Vel Total (ft/s)       *    8.72  * Avg. Vel. (ft/s)      *          *     8.72 *          *
* Max Chl Dpth (ft)      *    5.10  * Hydr. Depth (ft)      *          *     3.34 *          *
* Conv. Total (cfs)      * 23388.4  * Conv. (cfs)           *          *  23388.4 *          *
* Length Wtd. (ft)       *  390.00  * Wetted Per. (ft)      *          *    55.38 *          *
* Min Ch El (ft)         * 2411.90  * Shear (lb/sq ft)      *          *     0.93 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *     8.08 *          *
* Frctn Loss (ft)        *    1.51  * Cum Volume (acre-ft)  *    0.05  *     6.09 *          *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)        *    0.12  *     1.61 *          *
************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: Upper             RS: 16127.8

INPUT
Description: grass sides, gravel bottom
Station Elevation Data    num=       5
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************
       0     2417    23.5     2411    30.4     2410    47.6     2411    83.2     2421

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
***********************************************
       0     .025    30.4     .027    47.6     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    83.2             96.3    92.8    92.8             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2416.59  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.90  * Wt. n-Val.            *          *    0.026 *          *
* W.S. Elev (ft)         * 2415.68  * Reach Len. (ft)       *   96.30  *    92.80 *   92.80  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *   206.83 *          *
* E.G. Slope (ft/ft)     *0.003340  * Area (sq ft)          *          *   206.83 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          *  1577.00 *          *
* Top Width (ft)         *   59.10  * Top Width (ft)        *          *    59.10 *          *
* Vel Total (ft/s)       *    7.62  * Avg. Vel. (ft/s)      *          *     7.62 *          *
* Max Chl Dpth (ft)      *    5.68  * Hydr. Depth (ft)      *          *     3.50 *          *
* Conv. Total (cfs)      * 27285.4  * Conv. (cfs)           *          *  27285.4 *          *
* Length Wtd. (ft)       *   92.80  * Wetted Per. (ft)      *          *    60.44 *          *
* Min Ch El (ft)         * 2410.00  * Shear (lb/sq ft)      *          *     0.71 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *     5.44 *          *
* Frctn Loss (ft)        *    0.10  * Cum Volume (acre-ft)  *    0.05  *     4.35 *          *
* C & E Loss (ft)        *    0.21  * Cum SA (acres)        *    0.12  *     1.10 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
```

Warning: T nveyance ratio (upstream conveyance divided by downstream conveyance less than
0.. or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 16035.0

INPUT
Description: grass sides, gravel bottom
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2417	33.7	2410	43.6	2409.9	64	2409.9	71.8	2410
121.9	2419								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	43.6	.027	64	.025	71.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.9	106.2	119.3	133.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.026	
W.S. Elev (ft)	2416.06	Reach Len. (ft)	106.20	119.30	133.30
Crit W.S. (ft)		Flow Area (sq ft)		424.31	
E.G. Slope (ft/ft)	0.000560	Area (sq ft)		424.31	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	101.00	Top Width (ft)		101.00	
Vel Total (ft/s)	3.72	Avg. Vel. (ft/s)		3.72	
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)		4.20	
Conv. Total (cfs)	66630.8	Conv. (cfs)		66630.8	
Length Wtd. (ft)	119.24	Wetted Per. (ft)		102.16	
Min Ch El (ft)	2409.90	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.54	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.05	3.68	
C & E Loss (ft)	0.02	Cum SA (acres)	0.12	0.93	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15915.7

INPUT
Description: gravel bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416.5	0	2415.1	12.4	2414	44.5	2410	53.2	2409
63.6	2408.8	76.7	2409	83.1	2410	123.5	2419		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	123.5	20	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.027	0.027	
W.S. Elev (ft)	2416.04	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)	19.04	496.88	
E.G. Slope (ft/ft)	0.000445	Area (sq ft)	19.04	496.88	
Q Total (cfs)	1577.00	Flow (cfs)	13.38	1563.62	
Top Width (ft)	150.63	Top Width (ft)	40.40	110.23	
Vel Total (ft/s)	3.06	Avg. Vel. (ft/s)	0.70	3.15	
Max Chl Dpth (ft)	7.24	Hydr. Depth (ft)	0.47	4.51	
Conv. Total (cfs)	74764.5	Conv. (cfs)	634.5	74130.0	
Length Wtd. (ft)	20.00	Wetted Per. (ft)	40.41	111.33	
Min Ch El (ft)	2408.80	Shear (lb/sq ft)	0.01	0.12	
Alpha	1.05	Stream Power (lb/ft s)	0.01	0.39	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.03	2.42	
C & E Loss (ft)	0.00	Cum SA (acres)	0.07	0.65	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15895.7

INPUT
Description: u/s face of cart path
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.2	17.7	2414.2	31.6	2412.2	51.6	2410.2
57.8	2409.2	65.1	2408.7	72.4	2409.2	86.8	2410.2	121.6	2419.2

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.027	0.027	
W.S. Elev (ft)	2416.00	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)	2412.94	Flow Area (sq ft)	24.16	455.98	
E.G. Slope (ft/ft)	0.000583	Area (sq ft)	24.16	455.98	
Q Total (cfs)	1577.00	Flow (cfs)	17.50	1559.50	
Top Width (ft)	169.24	Top Width (ft)	60.00	109.24	
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)	0.72	3.42	
Max Chl Dpth (ft)	7.30	Hydr. Depth (ft)	0.40	4.17	
Conv. Total (cfs)	65325.3	Conv. (cfs)	725.1	64600.2	
Length Wtd. (ft)	73.80	Wetted Per. (ft)	60.01	110.40	
Min Ch El (ft)	2408.70	Shear (lb/sq ft)	0.01	0.15	
Alpha	1.07	Stream Power (lb/ft s)	0.01	0.51	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.02	2.20	
C & E Loss (ft)		Cum SA (acres)	0.05	0.59	

CULVERT

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15888.2

INPUT
Description: cart path crossing 3
Distance from Upstream XS = .1
Deck/Roadway Width = 73.6
Weir Coefficient = 2.6

```
Upstream  1     Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
      22  2413.3           100.8  2413.4

Upstream Bridge Cross Section Data
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -60    2416       0  2415.2    17.7  2414.2    31.6  2412.2    51.6  2410.2
    57.8  2409.2    65.1  2408.7    72.4  2409.2    86.8  2410.2   121.6  2419.2

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
**********************************
     -60    .027       0    .027

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   121.6             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
      22  2413.3           100.8  2413.4

Downstream Bridge Cross Section Data
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -60    2416       0  2415.1    17.7  2414.1    31.6  2412.1    51.6  2410.1
    57.8  2409.1    65.1  2408.6    72.4  2409.1    86.8  2410.1   121.6  2419.1

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
**********************************
     -60    .027       0    .027

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   121.6             .1       .3

Upstream Embankment side slope             =       0 horiz. to 1.0 vertical
Downstream Embankment side slope           =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins        =
Energy head used in spillway design        =
Spillway height used in design             =
Weir crest shape                           = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     3.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0    73.7     .013     .013        0                  .2               1
Number of Barrels =  6
Upstream   Elevation =  2409.2
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    55.1    59.1    63.1    67.1    71.1    75.1
Downstream Elevation =  2409.1
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    55.1    59.1    63.1    67.1    71.1    75.1
```

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	380.08	Culv Full Len (ft)	73.70		
# Barrels	6	Culv Vel US (ft/s)	6.58		
Q Barrel (cfs)	63.35	Culv Vel DS (ft/s)	6.58		
E.G. US. (ft)	2416.19	Culv Inv El Up (ft)	2409.20		
W.S. US. (ft)	2416.00	Culv Inv El Dn (ft)	2409.10		
E.G. DS (ft)	2415.37	Culv Frctn Ls (ft)	0.29		
W.S. DS (ft)	2415.09	Culv Exit Loss (ft)	0.39		
Delta EG (ft)	0.82	Culv Entr Loss (ft)	0.13		
Delta WS (ft)	0.91	Q Weir (cfs)	1196.92		
E.G. IC (ft)	2415.69	Weir Sta Lft (ft)	-60.00		
E.G. OC (ft)	2416.19	Weir Sta Rgt (ft)	109.95		
Culvert Control	Outlet	Weir Submerg	0.53		
Culv WS Inlet (ft)	2412.70	Weir Max Depth (ft)	2.89		
Culv WS Outlet (ft)	2412.60	Weir Avg Depth (ft)	1.80		
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	305.37		
Culv Crt Depth (ft)	2.49	Min El Weir Flow (ft)	2413.31		

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15880.7

INPUT
Description: d/s face of cart path culvert
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	2416	0	2415.1	17.7	2414.1	31.6	2412.1	51.6	2410.1
57.8	2409.1	65.1	2408.6	72.4	2409.1	86.8	2410.1	121.6	2419.1

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-60	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.027	
W.S. Elev (ft)	2415.09	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)		Flow Area (sq ft)		368.29	
E.G. Slope (ft/ft)	0.001164	Area (sq ft)		368.29	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	105.88	Top Width (ft)		105.88	
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)		4.28	
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)		3.48	
Conv. Total (cfs)	46224.3	Conv. (cfs)		46224.3	
Length Wtd. (ft)	73.80	Wetted Per. (ft)		106.94	
Min Ch El (ft)	2408.60	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		1.07	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	0.00	1.50	
C & E Loss (ft)	0.00	Cum SA (acres)	0.00	0.41	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15860.7

INPUT
Description: gravel sides & bottom

Station El on Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-55	2416	0	2415	17.7	2414	31.6	2412	51.6	2410
57.8	2409	65.1	2408.5	72.4	2409	86.8	2410	121.6	2419

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-55	.027	0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.000	0.027	
W.S. Elev (ft)	2415.01	Reach Len. (ft)	68.00	73.80	75.10
Crit W.S. (ft)		Flow Area (sq ft)	0.00	370.08	
E.G. Slope (ft/ft)	0.001149	Area (sq ft)	0.00	370.08	
Q Total (cfs)	1577.00	Flow (cfs)	0.00	1577.00	
Top Width (ft)	106.44	Top Width (ft)	0.28	106.15	
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)	0.03	4.26	
Max Chl Dpth (ft)	6.51	Hydr. Depth (ft)	0.00	3.49	
Conv. Total (cfs)	46518.9	Conv. (cfs)	0.0	46518.9	
Length Wtd. (ft)	73.80	Wetted Per. (ft)	0.28	107.21	
Min Ch El (ft)	2408.50	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		1.06	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.00	0.88	
C & E Loss (ft)	0.06	Cum SA (acres)	0.00	0.23	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp

REACH: Upper RS: 15786.9

INPUT

Description: shrubs along gabions rt side. gravel bottom, grass lt side

Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2419	23.4	2418	34	2416	43.9	2413	56.5	2409
69.5	2408	77.7	2407.8	81	2408	90.6	2416	102.1	2419

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	56.5	.027	81	.15	90.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.1	78.3	91.8	103.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2415.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.		0.059	
W.S. Elev (ft)	2414.15	Reach Len. (ft)	78.30	91.80	103.70
Crit W.S. (ft)	2412.77	Flow Area (sq ft)		209.66	
E.G. Slope (ft/ft)	0.013632	Area (sq ft)		209.66	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	48.25	Top Width (ft)		48.25	

Vel Total (ft/s)	7.52	Avg. Vel. (ft/s)		7.52				
Max Chl Dpth (ft)	6.35	Hydr. Depth (ft)		4.34				
Conv. Total (cfs)	13507.0	Conv. (cfs)		13507.0				
Length Wtd. (ft)	91.80	Wetted Per. (ft)		51.31				
Min Ch El (ft)	2407.80	Shear (lb/sq ft)		3.48				
Alpha	1.00	Stream Power (lb/ft s)		26.15				
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)		0.38				
C & E Loss (ft)	0.07	Cum SA (acres)		0.10				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: Upper RS: 15695.1

INPUT
Description: *shrubs along gabions rt side. gravel bottom, grass lt side*
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2418	26	2417	47	2410.9	61	2407	67.4	2406.1
81.2	2406.4	84.8	2407	91.8	2410	130.6	2420		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47	.027	67.4	.15	84.8	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	130.6	81.5	103.6	127.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2412.55	Element			
Vel Head (ft)	1.61	Wt. n-Val.		0.081	
W.S. Elev (ft)	2410.94	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	2410.94	Flow Area (sq ft)		154.76	
E.G. Slope (ft/ft)	*0.068838	Area (sq ft)		154.76	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	48.59	Top Width (ft)		48.59	
Vel Total (ft/s)	10.19	Avg. Vel. (ft/s)		10.19	
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)		3.19	
Conv. Total (cfs)	6010.6	Conv. (cfs)		6010.6	
Length Wtd. (ft)	0.00	Wetted Per. (ft)		49.98	
Min Ch El (ft)	2406.10	Shear (lb/sq ft)		13.31	
Alpha	1.00	Stream Power (lb/ft s)		135.60	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)			
C & E Loss (ft)	0.34	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

de, the calculated water surface came back below critical depth. This i ates that there is
not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15591.5

INPUT
Description: grass left side, 1.5' weed in bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2414	28.9	2406	42	2404.9	47.1	2404.7	72.2	2404.7
77.8	2405	79.9	2406	96	2406	97.9	2407	132.4	2418

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	47.1	.029	72.2	.025	79.9	.015	96	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	132.4	141.2	154.6	169.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2409.48	Element		0.025	
Vel Head (ft)	0.49	Wt. n-Val.		154.60	169.30
W.S. Elev (ft)	2408.99	Reach Len. (ft)	141.20	281.33	
Crit W.S. (ft)		Flow Area (sq ft)		281.33	
E.G. Slope (ft/ft)	0.001802	Area (sq ft)		1577.00	
Q Total (cfs)	1577.00	Flow (cfs)		86.06	
Top Width (ft)	86.06	Top Width (ft)		5.61	
Vel Total (ft/s)	5.61	Avg. Vel. (ft/s)		4.29	
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)		3.27	
Conv. Total (cfs)	37153.4	Conv. (cfs)		37153.4	
Length Wtd. (ft)	154.60	Wetted Per. (ft)		87.30	
Min Ch El (ft)	2404.70	Shear (lb/sq ft)		0.36	
Alpha	1.00	Stream Power (lb/ft s)		2.03	
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)		26.48	
C & E Loss (ft)	0.05	Cum SA (acres)		9.31	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15436.9

INPUT
Description: grass left side, 1.5' weed in bottom, gravel right side
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2412	29.3	2405	35.4	2404.5	86.8	2404.5	96	2405
115.5	2410	132.3	2418						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	35.4	.029	86.8	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	132.3	171	180.6	189.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2409.19	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.32	Wt. n-Val.		0.028		
W.S. Elev (ft)	2408.87	Reach Len. (ft)	171.00	180.60	189.10	
Crit W.S. (ft)		Flow Area (sq ft)		348.60		
E.G. Slope (ft/ft)	0.001318	Area (sq ft)		348.60		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	98.02	Top Width (ft)		98.02		
Vel Total (ft/s)	4.52	Avg. Vel. (ft/s)		4.52		
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		3.56		
Conv. Total (cfs)	43433.6	Conv. (cfs)		43433.6		
Length Wtd. (ft)	180.60	Wetted Per. (ft)		99.00		
Min Ch El (ft)	2404.50	Shear (lb/sq ft)		0.29		
Alpha	1.00	Stream Power (lb/ft s)		1.31		
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)		25.36		
C & E Loss (ft)	0.07	Cum SA (acres)		8.99		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 15256.3

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2411.3	11.8	2411	41.2	2407	51.6	2405	59.3	2404.3
69.7	2404	76.9	2403.9	93.2	2404	99	2405	131.6	2418

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93.2	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	131.6	227.6	228.9	230.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2408.72	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.99	Wt. n-Val.		0.025		
W.S. Elev (ft)	2407.73	Reach Len. (ft)	227.60	228.90	230.40	
Crit W.S. (ft)		Flow Area (sq ft)		197.99		
E.G. Slope (ft/ft)	0.004708	Area (sq ft)		197.99		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	70.04	Top Width (ft)		70.04		
Vel Total (ft/s)	7.96	Avg. Vel. (ft/s)		7.96		
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)		2.83		
Conv. Total (cfs)	22982.2	Conv. (cfs)		22982.2		
Length Wtd. (ft)	228.90	Wetted Per. (ft)		70.93		
Min Ch El (ft)	2403.90	Shear (lb/sq ft)		0.82		
Alpha	1.00	Stream Power (lb/ft s)		6.54		
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)		24.23		
C & E Loss (ft)	0.04	Cum SA (acres)		8.64		

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTI...

RIVER: Flamingo Wash Sp
REACH: lower RS: 15027.4

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2409.2	15.4	2408	29	2404	38.5	2403	44.8	2402.4
55.7	2402.2	63	2402.2	71.1	2403	77	2404	101.4	2414

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	71.1	.027

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
0	101.4	91.4	121.6	147.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2407.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.		0.025	
W.S. Elev (ft)	2406.00	Reach Len. (ft)	91.40	121.60	147.60
Crit W.S. (ft)	2406.00	Flow Area (sq ft)		166.36	
E.G. Slope (ft/ft)	0.006810	Area (sq ft)		166.36	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	59.66	Top Width (ft)		59.66	
Vel Total (ft/s)	9.48	Avg. Vel. (ft/s)		9.48	
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	19109.7	Conv. (cfs)		19109.7	
Length Wtd. (ft)	121.60	Wetted Per. (ft)		60.55	
Min Ch El (ft)	2402.20	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		11.07	
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)		23.27	
C & E Loss (ft)	0.11	Cum SA (acres)		8.30	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14905.8

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2407	22.1	2404	35.9	2402	40.6	2401.5	66.5	2401.3
84.2	2401.4	87.6	2402	93.5	2403	122.2	2414		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	87.6	.027

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   122.2               91   106.6   118.7            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2405.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.01	Wt. n-Val.		0.025	
W.S. Elev (ft)	2404.51	Reach Len. (ft)	91.00	106.60	118.70
Crit W.S. (ft)	2404.32	Flow Area (sq ft)		195.23	
E.G. Slope (ft/ft)	0.005707	Area (sq ft)		195.23	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	79.05	Top Width (ft)		79.05	
Vel Total (ft/s)	8.08	Avg. Vel. (ft/s)		8.08	
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)		2.47	
Conv. Total (cfs)	20875.0	Conv. (cfs)		20875.0	
Length Wtd. (ft)	106.60	Wetted Per. (ft)		79.67	
Min Ch El (ft)	2401.30	Shear (lb/sq ft)		0.87	
Alpha	1.00	Stream Power (lb/ft s)		7.05	
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)		22.76	
C & E Loss (ft)	0.02	Cum SA (acres)		8.10	

```
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 14799.2

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0    2407    29.4    2403    41.3    2401    46.1  2400.7    73.2  2400.6
    93.7    2401   121.8    2413

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
*********************************
       0    .025    93.7    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   121.8             121.5   133.7   141.3            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2404.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.21	Wt. n-Val.		0.026	
W.S. Elev (ft)	2403.60	Reach Len. (ft)	121.50	133.70	141.30
Crit W.S. (ft)	2403.60	Flow Area (sq ft)		178.79	
E.G. Slope (ft/ft)	0.007351	Area (sq ft)		178.79	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	74.79	Top Width (ft)		74.79	
Vel Total (ft/s)	8.82	Avg. Vel. (ft/s)		8.82	
Max Chl Dpth (ft)	3.00	Hydr. Depth (ft)		2.39	
Conv. Total (cfs)	18393.8	Conv. (cfs)		18393.8	
Length Wtd. (ft)	133.70	Wetted Per. (ft)		75.55	
Min Ch El (ft)	2400.60	Shear (lb/sq ft)		1.09	
Alpha	1.00	Stream Power (lb/ft s)		9.58	
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)		22.31	
C & E Loss (ft)	0.01	Cum SA (acres)		7.92	

```
Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
```

T. ay indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14665.5

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2407	24.5	2405	47.2	2399	56.9	2398	62.5	2397.9
76.1	2398	95	2399	98.1	2400	121.5	2409		

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	95	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.5	300	300	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2402.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.33	Wt. n-Val.		0.025	
W.S. Elev (ft)	2401.43	Reach Len. (ft)	300.00	300.00	300.00
Crit W.S. (ft)	2401.43	Flow Area (sq ft)		170.10	
E.G. Slope (ft/ft)	0.006814	Area (sq ft)		170.10	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	63.78	Top Width (ft)		63.78	
Vel Total (ft/s)	9.27	Avg. Vel. (ft/s)		9.27	
Max Chl Dpth (ft)	3.52	Hydr. Depth (ft)		2.67	
Conv. Total (cfs)	19104.8	Conv. (cfs)		19104.8	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		64.59	
Min Ch El (ft)	2397.90	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		10.39	
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)		21.77	
C & E Loss (ft)	0.02	Cum SA (acres)		7.70	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14365.5

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2399.3	24	2396	33.2	2395	46.2	2394.5	63.8	2394
71.7	2395	75.1	2395.5	101.6	2406				

```
Manning's n Values        num=       2
     Sta   n Val      Sta   n Val
*********************************
       0    .025     71.7    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   101.6             105.1   100.6    95.7             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2399.04  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.27  * Wt. n-Val.             *         *  0.025  *          *
* W.S. Elev (ft)          * 2397.77  * Reach Len. (ft)        *  105.10 *  100.60 *   95.70  *
* Crit W.S. (ft)          * 2397.77  * Flow Area (sq ft)      *         *  174.44 *          *
* E.G. Slope (ft/ft)      *0.007058  * Area (sq ft)           *         *  174.44 *          *
* Q Total (cfs)           * 1577.00  * Flow (cfs)             *         * 1577.00 *          *
* Top Width (ft)          *   69.71  * Top Width (ft)         *         *   69.71 *          *
* Vel Total (ft/s)        *    9.04  * Avg. Vel. (ft/s)       *         *    9.04 *          *
* Max Chl Dpth (ft)       *    3.77  * Hydr. Depth (ft)       *         *    2.50 *          *
* Conv. Total (cfs)       * 18771.7  * Conv. (cfs)           *         * 18771.7 *          *
* Length Wtd. (ft)        *  100.60  * Wetted Per. (ft)       *         *   70.43 *          *
* Min Ch El (ft)          * 2394.00  * Shear (lb/sq ft)      *         *    1.09 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *    9.87 *          *
* Frctn Loss (ft)         *    0.59  * Cum Volume (acre-ft)   *         *   20.58 *          *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)         *         *    7.24 *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 14264.9

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
       0    2400    21.7    2395    30.2    2394    41.3  2393.6    60.6  2393.6
    70.2    2394   102.2    2405

Manning's n Values        num=       2
     Sta   n Val      Sta   n Val
*********************************
       0    .025     70.2    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   102.2               90      90       90             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2398.30  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.05  * Wt. n-Val.             *          *  0.025  *          *
* W.S. Elev (ft)          * 2397.26  * Reach Len. (ft)        *   90.00  *  90.00  *   90.00  *
* Crit W.S. (ft)          * 2396.95  * Flow Area (sq ft)      *          *  191.93 *          *
* E.G. Slope (ft/ft)      *0.004966  * Area (sq ft)           *          *  191.93 *          *
* Q Total (cfs)           * 1577.00  * Flow (cfs)             *          * 1577.00 *          *
* Top Width (ft)          *   67.76  * Top Width (ft)         *          *   67.76 *          *
* Vel Total (ft/s)        *    8.22  * Avg. Vel. (ft/s)       *          *    8.22 *          *
* Max Chl Dpth (ft)       *    3.66  * Hydr. Depth (ft)       *          *    2.83 *          *
```

Conv. To cfs)	22377.8	Conv. (cfs)		22377.8			
Length Wtd. (ft)	90.00	Wetted Per. (ft)		68.63			
Min Ch El (ft)	2393.60	Shear (lb/sq ft)		0.87			
Alpha	1.00	Stream Power (lb/ft s)		7.12			
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)		20.16			
C & E Loss (ft)	0.03	Cum SA (acres)		7.09			

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 14174.9

INPUT
Description: grass left side and bottom, gravel right side
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	19.2	2397	28.8	2394	46.5	2393	61.2	2392.7
71.1	2393	75.9	2394	102.6	2404				

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	71.1	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.6	203	197	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2397.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.		0.025	
W.S. Elev (ft)	2396.36	Reach Len. (ft)	203.00	200.00	197.00
Crit W.S. (ft)	2396.36	Flow Area (sq ft)		166.81	
E.G. Slope (ft/ft)	0.006947	Area (sq ft)		166.81	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	60.93	Top Width (ft)		60.93	
Vel Total (ft/s)	9.45	Avg. Vel. (ft/s)		9.45	
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)		2.74	
Conv. Total (cfs)	18920.4	Conv. (cfs)		18920.4	
Length Wtd. (ft)	200.00	Wetted Per. (ft)		61.86	
Min Ch El (ft)	2392.70	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		11.06	
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)		19.79	
C & E Loss (ft)	0.05	Cum SA (acres)		6.95	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13974.9

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2400	24.7	2390.7	33.9	2390	41.6	2389.8	54.7	2389.6
60.1	2390	66.2	2391	88.9	2402				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	24.7	.027	66.2	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	88.9	60.8	46.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2395.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.		0.028	
W.S. Elev (ft)	2393.79	Reach Len. (ft)	60.80	46.30	32.10
Crit W.S. (ft)	2393.47	Flow Area (sq ft)		177.67	
E.G. Slope (ft/ft)	0.006283	Area (sq ft)		177.67	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	55.48	Top Width (ft)		55.48	
Vel Total (ft/s)	8.88	Avg. Vel. (ft/s)		8.88	
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)		3.20	
Conv. Total (cfs)	19895.0	Conv. (cfs)		19895.0	
Length Wtd. (ft)	46.30	Wetted Per. (ft)		56.81	
Min Ch El (ft)	2389.60	Shear (lb/sq ft)		1.23	
Alpha	1.00	Stream Power (lb/ft s)		10.89	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)		19.00	
C & E Loss (ft)	0.06	Cum SA (acres)		6.69	

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13928.6

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401.1	15.8	2399.1	27.7	2390.1	32.2	2389.6	47.5	2389.5
67.5	2389.6	70	2390.1	93.8	2401.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	67.5	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	93.8	46	42	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2394.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.		0.029	
W.S. Elev (ft)	2393.69	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2393.01	Flow Area (sq ft)		194.71	
E.G. Slope (ft/ft)	0.004651	Area (sq ft)		194.71	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	54.47	Top Width (ft)		54.47	
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)		8.10	
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)		3.57	
Conv. Total (cfs)	23123.0	Conv. (cfs)		23123.0	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		56.57	

* Min Ch El	* 2389.50	* Shear (lb/sq ft)	*	*	1.00		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	8.10	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	*	18.80	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	*	6.63	*	*

Note: Manning's n values were composited to a single value in the main channel.

BRIDGE

RIVER: Flamingo Wash Sp
REACH: lower RS: 13912.6

INPUT
Description: main roadway bridge
Distance from Upstream XS = .1
Deck/Roadway Width = 41.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0	2402	2399	95	2402.5	2399

Upstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401.1	15.8	2399.1	27.7	2390.1	32.2	2389.6	47.5	2389.5
67.5	2389.6	70	2390.1	93.8	2401.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	67.5	.032

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	93.8	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0	2402	2399	95	2402.5	2399

Downstream Bridge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	15.8	2399	27.7	2390	32.2	2389.5	47.5	2389.4
67.5	2389.5	70	2390	93.8	2401.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	70	.032

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	93.8	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2394.71	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2393.69	E.G. Elev (ft)	2394.71	2394.46
Q Total (cfs)	1577.00	W.S. Elev (ft)	2393.69	2393.12
Q Bridge (cfs)	1577.00	Crit W.S. (ft)	2392.98	2392.93
Q Weir (cfs)		Max Chl Dpth (ft)	4.19	3.71
Weir Sta Lft (ft)		Vel Total (ft/s)	8.10	9.31
Weir Sta Rgt (ft)		Flow Area (sq ft)	194.67	169.37
Weir Submerg		Froude # Chl	0.76	0.92
Weir Max Depth (ft)		Specif Force (cu ft)	776.37	749.84
Min El Weir Flow (ft)	2402.01	Hydr Depth (ft)	3.57	3.20
Min El Prs (ft)	2399.00	W.P. Total (ft)	56.57	54.70
Delta EG (ft)	0.26	Conv. Total (cfs)	24421.4	19802.1
Delta WS (ft)	0.78	Top Width (ft)	54.46	52.86
BR Open Area (sq ft)	531.96	Frctn Loss (ft)	0.21	0.00
BR Open Vel (ft/s)	9.31	C & E Loss (ft)	0.03	0.02
Coef of Q		Shear Total (lb/sq ft)	0.90	1.23
Br Sel Method	Energy only	Power Total (lb/ft s)	7.26	11.41

Note: Manning's n values were composited to a single value in the main channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13896.6

INPUT
Description: gravel bottom, gabion sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2401	15.8	2399	27.7	2390	32.2	2389.5	47.5	2389.4
67.5	2389.5	70	2390	93.8	2401.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	27.7	.027	70	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	93.8	46	42	36	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2394.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.54	Wt. n-Val.		0.028	
W.S. Elev (ft)	2392.91	Reach Len. (ft)	46.00	42.00	36.00
Crit W.S. (ft)	2392.91	Flow Area (sq ft)		158.55	
E.G. Slope (ft/ft)	0.008394	Area (sq ft)		158.55	

* Q Total	* 1577.00	* Flow (cfs)	*	* 1577.00	*
* Top Width (ft)	* 52.17	* Top Width (ft)	*	* 52.17	*
* Vel Total (ft/s)	* 9.95	* Avg. Vel. (ft/s)	*	* 9.95	*
* Max Chl Dpth (ft)	* 3.51	* Hydr. Depth (ft)	*	* 3.04	*
* Conv. Total (cfs)	* 17213.1	* Conv. (cfs)	*	* 17213.1	*
* Length Wtd. (ft)	* 42.00	* Wetted Per. (ft)	*	* 53.89	*
* Min Ch El (ft)	* 2389.40	* Shear (lb/sq ft)	*	* 1.54	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 15.34	*
* Frctn Loss (ft)	* 0.31	* Cum Volume (acre-ft)	*	* 18.63	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 6.58	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13854.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2400	24.3	2397	50.2	2389	58.8	2388.9	77	2388.9
85	2389	119.9	2401.5						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	119.9	234.5	224.2	219.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2393.98	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.47	* Wt. n-Val.	*	* 0.025	* *
* W.S. Elev (ft)	* 2392.51	* Reach Len. (ft)	* 234.50	* 224.20	* 219.80 *
* Crit W.S. (ft)	* 2392.51	* Flow Area (sq ft)	*	* 162.16	* *
* E.G. Slope (ft/ft)	*0.006661	* Area (sq ft)	*	* 162.16	* *
* Q Total (cfs)	* 1577.00	* Flow (cfs)	*	* 1577.00	* *
* Top Width (ft)	* 55.99	* Top Width (ft)	*	* 55.99	* *
* Vel Total (ft/s)	* 9.72	* Avg. Vel. (ft/s)	*	* 9.72	* *
* Max Chl Dpth (ft)	* 3.61	* Hydr. Depth (ft)	*	* 2.90	* *
* Conv. Total (cfs)	* 19322.6	* Conv. (cfs)	*	* 19322.6	* *
* Length Wtd. (ft)	* 224.20	* Wetted Per. (ft)	*	* 57.13	* *
* Min Ch El (ft)	* 2388.90	* Shear (lb/sq ft)	*	* 1.18	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 11.48	* *
* Frctn Loss (ft)	* 1.50	* Cum Volume (acre-ft)	*	* 18.47	* *
* C & E Loss (ft)	* 0.05	* Cum SA (acres)	*	* 6.52	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13630.4

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2391.8	16	2391	51	2386	62.6	2385	82.2	2385.6
90.7	2386	128.4	2400						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	128.4	300	300	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2390.13	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.29	Wt. n-Val.		0.025		
W.S. Elev (ft)	2388.84	Reach Len. (ft)	300.00	300.00	300.00	
Crit W.S. (ft)	2388.84	Flow Area (sq ft)		173.16		
E.G. Slope (ft/ft)	0.006754	Area (sq ft)		173.16		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	67.24	Top Width (ft)		67.24		
Vel Total (ft/s)	9.11	Avg. Vel. (ft/s)		9.11		
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)		2.58		
Conv. Total (cfs)	19189.3	Conv. (cfs)		19189.3		
Length Wtd. (ft)	300.00	Wetted Per. (ft)		68.02		
Min Ch El (ft)	2385.00	Shear (lb/sq ft)		1.07		
Alpha	1.00	Stream Power (lb/ft s)		9.78		
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)		17.61		
C & E Loss (ft)	0.02	Cum SA (acres)		6.21		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13330.4

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2393	11.4	2392	64.9	2382	71.7	2381.6	87.1	2381.5
93	2382	129.7	2396						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

```
          129.7          145.1   150.2   153.1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2387.06	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.45	Wt. n-Val.		0.025		
W.S. Elev (ft)	2385.61	Reach Len. (ft)	145.10	150.20	153.10	
Crit W.S. (ft)	2385.61	Flow Area (sq ft)		163.08		
E.G. Slope (ft/ft)	0.006654	Area (sq ft)		163.08		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	56.87	Top Width (ft)		56.87		
Vel Total (ft/s)	9.67	Avg. Vel. (ft/s)		9.67		
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)		2.87		
Conv. Total (cfs)	19332.4	Conv. (cfs)		19332.4		
Length Wtd. (ft)	150.20	Wetted Per. (ft)		57.90		
Min Ch El (ft)	2381.50	Shear (lb/sq ft)		1.17		
Alpha	1.00	Stream Power (lb/ft s)		11.31		
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)		16.45		
C & E Loss (ft)	0.07	Cum SA (acres)		5.78		

```
Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 13180.2

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       7
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
       0     2387     50.9     2385     86.9     2381    105.5   2379.8    120.7     2380
   130.6     2381    164.8     2393

Manning's n Values        num=       1
     Sta   n Val
***************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   164.8             94.4   130.6   144.2             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2384.70	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.23	Wt. n-Val.		0.025		
W.S. Elev (ft)	2383.47	Reach Len. (ft)	94.40	130.60	144.20	
Crit W.S. (ft)	2383.47	Flow Area (sq ft)		177.13		
E.G. Slope (ft/ft)	0.006964	Area (sq ft)		177.13		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	73.00	Top Width (ft)		73.00		
Vel Total (ft/s)	8.90	Avg. Vel. (ft/s)		8.90		
Max Chl Dpth (ft)	3.67	Hydr. Depth (ft)		2.43		
Conv. Total (cfs)	18897.7	Conv. (cfs)		18897.7		
Length Wtd. (ft)	130.60	Wetted Per. (ft)		73.65		
Min Ch El (ft)	2379.80	Shear (lb/sq ft)		1.05		
Alpha	1.00	Stream Power (lb/ft s)		9.31		
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)		15.86		
C & E Loss (ft)	0.17	Cum SA (acres)		5.55		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13049.6

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2389	13.3	2388	45.3	2387	64.7	2386	86.7	2384
129.1	2383	160.7	2380	187.5	2378.9	205.8	2378.9	213.6	2379
271.1	2391								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left 64.7 Right 271.1 Lengths: Left Channel 20 Right 20 Coeff Contr. .1 Expan. .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2383.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.025	
W.S. Elev (ft)	2382.52	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)		239.22	
E.G. Slope (ft/ft)	0.003680	Area (sq ft)		239.22	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	96.27	Top Width (ft)		96.27	
Vel Total (ft/s)	6.59	Avg. Vel. (ft/s)		6.59	
Max Chl Dpth (ft)	3.62	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	25995.1	Conv. (cfs)		25995.1	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		96.77	
Min Ch El (ft)	2378.90	Shear (lb/sq ft)		0.57	
Alpha	1.00	Stream Power (lb/ft s)		3.74	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		15.24	
C & E Loss (ft)	0.14	Cum SA (acres)		5.30	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13029.6

INPUT
Description: grass bottom & sides, u/s face of cart path culvert
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2392.7	17	2392.2	62.4	2384.2	109	2380.2	121.2	2379.2
139.3	2378.2	145.9	2378.1	174.5	2377.8	182.2	2378.2	227.2	2386.2

```
   245.9  2.   .9

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.4   245.9               10      10      10            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2383.02  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.22  * Wt. n-Val.            *          *    0.025 *          *
* W.S. Elev (ft)         * 2382.80  * Reach Len. (ft)       *   10.00  *   10.00  *   10.00  *
* Crit W.S. (ft)         * 2380.80  * Flow Area (sq ft)     *          *  417.38  *          *
* E.G. Slope (ft/ft)     *0.000853  * Area (sq ft)          *          *  417.38  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *  129.38  * Top Width (ft)        *          *  129.38  *          *
* Vel Total (ft/s)       *    3.78  * Avg. Vel. (ft/s)      *          *    3.78  *          *
* Max Chl Dpth (ft)      *    5.00  * Hydr. Depth (ft)      *          *    3.23  *          *
* Conv. Total (cfs)      * 53996.6  * Conv. (cfs)          *          * 53996.6  *          *
* Length Wtd. (ft)       *   10.00  * Wetted Per. (ft)      *          *  129.98  *          *
* Min Ch El (ft)         * 2377.80  * Shear (lb/sq ft)     *          *    0.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.65  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  *          *   15.09  *          *
* C & E Loss (ft)        *          * Cum SA (acres)        *          *    5.25  *          *
*************************************************************************************************

CULVERT


RIVER: Flamingo Wash Sp
REACH: lower              RS: 13024.6

INPUT
Description: cart path crossing 2
Distance from Upstream XS =       .1
Deck/Roadway Width        =     8.8
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
   114.6  2379.7             171  2379.8           192.8  2380.1

Upstream Bridge Cross Section Data
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
       0  2392.7      17  2392.2    62.4  2384.2     109  2380.2   121.2  2379.2
   139.3  2378.2   145.9  2378.1   174.5  2377.8   182.2  2378.2   227.2  2386.2
   245.9  2388.9

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
          62.4   245.9            .1       .3

Downstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
   114.6  2379.7             171  2379.8           192.8  2380.1

Downstream Bridge Cross Section Data
```

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2392.6	17	2392.1	62.4	2384.1	109	2380.1	121.2	2379.1
139.3	2378.1	145.9	2378	174.5	2377.7	182.2	2378.1	227.2	2386.1
245.9	2388.8								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left Right Coeff Contr. Expan.
62.4 245.9 .1 .3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
Culvert #1 Circular 1.5
FHWA Chart # 55- Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
0	9.9	.013	.013	0	.2	1

Number of Barrels = 6
Upstream Elevation = 2377.8
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
165.1	167.1	169.1	171.1	173.1	175.1

Downstream Elevation = 2377.7
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
165.1	167.1	169.1	171.1	173.1	175.1

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	103.25	Culv Full Len (ft)	9.90
# Barrels	6	Culv Vel US (ft/s)	9.74
Q Barrel (cfs)	17.21	Culv Vel DS (ft/s)	9.74
E.G. US. (ft)	2383.02	Culv Inv El Up (ft)	2377.80
W.S. US. (ft)	2382.80	Culv Inv El Dn (ft)	2377.70
E.G. DS (ft)	2381.78	Culv Frctn Ls (ft)	0.27
W.S. DS (ft)	2380.99	Culv Exit Loss (ft)	0.68
Delta EG (ft)	1.24	Culv Entr Loss (ft)	0.29
Delta WS (ft)	1.81	Q Weir (cfs)	1473.75
E.G. IC (ft)	2382.94	Weir Sta Lft (ft)	76.07
E.G. OC (ft)	2383.02	Weir Sta Rgt (ft)	209.35
Culvert Control	Outlet	Weir Submerg	0.31
Culv WS Inlet (ft)	2379.30	Weir Max Depth (ft)	3.33
Culv WS Outlet (ft)	2379.20	Weir Avg Depth (ft)	2.55
Culv Nml Depth (ft)	1.50	Weir Flow Area (sq ft)	339.83
Culv Crt Depth (ft)	1.50	Min El Weir Flow (ft)	2379.71

Note: Culvert critical depth exceeds the height of the culvert.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 13019.6

```
INPUT
Description: grass bottom & sides, d/s face of cart path culvert
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2392.6      17  2392.1    62.4  2384.1     109  2380.1   121.2  2379.1
   139.3  2378.1   145.9    2378   174.5  2377.7   182.2  2378.1   227.2  2386.1
   245.9  2388.8

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.4   245.9               20      20      20             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2381.78  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.79  * Wt. n-Val.            *          *    0.025 *          *
* W.S. Elev (ft)         * 2380.99  * Reach Len. (ft)       *   20.00  *   20.00  *   20.00  *
* Crit W.S. (ft)         * 2380.70  * Flow Area (sq ft)     *          *  221.29  *          *
* E.G. Slope (ft/ft)     *0.004998  * Area (sq ft)          *          *  221.29  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *   99.82  * Top Width (ft)        *          *   99.82  *          *
* Vel Total (ft/s)       *    7.13  * Avg. Vel. (ft/s)      *          *    7.13  *          *
* Max Chl Dpth (ft)      *    3.29  * Hydr. Depth (ft)      *          *    2.22  *          *
* Conv. Total (cfs)      * 22306.9  * Conv. (cfs)           *          * 22306.9  *          *
* Length Wtd. (ft)       *   20.00  * Wetted Per. (ft)      *          *  100.19  *          *
* Min Ch El (ft)         * 2377.70  * Shear (lb/sq ft)      *          *    0.69  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.91  *          *
* Frctn Loss (ft)        *    0.12  * Cum Volume (acre-ft)  *          *   15.02  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    5.22  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 12999.6

INPUT
Description: grass bottom & sides
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2392.5      17    2392    62.4    2384     109    2380   121.2    2379
   139.3    2378   145.9  2377.9   174.5  2377.6   182.2    2378   227.2    2386
   245.9  2388.7

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.4   245.9             125.3   114.7   112.5             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2381.64  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.03  * Wt. n-Val.            *          *    0.025 *          *
* W.S. Elev (ft)         * 2380.61  * Reach Len. (ft)       *  125.30  *  114.70  *  112.50  *
* Crit W.S. (ft)         * 2380.61  * Flow Area (sq ft)     *          *  193.80  *          *
* E.G. Slope (ft/ft)     *0.007273  * Area (sq ft)          *          *  193.80  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *   94.94  * Top Width (ft)        *          *   94.94  *          *
```

Vel Total (ft/s)	8.14	Avg. Vel. (ft/s)		8.14	
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)		2.04	
Conv. Total (cfs)	18492.2	Conv. (cfs)		18492.2	
Length Wtd. (ft)	114.70	Wetted Per. (ft)		95.28	
Min Ch El (ft)	2377.60	Shear (lb/sq ft)		0.92	
Alpha	1.00	Stream Power (lb/ft s)		7.51	
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)		14.92	
C & E Loss (ft)	0.01	Cum SA (acres)		5.18	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12884.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2397	16.5	2395	72.7	2381	105.7	2376	117.8	2375.7
132.7	2375.8	146.1	2376	160.7	2377	166.8	2378	198.8	2386

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	16.5	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16.5	198.8	100	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2379.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.		0.025	
W.S. Elev (ft)	2378.75	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2378.75	Flow Area (sq ft)		184.48	
E.G. Slope (ft/ft)	0.007093	Area (sq ft)		184.48	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	82.24	Top Width (ft)		82.24	
Vel Total (ft/s)	8.55	Avg. Vel. (ft/s)		8.55	
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.24	
Conv. Total (cfs)	18724.7	Conv. (cfs)		18724.7	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		82.66	
Min Ch El (ft)	2375.70	Shear (lb/sq ft)		0.99	
Alpha	1.00	Stream Power (lb/ft s)		8.45	
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)		14.42	
C & E Loss (ft)	0.01	Cum SA (acres)		4.94	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

```
RIVER: Fl      o Wash Sp
REACH: lo                  RS: 12784.9

INPUT
Description: grass bottom & sides
Station Elevation Data    num=      10
    Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
      0  2390.5    17.9    2389    71.4    2377    79.7    2376      93    2375
    108  2374.8   120.2    2375   137.8    2376   152.2    2378   178.7  2385.2

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          17.9   178.7             163.1   151.7   136.6             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2379.06  * Element                * Left OB * Channel * Right OB *
* Vel Head (ft)          *    1.11  * Wt. n-Val.             *         *   0.025 *         *
* W.S. Elev (ft)         * 2377.95  * Reach Len. (ft)       *  163.10 *  151.70 *  136.60 *
* Crit W.S. (ft)         * 2377.95  * Flow Area (sq ft)     *         *  186.56 *         *
* E.G. Slope (ft/ft)     *0.007098  * Area (sq ft)          *         *  186.56 *         *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *         * 1577.00 *         *
* Top Width (ft)         *   84.70  * Top Width (ft)        *         *   84.70 *         *
* Vel Total (ft/s)       *    8.45  * Avg. Vel. (ft/s)      *         *    8.45 *         *
* Max Chl Dpth (ft)      *    3.15  * Hydr. Depth (ft)      *         *    2.20 *         *
* Conv. Total (cfs)      * 18717.6  * Conv. (cfs)           *         * 18717.6 *         *
* Length Wtd. (ft)       *  151.70  * Wetted Per. (ft)      *         *   85.07 *         *
* Min Ch El (ft)         * 2374.80  * Shear (lb/sq ft)      *         *    0.97 *         *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    8.22 *         *
* Frctn Loss (ft)        *    1.07  * Cum Volume (acre-ft)   *         *   14.00 *         *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *         *    4.75 *         *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower               RS: 12633.2

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       7
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
       0     2379    28.2     2375    36.9     2374     51.7  2373.2     68.6  2373.2
    89.1     2374   143.1   2384.5

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   143.1             69.9    59.9    49.5             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2377.45	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.13	Wt. n-Val.		0.025		
W.S. Elev (ft)	2376.33	Reach Len. (ft)	69.90	59.90	49.50	
Crit W.S. (ft)	2376.33	Flow Area (sq ft)		185.17		
E.G. Slope (ft/ft)	*0.007002	Area (sq ft)		185.17		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	82.23	Top Width (ft)		82.23		
Vel Total (ft/s)	8.52	Avg. Vel. (ft/s)		8.52		
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)		2.25		
Conv. Total (cfs)	18845.7	Conv. (cfs)		18845.7		
Length Wtd. (ft)	59.90	Wetted Per. (ft)		82.64		
Min Ch El (ft)	2373.20	Shear (lb/sq ft)		0.98		
Alpha	1.00	Stream Power (lb/ft s)		8.34		
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)		13.35		
C & E Loss (ft)	0.27	Cum SA (acres)		4.46		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12573.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2377	88.7	2374	102.5	2373	133	2372	153.2	2372
172.5	2373	233.7	2385						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	233.7	30.4	30.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2376.42	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.24	Wt. n-Val.		0.025		
W.S. Elev (ft)	2376.18	Reach Len. (ft)	30.40	30.40	30.40	
Crit W.S. (ft)		Flow Area (sq ft)		400.43		
E.G. Slope (ft/ft)	*0.001344	Area (sq ft)		400.43		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	164.41	Top Width (ft)		164.41		
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)		3.94		
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)		2.44		
Conv. Total (cfs)	43010.4	Conv. (cfs)		43010.4		
Length Wtd. (ft)	30.40	Wetted Per. (ft)		164.84		
Min Ch El (ft)	2372.00	Shear (lb/sq ft)		0.20		
Alpha	1.00	Stream Power (lb/ft s)		0.80		
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		12.95		
C & E Loss (ft)	0.04	Cum SA (acres)		4.29		

```
**********      ********************************************************************      ********

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 12542.9

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
       0    2378    62.4    2378    91.8    2373   110.5    2372   125.6  2371.8
   136.2    2372   152.1    2373   213.7    2385

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.4   213.7             30.1    30.1    30.1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2376.32  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.63  * Wt. n-Val.            *          *    0.025  *          *
* W.S. Elev (ft)          * 2375.69  * Reach Len. (ft)       *   30.10  *   30.10  *   30.10  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *  247.82  *          *
* E.G. Slope (ft/ft)      *0.002992  * Area (sq ft)          *          *  247.82  *          *
* Q Total (cfs)           * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)          *   89.95  * Top Width (ft)        *          *   89.95  *          *
* Vel Total (ft/s)        *    6.36  * Avg. Vel. (ft/s)      *          *    6.36  *          *
* Max Chl Dpth (ft)       *    3.89  * Hydr. Depth (ft)      *          *    2.76  *          *
* Conv. Total (cfs)       * 28829.9  * Conv. (cfs)           *          * 28829.9  *          *
* Length Wtd. (ft)        *   30.10  * Wetted Per. (ft)      *          *   90.50  *          *
* Min Ch El (ft)          * 2371.80  * Shear (lb/sq ft)      *          *    0.51  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.26  *          *
* Frctn Loss (ft)         *    0.09  * Cum Volume (acre-ft)  *          *   12.72  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    4.20  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 12512.8

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
       0    2383    38.7    2382    83.9    2373    90.3    2372    99.1  2371.5
   127.4    2372   141.5    2373   198.2  2384.1

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          38.7   198.2              138   150.5   163.1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2376.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.025	
W.S. Elev (ft)	2375.50	Reach Len. (ft)	138.00	150.50	163.10
Crit W.S. (ft)		Flow Area (sq ft)		232.42	
E.G. Slope (ft/ft)	0.003332	Area (sq ft)		232.42	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	82.94	Top Width (ft)		82.94	
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79	
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)		2.80	
Conv. Total (cfs)	27321.9	Conv. (cfs)		27321.9	
Length Wtd. (ft)	150.50	Wetted Per. (ft)		83.56	
Min Ch El (ft)	2371.50	Shear (lb/sq ft)		0.58	
Alpha	1.00	Stream Power (lb/ft s)		3.93	
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)		12.55	
C & E Loss (ft)	0.08	Cum SA (acres)		4.14	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12362.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2381.5	33.6	2381	43.6	2380	73.4	2371	78.7	2370
90.7	2369.6	100.9	2370	164.5	2384				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left 33.6 Right 164.5 Lengths: Left Channel 114 Right 103.1 90.7 Coeff Contr. .1 Expan. .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2375.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.		0.025	
W.S. Elev (ft)	2373.97	Reach Len. (ft)	114.00	103.10	90.70
Crit W.S. (ft)	2373.97	Flow Area (sq ft)		161.60	
E.G. Slope (ft/ft)	0.006622	Area (sq ft)		161.60	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	55.40	Top Width (ft)		55.40	
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)		9.76	
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		2.92	
Conv. Total (cfs)	19379.7	Conv. (cfs)		19379.7	
Length Wtd. (ft)	103.10	Wetted Per. (ft)		56.38	
Min Ch El (ft)	2369.60	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)		11.56	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)		11.87	
C & E Loss (ft)	0.32	Cum SA (acres)		3.91	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than

```
        0    : greater than 1.4.  This may indicate the need for additional cross .    .ons.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
        This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
        depth, the calculated water surface came back below critical depth.  This indicates that there is
        not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 12259.2

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       8
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
       0     2376     38.8     2375     72.1     2370     77.8     2369     91.4     2368
   101.5     2368    111.1     2369      173     2382

Manning's n Values        num=       1
     Sta    n Val
****************
       0     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     173             22.4      16     9.2             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2374.19  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.41  * Wt. n-Val.            *          *    0.025 *          *
* W.S. Elev (ft)         * 2373.79  * Reach Len. (ft)       *   22.40  *   16.00  *    9.20  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  307.72  *          *
* E.G. Slope (ft/ft)     *0.001400  * Area (sq ft)          *          *  307.72  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *   87.00  * Top Width (ft)        *          *   87.00  *          *
* Vel Total (ft/s)       *    5.12  * Avg. Vel. (ft/s)      *          *    5.12  *          *
* Max Chl Dpth (ft)      *    5.79  * Hydr. Depth (ft)      *          *    3.54  *          *
* Conv. Total (cfs)      * 42151.2  * Conv. (cfs)           *          * 42151.2  *          *
* Length Wtd. (ft)       *   16.00  * Wetted Per. (ft)      *          *   87.95  *          *
* Min Ch El (ft)         * 2368.00  * Shear (lb/sq ft)      *          *    0.31  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    1.57  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)  *          *   11.32  *          *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *          *    3.74  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
        0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 12243.2

INPUT
Description: grass bottom & sides, u/s face of cart path culvert
Station Elevation Data    num=       8
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
       0   2378.3     80.8   2368.3     89.4     2368    108.9   2367.9    118.3   2368.3
   129.6   2370.3      176   2380.3    193.9   2382.4

Manning's n Values        num=       1
     Sta    n Val
****************
       0     .025
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     176              16      16      16             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)        * 2374.12  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.21  * Wt. n-Val.           *          *    0.025  *          *
* W.S. Elev (ft)        * 2373.91  * Reach Len. (ft)      *   16.00  *   16.00  *   16.00  *
* Crit W.S. (ft)        * 2371.26  * Flow Area (sq ft)    *          *  429.83  *          *
* E.G. Slope (ft/ft)    *0.000633  * Area (sq ft)         *          *  429.83  *          *
* Q Total (cfs)         * 1577.00  * Flow (cfs)           *          * 1577.00  *          *
* Top Width (ft)        *  110.88  * Top Width (ft)       *          *  110.88  *          *
* Vel Total (ft/s)      *    3.67  * Avg. Vel. (ft/s)     *          *    3.67  *          *
* Max Chl Dpth (ft)     *    6.01  * Hydr. Depth (ft)     *          *    3.88  *          *
* Conv. Total (cfs)     * 62699.7  * Conv. (cfs)          *          * 62699.7  *          *
* Length Wtd. (ft)      *   16.00  * Wetted Per. (ft)     *          *  111.80  *          *
* Min Ch El (ft)        * 2367.90  * Shear (lb/sq ft)     *          *    0.15  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.56  *          *
* Frctn Loss (ft)       *          * Cum Volume (acre-ft)  *          *   11.18  *          *
* C & E Loss (ft)       *          * Cum SA (acres)        *          *    3.70  *          *
*****************************************************************************************

CULVERT


RIVER: Flamingo Wash Sp
REACH: lower             RS: 12234.95

INPUT
Description: cart path crossing 1
Distance from Upstream XS =       .1
Deck/Roadway Width        =    15.8
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
    56.6  2371.3             100  2370.2           131.1  2370.6

Upstream Bridge Cross Section Data
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
       0  2378.3    80.8  2368.3    89.4    2368   108.9  2367.9   118.3  2368.3
   129.6  2370.3     176  2380.3   193.9  2382.4

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0     176             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
    56.6  2371.3             100  2370.2           131.1  2370.6

Downstream Bridge Cross Section Data
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
       0  2378.2    80.8  2368.2    89.4  2367.9   108.9  2367.8   118.3  2368.2
   129.6  2370.2     176  2380.2   193.9  2382.3

Manning's n Values        num=       1
```

```
     Sta      n1
****************
       0    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
            0     176             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1       Circular     1.5
FHWA Chart # 55-  Circular Culvert
FHWA Scale # 1 - Smooth tapered inlet throat
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length     Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0    15.9      .013      .013         0                   .2                 1
Number of Barrels =  6
Upstream   Elevation =  2368.3
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
      95       97       99      101      103      105
Downstream Elevation =  2368.2
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
      95       97       99      101      103      105

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1
*********************************************************************
* Q Culv Group (cfs)      *  120.15  * Culv Full Len (ft)      *   15.90  *
* # Barrels               *       6  * Culv Vel US (ft/s)      *   11.33  *
* Q Barrel (cfs)          *   20.02  * Culv Vel DS (ft/s)      *   11.33  *
* E.G. US. (ft)           * 2374.13  * Culv Inv El Up (ft)     * 2368.30  *
* W.S. US. (ft)           * 2373.91  * Culv Inv El Dn (ft)     * 2368.20  *
* E.G. DS (ft)            * 2372.34  * Culv Frctn Ls (ft)      *    0.58  *
* W.S. DS (ft)            * 2371.16  * Culv Exit Loss (ft)     *    0.81  *
* Delta EG (ft)           *    1.78  * Culv Entr Loss (ft)     *    0.40  *
* Delta WS (ft)           *    2.75  * Q Weir (cfs)            * 1456.85  *
* E.G. IC (ft)            * 2374.07  * Weir Sta Lft (ft)       *   33.98  *
* E.G. OC (ft)            * 2374.13  * Weir Sta Rgt (ft)       *  147.20  *
* Culvert Control         *  Outlet  * Weir Submerg            *    0.14  *
* Culv WS Inlet (ft)      * 2369.80  * Weir Max Depth (ft)     *    3.89  *
* Culv WS Outlet (ft)     * 2369.70  * Weir Avg Depth (ft)     *    2.82  *
* Culv Nml Depth (ft)     *    1.50  * Weir Flow Area (sq ft)  *  319.59  *
* Culv Crt Depth (ft)     *    1.50  * Min El Weir Flow (ft)   * 2370.21  *
*********************************************************************

Note:    Culvert critical depth exceeds the height of the culvert.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower             RS: 12226.7

INPUT
Description: grass bottom & sides, ds face of cart path culvert
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2378.2    80.8  2368.2    89.4  2367.9   108.9  2367.8   118.3  2368.2
   129.6  2370.2     176  2380.2   193.9  2382.3
```

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	176	15.7	15.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2372.34	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.19	Wt. n-Val.		0.025		
W.S. Elev (ft)	2371.16	Reach Len. (ft)	15.70	15.70	15.70	
Crit W.S. (ft)	2371.16	Flow Area (sq ft)		180.37		
E.G. Slope (ft/ft)	0.007027	Area (sq ft)		180.37		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	77.12	Top Width (ft)		77.12		
Vel Total (ft/s)	8.74	Avg. Vel. (ft/s)		8.74		
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)		2.34		
Conv. Total (cfs)	18812.8	Conv. (cfs)		18812.8		
Length Wtd. (ft)	15.70	Wetted Per. (ft)		77.59		
Min Ch El (ft)	2367.80	Shear (lb/sq ft)		1.02		
Alpha	1.00	Stream Power (lb/ft s)		8.92		
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)		11.07		
C & E Loss (ft)	0.00	Cum SA (acres)		3.67		

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12211.0

INPUT
Description: grass bottom & sides
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2378	80.8	2368	89.4	2367.7	108.9	2367.6	118.3	2368
129.6	2370	176	2380	193.9	2382.1				

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	176	69.8	70.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2372.14	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.19	Wt. n-Val.		0.025		
W.S. Elev (ft)	2370.95	Reach Len. (ft)	69.80	71.10	70.50	
Crit W.S. (ft)	2370.95	Flow Area (sq ft)		180.17		
E.G. Slope (ft/ft)	0.007050	Area (sq ft)		180.17		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	77.09	Top Width (ft)		77.09		
Vel Total (ft/s)	8.75	Avg. Vel. (ft/s)		8.75		
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)		2.34		
Conv. Total (cfs)	18782.4	Conv. (cfs)		18782.4		

* Length W ft)	*	71.10	* Wetted Per. (ft)	*	*	77.56		*		
* Min Ch El ..t)	*	2367.60	* Shear (lb/sq ft)	*	*	1.02	*	*		
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	*	8.95	*	*		
* Frctn Loss (ft)	*	0.51	* Cum Volume (acre-ft)	*	*	11.01	*	*		
* C & E Loss (ft)	*	0.03	* Cum SA (acres)	*	*	3.64	*	*		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12139.9

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2377	42.8	2371	71.4	2368	84.6	2367	93.8	2366.4
114.5	2366.2	128.7	2367	148.9	2370	203.3	2380	211.8	2381

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
42.8	148.9	105.9	70.6	37.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	*	2370.55	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	1.09	* Wt. n-Val.	*		*	0.025	*		*
* W.S. Elev (ft)	*	2369.47	* Reach Len. (ft)	*	105.90	*	70.60	*	37.60	*
* Crit W.S. (ft)	*	2369.47	* Flow Area (sq ft)	*		*	188.42	*		*
* E.G. Slope (ft/ft)	*	0.007210	* Area (sq ft)	*		*	188.42	*		*
* Q Total (cfs)	*	1577.00	* Flow (cfs)	*		*	1577.00	*		*
* Top Width (ft)	*	87.89	* Top Width (ft)	*		*	87.89	*		*
* Vel Total (ft/s)	*	8.37	* Avg. Vel. (ft/s)	*		*	8.37	*		*
* Max Chl Dpth (ft)	*	3.27	* Hydr. Depth (ft)	*		*	2.14	*		*
* Conv. Total (cfs)	*	18571.7	* Conv. (cfs)	*		*	18571.7	*		*
* Length Wtd. (ft)	*	70.60	* Wetted Per. (ft)	*		*	88.23	*		*
* Min Ch El (ft)	*	2366.20	* Shear (lb/sq ft)	*		*	0.96	*		*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	8.05	*		*
* Frctn Loss (ft)	*	0.51	* Cum Volume (acre-ft)	*		*	10.70	*		*
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*		*	3.50	*		*

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 12069.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2373	29.1	2371	54.6	2369	74	2366.4	93.4	2366
109.7	2365.6	121.8	2366	138.1	2367	166.1	2371	209.1	2380
216.4	2381								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
54.6	166.1	87	70	52.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2369.70	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.05	Wt. n-Val.		0.025		
W.S. Elev (ft)	2368.65	Reach Len. (ft)	87.00	70.00	52.20	
Crit W.S. (ft)	2368.65	Flow Area (sq ft)		191.56		
E.G. Slope (ft/ft)	0.007288	Area (sq ft)		191.56		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	92.38	Top Width (ft)		92.38		
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)		8.23		
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.07		
Conv. Total (cfs)	18472.9	Conv. (cfs)		18472.9		
Length Wtd. (ft)	70.00	Wetted Per. (ft)		92.69		
Min Ch El (ft)	2365.60	Shear (lb/sq ft)		0.94		
Alpha	1.00	Stream Power (lb/ft s)		7.74		
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)		10.40		
C & E Loss (ft)	0.05	Cum SA (acres)		3.36		

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11999.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2371.4	26.8	2371	58	2366	62.7	2365.5	96.4	2365
117.1	2366	128.8	2367	189.1	2380	207	2382		

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
26.8	189.1	107.8	99.8	89.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2369.13	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.87	Wt. n-Val.		0.025		

W.S. El t)	2368.26	Reach Len. (ft)	107.80	99.80	39.90
Crit W.S t)	2368.01	Flow Area (sq ft)		210.64	
E.G. Slope (ft/ft)	0.005194	Area (sq ft)		210.64	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	90.75	Top Width (ft)		90.75	
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)		7.49	
Max Chl Dpth (ft)	3.26	Hydr. Depth (ft)		2.32	
Conv. Total (cfs)	21881.5	Conv. (cfs)		21881.5	
Length Wtd. (ft)	99.80	Wetted Per. (ft)		91.17	
Min Ch El (ft)	2365.00	Shear (lb/sq ft)		0.75	
Alpha	1.00	Stream Power (lb/ft s)		5.61	
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)		10.07	
C & E Loss (ft)	0.04	Cum SA (acres)		3.21	

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11899.5

INPUT
Description: grass bottom & sides
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2371.2	35.2	2370	51.5	2368	72.2	2365	78	2364
95.9	2363.3	107.4	2364	116.6	2365	185.2	2380	196.9	2381

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
35.2	185.2	125.1	130.2	141.3	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2368.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.27	Wt. n-Val.		0.025	
W.S. Elev (ft)	2367.23	Reach Len. (ft)	125.10	130.20	141.30
Crit W.S. (ft)	2367.23	Flow Area (sq ft)		174.51	
E.G. Slope (ft/ft)	0.006907	Area (sq ft)		174.51	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	69.95	Top Width (ft)		69.95	
Vel Total (ft/s)	9.04	Avg. Vel. (ft/s)		9.04	
Max Chl Dpth (ft)	3.93	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	18974.8	Conv. (cfs)		18974.8	
Length Wtd. (ft)	130.20	Wetted Per. (ft)		70.52	
Min Ch El (ft)	2363.30	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		9.64	
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)		9.63	
C & E Loss (ft)	0.01	Cum SA (acres)		3.03	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11769.3

```
INPUT
Description: grass bottom & sides
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2372.9    34.7    2363      42    2362    52.6  2361.7    64.5    2362
    72.3    2363     156    2378

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0     156             86.5   102.5   127.7             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2367.07  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.37  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 2365.69  * Reach Len. (ft)       *   86.50  *  102.50  *  127.70  *
* Crit W.S. (ft)         * 2365.69  * Flow Area (sq ft)     *          *  167.71  *          *
* E.G. Slope (ft/ft)     *0.006760  * Area (sq ft)          *          *  167.71  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *   62.08  * Top Width (ft)        *          *   62.08  *          *
* Vel Total (ft/s)       *    9.40  * Avg. Vel. (ft/s)      *          *    9.40  *          *
* Max Chl Dpth (ft)      *    3.99  * Hydr. Depth (ft)      *          *    2.70  *          *
* Conv. Total (cfs)      * 19180.0  * Conv. (cfs)           *          * 19180.0  *          *
* Length Wtd. (ft)       *  102.50  * Wetted Per. (ft)      *          *   62.83  *          *
* Min Ch El (ft)         * 2361.70  * Shear (lb/sq ft)      *          *    1.13  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   10.59  *          *
* Frctn Loss (ft)        *    0.68  * Cum Volume (acre-ft)  *          *    9.12  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    2.83  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 11666.8

INPUT
Description: grass bottom & sides
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2368.4    26.6    2368    78.6    2368   103.3    2362   119.1  2360.8
   130.3    2361   138.9    2362     161    2368   242.5    2383

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          78.6     161             144.5   149.5   155.7             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2366.37  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.41  * Wt. n-Val.            *          *   0.025  *          *
```

W.S. Ele	)	2364.95	Reach Len. (ft)		144.50		149.50		5.70		
Crit W.S.	(ft)	2364.95	Flow Area (sq ft)				165.29				
E.G. Slope	(ft/ft)	0.006598	Area (sq ft)				165.29				
Q Total	(cfs)	1577.00	Flow (cfs)				1577.00				
Top Width	(ft)	58.64	Top Width (ft)				58.64				
Vel Total	(ft/s)	9.54	Avg. Vel. (ft/s)				9.54				
Max Chl Dpth	(ft)	4.15	Hydr. Depth (ft)				2.82				
Conv. Total	(cfs)	19414.9	Conv. (cfs)				19414.9				
Length Wtd.	(ft)	149.50	Wetted Per. (ft)				59.49				
Min Ch El	(ft)	2360.80	Shear (lb/sq ft)				1.14				
Alpha		1.00	Stream Power (lb/ft s)				10.92				
Frctn Loss	(ft)	0.99	Cum Volume (acre-ft)				8.73				
C & E Loss	(ft)	0.01	Cum SA (acres)				2.69				

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11517.3

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2368.3	28.2	2366.5	81	2367.1	97.2	2366	115	2361
133.2	2358.7	139.9	2359	156.1	2361	182.5	2366	211.7	2370
256.8	2372.5								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
81	182.5	96.4	100.1	102.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2364.65	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.38	Wt. n-Val.		0.025		
W.S. Elev (ft)	2363.27	Reach Len. (ft)	96.40	100.10	102.70	
Crit W.S. (ft)	2363.27	Flow Area (sq ft)		167.51		
E.G. Slope (ft/ft)	0.006661	Area (sq ft)		167.51		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	61.15	Top Width (ft)		61.15		
Vel Total (ft/s)	9.41	Avg. Vel. (ft/s)		9.41		
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)		2.74		
Conv. Total (cfs)	19322.6	Conv. (cfs)		19322.6		
Length Wtd. (ft)	100.10	Wetted Per. (ft)		61.95		
Min Ch El (ft)	2358.70	Shear (lb/sq ft)		1.12		
Alpha	1.00	Stream Power (lb/ft s)		10.59		
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)		8.16		
C & E Loss (ft)	0.04	Cum SA (acres)		2.48		

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11417.2

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2368	20.6	2365	33.6	2364	104.6	2363	128.6	2359
148.3	2357.9	166.9	2359	196.7	2364	221.2	2367	237	2370
267.2	2372.3								

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
104.6 196.7 99.8 99.4 100.8 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2363.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.		0.025	
W.S. Elev (ft)	2361.82	Reach Len. (ft)	99.80	99.40	100.80
Crit W.S. (ft)	2361.82	Flow Area (sq ft)		176.28	
E.G. Slope (ft/ft)	0.006929	Area (sq ft)		176.28	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	71.97	Top Width (ft)		71.97	
Vel Total (ft/s)	8.95	Avg. Vel. (ft/s)		8.95	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)		2.45	
Conv. Total (cfs)	18945.5	Conv. (cfs)		18945.5	
Length Wtd. (ft)	99.40	Wetted Per. (ft)		72.50	
Min Ch El (ft)	2357.90	Shear (lb/sq ft)		1.05	
Alpha	1.00	Stream Power (lb/ft s)		9.41	
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)		7.76	
C & E Loss (ft)	0.06	Cum SA (acres)		2.33	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11317.8

INPUT
Description: grass bottom & sides
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2363	17.2	2364	74.3	2361	97.5	2360	138.3	2357
145	2356.4	155	2357	199.2	2363.5	220.7	2364	240	2367
266.3	2376								

```
Manning's      ues        num=       1
     Sta   .. .al
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          17.2   199.2             104.7   104.2   103.9             .1      .3
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2361.57	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.05	Wt. n-Val.		0.025		
W.S. Elev (ft)	2360.53	Reach Len. (ft)	104.70	104.20	103.90	
Crit W.S. (ft)	2360.53	Flow Area (sq ft)		192.07		
E.G. Slope (ft/ft)	0.007372	Area (sq ft)		192.07		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	93.69	Top Width (ft)		93.69		
Vel Total (ft/s)	8.21	Avg. Vel. (ft/s)		8.21		
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)		2.05		
Conv. Total (cfs)	18367.5	Conv. (cfs)		18367.5		
Length Wtd. (ft)	104.20	Wetted Per. (ft)		94.12		
Min Ch El (ft)	2356.40	Shear (lb/sq ft)		0.94		
Alpha	1.00	Stream Power (lb/ft s)		7.71		
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)		7.34		
C & E Loss (ft)	0.01	Cum SA (acres)		2.14		

```
Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.
```

CROSS SECTION

```
RIVER: Flamingo Wash Sp
REACH: lower              RS: 11213.6

INPUT
Description: grass bottom & sides
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0    2367    26.8  2362.9    45.8  2364.6   116.7    2356   128.7  2355.8
   135.9    2356   152.4    2357   168.2    2360   206.8    2365   256.5    2376

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   256.5             102.2   100.5   101.2             .1      .3
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2360.62	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.19	Wt. n-Val.		0.025		
W.S. Elev (ft)	2359.43	Reach Len. (ft)	102.20	100.50	101.20	
Crit W.S. (ft)	2359.43	Flow Area (sq ft)		179.97		
E.G. Slope (ft/ft)	0.007032	Area (sq ft)		179.97		
Q Total (cfs)	1577.00	Flow (cfs)		1577.00		
Top Width (ft)	76.74	Top Width (ft)		76.74		
Vel Total (ft/s)	8.76	Avg. Vel. (ft/s)		8.76		
Max Chl Dpth (ft)	3.63	Hydr. Depth (ft)		2.35		
Conv. Total (cfs)	18805.2	Conv. (cfs)		18805.2		
Length Wtd. (ft)	100.50	Wetted Per. (ft)		77.21		

* Min Ch El (ft)	* 2355.80	* Shear (lb/sq ft)	*	* 1.02	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 8.97	*
* Frctn Loss (ft)	* 0.68	* Cum Volume (acre-ft)	*	* 6.90	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.94	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11113.1

INPUT
Description: grass bottom & sides
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2366.6	48	2360	71.3	2358	93	2355	112.2	2354.8
116.3	2355	127.4	2356	154.6	2361	173.7	2363	206	2365
225.1	2367	231.9	2368						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	93	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
48	154.6	80.6	96.7	118.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2359.71	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.19	* Wt. n-Val.	*	* 0.025	*
* W.S. Elev (ft)	* 2358.51	* Reach Len. (ft)	* 80.60	* 96.70	* 118.20 *
* Crit W.S. (ft)	* 2358.51	* Flow Area (sq ft)	*	* 180.01	*
* E.G. Slope (ft/ft)	*0.006488	* Area (sq ft)	*	* 180.01	*
* Q Total (cfs)	* 1577.00	* Flow (cfs)	*	* 1577.00	*
* Top Width (ft)	* 75.75	* Top Width (ft)	*	* 75.75	*
* Vel Total (ft/s)	* 8.76	* Avg. Vel. (ft/s)	*	* 8.76	*
* Max Chl Dpth (ft)	* 3.71	* Hydr. Depth (ft)	*	* 2.38	*
* Conv. Total (cfs)	* 19578.5	* Conv. (cfs)	*	* 19578.5	*
* Length Wtd. (ft)	* 96.70	* Wetted Per. (ft)	*	* 76.25	*
* Min Ch El (ft)	* 2354.80	* Shear (lb/sq ft)	*	* 0.96	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 8.38	*
* Frctn Loss (ft)	* 0.64	* Cum Volume (acre-ft)	*	* 6.48	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 1.76	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 11016.4

```
INPUT
Description: grass bottom & sides
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2366.6    15.7    2365    58.1    2355    62.7    2354    73.1    2353
    89.5    2353   104.2    2354   112.3    2355     136    2360     170    2364
   206.6  2366.5

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   206.6             251.8   277.3     314             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2357.86  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.27  * Wt. n-Val.             *          *    0.025 *          *
* W.S. Elev (ft)         * 2356.59  * Reach Len. (ft)        *  251.80  *   277.30 *  314.00  *
* Crit W.S. (ft)         * 2356.59  * Flow Area (sq ft)      *          *   174.13 *          *
* E.G. Slope (ft/ft)     *0.006764  * Area (sq ft)           *          *   174.13 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)             *          *  1577.00 *          *
* Top Width (ft)         *   68.45  * Top Width (ft)         *          *    68.45 *          *
* Vel Total (ft/s)       *    9.06  * Avg. Vel. (ft/s)       *          *     9.06 *          *
* Max Chl Dpth (ft)      *    3.59  * Hydr. Depth (ft)       *          *     2.54 *          *
* Conv. Total (cfs)      * 19175.1  * Conv. (cfs)           *          *  19175.1 *          *
* Length Wtd. (ft)       *  277.30  * Wetted Per. (ft)       *          *    69.05 *          *
* Min Ch El (ft)         * 2353.00  * Shear (lb/sq ft)      *          *     1.06 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *     9.64 *          *
* Frctn Loss (ft)        *    0.68  * Cum Volume (acre-ft)   *          *     6.09 *          *
* C & E Loss (ft)        *    0.26  * Cum SA (acres)         *          *     1.60 *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 10739.1

INPUT
Description: grass bottom @ sides
Station Elevation Data    num=       8
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
       0     2364     44.2     2352       56     2351     71.5  2350.5       84     2351
    89.8     2352    109.8   2357.3    163.1   2371.5

Manning's n Values        num=       1
     Sta   n Val
****************
       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
            0   163.1            236.6   302.1   218.3            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)        * 2356.66  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.42  * Wt. n-Val.            *          *    0.025  *          *
* W.S. Elev (ft)        * 2356.24  * Reach Len. (ft)       *  236.60  *  302.10  *  218.30  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *  304.17  *          *
* E.G. Slope (ft/ft)    *0.001250  * Area (sq ft)          *          *  304.17  *          *
* Q Total (cfs)         * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)        *   77.22  * Top Width (ft)        *          *   77.22  *          *
* Vel Total (ft/s)      *    5.18  * Avg. Vel. (ft/s)      *          *    5.18  *          *
* Max Chl Dpth (ft)     *    5.74  * Hydr. Depth (ft)      *          *    3.94  *          *
* Conv. Total (cfs)     * 44607.9  * Conv. (cfs)           *          * 44607.9  *          *
* Length Wtd. (ft)      *  302.10  * Wetted Per. (ft)      *          *   78.48  *          *
* Min Ch El (ft)        * 2350.50  * Shear (lb/sq ft)      *          *    0.30  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    1.57  *          *
* Frctn Loss (ft)       *    0.79  * Cum Volume (acre-ft)  *          *    4.57  *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *          *    1.14  *          *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower              RS: 10512.5

INPUT
Description: shrubs along gabions on rt side, grass bottom & sides
Station Elevation Data    num=      7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0    2360    35.4    2349    47.9  2348.6    56.7  2348.8      62  2348.9
    63.3    2353   109.1  2371.3

Manning's n Values        num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
       0    .025    56.7     .15    63.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   109.1             314.3   308.7   302.2             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)        * 2355.85  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.65  * Wt. n-Val.            *          *    0.055  *          *
* W.S. Elev (ft)        * 2355.20  * Reach Len. (ft)       *  314.30  *  308.70  *  302.20  *
* Crit W.S. (ft)        * 2353.15  * Flow Area (sq ft)     *          *  244.43  *          *
* E.G. Slope (ft/ft)    *0.008378  * Area (sq ft)          *          *  244.43  *          *
* Q Total (cfs)         * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)        *   53.37  * Top Width (ft)        *          *   53.37  *          *
* Vel Total (ft/s)      *    6.45  * Avg. Vel. (ft/s)      *          *    6.45  *          *
* Max Chl Dpth (ft)     *    6.60  * Hydr. Depth (ft)      *          *    4.58  *          *
* Conv. Total (cfs)     * 17228.9  * Conv. (cfs)           *          * 17228.9  *          *
* Length Wtd. (ft)      *  308.70  * Wetted Per. (ft)      *          *   57.75  *          *
* Min Ch El (ft)        * 2348.60  * Shear (lb/sq ft)      *          *    2.21  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *   14.28  *          *
* Frctn Loss (ft)       *    4.83  * Cum Volume (acre-ft)  *          *    2.66  *          *
* C & E Loss (ft)       *    0.10  * Cum SA (acres)        *          *    0.68  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower             RS: 10203.8

INPUT
Description: shrubs along gabions on rt side, grass bottom & sides
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0    2355    37.1    2346    43.3    2345    62.5    2345    68.8    2346
    70.1    2350    98.5    2360

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .025    62.5     .15    70.1    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    98.5             10.8    83.8    68.8             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2350.92  * Element               * Left OB * Channel * Right OB *
* Vel Head (ft)          *    1.66  * Wt. n-Val.            *         *   0.060 *          *
* W.S. Elev (ft)         * 2349.26  * Reach Len. (ft)       *   10.80  *   83.80 *   68.80  *
* Crit W.S. (ft)         * 2349.26  * Flow Area (sq ft)     *         *  152.31 *          *
* E.G. Slope (ft/ft)     *0.038870  * Area (sq ft)          *         *  152.31 *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *         * 1577.00 *          *
* Top Width (ft)         *   46.19  * Top Width (ft)        *         *   46.19 *          *
* Vel Total (ft/s)       *   10.35  * Avg. Vel. (ft/s)      *         *   10.35 *          *
* Max Chl Dpth (ft)      *    4.26  * Hydr. Depth (ft)      *         *    3.30 *          *
* Conv. Total (cfs)      *  7998.8  * Conv. (cfs)           *         *  7998.8 *          *
* Length Wtd. (ft)       *   83.80  * Wetted Per. (ft)      *         *   49.10 *          *
* Min Ch El (ft)         * 2345.00  * Shear (lb/sq ft)      *         *    7.53 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *   77.94 *          *
* Frctn Loss (ft)        *    1.00  * Cum Volume (acre-ft)  *         *    1.26 *          *
* C & E Loss (ft)        *    0.26  * Cum SA (acres)        *         *    0.33 *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION


RIVER: Flamingo Wash Sp
REACH: lower             RS: 10120.0

INPUT
Description: us end of rainbow bridge
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
```

```
      0  2355.7    21.3  2352.7    41.5  2342.7    50.5  2341.7    60.6  2340.7
   66.3  2340.7    76.5  2341.7   127.7  2357.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
       0     .04    50.5    .035    76.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   127.7              120     120     120             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2347.11  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.80  * Wt. n-Val.            *          *   0.038  *          *
* W.S. Elev (ft)         * 2346.32  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2345.16  * Flow Area (sq ft)     *          *  220.21  *          *
* E.G. Slope (ft/ft)     *0.005710  * Area (sq ft)          *          *  220.21  *          *
* Q Total (cfs)          * 1577.00  * Flow (cfs)            *          * 1577.00  *          *
* Top Width (ft)         *   57.08  * Top Width (ft)        *          *   57.08  *          *
* Vel Total (ft/s)       *    7.16  * Avg. Vel. (ft/s)      *          *    7.16  *          *
* Max Chl Dpth (ft)      *    5.62  * Hydr. Depth (ft)      *          *    3.86  *          *
* Conv. Total (cfs)      * 20868.7  * Conv. (cfs)           *          * 20868.7  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   58.78  *          *
* Min Ch El (ft)         * 2340.70  * Shear (lb/sq ft)      *          *    1.34  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    9.56  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *    0.90  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    0.23  *          *
*************************************************************************************************

Note:    Manning's n values were composited to a single value in the main channel.

BRIDGE


RIVER: Flamingo Wash Sp
REACH: lower              RS: 10060.0

INPUT
Description: Flamingo Wash/Rainbow Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =    119.8
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
       0  2355.9  2352.7     130  2358.2  2352.7

Upstream Bridge Cross Section Data
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0  2355.7    21.3  2352.7    41.5  2342.7    50.5  2341.7    60.6  2340.7
   66.3  2340.7    76.5  2341.7   127.7  2357.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
       0     .04    50.5    .035    76.5     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   127.7             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
       0  2355.9  2352.7     130  2358.2  2352.7
```

Downstream Edge Cross Section Data
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355	21.3	2352	41.5	2342	50.5	2341	60.6	2340
66.3	2340	76.5	2341	127.7	2357				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.5	.035	76.5	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	127.7	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

			Inside BR US	Inside BR DS
E.G. US. (ft)	2347.11	E.G. Elev (ft)	2347.11	2346.55
W.S. US. (ft)	2346.32	W.S. Elev (ft)	2346.32	2345.83
Q Total (cfs)	1577.00	W.S. Elev (ft)	2346.32	2345.83
Q Bridge (cfs)	1577.00	Crit W.S. (ft)	2345.18	2344.48
Q Weir (cfs)		Max Chl Dpth (ft)	5.62	5.83
Weir Sta Lft (ft)		Vel Total (ft/s)	7.16	6.78
Weir Sta Rgt (ft)		Flow Area (sq ft)	220.16	232.69
Weir Submerg		Froude # Chl	0.64	0.60
Weir Max Depth (ft)		Specif Force (cu ft)	852.01	882.32
Min El Weir Flow (ft)	2355.91	Hydr Depth (ft)	3.86	4.00
Min El Prs (ft)	2352.70	W.P. Total (ft)	58.78	59.99
Delta EG (ft)	0.57	Conv. Total (cfs)	22544.6	24386.4
Delta WS (ft)	0.48	Top Width (ft)	57.07	58.21
BR Open Area (sq ft)	690.95	Frctn Loss (ft)	0.54	0.00
BR Open Vel (ft/s)	7.16	C & E Loss (ft)	0.03	0.00
Coef of Q		Shear Total (lb/sq ft)	1.14	1.01
Br Sel Method	Energy only	Power Total (lb/ft s)	8.20	6.86

Note: Manning's n values were composited to a single value in the main channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 10000.0

INPUT
Description: ds end of rainbow bridge
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2355	21.3	2352	41.5	2342	50.5	2341	60.6	2340
66.3	2340	76.5	2341	127.7	2357				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.5	.035	76.5	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	127.7	60.1	60.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2346.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.038	
W.S. Elev (ft)	2345.83	Reach Len. (ft)	60.10	60.10	60.10
Crit W.S. (ft)		Flow Area (sq ft)		232.65	
E.G. Slope (ft/ft)	0.004897	Area (sq ft)		232.65	
Q Total (cfs)	1577.00	Flow (cfs)		1577.00	
Top Width (ft)	58.20	Top Width (ft)		58.20	
Vel Total (ft/s)	6.78	Avg. Vel. (ft/s)		6.78	
Max Chl Dpth (ft)	5.83	Hydr. Depth (ft)		4.00	
Conv. Total (cfs)	22535.1	Conv. (cfs)		22535.1	
Length Wtd. (ft)	60.10	Wetted Per. (ft)		59.99	
Min Ch El (ft)	2340.00	Shear (lb/sq ft)		1.19	
Alpha	1.00	Stream Power (lb/ft s)		8.04	
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)		0.28	
C & E Loss (ft)	0.06	Cum SA (acres)		0.07	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Flamingo Wash Sp
REACH: lower RS: 9939.9

INPUT
Description: grouted riprap sides, unlined bottom
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2354	19.7	2341	37.7	2340	46	2340	53	2341
86.7	2358								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	19.7	.035	53	.04	86.7	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	86.7	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2346.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.36	Wt. n-Val.		0.037	
W.S. Elev (ft)	2344.72	Reach Len. (ft)			

Crit W.S	.)	2344.34	Flow Area (sq ft)			168.81					
E.G. Slope (ft/ft)		0.010005	Area (sq ft)			168.81					
Q Total (cfs)		1577.00	Flow (cfs)			1577.00					
Top Width (ft)		46.31	Top Width (ft)			46.31					
Vel Total (ft/s)		9.34	Avg. Vel. (ft/s)			9.34					
Max Chl Dpth (ft)		4.72	Hydr. Depth (ft)			3.65					
Conv. Total (cfs)		15766.3	Conv. (cfs)			15766.3					
Length Wtd. (ft)			Wetted Per. (ft)			48.41					
Min Ch El (ft)		2340.00	Shear (lb/sq ft)			2.18					
Alpha		1.00	Stream Power (lb/ft s)			20.35					
Frctn Loss (ft)			Cum Volume (acre-ft)								
C & E Loss (ft)			Cum SA (acres)								

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Old input channe
REACH: obsolete RS: 1100.0

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2415.2	17.7	2414.2	31.6	2412.2	51.6	2410.2	57.8	2409.2
65.1	2408.7	72.4	2409.2	86.8	2410.2	121.6	2419.2		

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	121.6	68	73.8	75.1	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2409.60	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.19	Wt. n-Val.		0.027		
W.S. Elev (ft)	2409.41	Reach Len. (ft)	68.00	73.80	75.10	
Crit W.S. (ft)	2409.41	Flow Area (sq ft)		7.09		
E.G. Slope (ft/ft)	0.015190	Area (sq ft)		7.09		
Q Total (cfs)	25.00	Flow (cfs)		25.00		
Top Width (ft)	18.83	Top Width (ft)		18.83		
Vel Total (ft/s)	3.53	Avg. Vel. (ft/s)		3.53		
Max Chl Dpth (ft)	0.71	Hydr. Depth (ft)		0.38		
Conv. Total (cfs)	202.8	Conv. (cfs)		202.8		
Length Wtd. (ft)	73.80	Wetted Per. (ft)		18.89		
Min Ch El (ft)	2408.70	Shear (lb/sq ft)		0.36		
Alpha	1.00	Stream Power (lb/ft s)		1.25		
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)		0.01		
C & E Loss (ft)	0.01	Cum SA (acres)		0.03		

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Old input channe
REACH: obsolete RS: 1000.0

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2419	23.4	2418	34	2416	56.5	2409	69.5	2408
77.7	2407.8	81	2408	90.6	2416	102.1	2419		

Manning's n Values num= 1

Sta	n Val
0	.027

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	102.1	78.3	91.8	103.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2408.61	Element		0.027	
Vel Head (ft)	0.15	Wt. n-Val.			
W.S. Elev (ft)	2408.46	Reach Len. (ft)			
Crit W.S. (ft)	2408.40	Flow Area (sq ft)		7.91	
E.G. Slope (ft/ft)	0.009999	Area (sq ft)		7.91	
Q Total (cfs)	25.00	Flow (cfs)		25.00	
Top Width (ft)	18.01	Top Width (ft)		18.01	
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	
Max Chl Dpth (ft)	0.66	Hydr. Depth (ft)		0.44	
Conv. Total (cfs)	250.0	Conv. (cfs)		250.0	
Length Wtd. (ft)		Wetted Per. (ft)		18.20	
Min Ch El (ft)	2407.80	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		0.86	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Flamingo Wash Sp

Reach	River Sta.	n1	n2	n3	n4	n5
Upper	18060.5	.015	.015	.015		
Upper	18045.5	.015	.015	.015		
Upper	18026.05	Bridge				
Upper	18006.6	.015	.015	.015		
Upper	17992.6	.025	.015	.025		
Upper	17792.3	.025				
Upper	17678.8	.027				
Upper	17539.1	.027				
Upper	17477.5	.025	.015	.027		
Upper	17457.5	.025	.15	.015	.025	
Upper	17450.5	Culvert				
Upper	17443.5	.025	.15	.015	.025	
Upper	17423.5	.15	.027	.025		
Upper	17395.5	.15	.027	.025		
Upper	17286.9	.15	.027	.025		
Upper	17182.7	.025	.027	.15	.027	
Upper	17172.7	.025	.15	.027		
Upper	17140.8	Culvert				
Upper	17108.8	.025	.027			
Upper	17098.8	.025	.027			
Upper	17065.8	.027	.15	.027	.025	
Upper	16956.5	.025	.027	.025		
Upper	16748.5	.025	.027	.025		
Upper	16517.8	.025	.027	.025		
Upper	16127.8	.025	.027	.025		

*Upper	16035.0	.025*	.027*	.025*	.025*		
*Upper	15915.7	.027*	.027*				
*Upper	15895.7	.027*	.027*				
*Upper	15888.2	*Culvert *					
*Upper	15880.7	.027*	.027*				
*Upper	15860.7	.027*	.027*				
*Upper	15786.9	.025*	.027*	.15*	.025*		
*Upper	15695.1	.025*	.027*	.15*	.027*		
*lower	15591.5	.025*	.029*	.025*	.015*	.025*	
*lower	15436.9	.025*	.029*	.027*			
*lower	15256.3	.025*	.027*				
*lower	15027.4	.025*	.027*				
*lower	14905.8	.025*	.027*				
*lower	14799.2	.025*	.032*				
*lower	14665.5	.025*	.027*				
*lower	14365.5	.025*	.027*				
*lower	14264.9	.025*	.027*				
*lower	14174.9	.025*	.027*				
*lower	13974.9	.032*	.027*	.032*			
*lower	13928.6	.032*	.027*	.032*			
*lower	13912.6	*Bridge *					
*lower	13896.6	.032*	.027*	.032*			
*lower	13854.6	.025*					
*lower	13630.4	.025*					
*lower	13330.4	.025*					
*lower	13180.2	.025*					
*lower	13049.6	.025*					
*lower	13029.6	.025*					
*lower	13024.6	*Culvert *					
*lower	13019.6	.025*					
*lower	12999.6	.025*					
*lower	12884.9	.025*	.025*				
*lower	12784.9	.025*					
*lower	12633.2	.025*					
*lower	12573.3	.025*					
*lower	12542.9	.025*					
*lower	12512.8	.025*					
*lower	12362.3	.025*					
*lower	12259.2	.025*					
*lower	12243.2	.025*					
*lower	12234.95	*Culvert *					
*lower	12226.7	.025*					
*lower	12211.0	.025*					
*lower	12139.9	.025*					
*lower	12069.3	.025*					
*lower	11999.3	.025*					
*lower	11899.5	.025*					
*lower	11769.3	.025*					
*lower	11666.8	.025*					
*lower	11517.3	.025*					
*lower	11417.2	.025*					
*lower	11317.8	.025*					
*lower	11213.6	.025*					
*lower	11113.1	.025*	.025*				
*lower	11016.4	.025*					
*lower	10739.1	.025*					
*lower	10512.5	.025*	.15*	.025*			
*lower	10203.8	.025*	.15*	.025*			
*lower	10120.0	.04*	.035*	.04*			
*lower	10060.0	*Bridge *					
*lower	10000.0	.04*	.035*	.04*			
*lower	9939.9	.04*	.035*	.04*	.04*		

River:Old input channe

Reach	River Sta.	n1
*obsolete	1100.0	.027*

*obsolete	1000.0	.027		

SUMMARY OF REACH LENGTHS

River: Flamingo Wash Sp

Reach	River Sta.	Left	Channel	Right
Upper	18060.5	15	15	15
Upper	18045.5	38.9	38.9	38.9
Upper	18026.05	Bridge		
Upper	18006.6	13.1	14	14.7
Upper	17992.6	205.3	200.3	197.3
Upper	17792.3	124.2	113.5	100.1
Upper	17678.8	144.1	139.7	132.6
Upper	17539.1	61.6	61.6	61.6
Upper	17477.5	20	20	20
Upper	17457.5	14	14	14
Upper	17450.5	Culvert		
Upper	17443.5	20	20	20
Upper	17423.5	28	28	28
Upper	17395.5	106.5	108.6	115.1
Upper	17286.9	104.2	104.2	104.2
Upper	17182.7	10	10	10
Upper	17172.7	63.9	63.9	63.9
Upper	17140.8	Culvert		
Upper	17108.8	33	33	33
Upper	17098.8	33	33	33
Upper	17065.8	93.5	109.3	127.9
Upper	16956.5	196.6	208	217.7
Upper	16748.5	225.8	230.7	239.8
Upper	16517.8	390	390	390
Upper	16127.8	96.3	92.8	92.8
Upper	16035.0	106.2	119.3	133.3
Upper	15915.7	20	20	20
Upper	15895.7	68	73.8	75.1
Upper	15888.2	Culvert		
Upper	15880.7	68	73.8	75.1
Upper	15860.7	68	73.8	75.1
Upper	15786.9	78.3	91.8	103.7
Upper	15695.1	81.5	103.6	127.4
lower	15591.5	141.2	154.6	169.3
lower	15436.9	171	180.6	189.1
lower	15256.3	227.6	228.9	230.4
lower	15027.4	91.4	121.6	147.6
lower	14905.8	91	106.6	118.7
lower	14799.2	121.5	133.7	141.3
lower	14665.5	300	300	300
lower	14365.5	105.1	100.6	95.7
lower	14264.9	90	90	90
lower	14174.9	203	200	197
lower	13974.9	60.8	46.3	32.1
lower	13928.6	46	42	36
lower	13912.6	Bridge		
lower	13896.6	46	42	36
lower	13854.6	234.5	224.2	219.8
lower	13630.4	300	300	300
lower	13330.4	145.1	150.2	153.1
lower	13180.2	94.4	130.6	144.2
lower	13049.6	20	20	20
lower	13029.6	10	10	10
lower	13024.6	Culvert		
lower	13019.6	20	20	20
lower	12999.6	125.3	114.7	112.5
lower	12884.9	100	100	100
lower	12784.9	163.1	151.7	136.6

Reach	River Sta.	Left	Channel	Right
*lower	12633.2	69.9*	59.9*	49.5*
*lower	12573.3	30.4*	30.4*	30.4*
*lower	12542.9	30.1*	30.1*	30.1*
*lower	12512.8	138*	150.5*	163.1*
*lower	12362.3	114*	103.1*	90.7*
*lower	12259.2	22.4*	16*	9.2*
*lower	12243.2	16*	16*	16*
*lower	12234.95	*Culvert *	*	*
*lower	12226.7	15.7*	15.7*	15.7*
*lower	12211.0	69.8*	71.1*	70.5*
*lower	12139.9	105.9*	70.6*	37.6*
*lower	12069.3	87*	70*	52.2*
*lower	11999.3	107.8*	99.8*	89.9*
*lower	11899.5	125.1*	130.2*	141.3*
*lower	11769.3	86.5*	102.5*	127.7*
*lower	11666.8	144.5*	149.5*	155.7*
*lower	11517.3	96.4*	100.1*	102.7*
*lower	11417.2	99.8*	99.4*	100.8*
*lower	11317.8	104.7*	104.2*	103.9*
*lower	11213.6	102.2*	100.5*	101.2*
*lower	11113.1	80.6*	96.7*	118.2*
*lower	11016.4	251.8*	277.3*	314*
*lower	10739.1	236.6*	302.1*	218.3*
*lower	10512.5	314.3*	308.7*	302.2*
*lower	10203.8	10.8*	83.8*	68.8*
*lower	10120.0	120*	120*	120*
*lower	10060.0	*Bridge *	*	*
*lower	10000.0	60.1*	60.1*	60.1*
*lower	9939.9	0*	0*	0*

River: Old input channe

Reach	River Sta.	Left	Channel	Right
*obsolete	1100.0	68*	73.8*	75.1*
*obsolete	1000.0	78.3*	91.8*	103.7*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Flamingo Wash Sp

Reach	River Sta.	Contr.	Expan.
*Upper	18060.5	.1*	.3*
*Upper	18045.5	.1*	.3*
*Upper	18026.05	*Bridge *	*
*Upper	18006.6	.1*	.3*
*Upper	17992.6	.1*	.3*
*Upper	17792.3	.1*	.3*
*Upper	17678.8	.1*	.3*
*Upper	17539.1	.1*	.3*
*Upper	17477.5	.1*	.3*
*Upper	17457.5	.1*	.3*
*Upper	17450.5	*Culvert *	*
*Upper	17443.5	.1*	.3*
*Upper	17423.5	.1*	.3*
*Upper	17395.5	.1*	.3*
*Upper	17286.9	.1*	.3*
*Upper	17182.7	.1*	.3*
*Upper	17172.7	.1*	.3*
*Upper	17140.8	*Culvert *	*
*Upper	17108.8	.1*	.3*
*Upper	17098.8	.1*	.3*
*Upper	17065.8	.1*	.3*
*Upper	16956.5	.1*	.3*

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*Upper          *    16748.5 *       .1*       .3*
*Upper          *    16517.8 *       .1*       .3*
*Upper          *    16127.8 *       .1*       .3*
*Upper          *    16035.0 *       .1*       .3*
*Upper          *    15915.7 *       .1*       .3*
*Upper          *    15895.7 *       .1*       .3*
*Upper          *    15888.2 *Culvert  *         *
*Upper          *    15880.7 *       .1*       .3*
*Upper          *    15860.7 *       .1*       .3*
*Upper          *    15786.9 *       .1*       .3*
*Upper          *    15695.1 *       .1*       .3*
*lower          *    15591.5 *       .1*       .3*
*lower          *    15436.9 *       .1*       .3*
*lower          *    15256.3 *       .1*       .3*
*lower          *    15027.4 *       .1*       .3*
*lower          *    14905.8 *       .1*       .3*
*lower          *    14799.2 *       .1*       .3*
*lower          *    14665.5 *       .1*       .3*
*lower          *    14365.5 *       .1*       .3*
*lower          *    14264.9 *       .1*       .3*
*lower          *    14174.9 *       .1*       .3*
*lower          *    13974.9 *       .1*       .3*
*lower          *    13928.6 *       .1*       .3*
*lower          *    13912.6 *Bridge   *         *
*lower          *    13896.6 *       .1*       .3*
*lower          *    13854.6 *       .1*       .3*
*lower          *    13630.4 *       .1*       .3*
*lower          *    13330.4 *       .1*       .3*
*lower          *    13180.2 *       .1*       .3*
*lower          *    13049.6 *       .1*       .3*
*lower          *    13029.6 *       .1*       .3*
*lower          *    13024.6 *Culvert  *         *
*lower          *    13019.6 *       .1*       .3*
*lower          *    12999.6 *       .1*       .3*
*lower          *    12884.9 *       .1*       .3*
*lower          *    12784.9 *       .1*       .3*
*lower          *    12633.2 *       .1*       .3*
*lower          *    12573.3 *       .1*       .3*
*lower          *    12542.9 *       .1*       .3*
*lower          *    12512.8 *       .1*       .3*
*lower          *    12362.3 *       .1*       .3*
*lower          *    12259.2 *       .1*       .3*
*lower          *    12243.2 *       .1*       .3*
*lower          *    12234.95*Culvert  *         *
*lower          *    12226.7 *       .1*       .3*
*lower          *    12211.0 *       .1*       .3*
*lower          *    12139.9 *       .1*       .3*
*lower          *    12069.3 *       .1*       .3*
*lower          *    11999.3 *       .1*       .3*
*lower          *    11899.5 *       .1*       .3*
*lower          *    11769.3 *       .1*       .3*
*lower          *    11666.8 *       .1*       .3*
*lower          *    11517.3 *       .1*       .3*
*lower          *    11417.2 *       .1*       .3*
*lower          *    11317.8 *       .1*       .3*
*lower          *    11213.6 *       .1*       .3*
*lower          *    11113.1 *       .1*       .3*
*lower          *    11016.4 *       .1*       .3*
*lower          *    10739.1 *       .1*       .3*
*lower          *    10512.5 *       .1*       .3*
*lower          *    10203.8 *       .1*       .3*
*lower          *    10120.0 *       .1*       .3*
*lower          *    10060.0 *Bridge   *         *
*lower          *    10000.0 *       .1*       .3*
*lower          *    9939.9  *       .1*       .3*
****************************************************
River: Old input channe

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Reac.	River Sta.	Contr.	Expan.
*obsolete	1100.0	.1*	.3*
*obsolete	1000.0	.1*	.3*

Profile Output Table - Standard Table 1

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Old input channe*	obsolete	1100.0	PF 1	25.00	2408.70	2409.41	2409.41	2409.60	0.015190	3.53	7.09	18.83	1.01
Old input channe*	obsolete	1000.0	PF 1	25.00	2407.80	2408.46	2408.40	2408.61	0.009999	3.16	7.91	18.01	0.84
Flamingo Wash Sp*	Upper	18060.5	PF 1	1577.00	2418.80	2426.07		2426.88	0.000636	7.22	218.53	30.14	0.47
Flamingo Wash Sp*	Upper	18045.5	PF 1	1577.00	2418.70	2426.19	2422.80	2426.81	0.000452	6.31	250.06	33.44	0.41
Flamingo Wash Sp*	Upper	18026.05		Bridge									
Flamingo Wash Sp*	Upper	18006.6	PF 1	1577.00	2418.60	2425.33		2426.71	0.001261	9.41	167.50	24.97	0.64
Flamingo Wash Sp*	Upper	17992.6	PF 1	1577.00	2418.50	2426.01		2426.40	0.000595	5.05	312.18	63.63	0.40
Flamingo Wash Sp*	Upper	17792.3	PF 1	1577.00	2417.50	2425.93		2426.24	0.000770	4.45	354.21	76.75	0.37
Flamingo Wash Sp*	Upper	17678.8	PF 1	1577.00	2417.30	2425.97		2426.14	0.000381	3.35	471.20	82.69	0.25
Flamingo Wash Sp*	Upper	17539.1	PF 1	1577.00	2417.20	2425.92		2426.08	0.000398	3.28	481.33	90.75	0.25
Flamingo Wash Sp*	Upper	17477.5	PF 1	1577.00	2417.10	2425.97		2426.04	0.000190	2.10	751.04	169.31	0.18
Flamingo Wash Sp*	Upper	17457.5	PF 1	1577.00	2417.00	2425.87	2421.06	2426.02	0.000750	3.16	499.34	92.66	0.24
Flamingo Wash Sp*	Upper	17450.5		Culvert									
Flamingo Wash Sp*	Upper	17443.5	PF 1	1577.00	2416.90	2425.77		2425.94	0.000871	3.22	490.05	90.53	0.24
Flamingo Wash Sp*	Upper	17423.5	PF 1	1577.00	2416.80	2425.52		2425.89	0.003180	4.84	325.65	48.36	0.33
Flamingo Wash Sp*	Upper	17395.5	PF 1	1577.00	2416.70	2425.30		2425.76	0.005736	5.45	289.33	47.53	0.39
Flamingo Wash Sp*	Upper	17286.9	PF 1	1577.00	2416.50	2423.72		2424.69	0.017768	7.91	199.37	40.04	0.62
Flamingo Wash Sp*	Upper	17182.7	PF 1	1577.00	2416.20	2422.63		2423.04	0.011629	5.14	306.92	79.62	0.46
Flamingo Wash Sp*	Upper	17172.7	PF 1	1577.00	2416.10	2422.51	2420.47	2422.93	0.011668	5.16	305.36	79.41	0.46
Flamingo Wash Sp*	Upper	17140.8		Culvert									
Flamingo Wash Sp*	Upper	17108.8	PF 1	1577.00	2416.00	2421.03		2421.53	0.001910	5.64	279.72	87.73	0.56
Flamingo Wash Sp*	Upper	17098.8	PF 1	1577.00	2415.90	2420.98		2421.46	0.001983	5.56	283.82	88.23	0.55
Flamingo Wash Sp*	Upper	17065.8	PF 1	1577.00	2415.50	2420.64		2421.30	0.014365	6.52	241.76	71.93	0.63
Flamingo Wash Sp*	Upper	16956.5	PF 1	1577.00	2414.90	2420.12		2420.79	0.002281	6.55	240.69	65.50	0.60
Flamingo Wash Sp*	Upper	16748.5	PF 1	1577.00	2413.30	2418.40	2418.40	2419.94	0.006747	9.98	158.06	51.25	1.00
Flamingo Wash Sp*	Upper	16517.8	PF 1	1577.00	2411.90	2417.00		2418.18	0.004546	8.72	180.89	54.09	0.84
Flamingo Wash Sp*	Upper	16127.8	PF 1	1577.00	2410.00	2415.68		2416.59	0.003340	7.62	206.83	59.10	0.72

Flamingo Wash Sp	Upper	16035.0	PF 1	1577.00	2409.90	2416.06		2416.27	0.000560	3.72	424.31	101.00	0.32
Flamingo Wash Sp	Upper	15915.7	PF 1	1577.00	2408.80	2416.04		2416.20	0.000445	3.15	515.93	150.63	0.26
Flamingo Wash Sp	Upper	15895.7	PF 1	1577.00	2408.70	2416.00	2412.94	2416.18	0.000583	3.42	480.14	169.24	0.30
Flamingo Wash Sp	Upper	15888.2		Culvert									
Flamingo Wash Sp	Upper	15880.7	PF 1	1577.00	2408.60	2415.09		2415.37	0.001164	4.28	368.29	105.88	0.40
Flamingo Wash Sp	Upper	15860.7	PF 1	1577.00	2408.50	2415.01		2415.29	0.001149	4.26	370.08	106.44	0.40
Flamingo Wash Sp	Upper	15786.9	PF 1	1577.00	2407.80	2414.15	2412.77	2415.02	0.013632	7.52	209.66	48.25	0.64
Flamingo Wash Sp	Upper	15695.1	PF 1	1577.00	2406.10	2410.94	2410.94	2412.55	0.068838	10.19	154.76	48.59	1.01
Flamingo Wash Sp	lower	15591.5	PF 1	1577.00	2404.70	2408.99		2409.48	0.001802	5.61	281.33	86.06	0.55
Flamingo Wash Sp	lower	15436.9	PF 1	1577.00	2404.50	2408.87		2409.19	0.001318	4.52	348.60	98.02	0.42
Flamingo Wash Sp	lower	15256.3	PF 1	1577.00	2403.90	2407.73		2408.72	0.004708	7.96	197.99	70.04	0.83
Flamingo Wash Sp	lower	15027.4	PF 1	1577.00	2402.20	2406.00	2406.00	2407.39	0.006810	9.48	166.36	59.66	1.00
Flamingo Wash Sp	lower	14905.8	PF 1	1577.00	2401.30	2404.51	2404.32	2405.52	0.005707	8.08	195.23	79.05	0.91
Flamingo Wash Sp	lower	14799.2	PF 1	1577.00	2400.60	2403.60	2403.60	2404.81	0.007351	8.82	178.79	74.79	1.01
Flamingo Wash Sp	lower	14665.5	PF 1	1577.00	2397.90	2401.43	2401.43	2402.76	0.006814	9.27	170.10	63.78	1.00
Flamingo Wash Sp	lower	14365.5	PF 1	1577.00	2394.00	2397.77	2397.77	2399.04	0.007058	9.04	174.44	69.71	1.01
Flamingo Wash Sp	lower	14264.9	PF 1	1577.00	2393.60	2397.26	2396.95	2398.30	0.004966	8.22	191.93	67.76	0.86
Flamingo Wash Sp	lower	14174.9	PF 1	1577.00	2392.70	2396.36	2396.36	2397.74	0.006947	9.45	166.81	60.93	1.01
Flamingo Wash Sp	lower	13974.9	PF 1	1577.00	2389.60	2393.79	2393.47	2395.02	0.006283	8.88	177.67	55.48	0.87
Flamingo Wash Sp	lower	13928.6	PF 1	1577.00	2389.50	2393.69	2393.01	2394.71	0.004651	8.10	194.71	54.47	0.75
Flamingo Wash Sp	lower	13912.6		Bridge									
Flamingo Wash Sp	lower	13896.6	PF 1	1577.00	2389.40	2392.91	2392.91	2394.45	0.008394	9.95	158.55	52.17	1.01
Flamingo Wash Sp	lower	13854.6	PF 1	1577.00	2388.90	2392.51	2392.51	2393.98	0.006661	9.72	162.16	55.99	1.01
Flamingo Wash Sp	lower	13630.4	PF 1	1577.00	2385.00	2388.84	2388.84	2390.13	0.006754	9.11	173.16	67.24	1.00
Flamingo Wash Sp	lower	13330.4	PF 1	1577.00	2381.50	2385.61	2385.61	2387.06	0.006654	9.67	163.08	56.87	1.01
Flamingo Wash Sp	lower	13180.2	PF 1	1577.00	2379.80	2383.47	2383.47	2384.70	0.006964	8.90	177.13	73.00	1.01
Flamingo Wash Sp	lower	13049.6	PF 1	1577.00	2378.90	2382.52		2383.19	0.003680	6.59	239.22	96.27	0.74
Flamingo Wash Sp	lower	13029.6	PF 1	1577.00	2377.80	2382.80	2380.80	2383.02	0.000853	3.78	417.38	129.38	0.37
Flamingo Wash Sp	lower	13024.6		Culvert									
Flamingo Wash Sp	lower	13019.6	PF 1	1577.00	2377.70	2380.99	2380.70	2381.78	0.004998	7.13	221.29	99.82	0.84
Flamingo Wash Sp	lower	12999.6	PF 1	1577.00	2377.60	2380.61	2380.61	2381.64	0.007273	8.14	193.80	94.94	1.00
Flamingo Wash Sp	lower	12884.9	PF 1	1577.00	2375.70	2378.75	2378.75	2379.88	0.007093	8.55	184.48	82.24	1.01
Flamingo Wash Sp	lower	12784.9	PF 1	1577.00	2374.80	2377.95	2377.95	2379.06	0.007098	8.45	186.56	84.70	1.00
Flamingo Wash Sp	lower	12633.2	PF 1	1577.00	2373.20	2376.33	2376.33	2377.45	0.007002	8.52	185.17	82.23	1.00
Flamingo Wash Sp	lower	12573.3	PF 1	1577.00	2372.00	2376.18		2376.42	0.001344	3.94	400.43	164.41	

0.44													
Flamingo Wash Sp	lower	12542.9	PF 1	1577.00	2371.80	2375.69		2376.32	0.002992	6.36	247.82	[illegible]95	
0.68													
Flamingo Wash Sp	lower	12512.8	PF 1	1577.00	2371.50	2375.50		2376.22	0.003332	6.79	232.42	82.94	
0.71													
Flamingo Wash Sp	lower	12362.3	PF 1	1577.00	2369.60	2373.97	2373.97	2375.45	0.006622	9.76	161.60	55.40	
1.01													
Flamingo Wash Sp	lower	12259.2	PF 1	1577.00	2368.00	2373.79		2374.19	0.001400	5.12	307.72	87.00	
0.48													
Flamingo Wash Sp	lower	12243.2	PF 1	1577.00	2367.90	2373.91	2371.26	2374.12	0.000633	3.67	429.83	110.88	
0.33													
Flamingo Wash Sp	lower	12234.95		Culvert									
Flamingo Wash Sp	lower	12226.7	PF 1	1577.00	2367.80	2371.16	2371.16	2372.34	0.007027	8.74	180.37	77.12	
1.01													
Flamingo Wash Sp	lower	12211.0	PF 1	1577.00	2367.60	2370.95	2370.95	2372.14	0.007050	8.75	180.17	77.09	
1.01													
Flamingo Wash Sp	lower	12139.9	PF 1	1577.00	2366.20	2369.47	2369.47	2370.55	0.007210	8.37	188.42	87.89	
1.01													
Flamingo Wash Sp	lower	12069.3	PF 1	1577.00	2365.60	2368.65	2368.65	2369.70	0.007288	8.23	191.56	92.38	
1.01													
Flamingo Wash Sp	lower	11999.3	PF 1	1577.00	2365.00	2368.26	2368.01	2369.13	0.005194	7.49	210.64	90.75	
0.87													
Flamingo Wash Sp	lower	11899.5	PF 1	1577.00	2363.30	2367.23	2367.23	2368.50	0.006907	9.04	174.51	69.95	
1.01													
Flamingo Wash Sp	lower	11769.3	PF 1	1577.00	2361.70	2365.69	2365.69	2367.07	0.006760	9.40	167.71	62.08	
1.01													
Flamingo Wash Sp	lower	11666.8	PF 1	1577.00	2360.80	2364.95	2364.95	2366.37	0.006598	9.54	165.29	58.64	
1.00													
Flamingo Wash Sp	lower	11517.3	PF 1	1577.00	2358.70	2363.27	2363.27	2364.65	0.006661	9.41	167.51	61.15	
1.00													
Flamingo Wash Sp	lower	11417.2	PF 1	1577.00	2357.90	2361.82	2361.82	2363.06	0.006929	8.95	176.28	71.97	
1.01													
Flamingo Wash Sp	lower	11317.8	PF 1	1577.00	2356.40	2360.53	2360.53	2361.57	0.007372	8.21	192.07	93.69	
1.01													
Flamingo Wash Sp	lower	11213.6	PF 1	1577.00	2355.80	2359.43	2359.43	2360.62	0.007032	8.76	179.97	76.74	
1.01													
Flamingo Wash Sp	lower	11113.1	PF 1	1577.00	2354.80	2358.51	2358.51	2359.71	0.006488	8.76	180.01	75.75	
1.00													
Flamingo Wash Sp	lower	11016.4	PF 1	1577.00	2353.00	2356.59	2356.59	2357.86	0.006764	9.06	174.13	68.45	
1.00													
Flamingo Wash Sp	lower	10739.1	PF 1	1577.00	2350.50	2356.24		2356.66	0.001250	5.18	304.17	77.22	
0.46													
Flamingo Wash Sp	lower	10512.5	PF 1	1577.00	2348.60	2355.20	2353.15	2355.85	0.008378	6.45	244.43	53.37	
0.53													
Flamingo Wash Sp	lower	10203.8	PF 1	1577.00	2345.00	2349.26	2349.26	2350.92	0.038870	10.35	152.31	46.19	
1.00													
Flamingo Wash Sp	lower	10120.0	PF 1	1577.00	2340.70	2346.32	2345.16	2347.11	0.005710	7.16	220.21	57.08	
0.64													
Flamingo Wash Sp	lower	10060.0		Bridge									
Flamingo Wash Sp	lower	10000.0	PF 1	1577.00	2340.00	2345.83		2346.55	0.004897	6.78	232.65	58.20	
0.60													
Flamingo Wash Sp	lower	9939.9	PF 1	1577.00	2340.00	2344.72	2344.34	2346.07	0.010005	9.34	168.81	46.31	
0.86													

Profile Output Table - Standard Table 2

River	Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Old input channe	obsolete	1100.0	PF 1	2409.60	2409.41	0.19	0.90	0.01		25.00		18.83
Old input channe	obsolete	1000.0	PF 1	2408.61	2408.46	0.15				25.00		18.01
Flamingo Wash Sp	Upper	18060.5	PF 1	2426.88	2426.07	0.81	0.01	0.06		1577.00		30.14
Flamingo Wash Sp	Upper	18045.5	PF 1	2426.81	2426.19	0.62	0.00	0.00		1577.00		33.44
Flamingo Wash Sp	Upper	18026.05		Bridge								
Flamingo Wash Sp	Upper	18006.6	PF 1	2426.71	2425.33	1.38	0.01	0.29		1577.00		24.97

Flamingo Wash Sp*	Upper	17992.6	PF 1		2426.40	2426.01	0.40	0.14	0.03		1577.00	63.63
Flamingo Wash Sp*	Upper	17792.3	PF 1		2426.24	2425.93	0.31	0.06	0.04		1577.00	76.75
Flamingo Wash Sp*	Upper	17678.8	PF 1		2426.14	2425.97	0.17	0.05	0.00		1577.00	82.69
Flamingo Wash Sp*	Upper	17539.1	PF 1		2426.08	2425.92	0.17	0.02	0.03		1577.00	90.75
Flamingo Wash Sp*	Upper	17477.5	PF 1		2426.04	2425.97	0.07	0.01	0.01		1577.00	169.31
Flamingo Wash Sp*	Upper	17457.5	PF 1		2426.02	2425.87	0.15				1577.00	92.66
Flamingo Wash Sp*	Upper	17450.5			Culvert							
Flamingo Wash Sp*	Upper	17443.5	PF 1		2425.94	2425.77	0.16	0.03	0.02		1577.00	90.53
Flamingo Wash Sp*	Upper	17423.5	PF 1		2425.89	2425.52	0.36	0.12	0.01		1577.00	48.36
Flamingo Wash Sp*	Upper	17395.5	PF 1		2425.76	2425.30	0.46	1.01	0.05		1577.00	47.53
Flamingo Wash Sp*	Upper	17286.9	PF 1		2424.69	2423.72	0.97	1.48	0.17		1577.00	40.04
Flamingo Wash Sp*	Upper	17182.7	PF 1		2423.04	2422.63	0.41	0.12	0.00		1577.00	79.62
Flamingo Wash Sp*	Upper	17172.7	PF 1		2422.93	2422.51	0.41				1577.00	79.41
Flamingo Wash Sp*	Upper	17140.8			Culvert							
Flamingo Wash Sp*	Upper	17108.8	PF 1		2421.53	2421.03	0.49	0.06	0.00		1577.00	87.73
Flamingo Wash Sp*	Upper	17098.8	PF 1		2421.46	2420.98	0.48	0.14	0.02		1577.00	88.23
Flamingo Wash Sp*	Upper	17065.8	PF 1		2421.30	2420.64	0.66	0.51	0.00		1577.00	71.93
Flamingo Wash Sp*	Upper	16956.5	PF 1		2420.79	2420.12	0.67	0.76	0.09		1577.00	65.50
Flamingo Wash Sp*	Upper	16748.5	PF 1		2419.94	2418.40	1.55	1.27	0.11		1577.00	51.25
Flamingo Wash Sp*	Upper	16517.8	PF 1		2418.18	2417.00	1.18	1.51	0.08		1577.00	54.09
Flamingo Wash Sp*	Upper	16127.8	PF 1		2416.59	2415.68	0.90	0.10	0.21		1577.00	59.10
Flamingo Wash Sp*	Upper	16035.0	PF 1		2416.27	2416.06	0.21	0.06	0.02		1577.00	101.00
Flamingo Wash Sp*	Upper	15915.7	PF 1		2416.20	2416.04	0.15	0.01	0.00	13.38	1563.62	150.63
Flamingo Wash Sp*	Upper	15895.7	PF 1		2416.18	2416.00	0.18			17.50	1559.50	169.24
Flamingo Wash Sp*	Upper	15888.2			Culvert							
Flamingo Wash Sp*	Upper	15880.7	PF 1		2415.37	2415.09	0.28	0.09	0.00		1577.00	105.88
Flamingo Wash Sp*	Upper	15860.7	PF 1		2415.29	2415.01	0.28	0.20	0.06	0.00	1577.00	106.44
Flamingo Wash Sp*	Upper	15786.9	PF 1		2415.02	2414.15	0.88	2.40	0.07		1577.00	48.25
Flamingo Wash Sp*	Upper	15695.1	PF 1		2412.55	2410.94	1.61	0.00	0.34		1577.00	48.59
Flamingo Wash Sp*	lower	15591.5	PF 1		2409.48	2408.99	0.49	0.24	0.05		1577.00	86.06
Flamingo Wash Sp*	lower	15436.9	PF 1		2409.19	2408.87	0.32	0.41	0.07		1577.00	98.02
Flamingo Wash Sp*	lower	15256.3	PF 1		2408.72	2407.73	0.99	1.29	0.04		1577.00	70.04
Flamingo Wash Sp*	lower	15027.4	PF 1		2407.39	2406.00	1.40	0.76	0.11		1577.00	59.66
Flamingo Wash Sp*	lower	14905.8	PF 1		2405.52	2404.51	1.01	0.69	0.02		1577.00	79.05
Flamingo Wash Sp*	lower	14799.2	PF 1		2404.81	2403.60	1.21	0.95	0.01		1577.00	74.79
Flamingo Wash Sp*	lower	14665.5	PF 1		2402.76	2401.43	1.33	2.08	0.02		1577.00	63.78
Flamingo Wash Sp*	lower	14365.5	PF 1		2399.04	2397.77	1.27	0.59	0.07		1577.00	69.71
Flamingo Wash Sp*	lower	14264.9	PF 1		2398.30	2397.26	1.05	0.52	0.03		1577.00	67.76
Flamingo Wash Sp*	lower	14174.9	PF 1		2397.74	2396.36	1.39	1.32	0.05		1577.00	60.93
Flamingo Wash Sp*	lower	13974.9	PF 1		2395.02	2393.79	1.22	0.25	0.06		1577.00	55.48
Flamingo Wash Sp*	lower	13928.6	PF 1		2394.71	2393.69	1.02	0.00	0.00		1577.00	54.47
Flamingo Wash Sp*	lower	13912.6			Bridge							
Flamingo Wash Sp*	lower	13896.6	PF 1		2394.45	2392.91	1.54	0.31	0.02		1577.00	52.17
Flamingo Wash Sp*	lower	13854.6	PF 1		2393.98	2392.51	1.47	1.50	0.05		1577.00	55.99
Flamingo Wash Sp*	lower	13630.4	PF 1		2390.13	2388.84	1.29	2.01	0.02		1577.00	67.24
Flamingo Wash Sp*	lower	13330.4	PF 1		2387.06	2385.61	1.45	1.02	0.07		1577.00	56.87
Flamingo Wash Sp*	lower	13180.2	PF 1		2384.70	2383.47	1.23	0.64	0.17		1577.00	73.00
Flamingo Wash Sp*	lower	13049.6	PF 1		2383.19	2382.52	0.67	0.03	0.14		1577.00	96.27
Flamingo Wash Sp*	lower	13029.6	PF 1		2383.02	2382.80	0.22				1577.00	129.38
Flamingo Wash Sp*	lower	13024.6			Culvert							
Flamingo Wash Sp*	lower	13019.6	PF 1		2381.78	2380.99	0.79	0.12	0.02		1577.00	99.82
Flamingo Wash Sp*	lower	12999.6	PF 1		2381.64	2380.61	1.03	0.82	0.01		1577.00	94.94
Flamingo Wash Sp*	lower	12884.9	PF 1		2379.88	2378.75	1.13	0.71	0.01		1577.00	82.24
Flamingo Wash Sp*	lower	12784.9	PF 1		2379.06	2377.95	1.11	1.07	0.00		1577.00	84.70
Flamingo Wash Sp*	lower	12633.2	PF 1		2377.45	2376.33	1.13	0.16	0.27		1577.00	82.23
Flamingo Wash Sp*	lower	12573.3	PF 1		2376.42	2376.18	0.24	0.06	0.04		1577.00	164.41
Flamingo Wash Sp*	lower	12542.9	PF 1		2376.32	2375.69	0.63	0.09	0.01		1577.00	89.95
Flamingo Wash Sp*	lower	12512.8	PF 1		2376.22	2375.50	0.71	0.69	0.08		1577.00	82.94
Flamingo Wash Sp*	lower	12362.3	PF 1		2375.45	2373.97	1.48	0.27	0.32		1577.00	55.40
Flamingo Wash Sp*	lower	12259.2	PF 1		2374.19	2373.79	0.41	0.01	0.06		1577.00	87.00
Flamingo Wash Sp*	lower	12243.2	PF 1		2374.12	2373.91	0.21				1577.00	110.88
Flamingo Wash Sp*	lower	12234.95			Culvert							
Flamingo Wash Sp*	lower	12226.7	PF 1		2372.34	2371.16	1.19	0.11	0.00		1577.00	77.12
Flamingo Wash Sp*	lower	12211.0	PF 1		2372.14	2370.95	1.19	0.51	0.03		1577.00	77.09
Flamingo Wash Sp*	lower	12139.9	PF 1		2370.55	2369.47	1.09	0.51	0.01		1577.00	87.89
Flamingo Wash Sp*	lower	12069.3	PF 1		2369.70	2368.65	1.05	0.43	0.05		1577.00	92.38
Flamingo Wash Sp*	lower	11999.3	PF 1		2369.13	2368.26	0.87	0.59	0.04		1577.00	90.75
Flamingo Wash Sp*	lower	11899.5	PF 1		2368.50	2367.23	1.27	0.89	0.01		1577.00	69.95
Flamingo Wash Sp*	lower	11769.3	PF 1		2367.07	2365.69	1.37	0.68	0.00		1577.00	62.08

Flamingo Sp* lower	11666.8	PF 1		2366.37	2364.5	1.41	0.99	0.01		1577.00		.64
Flamingo Wash Sp* lower	11517.3	PF 1		2364.65	2363.27	1.38	0.68	0.04		1577.00		91.15
Flamingo Wash Sp* lower	11417.2	PF 1		2363.06	2361.82	1.24	0.71	0.06		1577.00		71.97
Flamingo Wash Sp* lower	11317.8	PF 1		2361.57	2360.53	1.05	0.75	0.01		1577.00		93.69
Flamingo Wash Sp* lower	11213.6	PF 1		2360.62	2359.43	1.19	0.68	0.00		1577.00		76.74
Flamingo Wash Sp* lower	11113.1	PF 1		2359.71	2358.51	1.19	0.64	0.01		1577.00		75.75
Flamingo Wash Sp* lower	11016.4	PF 1		2357.86	2356.59	1.27	0.68	0.26		1577.00		68.45
Flamingo Wash Sp* lower	10739.1	PF 1		2356.66	2356.24	0.42	0.79	0.02		1577.00		77.22
Flamingo Wash Sp* lower	10512.5	PF 1		2355.85	2355.20	0.65	4.83	0.10		1577.00		53.37
Flamingo Wash Sp* lower	10203.8	PF 1		2350.92	2349.26	1.66	1.00	0.26		1577.00		46.19
Flamingo Wash Sp* lower	10120.0	PF 1		2347.11	2346.32	0.80	0.00	0.00		1577.00		57.08
Flamingo Wash Sp* lower	10060.0			Bridge								
Flamingo Wash Sp* lower	10000.0	PF 1		2346.55	2345.83	0.71	0.41	0.06		1577.00		58.20
Flamingo Wash Sp* lower	9939.9	PF 1		2346.07	2344.72	1.36				1577.00		46.31

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ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 01

River: Flamingo Wash Sp Reach: Upper RS: 18026.05 Profile: PF 1
Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy. This is not physically possible, the momentum answer has been disregarded.
River: Flamingo Wash Sp Reach: Upper RS: 18026.05 Profile: PF 1 Upstream
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 18006.6 Profile: PF 1
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 17992.6 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17539.1 Profile: PF 1
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 17477.5 Profile: PF 1
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17450.5 Profile: PF 1
Warning: The weir over culvert is submerged.
River: Flamingo Wash Sp Reach: Upper RS: 17443.5 Profile: PF 1
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17423.5 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17395.5 Profile: PF 1
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17286.9 Profile: PF 1
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17182.7 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp Reach: Upper RS: 17098.8 Profile: PF 1
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Flamingo Wash Sp Reach: Upper RS: 17065.8 Profile: PF 1
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

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     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 16956.5     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 16748.5     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 16517.8     Profile: PF 1
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 16127.8     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 15860.7     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Flamingo Wash Sp  Reach: Upper     RS: 15786.9     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: Upper     RS: 15695.1     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:A flow split was encountered.  The program first calculated the momentum of both channels below the junction.  An
             energy balance was performed across the junction from the stream with the highest momentum downstream to the section
             upstream.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 15591.5     Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 15436.9     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 15256.3     Profile: PF 1
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 15027.4     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 14905.8     Profile: PF 1
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     Note:     nning's n values were composited to a single value in the main channe
River: Flamingo Wash Sp  Reach: lower     RS: 14799.2     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 14665.5     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 14365.5     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 14264.9     Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 14174.9     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13974.9     Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13928.6     Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13912.6     Profile: PF 1 Upstream
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13912.6     Profile: PF 1 Downstream
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13896.6     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 13854.6     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 13630.4     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 13330.4     Profile: PF 1
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Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 13180.2 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 13049.6 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Flamingo Wash Sp Reach: lower RS: 13024.6 Profile: PF 1 Culv: Culvert #1
Note: Culvert critical depth exceeds the height of the culvert.

River: Flamingo Wash Sp Reach: lower RS: 12999.6 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12884.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12784.9 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12633.2 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12573.3 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Flamingo Wash Sp Reach: lower RS: 12512.8 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Flamingo Wash Sp Reach: lower RS: 12362.3 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warni. .ring the standard step iterations, when the assumed water surface wa equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12259.2 Profile: PF 1

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Flamingo Wash Sp Reach: lower RS: 12234.95 Profile: PF 1 Culv: Culvert #1

Note: Culvert critical depth exceeds the height of the culvert.

River: Flamingo Wash Sp Reach: lower RS: 12226.7 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12211.0 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12139.9 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 12069.3 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 11899.5 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 11769.3 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 11666.8 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 11517.3 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Flamingo Wash Sp Reach: lower RS: 11417.2 Profile: PF 1

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

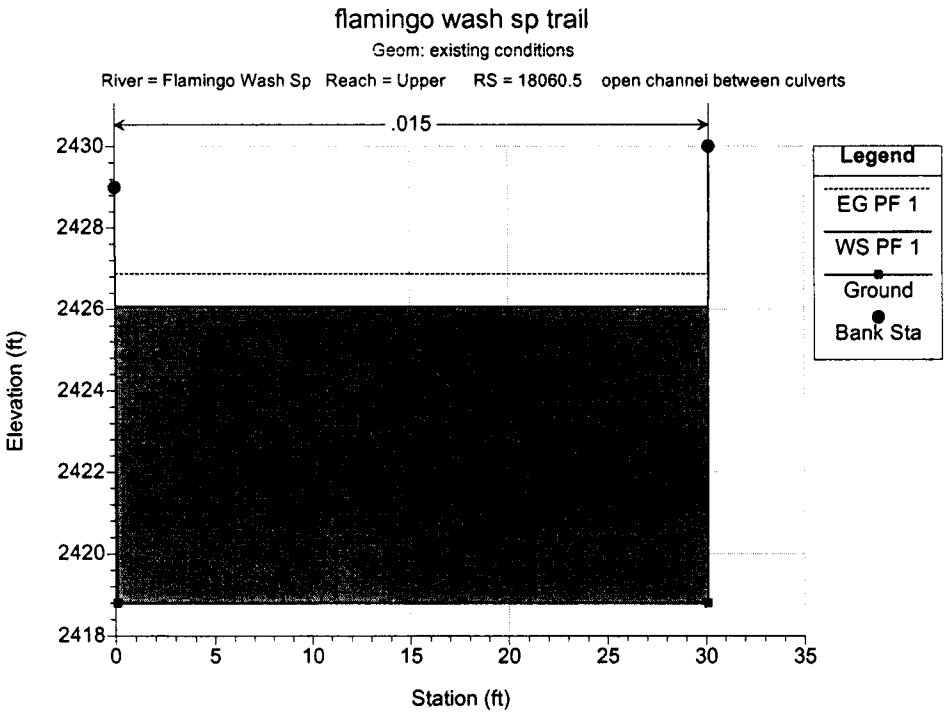
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

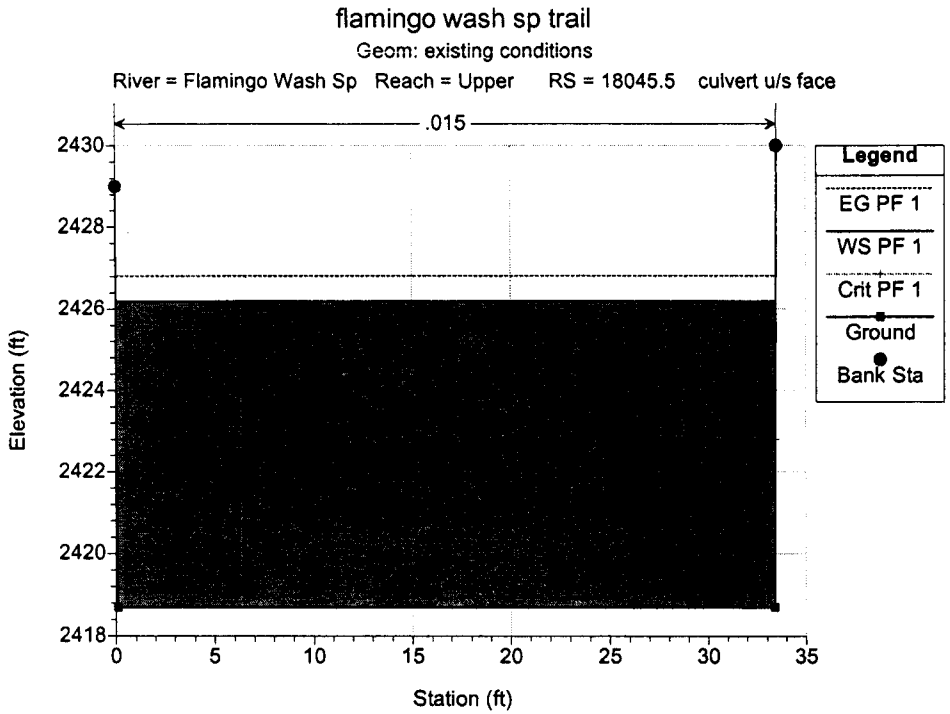
```
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 11317.8     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 11213.6     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 11113.1     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 11016.4     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
             surface that had the least amount of error between computed and assumed values.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Flamingo Wash Sp  Reach: lower     RS: 10739.1     Profile: PF 1
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Flamingo Wash Sp  Reach: lower     RS: 10512.5     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 10203.8     Profile: PF 1
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 10120.0     Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 10060.0     Profile: PF 1 Upstream
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 10060.0     Profile: PF 1 Downstream
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 10000.0     Profile: PF 1
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Flamingo Wash Sp  Reach: lower     RS: 9939.9      Profile: PF 1
     Note:   Manning's n values were composited to a single value in the main channel.
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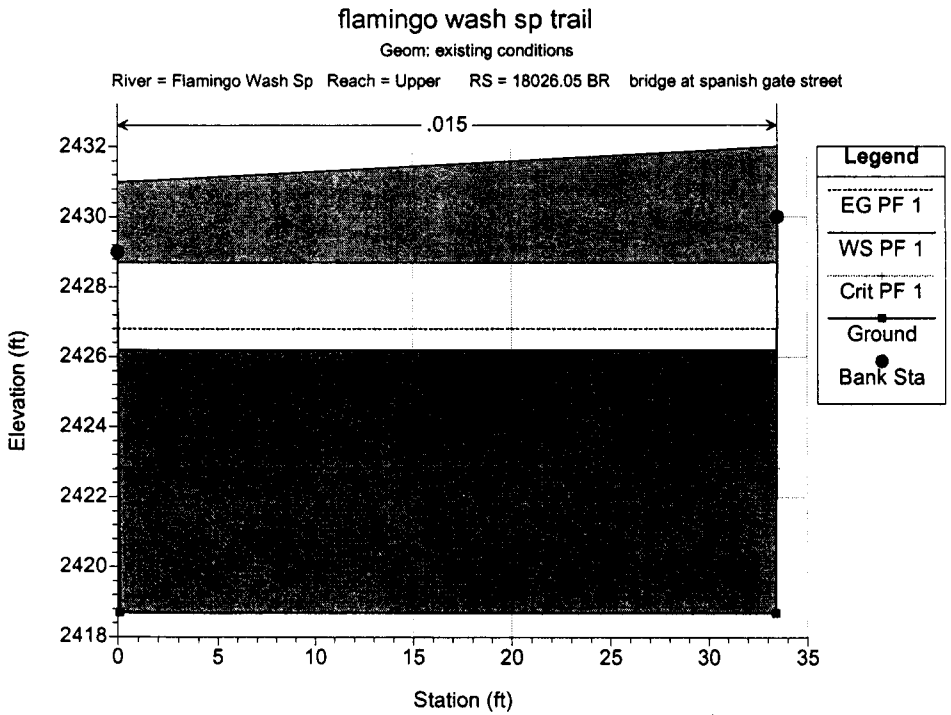
River: Old t channe Reach: obsolete RS: 1100.0 Profile: PF 1

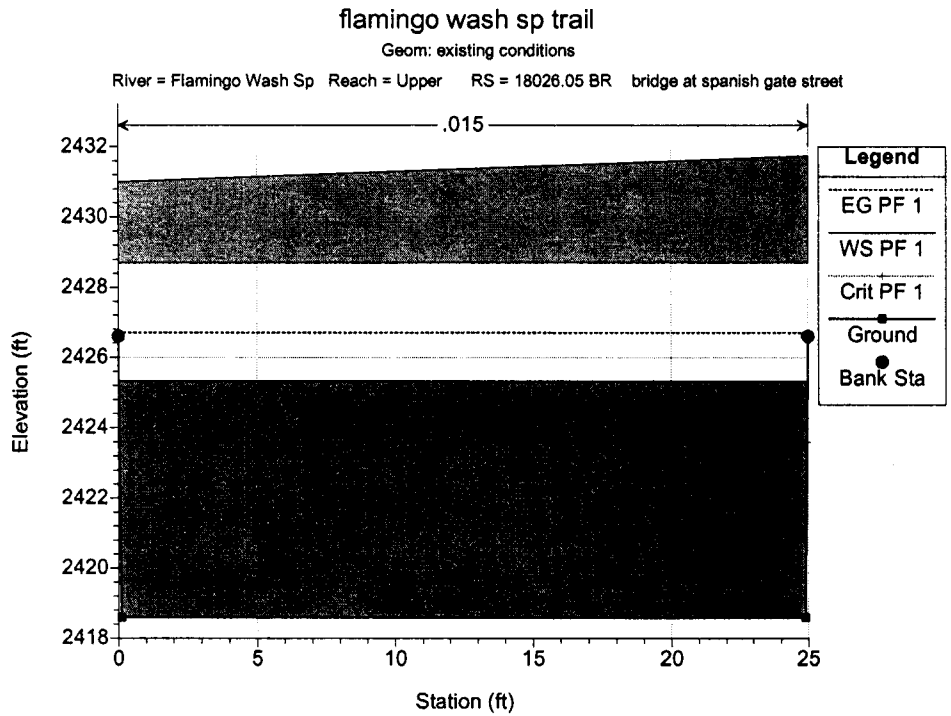
Warnin.. ..ne energy equation could not be balanced within the specified number o.. ..erations. The program selected the water surface that had the least amount of error between computed and assumed values.

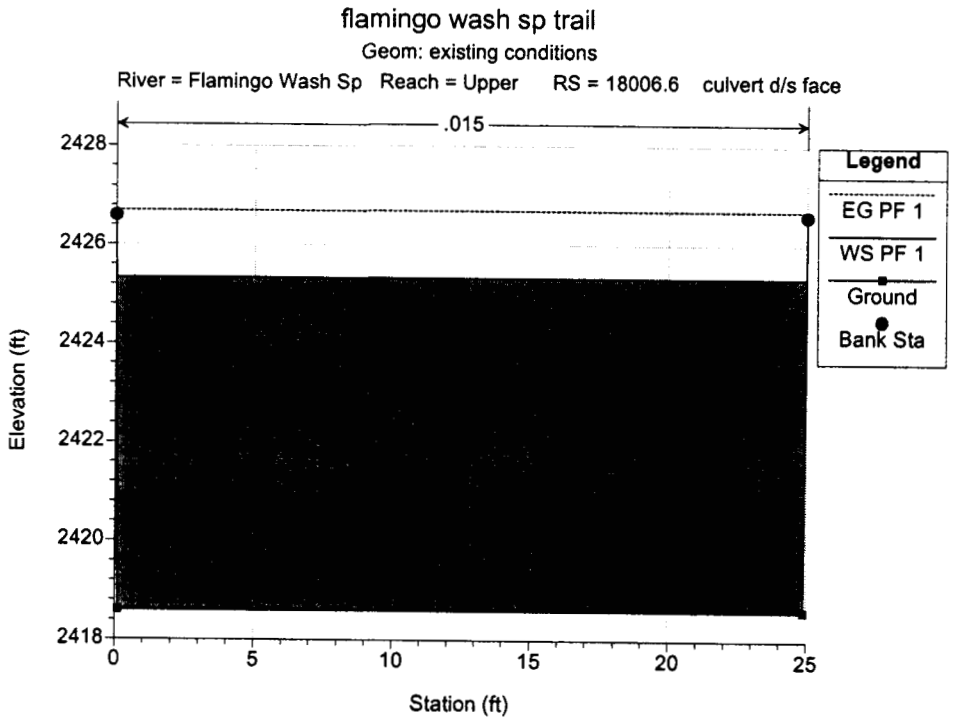
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

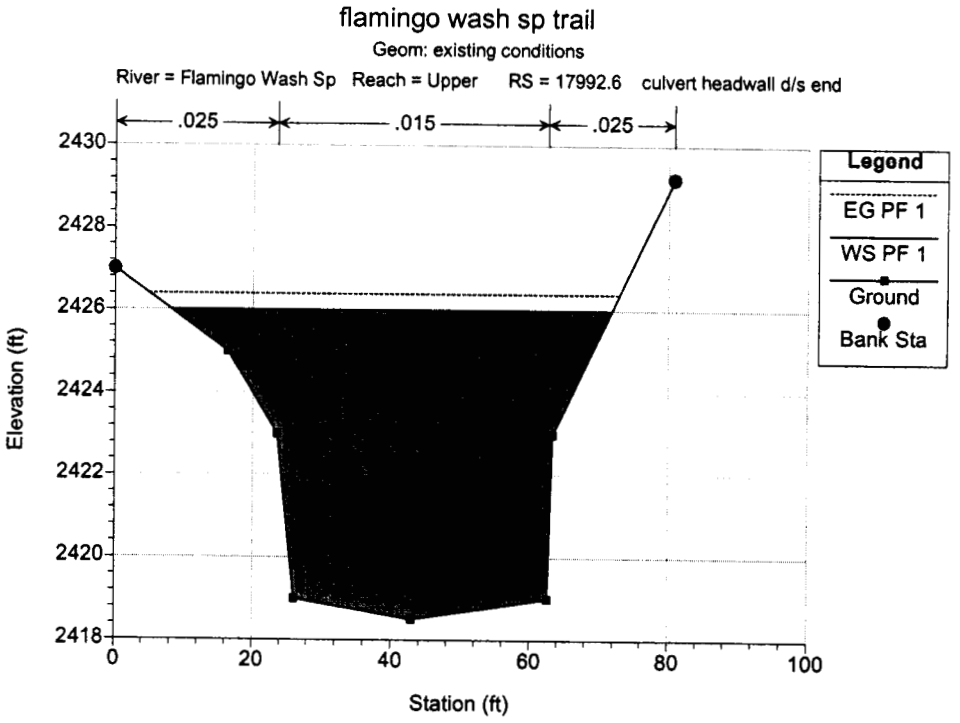

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 18060.5 open channel between culverts
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

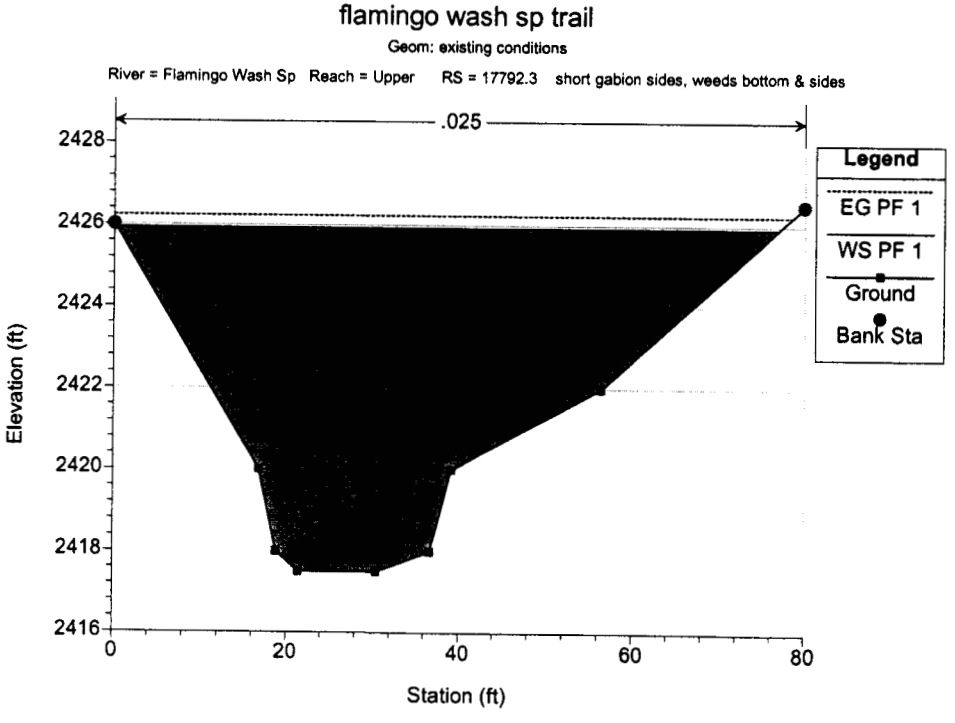

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 18045.5 culvert u/s face
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

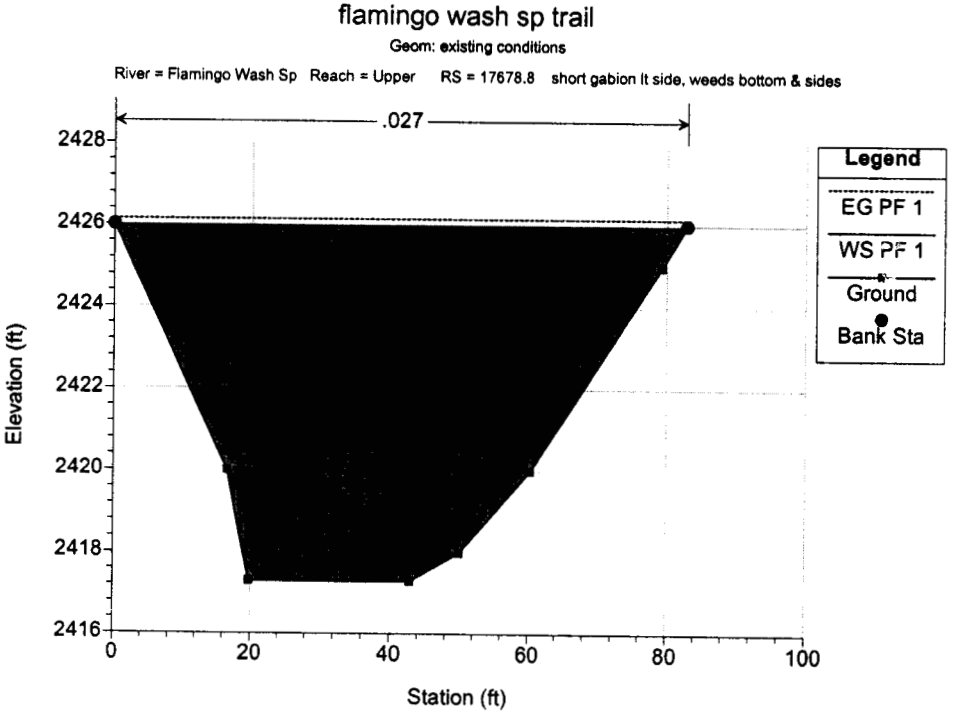

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 18026.05 BR bridge at spanish gate street
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

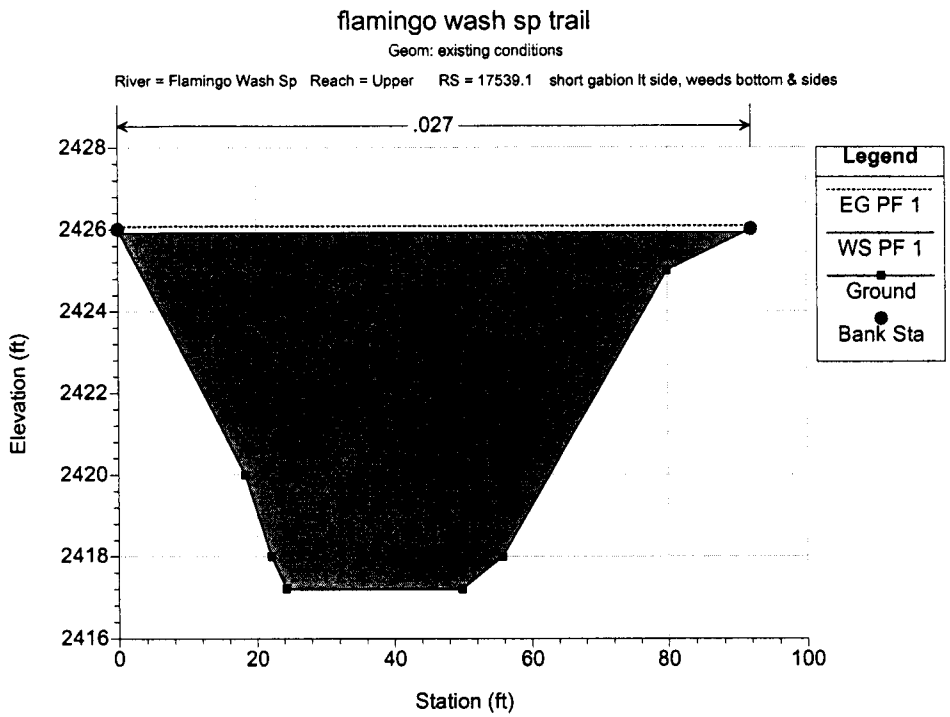

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 18026.05 BR bridge at spanish gate street
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

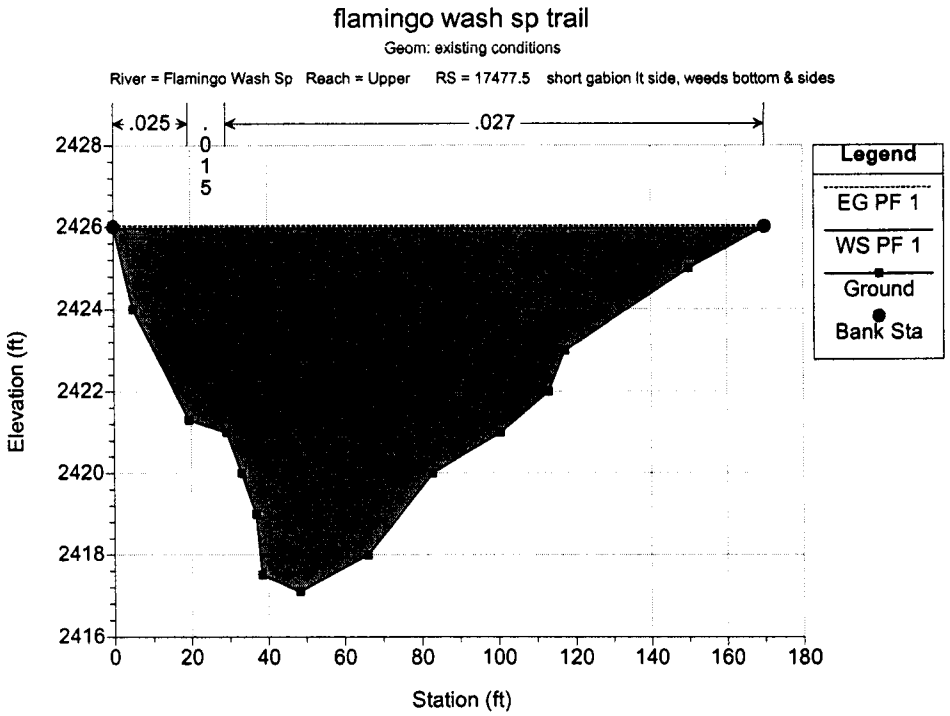

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 18006.6 culvert d/s face
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

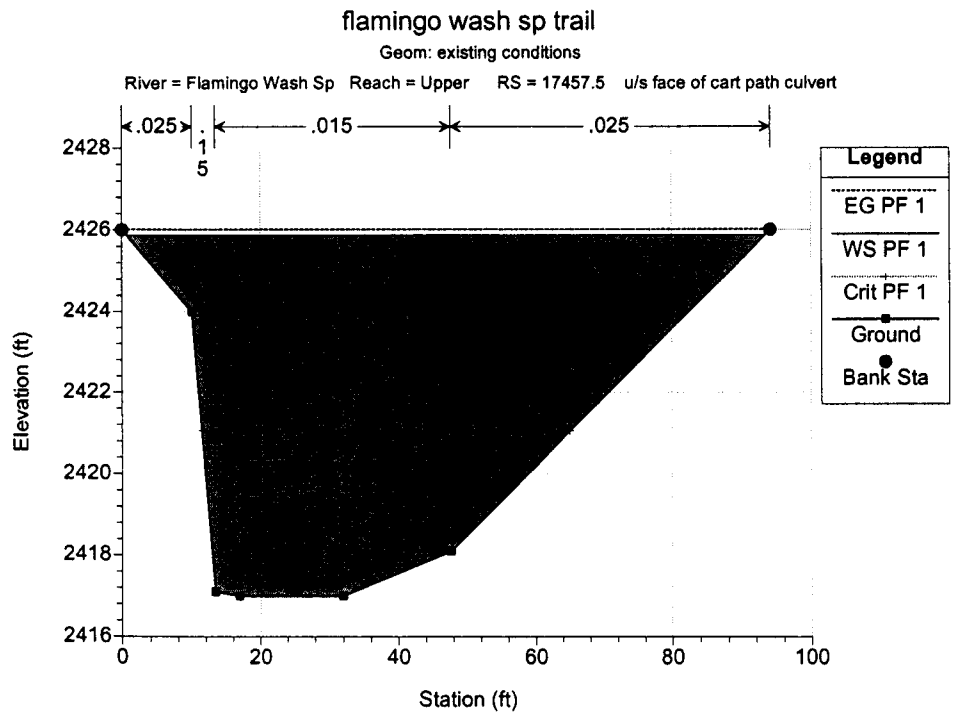

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17992.6 culvert headwall d/s end
.025
.015
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

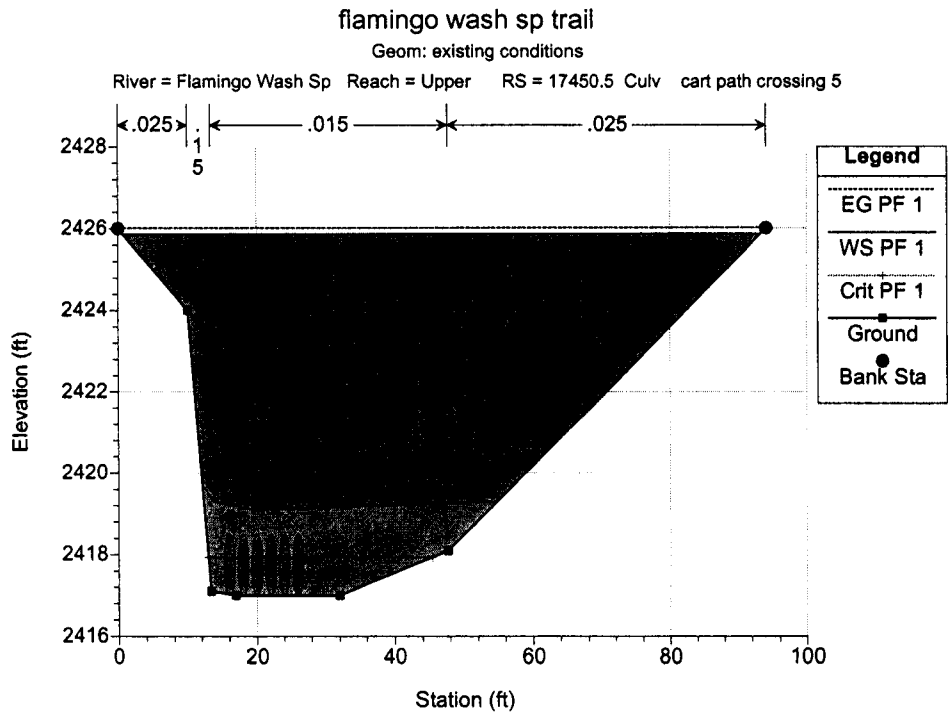

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17792.3 short gabion sides, weeds bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

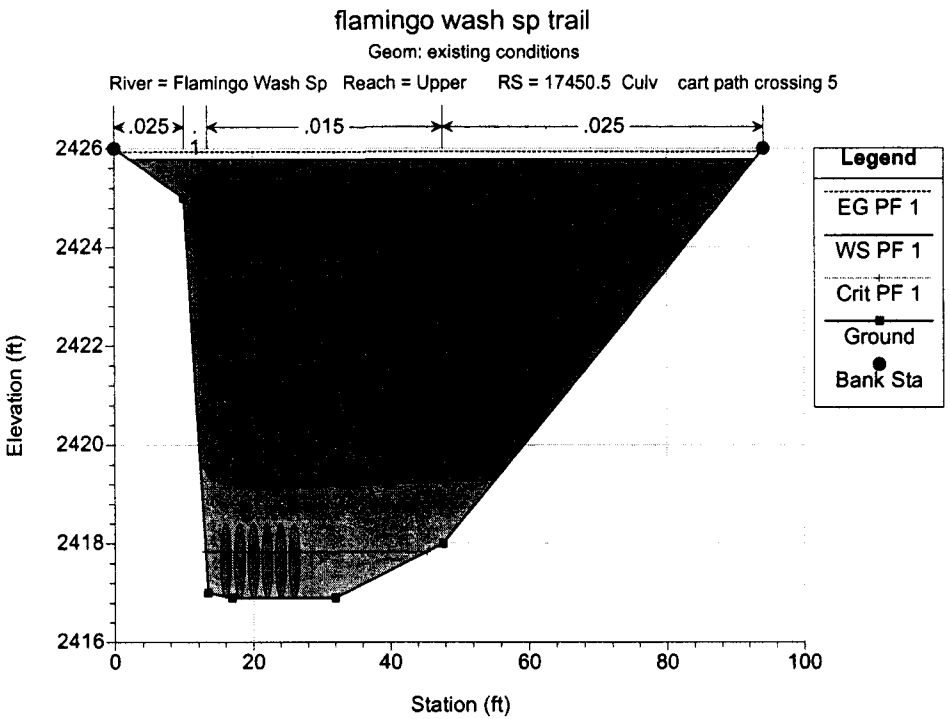

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17678.8 short gabion lt side, weeds bottom & sides
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

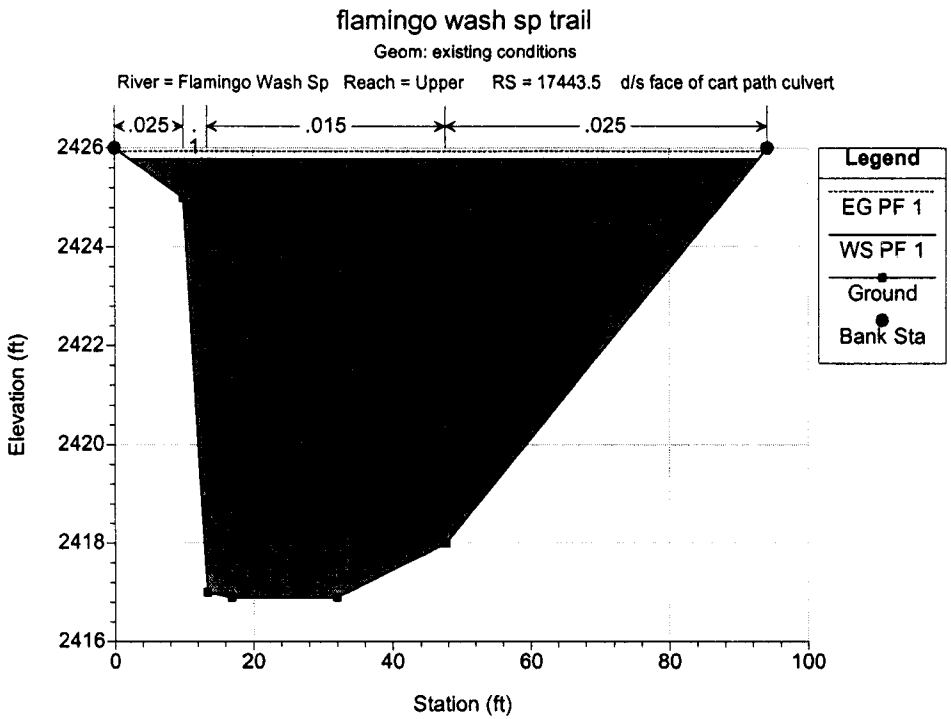

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17539.1 short gabion lt side, weeds bottom & sides
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

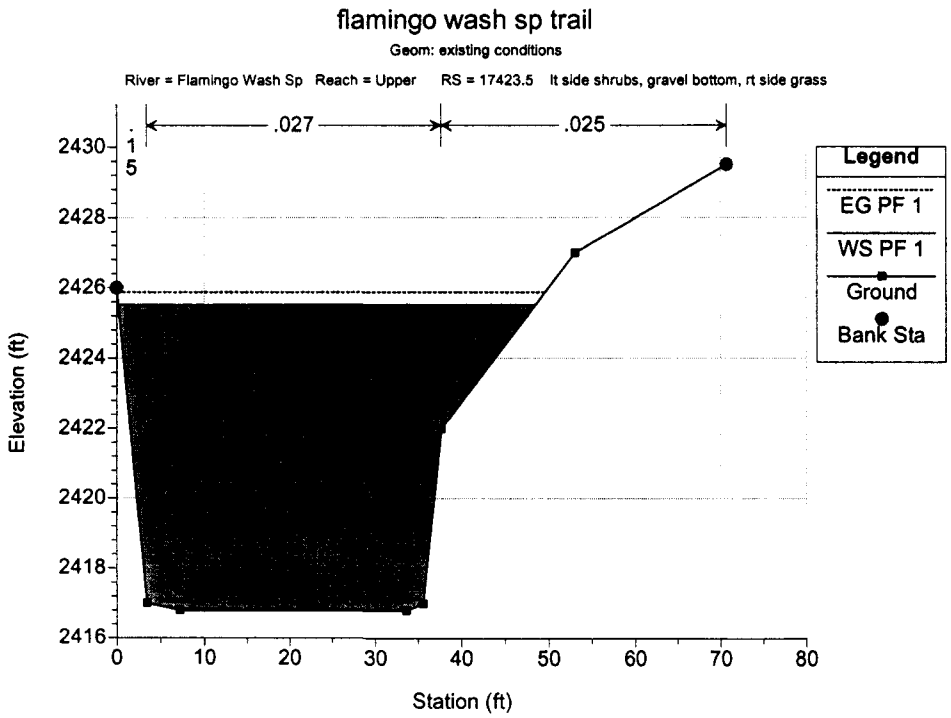

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17477.5 short gabion lt side, weeds bottom & sides
.025
.015
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

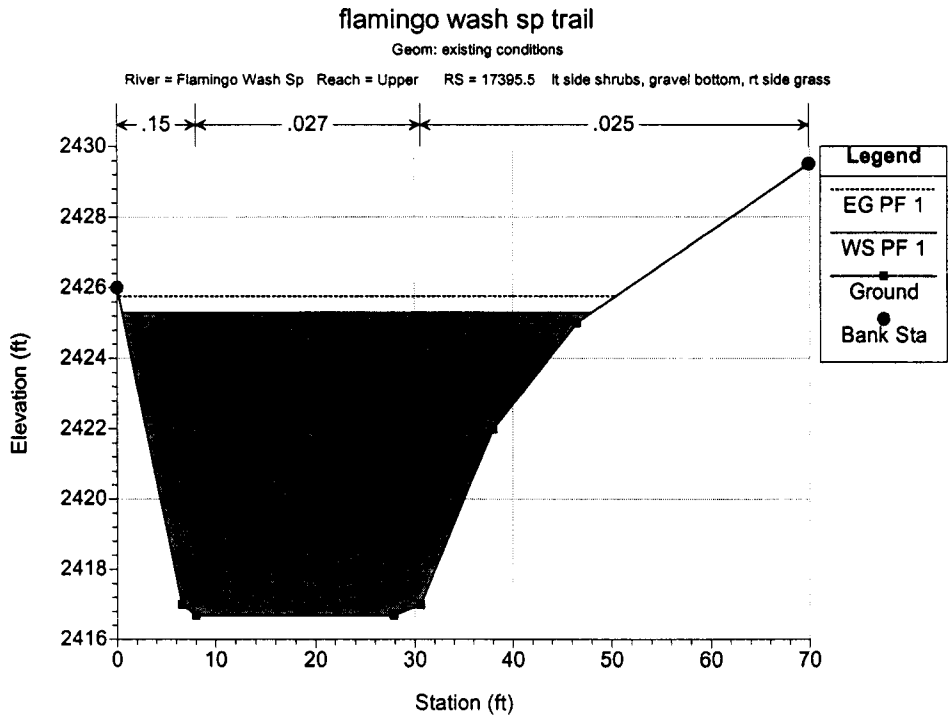

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17457.5 u/s face of cart path culvert
.025
.015
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

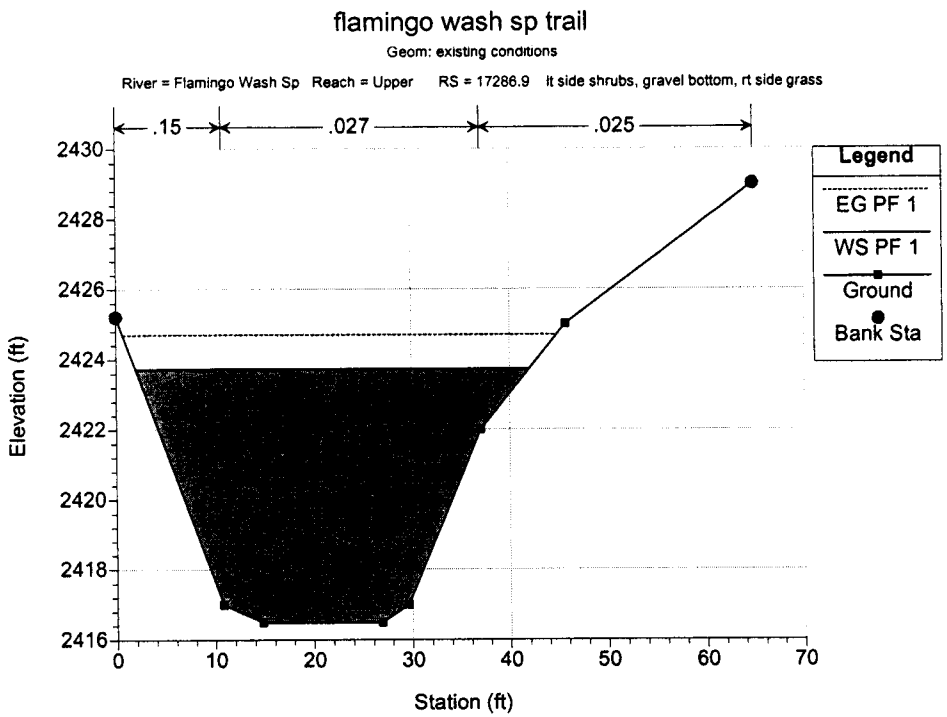

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17450.5 Culv cart path crossing 5
.025
.015
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

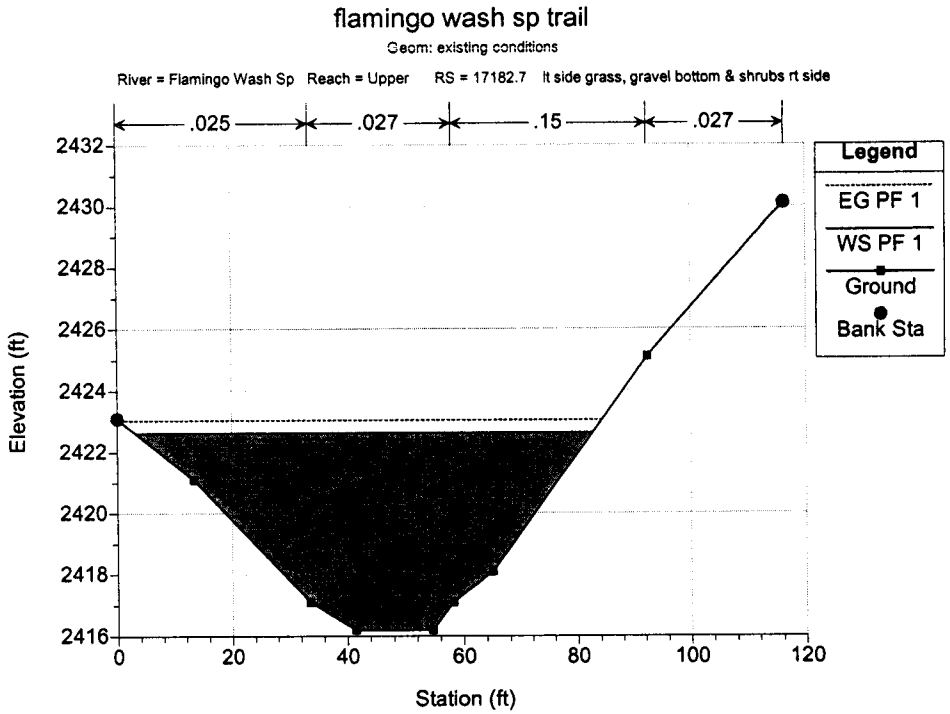

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17450.5 Culv cart path crossing 5
.025
.1
.015
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

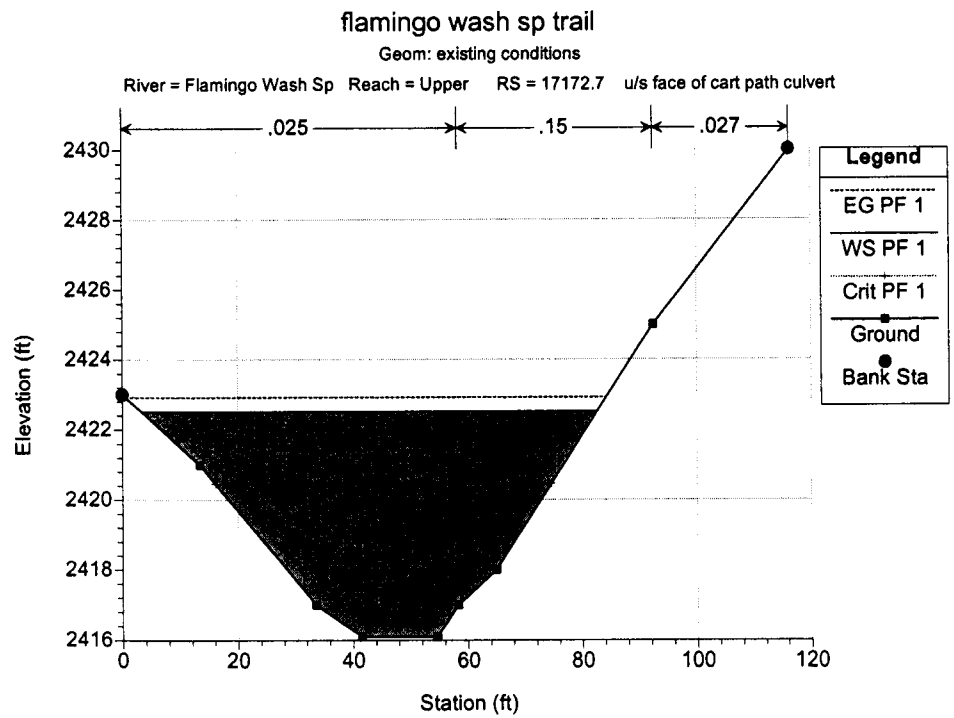

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17443.5 d/s face of cart path culvert
.025
.1
.015
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

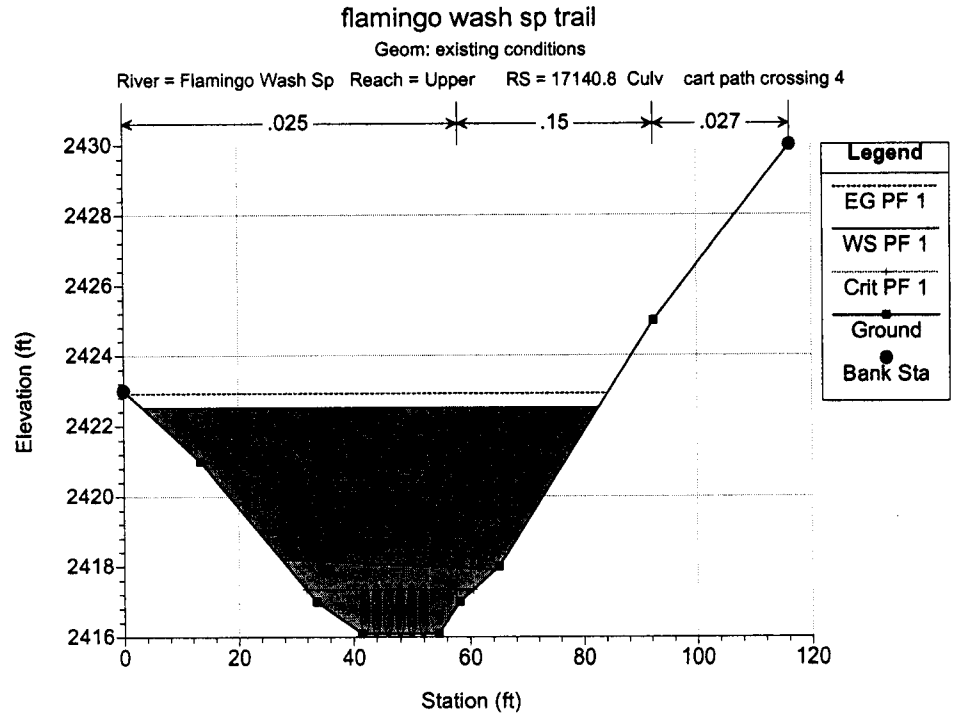

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17423.5 lt side shrubs, gravel bottom, rt side grass
.1
.027
.025
.15
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

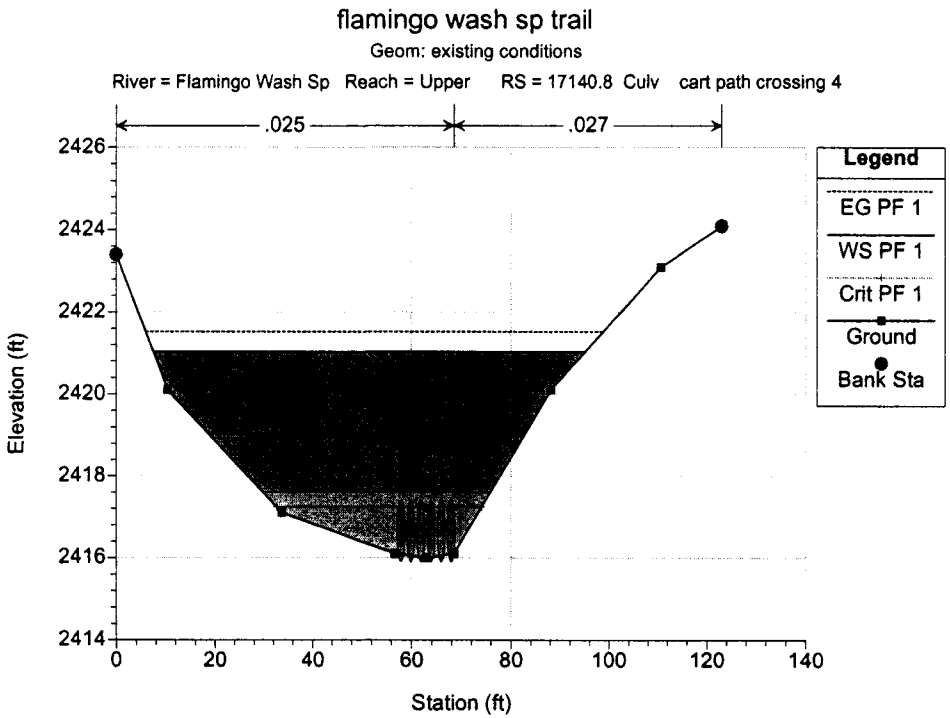

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17395.5 lt side shrubs, gravel bottom, rt side grass
.15
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

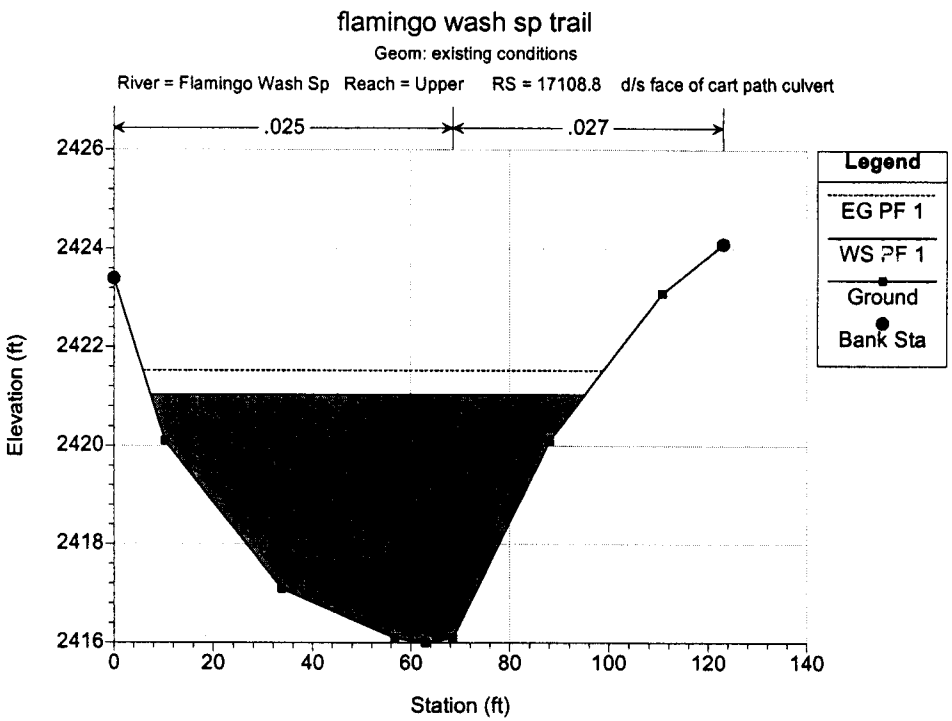

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17286.9 lt side shrubs, gravel bottom, rt side grass
.15
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

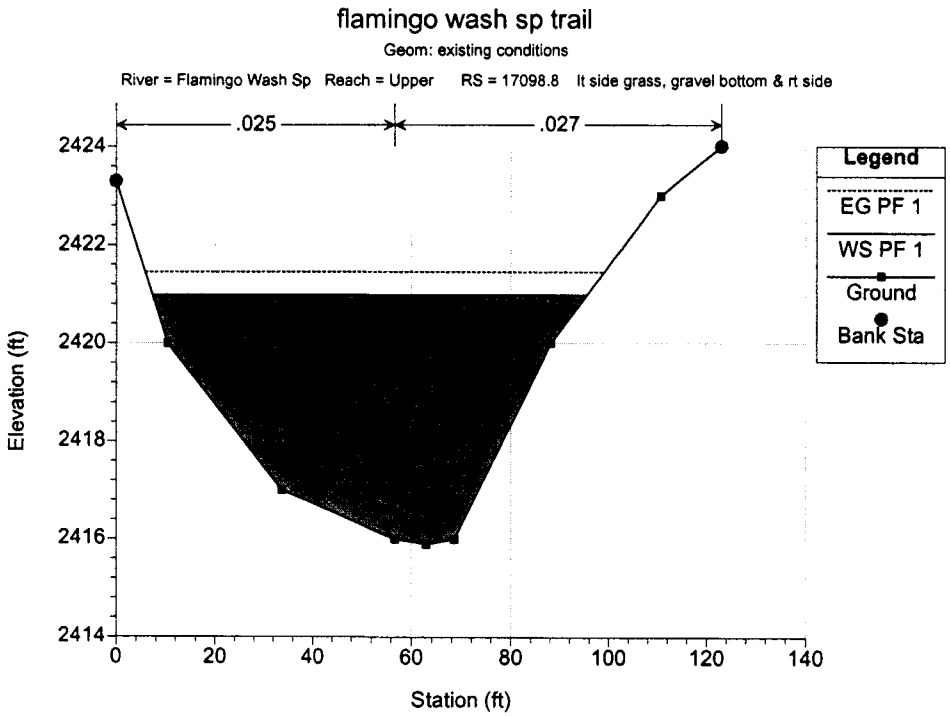

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17182.7 lt side grass, gravel bottom & shrubs rt side
.025
.027
.15
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

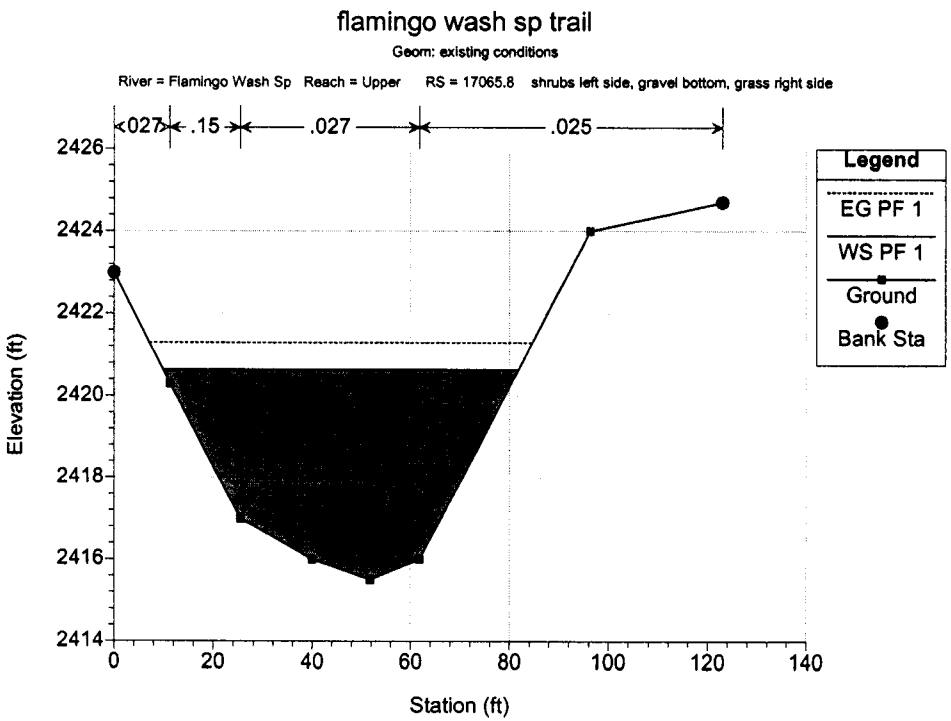

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17172.7 u/s face of cart path culvert
.025
.15
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

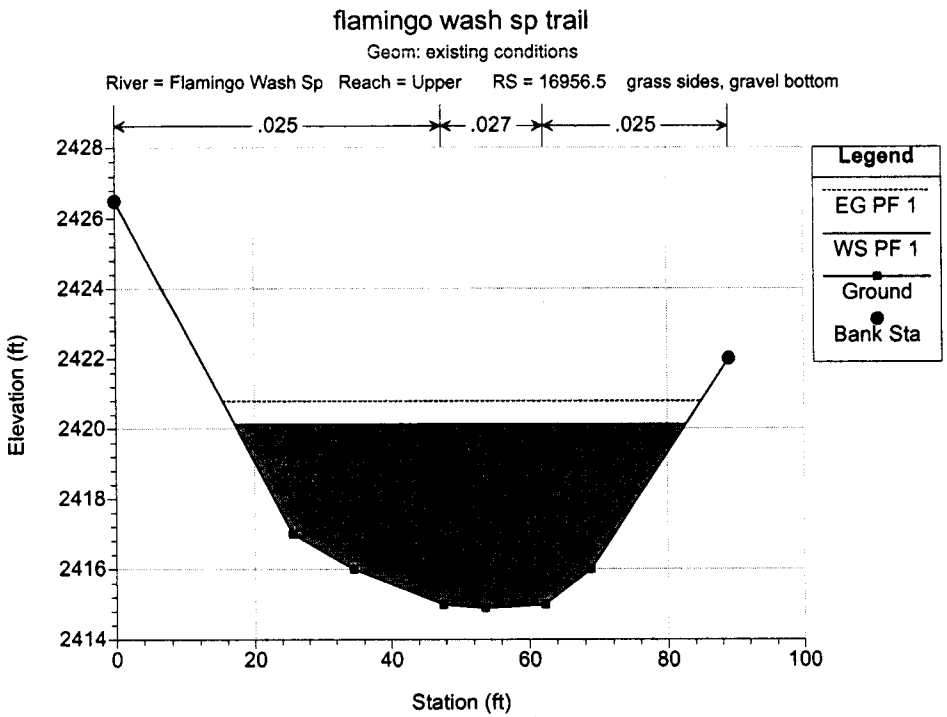

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17140.8 Culv cart path crossing 4
.025
.15
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

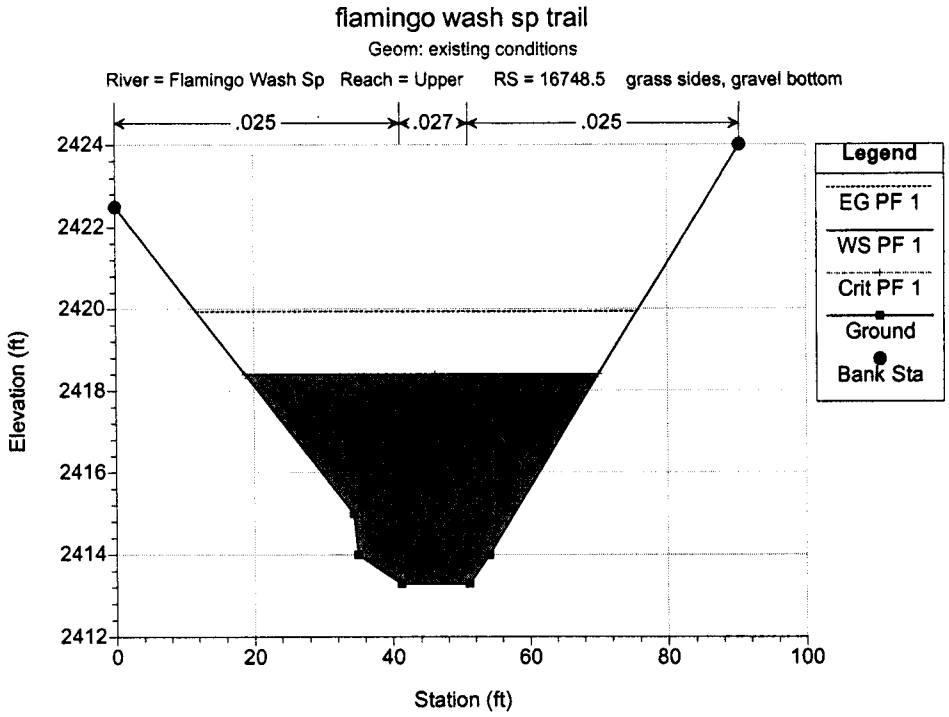

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17140.8 Culv cart path crossing 4
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

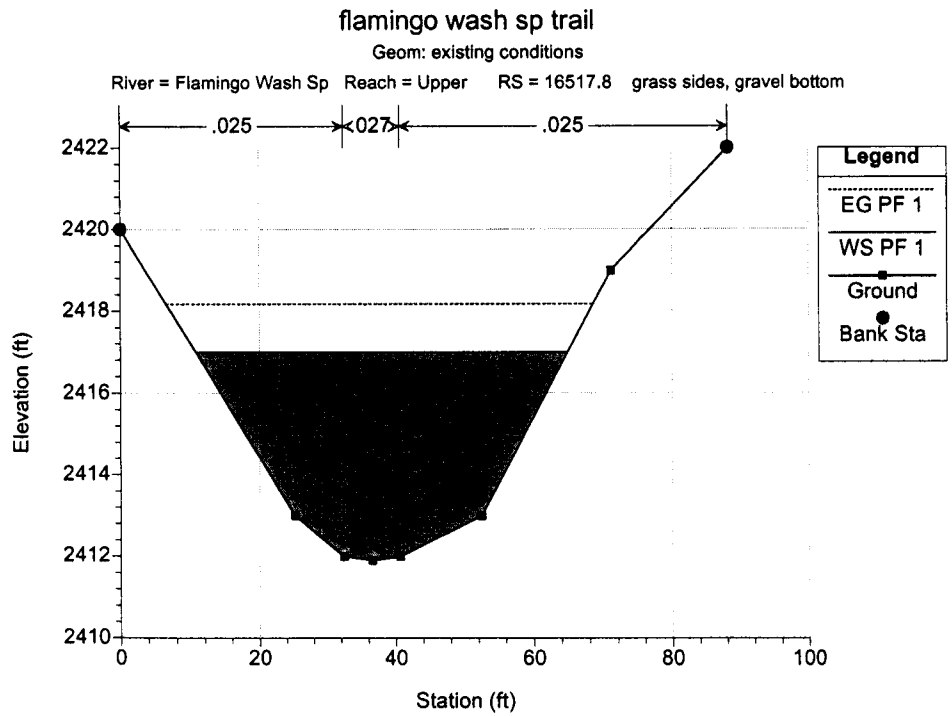

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17108.8 d/s face of cart path culvert
.025
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

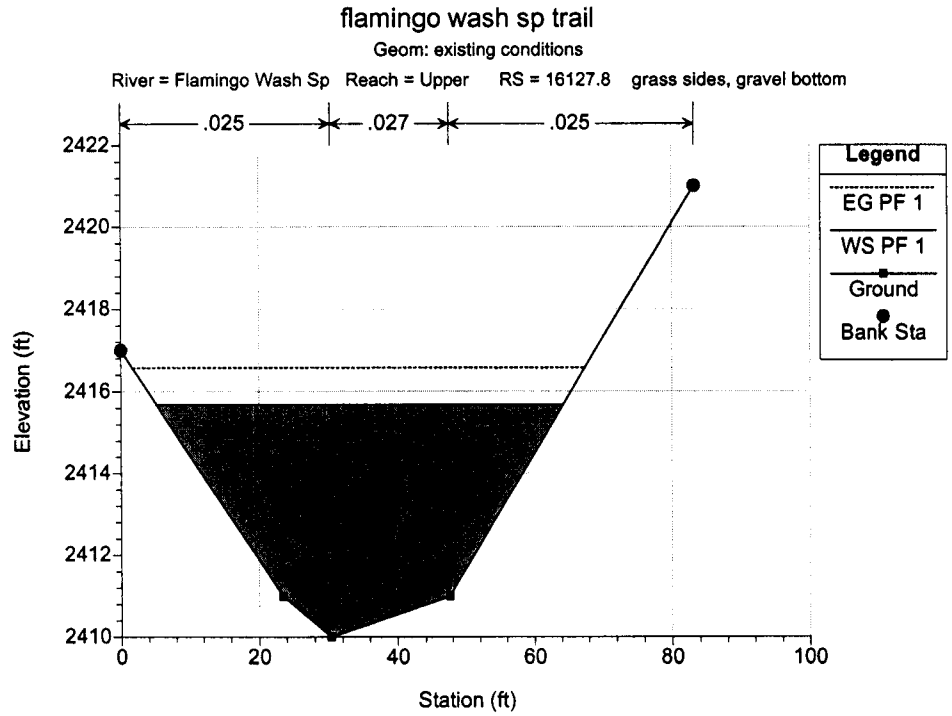

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17098.8 lt side grass, gravel bottom & rt side
.025
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

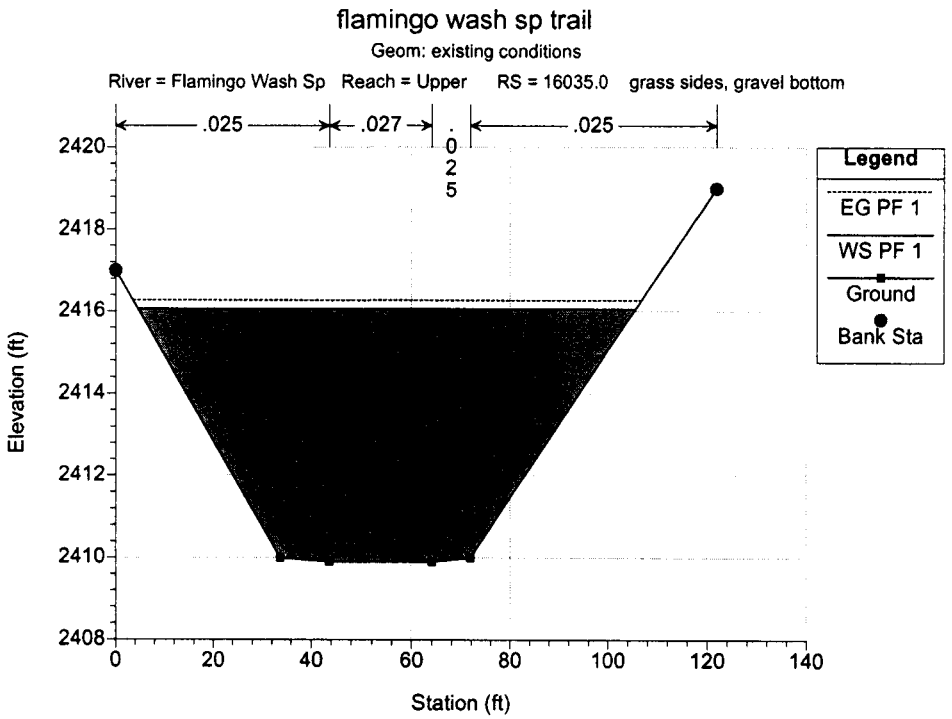

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 17065.8 shrubs left side, gravel bottom, grass right side
.027
.15
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

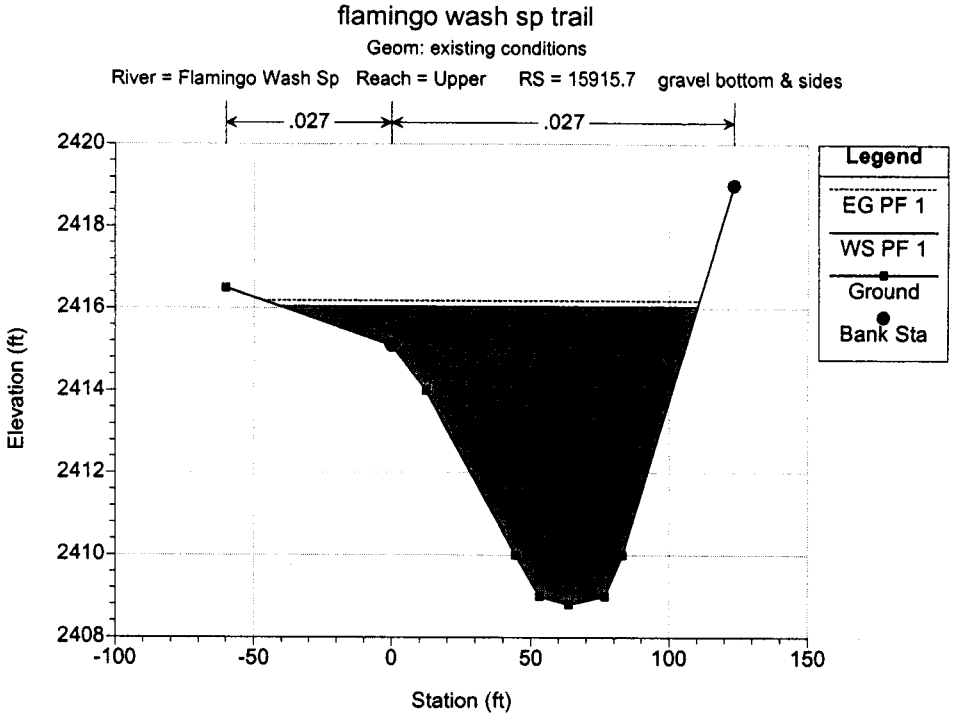

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 16956.5 grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

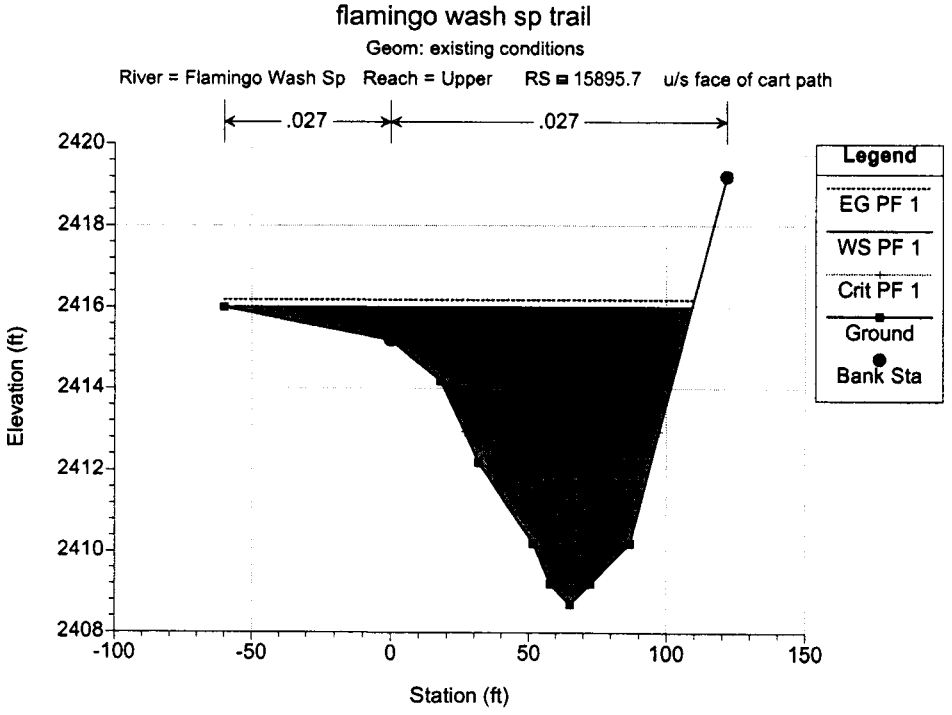

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 16748.5 grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

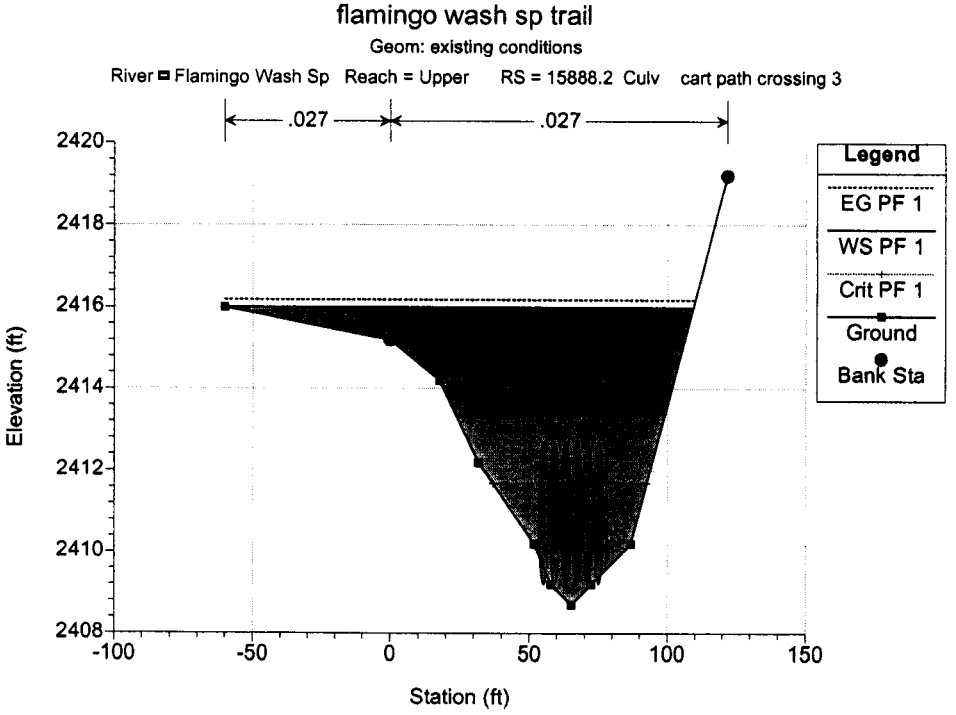

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 16517.8 grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

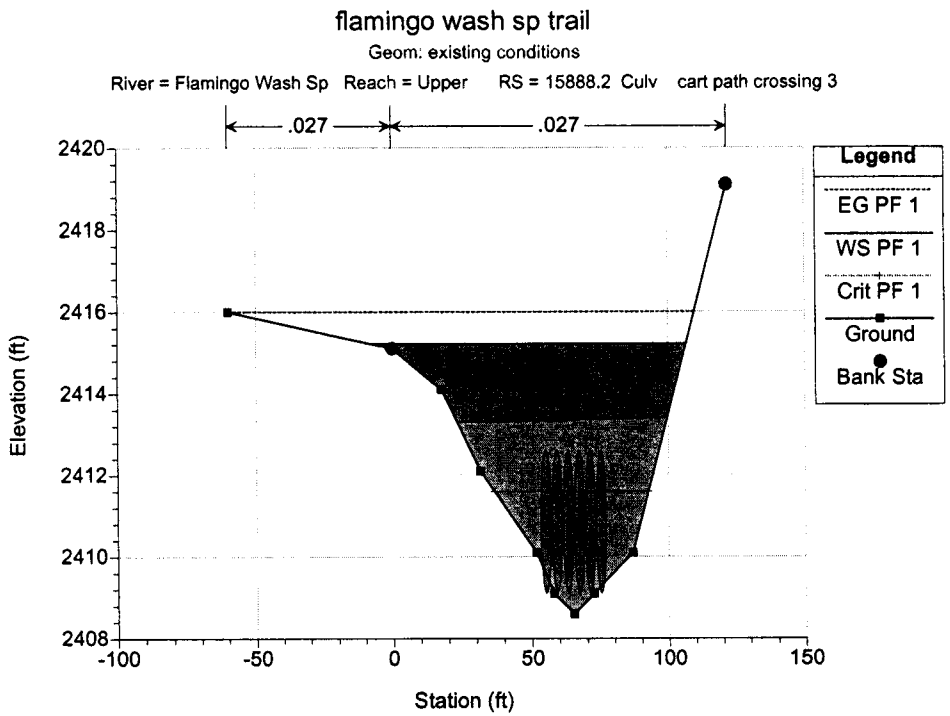

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 16127.8 grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

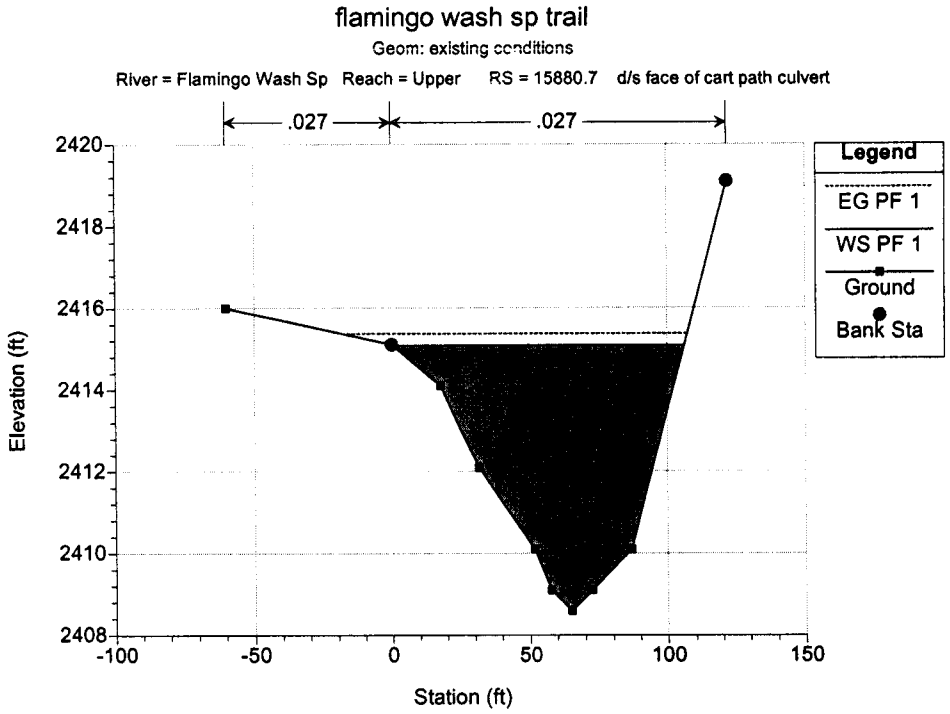

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 16035.0 grass sides, gravel bottom
.025
.027
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

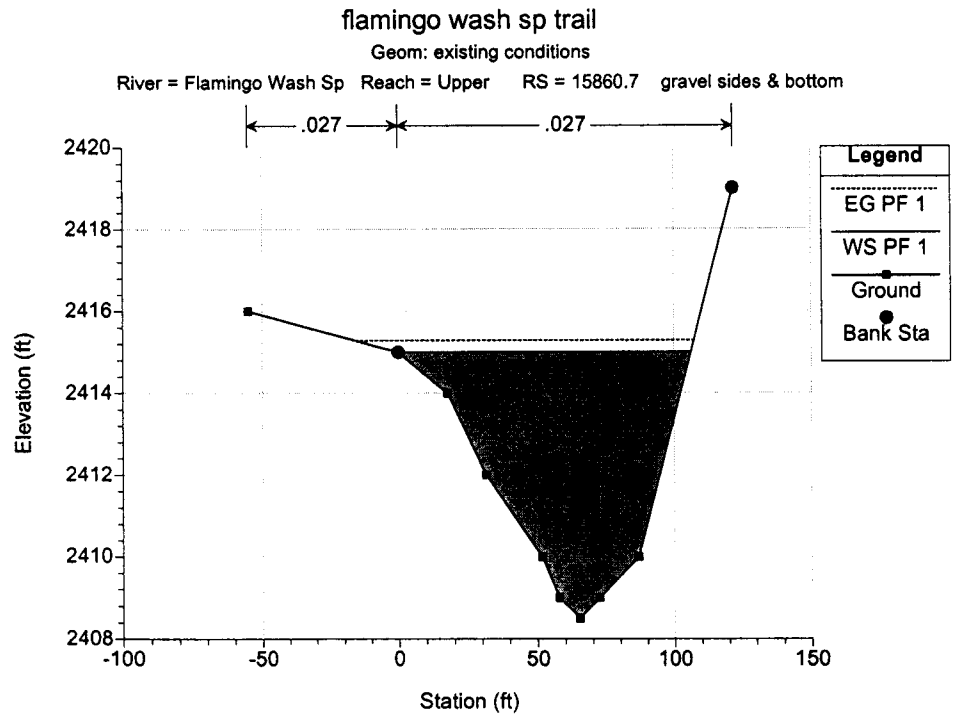

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15915.7 gravel bottom & sides
.027
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

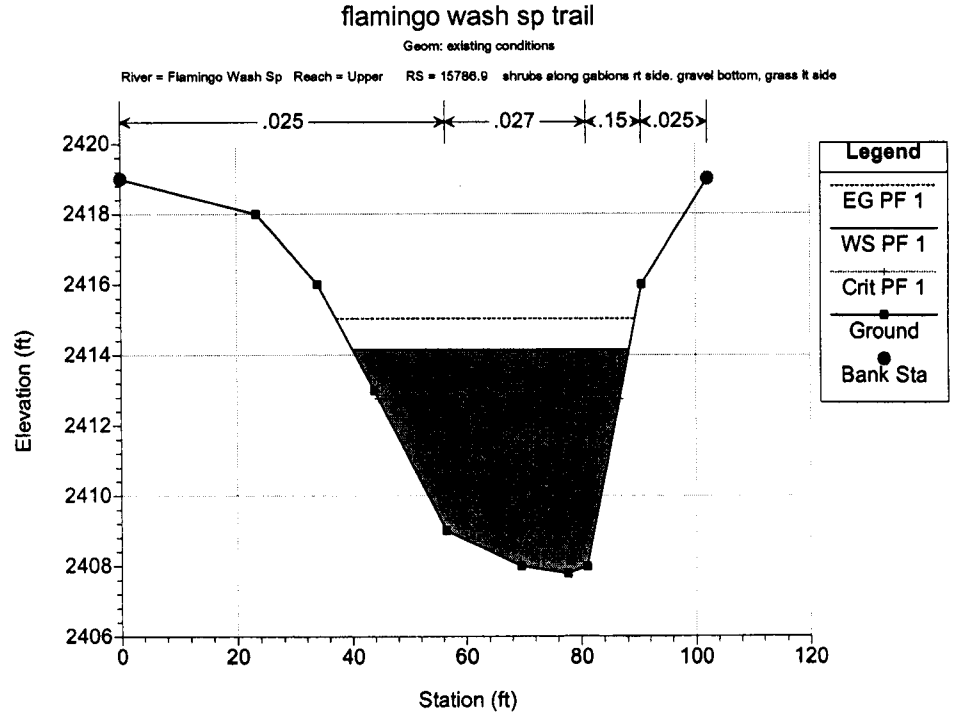

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15895.7 u/s face of cart path
.027
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

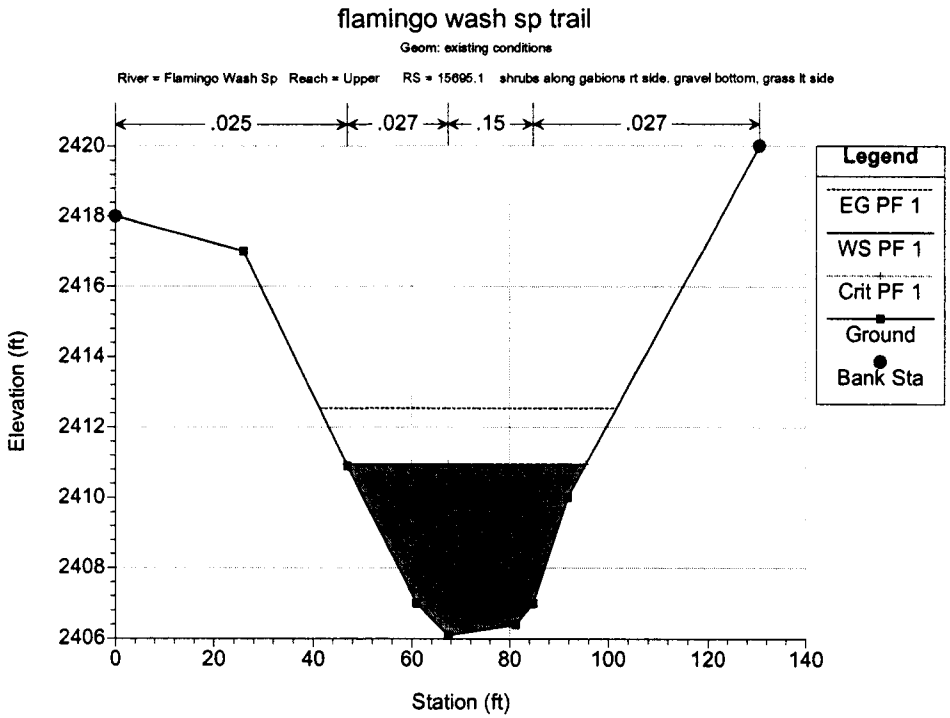

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15888.2 Culv cart path crossing 3
.027
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

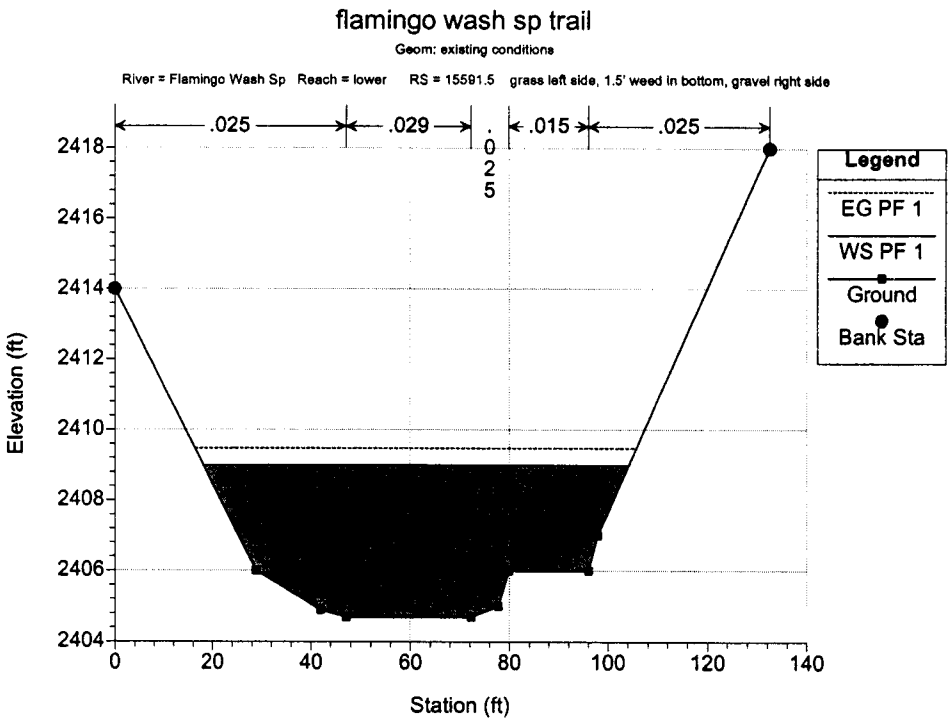

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15888.2 Culv cart path crossing 3
.027
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

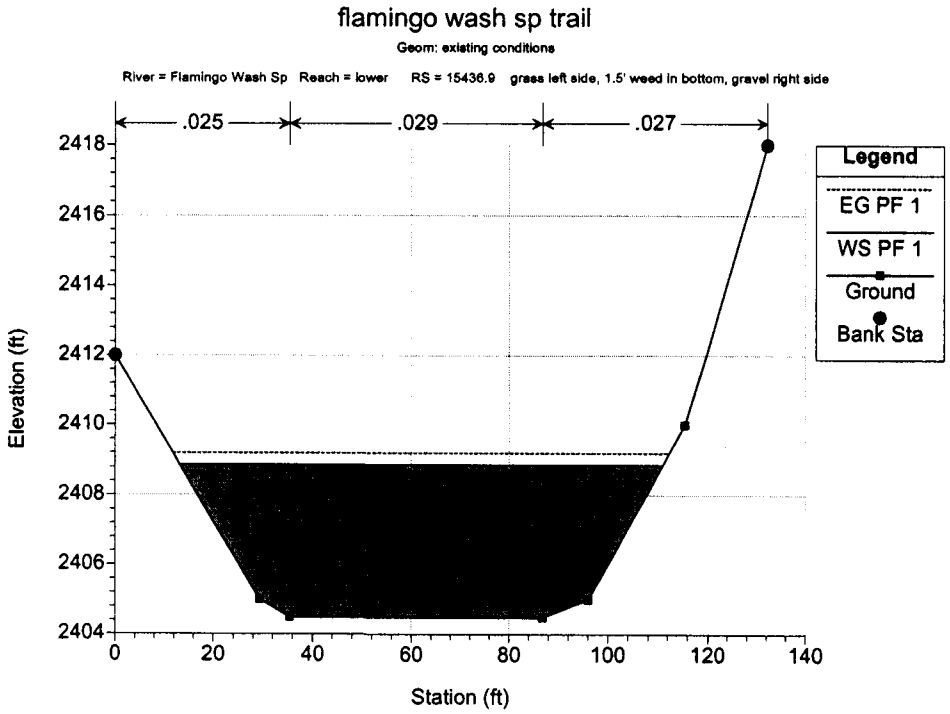

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15880.7 d/s face of cart path culvert
.027
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

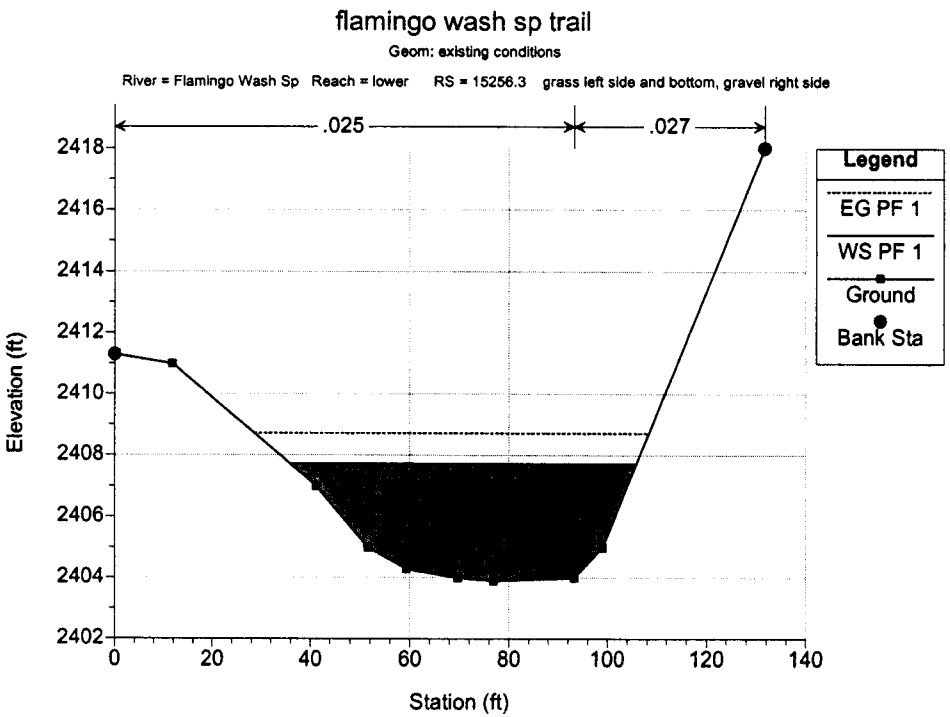

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15860.7 gravel sides & bottom
.027
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

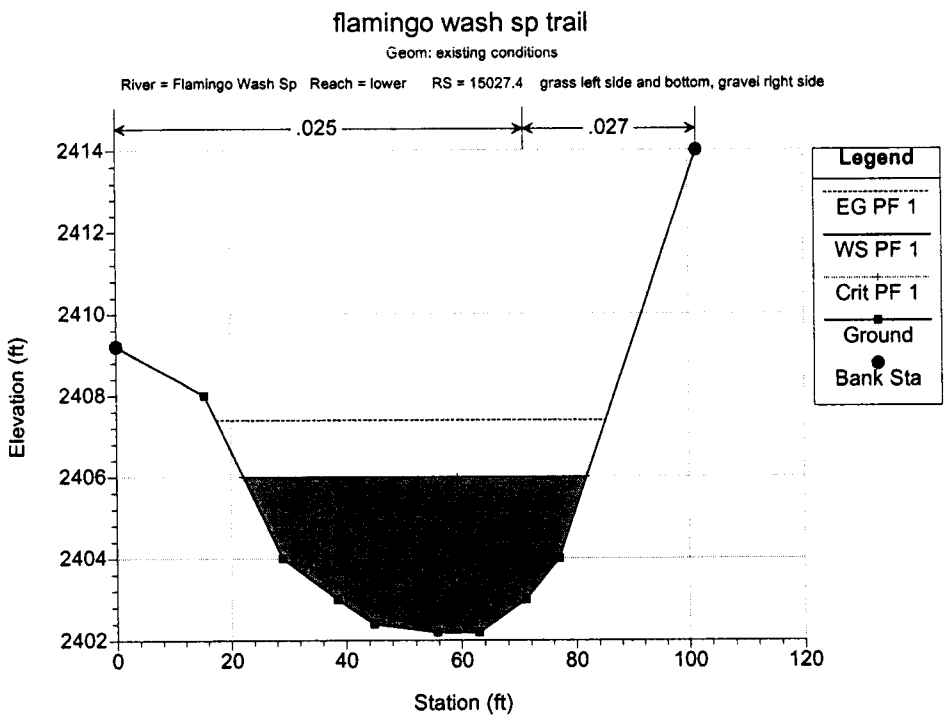

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15786.9 shrubs along gabions rt side, gravel bottom, grass lt side
.025
.027
.15
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

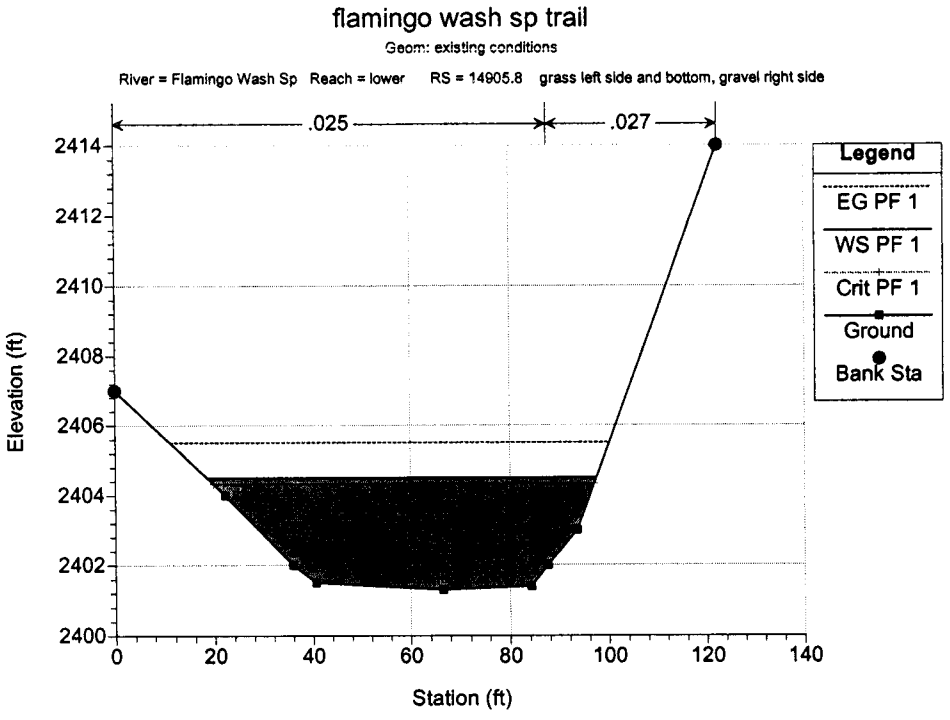

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = Upper RS = 15695.1 shrubs along gabions rt side, gravel bottom, grass lt side
.025
.027
.15
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

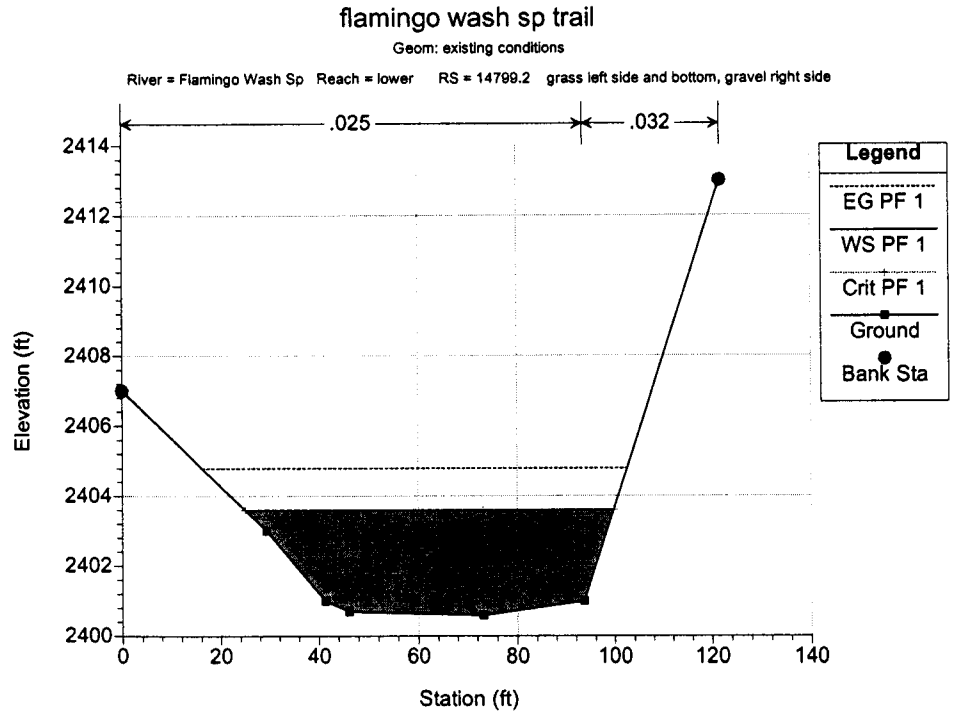

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 15591.5 grass left side, 1.5' weed in bottom, gravel right side
.025
.029
.025
.015
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

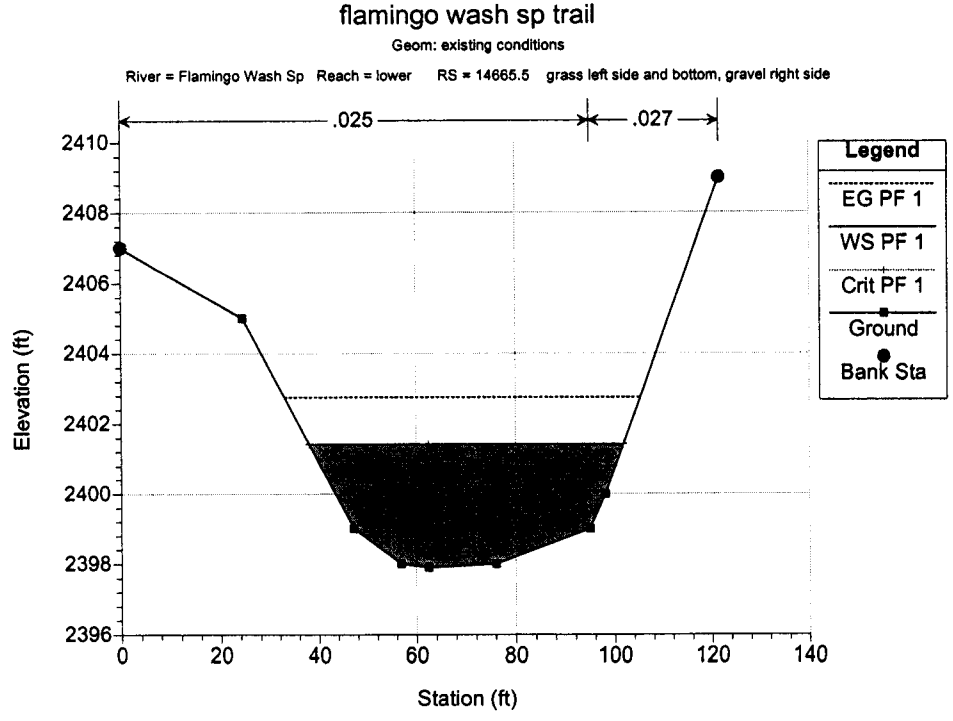

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 15436.9 grass left side, 1.5' weed in bottom, gravel right side
.025
.029
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

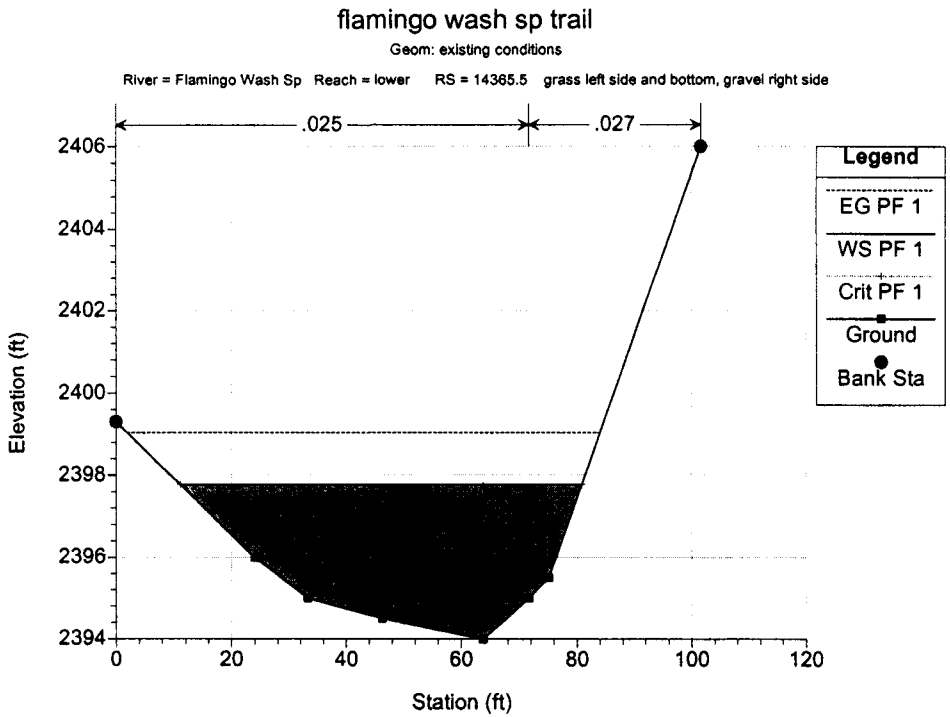

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 15256.3 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

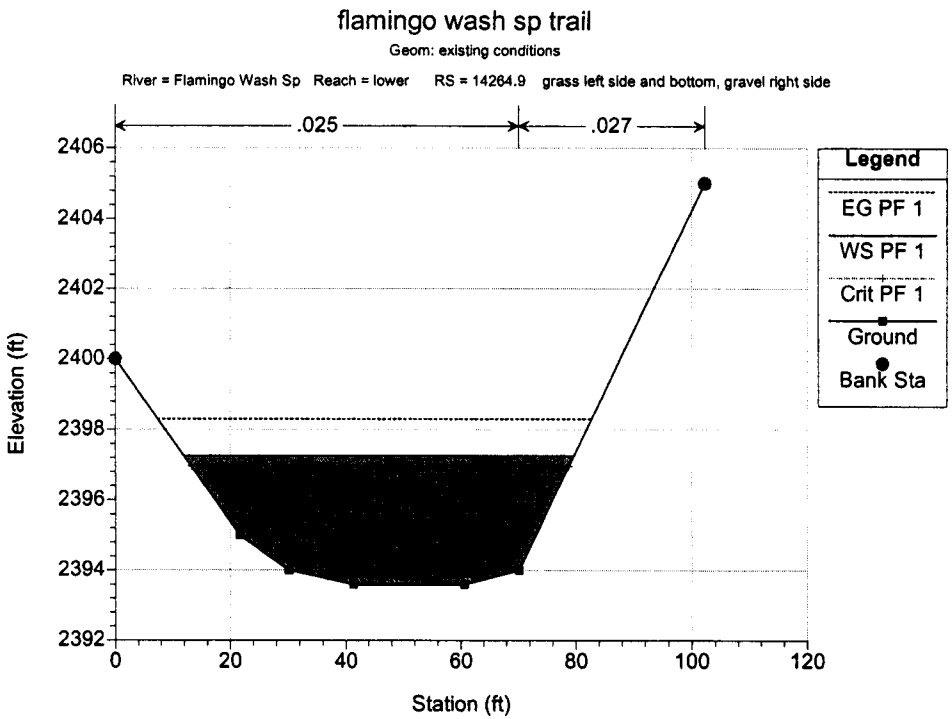

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 15027.4 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

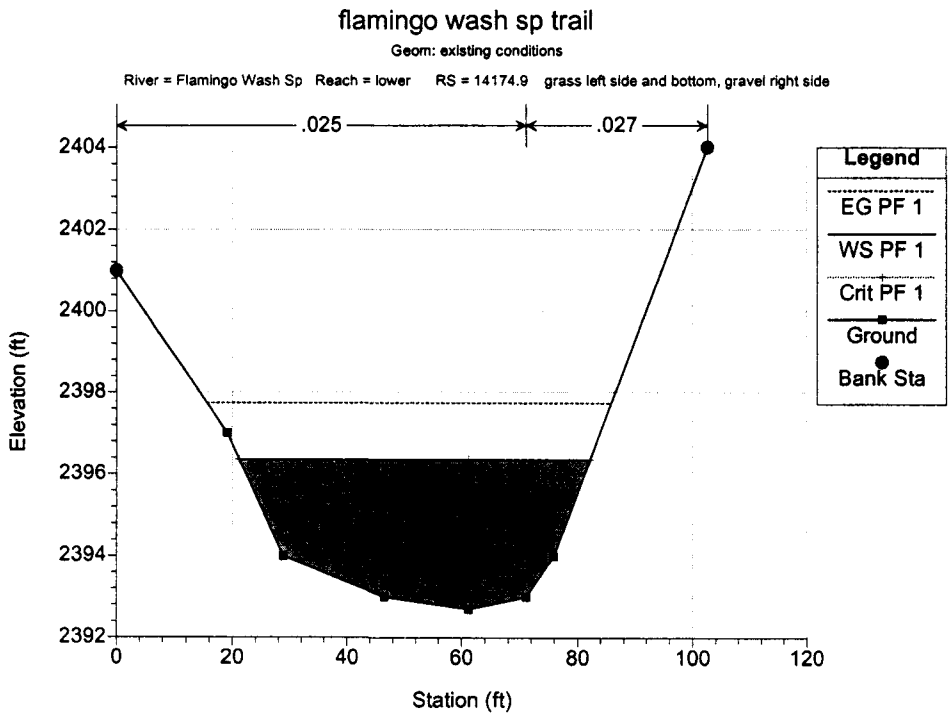

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14905.8 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

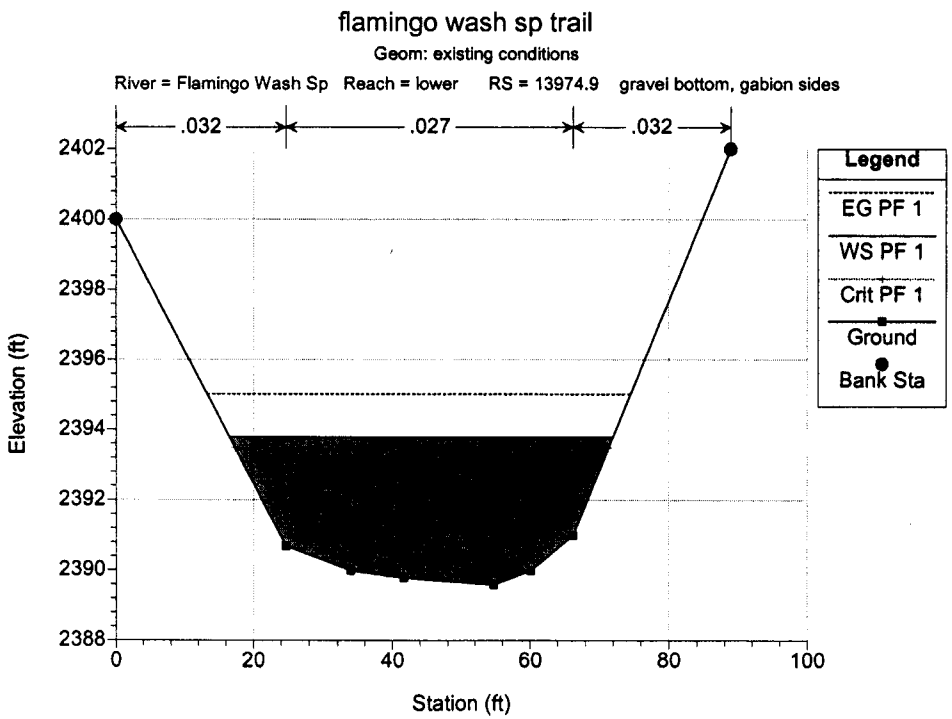

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14799.2 grass left side and bottom, gravel right side
.025
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

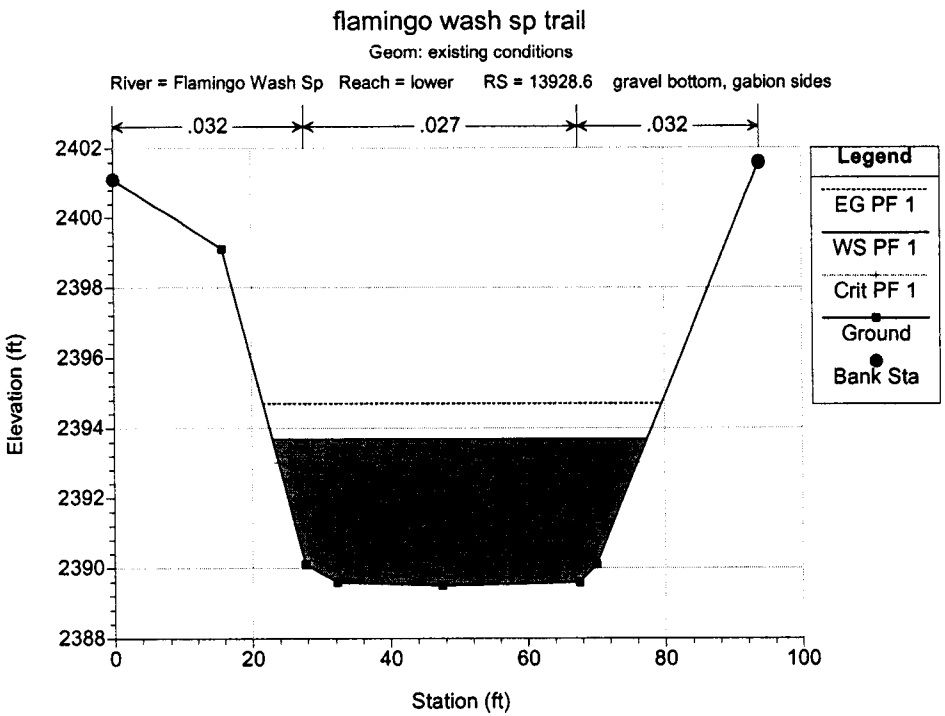

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14665.5 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

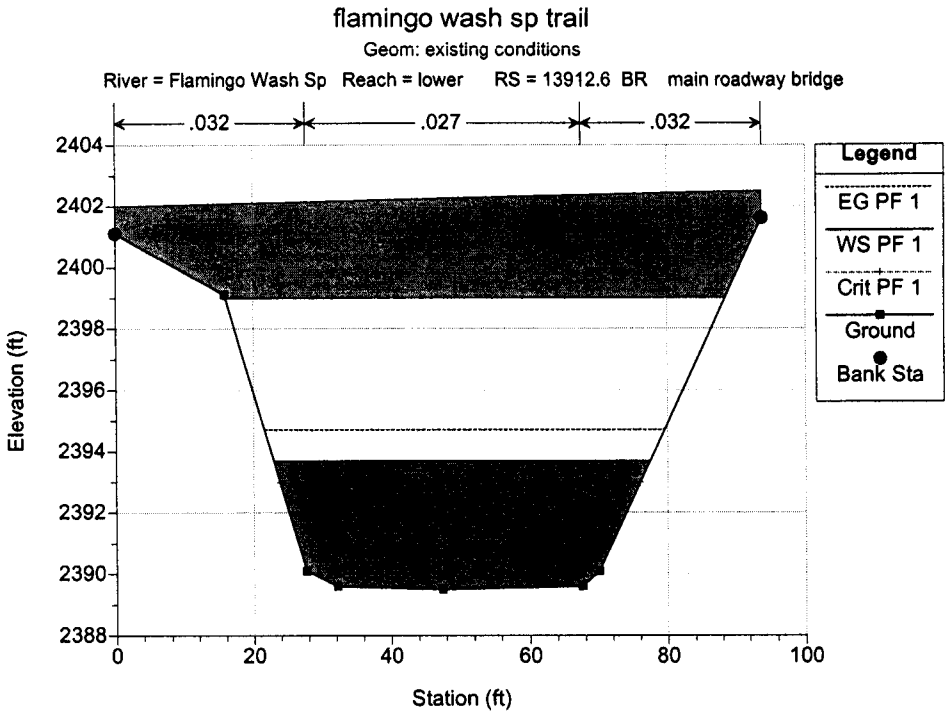

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14365.5 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

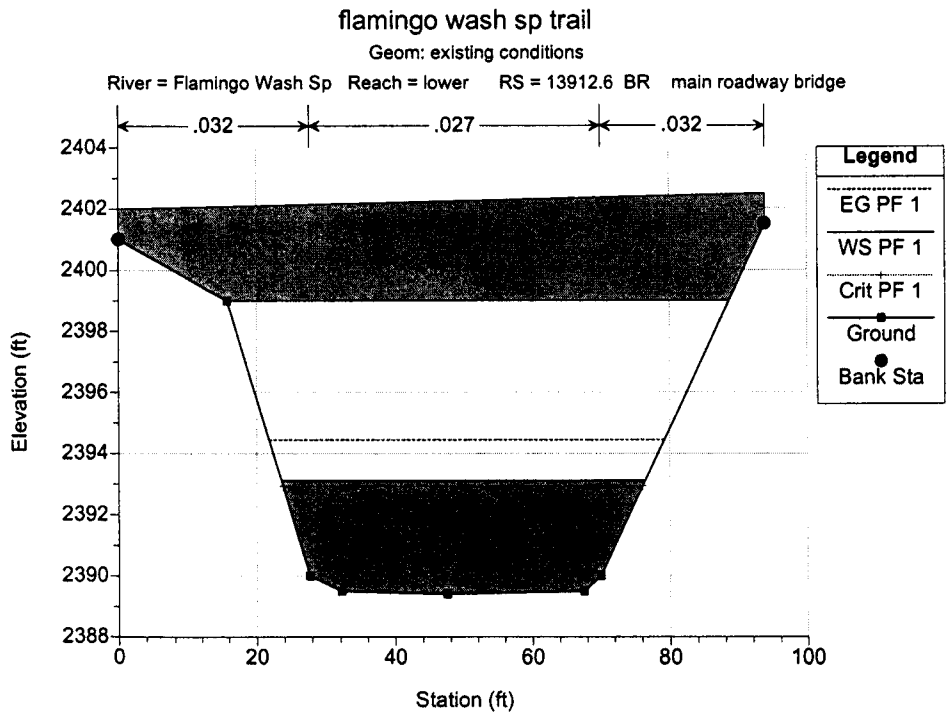

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14264.9 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

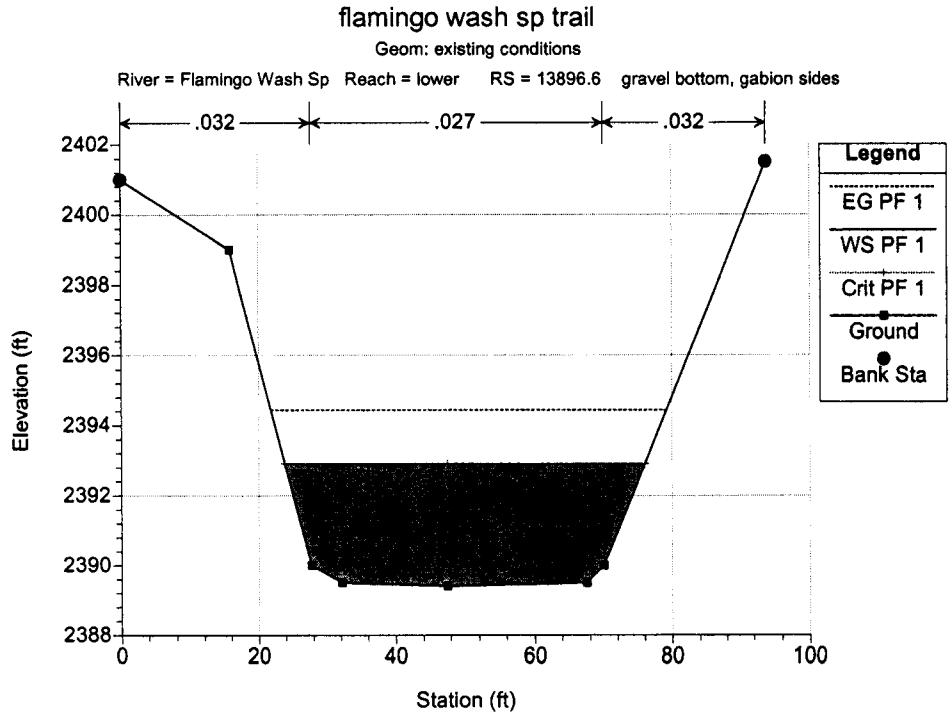

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 14174.9 grass left side and bottom, gravel right side
.025
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

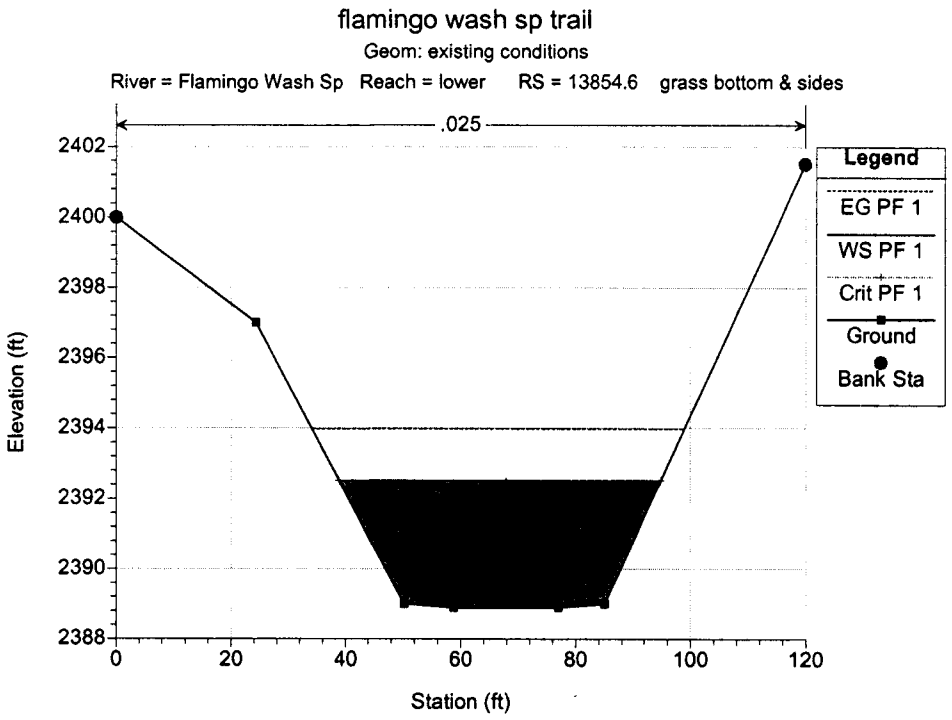

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13974.9 gravel bottom, gabion sides
.032
.027
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

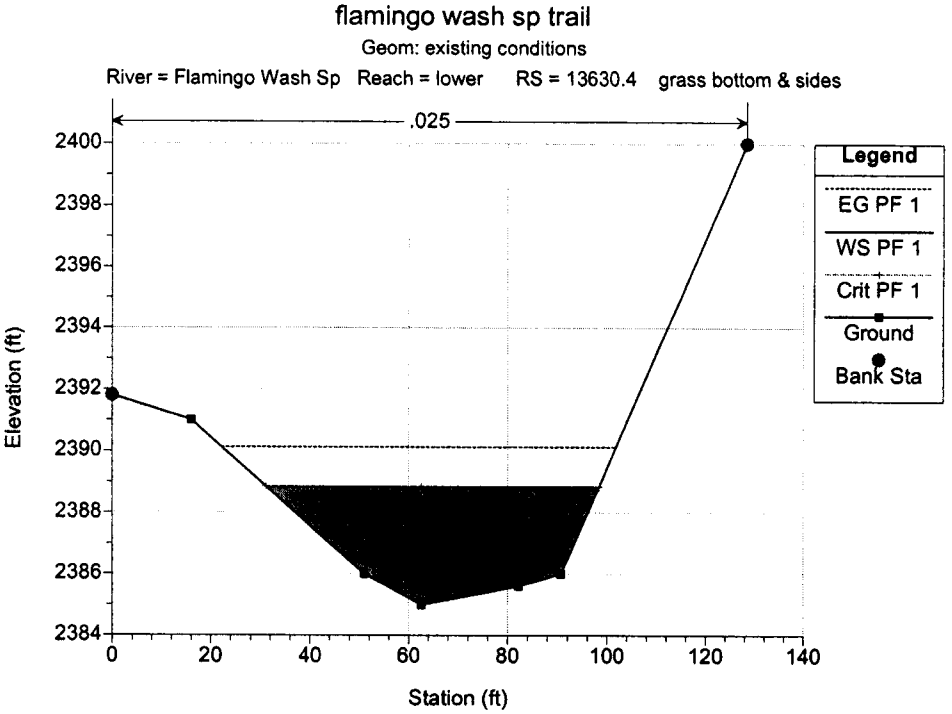

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13928.6 gravel bottom, gabion sides
.032
.027
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

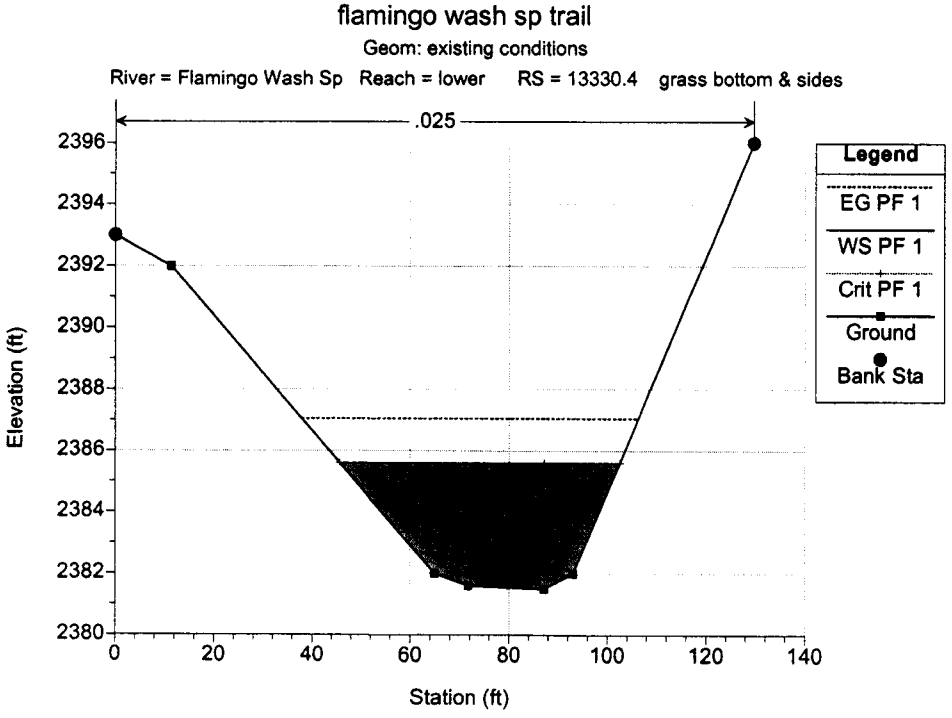

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13912.6 BR main roadway bridge
.032
.027
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

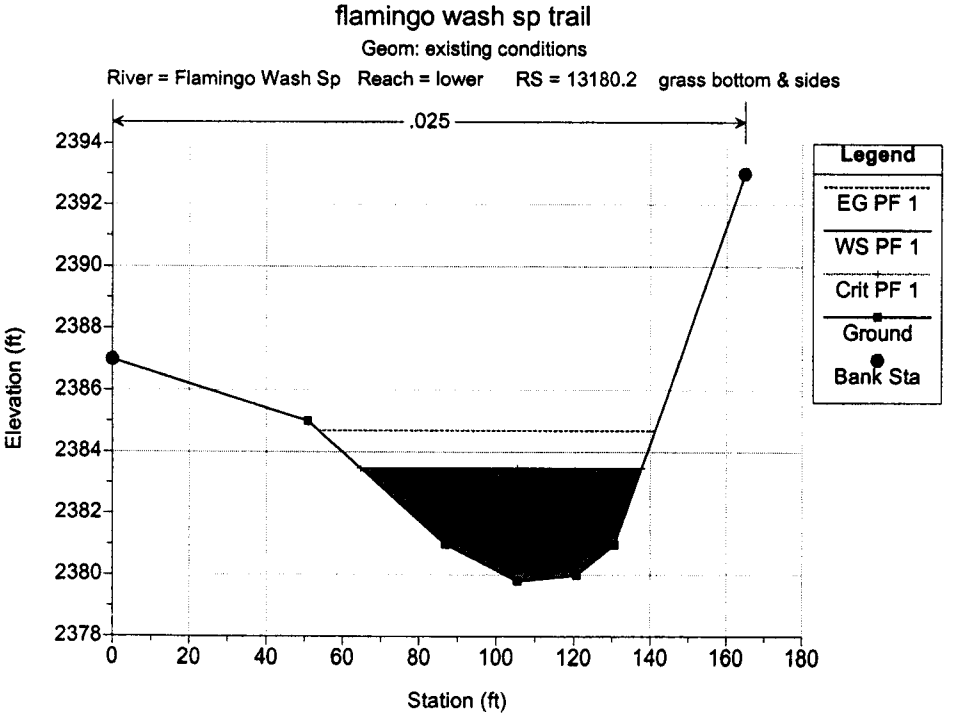

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13912.6 BR main roadway bridge
.032
.027
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

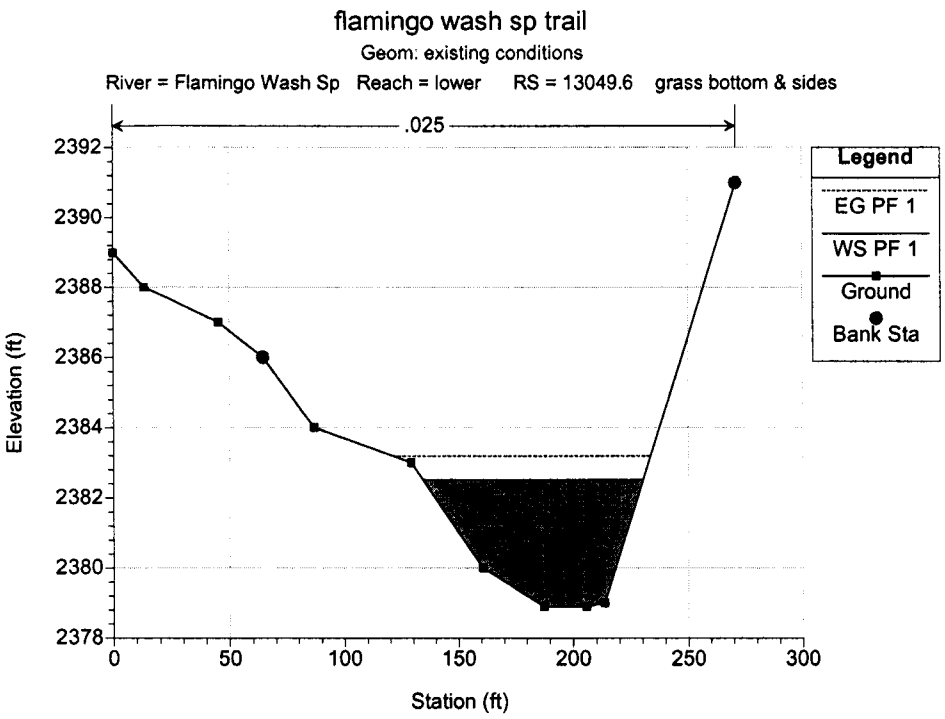

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13896.6 gravel bottom, gabion sides
.032
.027
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

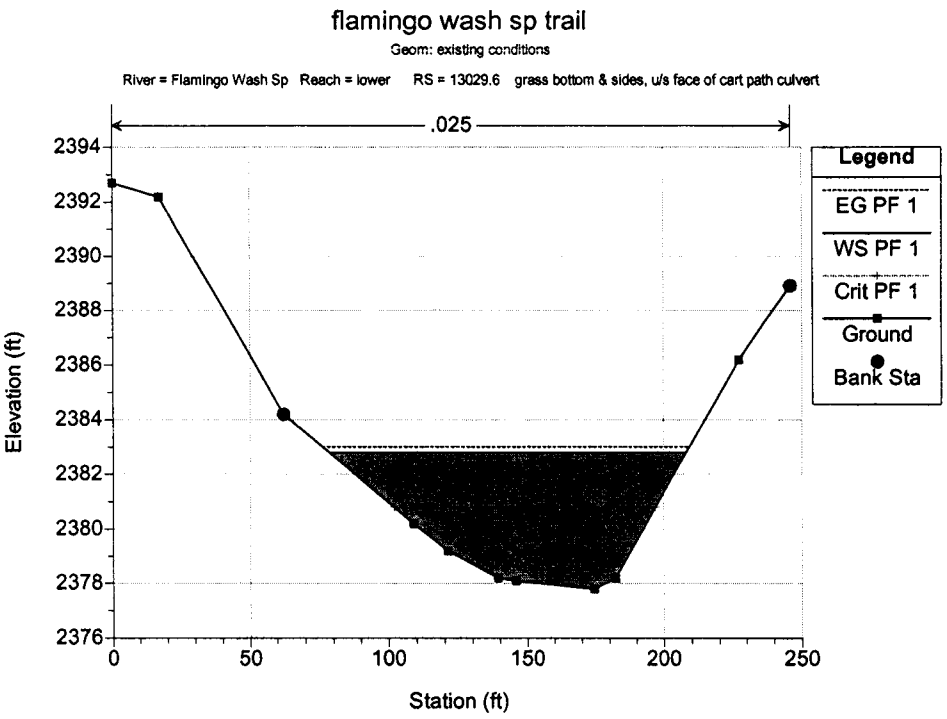

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13854.6 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

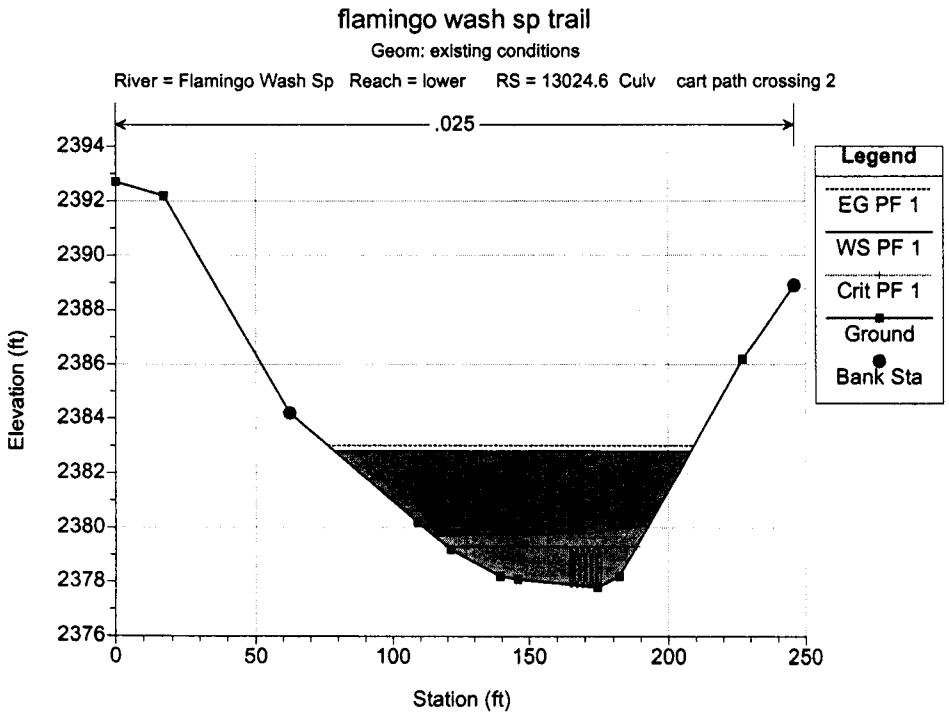

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13630.4 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

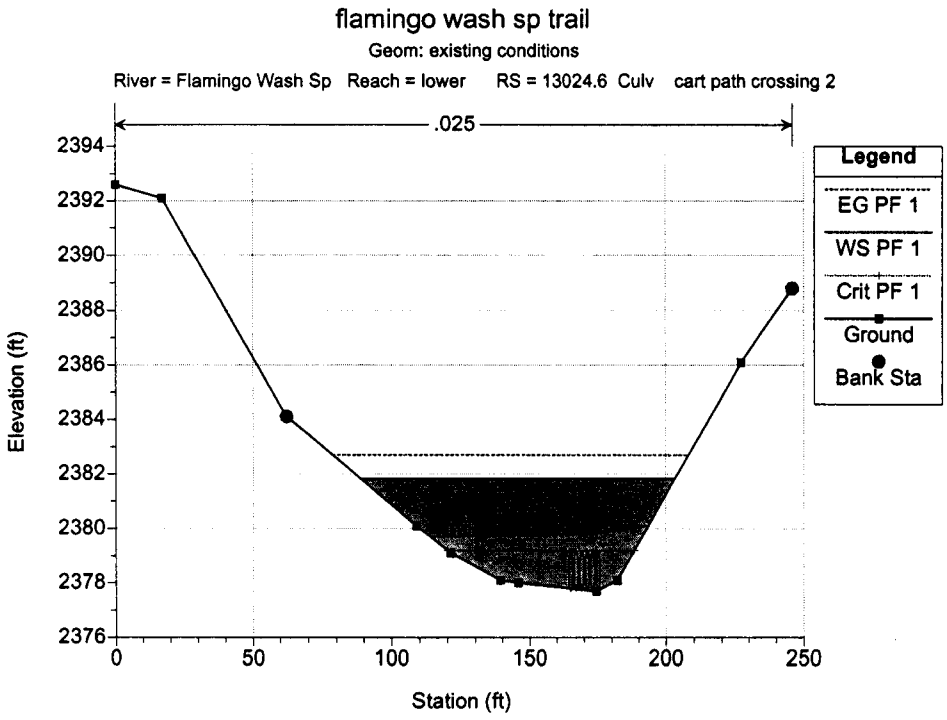

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13330.4 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

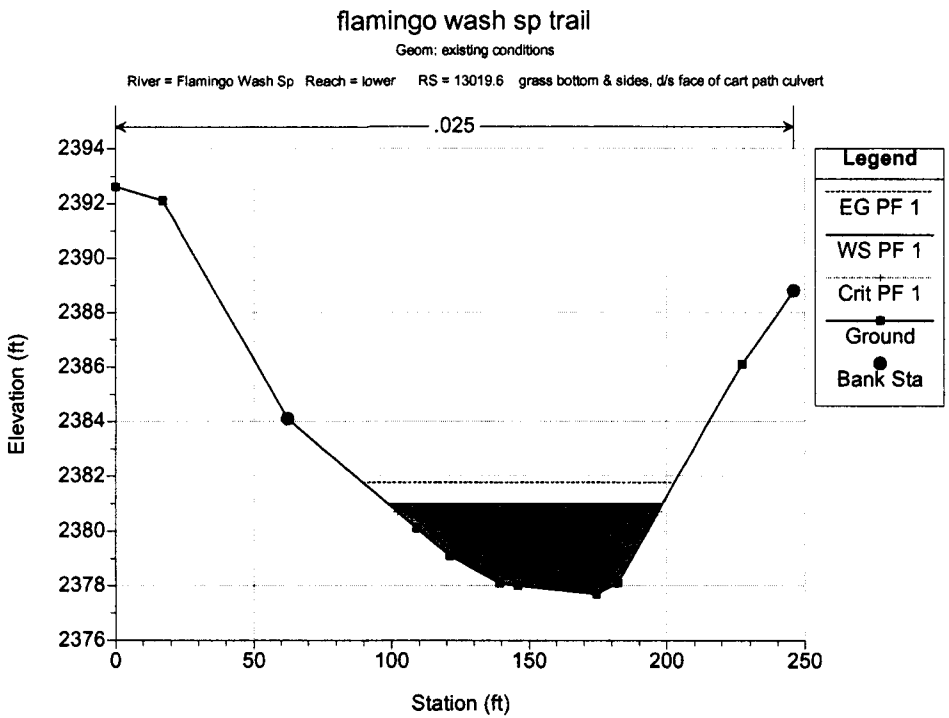

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13180.2 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

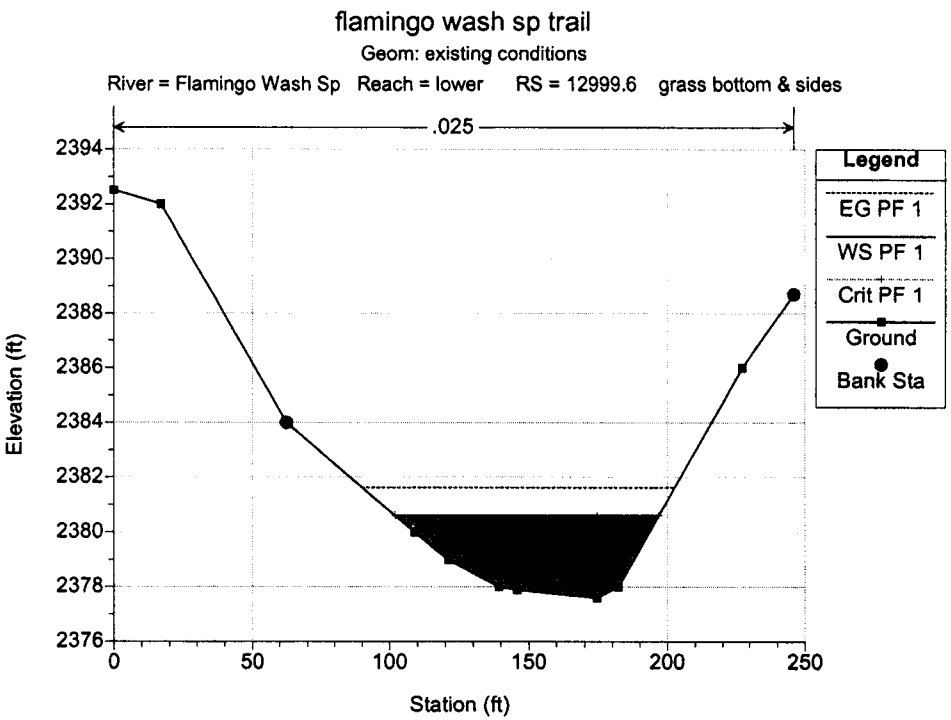

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13049.6 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

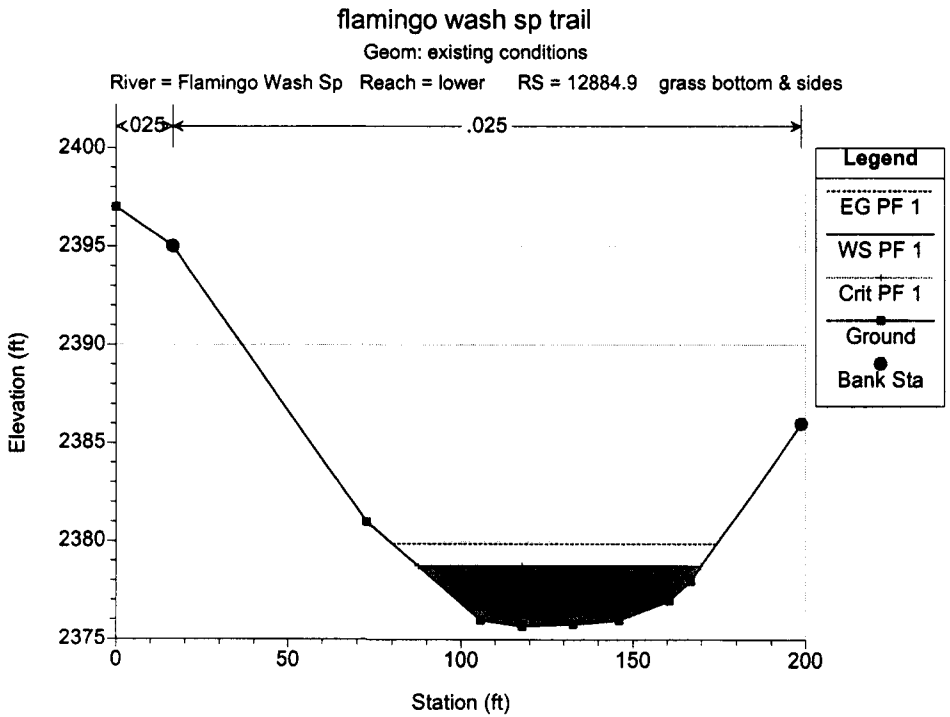

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13029.6 grass bottom & sides, u/s face of cart path culvert
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

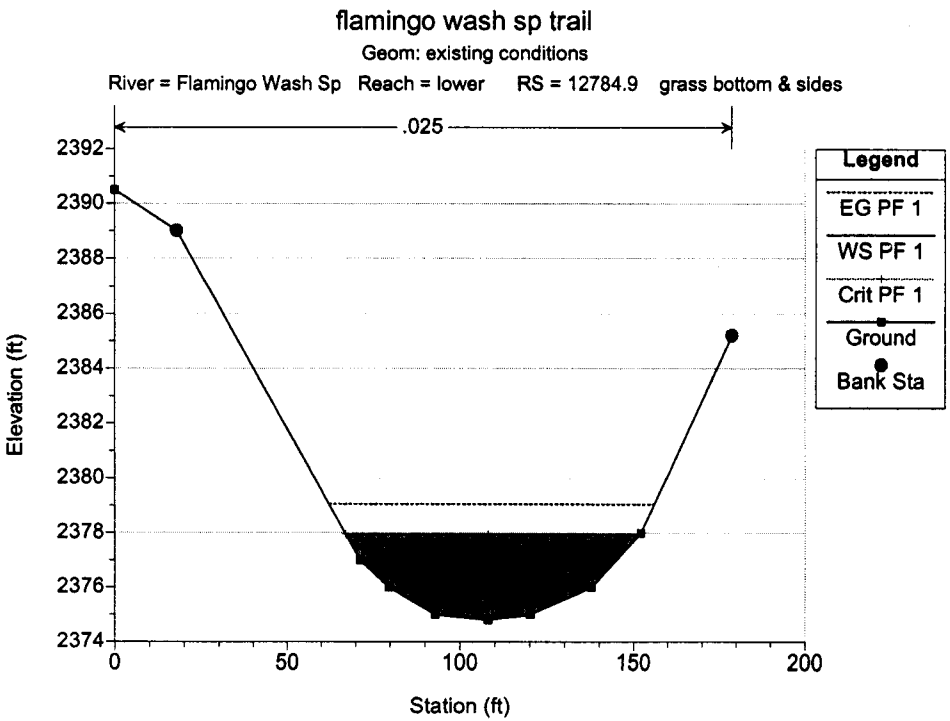

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13024.6 Culv cart path crossing 2
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

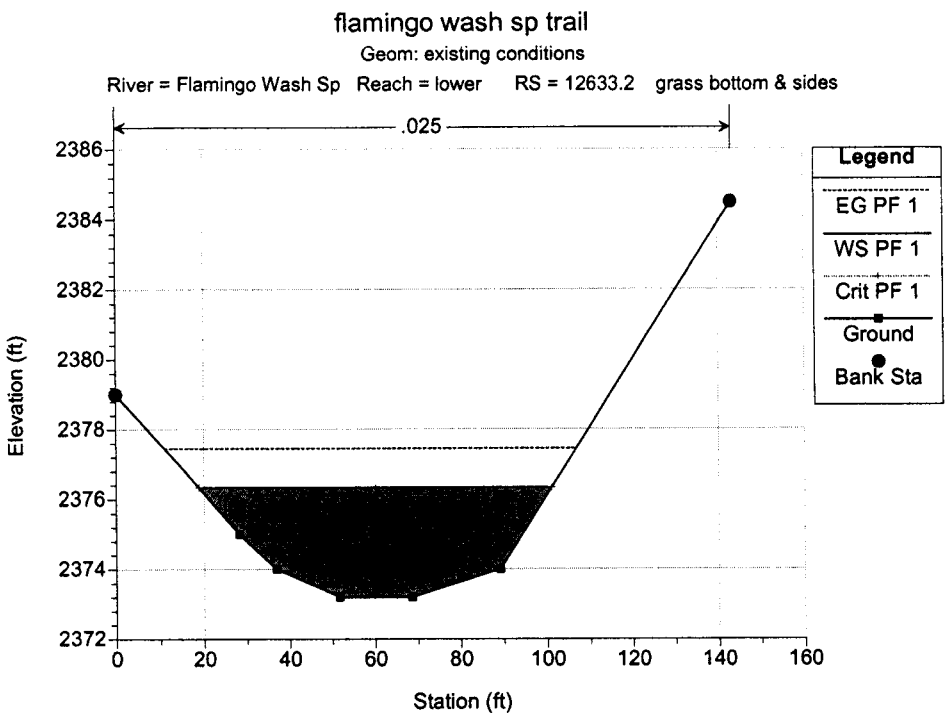

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13024.6 Culv cart path crossing 2
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

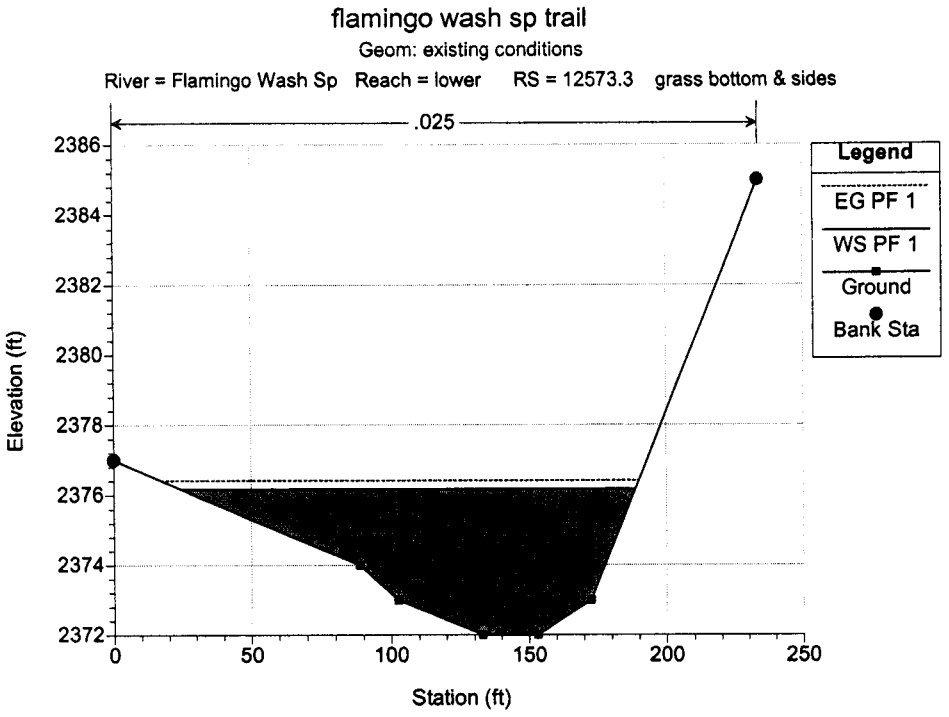

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 13019.6 grass bottom & sides, d/s face of cart path culvert
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

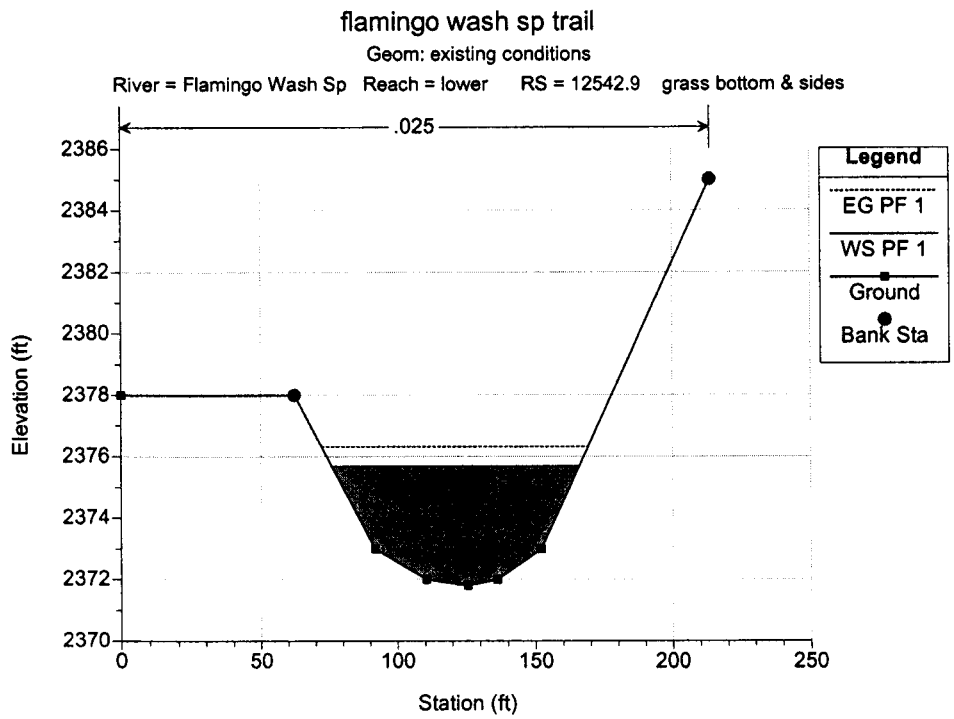

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12999.6 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

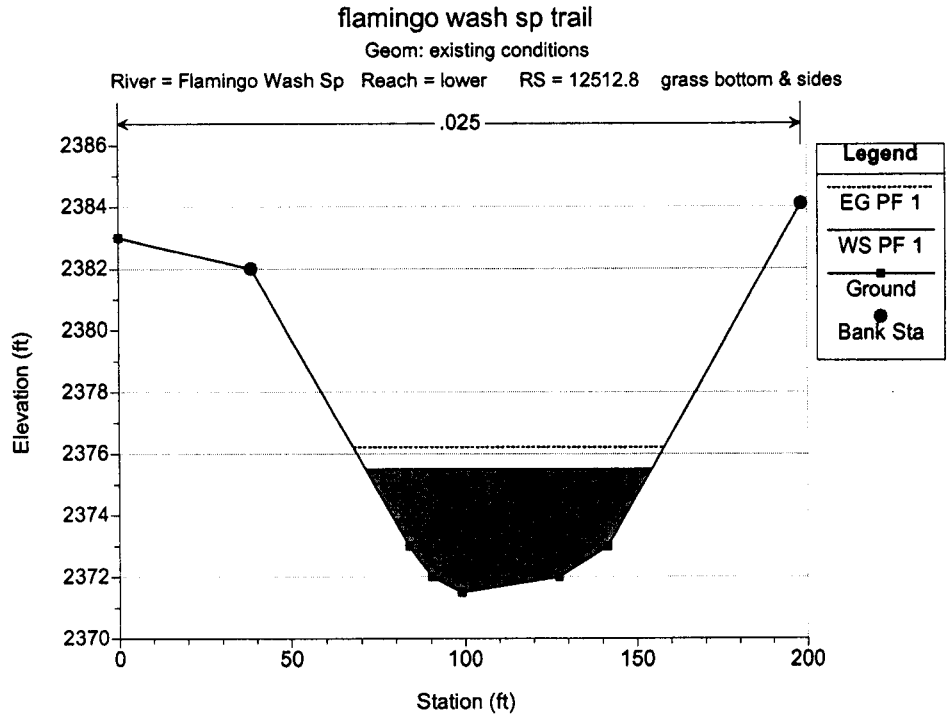

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12884.9 grass bottom & sides
.025
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

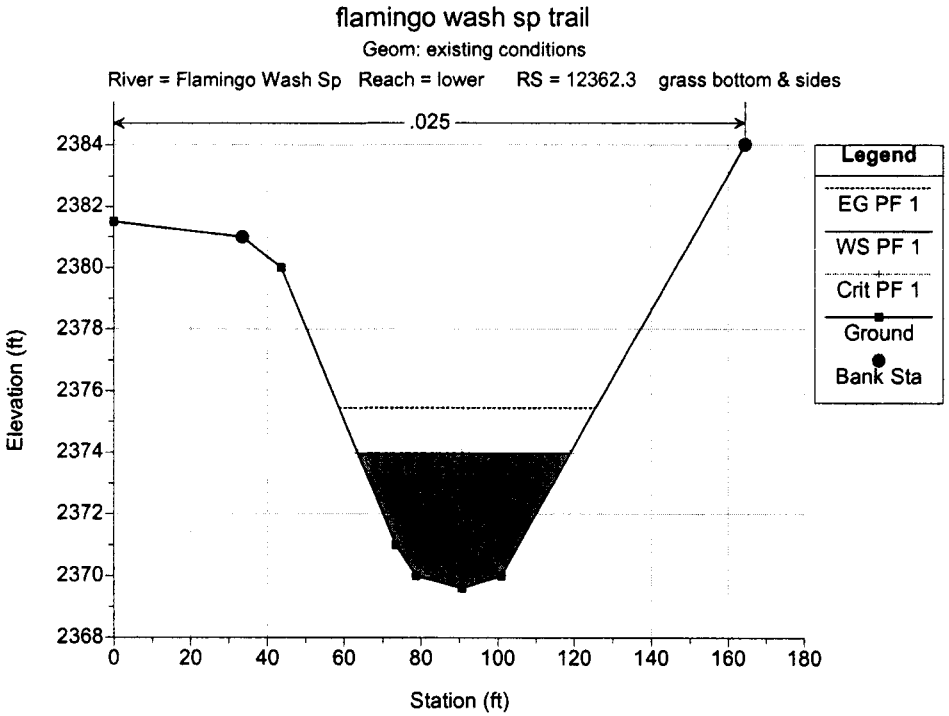

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12784.9 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

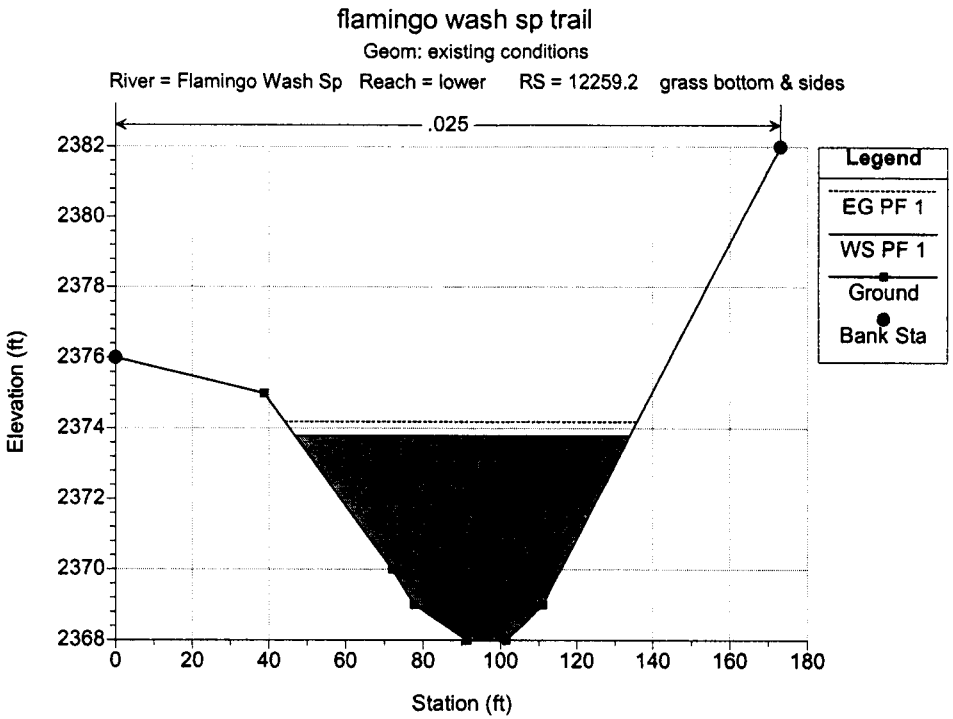

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12633.2 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

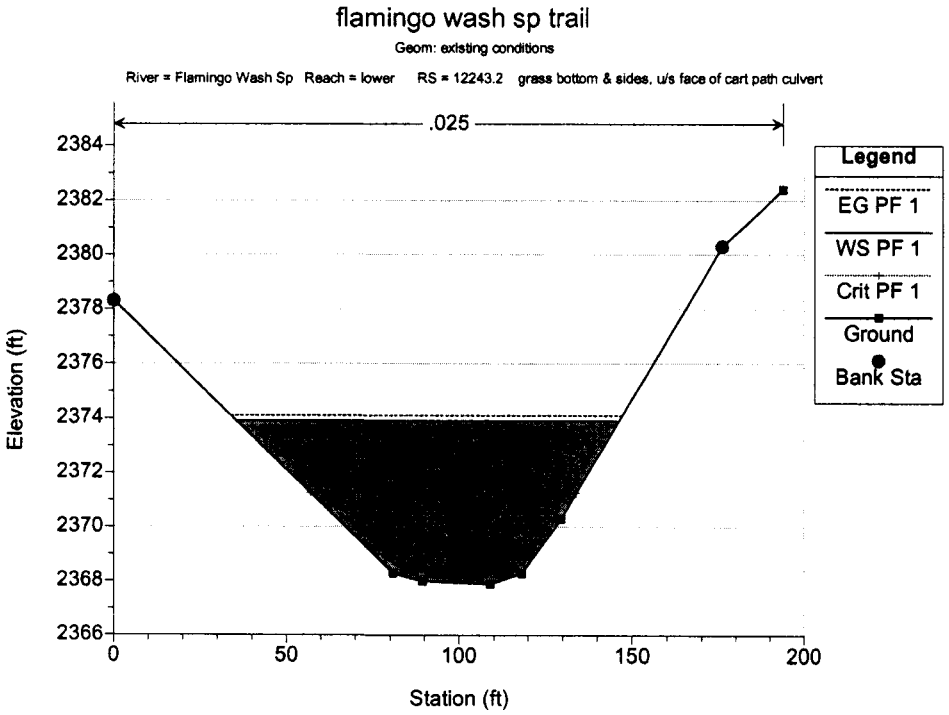

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12573.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

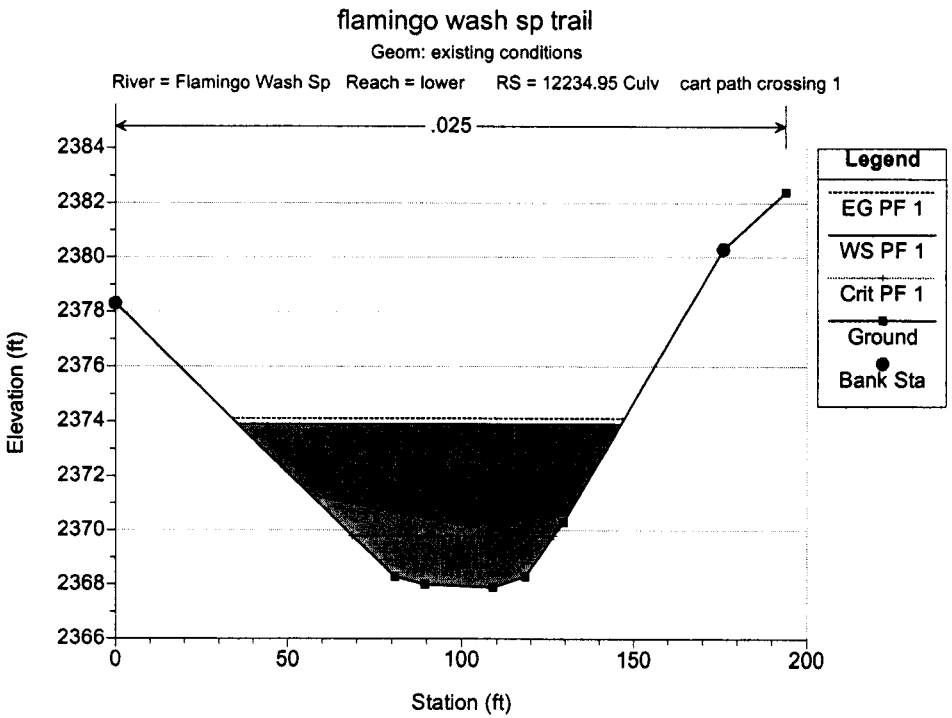

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12542.9 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

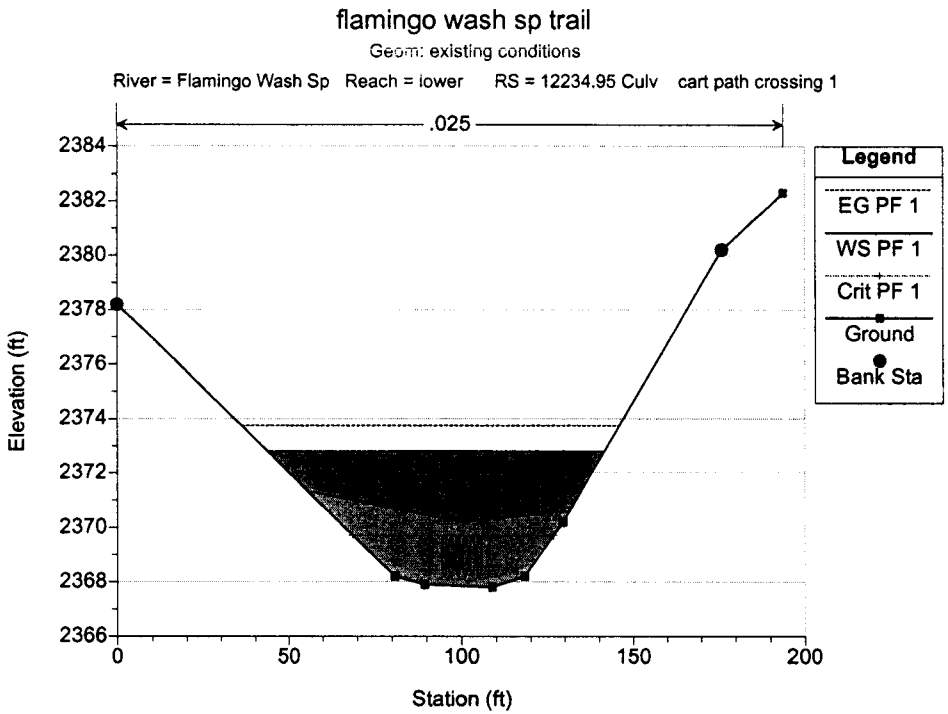

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12512.8 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

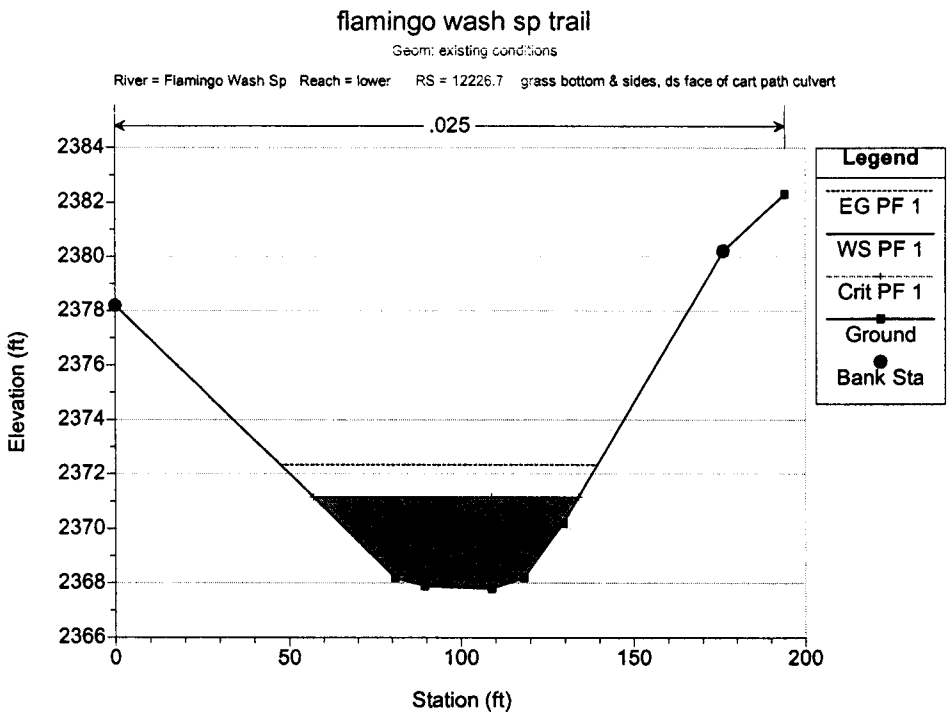

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12362.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

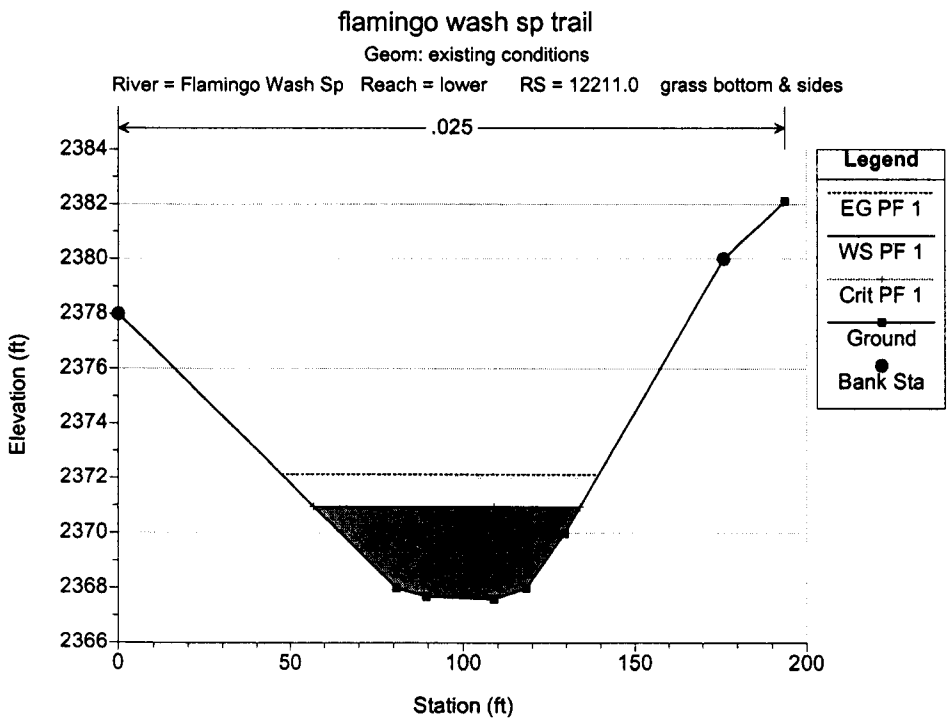

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12259.2 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

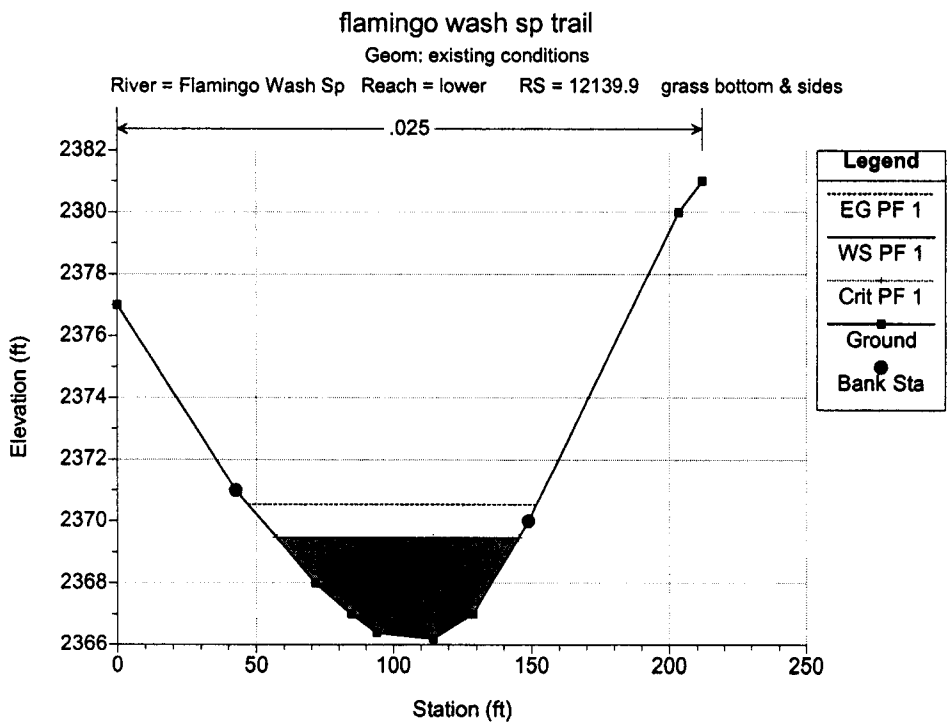

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12243.2 grass bottom & sides, u/s face of cart path culvert
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

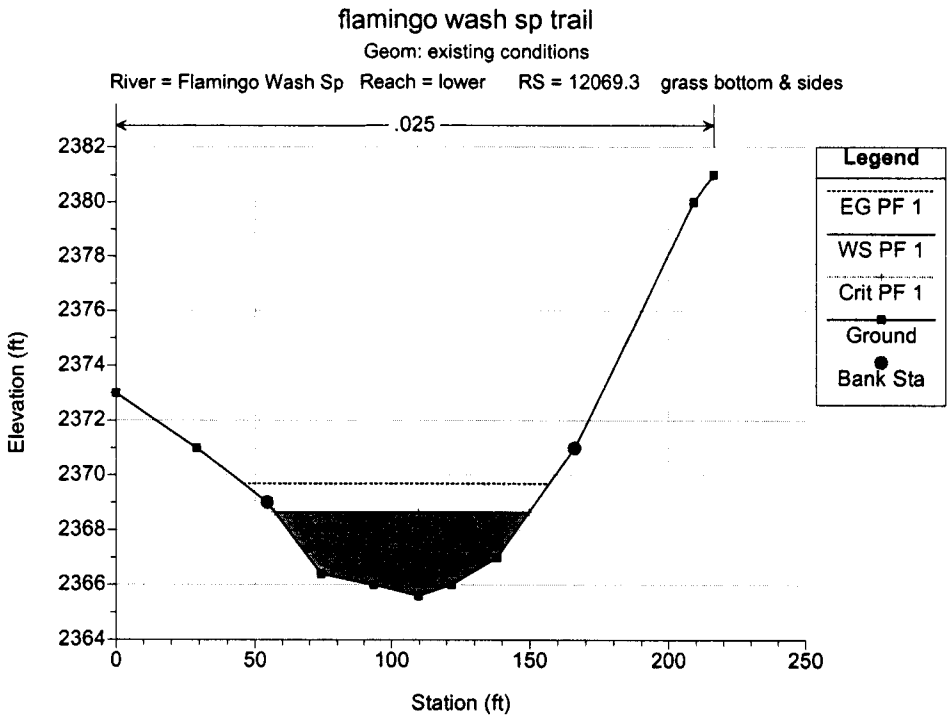

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12234.95 Culv cart path crossing 1
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

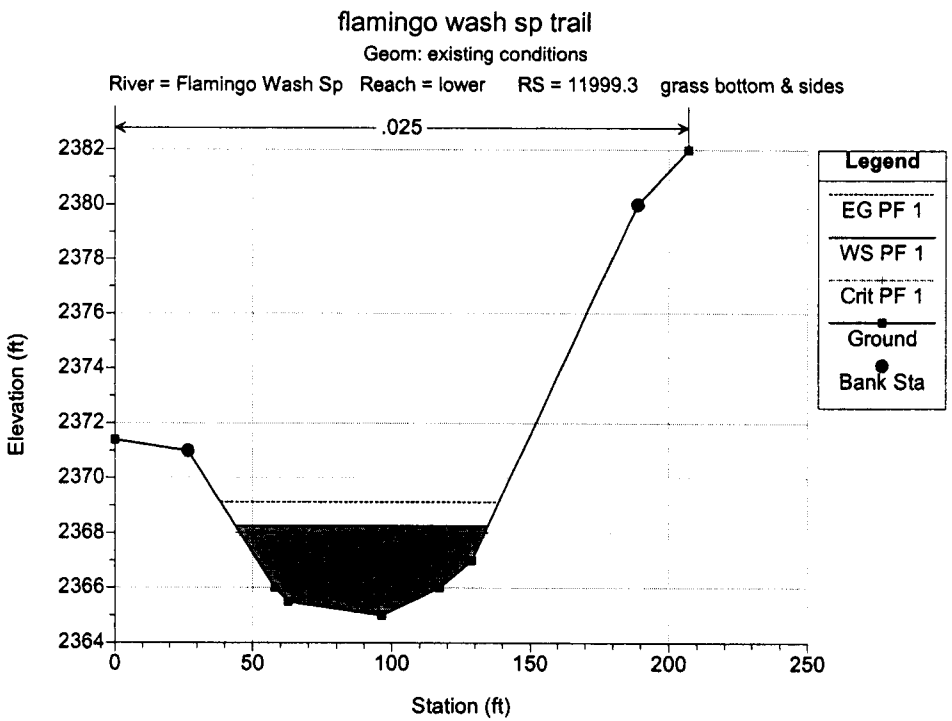

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12234.95 Culv cart path crossing 1
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2366
2368
2370
2372
2374
2376
2378
2380
2382
2384
0
50
100
150
200

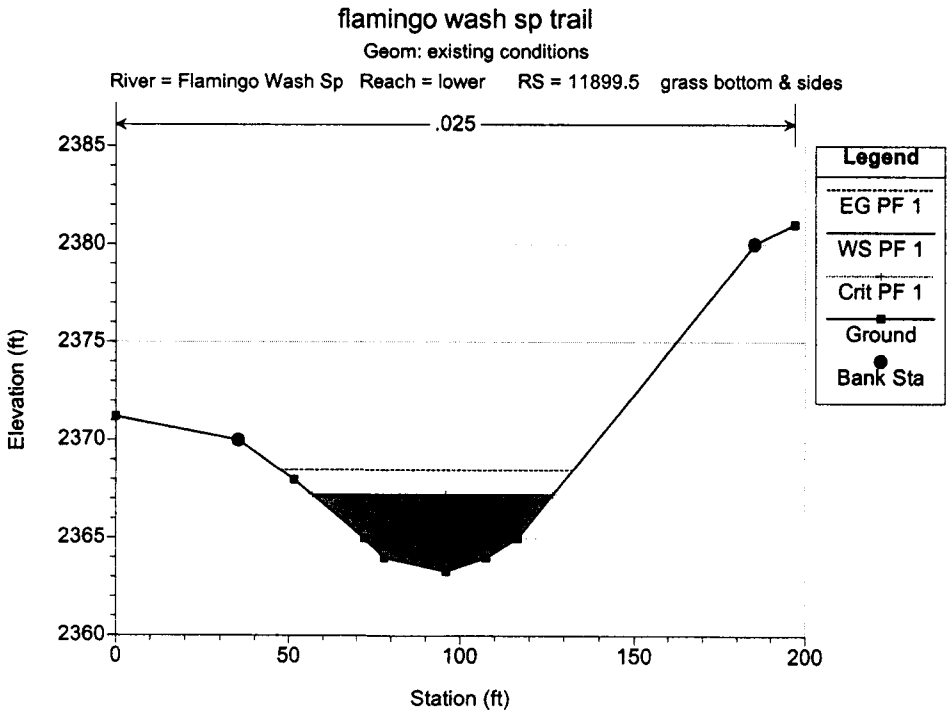

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12226.7 grass bottom & sides, ds face of cart path culvert
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2366
2368
2370
2372
2374
2376
2378
2380
2382
2384
0
50
100
150
200

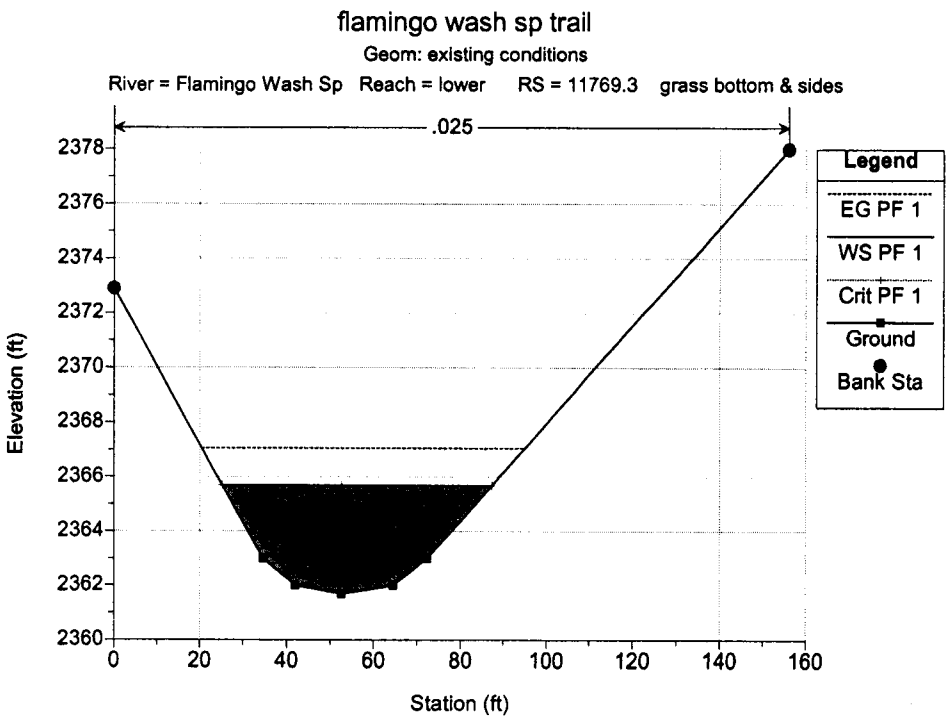

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12211.0 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2366
2368
2370
2372
2374
2376
2378
2380
2382
2384
0
50
100
150
200

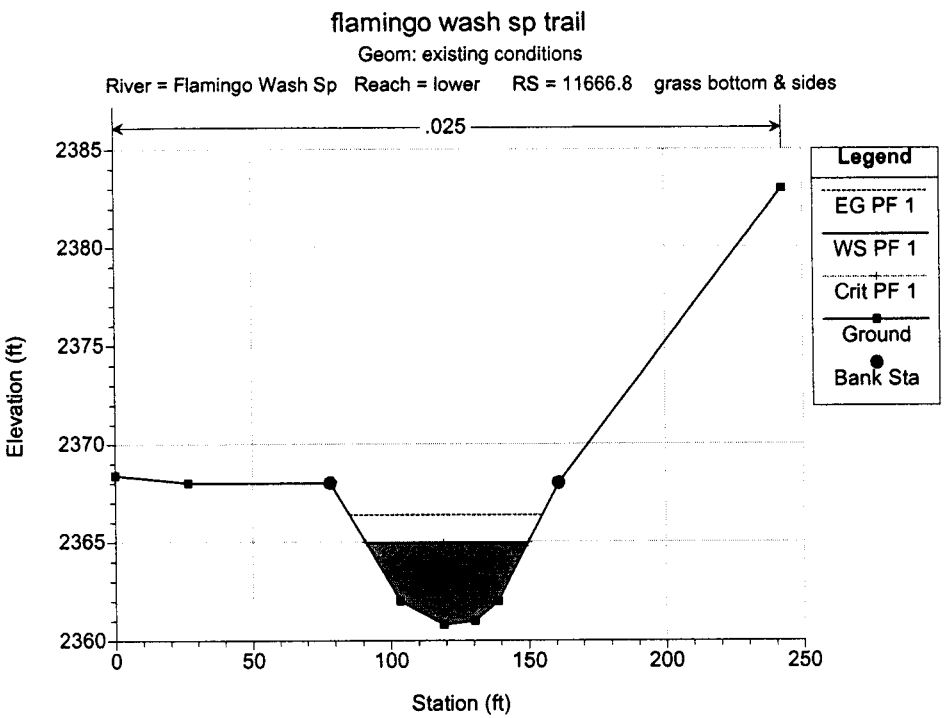

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12139.9 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2366
2368
2370
2372
2374
2376
2378
2380
2382
0
50
100
150
200
250

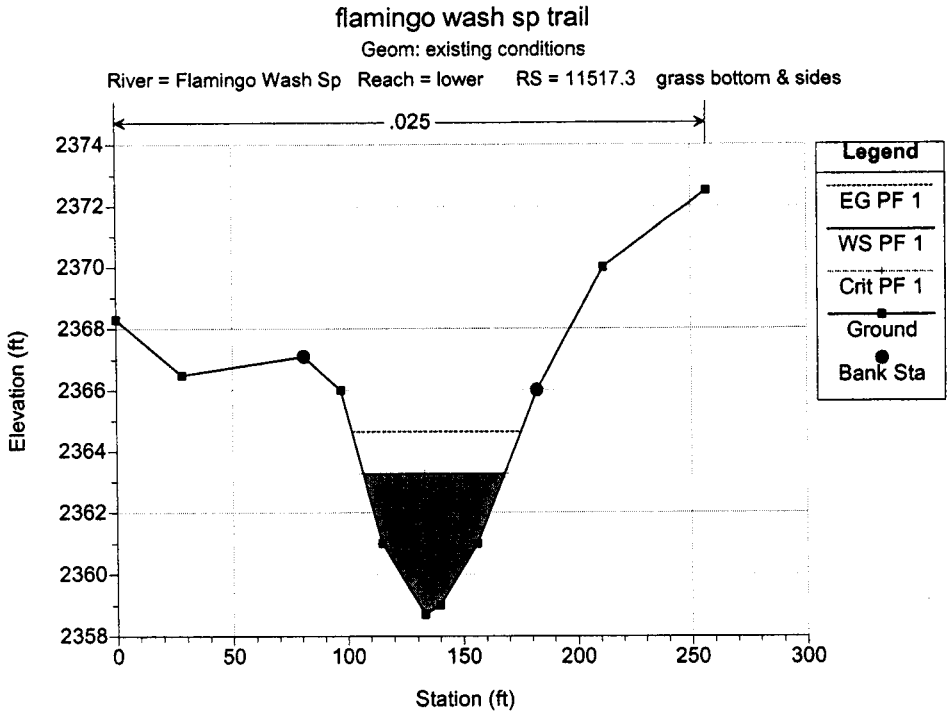

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 12069.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2382
2380
2378
2376
2374
2372
2370
2368
2366
2364
0
50
100
150
200
250

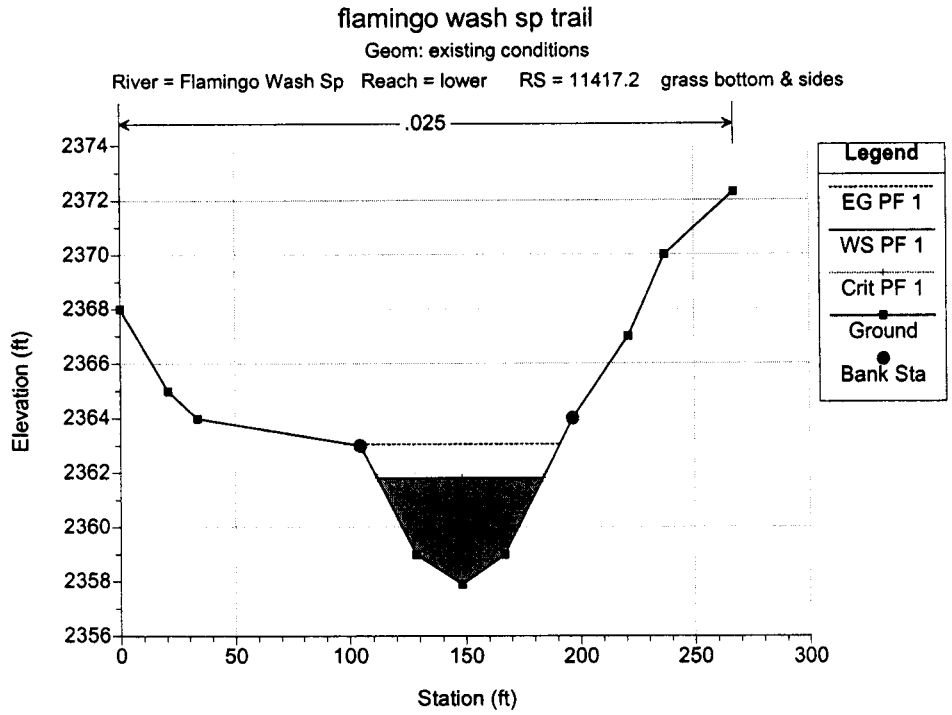

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11999.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2382
2380
2378
2376
2374
2372
2370
2368
2366
2364
0
50
100
150
200
250

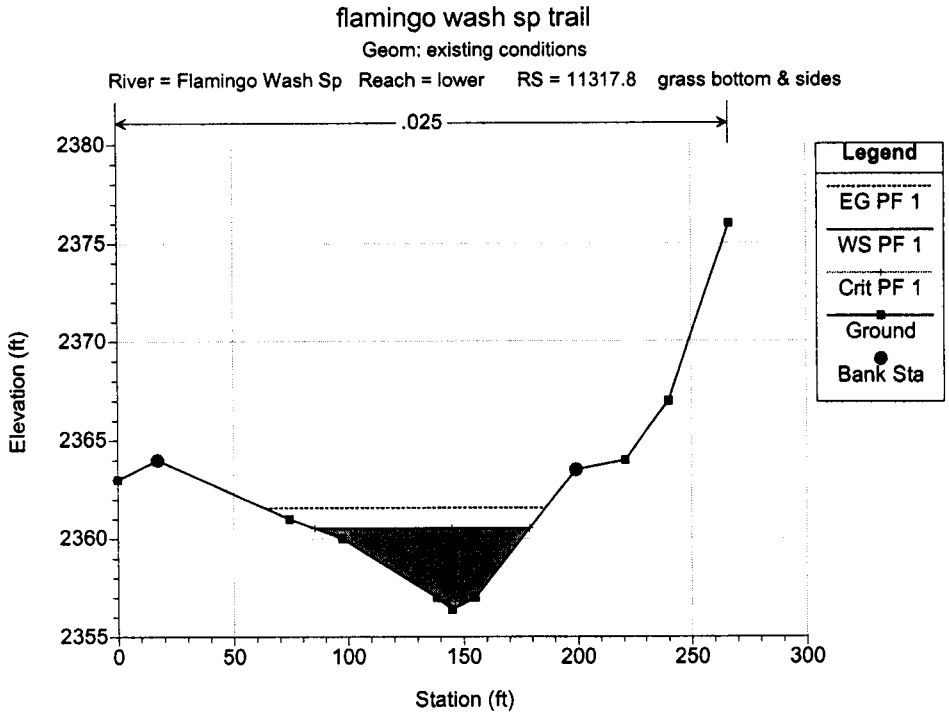

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11899.5 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2385
2380
2375
2370
2365
2360
0
50
100
150
200

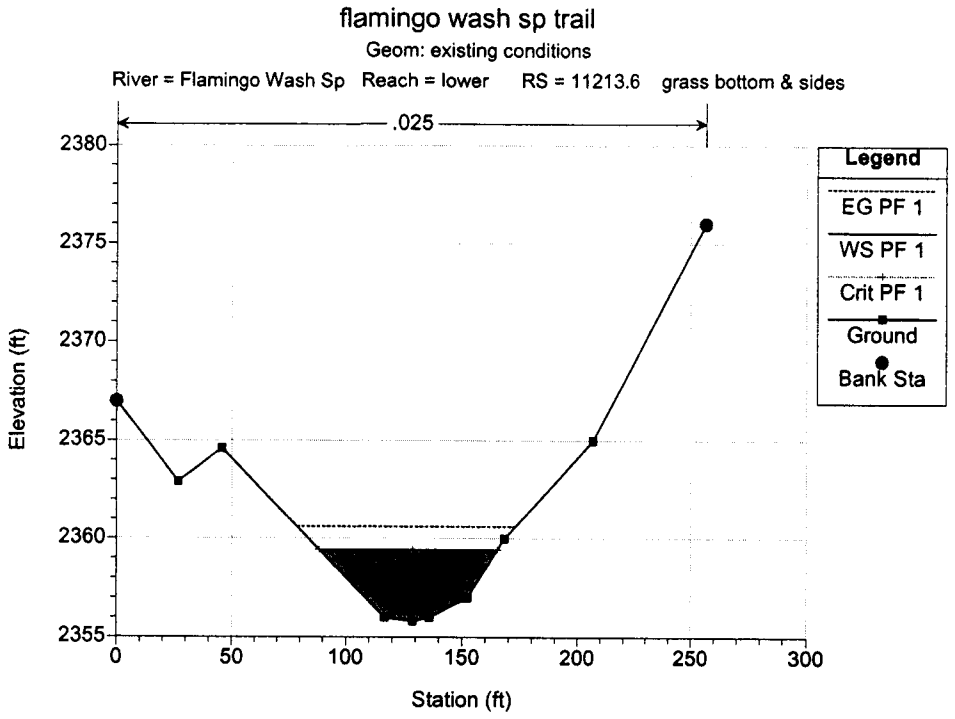

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11769.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2378
2376
2374
2372
2370
2368
2366
2364
2362
2360
0
20
40
60
80
100
120
140
160

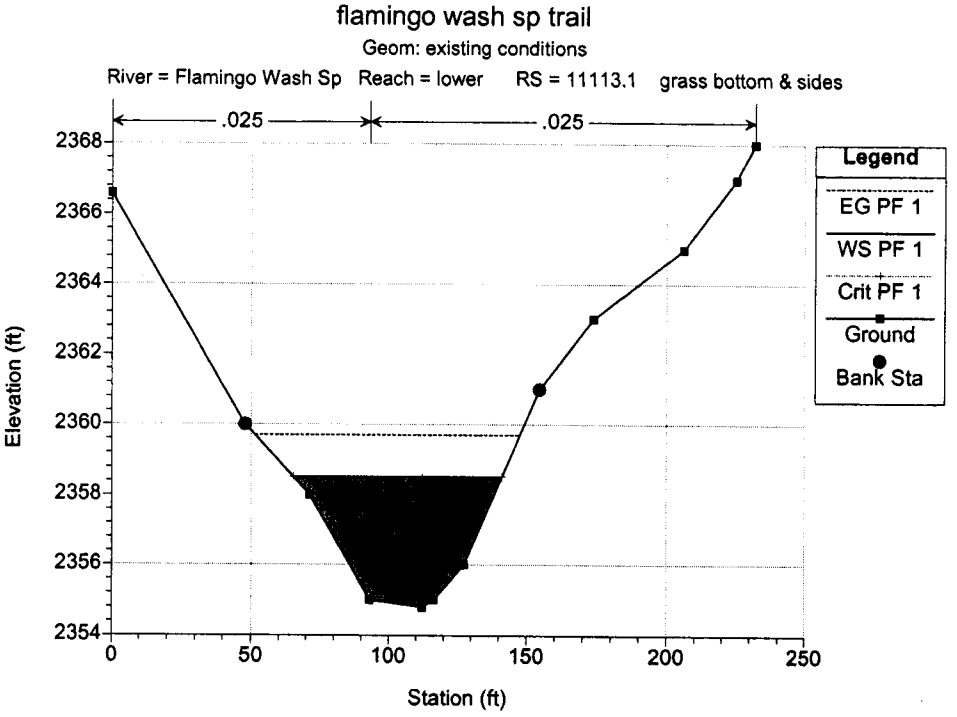

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11666.8 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

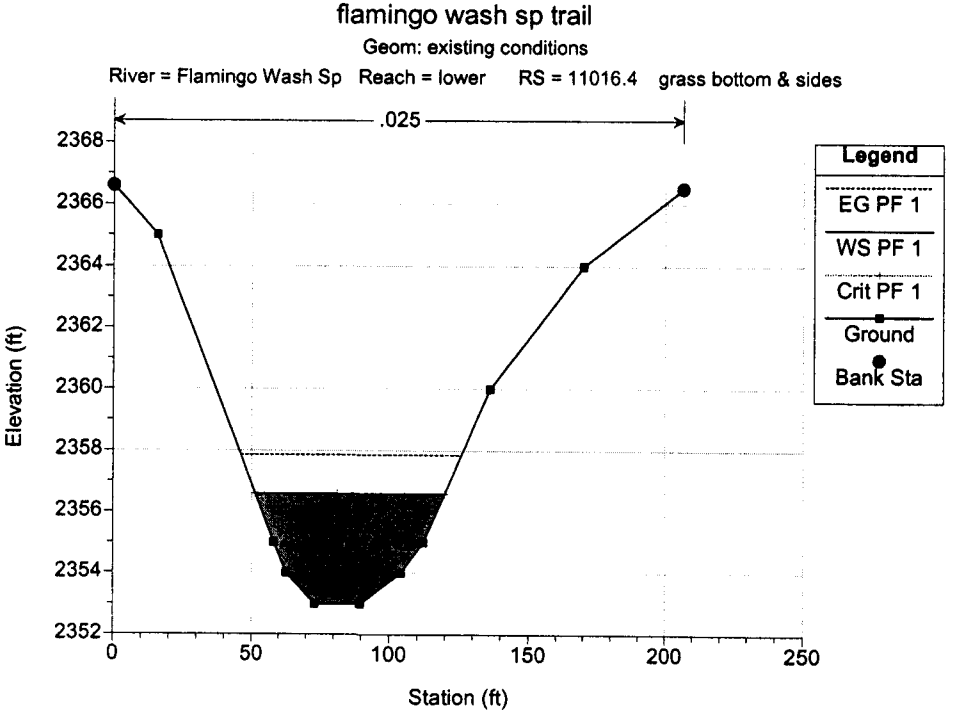

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11517.3 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

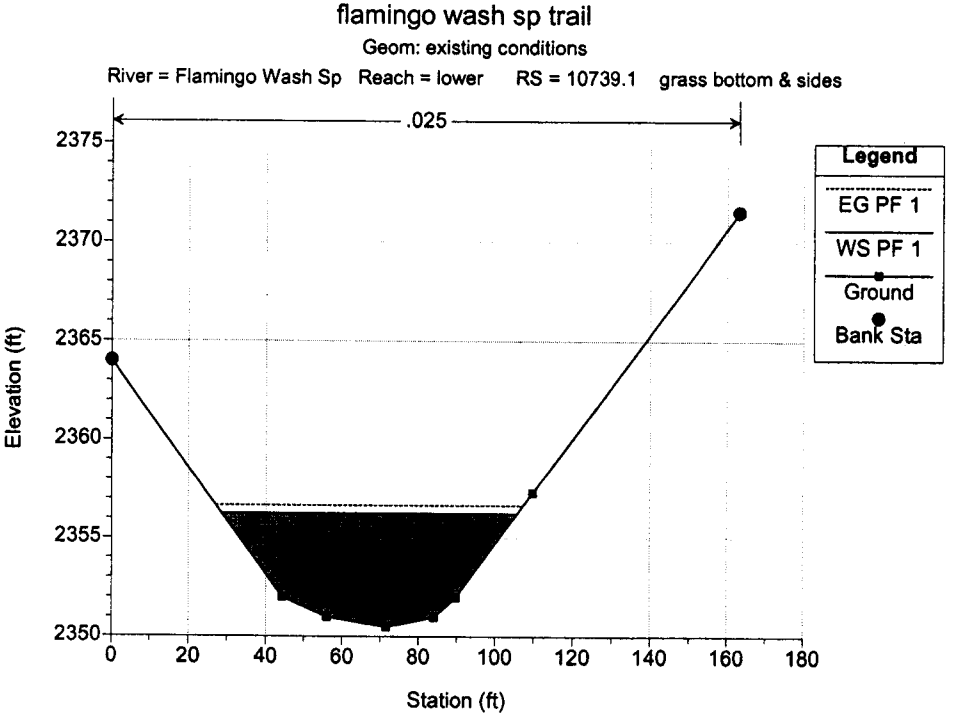

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11417.2 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

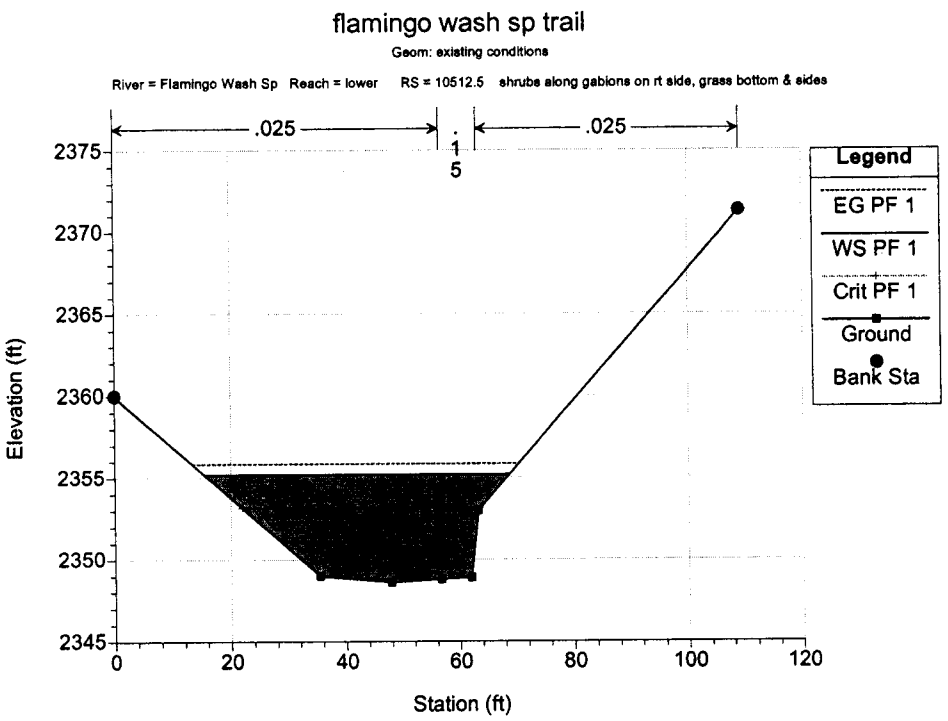

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11317.8 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

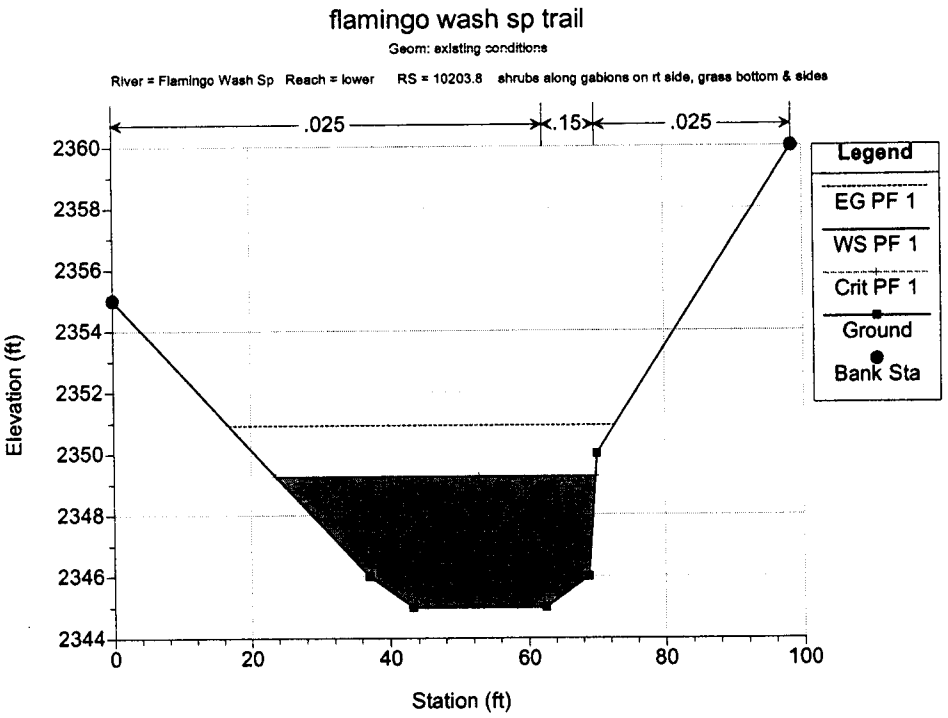

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11213.6 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

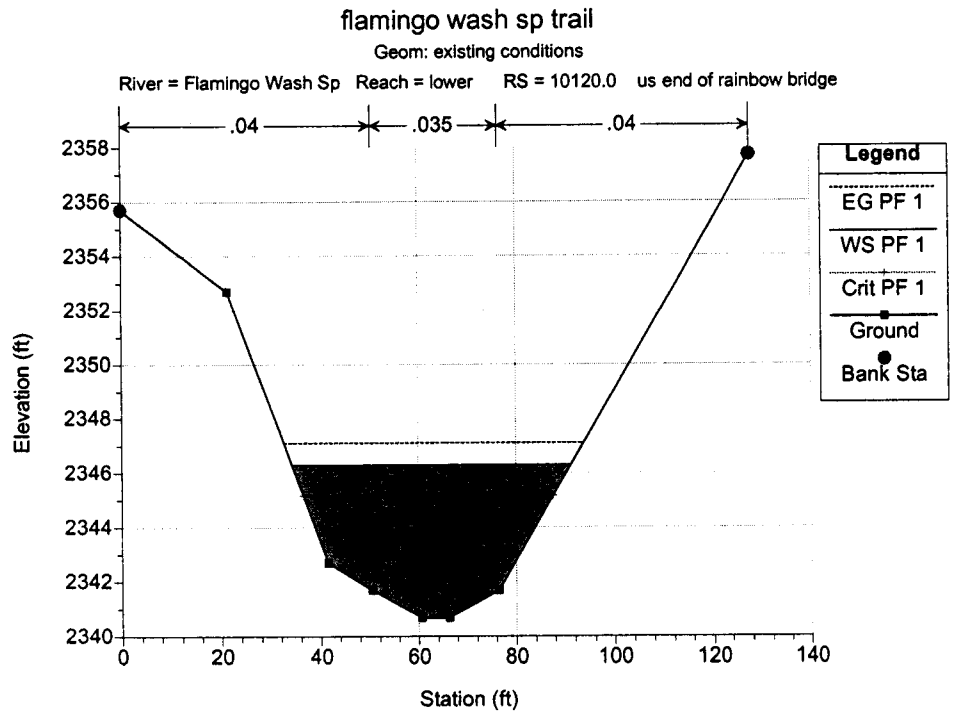

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11113.1 grass bottom & sides
.025
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

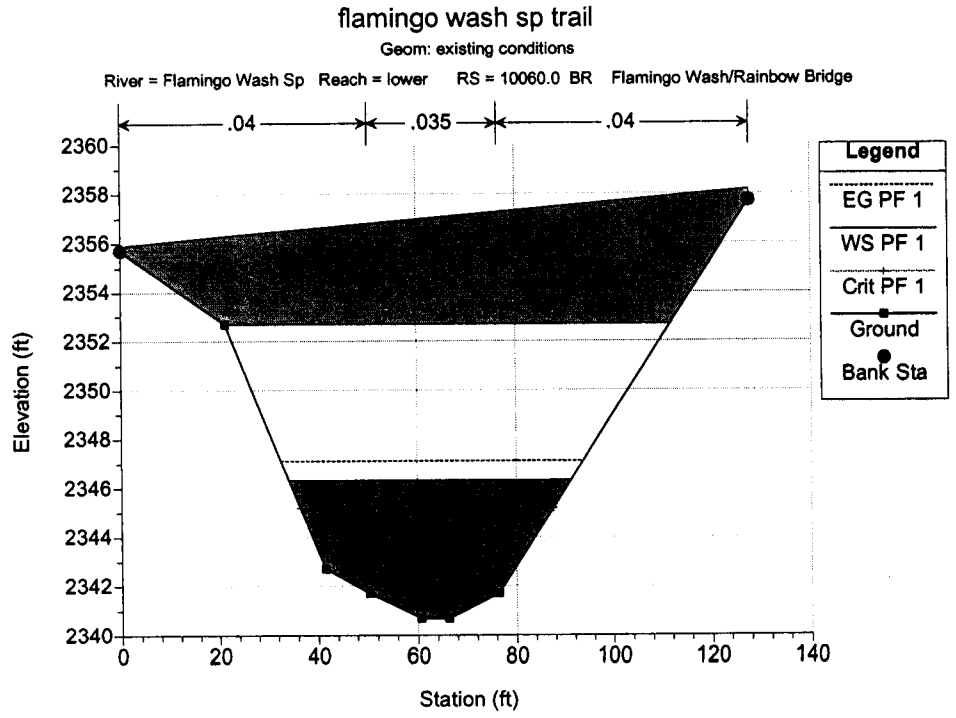

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 11016.4 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

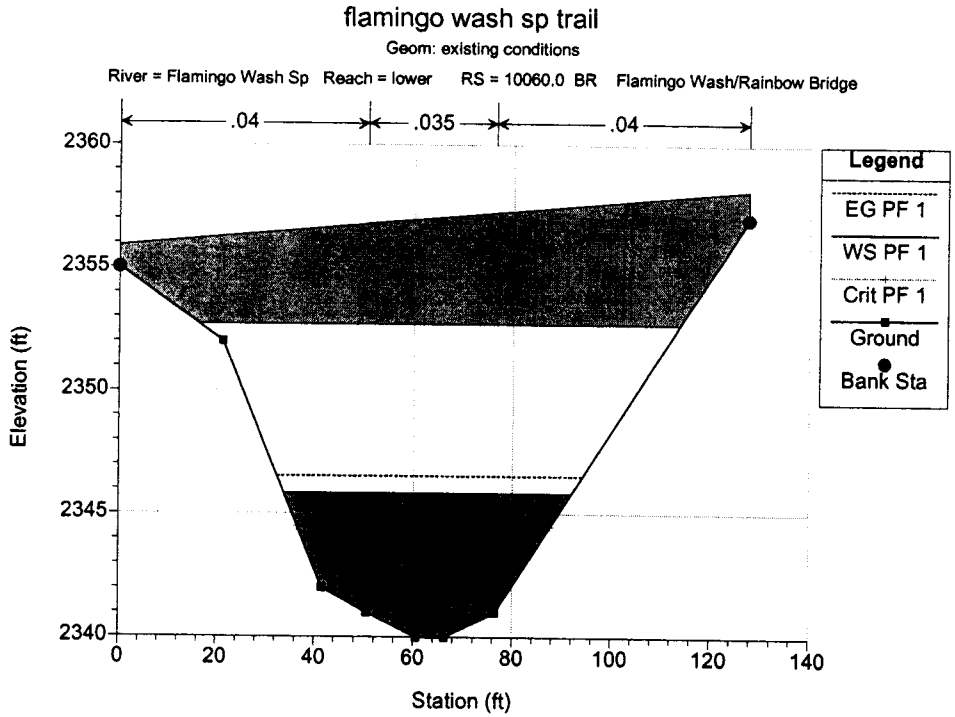

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10739.1 grass bottom & sides
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

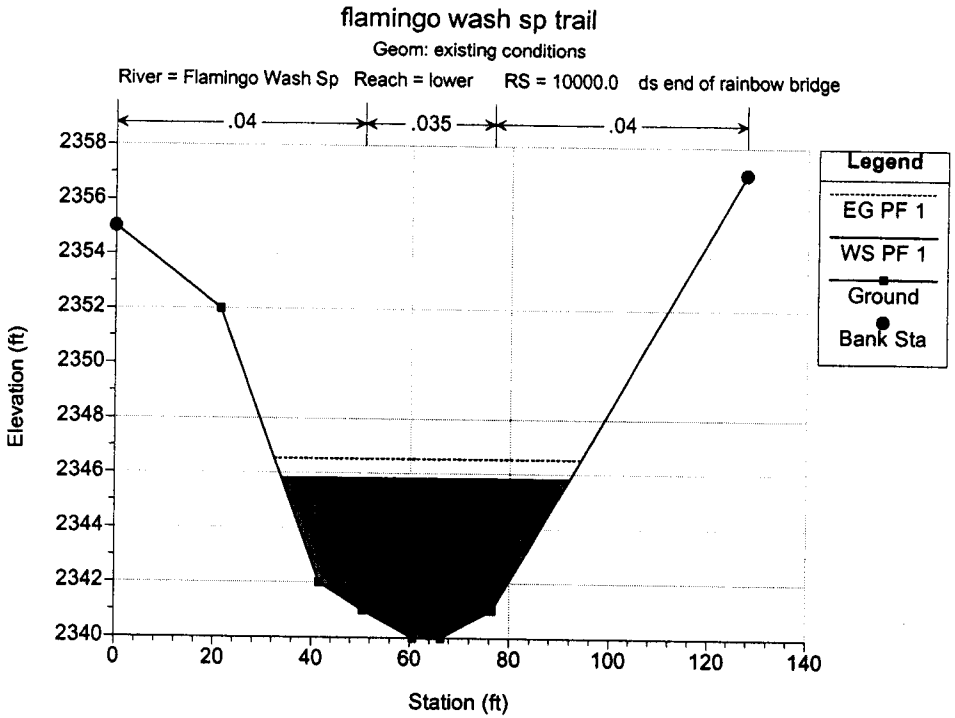

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10512.5 shrubs along gabions on rt side, grass bottom & sides
.025
.025
1
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

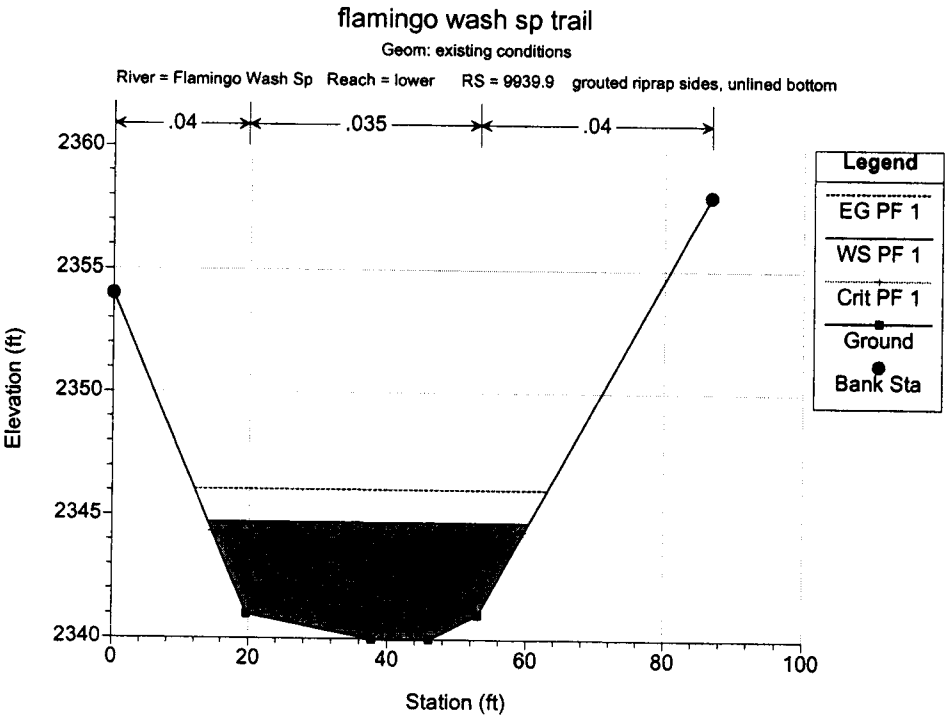

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10203.8 shrubs along gabions on rt side, grass bottom & sides
.025
.15
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

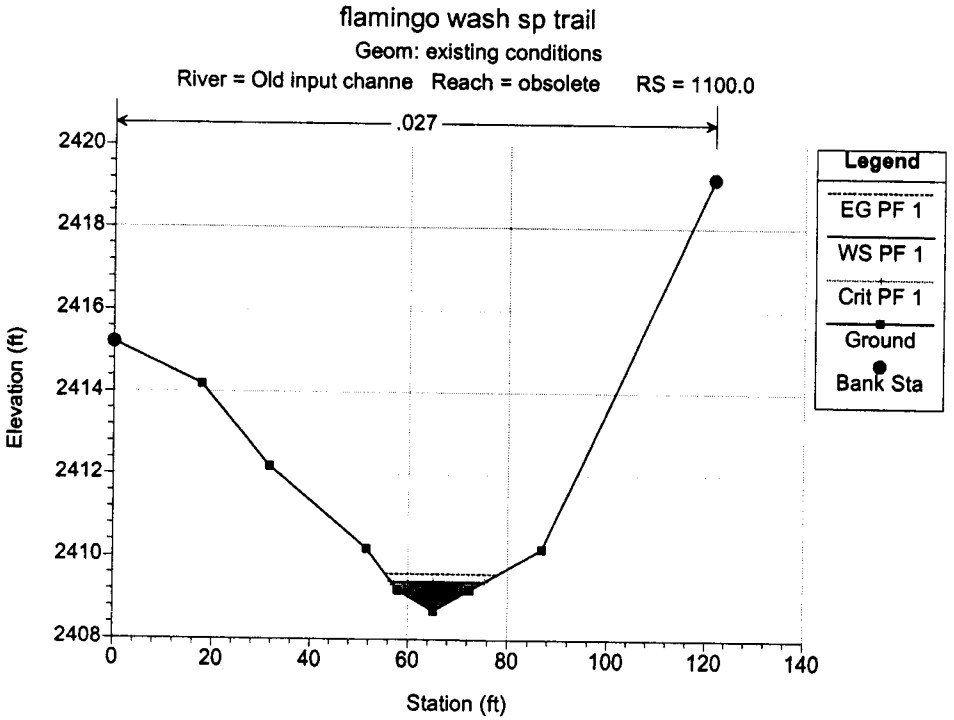

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10120.0 us end of rainbow bridge
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

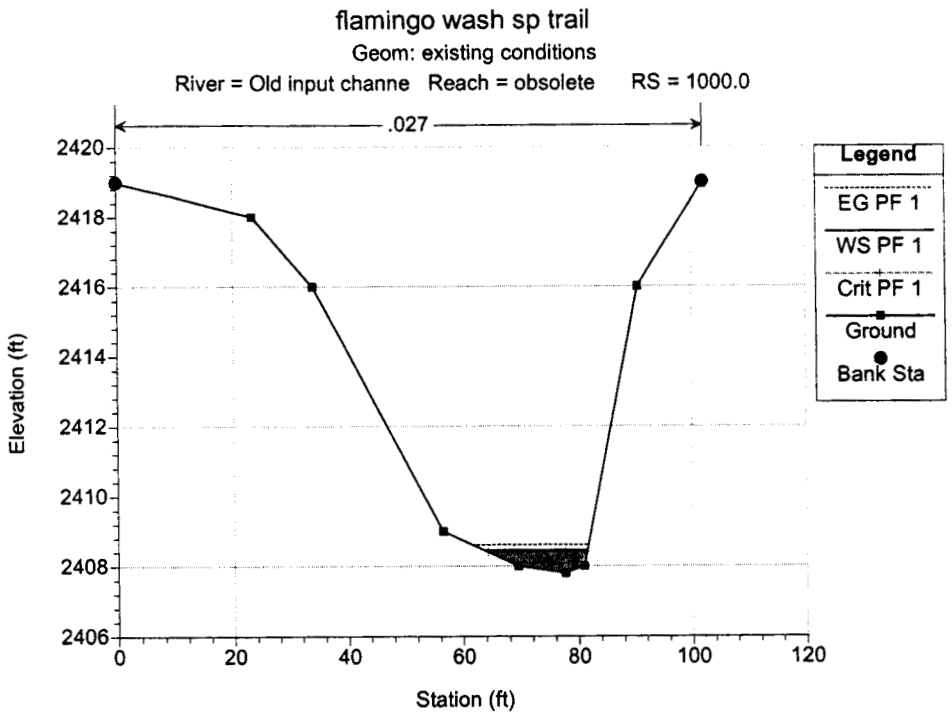

flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10060.0 BR Flamingo Wash/Rainbow Bridge
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10060.0 BR Flamingo Wash/Rainbow Bridge
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 10000.0 ds end of rainbow bridge
.04
.035
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


flamingo wash sp trail
Geom: existing conditions
River = Flamingo Wash Sp Reach = lower RS = 9939.9 grouted riprap sides, unlined bottom
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


flamingo wash sp trail
Geom: existing conditions
River = Old input channe Reach = obsolete RS = 1100.0
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


flamingo wash sp trail
Geom: existing conditions
River = Old input channe Reach = obsolete RS = 1000.0
.027
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2420
2418
2416
2414
2412
2410
2408
2406
0
20
40
60
80
100
120

APPENDIX G

Certification Letters for Lakes Detention Basin Facilities

Department of Public Works

500 S Grand Central Pky • PO Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

December 27, 2006

Mr. Kevin Eubanks, P. E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

BID NO. 4722-00
PROJECT: LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES, PHASE 3B – DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION

Dear Mr. Eubanks:

The above-referenced project is complete, in place according to Plan and is fully functional. Please consider this document as certification that the project was constructed within substantial conformance of the contract plans.

If you have any questions or comments regarding this correspondence, please feel free to contact me at 455-4107.

DENIS CEDERBURG
DIRECTOR OF PUBLIC WORKS

BY: _____
LESLIE R. HENLEY, P.E.
Deputy Director of Public Works

LRH:vbc

12/27/06

BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
TOM COLLINS • YVONNE ATKINSON GATES • CHIP MAXFIELD • LYNETTE BOGGS McDONALD • BRUCE L. WOODBURY
VIRGINIA VALENTINE, P.E., County Manager

Department of Public Works

500 S Grand Central Pky • PO Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

December 27, 2006

Mr. Kevin Eubanks, P. E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

BID NO. 4163-98
PROJECT: BUFFALO OUTFALL COLLECTION SYSTEM – PEACE WAY TO TROPICANA AVENUE

Dear Mr. Eubanks:

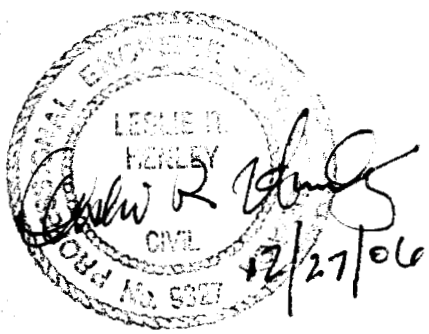
The above-referenced project is complete, in place according to Plan and is fully functional. Please consider this document as certification that the project was constructed within substantial conformance of the contract plans.

If you have any questions or comments regarding this correspondence, please feel free to contact me at 455-4107.

DENIS CEDERBURG
DIRECTOR OF PUBLIC WORKS

BY: _____
LESLIE R. HENLEY, P.E.
Deputy Director of Public Works

LRH:vbc



BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
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VIRGINIA VALENTINE, P.E., County Manager

Department of Public Works

500 S Grand Central Pky • PO Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

December 5, 2006

Mr. Kevin Eubanks, P. E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

BID NO. 5160-02
PROJECT: BUFFALO DRIVE – SAHARA AVENUE TO TROPICANA AVENUE

Dear Mr. Eubanks:

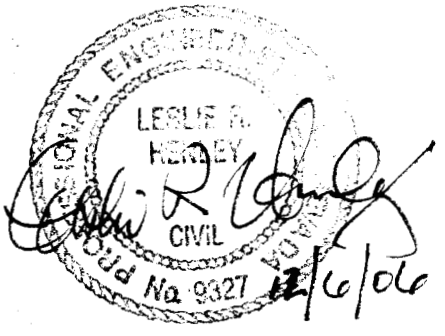
The Buffalo Drive – Sahara Avenue to Tropicana Avenue project is complete, in place according to Plan and is fully functional. Please consider this document as certification that the project was constructed within substantial conformance of the contract plans.

If you have any questions or comments regarding this correspondence, please feel free to contact me at 455-4107.

DENIS CEDERBURG
DIRECTOR OF PUBLIC WORKS

BY: _____
LESLIE R. HENLEY, P.E.
Deputy Director of Public Works

LRH:vbc



BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
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VIRGINIA VALENTINE, P.E., County Manager

Department of Public Works

500 S Grand Central Pky • PO Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

December 5, 2006

Mr. Kevin Eubanks, P. E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

BID NO. 4372-99
PROJECT: BUFFALO OUTFALL/COLLECTION SYSTEM, PHASE 2 FROM DESERT INN ROAD TO PEACE WAY

Dear Mr. Eubanks:

The Buffalo Outfall/Collection System, Phase 2 from Desert Inn Road to Peace Way project is complete, in place according to Plan and is fully functional. Please consider this document as certification that the project was constructed within substantial conformance of the contract plans.

If you have any questions or comments regarding this correspondence, please feel free to contact me at 455-4107.

DENIS CEDERBURG
DIRECTOR OF PUBLIC WORKS

BY: _____
LESLIE R. HENLEY, P.E.
Deputy Director of Public Works

LRH:vbc

LESLIE R. HENLEY
CIVIL
No. 9327
12/6/06

BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
TOM COLLINS • YVONNE ATKINSON GATES • CHIP MAXFIELD • LYNETTE BOGGS McDONALD • BRUCE L. WOODBURY
VIRGINIA VALENTINE, P.E., County Manager

Department of Public Works

500 S Grand Central Pky • PO Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

December 5, 2006

Mr. Kevin Eubanks, P. E., CFM
Assistant General Manager
Clark County Regional Flood Control District
600 South Grand Central Parkway
Las Vegas, Nevada 89106

BID NO. 4500-99
PROJECT: LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES, PHASE 3, DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION

Dear Mr. Eubanks:

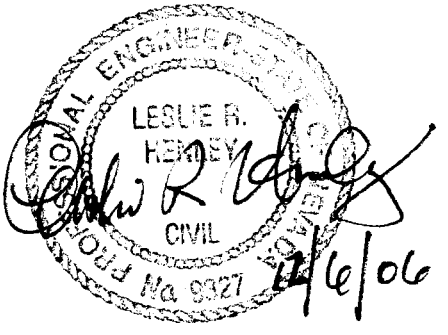
The Lakes Detention Basin & Associated Collection Facilities, Phase 3, Desert Inn, Durango & Spring Mountain, is complete, in place according to Plan and is fully functional. Please consider this document as certification that the project was constructed within substantial conformance of the contract plans.

If you have any questions or comments regarding this correspondence, please feel free to contact me at 455-4107.

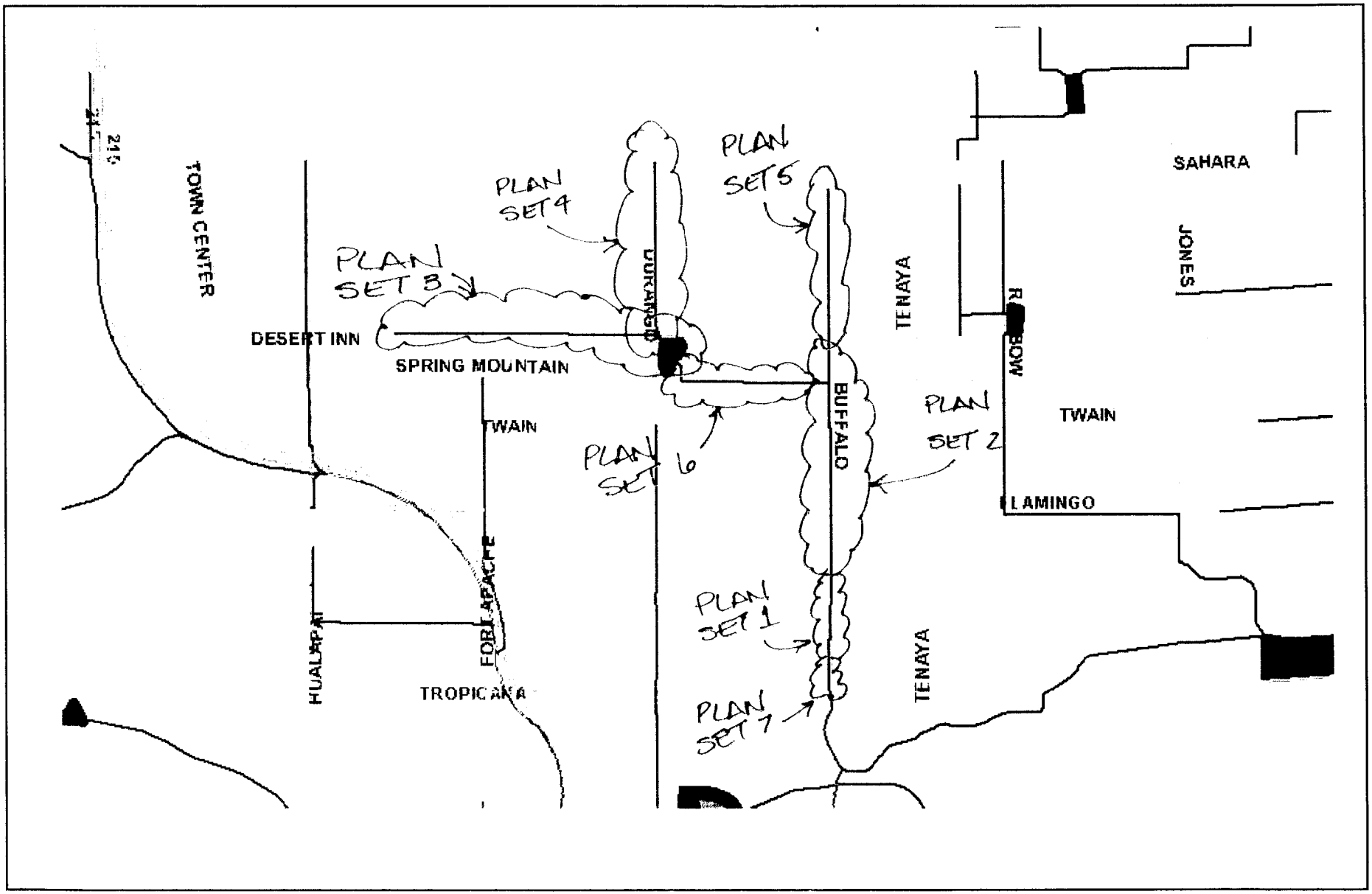
DENIS CEDERBURG
DIRECTOR OF PUBLIC WORKS

BY: _____
LESLIE R. HENLEY, P.E.
Deputy Director of Public Works

LRH:vbc



BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
TOM COLLINS • YVONNE ATKINSON GATES • CHIP MAXFIELD • LYNETTE BOGGS McDONALD • BRUCE L. WOODBURY
VIRGINIA VALENTINE, P.E., County Manager


215
TOWN CENTER
PLAN SET 4
PLAN SET 5
PLAN SET 3
DESERT INN
SPRING MOUNTAIN
DURANGO
TENAYA
SAHARA
JONES
RAINBOW
TWAIN
BUFFALO
PLAN SET 6
PLAN SET 2
LAMINGO
HUALAPAI
APACHE
TROPICANA
PLAN SET 1
PLAN SET 7
TENAYA

Plan Set # *	RFCD Bid Report Board Date	Item #	RFCD Bid Name	Plan Name	CCPW Bid Number	Digital File on FEMD CD?	Contract Doc. Date
1	7/9/1998	16	Phase 1 Buffalo Outfall, Peace Way to Tropicana	Buffalo Outfall/Collection System from Peace way to Tropicana Avenue	4163-98	CLA13B98 - Buffalo Outfall-Peace Way to Tropicana - AsBuilt.pdf	
2	5/13/1999	13	Phase 2 Buffalo Outfall Desert Inn to Peace Way	Buffalo Outfall/Collection System Phase 2 from Desert Inn to Peace Way	4372-99	CLA13C98 - Buffalo Outfall-Collection System-Phase II - Dese.pdf	2/17/1999
3	3/9/2000	9	Phase 3 Desert Inn - Grand Canyon to Durango and Durango - Sahara to Desert Inn	Lakes detention Basin & Associated Collection Facilities Phase 3	4500-99	CLA13C98 - Lakes Detention Basin and Collection Facilities .pdf	7/28/1999
4	11/9/2000	15	Phase 3B Durango - Sahara to Desert Inn	Lakes detention Basin & Associated Collection Facilities Phase 3B	4722-00	CLA13C98 - Lakes Detention Basin and Collection Faciliti (1).pdf	7/28/1999
5	11/14/2002	23a	Phase 4 Buffalo - Laredo to Desert Inn	Improvement Plans for Buffalo Drive - Sahara to Tropicana	5160-02	CLA13C98 - Buffalo Drive Improvements - Sahara to Tropicana .pdf	8/5/2002
6	RTC Funded			Spring Mountain Road - Phase II	4500-99	CLA13C98 - Spring Mtn Rd - Phase II - Durango to Buffalo-AsB.pdf	
7	Private Developer Funded			Buffalo Drive Tropicana to Sta. 43+69.00		buffalo drive Tropicana ave to sta.pdf	

APPENDIX H

Rating Curves for Lakes Detention Basin

DEPARTMENT OF PUBLIC WORKS

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C1.02 GENERAL NOTES, QUANTITIES, LEGEND & ABBREVIATIONS
C1.03 GENERAL NOTES & DRAWING INDEX
C1.04 WATERSHED BOUNDARY MAP
C1.05 CAPACITY CURVES & HYDROLOGIC INFORMATION
C1.06 SURVEY CONTROL MAP
C1.07 SURVEY CONTROL MAP

LAKES DETENTION BASIN COLLECTION SYSTEM (DRAWINGS-C2.xx)
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C2.02 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 8+98.67 TO 16+00.00
C2.03 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 16+00.00 TO 26+00.00
C2.04 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 26+00.00 TO 36+00.00
C2.05 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 36+00.00 TO 46+00.00
C2.06 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 46+88.00 TO 55+00.00
C2.07 DURANGO COLLECTION SYSTEM PLAN & PROFILE STA 55+00.00 TO 65+00.00
C2.08 DESERT INN COLLECTION SYSTEM PLAN & PROFILE STA 39+00.00 TO 40+00.00
C2.09 DESERT INN COLLECTION SYSTEM PLAN & PROFILE STA 40+00.00 TO 50+00.00
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C2.11 DESERT INN COLLECTION SYSTEM PLAN & PROFILE STA 60+00.00 TO 70+00.00
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C2.18 DETENTION BASIN INLET PIPE(SPRING MOUNTAIN) PLAN & PROFILE
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C2.26 DROP INLET INTERSECTION ENLARGEMENTS-DURANGO "N" THRU "P"
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C2.35 MISCELLANEOUS DETAILS

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C3.02 DURANGO SANITARY SEWER SYSTEM PLAN & PROFILE STA 16+00.00 TO 26+00.00
C3.03 DURANGO SANITARY SEWER SYSTEM PLAN & PROFILE STA 26+00.00 TO 36+00.00
C3.04 DURANGO SANITARY SEWER SYSTEM PLAN & PROFILE STA 36+00.00 TO 46+00.00
C3.05 DURANGO SANITARY SEWER SYSTEM PLAN & PROFILE STA 46+00.00 TO 55+00.00
C3.06 DURANGO SANITARY SEWER SYSTEM PLAN & PROFILE STA 55+00.00 TO 65+00.00
C3.07 MISCELLANEOUS DETAILS

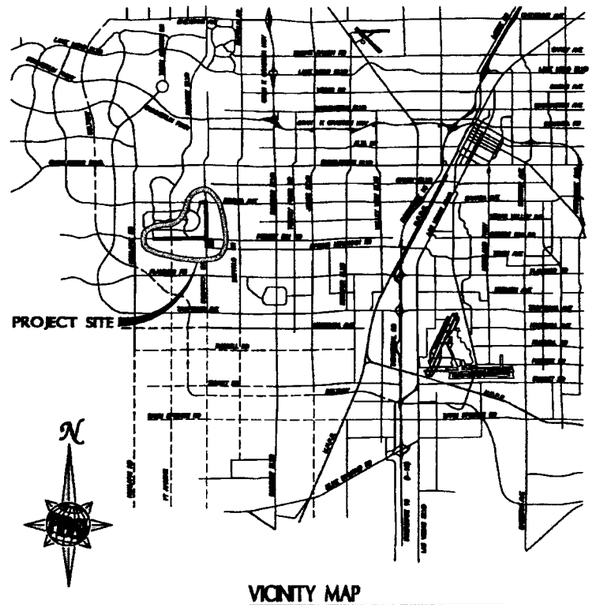
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C4.03 DETENTION BASIN GRADING-PLAN 1
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C4.06 DETENTION BASIN GRADING-PLAN 4
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C4.11 MISCELLANEOUS DETAILS
C4.12 DETENTION BASIN CROSS SECTIONS PLAN VIEW
C4.13 DETENTION BASIN CROSS SECTIONS DURANGO STA 64+00.00 & STA 65+00.00
C4.14 DETENTION BASIN CROSS SECTIONS DURANGO STA 66+00.00 & STA 67+00.00
C4.15 DETENTION BASIN CROSS SECTIONS DURANGO STA 68+00.00 & STA 69+00.00
C4.16 DETENTION BASIN CROSS SECTIONS DURANGO STA 70+00.00 & STA 71+00.00
C4.17 DETENTION BASIN CROSS SECTIONS DURANGO STA 72+00.00 & STA 73+00.00
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STRUCTURAL (DRAWINGS-S1.xx)
S1.01 STRUCTURAL DETAILS
S1.02 STRUCTURAL DETAILS
S1.03 STRUCTURAL DETAILS
S1.04 STRUCTURAL DETAILS
S1.05 STRUCTURAL DETAILS
S1.06 STRUCTURAL DETAILS
S1.07 STRUCTURAL DETAILS
S1.08 STRUCTURAL DETAILS
S1.09 STRUCTURAL DETAILS
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C5.02 LANDSCAPING HORIZONTAL CONTROL PLAN
C5.03 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.04 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.05 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.06 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.07 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.08 LANDSCAPE BUFFER & TURF IMPROVEMENTS
C5.09 LANDSCAPE BUFFER & TURF IMPROVEMENTS
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C5.13 LANDSCAPE IRRIGATION PLANS
C5.14 LANDSCAPE IRRIGATION PLANS W/ PUMP STATION & P.G.C.
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C5.22 PUMP STATION MISCELLANEOUS DETAILS
C5.23 LANDSCAPE IRRIGATION DETAILS
C5.24 LANDSCAPE IRRIGATION DETAILS

-RECORD DRAWING-
COMPLETED ON: 06/06/2002
BY: PBSJ
PROJECT ACCEPTANCE DATE: 03/15/2001
CONST. MANAGER: BLACK & VEATCH
CONTRACTOR: LAS VEGAS PAVING

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087



VICINITY MAP
Not to scale

1999
IMPROVEMENT PLANS FOR

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES PHASE 3

BID #4500-99
DESERT INN, DURANGO & SPRING MOUNTAIN COLLECTION
FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT,
CLARK COUNTY REGIONAL TRANSPORTATION COMMISSION,
CLARK COUNTY SANITATION DISTRICT, &
CLARK COUNTY DEPARTMENT OF PARKS AND RECREATION

PBSJ
901 North Green Valley Pkwy Suite 200 Henderson, Nevada 89074 Telephone 702/363-7278 Fax 702/363-7200
ENGINEERING · PLANNING · SURVEYING · CONSTRUCTION SERVICES

COUNTY COMMISSIONERS

BRUCE WOODBURY, CHAIRMAN
ERIN KENNY, VICE-CHAIR
YVONNE ATKINSON GATES
DARIO HERRERA
MARY J. KINCAID
LANCE MALONE
MYRNA WILLIAMS

COUNTY MANAGER

DALE W. ASKEW

DIRECTOR OF PUBLIC WORKS

APPROVED:

M.J. MANNING *P.E. 7299*

GENERAL MANAGER/CHIEF ENGINEER CCRFCD

APPROVED:

GALE WM. FRASER II, *P.E.*

AGENCY	PLANS REVIEWED BY	DATE
SPRINT CENTRAL TELEPHONE		
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHWEST GAS COMPANY		
NEVADA POWER COMPANY		
C.C. SANITATION DISTRICT		
COX COMMUNICATIONS LAS VEGAS, INC.		
REGIONAL TRANSPORTATION COMMISSION		

DEPARTMENT OF PUBLIC WORKS	PLANS REVIEWED BY:	DATE OF APPROVAL
DEPUTY DIRECTOR FOR PROFESSIONAL SERVICES		
COMMUNITY DEVELOPMENT DIVISION		
CONSTRUCTION MANAGEMENT DIVISION		
DESIGN ENGINEERING DIVISION		
MAINTENANCE MANAGEMENT DIVISION		
TRAFFIC MANAGEMENT DIVISION		
COUNTY SURVEYOR'S OFFICE		
CLARK COUNTY DEPTARTMENT OF PARKS & RECREATION		

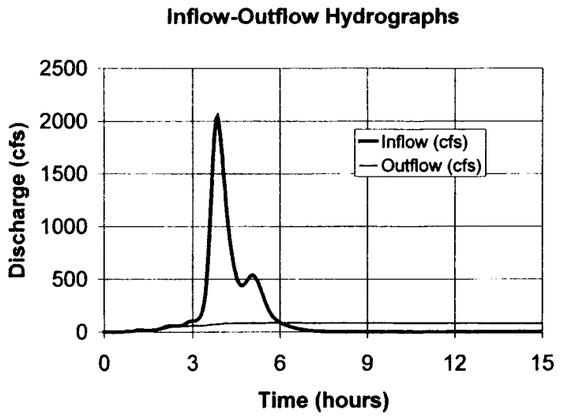
REVISIONS					
REVISION NO.	DESCRIPTION	BY	DATE	APPROVAL	DATE

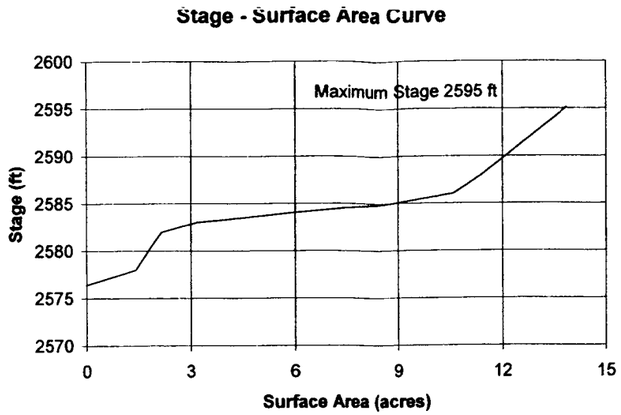
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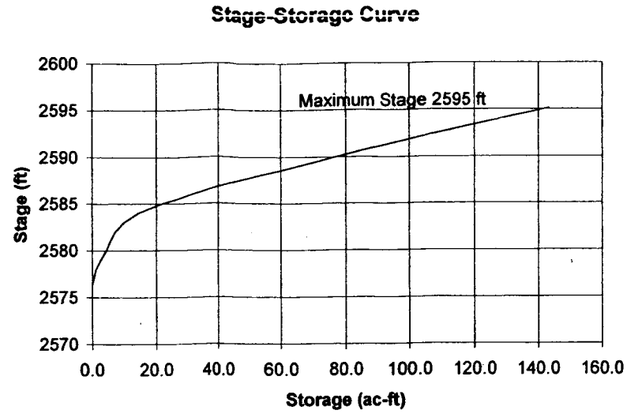
COVER SHEET

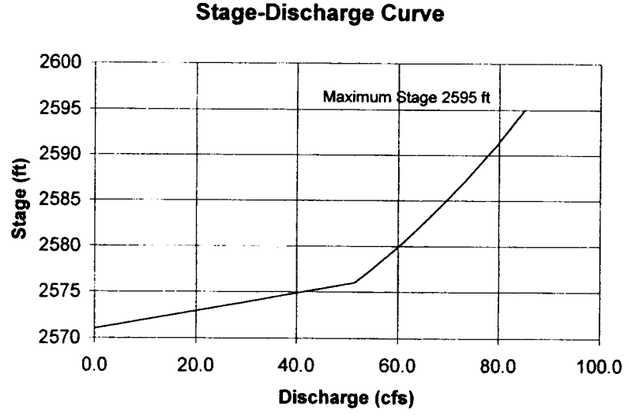
L-1583

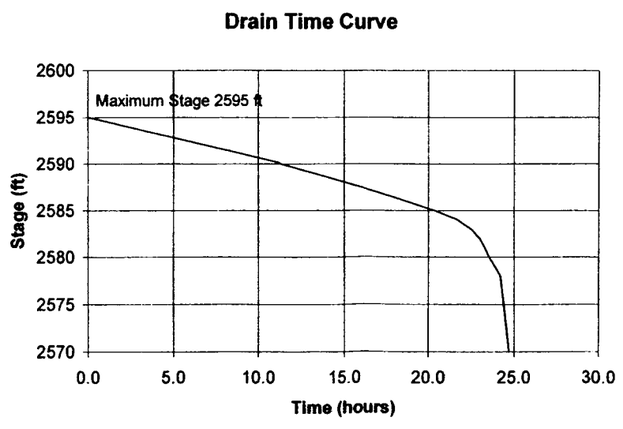
BID #4500-99 LAKES DETENTION BASIN PHASE 3 – DESERT INN, DURANGO, & SPRING MOUNTAIN COLLECTION











DETENTION BASIN CHARACTERISTICS		
DRAINAGE AREA	2.6	SQUARE MILES
TYPE OF DETENTION BASIN		BELOW GRADE EXCAVATION
EMERGENCY SPILLWAY		AT GRADE OVERFLOW
AREA DISTURBED BY CONSTRUCTION	31.5	ACRES
100-YEAR PEAK INFLOW	2,050.0	CFS
100-YEAR PEAK OUTFLOW	85.0	CFS
100-YEAR PEAK STORAGE	143.0	ACRE-FEET
100-YEAR WATER SURFACE AREA	13.9	ACRES
DETENTION BASIN CREST ELEVATION	2,596.0	FEET
100-YEAR PEAK STAGE ELEVATION	2,595.0	FEET
DETENTION BASIN INVERT ELEVATION	2,576.4	FEET
100-YEAR PEAK DEPTH	18.6	FEET
OUTLET		36-INCH RCP
INVERT ELEVATION OF OUTLET	2,571.4	FEET
DRAIN TIME TO 50% OF CAPACITY	12.2	HOURS
DRAIN TIME TO 90% OF CAPACITY	21.7	HOURS
10-YEAR WATER SURFACE ELEVATION	2,587.2	FEET
25-YEAR WATER SURFACE ELEVATION	2,590.1	FEET

-RECORD DRAWING-

COMPLETED ON: 05/08/2002
BY: PBSJ
PROJECT ACCEPTANCE DATE: 03/15/2001
CONST. MANAGER: BLACK & VEATCH
CONTRACTOR: LAS VEGAS PAVING

ORIGINAL CONTRACT DOCUMENTS ARE ON FILE WITH THE CLARK COUNTY DEPT. OF PUBLIC WORKS DOCUMENTS WERE SIGNED AND SEALED ON 07/28/1999 BY DONALD W. DAVIS UNDER NEVADA LICENSE NO. 8087

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: A. SPATA
DRAWN BY: A. SPATA
CHECKED BY: D. DAVIS
DATE: JULY 28, 1999

JOB NO.: 51516
DRAWING NO.: 516-3105
SCALE: HORIZ.:
VERT.:

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SEAL

CLARK COUNTY NEVADA

Department of Public Works

LAKES DETENTION BASIN & ASSOCIATED COLLECTION FACILITIES - PHASE 3

CAPACITY CURVES & HYDROLOGIC INFORMATION

L-1583

DRAWING NO. 5 / 77

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APPENDIX I

Data CD
Digital Files for Lakes Detention Basin
Revised HEC-RAS Analysis