Request for Letter of Map Revision
Flamingo Diversion – Jones Branch
Sunset to Russell Road

Clark County, Nevada

Prepared for:

Clark County
Regional Flood Control District
500 S. Grand Central Parkway
Las Vegas, NV 89155

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

04-09-0491P

Prepared by:

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December 17, 2003

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I. INTRODUCTION

This submittal package provides hydrologic and hydraulic modeling in support of the request for a Letter of Map Revision for the Flamingo Diversion – Jones Branch between Sunset Road and Russell Road in Clark County, Nevada. The Jones Branch is a one-mile long storm drain extending from Sunset Road to the Flamingo Diversion Channel at Russell Road. The storm drain was designed and constructed by the Clark County Public Works Department.

II. PREVIOUS STUDIES

A copy of the Flood Insurance Rate Map (FIRM), dated September 2002, is provided herein as Figure 1A in Appendix B. The study area, outlined on the Figure 1A, includes four washes. The washes are referred to herein as the Tropicana Wash South Branch, Central Branch Tributary, Tropicana Wash Central Branch, and North Branch Tributary. On Figure 1A, the Central and South Branches of the Tropicana Wash are designated as Zone AE and the tributaries are designated as Zone A. The mapping for these washes was originally developed in the Flood Insurance Study (FIS) entitled "Flood Insurance Study Restudy Tropicana Wash and Tributaries", prepared by CH2M Hill in 1992.

Subsequent to mapping on Figure 1A, HDR prepared the Flood Insurance Restudy for Tropicana Wash and Tributaries (LOMR Case #02-09-718P) dated November 2002. The hydrology for all four washes in the study area was revised in the HDR FIS; however, only flood zones for the Central and South Branches were revised by HDR. These tributaries were revised from Zone AE to Zone A as shown on Figures 1B and 1C in Appendix B. HDR used Manning's equation to calculate flow depth based on ground survey sections of the Central and South Branches. The HDR HEC-1 model and flow depth calculations for the Central and South Branches supersede the previous work conducted by CH2M Hill.

Relevant excerpts from the HDR FIS are contained in Appendix E, including the HEC-1 hydrologic analysis, the drainage basin map, and cross-sectional data for the Central and South Branches. The cross-sectional information provided by CH2M Hill for the North and Central Tributaries is also contained in Appendix E.

III. HYDROLOGIC ANALYSIS

The 100-year storm HEC-1 model presented in the HDR FIS was modified in this study to account for the diversions into Jones Boulevard storm drain. The storm drain was installed perpendicularly across the flow path of the drainage basins and flow direction of the four washes. Drainage basins designated in the HDR FIS as FDC11, FDC15, FDC17, FDC18 and FDC19 were subdivided in this study

(see Figure C-1, Appendix C) to quantify flow along Jones Boulevard. The basin areas and routing lengths for these basins were revised accordingly to adjust for the smaller subbasins. The rainfall depths and curve numbers were not affected by the modifications.

The Jones Boulevard storm drain inlet system does not intercept 100 percent of the 100-year flow approaching from the drainage areas to the southwest. Hydraulic calculations, discussed in the following section, indicated that flow overtops the road at three locations: 1) Tropicana Wash South Branch; 2) Central Branch Tributary; and 3) North Branch Tributary. Figure C-1 in Appendix C shows the 100-year surface flow rates and pipe flow rates resulting from this study. The revised HEC-1 model is contained in Appendix C.

IV. HYDRAULIC ANALYSIS

Hydraulic calculations were conducted using approximate methods to develop: 1) inlet capacity for the Jones storm drain; 2) flow bypass (north along Jones Boulevard) at the downstream end of each drainage basin; 3) 100-year storm hydraulic grade line (HGL) for the Jones storm drain, and 4) average flow depths in the washes downstream of Jones Boulevard. The hydraulic calculations and model output are provided in Appendix D.

1) The Jones Boulevard storm drain inlet locations are shown on the improvement plans in Appendix F Inlets and are labeled on Figure C-1. Inlet D2 is a 60" x 38" ERCP, inlets D9B, D16A, D16B, D19A and D19B are curb inlets, and the remaining are field inlets that were constructed in a sump condition next to the roadway. For the curb inlets, the capacity was evaluated using the Federal Highway Administration (FHWA) HY-22 computer program. The orifice equation was used to estimate the inflow capacity of the field inlets, and the FHWA culvert capacity nomograph for inlet control was used to assess the capacity of the 60" x 38" ERCP inlet.

2) The total capacity of the inlets in a drainage basin was compared to the total inflow from the upstream drainage area. If the inflow exceeded the total inlet capacity, a calculation was performed to determine how much flow would bypass the drainage area and continue north along Jones Boulevard. The remaining was assumed to overtop Jones Boulevard and flow east. Bypass flows were estimated using normal depth analysis.

3) The Jones Boulevard storm drain system was modeled using Water Surface Pressure Gradient (WSPG) model.

4) The flow depths in the four washes downstream of Jones Boulevard were evaluated using normal depth analysis and, where possible, the cross-section data provided in the HDR FIS and CH2M Hill FIS. Additional cross-sections

were created in this study using Clark County GIS data to evaluate flow depths in the washes where previous data did not exist.

The resulting flow depths in the four washes are shown on the Work Map – Figure 3. Based on the results, all or portions of the washes are proposed to revised to Zone X (shaded) which is defined as an area of 0.2% annual chance of flood; area with 1% annual chance of flood with an average depth of less than 1 foot or with drainage areas of less than 1 square mile; area protected by levees from 1% annual chance flood.

V. CONCLUSIONS

A revised hydrologic model was prepared to divert flow from four washes into the Flamingo Diversion – Jones Branch storm drain. The average flow depth in the washes downstream of Jones Boulevard was recalculated using the revised 100-year flow rates. The average depth of flow was found to be at or below 1 foot, except in the lower portions of the Central Branch Tributary and the Tropicana Wash South Branch. The flood zone for the washes is proposed to be revised to Zone X (shaded), except where the flow depth exceeds 1-foot in the lower reaches of the Central Branch Tributary and the Tropicana Wash South Branch.

APPENDIX A

FEMA Forms

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

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, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). 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 FEMA

This request is for a (check one):

☐ CLOMR: A letter from 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 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	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
320003	Clark County Unincorporated Areas	NV	32003C	2553E	9/27/02
320003	Clark County Unincorporated Areas	NV	32003C	2554E	9/27/02

2. Flooding Source: Tropicana Wash

3. Project Name/Identifier: Tropicana Wash

4. FEMA zone designations affected: 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 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: Syndi J. Flippin-Dudley, Ph.D., P.E	Company: The Louis Berger Group, Inc.	
Mailing Address: 500 East Amigo Court Suite 100 Las Vegas, NV 89119	Daytime Telephone No.: (702)-736-6632	Fax No.: (702)-736-0704
	E-Mail Address: sdudley@louisberger.com	
Signature of Requester (required): Syndi J. Flippin-Dudley		Date: 12/17/03

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: Dave Betley, P.E., Principal Engineer, Civil Engineering Division		Telephone No.: (702)-455-4808
Community Name: Clark County Unincorporated Areas	Community Official's Signature (required):	Date: 12/19/03

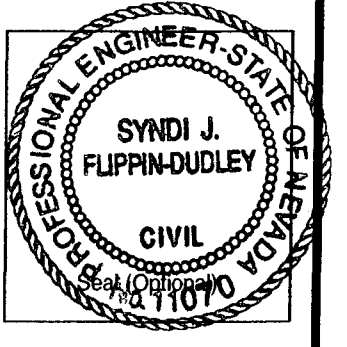
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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: Syndi J. Flippin-Dudley, Ph.D., P.E	License No.: 11070	Expiration Date:
Company Name: The Louis Berger Group, Inc.	Telephone No.: (702)-733-6632	Fax No.: (702)-736-0704
Signature: Syndi J. Flippin-Dudley		Date: 12/17/03

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)

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 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, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). 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: Tropicana 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)

attached explanation

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

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model [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 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	Water-Surface Elevations (ft.) Proposed/Revised
Downstream Limit				
Upstream Limit				

2. Hydraulic Method Used

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

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

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

Duplicate Effective Model*	Natural File Name:	Floodway File Name:
Corrected Effective Model*	Natural File Name:	Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name:	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:
Other - (attach description)	Natural File Name:	Floodway File 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 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.

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 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 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 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.

EXPLANATIONS

Description of Structure (Form 1, Section B-5b)

A box culvert and storm drain was constructed under Jones Boulevard between Sunset Road and the Flamingo Diversion Channel.

Explanation of Hydrology (Form 2, Section A-1, A-2)

The existing hydrology was taken from the Flood Insurance Restudy for Tropicana Wash and Tributaries, FEMA Case # 02-09-718P. The basins were subdivided, but hydrologic parameters were not changed.

Hydraulics (From 2, Section B-1, B-2, B-3, B-4)

Approximate methods were used.

Hydraulic Calculation Method (Form 2, Section B-2)

FlowMaster was used for the hydraulic calculations to determine the 100-year water surface elevations. Manning's Equation was used for the hydraulic calculations.

APPENDIX B

Figures

CLARK COUNTY UNINCORPORATED AREAS 320003

ZONE X

ZONE AE

ZONE A

FLAMINGO DIVERSION CHANNEL

AREA OF STUDY

TROPICANA DETENTION BASIN

REVISED PER LOMR CASE # 02-09-718P SEE FIGURES 1B & 1C

BLUE DIAMOND FAN

BLUE DIAMOND CHANNEL

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 21 SOUTH, RANGE 60 EAST AND TOWNSHIP 22 SOUTH, RANGE 60 EAST.

100-YEAR FLOOD CONTAINED IN CHANNEL

THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING

LIMIT OF DETAILED STUDY

PANEL 2553 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2553 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

MAP NUMBER 32003C2553 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

PANEL 2554 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2554 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

MAP NUMBER 32003C2554 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

FEMA FLOOD ZONE MAP

FROM FIRM MAP NUMBER 32003C-2553E AND NUMBER 32003C-2554E

FIGURE 1A

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-13.dgn - 9/25/2003 - 15:46:42 JPS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) zone 11. The horizontal datum is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and DEFENSE data. Segments were digitized off of the orthophotography based on sense of development.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or deannexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM, visit the Map Service Center (MSC) website at www.msc.fema.gov. A digital version of this map is also available for viewing and downloading from the Nevada Map Depository website at www.nvmap.state.nv.us.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

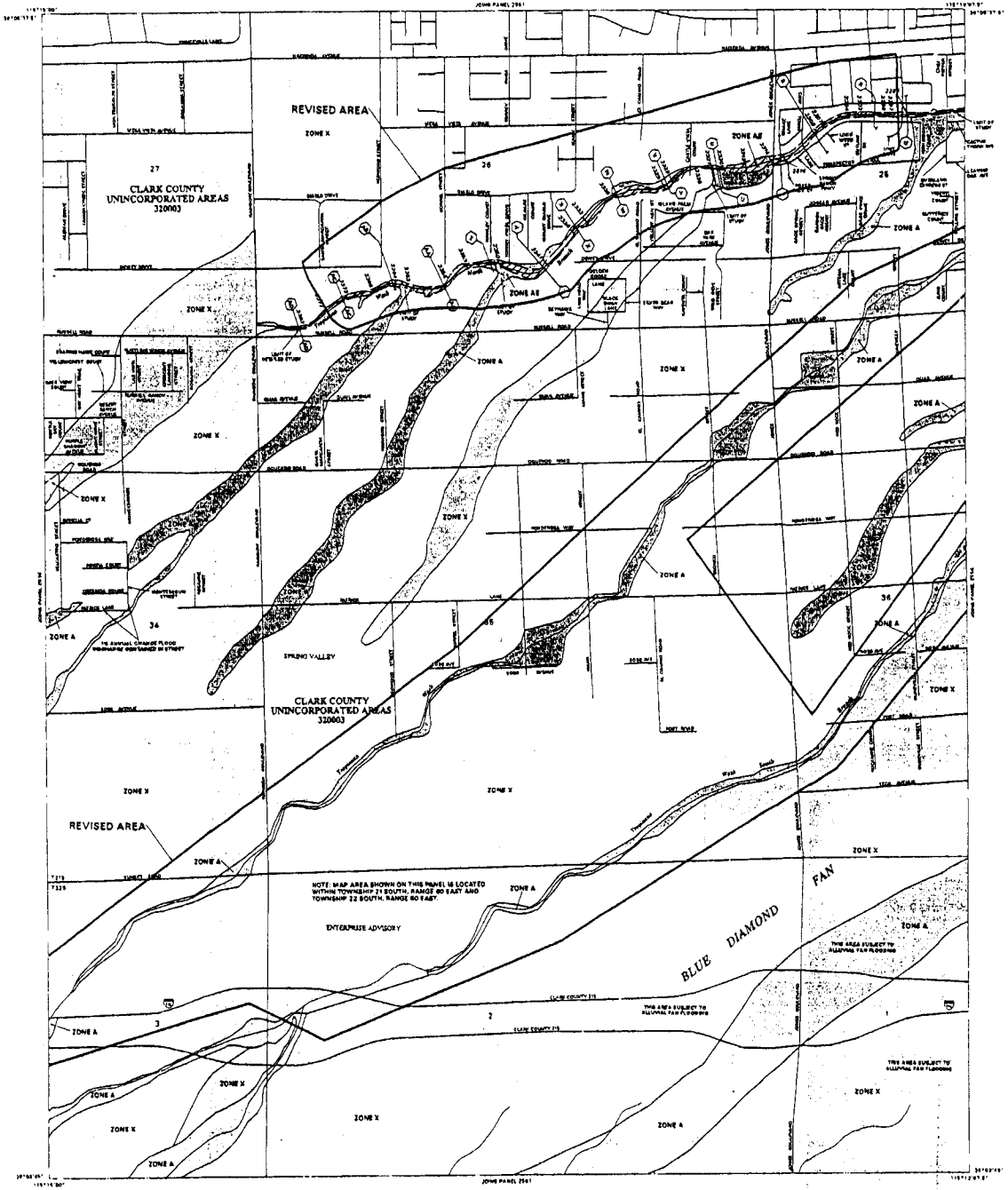
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to more detailed hydraulic computations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a cooperative partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share data and floodplain surveys within their Geographic Information System Management Office (GISMO).

The DFIRM contains several innovative features. These include a Southern Nevada GIS - Cooperative among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between fourteen separate jurisdictions. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This centerline database serves as the base map for the DFIRM.

DIGITAL DATA AVAILABILITY: http://www.co.clark.nv.us/comprop/dfirm.htm



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined

ZONE AE — Base Flood Elevations determined

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Area of reduced flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

ZONE A99 — Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross Section Line
- Transect Line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

- 4275000m — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- MT 8 — River mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 27, 2002: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to incorporate previously issued letters of map revision, to reflect updated topographic information, and to incorporate floodway boundary revisions.

For the exact date of map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 800'

PANEL 2553F

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2553 OF 4090

REVISED TO REFLECT LOMR DATED JUN 19 2003

MAP NUMBER
32003C2553E
MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

FIGURE 1B

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) zone 11. The horizontal datum is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional discrepancies in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was compiled using Orthophotography, dated 1998 or newer, and DEP/ZONE data. Geospatial data was digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information regarding Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment covering portions of this panel, and digital versions of this FIRM, may be available. Contact the FEMA Map Service Center at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
Fax: 800-358-9620
www.fema.gov/mit/tmc

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a cooperative partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long term approach to coordinating the update of flood studies and floodplain maps for the county. The floodplain management objective for the county has been to utilize the most accurate, up-to-date information in the administration of its floodplain management ordinance. To this end, Clark County has developed a base map and supporting topographic data that meet or exceed the standards established by the Clark County Geographic Information System Management Office (GISMO).

This DFIRM contains several interactive features. These include:

- Seamless Digital GIS - Conversion process using best practices that applies throughout Clark County. The foundation of conversion is the GIS Interlocal Agreement (formal agreement between regional partnerships). In part, this agreement states that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Seamless Digital GIS Website.

- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This comprises the base format for the DFIRM.

DIGITAL DATA AVAILABILITY: http://www.co.clark.nv.us/cis/clarkmap/gisnew.htm

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No base flood elevations determined.

ZONE AE — Base flood elevations determined.

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Area of special flood hazard formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A) — Cross section line
- (23) — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000 mN — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 mE — 5000-foot grid ticks
- DX5510 W — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to the Map Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 27, 2002 - to update corporate limits, to change Special Flood Hazard Areas, to incorporate previously issued Letters of Map Revision, to add Special Flood Hazard Areas, to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Area designations, to reflect updated topographic information, to change floodway widths, to change floodway designations, and to reflect the results of recent revised hydrologic and hydraulic analyses.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

PANEL 2554E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA
AND INCORPORATED AREAS

PANEL 2554 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTAINS: CLARK COUNTY, HENDERSON, LAS VEGAS, NORTH LAS VEGAS, PANEL, NONE

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 property.

REVISED TO REFLECT LOMR DATED JUN 19 2003

MAP NUMBER
32003C2554E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

FIGURE 1C

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

REVISED PER LOMR CASE # 02-09-718P SEE FIGURES 1B & 1C

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

FLAMINGO DIVERSION CHANNEL

AREA OF STUDY

TROPICANA DETENTION BASIN

BLUE DIAMOND CHANNEL

CLARK COUNTY UNINCORPORATED AREAS 320003

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 21 SOUTH, RANGE 60 EAST AND TOWNSHIP 22 SOUTH, RANGE 60 EAST.

PANEL 2563 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2563 OF 4090

MAP NUMBER 32003C2563 E
MAP REVISED: SEPTEMBER 27, 2002
Federal Emergency Management Agency

PANEL 2564 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2554 OF 4090

MAP NUMBER 32003C2554 E
MAP REVISED: SEPTEMBER 27, 2002
Federal Emergency Management Agency

ANNOTATED FLOOD ZONE MAP

FIGURE 2

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-1S.dgn - 12/15/2003 - 11:54:13 - JPS

TROPICANA WASH NORTH BRANCH

ZONE X (SHADED)

ZONE X

LOMR CASE NO: 00-09-8281
100 YEAR FLOOD CONTAINED
IN CHANNEL

CT-NT-1A
0.21

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

NORTH BRANCH TRIBUTARY

TROPICANA WASH CENTRAL BRANCH

FLAMINGO DIVERSION CHANNEL

ZONE X (SHADED)

RUSSELL ROAD

LB 1
0.54

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

8
0.0

LB 2
0.52

ZONE A

CT-2-A
1.1

LB 3
0.64

CT-2-E
0.70

9
0.0

10
0.99

ZONE X

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

DECATUR BOULEVARD

ZONE A

11
0.80

ZONE AE

JONES BOULEVARD

CENTRAL BRANCH TRIBUTARY

12
0.69

13
1.0

AREA OF STUDY

ZONE X

TROPICANA WASH SOUTH BRANCH

14
0.99

ZONE X (SHADED)

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

15
0.84

ZONE A

SUNSET ROAD

N

400 200 0 400 800 1600

SYNDI J. PUPPIN-DUDLEY
Exp. 11-30-05
CIVIL
No. 11070
12/17/03

LEGEND

(XX) CROSS SECTION FROM HDR FIS (2002)

(CT-) CROSS SECTION FROM CH2M HILL FIS (1992)

(LB-) CROSS SECTION ADDED BY LOUIS BERGER FOR THIS LOMR

[X.XX] HYDRAULIC DEPTH AT CROSS SECTION

WORK MAP
FLAMINGO DIVERSION - JONES BRANCH
FIGURE 3

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-12.dgn - 12/15/2003 - 11:47:40 JPS

Photo 1: A Typical Drop Inlet with a sump on Jones Boulevard

Photo 2: Tropicana Wash Tributary Central Branch near LB-X-section 4

APPENDIX C

Hydrologic Analysis

Figure C-1 – Drainage Basin Map

The Louis Berger Group
500 Amigo Court, Suite 100
Las Vegas, NV 89119

Telephone: (702) 736-6632
Fax: (702) 736-0704

RFCD
2004 MAY 11 AM 10: 29

FACSIMILE MESSAGE

DATE:

TO: KEVIN EUBANKS
Company: CCRFCD
Fax No.: 455-3870
cc:

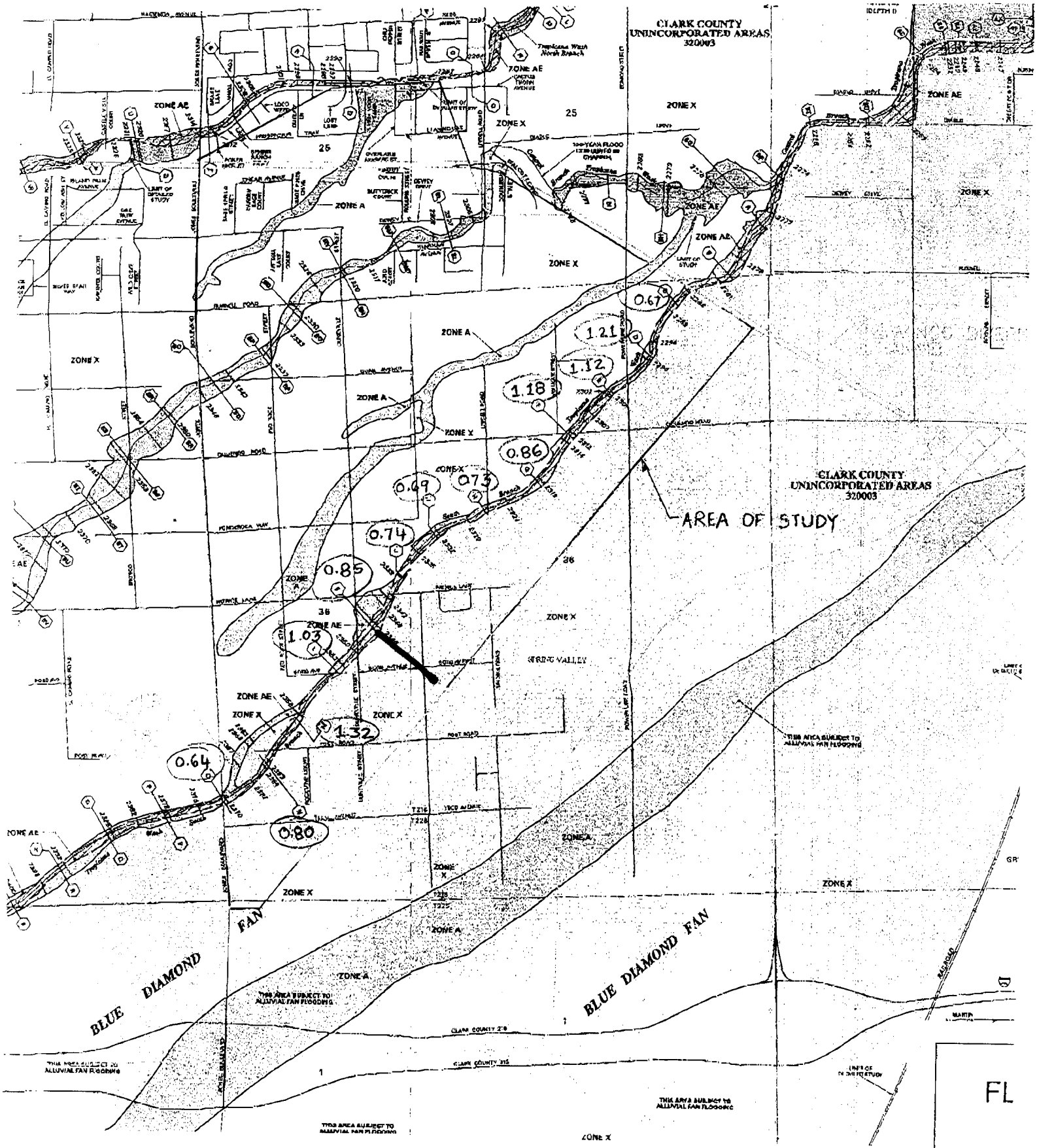
FROM: FRED RETZLAFF
Project # CASE # 04-09-0491P
Subject: SOUTH BRANCH MODEL HYDRAULIC DEPTHS
Number of pages sent (including cover sheet)
1 OF 2

COMMENTS/REMARKS

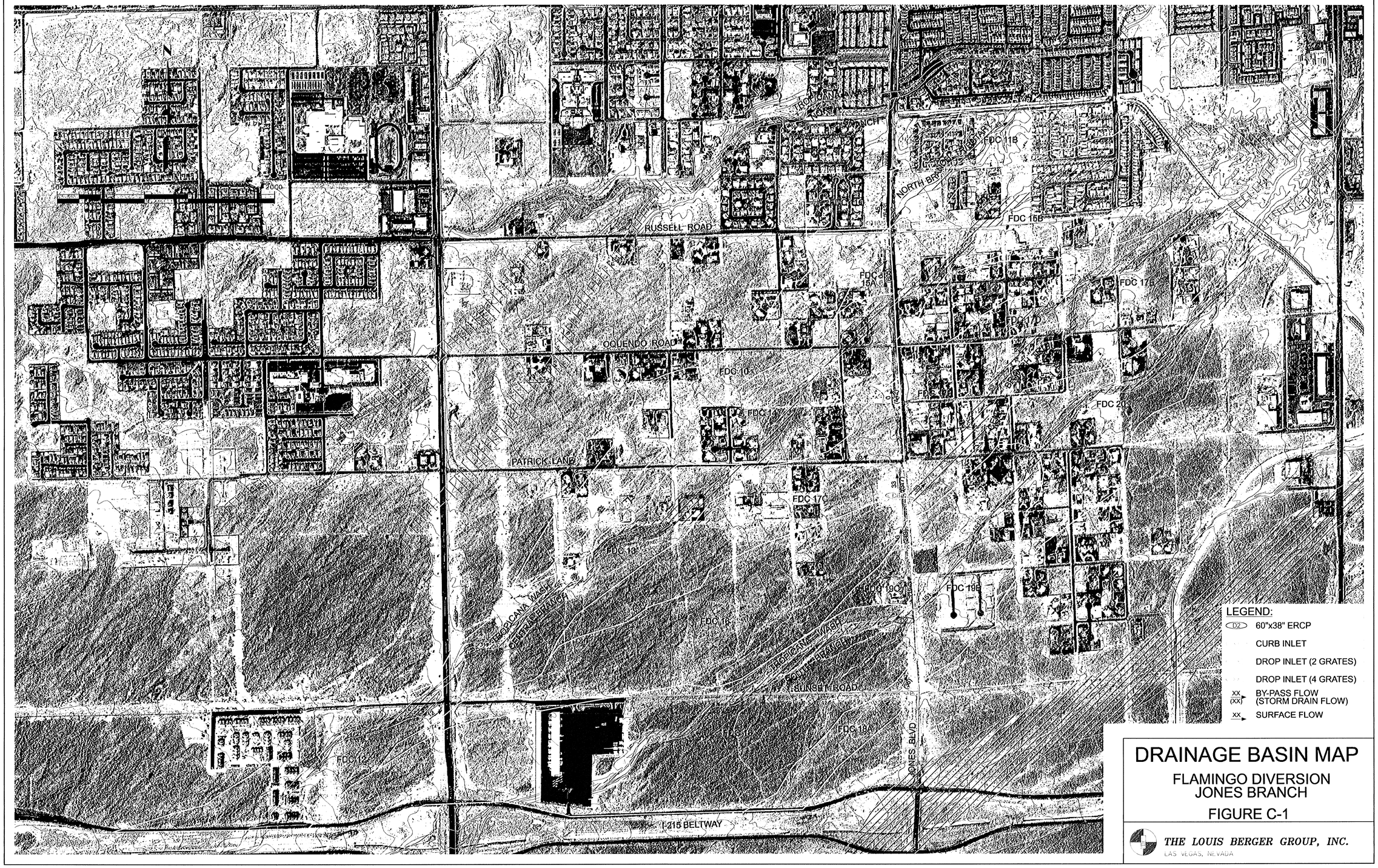
KEVIN, ATTACHED ARE THE HYDRAULIC DEPTH RESULTS USING THE CH2M HILL HEC-2 MODEL.

PLEASE ADVISE US IMMEDIATELY IF YOU DO NOT RECEIVE ALL PAGES BEING TRANSMITTED

MAY-11-04 TUE 10:37 AM THE LOUIS BERGER GROUP FAX:1 702 736 0704 PAGE 1



BOUNDARY CONDITION : KNOWN WATER SURFACE ELEVATION



LEGEND:

- 60"x38" ERCP
- CURB INLET
- DROP INLET (2 GRATES)
- DROP INLET (4 GRATES)
- BY-PASS FLOW (STORM DRAIN FLOW)
- SURFACE FLOW

DRAINAGE BASIN MAP

FLAMINGO DIVERSION JONES BRANCH

FIGURE C-1

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879 - flam - jones\exhibits\879-FIGURE 4.dgn - 10/20/2003 - 14:59:05 - GRV

Revised HEC-1 Model

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   20OCT03  TIME  17:34:27   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
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

   1          ID    REQUEST FOR LETTER OF MAP REVISION                          DATE: 08/12/03
   2          ID    PREPARED FOR:  CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
   3          ID    ENGINEER:  THE LOUISBERGER GROUP, INC.                        BY: JSD
   4          ID    FILE NAME: JonesSD.dat
   5          ID    MODIFIED FROM THE FLOOD INSURANCE RESTUDY FOR
   6          ID    TROPICANA WASH AND TRIBUTARIES DONE BY HDR
   7          ID
   8          ID    - 100-YEAR, 6-HOUR MODEL
   9          ID    - LOCAL STORM RAINFALL DISTRIBUTION (SDN#3)
  10          ID    - JD RECORDS USED TO SIMULATE AREAL REDUCTION FACTORS FOLLOWING
  11          ID      TABLE 502 OF THE CCRFCD HYDROLOGIC CRITERIA AND DRNG DSGN MANUAL
  12          ID    - TROPICANA WASH WATERSHED WITH THE FOLLOWING DRAINAGE STRUCTURES IN PLACE:
  13          ID      ** BLUE DIAMOND DETENTION BASIN - (EXISTING)
  14          ID      ** LAS VEGAS BELTWAY CHANNEL, SECTIONS 7A AND 7B - (EXISTING)
  15          ID      ** LOWER BLUE DIAMOND CHANNEL - (EXISTING)
  16          ID      ** TROPICANA OUTLET CHANNEL - (EXISTING)
  17          ID      ** TROPICANA DETENTION BASIN - (EXISTING)
  18          ID      ** LOWER FLAMINGO DIVERSION CHANNEL, PH I - (TO BE COMPLETE IN 12-18MOS)
  19          ID    - NEW MODEL FOR WATERSHED BETWEEN BELTWAY CHANNEL AND THE PHASE I LIMIT OF
  20          ID      THE FLAMINGO DIVERSION CHANNEL CHANNEL.
  21          ID    - ALL RUNOFF FROM THIS WATERSHED IS INTERCEPTED BY THE FLAMINGO DIVERSION
  22          ID      CHANNEL, PHASE I IMPROVEMENTS AND CONVEYED DIRECTLY TO THE TROPICANA
  23          ID      DETENTION BASIN.
  24          ID    - NO CONTRIBUTION FROM UPPER BLUE DIAMOND FOR FLAMINGO/RED ROCK STORM
  25          ID    - NO CONTRIBUTION FROM AREAS SOUTH OF THE LAS VEGAS BELTWAY
  26          ID    - MODEL UPDATED AUGUST 2003 TO INCLUDE THE JONES BLVD STORMDRAIN IMPROVMENTS
              *DIAGRAM
  27          IT       1       0       0     300
  28          IO       5
  29          IN       5
  30          JD    2.77   0.001
  31          PC    0.00    0.02   0.057    0.07   0.087   0.108   0.124   0.130   0.130   0.130
  32          PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
  33          PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
  34          PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
  35          PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
  36          PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
  37          PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
  38          PC   0.998   0.999   1.000
  39          JD    2.72     0.5
  40          JD    2.69     1.0
  41          JD    2.58     2.0
  42          JD    2.52     4.0
              *  ***
              *  ***

  43          KK  FDC18A  CONCENTRATION POINT C219
  44          KM    RUNOFF FROM SUBBASIN FDC18A AT C219
  45          BA   0.027
  46          LS       0    88.0
  47          UK     400   0.016   0.100     100
  48          RK    1700   0.015   0.030            TRAP       10      10
              *
```

1 HEC-1 INPUT PAGE 2

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

  49          KK      J1
  50          KM    DIVERT FLOW INTO 4 GRATE FIELD INLET
  51          KM    WEST SIDE OF JONES JUST SOUTH OF SUNSET
  52          DT      D1              126
  53          DI       1      49
  54          DQ       0      49
              *

  55          KK    J1J2
  56          KM    ROUTE BYPASS FLOW FROM J1 TO J2
```

```
                                                                JONESSD
   57          RK     900   0.0092  0.020            TRAP      2       10
               *

   58          KK   FDC18  CONCENTRATION POINT C216
   59          KM    RUNOFF FROM SUBBASIN FDC18 AT C216
   60          BA   0.274
   61          LS       0    88.0
   62          UK     400    .015    0.10     100
   63          RK    4800   0.015   0.030    0.15    TRAP      10      10
   64          RK    3000   0.014   0.035            TRAP      40       6
               *

   65          KK    C216
   66          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC18 AND ROUTED FLOWS FROM J1
   67          HC       2
               *

   68          KK     J2A
   69          KM    DIVERT FLOW INTO AN ELLEPTICAL CONCRETE PIPE
   70          KM    WEST SIDE OF JONES BETWEEN POST AND SUNSET
   71          DT      D2             126
   72          DI       0     126
   73          DQ       0     126
               *

   74          KK     J2B
   75          KM    JONES BLVD OVERFLOW INTO THE SOUTH BRANCH OF THE TROPICAN WASH
   76          DT      W1            1000
   77          DI       0      44      50     100     200     500    1000
   78          DQ       0       1       7      57     157     457     957
               *
               *  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  **
               *
               *

   79          KK    J2D3
   80          KM    ROUTE BYPASS FLOW FROM J2 TO D3
   81          RK     425  0.0082   0.020            TRAP       4      10
               *
1                                        HEC-1 INPUT                                          PAGE  3

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

   82          KK  FDC19C  CONCENTRATION POINT C220
   83          KM    RUNOFF FROM SUBBASIN FDC19C
   84          BA   0.014
   85          LS            84.5
   86          UK     400   0.015    0.10     100
   87          RK    1300   0.012   0.040            TRAP      30       6
               *

   88          KK    C220
   89          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC19C AND ROUTED FLOWS FROM J2
   90          HC       2
               *

   91          KK    J3D4
   92          KM   ROUTE BYPASS FLOW FROM J3 TO D4
   93          RK     300  0.0095   0.020            TRAP       4      10
               *

   94          KK  JFD19C
   95          KM    DIVERT FLOW INTO DROP INLETS
   96          KM   COMBINING INLETS D3 AND D4
   97          DT  DFD19C             98
   98          DI       0      98
   99          DQ       0      98
               *

  100          KK   FDC16  CONCENTRATION POINT C214
  101          KM    RUNOFF FROM SUBBASIN FDC16 AT C214
  102          BA   0.166
  103          LS       0    87.2
  104          UK     400    .015    0.10     100
  105          RK    4800   0.015    0.04            TRAP      10      10
               *

  106          KK    C214
  107          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC16 AND ROUTED FLOWS FROM J4
  108          HC       2
               *

  109          KK   JFD16
  110          KM    DIVERT FLOW INTO DROP INLETS
  111          KM   COMBINING INLETS D5 AND D6
  112          DT   DFD16             98
  113          DI       0      98
  114          DQ       0      98
               *

  115          KK     J6B
  116          KM    JONES BLVD OVERFLOW INTO A TRIBUTARY OF THE CENTAL BRANCH OF THE TROP. WASH
  117          DT      W2            1000
  118          DI       0      34      50     100     200     500    1000
  119          DQ       0       1      17      67     167     467     967
               *
               *  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  **
               *
1                                        HEC-1 INPUT                                          PAGE  4

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

  120          KK    J6D7
  121          KM    ROUTE BYPASS FLOW FROM J6 TO D7
```

```
                                                                JONESSD
122          RK     310  0.0049   0.020            TRAP      2       10
             *

123          KK  FDC17C  CONCENTRATION POINT C221
124          KM    RUNOFF FROM SUBBASIN FDC17C
125          BA   0.104
126          LS            84.3
127          UK     400   0.010    0.10     100
128          RK    4800   0.008   0.020    0.06    TRAP      30       8
             *

129          KK    C221
130          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC17C AND ROUTED FLOWS FROM J6
131          HC       2
             *

132          KK  JFD17C
133          KM    DIVERT FLOW INTO DROP INLETS
134          KM   COMBINING INLETS D7, D8, D9A, D9B, D10, D11
135          DT  DFD17C             208
136          DI       0     208
137          DQ       0     208
             *
             * ***  ***

138          KK   FDC12  CONCENTRATION POINT C210
139          KM    RUNOFF FROM SUBBASIN FDC12 AT C210
140          BA   0.072
141          LS       0    88.0
142          UK     400    .015    0.10     100
143          RK    3000   0.015    0.04            TRAP      40       6
             *

144          KK  210211
145          KM    ROUTE RUNOFF FROM C210 TO C211
146          RK    4600   0.013   0.040            TRAP      40       6
             *

147          KK   FDC13  CONCENTRATION POINT C211
148          KM    RUNOFF FROM SUBBASIN FDC13
149          BA   0.086
150          LS            86.7
151          UK     400   0.015    0.10     100
152          RK    4200   0.013   0.040            TRAP      40       6
             *

153          KK    C211
154          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC13 AND ROUTED FLOWS FROM C210
155          HC       2
             *
1                                        HEC-1 INPUT                                                    PAGE  5

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

156          KK  211212
157          KM    ROUTE RUNOFF FROM C211 TO C212
158          RK    2900   0.014   0.040            TRAP      20      10
             *

159          KK   FDC14  CONCENTRATION POINT C212
160          KM    RUNOFF FROM SUBBASIN FDC14
161          BA   0.114
162          LS            84.0
163          UK     400   0.015    0.10     100
164          RK    2500   0.014   0.040            TRAP      20      10
             *

165          KK    C212
166          HC       2
             *

167          KK   C212A  CONCENTRATION POINT C 212A
168          KM    COMBINE HYDROGRAPHS: C212 AND J11D12
169          HC       2
             *

170          KK   JFD14
171          KM    DIVERT FLOW INTO DROP INLETS
172          KM   COMBINING INLETS D12, D13, D14 AND D15
173          DT   DFD14             196
174          DI       0     196
175          DQ       0     196
             *

176          KK    J13B
177          KM    JONES BLVD OVERFLOW INTO THE CENTRAL BRANCH OF THE TROPICANA WASH
178          DT      W3             965
179          DI       0      36      50      75     100     500    1000
180          DQ       0       1      15      40      65     465     965
             *
             *  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  **
             *

181          KK  FDC15A CONCENTRATION POINT C223
182          KM    RUNOFF FROM SUBBASIN FDC15A AT C223
183          BA    .010
184          LS       0    86.9
185          UK     400    .015    0.10     100
186          RK     900   0.020   0.035            TRAP      10      10
             *

187          KK     J15
188          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC15A AND STREET FLOW FROM J15
189          HC       2
             *
```

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

  190     KK  J15J16
  191     KM    ROUTE STREET FLOW FOR J15 TO J16
  192     RK     328  0.0098   0.020            TRAP       4      10
          *

  193     KK   FDC10  CONCENTRATION POINT C208
  194     KM    RUNOFF FROM SUBBASIN FDC10 AT C208
  195     BA    .099
  196     LS       0    84.3
  197     UK     400    .015    0.10     100
  198     RK    5200   0.016   0.035            TRAP      10      10
          *

  199     KK    C208  CONCENTRATION POINT C208
  200     KM    COMBINE HYDROGRAPHS: C208 AND J15J16
  201     HC       2
          *

  202     KK    J16A
  203     KM    DIVERT FLOW INTO INLET
  204     KM    WEST SIDE OF JONES ON RUSSEL
  205     DT    D16A            31.64
  206     DI       0    11.0   70.00
  207     DQ       0    7.47   31.64
          *

  208     KK  J15J16
  209     KM    ROUTE STREET FLOW FOR J15 TO J16
  210     RK     500  0.0098   0.020            TRAP       4      10
          *

  211     KK     JJ5
  212     KM    JONES BLVD OVERFLOW INTO THE NORTH BRANCH OF THE TROPICANA WASH
  213     DT      W4          999.00
  214     DI       0        13      50     100     500    1000
  215     DQ       0         1      38      88     488     988
          *

  216     KK  FDC11C  CONCENTRATION POINT C222
  217     KM    RUNOFF FROM SUBBASIN FDC11C AND ROUTE
  218     BA   0.024
  219     LS            86.1
  220     UK     400   0.015    0.10     100
  221     RK     850  0.0125   0.025            TRAP      30       8
          *

  222     KK    C222  CONCENTRATION POINT C222
  223     KM    COMBINE HYDROGRAPHS: FDC11A AND J17J18
  224     HC       2
          *
```



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

  225     KK     J17
  226     KM    DIVERT FLOW INTO INLET
  227     KM    WEST SIDE OF JONES JUST SOUTH OF DEWEY
  228     DT    D19A            45.83
  229     DI       0    13.5  140.00
  230     DQ       0    8.25   45.83
          *

  231     KK     JJ6
  232     KM    DIVERT FLOW INTO W3
  233     KM    WHEN THE CAPACITY OF THE ROAD HAS BEEN EXCEEDED
  234     DT    T11C          999.00
  235     DI       0     141     500    1000
  236     DQ       0       1     360     860
          *
          *  ***
          *  THIS IS FOR W1

  237     KK      W1
  238     KM   THE DIVERSION OF W1 IS BEING BROUGHT BACK HERE
  239     DR      W1
          *

  240     KK     RW1
  241     RK    2200   0.012   0.040            TRAP      30      6
          *

  242     KK  FDC19B
  243     BA   0.089
  244     LS       0    84.5
  245     UK     400   0.015    0.10     100
  246     RK    2200   0.012   0.040            TRAP      30      6
          *

  247     KK     W1B
  248     HC       2
          *

  249     KK    RW1B
  250     RK    4000   0.012   0.040            TRAP      30      6
          *

  251     KK   FDC20
  252     BA   0.118
  253     LS       0    84.7
  254     UK     400   0.015    0.10     100
```

```
255          RK    4000   0.012   0.040           TRAP      30      6
             *
```



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

256          KK    C218
257          HC       2
             *
             * ***
             *  THIS IS FOR W2
258          KK      W2
259          KM   THE DIVERSION OF W2 IS BEING BROUGHT BACK HERE
260          DR      W2
             *
261          KK     RW2
262          RK    4800   0.008   0.020    0.06    TRAP      30       8
             *
263          KK  FDC17B
264          BA  0.0857
265          LS            84.3
266          UK     400   0.010    0.10     100
267          RK    2742  0.0135   0.020            TRAP      30       8
             *
268          KK     W2B
269          HC       2
             *
270          KK    RW2A
271          RK     500   0.008   0.020    0.06    TRAP      30       8
             *
272          KK  FDC17D
273          BA  0.0154
274          LS            84.3
275          UK     400   0.010    0.10     100
276          RK    1494  0.0154   0.020            TRAP      30       8
             *
277          KK     W2D
278          HC       2
             *
279          KK    RW2B
280          RK    2100   0.008   0.020    0.06    TRAP      30       8
             *
281          KK  FDC17E
282          BA  0.1049
283          LS            84.3
284          UK     400   0.010    0.10     100
285          RK    4224  0.0137   0.020            TRAP      30       8
             *
```



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

286          KK     W2E
287          HC       2
             *
             * ***
             *  THIS IS FOR W3
288          KK      W3
289          KM   THE DIVERSION OF W3 IS BEING BROUGHT BACK HERE
290          DR      W3
             *
291          KK  FDC15B
292          BA    .102
293          LS       0    86.9
294          UK     400    .015    0.10     100
295          RK    2000   0.020   0.035            TRAP      10      10
             *
296          KK    C213
297          HC       2
             *
             * ***
             *  THIS IS WHERE W4 STARTS
298          KK      W4
299          KM   RETREIVE OVERFLOW AT RUSSEL
300          DR      W4
             *
301          KK    J16B
302          KM    DIVERT FLOW INTO INLET
303          KM    EAST SIDE OF JONES ON RUSSEL
304          DT    D16B           7.12
305          DI       0     1.4   12.00
306          DQ       0    1.21    7.12
             *
307          KK    T11C
308          KM   THE DIVERSION OF T212A IS BEING BROUGHT BACK HERE
309          DR    T11C
             *
310          KK    J18A
```

```
311          KM    DIVERT FLOW INTO INLET
312          KM    EAST SIDE OF JONES JUST SOUTH OF DEWEY
313          DT    D19B          46.11
314          DI       0    13.5  145.00
315          DQ       0    8.17   46.11
             *
```



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

316          KK     CB6
317          HC       2
             *

318          KK     RW4
319          RK    2000   0.012   0.040           TRAP      30      6
             *

320          KK  FDC11B
321          BA   0.043
322          LS       0    86.1
323          UK     400   0.015    0.10     100
324          RK    2000  0.0125   0.025           TRAP      30      8
             *

325          KK    C209
326          HC       2
             *
             *
             *  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  **
             *  ***  ***  * END ROAD DRAINAGE MODEL AND BEGIN STORM DRAINAGE MODEL *  ***  **
             *  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  **
             *

327          KK      G1
328          KM    D1 GRATE INFLOW
329          DR      D1
             *

330          KK     SD1
331          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
332          RK     102  0.0056   0.013           CIRC     3.0
             *

333          KK     SD2
334          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
335          RK     302  0.0052   0.013           CIRC     3.5
             *

336          KK     SD3
337          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
338          RK     300  0.0057   0.013           CIRC     4.0
             *

339          KK     SD4
340          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
341          RK     286  0.0083   0.013           CIRC     4.5
             *
```



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

342          KK      G2
343          KM    D2 GRATE INFLOW
344          DR      D2
             *

345          KK    CSD5
346          KM    COMBINE HYDROGRAPHS: INLET G2 AND ROUTED FLOWS FROM SD4
347          HC       2   0.001
             *

348          KK     SD5
349          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
350          RK     422  0.0120   0.013           CIRC     5.0
             *

351          KK  GFD19C
352          KM    D3 AND D4 GRATE INFLOW
353          DR  DFD19C
             *

354          KK    CSD7
355          KM    COMBINE HYDROGRAPHS: INLET G4 AND ROUTED FLOWS FROM SD6
356          HC       2
             *

357          KK     SD7
358          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
359          RK     290  0.0096   0.013           CIRC     6.0
             *

360          KK   GFD16
361          KM    D5 AND D6 GRATE INFLOW
362          DR   DFD16
             *

363          KK    CSD9
364          KM    COMBINE HYDROGRAPHS: INLET G6 AND ROUTED FLOWS FROM SD8
365          HC       2
             *

366          KK     SD9
367          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
```

```
368          RK     309  0.0074   0.013            DEEP     7.0
             *

369          KK  GFD17C
370          KM    D7, D8, D9A, D9B, D10 AND D11 INFLOW
371          DR  DFD17C
             *
```



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

372          KK   CSD14
373          KM    COMBINE HYDROGRAPHS: INLET G11 AND ROUTED FLOWS FROM SD9
374          HC       2
             *

375          KK    SD14
376          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
377          RK     599  0.0050   0.013            DEEP    10.0
             *

378          KK   GFD14
379          KM    D15 GRATE INFLOW
380          DR   DFD14
             *

381          KK   CSD16
382          KM    COMBINE HYDROGRAPHS: INLET GFD14 AND ROUTED FLOWS FROM SD14
383          HC       2   0.001
             *

384          KK    SD16
385          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
386          RK     658  0.0050   0.013            DEEP    13.0
             *

387          KK    G16A
388          KM   RETREIVE FLOW AT RUSSELL
389          DR    D16A
             *

390          KK    SD18
391          RK     141  0.0112   0.013            DEEP    10.0
             *

392          KK    G16B
393          KM   RETREIVE FLOW FROM RUSSEL
394          DR    D16B
             *

395          KK   CSD16
396          HC       3   0.001
             *

397          KK    SD19
398          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
399          RK      46  0.0522   0.013            DEEP    10.0
             *

400          KK    SD20
401          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
402          RK      80  0.0112   0.013            DEEP    10.0
             *
```



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

403          KK    SD21
404          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM
405          RK     470  0.0112   0.013            DEEP    10.0
             *

406          KK    G19A
407          KM   THE DIVERSION OF D19A BEING BROUGHT BACK HERE
408          DR    D19A
             *

409          KK    G19B
410          KM    D19 GRATE INFLOW
411          DR    D19B
             *

412          KK     CB6
413          HC       2   0.001
             *

414          KK   CSD22
415          KM    COMBINE HYDROGRAPHS: INLET G19 AND ROUTED FLOWS FROM SD21
416          HC       2
             *

417          KK    SD22
418          KM    ROUTE FLOW FROM THROUGH CLOSED DRAINAGE SYSTEM TO EXISTING 10'x8' RCB
419          RK     385  0.0164   0.013            DEEP     8.0
             *
             *  ***
420          ZZ
```

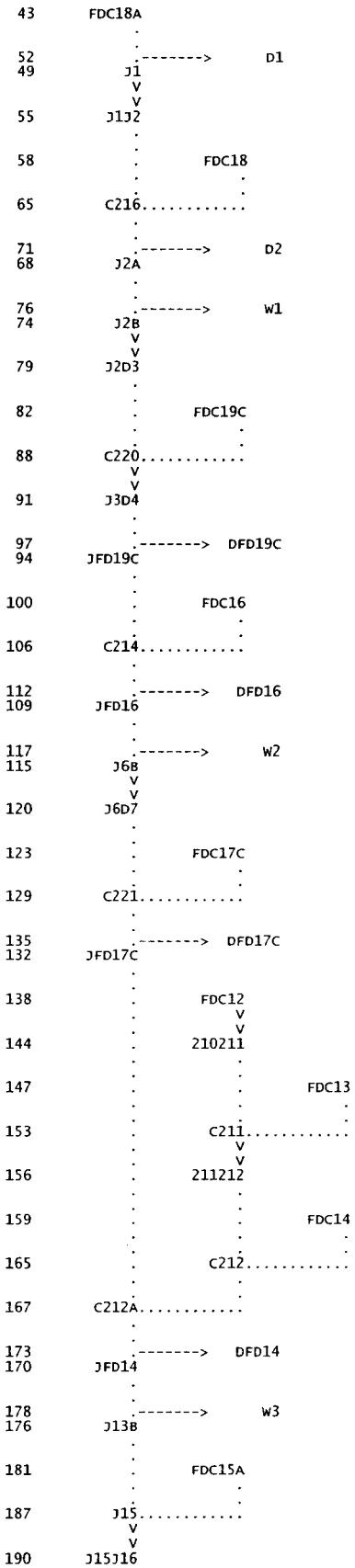
1

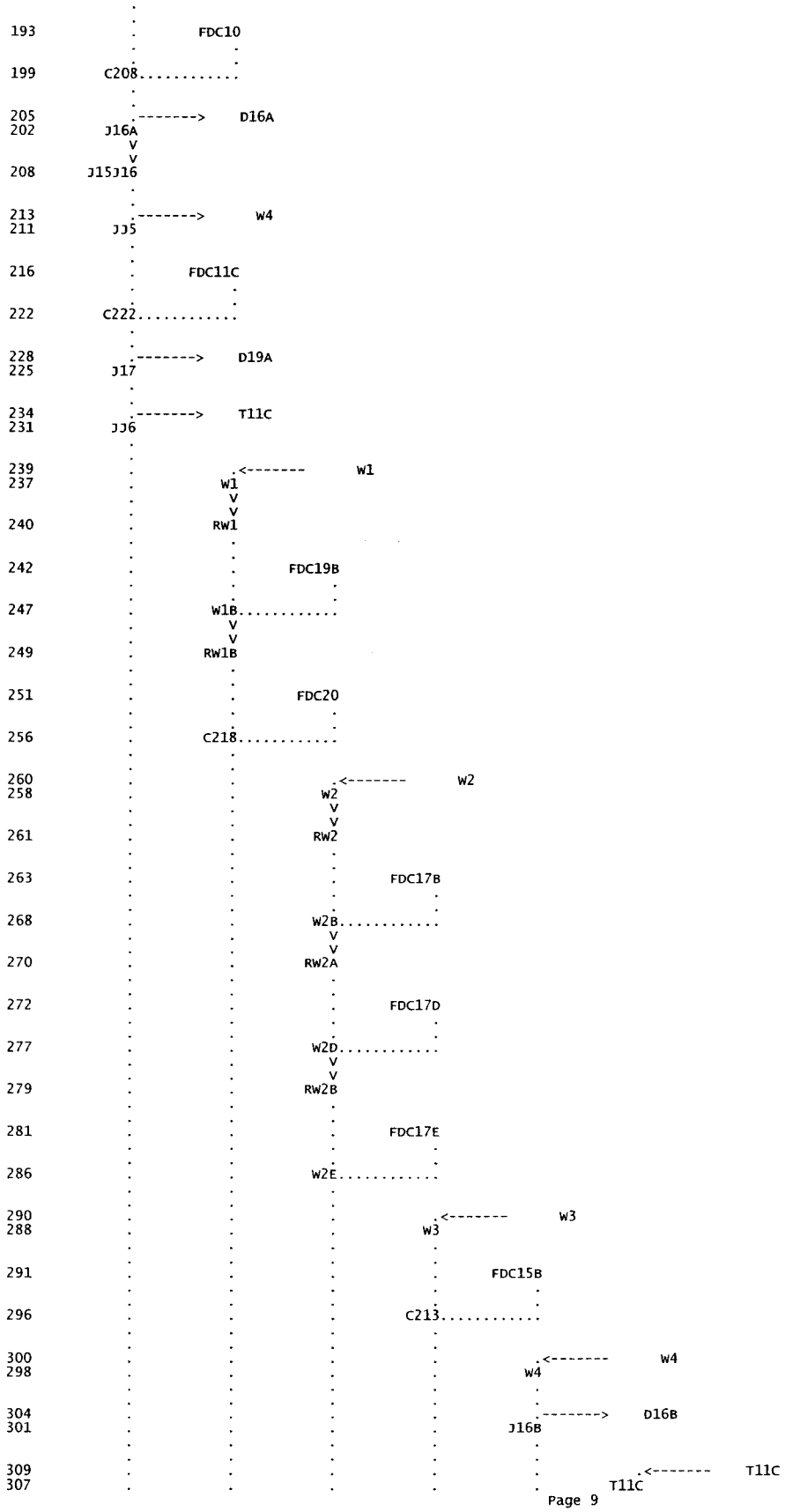
SCHEMATIC DIAGRAM OF STREAM NETWORK

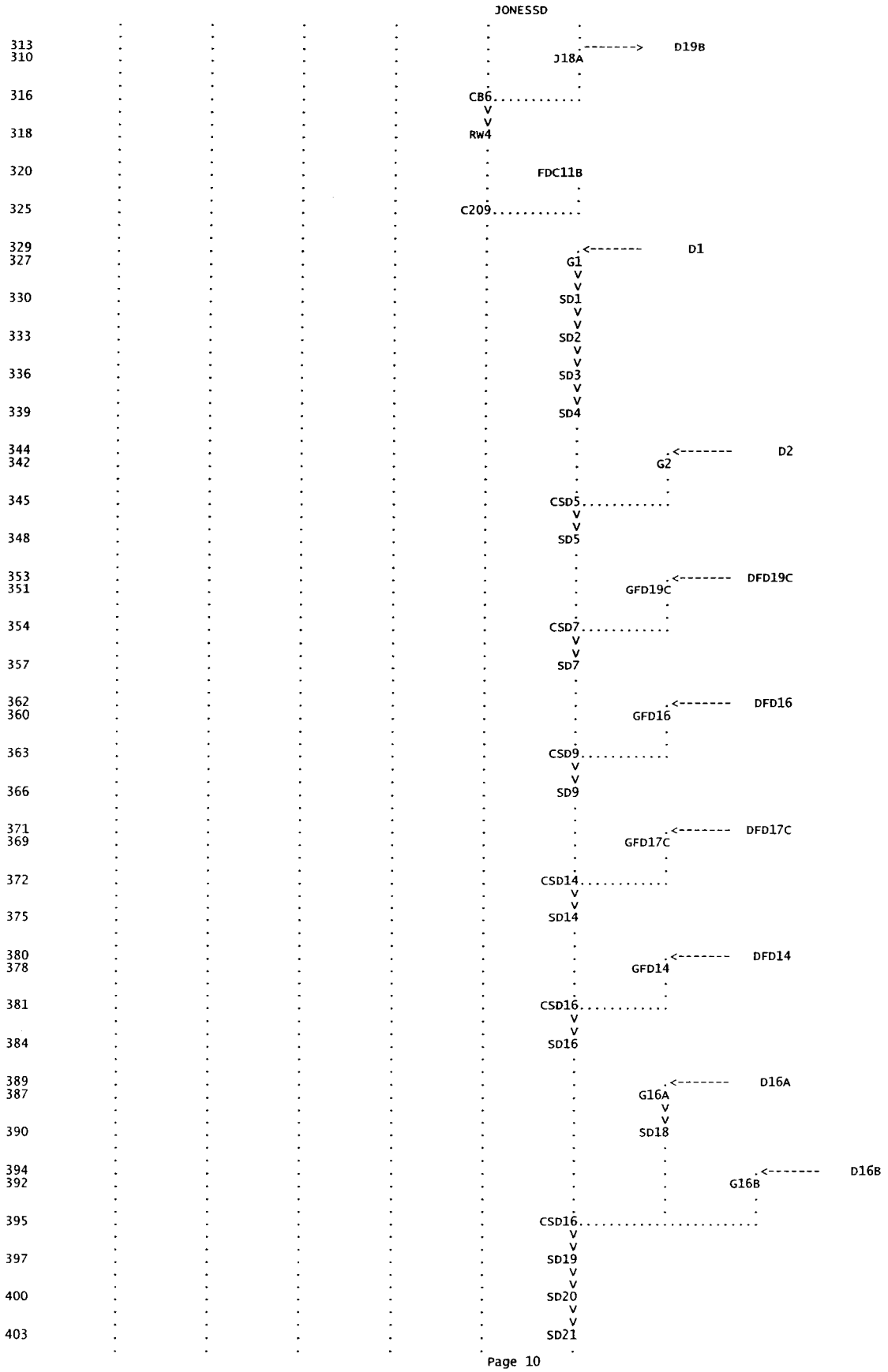
INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW


43 FDC18A
52 D1
49 J1
55 J1J2
58 FDC18
65 C216
71 D2
68 J2A
76 W1
74 J2B
79 J2D3
82 FDC19C
88 C220
91 J3D4
97 DFD19C
94 JFD19C
100 FDC16
106 C214
112 DFD16
109 JFD16
117 W2
115 J6B
120 J6D7
123 FDC17C
129 C221
135 DFD17C
132 JFD17C
138 FDC12
144 210211
147 FDC13
153 C211
156 211212
159 FDC14
165 C212
167 C212A
173 DFD14
170 JFD14
178 W3
176 J13B
181 FDC15A
187 J15
190 J15J16


193
FDC10
199
C208
205
D16A
202
J16A
208
J15J16
213
W4
211
JJ5
216
FDC11C
222
C222
228
D19A
225
J17
234
T11C
231
JJ6
239
W1
237
W1
240
RW1
242
FDC19B
247
W1B
249
RW1B
251
FDC20
256
C218
260
W2
258
W2
261
RW2
263
FDC17B
268
W2B
270
RW2A
272
FDC17D
277
W2D
279
RW2B
281
FDC17E
286
W2E
290
W3
288
W3
291
FDC15B
296
C213
300
W4
298
W4
304
D16B
301
J16B
309
T11C
307
T11C


JONESSD
313
310
J18A
D19B
316
CB6
318
RW4
320
FDC11B
325
C209
329
327
G1
D1
330
SD1
333
SD2
336
SD3
339
SD4
344
342
G2
D2
345
CSD5
348
SD5
353
351
GFD19C
DFD19C
354
CSD7
357
SD7
362
360
GFD16
DFD16
363
CSD9
366
SD9
371
369
GFD17C
DFD17C
372
CSD14
375
SD14
380
378
GFD14
DFD14
381
CSD16
384
SD16
389
387
G16A
D16A
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SD18
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CSD16
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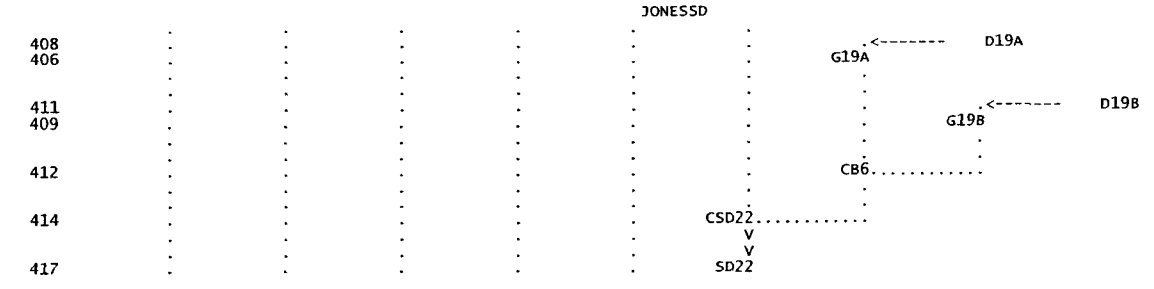
SD19
400
SD20
403
SD21



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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1*****************************************
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*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   20OCT03  TIME  17:34:27   *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

REQUEST FOR LETTER OF MAP REVISION DATE: 08/12/03
PREPARED FOR: CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
ENGINEER: THE LOUISBERGER GROUP, INC. BY: JSD
FILE NAME: JonesSD.dat
MODIFIED FROM THE FLOOD INSURANCE RESTUDY FOR
TROPICANA WASH AND TRIBUTARIES DONE BY HDR

- 100-YEAR, 6-HOUR MODEL
- LOCAL STORM RAINFALL DISTRIBUTION (SDN#3)
- JD RECORDS USED TO SIMULATE AREAL REDUCTION FACTORS FOLLOWING
  TABLE 502 OF THE CCRFCD HYDROLOGIC CRITERIA AND DRNG DSGN MANUAL
- TROPICANA WASH WATERSHED WITH THE FOLLOWING DRAINAGE STRUCTURES IN PLACE:
  ** BLUE DIAMOND DETENTION BASIN - (EXISTING)
  ** LAS VEGAS BELTWAY CHANNEL, SECTIONS 7A AND 7B - (EXISTING)
  ** LOWER BLUE DIAMOND CHANNEL - (EXISTING)
  ** TROPICANA OUTLET CHANNEL - (EXISTING)
  ** TROPICANA DETENTION BASIN - (EXISTING)
  ** LOWER FLAMINGO DIVERSION CHANNEL, PH I - (TO BE COMPLETE IN 12-18MOS)
- NEW MODEL FOR WATERSHED BETWEEN BELTWAY CHANNEL AND THE PHASE I LIMIT OF
  THE FLAMINGO DIVERSION CHANNEL CHANNEL.
- ALL RUNOFF FROM THIS WATERSHED IS INTERCEPTED BY THE FLAMINGO DIVERSION
  CHANNEL, PHASE I IMPROVEMENTS AND CONVEYED DIRECTLY TO THE TROPICANA
  DETENTION BASIN.
- NO CONTRIBUTION FROM UPPER BLUE DIAMOND FOR FLAMINGO/RED ROCK STORM
- NO CONTRIBUTION FROM AREAS SOUTH OF THE LAS VEGAS BELTWAY
- MODEL UPDATED AUGUST 2003 TO INCLUDE THE JONES BLVD STORMDRAIN IMPROVMENTS

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

   IT          HYDROGRAPH TIME DATA
                    NMIN           1  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         0459  ENDING TIME
                   ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL      .02 HOURS
                    TOTAL TIME BASE    4.98 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

30 JD          INDEX STORM NO. 1
                    STRM        2.77  PRECIPITATION DEPTH
                    TRDA         .00  TRANSPOSITION DRAINAGE AREA

31 PI           PRECIPITATION PATTERN
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39 JD INDEX STORM NO. 2
STRM 2.72 PRECIPITATION DEPTH
TRDA .50 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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42 JD INDEX STORM NO. 5
STRM 2.52 PRECIPITATION DEPTH
TRDA 4.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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*** FLOGRD - MAXIMUM NUMBER OF DX INTERVALS REACHED. MDX=201
THIS MAY AFFECT ACCURACY OF KW SOLUTION. TO REDUCE ERRORS SHORTEN CHANNEL ELEMENT = 3

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

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

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*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 27

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

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

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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 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	FDC18A	36.	3.58	5.	5.	5.	.03		
+	DIVERSION TO	D1	36.	3.58	4.	4.	4.	.03		
+	HYDROGRAPH AT	J1	1.	2.52	0.	0.	0.	.03		
+	ROUTED TO	J1J2	0.	.00	0.	0.	0.	.03		
+	HYDROGRAPH AT	FDC18	320.	3.73	45.	45.	45.	.27		
+	2 COMBINED AT	C216	320.	3.73	45.	45.	45.	.30		
+	DIVERSION TO	D2	126.	3.55	32.	32.	32.	.30		
+	HYDROGRAPH AT	J2A	194.	3.73	13.	13.	13.	.30		
+	DIVERSION TO	W1	151.	3.73	8.	8.	8.	.30		
+	HYDROGRAPH AT	J2B	43.	3.58	5.	5.	5.	.30		
+	ROUTED TO	J2D3	43.	3.62	5.	5.	5.	.30		
+	HYDROGRAPH AT	FDC19C	15.	3.65	2.	2.	2.	.01		
+	2 COMBINED AT	C220	57.	3.65	7.	7.	7.	.31		
+	ROUTED TO	J3D4	57.	3.67	7.	7.	7.	.31		
+	DIVERSION TO	DFD19C	57.	3.67	7.	7.	7.	.31		
+	HYDROGRAPH AT	JFD19C	0.	.00	0.	0.	0.	.31		
+	HYDROGRAPH AT	FDC16	186.	3.70	27.	27.	27.	.17		
+	2 COMBINED AT	C214	184.	3.70	27.	27.	27.	.48		
+	DIVERSION TO	DFD16	98.	3.52	22.	22.	22.	.48		
+	HYDROGRAPH AT	JFD16	86.	3.70	5.	5.	5.	.48		
+	DIVERSION TO	W2	53.	3.70	2.	2.	2.	.48		
+	HYDROGRAPH AT	J6B	33.	3.57	3.	3.	3.	.48		
+	ROUTED TO	J6D7	33.	3.60	3.	3.	3.	.48		
+	HYDROGRAPH AT	FDC17C	95.	3.75	14.	14.	14.	.10		
+	2 COMBINED AT	C221	127.	3.75	17.	17.	17.	.59		
+	DIVERSION TO	DFD17C	127.	3.75	17.	17.	17.	.59		

+	HYDROGRAPH AT	JFD17C	0.	.00	0.	0.	0.	.59
+	HYDROGRAPH AT	FDC12	87.	3.67	12.	12.	12.	.07
+	ROUTED TO	210211	86.	3.95	10.	10.	10.	.07
+	HYDROGRAPH AT	FDC13	88.	3.75	13.	13.	13.	.09
+	2 COMBINED AT	C211	152.	3.90	23.	23.	23.	.16
+	ROUTED TO	211212	152.	4.03	21.	21.	21.	.16
+	HYDROGRAPH AT	FDC14	115.	3.65	16.	16.	16.	.11
+	2 COMBINED AT	C212	200.	4.03	37.	37.	37.	.27
+	2 COMBINED AT	C212A	195.	4.03	37.	37.	37.	.86
+	DIVERSION TO	DFD14	194.	4.03	37.	37.	37.	.86
+	HYDROGRAPH AT	JFD14	1.	4.03	0.	0.	0.	.86
+	DIVERSION TO	W3	0.	4.03	0.	0.	0.	.86
+	HYDROGRAPH AT	J13B	1.	4.03	0.	0.	0.	.86
+	HYDROGRAPH AT	FDC15A	13.	3.57	2.	2.	2.	.01
+	2 COMBINED AT	J15	12.	3.58	2.	2.	2.	.87
+	ROUTED TO	J15J16	12.	3.60	2.	2.	2.	.87
+	HYDROGRAPH AT	FDC10	93.	3.75	14.	14.	14.	.10
+	2 COMBINED AT	C208	99.	3.75	15.	15.	15.	.97
+	DIVERSION TO	D16A	32.	3.60	7.	7.	7.	.97
+	HYDROGRAPH AT	J16A	68.	3.75	8.	8.	8.	.97
+	ROUTED TO	J15J16	68.	3.77	8.	8.	8.	.97
+	DIVERSION TO	W4	22.	3.77	3.	3.	3.	.97
+	HYDROGRAPH AT	JJ5	45.	3.77	6.	6.	6.	.97
+	HYDROGRAPH AT	FDC11C	29.	3.57	4.	4.	4.	.02
+	2 COMBINED AT	C222	66.	3.73	9.	9.	9.	.99
+	DIVERSION TO	D19A	24.	3.73	4.	4.	4.	.99
+	HYDROGRAPH AT	J17	42.	3.73	5.	5.	5.	.99
+	DIVERSION TO	T11C	0.	3.72	0.	0.	0.	.99
+	HYDROGRAPH AT	JJ6	42.	3.73	5.	5.	5.	.99
+	HYDROGRAPH AT	W1	151.	3.73	8.	8.	8.	.30
+	ROUTED TO	RW1	149.	3.90	9.	9.	9.	.30
+	HYDROGRAPH AT	FDC19B	88.	3.70	13.	13.	13.	.09
+	2 COMBINED AT	W1B	214.	3.88	22.	22.	22.	.09
+	ROUTED TO	RW1B	212.	4.18	19.	19.	19.	.09
+	HYDROGRAPH AT	FDC20	100.	3.83	16.	16.	16.	.12
	2 COMBINED AT							

+	C218	264.	4.17	35.	35.	35.	.21
+ HYDROGRAPH AT	W2	53.	3.70	2.	2.	2.	.48
+ ROUTED TO	RW2	53.	3.95	3.	3.	3.	.48
+ HYDROGRAPH AT	FDC17B	84.	3.67	12.	12.	12.	.09
+ 2 COMBINED AT	W2B	103.	3.92	15.	15.	15.	.09
+ ROUTED TO	RW2A	102.	3.93	15.	15.	15.	.09
+ HYDROGRAPH AT	FDC17D	15.	3.65	2.	2.	2.	.02
+ 2 COMBINED AT	W2D	111.	3.93	17.	17.	17.	.10
+ ROUTED TO	RW2B	109.	4.02	16.	16.	16.	.10
+ HYDROGRAPH AT	FDC17E	100.	3.70	15.	15.	15.	.10
+ 2 COMBINED AT	W2E	195.	3.73	31.	31.	31.	.21
+ HYDROGRAPH AT	W3	0.	4.03	0.	0.	0.	.86
+ HYDROGRAPH AT	FDC15B	127.	3.58	17.	17.	17.	.10
+ 2 COMBINED AT	C213	127.	3.58	17.	17.	17.	.10
+ HYDROGRAPH AT	W4	22.	3.77	3.	3.	3.	.97
+ DIVERSION TO	D16B	7.	3.60	1.	1.	1.	.97
+ HYDROGRAPH AT	J16B	15.	3.77	1.	1.	1.	.97
+ HYDROGRAPH AT	T11C	0.	3.72	0.	0.	0.	.99
+ DIVERSION TO	D19B	0.	3.72	0.	0.	0.	.99
+ HYDROGRAPH AT	J18A	0.	3.72	0.	0.	0.	.99
+ 2 COMBINED AT	CB6	15.	3.77	1.	1.	1.	1.96
+ ROUTED TO	RW4	12.	4.07	1.	1.	1.	1.96
+ HYDROGRAPH AT	FDC11B	48.	3.67	7.	7.	7.	.04
+ 2 COMBINED AT	C209	43.	3.67	7.	7.	7.	2.00
+ HYDROGRAPH AT	G1	36.	3.58	4.	4.	4.	.03
+ ROUTED TO	SD1	36.	3.60	4.	4.	4.	.03
+ ROUTED TO	SD2	35.	3.60	4.	4.	4.	.03
+ ROUTED TO	SD3	35.	3.60	4.	4.	4.	.03
+ ROUTED TO	SD4	35.	3.62	4.	4.	4.	.03
+ HYDROGRAPH AT	G2	126.	3.55	32.	32.	32.	.30
+ 2 COMBINED AT	CSD5	162.	3.60	37.	37.	37.	.00
+ ROUTED TO	SD5	162.	3.62	37.	37.	37.	.00
+ HYDROGRAPH AT	GFD19C	57.	3.67	7.	7.	7.	.31
+ 2 COMBINED AT	CSD7	219.	3.62	44.	44.	44.	.00
+ ROUTED TO	SD7	219.	3.63	44.	44.	44.	.00
+ HYDROGRAPH AT	GFD16	98.	3.52	22.	22.	22.	.48

+	2 COMBINED AT CSD9	317.	3.63	66.	66.	66.	.00
+	ROUTED TO SD9	317.	3.63	66.	66.	66.	.00
+	HYDROGRAPH AT GFD17C	127.	3.75	17.	17.	17.	.59
+	2 COMBINED AT CSD14	442.	3.72	83.	83.	83.	.00
+	ROUTED TO SD14	442.	3.72	83.	83.	83.	.00
+	HYDROGRAPH AT GFD14	194.	4.03	37.	37.	37.	.86
+	2 COMBINED AT CSD16	605.	3.78	121.	121.	121.	.00
+	ROUTED TO SD16	604.	3.78	121.	121.	121.	.00
+	HYDROGRAPH AT G16A	32.	3.60	7.	7.	7.	.97
+	ROUTED TO SD18	32.	3.62	7.	7.	7.	.97
+	HYDROGRAPH AT G16B	7.	3.60	1.	1.	1.	.97
+	3 COMBINED AT CSD16	643.	3.78	129.	129.	129.	.00
+	ROUTED TO SD19	643.	3.78	129.	129.	129.	.00
+	ROUTED TO SD20	643.	3.78	129.	129.	129.	.00
+	ROUTED TO SD21	643.	3.80	129.	129.	129.	.00
+	HYDROGRAPH AT G19A	24.	3.73	4.	4.	4.	.99
+	HYDROGRAPH AT G19B	0.	3.72	0.	0.	0.	.99
+	2 COMBINED AT CB6	26.	3.72	5.	5.	5.	.00
+	2 COMBINED AT CSD22	666.	3.78	133.	133.	133.	.00
+	ROUTED TO SD22	666.	3.78	132.	132.	132.	.00

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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 STORM = 1 STORM AREA (SQ MI) = .00									
FDC18A	MANE	.99	36.52	215.59	1.41	1.00	36.47	215.00	1.41
CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2326E+01 OUTFLOW= .2029E+01 BASIN STORAGE= .2927E+00 PERCENT ERROR= .2									
FOR STORM = 2 STORM AREA (SQ MI) = .50									
FDC18A	MANE	1.00	35.40	215.56	1.37	1.00	35.30	216.00	1.37
CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2263E+01 OUTFLOW= .1977E+01 BASIN STORAGE= .2724E+00 PERCENT ERROR= .6									
FOR STORM = 3 STORM AREA (SQ MI) = 1.00									
FDC18A	MANE	1.00	34.69	215.45	1.35	1.00	34.63	216.00	1.34
CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2225E+01 OUTFLOW= .1944E+01 BASIN STORAGE= .2694E+00 PERCENT ERROR= .5									
FOR STORM = 4 STORM AREA (SQ MI) = 2.00									
FDC18A	MANE	1.00	32.15	215.80	1.26	1.00	32.12	216.00	1.25
CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2088E+01 OUTFLOW= .1810E+01 BASIN STORAGE= .2695E+00 PERCENT ERROR= .4									
FOR STORM = 5 STORM AREA (SQ MI) = 4.00									
FDC18A	MANE	1.00	30.76	216.58	1.21	1.00	30.73	216.00	1.21
CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2014E+01 OUTFLOW= .1742E+01 BASIN STORAGE= .2692E+00 PERCENT ERROR= .1									
FOR STORM = 1 STORM AREA (SQ MI) = .00									

J1J2	MANE	1.00	.00	.00	.00	1.00	.00	216.00	.00

FOR STORM = 2 STORM AREA (SQ MI) = .50

J1J2	MANE	1.00	.00	.00	.00	1.00	.00	216.00	.00

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J1J2	MANE	1.00	.00	.00	.00	1.00	.00	216.00	.00

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J1J2	MANE	1.00	.00	.00	.00	1.00	.00	216.00	.00

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J1J2	MANE	1.00	.00	.00	.00	1.00	.00	216.00	.00

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC18	MANE	1.00	329.08	223.92	1.31	1.00	328.98	224.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2360E+02 OUTFLOW= .1915E+02 BASIN STORAGE= .3288E+01 PERCENT ERROR= 5.0

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC18	MANE	.95	318.83	223.86	1.27	1.00	318.78	224.00	1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2296E+02 OUTFLOW= .1855E+02 BASIN STORAGE= .3297E+01 PERCENT ERROR= 4.9

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC18	MANE	.97	312.51	224.52	1.24	1.00	312.05	224.00	1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2258E+02 OUTFLOW= .1819E+02 BASIN STORAGE= .3252E+01 PERCENT ERROR= 5.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC18	MANE	1.00	290.09	225.24	1.17	1.00	289.91	225.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2119E+02 OUTFLOW= .1704E+02 BASIN STORAGE= .3073E+01 PERCENT ERROR= 5.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC18	MANE	1.00	278.31	225.86	1.11	1.00	278.04	226.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2044E+02 OUTFLOW= .1628E+02 BASIN STORAGE= .3090E+01 PERCENT ERROR= 5.2

FOR STORM = 1 STORM AREA (SQ MI) = .00

J2D3	MANE	.45	43.00	215.32	.12	1.00	43.00	216.00	.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1977E+01 EXCESS= .0000E+00 OUTFLOW= .1981E+01 BASIN STORAGE= .1790E-05 PERCENT ERROR= -.2

FOR STORM = 2 STORM AREA (SQ MI) = .50

J2D3	MANE	.46	43.00	216.03	.12	1.00	43.00	217.00	.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1931E+01 EXCESS= .0000E+00 OUTFLOW= .1936E+01 BASIN STORAGE= .2048E-05 PERCENT ERROR= -.3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J2D3	MANE	.48	43.00	216.25	.12	1.00	43.00	217.00	.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1903E+01 EXCESS= .0000E+00 OUTFLOW= .1908E+01 BASIN STORAGE= .2062E-05 PERCENT ERROR= -.3

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J2D3	MANE	.48	43.00	217.26	.11	1.00	43.00	218.00	.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1792E+01 EXCESS= .0000E+00 OUTFLOW= .1797E+01 BASIN STORAGE= .1916E-05 PERCENT ERROR= -.3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J2D3	MANE	.43	43.00	218.02	.11	1.00	43.00	219.00	.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1726E+01 EXCESS= .0000E+00 OUTFLOW= .1735E+01 BASIN STORAGE= .2093E-05 PERCENT ERROR= -.5

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC19C	MANE	1.00	14.93	219.57	1.14	1.00	14.92	219.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1018E+01 OUTFLOW= .8502E+00 BASIN STORAGE= .1592E+00 PERCENT ERROR= .8

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC19C	MANE	1.00	14.43	219.38	1.11	1.00	14.40	219.00	1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9873E+00 OUTFLOW= .8271E+00 BASIN STORAGE= .1584E+00 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC19C	MANE	1.00	14.11	220.07	1.08	1.00	14.11	220.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9692E+00 OUTFLOW= .8088E+00 BASIN STORAGE= .1589E+00 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC19C	MANE	.95	12.92	220.29	1.00	1.00	12.91	220.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9035E+00 OUTFLOW= .7497E+00 BASIN STORAGE= .1506E+00 PERCENT ERROR= .4

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC19C	MANE	1.00	12.31	220.26	.96	1.00	12.30	221.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8681E+00 OUTFLOW= .7162E+00 BASIN STORAGE= .1482E+00 PERCENT ERROR= .4

FOR STORM = 1 STORM AREA (SQ MI) = .00

J3D4	MANE	.42	57.91	219.72	.17	1.00	57.90	220.00	.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2829E+01 EXCESS= .0000E+00 OUTFLOW= .2824E+01 BASIN STORAGE= .5864E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

J3D4	MANE	.42	57.39	220.07	.16	1.00	57.39	220.00	.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2757E+01 EXCESS= .0000E+00 OUTFLOW= .2752E+01 BASIN STORAGE= .5755E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J3D4	MANE	.36	57.11	219.93	.16	1.00	57.11	220.00	.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2713E+01 EXCESS= .0000E+00 OUTFLOW= .2709E+01 BASIN STORAGE= .5680E-02 PERCENT ERROR= -.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J3D4	MANE	.39	55.90	220.88	.15	1.00	55.89	221.00	.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2541E+01 EXCESS= .0000E+00 OUTFLOW= .2536E+01 BASIN STORAGE= .5452E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J3D4	MANE	.43	55.29	221.36	.15	1.00	55.29	221.00	.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2447E+01 EXCESS= .0000E+00 OUTFLOW= .2442E+01 BASIN STORAGE= .5317E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC16	MANE	1.06	191.14	222.25	1.30	1.00	190.99	222.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1376E+02 OUTFLOW= .1150E+02 BASIN STORAGE= .2245E+01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC16	MANE	1.00	184.62	222.30	1.26	1.00	184.39	222.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1338E+02 OUTFLOW= .1116E+02 BASIN STORAGE= .2208E+01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC16	MANE	1.00	181.46	222.97	1.23	1.00	181.42	222.00	1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1316E+02 OUTFLOW= .1091E+02 BASIN STORAGE= .2138E+01 PERCENT ERROR= .8

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC16	MANE	1.15	167.77	222.56	1.15	1.00	167.74	223.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1233E+02 OUTFLOW= .1017E+02 BASIN STORAGE= .2135E+01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC16	MANE	1.00	160.46	223.82	1.10	1.00	160.34	223.00	1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1188E+02 OUTFLOW= .9754E+01 BASIN STORAGE= .2025E+01 PERCENT ERROR= .8

FOR STORM = 1 STORM AREA (SQ MI) = .00

J6D7	MANE	.51	33.00	215.35	.04	1.00	33.00	216.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1133E+01 EXCESS= .0000E+00 OUTFLOW= .1137E+01 BASIN STORAGE= .3968E-05 PERCENT ERROR= -.3

FOR STORM = 2 STORM AREA (SQ MI) = .50

J6D7	MANE	.46	33.00	215.35	.04	1.00	33.00	216.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1092E+01 EXCESS= .0000E+00 OUTFLOW= .1100E+01 BASIN STORAGE= .4650E-05 PERCENT ERROR= -.7

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J6D7	MANE	.52	33.00	216.48	.04	1.00	33.00	217.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1066E+01 EXCESS= .0000E+00 OUTFLOW= .1072E+01 BASIN STORAGE= .3098E-05 PERCENT ERROR= -.6

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J6D7	MANE	.54	33.00	217.17	.04	1.00	33.00	218.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9665E+00 EXCESS= .0000E+00 OUTFLOW= .9714E+00 BASIN STORAGE= .3120E-05 PERCENT ERROR= -.5

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J6D7	MANE	.48	33.00	218.12	.04	1.00	33.00	219.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9024E+00 EXCESS= .0000E+00 OUTFLOW= .9092E+00 BASIN STORAGE= .3559E-05 PERCENT ERROR= -.8

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC17C	MANE	1.00	97.63	224.11	1.08	1.00	97.58	225.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7484E+01 OUTFLOW= .5996E+01 BASIN STORAGE= .1476E+01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC17C	MANE	1.00	94.42	224.80	1.04	1.00	94.36	225.00	1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7260E+01 OUTFLOW= .5778E+01 BASIN STORAGE= .1437E+01 PERCENT ERROR= .6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC17C	MANE	1.00	92.19	225.29	1.03	1.00	92.14	225.00	1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7127E+01 OUTFLOW= .5686E+01 BASIN STORAGE= .1419E+01 PERCENT ERROR= .3

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC17C	MANE	1.00	84.55	225.64	.95	1.00	84.47	226.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6641E+01 OUTFLOW= .5243E+01 BASIN STORAGE= .1376E+01 PERCENT ERROR= .3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC17C	MANE	1.00	80.49	225.88	.90	1.00	80.49	226.00	.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6379E+01 OUTFLOW= .5011E+01 BASIN STORAGE= .1343E+01 PERCENT ERROR= .4

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC12	MANE	1.15	88.64	220.07	1.36	1.00	88.60	220.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6202E+01 OUTFLOW= .5212E+01 BASIN STORAGE= .9820E+00 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC12	MANE	1.16	85.85	220.43	1.31	1.00	85.66	220.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6034E+01 OUTFLOW= .5042E+01 BASIN STORAGE= .9754E+00 PERCENT ERROR= .3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC12	MANE	1.10	83.92	220.51	1.29	1.00	83.71	221.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5934E+01 OUTFLOW= .4939E+01 BASIN STORAGE= .9818E+00 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC12	MANE	1.00	77.90	220.99	1.20	1.00	77.90	221.00	1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5568E+01 OUTFLOW= .4611E+01 BASIN STORAGE= .9213E+00 PERCENT ERROR= .6

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC12	MANE	1.03	74.72	221.11	1.15	1.00	74.65	221.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5370E+01 OUTFLOW= .4419E+01 BASIN STORAGE= .9285E+00 PERCENT ERROR= .4

FOR STORM = 1 STORM AREA (SQ MI) = .00

210211	MANE	1.06	88.19	236.17	1.11	1.00	88.07	237.00	1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5176E+01 EXCESS= .0000E+00 OUTFLOW= .4248E+01 BASIN STORAGE= .9393E+00 PERCENT ERROR= -.2

FOR STORM = 2 STORM AREA (SQ MI) = .50

210211	MANE	1.00	85.16	237.07	1.07	1.00	85.13	237.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5023E+01 EXCESS= .0000E+00 OUTFLOW= .4120E+01 BASIN STORAGE= .9269E+00 PERCENT ERROR= -.5

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

210211	MANE	1.00	82.73	237.87	1.06	1.00	82.65	238.00	1.06	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4931E+01 EXCESS= .0000E+00 OUTFLOW= .4079E+01 BASIN STORAGE= .9182E+00 PERCENT ERROR= -1.3

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

210211	MANE	1.00	77.43	238.53	.96	1.00	77.29	238.00	.96	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4596E+01 EXCESS= .0000E+00 OUTFLOW= .3704E+01 BASIN STORAGE= .8879E+00 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

210211	MANE	1.13	74.00	238.72	.94	1.00	73.94	239.00	.94	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4416E+01 EXCESS= .0000E+00 OUTFLOW= .3594E+01 BASIN STORAGE= .8708E+00 PERCENT ERROR= -1.1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC13	MANE	1.18	90.68	224.55	1.22	1.00	90.62	225.00	1.22	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6962E+01 OUTFLOW= .5585E+01 BASIN STORAGE= .1323E+01 PERCENT ERROR= .8

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC13	MANE	1.18	87.60	225.82	1.18	1.00	87.58	225.00	1.18	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6766E+01 OUTFLOW= .5420E+01 BASIN STORAGE= .1336E+01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC13	MANE	1.08	86.09	225.21	1.16	1.00	85.98	225.00	1.16	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6650E+01 OUTFLOW= .5313E+01 BASIN STORAGE= .1279E+01 PERCENT ERROR= .9

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC13	MANE	1.00	79.23	225.79	1.08	1.00	79.21	226.00	1.07	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6225E+01 OUTFLOW= .4932E+01 BASIN STORAGE= .1275E+01 PERCENT ERROR= .3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC13	MANE	1.00	75.70	226.56	1.03	1.00	75.56	227.00	1.03	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5995E+01 OUTFLOW= .4733E+01 BASIN STORAGE= .1252E+01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

211212	MANE	1.03	156.42	242.06	1.07	1.00	156.28	242.00	1.07	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9815E+01 EXCESS= .0000E+00 OUTFLOW= .9026E+01 BASIN STORAGE= .8155E+00 PERCENT ERROR= -.3

FOR STORM = 2 STORM AREA (SQ MI) = .50

211212	MANE	1.01	150.81	242.02	1.04	1.00	150.73	243.00	1.03	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9523E+01 EXCESS= .0000E+00 OUTFLOW= .8737E+01 BASIN STORAGE= .8055E+00 PERCENT ERROR= -.2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

211212	MANE	1.00	146.25	242.46	1.02	1.00	146.23	243.00	1.02	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9382E+01 EXCESS= .0000E+00 OUTFLOW= .8598E+01 BASIN STORAGE= .8006E+00 PERCENT ERROR= -.2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

211212	MANE	1.00	135.68	244.87	.93	1.00	135.53	245.00	.93	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8620E+01 EXCESS= .0000E+00 OUTFLOW= .7864E+01 BASIN STORAGE= .7756E+00 PERCENT ERROR= -.2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

211212	MANE	1.00	129.81	245.08	.89	1.00	129.77	245.00	.89	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8309E+01 EXCESS= .0000E+00 OUTFLOW= .7529E+01 BASIN STORAGE= .7657E+00 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC14	MANE	1.00	118.95	219.00	1.12	1.00	118.94	219.00	1.11	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8081E+01 OUTFLOW= .6800E+01 BASIN STORAGE= .1269E+01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC14	MANE	1.00	114.67	219.40	1.08	1.00	114.38	219.00	1.08	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7838E+01 OUTFLOW= .6575E+01 BASIN STORAGE= .1251E+01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

					JONESSD					
FDC14	MANE	1.00	112.09	220.10	1.06	1.00	112.09	220.00	1.05	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7692E+01 OUTFLOW= .6415E+01 BASIN STORAGE= .1262E+01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC14	MANE	1.00	102.54	220.49	.98	1.00	102.37	220.00	.97	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7164E+01 OUTFLOW= .5931E+01 BASIN STORAGE= .1171E+01 PERCENT ERROR= .9

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC14	MANE	1.00	97.59	220.92	.93	1.00	97.53	221.00	.93	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6879E+01 OUTFLOW= .5666E+01 BASIN STORAGE= .1156E+01 PERCENT ERROR= .8

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC15A	MANE	1.00	12.89	213.85	1.34	1.00	12.89	214.00	1.34	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8173E+00 OUTFLOW= .7172E+00 BASIN STORAGE= .9921E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC15A	MANE	1.00	12.45	214.45	1.31	1.00	12.40	215.00	1.30	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7945E+00 OUTFLOW= .6960E+00 BASIN STORAGE= .9618E-01 PERCENT ERROR= .3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC15A	MANE	1.00	12.17	214.81	1.28	1.00	12.16	215.00	1.28	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7809E+00 OUTFLOW= .6844E+00 BASIN STORAGE= .9556E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC15A	MANE	1.00	11.21	214.77	1.20	1.00	11.20	215.00	1.19	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7313E+00 OUTFLOW= .6379E+00 BASIN STORAGE= .9115E-01 PERCENT ERROR= .3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC15A	MANE	1.00	10.70	215.44	1.15	1.00	10.67	215.00	1.14	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7045E+00 OUTFLOW= .6110E+00 BASIN STORAGE= .8904E-01 PERCENT ERROR= .6

FOR STORM = 1 STORM AREA (SQ MI) = .00

J15J16	MANE	.46	13.00	242.62	.02	1.00	12.86	215.00	.02	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7531E+00 EXCESS= .0000E+00 OUTFLOW= .7485E+00 BASIN STORAGE= .5045E-02 PERCENT ERROR= -.1

FOR STORM = 2 STORM AREA (SQ MI) = .50

J15J16	MANE	.49	12.40	215.49	.02	1.00	12.39	215.00	.02	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7003E+00 EXCESS= .0000E+00 OUTFLOW= .6955E+00 BASIN STORAGE= .5034E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J15J16	MANE	.48	12.15	215.92	.01	1.00	12.14	216.00	.01	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6802E+00 EXCESS= .0000E+00 OUTFLOW= .6765E+00 BASIN STORAGE= .4937E-02 PERCENT ERROR= -.2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J15J16	MANE	.49	11.19	215.91	.01	1.00	11.19	216.00	.01	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6337E+00 EXCESS= .0000E+00 OUTFLOW= .6294E+00 BASIN STORAGE= .4784E-02 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J15J16	MANE	.48	10.67	216.17	.01	1.00	10.66	216.00	.01	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6086E+00 EXCESS= .0000E+00 OUTFLOW= .6052E+00 BASIN STORAGE= .4669E-02 PERCENT ERROR= -.2

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC10	MANE	1.00	95.41	225.44	1.10	1.00	95.39	225.00	1.09	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7124E+01 OUTFLOW= .5792E+01 BASIN STORAGE= .1297E+01 PERCENT ERROR= .5

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC10	MANE	1.00	91.97	225.10	1.06	1.00	91.93	225.00	1.05	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6911E+01 OUTFLOW= .5581E+01 BASIN STORAGE= .1310E+01 PERCENT ERROR= .3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC10	MANE	1.00	89.87	225.07	1.04	1.00	89.83	225.00	1.03	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6784E+01 OUTFLOW= .5469E+01 BASIN STORAGE= .1305E+01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC10	MANE	1.00	82.56	226.44	.96	1.00	82.46	226.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6322E+01 OUTFLOW= .5064E+01 BASIN STORAGE= .1247E+01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC10	MANE	1.00	78.83	226.85	.91	1.00	78.75	226.00	.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6072E+01 OUTFLOW= .4810E+01 BASIN STORAGE= .1232E+01 PERCENT ERROR= .5

FOR STORM = 1 STORM AREA (SQ MI) = .00

J15J16	MANE	.44	73.44	225.10	.07	1.00	73.41	225.00	.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3661E+01 EXCESS= .0000E+00 OUTFLOW= .3641E+01 BASIN STORAGE= .2514E-01 PERCENT ERROR= -.2

FOR STORM = 2 STORM AREA (SQ MI) = .50

J15J16	MANE	.45	69.72	225.52	.07	1.00	69.65	226.00	.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3481E+01 EXCESS= .0000E+00 OUTFLOW= .3465E+01 BASIN STORAGE= .2456E-01 PERCENT ERROR= -.3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

J15J16	MANE	.46	67.49	225.87	.07	1.00	67.43	226.00	.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3383E+01 EXCESS= .0000E+00 OUTFLOW= .3361E+01 BASIN STORAGE= .2412E-01 PERCENT ERROR= -.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

J15J16	MANE	.59	59.32	226.36	.06	1.00	59.23	226.00	.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3043E+01 EXCESS= .0000E+00 OUTFLOW= .3021E+01 BASIN STORAGE= .2283E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

J15J16	MANE	.45	55.38	226.75	.06	1.00	55.35	227.00	.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2865E+01 EXCESS= .0000E+00 OUTFLOW= .2845E+01 BASIN STORAGE= .2212E-01 PERCENT ERROR= -.1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC11C	MANE	1.00	29.69	214.42	1.30	1.00	29.69	214.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1887E+01 OUTFLOW= .1658E+01 BASIN STORAGE= .2263E+00 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC11C	MANE	1.13	28.67	214.43	1.25	1.00	28.66	214.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1833E+01 OUTFLOW= .1605E+01 BASIN STORAGE= .2237E+00 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC11C	MANE	1.10	28.04	214.15	1.23	1.00	28.00	214.00	1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1801E+01 OUTFLOW= .1571E+01 BASIN STORAGE= .2288E+00 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC11C	MANE	1.05	25.71	214.93	1.14	1.00	25.70	215.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1684E+01 OUTFLOW= .1461E+01 BASIN STORAGE= .2096E+00 PERCENT ERROR= .8

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC11C	MANE	1.16	24.46	215.59	1.10	1.00	24.46	215.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1621E+01 OUTFLOW= .1408E+01 BASIN STORAGE= .2102E+00 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

RW1	MANE	1.00	158.66	233.81	.25	1.00	158.43	234.00	.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3679E+01 EXCESS= .0000E+00 OUTFLOW= .3949E+01 BASIN STORAGE= .1077E-01 PERCENT ERROR= -7.6

FOR STORM = 2 STORM AREA (SQ MI) = .50

RW1	MANE	1.00	148.46	234.49	.23	1.00	147.96	234.00	.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3384E+01 EXCESS= .0000E+00 OUTFLOW= .3629E+01 BASIN STORAGE= .1062E-01 PERCENT ERROR= -7.6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

RW1	MANE	1.00	142.06	234.87	.21	1.00	141.82	235.00	.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3199E+01 EXCESS= .0000E+00 OUTFLOW= .3447E+01 BASIN STORAGE= .1149E-01 PERCENT ERROR= -8.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

RW1	MANE	1.00	119.72	235.98	.18	1.00	119.69	236.00	.18	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2568E+01 EXCESS= .0000E+00 OUTFLOW= .2817E+01 BASIN STORAGE= .9237E-02 PERCENT ERROR= -10.0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

RW1	MANE	1.00	108.54	236.71	.15	1.00	108.15	237.00	.15	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2232E+01 EXCESS= .0000E+00 OUTFLOW= .2366E+01 BASIN STORAGE= .1039E-01 PERCENT ERROR= -6.5

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC19B	MANE	1.00	90.64	221.92	1.12	1.00	90.63	222.00	1.12	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6469E+01 OUTFLOW= .5329E+01 BASIN STORAGE= .1080E+01 PERCENT ERROR= .9

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC19B	MANE	1.00	87.51	222.56	1.09	1.00	87.31	223.00	1.09	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6276E+01 OUTFLOW= .5168E+01 BASIN STORAGE= .1085E+01 PERCENT ERROR= .4

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC19B	MANE	1.00	85.71	222.74	1.07	1.00	85.61	223.00	1.06	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6161E+01 OUTFLOW= .5079E+01 BASIN STORAGE= .1072E+01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC19B	MANE	1.00	78.70	223.16	.99	1.00	78.60	223.00	.98	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5744E+01 OUTFLOW= .4694E+01 BASIN STORAGE= .1019E+01 PERCENT ERROR= .5

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC19B	MANE	1.00	75.08	223.32	.94	1.00	75.06	224.00	.94	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5518E+01 OUTFLOW= .4482E+01 BASIN STORAGE= .1001E+01 PERCENT ERROR= .6

FOR STORM = 1 STORM AREA (SQ MI) = .00

RW1B	MANE	1.00	222.42	250.01	1.74	1.00	222.40	250.00	1.74	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9275E+01 EXCESS= .0000E+00 OUTFLOW= .8266E+01 BASIN STORAGE= .1156E+01 PERCENT ERROR= -1.6

FOR STORM = 2 STORM AREA (SQ MI) = .50

RW1B	MANE	1.00	208.25	250.43	1.65	1.00	208.14	251.00	1.64	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8773E+01 EXCESS= .0000E+00 OUTFLOW= .7816E+01 BASIN STORAGE= .1137E+01 PERCENT ERROR= -2.1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

RW1B	MANE	1.00	200.78	251.20	1.58	1.00	200.21	251.00	1.58	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8494E+01 EXCESS= .0000E+00 OUTFLOW= .7502E+01 BASIN STORAGE= .1126E+01 PERCENT ERROR= -1.6

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

RW1B	MANE	1.00	171.28	253.15	1.35	1.00	170.95	254.00	1.35	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7485E+01 EXCESS= .0000E+00 OUTFLOW= .6409E+01 BASIN STORAGE= .1084E+01 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

RW1B	MANE	1.00	157.01	255.24	1.22	1.00	155.35	256.00	1.21	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6832E+01 EXCESS= .0000E+00 OUTFLOW= .5798E+01 BASIN STORAGE= .1061E+01 PERCENT ERROR= -.4

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC20	MANE	1.00	103.01	229.84	1.09	1.00	102.96	230.00	1.08	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8662E+01 OUTFLOW= .6830E+01 BASIN STORAGE= .1801E+01 PERCENT ERROR= .4

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC20	MANE	1.00	99.48	229.93	1.05	1.00	99.47	230.00	1.04	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8406E+01 OUTFLOW= .6597E+01 BASIN STORAGE= .1744E+01 PERCENT ERROR= .8

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC20	MANE	1.00	97.10	229.96	1.03	1.00	97.09	230.00	1.02	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8253E+01 OUTFLOW= .6463E+01 BASIN STORAGE= .1737E+01 PERCENT ERROR= .6

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC20	MANE	1.00	89.23	231.64	.95	1.00	89.13	231.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7696E+01 OUTFLOW= .5964E+01 BASIN STORAGE= .1693E+01 PERCENT ERROR= .5

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC20	MANE	1.00	85.02	231.99	.90	1.00	85.01	232.00	.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7396E+01 OUTFLOW= .5693E+01 BASIN STORAGE= .1651E+01 PERCENT ERROR= .7

FOR STORM = 1 STORM AREA (SQ MI) = .00

RW2	MANE	1.00	59.12	236.16	.05	1.00	59.03	236.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1056E+01 EXCESS= .0000E+00 OUTFLOW= .1319E+01 BASIN STORAGE= .2255E-01 PERCENT ERROR= -27.0

FOR STORM = 2 STORM AREA (SQ MI) = .50

RW2	MANE	1.00	52.64	237.16	.05	1.00	52.59	237.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9067E+00 EXCESS= .0000E+00 OUTFLOW= .1162E+01 BASIN STORAGE= .2097E-01 PERCENT ERROR= -30.5

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

RW2	MANE	1.00	49.82	237.66	.04	1.00	49.72	237.00	.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8339E+00 EXCESS= .0000E+00 OUTFLOW= .1081E+01 BASIN STORAGE= .2162E-01 PERCENT ERROR= -32.2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

RW2	MANE	1.00	36.12	239.32	.03	1.00	35.86	240.00	.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5387E+00 EXCESS= .0000E+00 OUTFLOW= .7523E+00 BASIN STORAGE= .2058E-01 PERCENT ERROR= -43.5

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

RW2	MANE	1.00	28.96	241.26	.02	1.00	28.90	241.00	.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3909E+00 EXCESS= .0000E+00 OUTFLOW= .5791E+00 BASIN STORAGE= .2042E-01 PERCENT ERROR= -53.4

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC17B	MANE	1.00	85.58	219.16	1.12	1.00	85.51	219.00	1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6167E+01 OUTFLOW= .5131E+01 BASIN STORAGE= .1027E+01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC17B	MANE	1.00	82.88	219.70	1.09	1.00	82.80	220.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5983E+01 OUTFLOW= .4976E+01 BASIN STORAGE= .9713E+00 PERCENT ERROR= .6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC17B	MANE	1.00	80.63	219.80	1.07	1.00	80.60	220.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5873E+01 OUTFLOW= .4891E+01 BASIN STORAGE= .9588E+00 PERCENT ERROR= .4

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC17B	MANE	1.00	73.85	221.28	.99	1.00	73.81	221.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5472E+01 OUTFLOW= .4519E+01 BASIN STORAGE= .9330E+00 PERCENT ERROR= .4

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC17B	MANE	.93	70.33	221.74	.95	1.00	70.28	222.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5256E+01 OUTFLOW= .4320E+01 BASIN STORAGE= .9106E+00 PERCENT ERROR= .5

FOR STORM = 1 STORM AREA (SQ MI) = .00

RW2A	MANE	.49	109.32	235.53	1.40	1.00	109.19	235.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6447E+01 EXCESS= .0000E+00 OUTFLOW= .6405E+01 BASIN STORAGE= .5367E-01 PERCENT ERROR= -.2

FOR STORM = 2 STORM AREA (SQ MI) = .50

RW2A	MANE	.62	100.15	236.30	1.33	1.00	99.85	236.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6121E+01 EXCESS= .0000E+00 OUTFLOW= .6080E+01 BASIN STORAGE= .5274E-01 PERCENT ERROR= -.2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

RW2A	MANE	.54	95.74	237.14	1.29	1.00	95.66	237.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5938E+01 EXCESS= .0000E+00 OUTFLOW= .5891E+01 BASIN STORAGE= .5224E-01 PERCENT ERROR= -.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
RW2A MANE .53 76.11 239.11 1.14 1.00 75.71 240.00 1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5241E+01 EXCESS= .0000E+00 OUTFLOW= .5197E+01 BASIN STORAGE= .5006E-01 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
RW2A MANE .52 70.25 223.10 1.06 1.00 70.21 223.00 1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4873E+01 EXCESS= .0000E+00 OUTFLOW= .4834E+01 BASIN STORAGE= .4885E-01 PERCENT ERROR= -.2

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC17D MANE 1.00 15.44 219.39 1.14 1.00 15.44 219.00 1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1108E+01 OUTFLOW= .9339E+00 BASIN STORAGE= .1726E+00 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC17D MANE 1.00 14.90 219.09 1.09 1.00 14.89 219.00 1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1075E+01 OUTFLOW= .8986E+00 BASIN STORAGE= .1696E+00 PERCENT ERROR= .6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC17D MANE .93 14.55 219.84 1.07 1.00 14.54 220.00 1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1055E+01 OUTFLOW= .8817E+00 BASIN STORAGE= .1675E+00 PERCENT ERROR= .6

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC17D MANE 1.00 13.34 220.69 .99 1.00 13.33 221.00 .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9834E+00 OUTFLOW= .8140E+00 BASIN STORAGE= .1631E+00 PERCENT ERROR= .6

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC17D MANE 1.00 12.68 221.08 .95 1.00 12.68 221.00 .95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9446E+00 OUTFLOW= .7780E+00 BASIN STORAGE= .1592E+00 PERCENT ERROR= .8

FOR STORM = 1 STORM AREA (SQ MI) = .00
RW2B MANE 1.00 117.36 240.08 1.30 1.00 117.30 240.00 1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7315E+01 EXCESS= .0000E+00 OUTFLOW= .6996E+01 BASIN STORAGE= .3105E+00 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50
RW2B MANE 1.00 107.42 241.38 1.24 1.00 107.21 241.00 1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6964E+01 EXCESS= .0000E+00 OUTFLOW= .6681E+01 BASIN STORAGE= .3051E+00 PERCENT ERROR= -.3

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
RW2B MANE 1.00 102.69 242.02 1.20 1.00 102.68 242.00 1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6765E+01 EXCESS= .0000E+00 OUTFLOW= .6485E+01 BASIN STORAGE= .3018E+00 PERCENT ERROR= -.3

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
RW2B MANE 1.00 86.87 226.41 1.06 1.00 86.82 227.00 1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6004E+01 EXCESS= .0000E+00 OUTFLOW= .5699E+01 BASIN STORAGE= .3021E+00 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
RW2B MANE 1.00 82.54 228.41 .99 1.00 82.54 228.00 .98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5599E+01 EXCESS= .0000E+00 OUTFLOW= .5323E+01 BASIN STORAGE= .2952E+00 PERCENT ERROR= -.3

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC17E MANE 1.00 102.66 221.93 1.10 1.00 102.62 222.00 1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7549E+01 OUTFLOW= .6164E+01 BASIN STORAGE= .1373E+01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC17E MANE 1.00 98.97 221.71 1.07 1.00 98.91 222.00 1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7323E+01 OUTFLOW= .5969E+01 BASIN STORAGE= .1307E+01 PERCENT ERROR= .6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC17E MANE 1.00 96.64 222.23 1.04 1.00 96.56 222.00 1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7188E+01 OUTFLOW= .5844E+01 BASIN STORAGE= .1292E+01 PERCENT ERROR= .7

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC17E MANE 1.00 88.60 223.41 .97 1.00 88.55 223.00 .96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6698E+01 OUTFLOW= .5422E+01 BASIN STORAGE= .1253E+01 PERCENT ERROR= .3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC17E MANE .96 84.36 223.85 .92 1.00 84.32 224.00 .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6434E+01 OUTFLOW= .5157E+01 BASIN STORAGE= .1225E+01 PERCENT ERROR= .8

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC15B MANE 1.00 130.39 214.60 1.34 1.00 130.31 215.00 1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8337E+01 OUTFLOW= .7295E+01 BASIN STORAGE= .1032E+01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC15B MANE .97 125.94 214.96 1.30 1.00 125.91 215.00 1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8104E+01 OUTFLOW= .7073E+01 BASIN STORAGE= .1016E+01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC15B MANE 1.00 123.39 215.61 1.28 1.00 123.06 215.00 1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7965E+01 OUTFLOW= .6940E+01 BASIN STORAGE= .1016E+01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC15B MANE 1.00 113.77 215.65 1.19 1.00 113.58 216.00 1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7459E+01 OUTFLOW= .6478E+01 BASIN STORAGE= .9627E+00 PERCENT ERROR= .3

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC15B MANE 1.00 108.58 215.91 1.14 1.00 108.55 216.00 1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7185E+01 OUTFLOW= .6191E+01 BASIN STORAGE= .9417E+00 PERCENT ERROR= .7

FOR STORM = 1 STORM AREA (SQ MI) = .00
RW4 MANE 1.00 17.03 241.73 .01 1.00 16.99 242.00 .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5927E+00 EXCESS= .0000E+00 OUTFLOW= .5472E+00 BASIN STORAGE= .6149E-01 PERCENT ERROR= -2.7

FOR STORM = 2 STORM AREA (SQ MI) = .50
RW4 MANE 1.06 15.73 241.93 .00 1.00 15.73 242.00 .00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5477E+00 EXCESS= .0000E+00 OUTFLOW= .5128E+00 BASIN STORAGE= .5979E-01 PERCENT ERROR= -4.6

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
RW4 MANE 1.07 14.99 242.55 .00 1.00 14.95 243.00 .00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5234E+00 EXCESS= .0000E+00 OUTFLOW= .4861E+00 BASIN STORAGE= .5873E-01 PERCENT ERROR= -4.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
RW4 MANE 1.07 12.26 244.50 .00 1.00 12.22 244.00 .00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4374E+00 EXCESS= .0000E+00 OUTFLOW= .4026E+00 BASIN STORAGE= .5452E-01 PERCENT ERROR= -4.5

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
RW4 MANE 1.00 10.82 245.80 .00 1.00 10.79 246.00 .00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3944E+00 EXCESS= .0000E+00 OUTFLOW= .3580E+00 BASIN STORAGE= .5267E-01 PERCENT ERROR= -4.1

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC11B MANE .96 49.57 219.60 1.25 1.00 49.45 220.00 1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3381E+01 OUTFLOW= .2868E+01 BASIN STORAGE= .5029E+00 PERCENT ERROR= .3

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC11B MANE 1.00 47.93 219.70 1.21 1.00 47.86 220.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3285E+01 OUTFLOW= .2771E+01 BASIN STORAGE= .4969E+00 PERCENT ERROR= .5

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC11B MANE 1.00 46.98 219.61 1.19 1.00 46.92 220.00 1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3227E+01 OUTFLOW= .2722E+01 BASIN STORAGE= .5013E+00 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC11B MANE 1.00 43.30 219.96 1.10 1.00 43.29 220.00 1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3018E+01 OUTFLOW= .2534E+01 BASIN STORAGE= .4650E+00 PERCENT ERROR= .6

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC11B MANE 1.00 41.34 220.87 1.06 1.00 41.31 221.00 1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2904E+01 OUTFLOW= .2428E+01 BASIN STORAGE= .4657E+00 PERCENT ERROR= .4

FOR STORM = 1 STORM AREA (SQ MI) = .00
SD1 MANE .13 36.19 215.17 1.27 1.00 36.15 215.00 1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1827E+01 EXCESS= .0000E+00 OUTFLOW= .1826E+01 BASIN STORAGE= .1041E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50
SD1 MANE .21 35.00 215.93 1.23 1.00 34.99 216.00 1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1771E+01 EXCESS= .0000E+00 OUTFLOW= .1769E+01 BASIN STORAGE= .7426E-03 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
SD1 MANE .17 34.32 216.05 1.21 1.00 34.31 216.00 1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1737E+01 EXCESS= .0000E+00 OUTFLOW= .1736E+01 BASIN STORAGE= .8489E-03 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
SD1 MANE .06 31.76 216.09 1.12 1.00 31.74 216.00 1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1615E+01 EXCESS= .0000E+00 OUTFLOW= .1613E+01 BASIN STORAGE= .1310E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
SD1 MANE .11 30.34 216.20 1.07 1.00 30.31 216.00 1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1549E+01 EXCESS= .0000E+00 OUTFLOW= .1548E+01 BASIN STORAGE= .1072E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00
SD2 MANE .31 36.13 215.66 1.27 1.00 36.11 216.00 1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1826E+01 EXCESS= .0000E+00 OUTFLOW= .1822E+01 BASIN STORAGE= .3510E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50
SD2 MANE .25 34.96 216.32 1.23 1.00 34.95 216.00 1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1768E+01 EXCESS= .0000E+00 OUTFLOW= .1764E+01 BASIN STORAGE= .3715E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
SD2 MANE .22 34.28 216.40 1.20 1.00 34.25 216.00 1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1735E+01 EXCESS= .0000E+00 OUTFLOW= .1731E+01 BASIN STORAGE= .4083E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
SD2 MANE .25 31.72 216.51 1.12 1.00 31.65 217.00 1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1613E+01 EXCESS= .0000E+00 OUTFLOW= .1609E+01 BASIN STORAGE= .3930E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
SD2 MANE .25 30.30 216.67 1.07 1.00 30.28 217.00 1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1548E+01 EXCESS= .0000E+00 OUTFLOW= .1544E+01 BASIN STORAGE= .3773E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00
SD3 MANE .31 36.07 216.32 1.26 1.00 36.06 216.00 1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1821E+01 EXCESS= .0000E+00 OUTFLOW= .1817E+01 BASIN STORAGE= .3298E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50
SD3 MANE .27 34.91 216.42 1.22 1.00 34.86 216.00 1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1764E+01 EXCESS= .0000E+00 OUTFLOW= .1761E+01 BASIN STORAGE= .3322E-02 PERCENT ERROR= -.1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
SD3 MANE .17 34.25 216.35 1.20 1.00 34.16 217.00 1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1731E+01 EXCESS= .0000E+00 OUTFLOW= .1726E+01 BASIN STORAGE= .3883E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD3	MANE	.27	31.65	216.95	1.11	1.00	31.65	217.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1609E+01 EXCESS= .0000E+00 OUTFLOW= .1605E+01 BASIN STORAGE= .3456E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD3	MANE	.21	30.26	217.22	1.07	1.00	30.24	217.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1543E+01 EXCESS= .0000E+00 OUTFLOW= .1541E+01 BASIN STORAGE= .3579E-02 PERCENT ERROR= -.1

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD4	MANE	.22	36.03	216.31	1.26	1.00	35.97	216.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1816E+01 EXCESS= .0000E+00 OUTFLOW= .1813E+01 BASIN STORAGE= .2908E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD4	MANE	.21	34.85	216.52	1.22	1.00	34.82	217.00	1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1759E+01 EXCESS= .0000E+00 OUTFLOW= .1757E+01 BASIN STORAGE= .2888E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD4	MANE	.14	34.16	217.09	1.20	1.00	34.16	217.00	1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1726E+01 EXCESS= .0000E+00 OUTFLOW= .1723E+01 BASIN STORAGE= .3154E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD4	MANE	.23	31.62	217.28	1.11	1.00	31.60	217.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1605E+01 EXCESS= .0000E+00 OUTFLOW= .1602E+01 BASIN STORAGE= .2604E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD4	MANE	.23	30.21	217.27	1.07	1.00	30.17	217.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1539E+01 EXCESS= .0000E+00 OUTFLOW= .1537E+01 BASIN STORAGE= .2523E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD5	MANE	.16	161.96	216.38	285.14	1.00	161.93	217.00	284.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1523E+02 EXCESS= .0000E+00 OUTFLOW= .1521E+02 BASIN STORAGE= .2734E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD5	MANE	.24	160.80	217.09	280.07	1.00	160.80	217.00	279.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1495E+02 EXCESS= .0000E+00 OUTFLOW= .1494E+02 BASIN STORAGE= .2076E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD5	MANE	.14	160.14	217.15	276.53	1.00	160.12	217.00	276.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1478E+02 EXCESS= .0000E+00 OUTFLOW= .1475E+02 BASIN STORAGE= .2967E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD5	MANE	.20	157.58	217.38	265.02	1.00	157.52	217.00	264.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1416E+02 EXCESS= .0000E+00 OUTFLOW= .1413E+02 BASIN STORAGE= .2234E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD5	MANE	.26	156.15	217.46	258.77	1.00	156.14	218.00	258.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1383E+02 EXCESS= .0000E+00 OUTFLOW= .1380E+02 BASIN STORAGE= .1840E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD7	MANE	.21	219.22	217.44	337.67	1.00	219.21	218.00	337.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1802E+02 EXCESS= .0000E+00 OUTFLOW= .1801E+02 BASIN STORAGE= .1430E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD7	MANE	.20	217.61	218.15	330.88	1.00	217.59	218.00	330.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1767E+02 EXCESS= .0000E+00 OUTFLOW= .1765E+02 BASIN STORAGE= .1413E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD7	MANE	.09	216.67	218.25	326.87	1.00	216.56	218.00	326.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1745E+02 EXCESS= .0000E+00 OUTFLOW= .1743E+02 BASIN STORAGE= .2257E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD7	MANE	.13	212.76	219.12	312.11	1.00	212.71	219.00	312.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1667E+02 EXCESS= .0000E+00 OUTFLOW= .1664E+02 BASIN STORAGE= .1747E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD7	MANE	.11	210.71	219.30	304.07	1.00	210.58	220.00	304.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1623E+02 EXCESS= .0000E+00 OUTFLOW= .1622E+02 BASIN STORAGE= .1928E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD9	MANE	.15	317.19	218.17	510.41	1.00	317.18	218.00	510.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2725E+02 EXCESS= .0000E+00 OUTFLOW= .2722E+02 BASIN STORAGE= .4056E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD9	MANE	.18	315.53	218.29	500.71	1.00	315.37	218.00	500.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2674E+02 EXCESS= .0000E+00 OUTFLOW= .2670E+02 BASIN STORAGE= .3336E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD9	MANE	.14	314.55	218.29	494.60	1.00	314.46	219.00	494.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2642E+02 EXCESS= .0000E+00 OUTFLOW= .2638E+02 BASIN STORAGE= .4258E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD9	MANE	.17	310.65	219.28	473.35	1.00	310.49	220.00	473.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2528E+02 EXCESS= .0000E+00 OUTFLOW= .2524E+02 BASIN STORAGE= .3508E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD9	MANE	.19	308.51	220.26	461.60	1.00	308.48	220.00	461.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2465E+02 EXCESS= .0000E+00 OUTFLOW= .2462E+02 BASIN STORAGE= .3193E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD14	MANE	.27	441.78	223.38	641.04	1.00	441.72	223.00	640.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3430E+02 EXCESS= .0000E+00 OUTFLOW= .3419E+02 BASIN STORAGE= .1200E+00 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD14	MANE	.23	436.92	223.42	627.55	1.00	436.76	224.00	626.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3355E+02 EXCESS= .0000E+00 OUTFLOW= .3347E+02 BASIN STORAGE= .1144E+00 PERCENT ERROR= -.1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD14	MANE	.27	433.89	223.46	618.58	1.00	433.85	224.00	618.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3309E+02 EXCESS= .0000E+00 OUTFLOW= .3299E+02 BASIN STORAGE= .1184E+00 PERCENT ERROR= -.1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD14	MANE	.28	422.90	224.57	586.80	1.00	422.77	224.00	586.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3141E+02 EXCESS= .0000E+00 OUTFLOW= .3129E+02 BASIN STORAGE= .1107E+00 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD14	MANE	.21	417.14	225.31	569.65	1.00	417.12	225.00	569.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3049E+02 EXCESS= .0000E+00 OUTFLOW= .3038E+02 BASIN STORAGE= .1087E+00 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD16	MANE	.33	604.51	227.36	932.43	1.00	604.42	227.00	931.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4987E+02 EXCESS= .0000E+00 OUTFLOW= .4973E+02 BASIN STORAGE= .1522E+00 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD16	MANE	.32	592.81	227.16	908.79	1.00	592.76	227.00	908.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4865E+02 EXCESS= .0000E+00 OUTFLOW= .4847E+02 BASIN STORAGE= .1544E+00 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD16	MANE	.22	586.58	227.58	896.04	1.00	586.34	228.00	895.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4794E+02 EXCESS= .0000E+00 OUTFLOW= .4779E+02 BASIN STORAGE= .1752E+00 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD16	MANE	.28	563.31	227.82	841.35	1.00	563.29	228.00	840.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4503E+02 EXCESS= .0000E+00 OUTFLOW= .4487E+02 BASIN STORAGE= .1635E+00 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD16	MANE	.35	550.16	228.77	813.71	1.00	550.07	229.00	813.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4355E+02 EXCESS= .0000E+00 OUTFLOW= .4340E+02 BASIN STORAGE= .1343E+00 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD18	MANE	.19	31.64	215.43	.06	1.00	31.64	216.00	.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2839E+01 EXCESS= .0000E+00 OUTFLOW= .2836E+01 BASIN STORAGE= .2134E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD18	MANE	.12	31.64	215.35	.05	1.00	31.64	216.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2775E+01 EXCESS= .0000E+00 OUTFLOW= .2772E+01 BASIN STORAGE= .2789E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD18	MANE	.18	31.64	216.38	.05	1.00	31.64	217.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2739E+01 EXCESS= .0000E+00 OUTFLOW= .2736E+01 BASIN STORAGE= .2158E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD18	MANE	.09	31.64	218.21	.05	1.00	31.64	219.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2618E+01 EXCESS= .0000E+00 OUTFLOW= .2614E+01 BASIN STORAGE= .3379E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD18	MANE	.11	31.64	219.33	.05	1.00	31.64	220.00	.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2549E+01 EXCESS= .0000E+00 OUTFLOW= .2547E+01 BASIN STORAGE= .2765E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD19	MANE	.05	643.17	227.03	995.35	1.00	643.15	227.00	995.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5308E+02 EXCESS= .0000E+00 OUTFLOW= .5308E+02 BASIN STORAGE= .1458E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD19	MANE	.07	631.49	227.04	971.16	1.00	631.48	227.00	970.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5179E+02 EXCESS= .0000E+00 OUTFLOW= .5179E+02 BASIN STORAGE= .1244E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD19	MANE	.16	625.04	228.04	956.92	1.00	625.03	228.00	955.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5104E+02 EXCESS= .0000E+00 OUTFLOW= .5103E+02 BASIN STORAGE= .6557E-03 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD19	MANE	.02	602.04	228.01	899.31	1.00	602.04	228.00	896.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4797E+02 EXCESS= .0000E+00 OUTFLOW= .4796E+02 BASIN STORAGE= .2589E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD19	MANE	.08	588.82	229.00	870.28	1.00	588.82	229.00	868.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4643E+02 EXCESS= .0000E+00 OUTFLOW= .4641E+02 BASIN STORAGE= .1060E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD20	MANE	.05	643.15	227.11	995.01	1.00	643.10	227.00	994.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5307E+02 EXCESS= .0000E+00 OUTFLOW= .5306E+02 BASIN STORAGE= .9826E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD20	MANE	.03	631.47	227.05	970.63	1.00	631.43	227.00	967.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5178E+02 EXCESS= .0000E+00 OUTFLOW= .5176E+02 BASIN STORAGE= .1315E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD20	MANE	.12	624.99	228.02	955.70	1.00	624.98	228.00	955.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5098E+02 EXCESS= .0000E+00 OUTFLOW= .5097E+02 BASIN STORAGE= .4206E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD20	MANE	.15	601.99	228.02	896.90	1.00	601.97	228.00	896.76

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CONTINUITY SUMMARY (AC-FT) - INFLOW= .4784E+02 EXCESS= .0000E+00 OUTFLOW= .4783E+02 BASIN STORAGE= .1417E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD20	MANE	.02	588.81	229.03	868.43	1.00	588.80	229.00	868.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4633E+02 EXCESS= .0000E+00 OUTFLOW= .4631E+02 BASIN STORAGE= .6184E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD21	MANE	.11	643.10	227.32	993.02	1.00	643.05	228.00	992.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5305E+02 EXCESS= .0000E+00 OUTFLOW= .5296E+02 BASIN STORAGE= .9009E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD21	MANE	.26	631.33	227.48	967.41	1.00	631.15	228.00	966.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5162E+02 EXCESS= .0000E+00 OUTFLOW= .5159E+02 BASIN STORAGE= .2768E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD21	MANE	.23	624.84	228.05	954.33	1.00	624.81	228.00	953.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5094E+02 EXCESS= .0000E+00 OUTFLOW= .5089E+02 BASIN STORAGE= .4935E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD21	MANE	.23	601.84	228.24	896.23	1.00	601.68	228.00	895.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4783E+02 EXCESS= .0000E+00 OUTFLOW= .4780E+02 BASIN STORAGE= .3073E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD21	MANE	.17	588.71	229.22	867.74	1.00	588.67	229.00	867.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4631E+02 EXCESS= .0000E+00 OUTFLOW= .4628E+02 BASIN STORAGE= .4303E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

SD22	MANE	.13	667.38	227.23	513.31	1.00	667.28	227.00	513.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5480E+02 EXCESS= .0000E+00 OUTFLOW= .5475E+02 BASIN STORAGE= .5594E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

SD22	MANE	.10	654.91	227.20	499.93	1.00	654.76	227.00	499.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5336E+02 EXCESS= .0000E+00 OUTFLOW= .5332E+02 BASIN STORAGE= .3846E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

SD22	MANE	.09	647.50	228.11	492.91	1.00	647.46	228.00	492.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5262E+02 EXCESS= .0000E+00 OUTFLOW= .5257E+02 BASIN STORAGE= .5177E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

SD22	MANE	.11	622.71	228.12	462.92	1.00	622.59	228.00	462.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4941E+02 EXCESS= .0000E+00 OUTFLOW= .4938E+02 BASIN STORAGE= .3703E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

SD22	MANE	.16	608.35	228.98	447.94	1.00	608.35	229.00	447.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4782E+02 EXCESS= .0000E+00 OUTFLOW= .4778E+02 BASIN STORAGE= .3523E-01 PERCENT ERROR= .0

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

APPENDIX D

Hydraulic Analysis

Inlet Capacity Calculations

Jones Boulevard Drop Inlets
Rating Curve Calculations for 4 and 2 Grate Drop Inlets

Headwater Depth	Orifice Constant	Clogging Factor	gravity	Area per Grate	4 Grates	2 Grates
					Orifice Inflow	Orifice Inflow
h*	Co	F	g	A**	Q_{inlet}***	Q_{inlet}***
ft			ft/s^2	ft^2	ft^3	ft^3
2.33	0.6	0.5	32.2	3.3	49	24

*Maximum available headwater
**Open area of inlet steel area
***Qinlet = $Co.A.F.(2.g.h)^{0.5}$

Jones Boulevard Inlets
Rating Curve Calculations for D2
Elliptical Pipe (60"x38")

Equivalent Pipe Dia. in	Headwater Depth ft	Outflow Q* cfs
48	6.58*	126
	6.08	80
	5.92	70
	5.52	60
	5.12	55
	4.72	40
	4.32	30

* Maximum available headwater depth
**From Figure 1005 of The Clark County Hydrologic Criteria and Drainage Design Manual

Jones Boulevard Drop Inlets

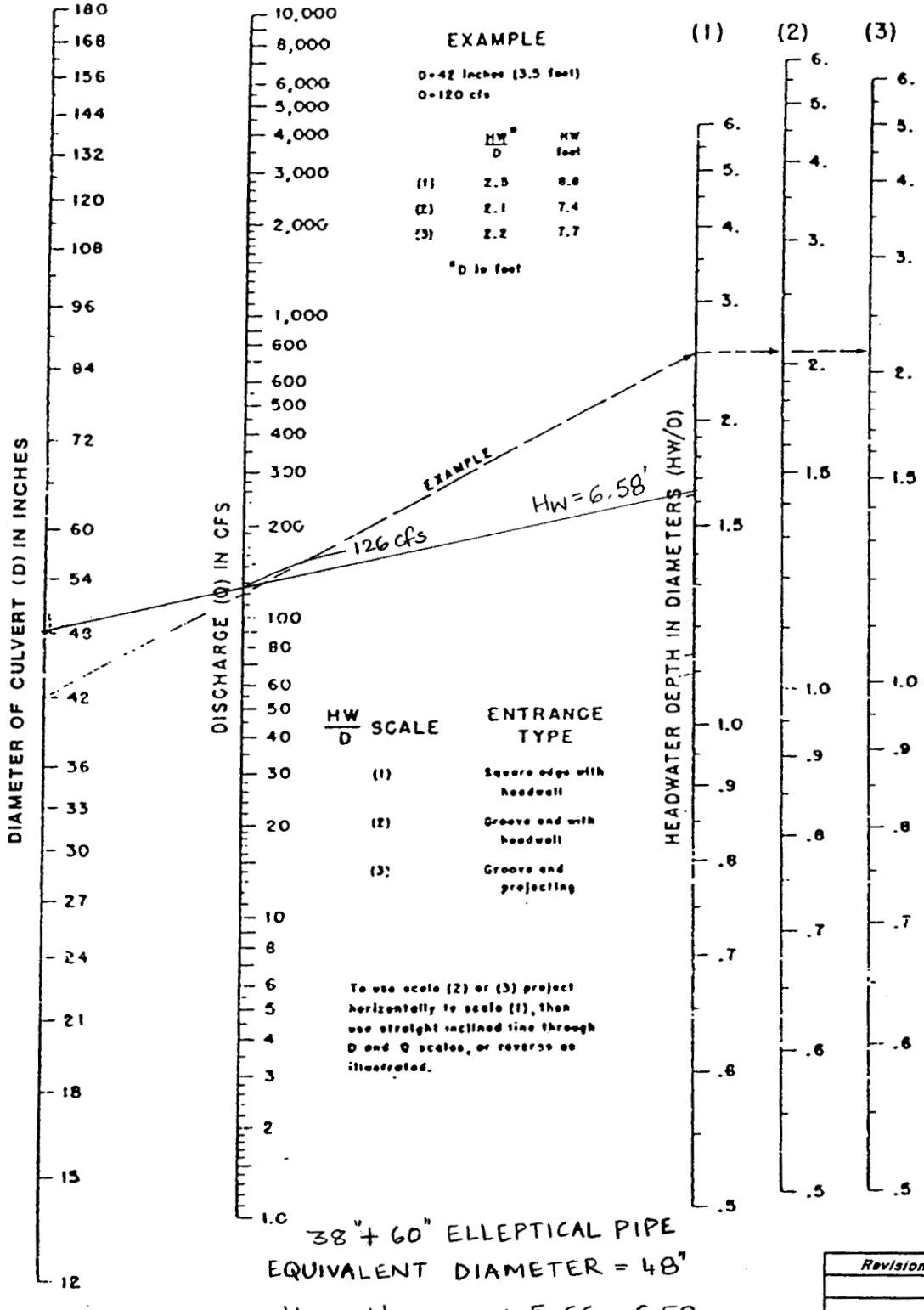
Rating Curve Calculations for Curb Inlets

Jones Boulevard Station (Drop inlet ID from Figure C-1)									
64+86(D9B)		88+37(D16A)		89+20(D16B)		94+58(D19A)		94+69(D19B)	
Flow Depth	Inflow	Flow ht	Inflow	Flow ht	Inflow	Flow ht	Inflow	Flow ht	Inflow
h	Q_{inlet}*	h	Q_{inlet}*	h	Q_{inlet}*	h	Q_{inlet}*	h	Q_{inlet}*
ft	ft^3/s	ft	ft^3/s	ft	ft^3/s	ft	ft^3/s	ft	ft^3/s
0.92	13	0.92	32	0.46	7	1.00	46	1.00	46
0.50	5	0.50	7	0.25	1	0.50	8	0.50	8
0.00	0	0.00	0	0.00	0	0.00	0	0.00	0

*Qinlet = From Hy-22, see following calculations based on 50% clogging factor

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH – INLET CONTROL RCP



38" + 60" ELLEPTICAL PIPE

EQUIVALENT DIAMETER = 48"

$H_W = H_{STREET} + 5.66 = 6.58$

Revision	Date

WRC ENGINEERING	REFERENCE: USDOT, FHWA, HDS, No. 5, 1985	FIGURE 1005

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/16/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

64+86(D9B)_0.5

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0118
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		17.000
T	Width of Spread (ft)		20.39

Gutter Flow

Eo	Gutter Flow Ratio	0.215
d	Depth of Flow (ft)	0.50
V	Average Velocity (ft/sec)	4.02

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	33.31	3.33	0.10	1.644	15.356
Reticuline	1.50	1.50	0.23	3.593	11.763
Combination			0.31	5.237	11.763

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/16/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

64+86(D9B)_0.92

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0118
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		108.000
T	Width of Spread (ft)		41.28

Gutter Flow

Eo	Gutter Flow Ratio	0.102
d	Depth of Flow (ft)	0.92
V	Average Velocity (ft/sec)	6.31

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	93.06	3.33	0.04	3.793	104.207
Reticuline	1.50	1.50	0.09	9.126	95.081
Combination			0.12	12.919	95.081

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

88+37(D16A)_0.5

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0050
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		11.000
T	Width of Spread (ft)		20.34

Gutter Flow

Eo	Gutter Flow Ratio	0.216
d	Depth of Flow (ft)	0.50
V	Average Velocity (ft/sec)	2.61

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	21.43	6.00	0.00	0.046	10.954
Parallel Bar P-1-7/8-4	1.50	5.95	0.68	7.423	3.531
Combination			0.68	7.469	3.531

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

88+37(D16A)_0.92

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0050
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		70.000
T	Width of Spread (ft)		41.21

Gutter Flow

Eo	Gutter Flow Ratio	0.103
d	Depth of Flow (ft)	0.92
V	Average Velocity (ft/sec)	4.10

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	59.92	6.00	0.00	0.105	69.895
Parallel Bar P-1-7/8-4	1.50	5.95	0.45	31.537	38.358
Combination			0.45	31.642	38.358

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description
89+20(D16B)_0.25

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0099
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		1.400
T	Width of Spread (ft)		7.61

Gutter Flow

Eo	Gutter Flow Ratio	0.570
d	Depth of Flow (ft)	0.25
V	Average Velocity (ft/sec)	2.15

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	7.15	6.00	0.01	0.018	1.382
Parallel Bar P-1-7/8-4	1.50	5.95	0.86	1.188	0.194
Combination			0.86	1.206	0.194

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description
89+20(D16B)_0.46

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0099
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		12.000
T	Width of Spread (ft)		18.43

Gutter Flow

Eo	Gutter Flow Ratio	0.239
d	Depth of Flow (ft)	0.46
V	Average Velocity (ft/sec)	3.46

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	26.18	6.00	0.00	0.041	11.959
Parallel Bar P-1-7/8-4	1.50	5.95	0.59	7.080	4.878
Combination			0.59	7.122	4.878

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

94+58(D19A)_0.5

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0073
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		13.500
T	Width of Spread (ft)		20.46

Gutter Flow

Eo	Gutter Flow Ratio	0.214
d	Depth of Flow (ft)	0.50
V	Average Velocity (ft/sec)	3.17

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	26.22	6.00	0.00	0.046	13.454
Parallel Bar P-1-7/8-4	1.50	5.95	0.61	8.201	5.253
Combination			0.61	8.247	5.253

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

REVISED AREA

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

FLAMINGO DIVERSION CHANNEL

AREA OF STUDY

TROPICANA DETENTION BASIN

AREA TO BE REMOVED FROM ZONE "A" AND REMAPPED AS ZONE "X" (SHADED)

BLUE DIAMOND CHANNEL

CLARK COUNTY UNINCORPORATED AREAS 320003

400 0 400 800

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 2554 OF 4090
REVISED TO REFLECT LOMR DATED JUN 15 2003
MAP NUMBER 32003C2554E
MAP REVISED: SEPTEMBER 27, 2012

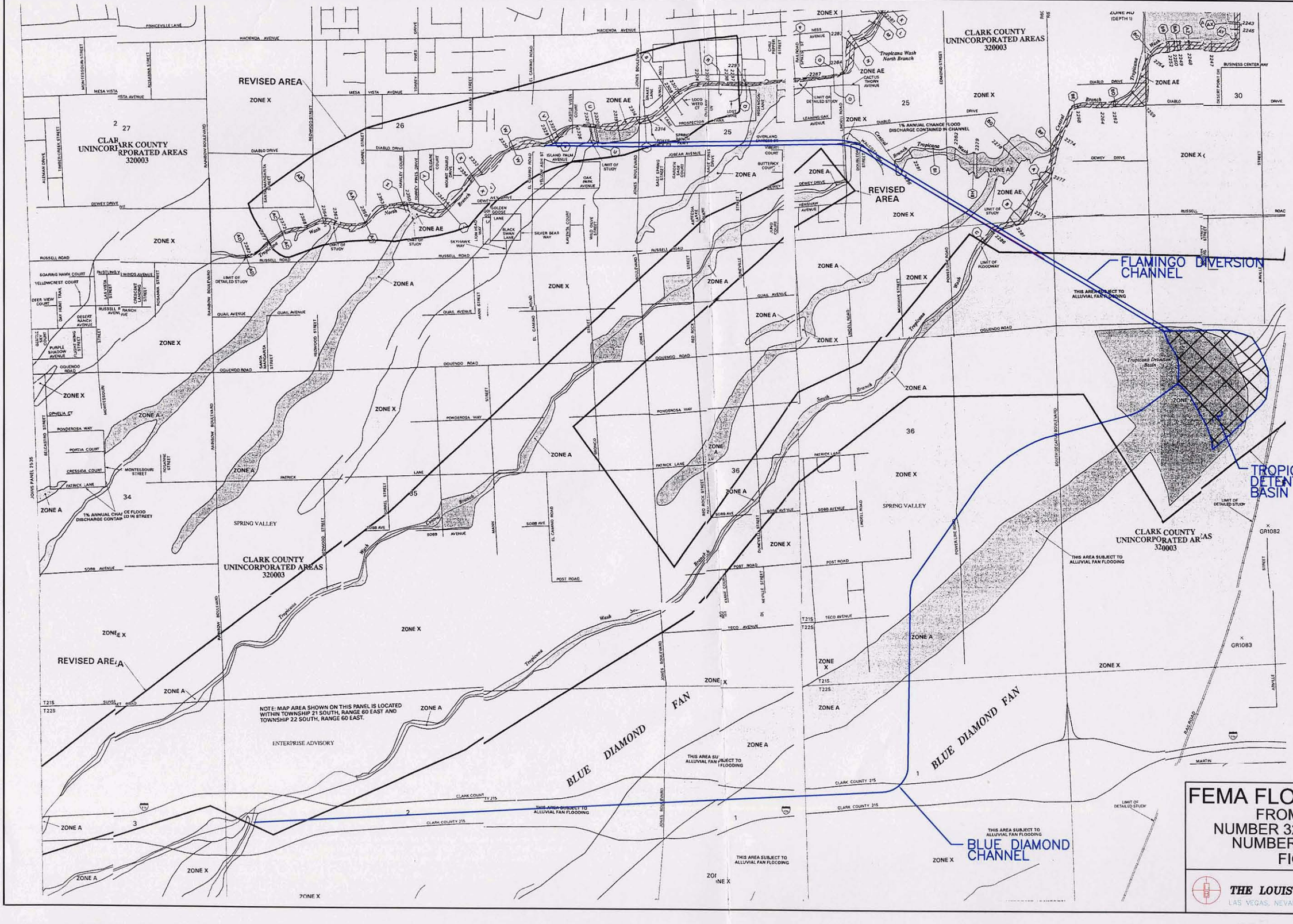
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 2553 OF 4090
REVISED TO REFLECT LOMR DATED JUN 19 2003
MAP NUMBER 32003C2553E
MAP REVISED: SEPTEMBER 27, 2012

ANNOTATED FLOOD ZONE MAP

FIGURE 2

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-15.dgn – 12/15/2003 – 11:54:13 JPS



FEMA FLOOD ZONE MAP

FROM FIRM MAP
NUMBER 32003C-2553E AND
NUMBER 32003C-2554E
FIGURE 1A

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-15.dgn - 12/15/2003 - 11:54:13 JPS

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

94+58(D19A)_1.09

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0073
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		140.000
T	Width of Spread (ft)		49.82

Gutter Flow

Eo	Gutter Flow Ratio	0.084
d	Depth of Flow (ft)	1.09
V	Average Velocity (ft/sec)	5.62

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	94.71	6.00	.950E-3	0.133	139.867
Parallel Bar P-1-7/8-4	1.50	5.95	0.33	45.693	94.174
Combination			0.33	45.826	94.174

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

94+69(D19B)_0.5

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0077
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		13.500
T	Width of Spread (ft)		20.25

Gutter Flow

Eo	Gutter Flow Ratio	0.217
d	Depth of Flow (ft)	0.50
V	Average Velocity (ft/sec)	3.23

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	26.53	6.00	0.00	0.046	13.454
Parallel Bar P-1-7/8-4	1.50	5.95	0.60	8.121	5.333
Combination			0.60	8.167	5.333

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

FHWA Urban Drainage Design Program, HY-22
Drainage of Highway Pavements

Inlets on Grade
Date: 09/17/2003

Project No. :CB879
Project Name.:FLOOD MAP REVISIONS
Computed by :VS

Project Description

94+69(D19B)_1.09

Inlets on Grade: Curb Opening, Grate Inlet

Roadway and Discharge Data

	Cross Slope		Composite
S	Longitudinal Slope	(ft/ft)	0.0077
Sx	Pavement Cross Slope	(ft/ft)	0.0200
Sw	Gutter Cross Slope	(ft/ft)	0.0830
n	Manning's Coefficient		0.017
W	Gutter Width (ft)		1.50
a	Gutter Depression (inch)		2.00
Q	Discharge (cfs)		145.000
T	Width of Spread (ft)		49.98

Gutter Flow

Eo	Gutter Flow Ratio	0.084
d	Depth of Flow (ft)	1.09
V	Average Velocity (ft/sec)	5.79

Inlet Interception

INLET INTERCEPTION	LT or WGR (ft)	L (ft)	E	Qi (cfs)	Qb (cfs)
Curb Opening	97.75	6.00	.920E-3	0.133	144.867
Reticuline	1.50	5.95	0.32	45.974	98.892
Combination			0.32	46.108	98.892

Note: 1. The curb opening length in the input screen is the total length of the curb opening including its length along the grate.

2. The lengths were divided by 2 to account for a 50% clogging factor.

Cross-section Flow Depth Calculations

CH2MHLL X-SECTION JCT-2-E
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	CH2 X-SECTION JCT2E
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.023500	ft/ft
Water Surface Elevation	2,318.56	ft

Elevation range: 2,317.50 ft to 2,329.30 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	2,329.30	100.00	500.00	0.037
150.00	2,328.00			
340.00	2,324.00			
420.00	2,320.00			
450.00	2,317.50			
460.00	2,317.50			
480.00	2,320.00			
500.00	2,322.70			

Results		
Wtd. Mannings Coefficient	0.037	
Discharge	105.72	cfs
Flow Area	21.84	ft²
Wetted Perimeter	31.31	ft
Top Width	31.20	ft
Height	1.06	ft ← critical Depth
Critical Depth	2,318.57	ft
Critical Slope	0.022509	ft/ft
Velocity	4.84	ft/s
Velocity Head	0.36	ft
Specific Energy	2,318.92	ft
Froude Number	1.02	
Flow is supercritical.		

$$\text{Hyd. Depth (critical)} = \frac{21.84}{31.20} = 0.70\,\text{ft}$$

CH2MHLL X-SECTION JCT-2-A
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	CH2 X-SECTION JCT2A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.016000 ft/ft			
Elevation range: 2,298.80 ft to 2,310.20 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	2,308.80	100.00	600.00	0.037
170.00	2,308.00			
250.00	2,304.00			
280.00	2,300.00			
285.00	2,298.80			
305.00	2,298.80			
310.00	2,300.00			
330.00	2,304.00			
480.00	2,308.00			
600.00	2,310.20			
Discharge	195.00	cfs		

Results		
Wtd. Mannings Coefficient	0.037	
Water Surface Elevation	2,300.19	ft
Flow Area	36.01	ft²
Wetted Perimeter	32.72	ft
Top Width	32.41	ft
Height	1.39	ft
Critical Depth	2,300.11	ft
Critical Slope	0.019797	ft/ft
Velocity	5.41	ft/s
Velocity Head	0.46	ft
Specific Energy	2,300.65	ft
Froude Number	0.91	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{36.01}{32.41} = 1.11 \text{ ft}$$

CH2MHLL X-SECTION NT-1-A
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	CH2 X-SECTION NT1A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.019500	ft/ft
Elevation range: 2,294.30 ft to 2,296.90 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,296.80	0.00	500.00	0.047
60.00	2,296.90			
200.00	2,296.00			
270.00	2,294.60			
320.00	2,294.30			
390.00	2,294.30			
500.00	2,296.00			

Discharge	43.00	cfs

Results		
Wtd. Mannings Coefficient	0.047	
Water Surface Elevation	2,294.57	ft
Flow Area	27.73	ft^2
Wetted Perimeter	133.16	ft
Top Width	133.15	ft
Height	0.27	ft
Critical Depth	2,294.50	ft
Critical Slope	0.059099	ft/ft
Velocity	1.55	ft/s
Velocity Head	0.04	ft
Specific Energy	2,294.61	ft
Froude Number	0.60	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{27.73}{133.15} = 0.21 \text{ ft}$$

LB X-SECTION 1
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	LB X-SECTION 1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.017800	ft/ft
Elevation range: 2,304.50 ft to 2,315.00 ft.		
Discharge	127.00	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	2,310.00	100.00	860.00	0.045
130.00	2,310.50			
160.00	2,310.00			
360.00	2,305.00			
370.00	2,304.50			
380.00	2,305.00			
580.00	2,310.00			
860.00	2,315.00			

Results		
Wtd. Mannings Coefficient	0.045	
Water Surface Elevation	2,305.76	ft
Flow Area	43.61	ft^2
Wetted Perimeter	81.15	ft
Top Width	81.10	ft
Height	1.26	ft
Critical Depth	2,305.62	ft
Critical Slope	0.037980	ft/ft
Velocity	2.91	ft/s
Velocity Head	0.13	ft
Specific Energy	2,305.90	ft
Froude Number	0.70	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{43.61}{81.10} = 0.54 \text{ ft}$$

LB X-SECTION 2
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	LB X-SECTION 2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.019300	ft/ft
Elevation range: 2,323.00 ft to 2,330.00 ft.		
Discharge	15.00	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,330.00	0.00	160.00	0.037
114.00	2,325.00			
120.00	2,323.00			
130.00	2,325.00			
160.00	2,330.00			

Results		
Wtd. Mannings Coefficient	0.037	
Water Surface Elevation	2,324.03	ft
Flow Area	4.27	ft²
Wetted Perimeter	8.53	ft
Top Width	8.26	ft
Height	1.03	ft
Critical Depth	2,323.97	ft
Critical Slope	0.026471	ft/ft
Velocity	3.52	ft/s
Velocity Head	0.19	ft
Specific Energy	2,324.22	ft
Froude Number	0.86	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{4.27}{8.26} = 0.52 \text{ ft}$$

LB X-SECTION 3
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	LB X-SECTION 3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.017900	ft/ft
Elevation range: 2,314.50 ft to 2,320.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,320.00	0.00	114.00	0.037
44.00	2,315.00			
60.00	2,314.50			
80.00	2,315.00			
114.00	2,320.00			

Discharge	111.00	cfs

Results		
Wtd. Mannings Coefficient	0.037	
Water Surface Elevation	2,315.47	ft
Flow Area	27.82	ft^2
Wetted Perimeter	43.47	ft
Top Width	43.40	ft
Height	0.97	ft
Critical Depth	2,315.42	ft
Critical Slope	0.023751	ft/ft
Velocity	3.99	ft/s
Velocity Head	0.25	ft
Specific Energy	2,315.72	ft
Froude Number	0.88	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{27.82}{43.40} = 0.64 \text{ ft}$$

X-SECTION 10
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.014600	ft/ft
Water Surface Elevation	2,297.41	ft

Elevation range: 2,295.84 ft to 2,306.34 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,303.55	0.00	112.00	0.040
26.00	2,301.07	112.00	263.00	0.030
47.00	2,300.94	263.00	339.00	0.040
94.00	2,302.23			
112.00	2,300.50			
123.00	2,295.84			
139.00	2,296.37			
154.00	2,296.04			
160.00	2,297.81			
177.00	2,298.03			
189.00	2,297.03			
206.00	2,299.47			
243.00	2,300.57			
263.00	2,304.95			
285.00	2,305.49			
339.00	2,306.34			

Results		
Wtd. Mannings Coefficient	0.030	
Discharge	274.97	cfs
Flow Area	46.41	ft²
Wetted Perimeter	47.13	ft
Top Width	46.56	ft
Height	1.57	ft ← critical Depth
Critical Depth	2,297.45	ft
Critical Slope	0.013270	ft/ft
Velocity	5.92	ft/s
Velocity Head	0.55	ft
Specific Energy	2,297.96	ft
Froude Number	1.05	
Flow is supercritical.		
Flow is divided.		

X-SECTION 10
Worksheet for Irregular Channel

Hyd. Depth (critical) $= \frac{46.41}{46.56} = 0.99$ ft

X-SECTION 11
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.017200 ft/ft			
Elevation range: 2,313.34 ft to 2,319.72 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,319.51	0.00	51.00	0.040
51.00	2,318.50	51.00	88.00	0.035
60.00	2,318.20	88.00	138.00	0.040
66.00	2,313.34	138.00	194.00	0.035
83.00	2,314.79	194.00	295.00	0.040
88.00	2,316.68			
88.00	2,316.66			
125.00	2,316.84			
138.00	2,315.96			
178.00	2,315.13			
194.00	2,318.88			
234.00	2,319.59			
295.00	2,319.72			
Discharge	214.00 cfs			

Results		
Wtd. Mannings Coefficient	0.035	
Water Surface Elevation	2,315.78	ft
Flow Area	45.32	ft^2
Wetted Perimeter	58.03	ft
Top Width	56.84	ft
Height	2.44	ft
Critical Depth	2,315.73	ft
Critical Slope	0.019885	ft/ft
Velocity	4.72	ft/s
Velocity Head	0.35	ft
Specific Energy	2,316.13	ft
Froude Number	0.93	
Flow is subcritical.		
Flow is divided.		

$$\text{Hyd. Depth} = \frac{45.32}{56.84} = 0.80 \text{ ft}$$

X-SECTION 12
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.015500	ft/ft
Elevation range: 2,327.45 ft to 2,335.05 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,329.76	0.00	217.00	0.035
26.00	2,330.76			
29.00	2,329.79			
33.00	2,329.48			
64.00	2,329.98			
67.00	2,331.48			
73.00	2,330.36			
78.00	2,328.26			
99.00	2,328.50			
104.00	2,327.45			
113.00	2,327.54			
125.00	2,328.64			
151.00	2,329.02			
160.00	2,334.21			
189.00	2,335.05			
217.00	2,334.84			

Discharge	214.00	cfs

Results		
Wtd. Mannings Coefficient	0.035	
Water Surface Elevation	2,329.06	ft
Flow Area	51.89	ft²
Wetted Perimeter	75.29	ft
Top Width	74.96	ft
Height	1.61	ft
Critical Depth	2,328.99	ft
Critical Slope	0.020767	ft/ft
Velocity	4.12	ft/s
Velocity Head	0.26	ft
Specific Energy	2,329.32	ft
Froude Number	0.87	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{51.89}{74.96} = 0.69 \text{ ft}$$

X-SECTION 13
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.013300 ft/ft			
Elevation range: 2,341.56 ft to 2,348.08 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,344.28	0.00	79.00	0.040
26.00	2,344.74	79.00	101.00	0.035
57.00	2,344.18	101.00	184.00	0.040
73.00	2,343.84			
79.00	2,341.86			
90.00	2,341.56			
98.00	2,341.86			
101.00	2,341.80			
101.00	2,342.87			
119.00	2,343.36			
129.00	2,348.08			
152.00	2,347.67			
184.00	2,347.19			
Discharge	214.00 cfs			

Results		
Wtd. Mannings Coefficient	0.038	
Water Surface Elevation	2,343.42	ft
Flow Area	46.62	ft^2
Wetted Perimeter	46.23	ft
Top Width	44.88	ft
Height	1.86	ft
Critical Depth	2,343.23	ft
Critical Slope	0.021258	ft/ft
Velocity	4.59	ft/s
Velocity Head	0.33	ft
Specific Energy	2,343.75	ft
Froude Number	0.79	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{46.62}{44.88} = 1.03\,\text{ft}$$

X-SECTION 14
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.014300	ft/ft
Elevation range: 2,353.40 ft to 2,361.33 ft.		
Discharge	151.00	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,359.49	0.00	137.00	0.035
7.00	2,354.11			
24.00	2,353.40			
35.00	2,354.02			
51.00	2,360.95			
88.00	2,361.30			
137.00	2,361.33			

Results		
Wtd. Mannings Coefficient	0.035	
Water Surface Elevation	2,354.78	ft
Flow Area	30.26	ft²
Wetted Perimeter	31.06	ft
Top Width	30.64	ft
Height	1.38	ft
Critical Depth	2,354.70	ft
Critical Slope	0.018682	ft/ft
Velocity	4.99	ft/s
Velocity Head	0.39	ft
Specific Energy	2,355.17	ft
Froude Number	0.89	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{30.26}{30.64} = 0.99 \text{ ft}$$

X-SECTION 15
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\flow dep.fm2
Worksheet	X-SECTION 15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.012950 ft/ft			
Elevation range: 2,366.24 ft to 2,371.57 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
-30.00	2,370.00	-30.00	211.00	0.035
0.00	2,368.20			
53.00	2,368.23			
84.00	2,367.52			
95.00	2,366.58			
105.00	2,366.24			
115.00	2,366.60			
127.00	2,370.85			
173.00	2,370.98			
196.00	2,370.32			
211.00	2,371.57			
Discharge	151.00 cfs			

Results		
Wtd. Mannings Coefficient	0.035	
Water Surface Elevation	2,367.70	ft
Flow Area	35.23	ft²
Wetted Perimeter	42.17	ft
Top Width	41.93	ft
Height	1.46	ft
Critical Depth	2,367.53	ft
Critical Slope	0.019039	ft/ft
Velocity	4.29	ft/s
Velocity Head	0.29	ft
Specific Energy	2,367.98	ft
Froude Number	0.82	
Flow is subcritical.		

$$\text{Hyd. Depth} = \frac{35.23}{41.93} = 0.84 \text{ ft}$$

Flow Depth Calculations on Jones Boulevard

Flowby Past Elliptical Pipe D2
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.008200	ft/ft
Water Surface Elevation	2,372.37	ft

Elevation range: 2,371.45 ft to 2,373.95 ft.

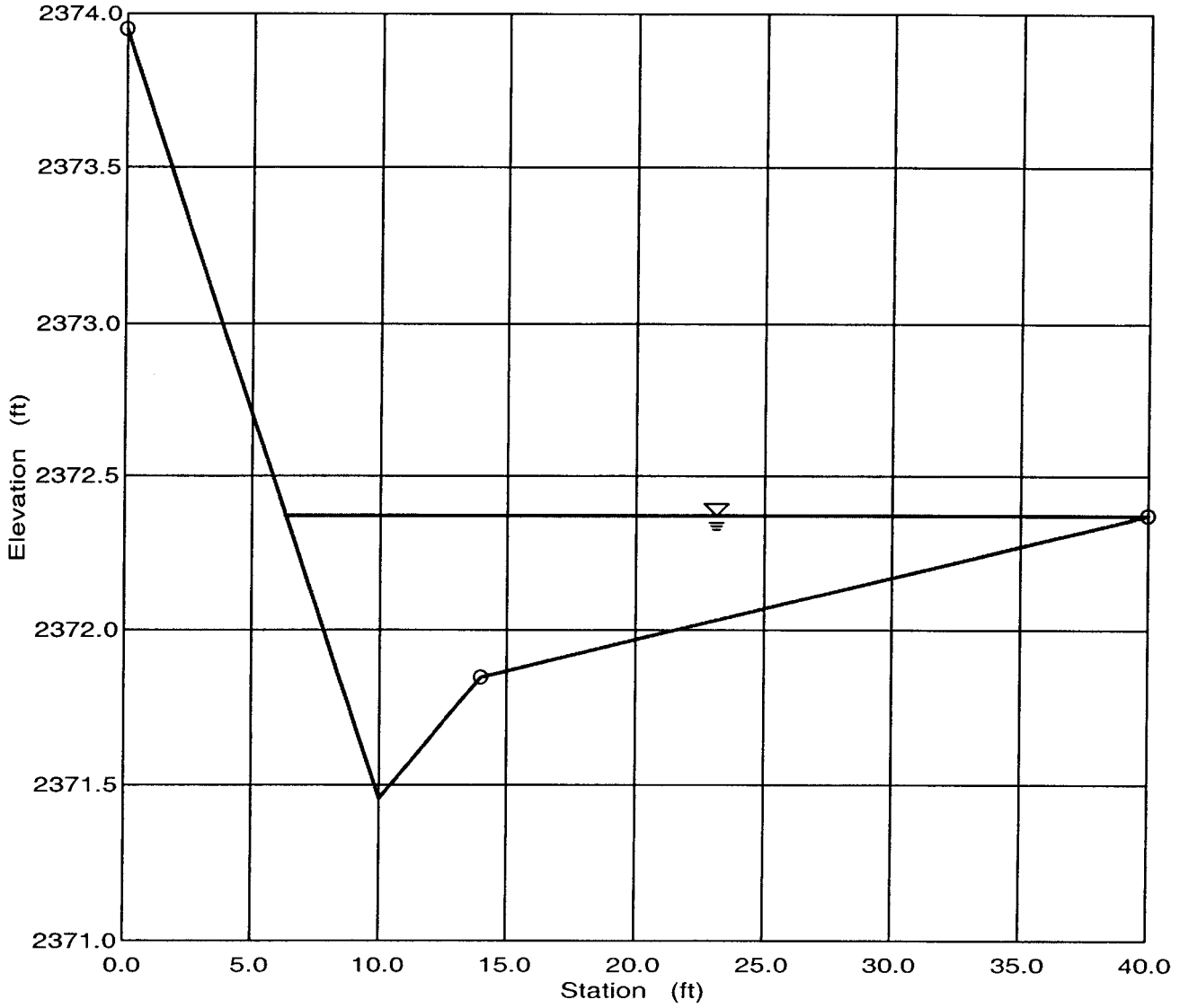
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,373.95	0.00	14.00	0.022
10.00	2,371.45	14.00	40.00	0.016
14.00	2,371.85			
40.00	2,372.37			

Results		
Wtd. Mannings Coefficient	0.017	
Discharge	42.72	cfs
Flow Area	11.33	ft²
Wetted Perimeter	33.82	ft
Top Width	33.68	ft
Height	0.92	ft
Critical Depth	2,372.40	ft
Critical Slope	0.006163	ft/ft
Velocity	3.77	ft/s
Velocity Head	0.22	ft
Specific Energy	2,372.59	ft
Froude Number	1.15	
Flow is supercritical.		

X-section of Jones Blvd. Past Elliptical Pipe D2
Cross Section for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Wtd. Mannings Coefficient	0.017	
Channel Slope	0.008200	ft/ft
Water Surface Elevation	2,372.37	ft
Discharge	42.72	cfs



Flowby Past Drop Inlet D6 on Jones
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.004900	ft/ft
Water Surface Elevation	2,363.98	ft

Elevation range: 2,363.06 ft to 2,365.56 ft.

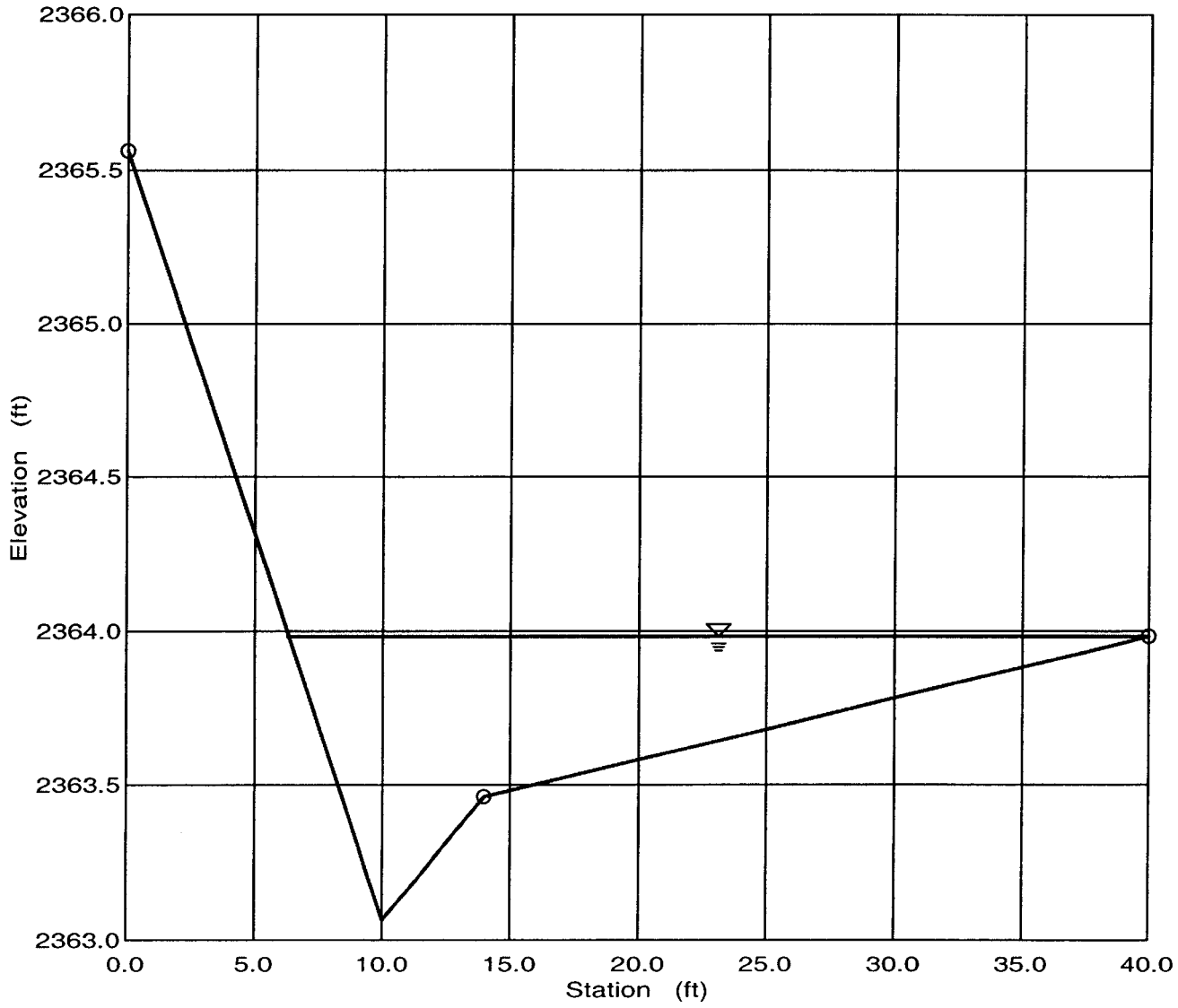
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,365.56	0.00	14.00	0.022
10.00	2,363.06	14.00	40.00	0.016
14.00	2,363.46			
40.00	2,363.98			

Results		
Wtd. Mannings Coefficient	0.017	
Discharge	33.03	cfs
Flow Area	11.33	ft²
Wetted Perimeter	33.82	ft
Top Width	33.68	ft
Height	0.92	ft
Critical Depth	2,363.95	ft
Critical Slope	0.006347	ft/ft
Velocity	2.91	ft/s
Velocity Head	0.13	ft
Specific Energy	2,364.11	ft
Froude Number	0.89	
Flow is subcritical.		

X-Section of Jones Blvd. Past Drop Inlet D6
Cross Section for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Wtd. Mannings Coefficient	0.017	
Channel Slope	0.004900	ft/ft
Water Surface Elevation	2,363.98	ft
Discharge	33.03	cfs



Flowby Past Drop Inlet D12
Worksheet for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.005500	ft/ft
Water Surface Elevation	2,353.26	ft

Elevation range: 2,352.34 ft to 2,354.84 ft.

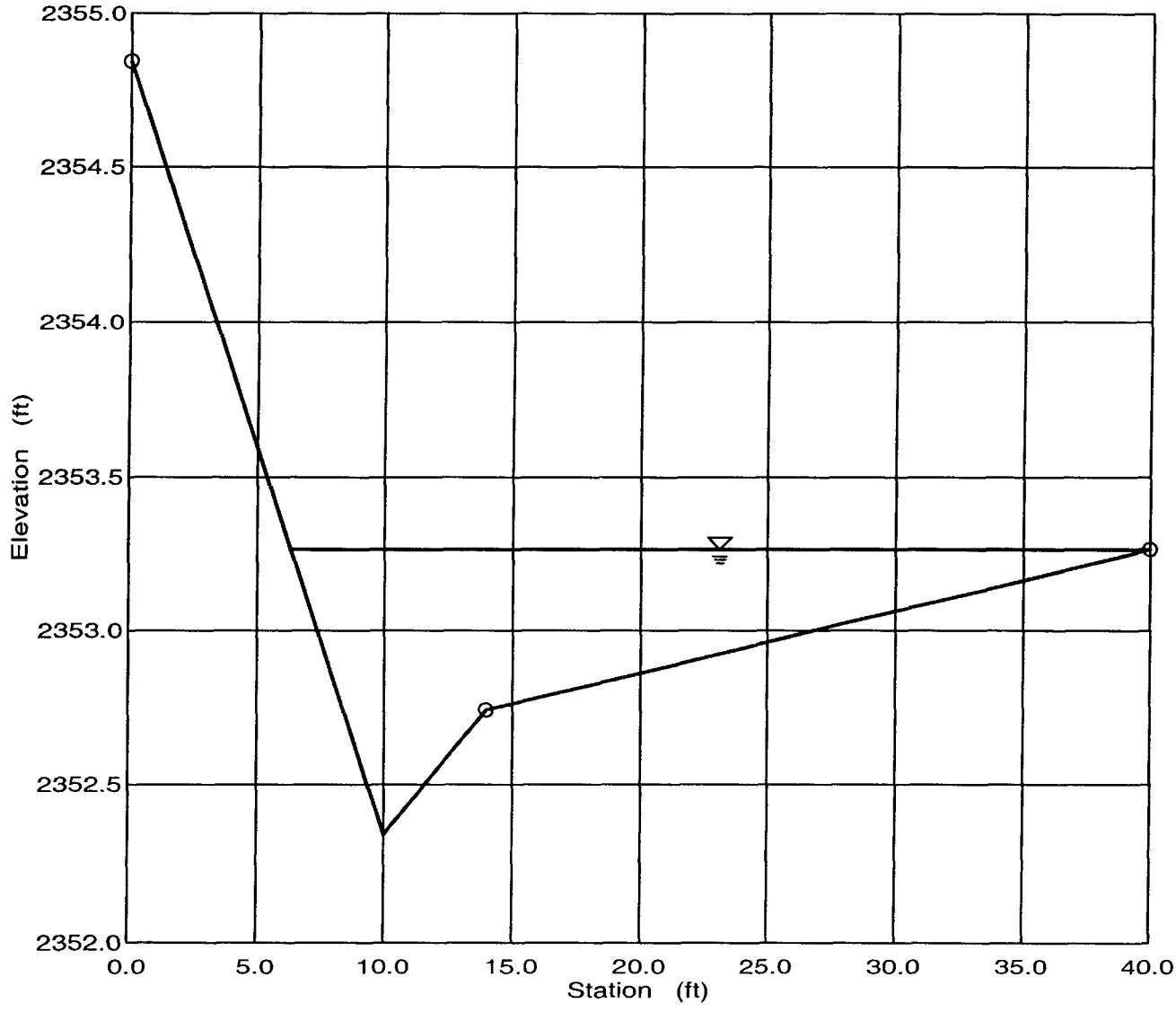
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2,354.84	0.00	14.00	0.022
10.00	2,352.34	14.00	40.00	0.016
14.00	2,352.74			
40.00	2,353.26			

Results		
Wtd. Mannings Coefficient	0.017	
Discharge	34.99	cfs
Flow Area	11.33	ft²
Wetted Perimeter	33.82	ft
Top Width	33.68	ft
Height	0.92	ft
Critical Depth	2,353.24	ft
Critical Slope	0.006299	ft/ft
Velocity	3.09	ft/s
Velocity Head	0.15	ft
Specific Energy	2,353.41	ft
Froude Number	0.94	
Flow is subcritical.		

X-Section of Jones Blvd Past Drop Inlet D12
Cross Section for Irregular Channel

Project Description	
Project File	e:\cb879\879-jones\revised\data cd\flowmaster calculations\cross se.fm2
Worksheet	X-Section and Capacity of Jones at W3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Wtd. Mannings Coefficient	0.017	
Channel Slope	0.005500	ft/ft
Water Surface Elevation	2,353.26	ft
Discharge	34.99	cfs



WSPG Calculations

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T1 JONES BLVD STORM DRAIN: I-215 TO DIABLO CHANNEL                              0
T2 CCRFCD MASTER PLAN FACILITIES
T3 100 YEAR EVENT MODEL BY LBG: file: JONES.WSW
SO  -9893.8802314.700  1                          2314.700
WX  -9893.8802314.700  1
R   -9893.8702314.700  1      .013                                  .000    .000 0
TS  -9883.8802315.800  2      .013                                  .000    .000 0
R   -9883.8702315.801  2      .013                                  .000   1.450 0
R   -9883.8602315.802  2      .013                                  .000    .000 0
JX  -9503.0502321.980  2 24 24.013   24.000   00.5002326.0002326.000 45.0-45.0    .000
R   -9503.0002322.000  2      .013                                  .000    .000 1
R   -9498.0902322.120  2      .013                                  .000    .000 0
TS  -9488.0902322.230  3      .013                                  .000    .000 0
R   -9145.0002326.080  3      .013                                  .000    .000 1
JX  -9033.0002327.330  3 18   .013   07.000         2331.800         45.0         .000
R   -8937.9202328.400  3      .013                                  .000   0.000 0
R   -8891.6102330.800  3      .013                                  .000   0.000 0
JX  -8882.2502331.290  3 54   .013   32.000         2332.600         45.0         .000
TS  -8874.6102331.960  4      .013                                  .000    .000 0
R   -8874.6002331.980  4      .013                                  .000   0.000 0
R   -8860.0002333.100  4      .013                                  .000   0.000 0
R   -8775.0002333.470  4      .013                                  .000   0.000 1
R   -8527.9002334.560  4      .013                                  .000   0.000 0
R   -8405.0002335.070  4      .013                                  .000   0.000 1
JX  -8234.0002335.820  4 99   .013   49.000         2337.900         57.0         .000
R   -8193.6902335.990  4      .013                                  .000   0.000 0
JX  -8172.0002336.150  4 98   .013   12.000         2338.800         45.0         .000
R   -8171.9002336.160  4      .013                                  .000   0.000 0
R   -8032.0002337.210  4      .013                                  .000   0.000 1
R   -7899.9902338.220  4      .013                                  .000   0.000 0
R   -7660.0002340.020  4      .013                                  .000   0.000 1
JX  -7598.0002340.490  4 36   .013   49.000         2342.500         45.0         .000
R   -7597.9902340.500  4      .013                                  .000   0.000 0
JX  -7515.0002341.110  4 30   .013   49.000         2343.500         45.0         .000
R   -7509.0002341.160  4      .013                                  .000   0.000 0
TS  -7500.0002341.260  5      .013                                  .000    .000 0
R   -7499.9902341.260  5      .013                                  .000   0.000 0
R   -7285.0002342.300  5      .013                                  .000   0.000 1
R   -7199.9902342.750  5      .013                                  .000   0.000 0
JX  -6915.0002344.160  5 24   .013   24.000         2347.200         45.0         .000
R   -6914.9902344.160  5      .013                                  .000   0.000 1
JX  -6851.0002344.480  5 30   .013   01.000         2346.900         45.0         .000
R   -6846.0002344.500  5      .013                                  .000   0.000 0
TS  -6836.0002344.600  6      .013                                  .000    .000 0
R   -6835.9902344.600  6      .013                                  .000   0.000 0
JX  -6540.0002346.780  6 24 18.013   18.500   00.5002349.7002350.200 45.0-45.0    .000
R   -6539.9902346.780  6      .013                                  .000   0.000 1
JX  -6258.0002348.860  6 30   .013   49.000         2351.400         45.0         .000
R   -6257.9902348.860  6      .013                                  .000   0.000 0
JX  -6174.0002349.480  6 30   .013   33.000         2352.000         45.0         .000
R   -6173.9902349.480  6      .013                                  .000   0.000 1
JX  -5865.0002351.760  6 24   .013   49.000         2354.800         45.0         .000
R   -5860.0002351.800  6      .013                                  .000   0.000 1
TS  -5850.0002352.000  7      .013                                  .000    .000 0
R   -5849.9902352.000  7      .013                                  .000   0.000 0
JX  -5557.0002354.910  7 24   .013   49.000         2357.900         45.0         .000
R   -5550.0002354.980  7      .013                                  .000   0.000 1
TS  -5540.0002355.180 72      .013                                  .000    .000 0
R   -5539.9902355.180 72      .013                                  .000   0.000 0
JX  -5250.0002357.950 72 24   .013   14.000         2360.900         45.0         .000
R   -5249.9902357.950 72      .013                                  .000   0.000 1
R   -4947.0002360.530 72      .013                                  .000   -.024 1
R   -4946.9902360.530 72      .013                                  .000   0.000 0
JX  -4946.9802361.590 60 48   .013   43.000         2363.650         45.0         .000
R   -4727.0002363.360 60      .013                                  .000   0.000 1
R   -4525.0002365.000 60      .013                                  .000   0.000 2
JX  -4521.0002365.150 60 97   .013  126.000         2365.750         45.0         .000
TS  -4511.0002365.620 54      .013                                  .000    .000 0
R   -4225.9902368.000 54      .013                                  .000   0.000 1
TS  -4224.5002368.710 48      .013                                  .000    .000 0
R   -3925.9902370.420 48      .013                                  .000   0.000 1
TS  -3924.5002371.030 42      .013                                  .000    .000 0
R   -3623.5002372.590 42      .013                                  .000  44.739 1
TS  -3623.0002373.150 36      .013                                  .000    .000 0
R   -3523.0002373.720 36      .013                                  .000   0.000 0
SH  -3523.0002373.720 36                          2377.000
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CD    1   3    0     .000    8.00     10.000   .000   .000    .00
CD    2   3    0     .010    7.000     8.000   .000   .000    .00
CD    3   3    0     .000    7.000    10.000   .000   .000    .00
CD    4   3    0     .000    6.000    13.000   .000   .000    .00
CD    5   3    0     .000    6.000    10.000   .000   .000    .00
CD    6   3    0     .000    6.000     7.000   .000   .000    .00
CD    7   3    0     .000    6.000     6.000   .000   .000    .00
CD   18   4    1     .000    1.500      .000   .000   .000    .00
CD   24   4    1     .000    2.000      .000   .000   .000    .00
CD   30   4    1     .000    2.500      .000   .000   .000    .00
CD   36   4    1     .000    3.000      .000   .000   .000    .00
CD   42   4    1     .000    3.500      .000   .000   .000    .00
CD   48   4    1     .000    4.000      .000   .000   .000    .00
CD   54   4    1     .000    4.500      .000   .000   .000    .00
CD   60   4    1     .000    5.000      .000   .000   .000    .00
CD   72   4    1     .000    6.000      .000   .000   .000    .00
CD   97   3    0     .000    3.170     5.000   .000   .000    .00
CD   98   3    0     .000    2.830     4.420   .000   .000    .00
CD   99   3    0     .000    2.420     3.750   .000   .000    .00
Q              36.000    .0
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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
-9893.880	2314.700	2.781	2317.481	665.50	23.93	8.89	2326.37	.00	5.16	10.00	8.000	10.000	.00	0 .0
WALL EXIT														
-9893.870	2314.700	2.779	2317.479	665.50	23.95	8.91	2326.39	.00	5.16	10.00	8.000	10.000	.00	0 .0
TRANS STR	.1101					.0171	.17	2.78	2.53		.013	.00	.00	BOX
-9883.860	2315.802	3.909	2319.711	665.50	21.28	7.03	2326.74	.00	5.99	8.00	7.000	8.000	.00	0 .0
JUNCT STR	.0162					.0100	3.81	3.91	1.90		.013	.00	.00	BOX
-9503.050	2321.980	5.226	2327.206	641.00	15.33	3.65	2330.86	.00	5.84	8.00	7.000	8.000	.00	0 .0
.050	.4020					.0060	.00	5.23	1.18	1.18	.013	.00	.00	BOX
-9503.000	2322.000	5.278	2327.278	641.00	15.18	3.58	2330.86	.00	5.84	8.00	7.000	8.000	.00	0 .0
.579	.0245					.0058	.00	5.28	1.16	3.09	.013	.00	.00	BOX
-9502.421	2322.014	5.309	2327.323	641.00	15.09	3.54	2330.86	.00	5.84	8.00	7.000	8.000	.00	0 .0
3.285	.0245					.0055	.02	5.31	1.15	3.09	.013	.00	.00	BOX
-9499.136	2322.094	5.568	2327.663	641.00	14.39	3.22	2330.88	.00	5.84	8.00	7.000	8.000	.00	0 .0
1.046	.0245					.0048	.01	5.57	1.07	3.09	.013	.00	.00	BOX
-9498.090	2322.120	5.841	2327.961	641.00	13.72	2.92	2330.88	.00	5.84	8.00	7.000	8.000	.00	0 .0
TRANS STR	.0110					.0025	.02	5.84	1.00		.013	.00	.00	BOX
-9488.090	2322.230	7.548	2329.778	641.00	9.16	1.30	2331.08	.00	5.03	10.00	7.000	10.000	.00	0 .0
44.838	.0112					.0025	.11	7.55	.61	3.33	.013	.00	.00	BOX

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
-9443.252	2322.733	7.159	2329.893	641.00	9.16	1.30	2331.19	.00	5.03	10.00	7.000	10.000	.00	0 .0
HYDRAULIC JUMP														
-9443.252	2322.733	3.328	2326.061	641.00	19.26	5.76	2331.82	.00	5.03	10.00	7.000	10.000	.00	0 .0
298.252	.0112					.0113	3.38	3.33	1.86	3.33	.013	.00	.00	BOX
-9145.000	2326.080	3.317	2329.397	641.00	19.32	5.80	2335.20	.00	5.03	10.00	7.000	10.000	.00	0 .0
JUNCT STR	.0112					.0119	1.34	3.32	1.87		.013	.00	.00	BOX
-9033.000	2327.330	3.187	2330.517	634.00	19.89	6.14	2336.66	.00	5.00	10.00	7.000	10.000	.00	0 .0
95.080	.0113					.0127	1.21	3.19	1.96	3.31	.013	.00	.00	BOX
-8937.920	2328.400	3.139	2331.539	634.00	20.20	6.33	2337.87	.00	5.00	10.00	7.000	10.000	.00	0 .0
8.231	.0518					.0124	.10	3.14	2.01	1.95	.013	.00	.00	BOX
-8929.688	2328.826	3.254	2332.080	634.00	19.48	5.89	2337.98	.00	5.00	10.00	7.000	10.000	.00	0 .0
9.240	.0518					.0110	.10	3.25	1.90	1.95	.013	.00	.00	BOX
-8920.448	2329.305	3.413	2332.718	634.00	18.58	5.36	2338.08	.00	5.00	10.00	7.000	10.000	.00	0 .0
7.601	.0518					.0096	.07	3.41	1.77	1.95	.013	.00	.00	BOX
-8912.848	2329.699	3.579	2333.279	634.00	17.71	4.87	2338.15	.00	5.00	10.00	7.000	10.000	.00	0 .0
6.183	.0518					.0085	.05	3.58	1.65	1.95	.013	.00	.00	BOX
-8906.665	2330.020	3.754	2333.774	634.00	16.89	4.43	2338.20	.00	5.00	10.00	7.000	10.000	.00	0 .0
4.939	.0518					.0074	.04	3.75	1.54	1.95	.013	.00	.00	BOX

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-8901.726	2330.276	3.937	2334.213	634.00	16.10	4.03	2338.24	.00	5.00	10.00	7.000	10.000	.00	0 .0
3.836	.0518					.0065	.02	3.94	1.43	1.95	.013	.00	.00	BOX
-8897.890	2330.475	4.129	2334.604	634.00	15.35	3.66	2338.26	.00	5.00	10.00	7.000	10.000	.00	0 .0
2.845	.0518					.0057	.02	4.13	1.33	1.95	.013	.00	.00	BOX
-8895.045	2330.622	4.331	2334.953	634.00	14.64	3.33	2338.28	.00	5.00	10.00	7.000	10.000	.00	0 .0
1.946	.0518					.0050	.01	4.33	1.24	1.95	.013	.00	.00	BOX
-8893.099	2330.723	4.542	2335.265	634.00	13.96	3.03	2338.29	.00	5.00	10.00	7.000	10.000	.00	0 .0
1.124	.0518					.0044	.00	4.54	1.15	1.95	.013	.00	.00	BOX
-8891.975	2330.781	4.764	2335.545	634.00	13.31	2.75	2338.30	.00	5.00	10.00	7.000	10.000	.00	0 .0
.364	.0518					.0039	.00	4.76	1.07	1.95	.013	.00	.00	BOX
-8891.610	2330.800	4.998	2335.798	634.00	12.69	2.50	2338.30	.00	5.00	10.00	7.000	10.000	.00	0 .0
JUNCT STR	.0523					.0036	.03	5.00	1.00		.013	.00	.00	BOX
-8882.250	2331.290	4.995	2336.285	602.00	12.05	2.26	2338.54	.00	4.83	10.00	7.000	10.000	.00	0 .0
TRANS STR	.0877					.0010	.01	5.00	.95		.013	.00	.00	BOX
-8874.610	2331.960	5.986	2337.946	602.00	7.74	.93	2338.88	.00	4.05	13.00	6.000	13.000	.00	0 .0
.011	1.8636					.0010	.00	5.99	.56	.50	.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

Program Package Serial Number: 1455

WATER SURFACE PROFILE LISTING Date:10-20-2003 Time: 5:53:50

JONES BLVD STORM DRAIN: I-215 TO DIABLO CHANNEL
CCRFCD MASTER PLAN FACILITIES
100 YEAR EVENT MODEL BY LBG: file: JONES.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-8874.600	2331.980	5.957	2337.937	602.00	7.77	.94	2338.88	.00	4.05	13.00	6.000	13.000	.00	0 .0
2.425	.0767					.0010	.00	5.96	.56	1.36	.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

-8872.175	2332.166	5.680	2337.846	602.00	8.15	1.03	2338.88	.00	4.05	13.00	6.000	13.000	.00	0 .0
.573	.0767					.0012	.00	5.68	.60	1.36	.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

-8871.602	2332.210	5.612	2337.822	602.00	8.25	1.06	2338.88	.00	4.05	13.00	6.000	13.000	.00	0 .0
HYDRAULIC JUMP														

---------- WARNING - Flow depth near top of box conduit ----------

-8871.602	2332.210	2.816	2335.026	602.00	16.45	4.20	2339.23	.00	4.05	13.00	6.000	13.000	.00	0 .0
2.697	.0767					.0080	.02	2.82	1.73	1.36	.013	.00	.00	BOX
-8868.904	2332.417	2.916	2335.333	602.00	15.88	3.92	2339.25	.00	4.05	13.00	6.000	13.000	.00	0 .0
3.069	.0767					.0071	.02	2.92	1.64	1.36	.013	.00	.00	BOX
-8865.835	2332.652	3.058	2335.711	602.00	15.14	3.56	2339.27	.00	4.05	13.00	6.000	13.000	.00	0 .0
2.472	.0767					.0062	.02	3.06	1.53	1.36	.013	.00	.00	BOX

Program Package Serial Number: 1455

WATER SURFACE PROFILE LISTING Date:10-20-2003 Time: 5:53:50

JONES BLVD STORM DRAIN: I-215 TO DIABLO CHANNEL
CCRFCD MASTER PLAN FACILITIES
100 YEAR EVENT MODEL BY LBG: file: JONES.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-8863.363	2332.842	3.208	2336.050	602.00	14.44	3.24	2339.29	.00	4.05	13.00	6.000	13.000	.00	0 .0
1.930	.0767					.0054	.01	3.21	1.42	1.36	.013	.00	.00	BOX
-8861.434	2332.990	3.364	2336.354	602.00	13.77	2.94	2339.30	.00	4.05	13.00	6.000	13.000	.00	0 .0
1.434	.0767					.0047	.01	3.36	1.32	1.36	.013	.00	.00	BOX
-8860.000	2333.100	3.528	2336.628	602.00	13.12	2.67	2339.30	.00	4.05	13.00	6.000	13.000	.00	0 .0
85.000	.0044					.0044	.37	3.53	1.23	3.54	.013	.00	.00	BOX
-8775.000	2333.470	3.523	2336.993	602.00	13.15	2.68	2339.68	.00	4.05	13.00	6.000	13.000	.00	0 .0
247.100	.0044					.0042	1.03	3.52	1.23	3.52	.013	.00	.00	BOX
-8527.900	2334.560	3.665	2338.225	602.00	12.63	2.48	2340.70	.00	4.05	13.00	6.000	13.000	.00	0 .0
26.456	.0041					.0039	.10	3.67	1.16	3.59	.013	.00	.00	BOX

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL		No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR		Type Ch
-8501.444	2334.670	3.684	2338.354	602.00	12.57	2.45	2340.81	.00	4.05	13.00	6.000	13.000	.00	0	.0
82.040	.0041					.0036	.30	3.68	1.15	3.59	.013	.00	.00	BOX	
-8419.404	2335.010	3.864	2338.874	602.00	11.99	2.23	2341.10	.00	4.05	13.00	6.000	13.000	.00	0	.0
14.404	.0041					.0032	.05	3.86	1.07	3.59	.013	.00	.00	BOX	
-8405.000	2335.070	4.053	2339.123	602.00	11.42	2.03	2341.15	.00	4.05	13.00	6.000	13.000	.00	0	.0
JUNCT STR	.0044							4.05	1.00		.013	.00	.00	BOX	
-8234.000	2335.820	2.913	2338.733	553.00	14.60	3.31	2342.04	.00	3.83	13.00	6.000	13.000	.00	0	.0
40.310	.0042					.0067	.27	2.91	1.51	3.37	.013	.00	.00	BOX	

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL		No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR		Type Ch
-8193.690	2335.990	2.840	2338.830	553.00	14.98	3.48	2342.31	.00	3.83	13.00	6.000	13.000	.00	0	.0
JUNCT STR	.0074					.0071	.15	2.84	1.57		.013	.00	.00	BOX	
-8172.000	2336.150	2.741	2338.891	541.00	15.18	3.58	2342.47	.00	3.77	13.00	6.000	13.000	.00	0	.0
.100	.1000					.0073	.00	2.74	1.62	1.16	.013	.00	.00	BOX	
-8171.900	2336.160	2.747	2338.907	541.00	15.15	3.56	2342.47	.00	3.77	13.00	6.000	13.000	.00	0	.0
139.900	.0075					.0072	1.01	2.75	1.61	2.72	.013	.00	.00	BOX	
-8032.000	2337.210	2.775	2339.985	541.00	15.00	3.49	2343.48	.00	3.77	13.00	6.000	13.000	.00	0	.0
132.010	.0077					.0068	.90	2.77	1.59	2.70	.013	.00	.00	BOX	
-7899.990	2338.220	2.852	2341.072	541.00	14.59	3.31	2344.38	.00	3.77	13.00	6.000	13.000	.00	0	.0
107.730	.0075					.0062	.66	2.85	1.52	2.72	.013	.00	.00	BOX	
-7792.260	2339.028	2.974	2342.001	541.00	13.99	3.04	2345.04	.00	3.77	13.00	6.000	13.000	.00	0	.0
63.038	.0075					.0054	.34	2.97	1.43	2.72	.013	.00	.00	BOX	
-7729.222	2339.501	3.119	2342.620	541.00	13.34	2.76	2345.38	.00	3.77	13.00	6.000	13.000	.00	0	.0
35.613	.0075					.0047	.17	3.12	1.33	2.72	.013	.00	.00	BOX	
-7693.609	2339.768	3.271	2343.039	541.00	12.72	2.51	2345.55	.00	3.77	13.00	6.000	13.000	.00	0	.0
20.307	.0075					.0041	.08	3.27	1.24	2.72	.013	.00	.00	BOX	
-7673.303	2339.920	3.431	2343.351	541.00	12.13	2.28	2345.64	.00	3.77	13.00	6.000	13.000	.00	0	.0
10.283	.0075					.0036	.04	3.43	1.15	2.72	.013	.00	.00	BOX	

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL		No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR		Type Ch
-7663.020	2339.997	3.598	2343.595	541.00	11.57	2.08	2345.67	.00	3.77	13.00	6.000	13.000	.00	0	.0
3.020	.0075					.0031	.01	3.60	1.07	2.72	.013	.00	.00	BOX	
-7660.000	2340.020	3.775	2343.795	541.00	11.02	1.89	2345.68	.00	3.77	13.00	6.000	13.000	.00	0	.0
JUNCT STR	.0076					.0020	.13	3.77	1.00		.013	.00	.00	BOX	
-7598.000	2340.490	3.999	2344.489	492.00	9.46	1.39	2345.88	.00	3.54	13.00	6.000	13.000	.00	0	.0
-7597.997	2340.493	3.989	2344.482	492.00	9.49	1.40	2345.88	.00	3.54	13.00	6.000	13.000	.00	0	.0
HYDRAULIC JUMP															
-7597.997	2340.493	3.130	2343.623	492.00	12.09	2.27	2345.89	.00	3.54	13.00	6.000	13.000	.00	0	.0
.007	1.0250					.0041	.00	3.13	1.20	.53	.013	.00	.00	BOX	
-7597.990	2340.500	3.148	2343.648	492.00	12.02	2.24	2345.89	.00	3.54	13.00	6.000	13.000	.00	0	.0
JUNCT STR	.0074					.0065	.54	3.15	1.19		.013	.00	.00	BOX	
-7515.000	2341.110	2.242	2343.352	443.00	15.20	3.59	2346.94	.00	3.30	13.00	6.000	13.000	.00	0	.0
6.000	.0083					.0090	.05	2.24	1.79	2.30	.013	.00	.00	BOX	
-7509.000	2341.160	2.239	2343.399	443.00	15.22	3.60	2346.99	.00	3.30	13.00	6.000	13.000	.00	0	.0

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
TRANS STR	.0111					.0069	.06	2.24	1.79		.013	.00	.00	BOX
-7499.990	2341.260	3.461	2344.721	443.00	12.80	2.54	2347.27	.00	3.94	10.00	6.000	10.000	.00	0 .0
214.990	.0048					.0048	1.02	3.46	1.21	3.46	.013	.00	.00	BOX
-7285.000	2342.300	3.497	2345.797	443.00	12.67	2.49	2348.29	.00	3.94	10.00	6.000	10.000	.00	0 .0
40.581	.0053					.0045	.18	3.50	1.19	3.35	.013	.00	.00	BOX

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-7244.418	2342.515	3.577	2346.092	443.00	12.38	2.38	2348.47	.00	3.94	10.00	6.000	10.000	.00	0 .0
36.196	.0053					.0041	.15	3.58	1.15	3.35	.013	.00	.00	BOX
-7208.222	2342.707	3.752	2346.458	443.00	11.81	2.17	2348.62	.00	3.94	10.00	6.000	10.000	.00	0 .0
8.232	.0053					.0036	.03	3.75	1.07	3.35	.013	.00	.00	BOX
-7199.990	2342.750	3.936	2346.686	443.00	11.26	1.97	2348.65	.00	3.94	10.00	6.000	10.000	.00	0 .0
JUNCT STR	.0049							3.94	1.00		.013	.00	.00	BOX
-6914.990	2344.160	2.582	2346.742	419.00	16.23	4.09	2350.83	.00	3.79	10.00	6.000	10.000	.00	0 .0
JUNCT STR	.0050					.0110	.70	2.58	1.78		.013	.00	.00	BOX
-6851.000	2344.480	2.413	2346.893	418.00	17.32	4.66	2351.55	.00	3.79	10.00	6.000	10.000	.00	0 .0
5.000	.0040					.0121	.06	2.41	1.97	3.55	.013	.00	.00	BOX
-6846.000	2344.500	2.399	2346.899	418.00	17.42	4.71	2351.61	.00	3.79	10.00	6.000	10.000	.00	0 .0
TRANS STR	.0100					.0095	.09	2.40	1.98		.013	.00	.00	BOX
-6835.990	2344.600	4.145	2348.745	418.00	14.41	3.22	2351.97	.00	4.80	7.00	6.000	7.000	.00	0 .0
JUNCT STR	.0074					.0063	1.86	4.14	1.25		.013	.00	.00	BOX
-6539.990	2346.780	4.248	2351.028	399.00	13.42	2.80	2353.82	.00	4.66	7.00	6.000	7.000	.00	0 .0
JUNCT STR	.0074					.0051	1.44	4.25	1.15		.013	.00	.00	BOX
-6258.000	2348.860	4.265	2353.125	350.00	11.72	2.13	2355.26	.00	4.27	7.00	6.000	7.000	.00	0 .0
-6257.990	2348.860	4.277	2353.137	350.00	11.69	2.12	2355.26	.00	4.27	7.00	6.000	7.000	.00	0 .0
JUNCT STR	.0074					.0026	.22	4.28	1.00		.013	.00	.00	BOX

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-6173.990	2349.480	4.837	2354.317	317.00	9.36	1.36	2355.68	.00	3.99	7.00	6.000	7.000	.00	0 .0
JUNCT STR	.0074							4.84	.75		.013	.00	.00	BOX
-5865.000	2351.760	2.628	2354.388	268.00	14.57	3.29	2357.68	.00	3.57	7.00	6.000	7.000	.00	0 .0
5.000	.0080					.0095	.05	2.63	1.58	2.79	.013	.00	.00	BOX
-5860.000	2351.800	2.623	2354.424	268.00	14.59	3.31	2357.73	.00	3.57	7.00	6.000	7.000	.00	0 .0
TRANS STR	.0200					.0071	.07	2.62	1.59		.013	.00	.00	BOX
-5850.000	2352.000	3.957	2355.957	268.00	11.29	1.98	2357.94	.00	3.96	6.00	6.000	6.000	.00	0 .0
-5849.990	2352.000	3.968	2355.968	268.00	11.26	1.97	2357.94	.00	3.96	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0099							3.97	1.00		.013	.00	.00	BOX
-5557.000	2354.910	2.323	2357.233	219.00	15.71	3.83	2361.07	.00	3.46	6.00	6.000	6.000	.00	0 .0
7.000	.0100					.0133	.09	2.32	1.82	2.57	.013	.00	.00	BOX
-5550.000	2354.980	2.313	2357.293	219.00	15.78	3.87	2361.16	.00	3.46	6.00	6.000	6.000	.00	0 .0
TRANS STR	.0200					.0104	.10	2.31	1.83		.013	.00	.00	BOX
-5539.990	2355.180	3.341	2358.521	219.00	13.54	2.84	2361.37	.00	4.05	5.96	6.000	.000	.00	1 .0
JUNCT STR	.0096					.0082	2.39	3.34	1.45		.013	.00	.00	PIPE
-5249.990	2357.950	3.036	2360.986	205.00	14.28	3.17	2364.15	.00	3.91	6.00	6.000	.000	.00	1 .0

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
	38.901	.0085				.0091	.35	3.04	1.63	3.09	.013	.00	.00	PIPE
-5211.089	2358.281	3.022	2361.303	205.00	14.37	3.20	2364.51	.00	3.91	6.00	6.000	.000	.00	1 .0
	168.104	.0085				.0098	1.64	3.02	1.64	3.09	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-5042.985	2359.713	2.911	2362.624	205.00	15.07	3.53	2366.15	.00	3.91	6.00	6.000	.000	.00	1 .0
	95.985	.0085				.0111	1.06	2.91	1.76	3.09	.013	.00	.00	PIPE
-4946.990	2360.530	2.806	2363.336	205.00	15.80	3.88	2367.21	.00	3.91	5.99	6.000	.000	.00	1 .0
JUNCT STR	*******					.0099	.00	2.81	1.89		.013	.00	.00	PIPE
-4946.980	2361.590	3.065	2364.655	162.00	12.84	2.56	2367.21	.00	3.65	4.87	5.000	.000	.00	1 .0
	219.980	.0080				.0079	1.74	3.06	1.41	3.06	.013	.00	.00	PIPE
-4727.000	2363.360	3.092	2366.453	162.00	12.70	2.51	2368.96	.00	3.65	4.86	5.000	.000	.00	1 .0
	128.379	.0081				.0074	.95	3.09	1.38	3.05	.013	.00	.00	PIPE
-4598.621	2364.402	3.206	2367.608	162.00	12.18	2.30	2369.91	.00	3.65	4.80	5.000	.000	.00	1 .0
	48.718	.0081				.0066	.32	3.21	1.29	3.05	.013	.00	.00	PIPE
-4549.903	2364.798	3.343	2368.141	162.00	11.61	2.09	2370.23	.00	3.65	4.71	5.000	.000	.00	1 .0
	19.973	.0081				.0059	.12	3.34	1.19	3.05	.013	.00	.00	PIPE
-4529.930	2364.960	3.489	2368.449	162.00	11.07	1.90	2370.35	.00	3.65	4.59	5.000	.000	.00	1 .0
	4.930	.0081				.0053	.03	3.49	1.09	3.05	.013	.00	.00	PIPE
-4525.000	2365.000	3.649	2368.649	162.00	10.55	1.73	2370.38	.00	3.65	4.44	5.000	.000	.00	1 .0
JUNCT STR	.0375					.0026	.01	3.65	1.00		.013	.00	.00	PIPE
-4521.000	2365.150	5.169	2370.319	36.00	1.83	.05	2370.37	.00	1.67	.00	5.000	.000	.00	1 .0
TRANS STR	.0470					.0003	.00	5.17	.00		.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-4511.000	2365.620	4.680	2370.300	36.00	2.26	.08	2370.38	.00	1.72	.00	4.500	.000	.00	1 .0
	22.484	.0084				.0003	.01	4.68	.00	1.37	.013	.00	.00	PIPE
-4488.516	2365.808	4.500	2370.308	36.00	2.26	.08	2370.39	.00	1.72	.00	4.500	.000	.00	1 .0
	50.875	.0084				.0003	.02	4.50	.00	1.37	.013	.00	.00	PIPE
-4437.641	2366.233	4.082	2370.315	36.00	2.37	.09	2370.40	.00	1.72	2.61	4.500	.000	.00	1 .0
	28.987	.0084				.0003	.01	4.08	.17	1.37	.013	.00	.00	PIPE
-4408.654	2366.475	3.840	2370.315	36.00	2.49	.10	2370.41	.00	1.72	3.18	4.500	.000	.00	1 .0
	23.732	.0084				.0003	.01	3.84	.21	1.37	.013	.00	.00	PIPE
-4384.922	2366.673	3.640	2370.313	36.00	2.61	.11	2370.42	.00	1.72	3.54	4.500	.000	.00	1 .0
	20.580	.0084				.0004	.01	3.64	.23	1.37	.013	.00	.00	PIPE
-4364.342	2366.845	3.465	2370.310	36.00	2.74	.12	2370.43	.00	1.72	3.79	4.500	.000	.00	1 .0
	18.285	.0084				.0004	.01	3.47	.26	1.37	.013	.00	.00	PIPE
-4346.057	2366.997	3.308	2370.305	36.00	2.87	.13	2370.43	.00	1.72	3.97	4.500	.000	.00	1 .0
	16.601	.0084				.0004	.01	3.31	.28	1.37	.013	.00	.00	PIPE
-4329.456	2367.136	3.164	2370.300	36.00	3.01	.14	2370.44	.00	1.72	4.11	4.500	.000	.00	1 .0
	15.277	.0084				.0005	.01	3.16	.31	1.37	.013	.00	.00	PIPE
-4314.179	2367.264	3.030	2370.294	36.00	3.16	.16	2370.45	.00	1.72	4.22	4.500	.000	.00	1 .0
	13.934	.0084				.0006	.01	3.03	.34	1.37	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-4300.246	2367.380	2.906	2370.286	36.00	3.31	.17	2370.46	.00	1.72	4.30	4.500	.000	.00	1 .0
12.954	.0084					.0006	.01	2.91	.37	1.37	.013	.00	.00	PIPE
-4287.292	2367.488	2.789	2370.277	36.00	3.48	.19	2370.47	.00	1.72	4.37	4.500	.000	.00	1 .0
11.952	.0084					.0007	.01	2.79	.40	1.37	.013	.00	.00	PIPE
-4275.340	2367.588	2.679	2370.267	36.00	3.65	.21	2370.47	.00	1.72	4.42	4.500	.000	.00	1 .0
10.922	.0084					.0008	.01	2.68	.43	1.37	.013	.00	.00	PIPE
-4264.418	2367.679	2.576	2370.256	36.00	3.82	.23	2370.48	.00	1.72	4.45	4.500	.000	.00	1 .0
10.129	.0084					.0009	.01	2.58	.46	1.37	.013	.00	.00	PIPE
-4254.289	2367.764	2.478	2370.242	36.00	4.01	.25	2370.49	.00	1.72	4.48	4.500	.000	.00	1 .0
8.954	.0084					.0010	.01	2.48	.50	1.37	.013	.00	.00	PIPE
-4245.335	2367.839	2.385	2370.224	36.00	4.21	.27	2370.50	.00	1.72	4.49	4.500	.000	.00	1 .0
HYDRAULIC JUMP														
-4245.335	2367.839	1.211	2369.050	36.00	10.44	1.69	2370.74	.00	1.72	3.99	4.500	.000	.00	1 .0
19.345	.0084					.0143	.28	1.21	1.98	1.37	.013	.00	.00	PIPE
-4225.990	2368.000	1.171	2369.171	36.00	10.94	1.86	2371.03	.00	1.72	3.95	4.500	.000	.00	1 .0
TRANS STR	.4764					.0105	.02	1.17	2.11		.013	.00	.00	PIPE
-4224.500	2368.710	1.585	2370.294	36.00	7.77	.94	2371.23	.00	1.79	3.91	4.000	.000	.00	1 .0
53.533	.0057					.0057	.31	1.58	1.26	1.58	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-4170.967	2369.016	1.585	2370.601	36.00	7.77	.94	2371.54	.00	1.79	3.91	4.000	.000	.00	1 .0
91.500	.0057					.0060	.55	1.58	1.26	1.58	.013	.00	.00	PIPE
-4079.467	2369.541	1.542	2371.083	36.00	8.05	1.01	2372.09	.00	1.79	3.89	4.000	.000	.00	1 .0
46.148	.0057					.0068	.31	1.54	1.32	1.58	.013	.00	.00	PIPE
-4033.319	2369.805	1.489	2371.294	36.00	8.44	1.11	2372.40	.00	1.79	3.87	4.000	.000	.00	1 .0
29.646	.0057					.0077	.23	1.49	1.42	1.58	.013	.00	.00	PIPE
-4003.673	2369.975	1.437	2371.412	36.00	8.86	1.22	2372.63	.00	1.79	3.84	4.000	.000	.00	1 .0
23.750	.0057					.0088	.21	1.44	1.52	1.58	.013	.00	.00	PIPE
-3979.923	2370.111	1.388	2371.499	36.00	9.29	1.34	2372.84	.00	1.79	3.81	4.000	.000	.00	1 .0
19.973	.0057					.0100	.20	1.39	1.62	1.58	.013	.00	.00	PIPE
-3959.950	2370.225	1.340	2371.565	36.00	9.74	1.47	2373.04	.00	1.79	3.78	4.000	.000	.00	1 .0
17.886	.0057					.0115	.20	1.34	1.74	1.58	.013	.00	.00	PIPE
-3942.063	2370.328	1.295	2371.623	36.00	10.22	1.62	2373.24	.00	1.79	3.74	4.000	.000	.00	1 .0
16.073	.0057					.0131	.21	1.30	1.86	1.58	.013	.00	.00	PIPE
-3925.990	2370.420	1.251	2371.671	36.00	10.72	1.78	2373.45	.00	1.79	3.71	4.000	.000	.00	1 .0
TRANS STR	.4095					.0096	.01	1.25	1.98		.013	.00	.00	PIPE
-3924.500	2371.030	1.744	2372.774	36.00	7.52	.88	2373.65	.00	1.86	3.50	3.500	.000	.00	1 .0
85.827	.0052					.0052	.44	1.74	1.13	1.74	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-3838.673	2371.475	1.744	2373.219	36.00	7.52	.88	2374.10	.00	1.86	3.50	3.500	.000	.00	1 .0

60.526	.0052					.0054	.33	1.74	1.13	1.74	.013	.00	.00	PIPE			
-3778.146	2371.789	1.702	2373.491	36.00	7.75	.93	2374.42	.00	1.86	3.50	3.500	.000	.00	1	.0		
39.266	.0052					.0060	.24	1.70	1.19	1.74	.013	.00	.00	PIPE			
-3738.881	2371.992	1.641	2373.633	36.00	8.13	1.03	2374.66	.00	1.86	3.49	3.500	.000	.00	1	.0		
25.916	.0052					.0068	.18	1.64	1.27	1.74	.013	.00	.00	PIPE			
-3712.965	2372.126	1.581	2373.708	36.00	8.52	1.13	2374.84	.00	1.86	3.48	3.500	.000	.00	1	.0		
22.019	.0052					.0078	.17	1.58	1.36	1.74	.013	.00	.00	PIPE			
-3690.946	2372.240	1.525	2373.766	36.00	8.94	1.24	2375.01	.00	1.86	3.47	3.500	.000	.00	1	.0		
19.183	.0052					.0088	.17	1.53	1.46	1.74	.013	.00	.00	PIPE			
-3671.763	2372.340	1.471	2373.811	36.00	9.38	1.37	2375.18	.00	1.86	3.46	3.500	.000	.00	1	.0		
17.318	.0052					.0101	.17	1.47	1.57	1.74	.013	.00	.00	PIPE			
-3654.445	2372.430	1.419	2373.849	36.00	9.83	1.50	2375.35	.00	1.86	3.44	3.500	.000	.00	1	.0		
15.951	.0052					.0115	.18	1.42	1.68	1.74	.013	.00	.00	PIPE			
-3638.494	2372.512	1.369	2373.882	36.00	10.31	1.65	2375.53	.00	1.86	3.42	3.500	.000	.00	1	.0		
14.994	.0052					.0131	.20	1.37	1.80	1.74	.013	.00	.00	PIPE			
-3623.500	2372.590	1.322	2373.912	36.00	10.82	1.82	2375.73	.00	1.86	3.39	3.500	.000	.00	1	.0		
TRANS STR	1.1196					.0098	.00	1.32	1.93		.013	.00	.00	PIPE			

Program Package Serial Number: 1455

WATER SURFACE PROFILE LISTING

Date:10-20-2003 Time: 5:53:50

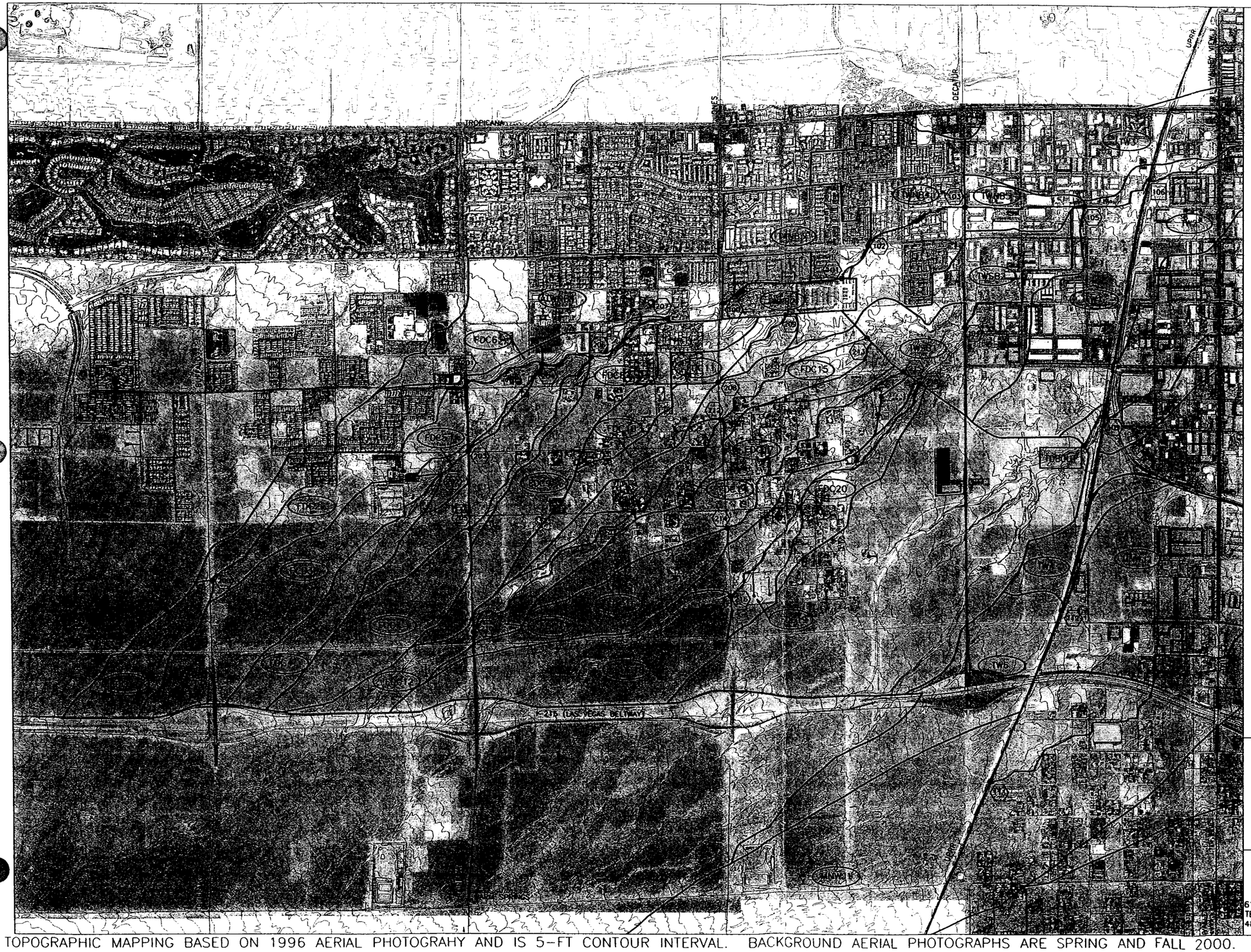
JONES BLVD STORM DRAIN: I-215 TO DIABLO CHANNEL
CCRFCD MASTER PLAN FACILITIES
100 YEAR EVENT MODEL BY LBG: file: JONES.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D. X-Fall	ZL ZR	No Wth Prs/Pip Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp				
-3623.000	2373.150	1.876	2375.026	36.00	7.74	.93	2375.96	.00	1.95	2.90	3.000	.000	.00	1 .0
80.411	.0057					.0057	.46	1.88	1.08	1.88	.013	.00	.00	PIPE
-3542.589	2373.608	1.876	2375.484	36.00	7.74	.93	2376.42	.00	1.95	2.90	3.000	.000	.00	1 .0
19.589	.0057					.0054	.11	1.88	1.08	1.88	.013	.00	.00	PIPE
-3523.000	2373.720	1.950	2375.670	36.00	7.40	.85	2376.52	.00	1.95	2.86	3.000	.000	.00	1 .0

APPENDIX E

Excerpts from Previous Studies

Excerpts from "Flood Insurance Restudy for Tropicana Wash and Tributaries", by HDR (2002)
(Watershed Map, HEC-1 Model and Cross sections)



CLARK COUNTY REGIONAL
FLOOD CONTROL DISTRICT

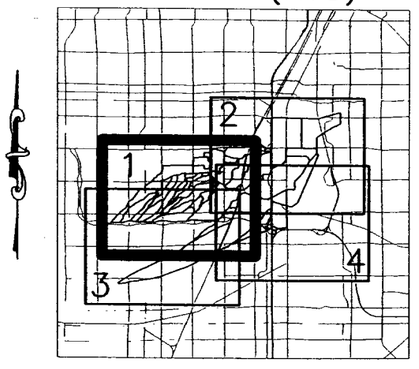
TROPICANA FLOOD INSURANCE STUDY
TROPICANA WASH AND TRIBUTARIES

MAY, 2001

LEGEND

- SUBBASIN BOUNDARY
- TWNB1 — SUBBASIN ID
- CONCENTRATION POINT
- 101 — SUBBASIN OR HYDROGRAPH COMBINE OPERATION
- 106 — DIVERSION OPERATION
- ROUTING FLOWPATH
- *** — SUBBASIN NOT MODELED

KEY MAP (NTS)



GRAPHIC SCALE

1000 0 500 1000 2000 4000

(IN FEET)
1 inch = 2000 ft.

EXHIBIT 1
WATERSHED MAP

SHEET 1 OF 4

JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC

6101 S. RURAL ROAD, STE 110
TEMPE, ARIZONA 85283
480-752-2124

2881 N. SILVER SPUR DRIVE
TUCSON, ARIZONA 85745
520-623-3112

TOPOGRAPHIC MAPPING BASED ON 1996 AERIAL PHOTOGRAHY AND IS 5-FT CONTOUR INTERVAL. BACKGROUND AERIAL PHOTOGRAPHS ARE SPRING AND FALL 2000.

```
1*************************************
 *                                   *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN  1998             *
 *           VERSION 4.1             *
 *                                   *
 *  RUN DATE   27FEB02  TIME  07:04:41   *
 *                                   *
 *************************************
```


```
*************************************
*                                   *
*    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

   1          ID    TROPICANA FLOOD INURANCE STUDY                                DATE: 05/14/01
   2          ID    PREPARED FOR:  CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
   3          ID    ENGINEER:  J.E. FULLER HYDROLOGY & GEOMORPHOLOGY, INC.            BY: WSO
   4          ID    FILE NAME: FDC100.IH1
   5          ID
   6          ID    - 100-YEAR, 6-HOUR MODEL
   7          ID    - LOCAL STORM RAINFALL DISTRIBUTION (SDN#3)
   8          ID    - JD RECORDS USED TO SIMULATE AREAL REDUCTION FACTORS FOLLOWING
   9          ID       TABLE 502 OF THE CCRFCD HYDROLOGIC CRITERIA AND DRNG DSGN MANUAL
  10          ID    - TROPICANA WASH WATERSHED WITH THE FOLLOWING DRAINAGE STRUCTURES IN PLACE:
  11          ID      ** BLUE DIAMOND DETENTION BASIN - (EXISTING)
  12          ID      ** LAS VEGAS BELTWAY CHANNEL, SECTIONS 7A AND 7B - (EXISTING)
  13          ID      ** LOWER BLUE DIAMOND CHANNEL - (EXISTING)
  14          ID      ** TROPICANA OUTLET CHANNEL - (EXISTING)
  15          ID      ** TROPICANA DETENTION BASIN - (EXISTING)
  16          ID      ** LOWER FLAMINGO DIVERSION CHANNEL, PH I - (TO BE COMPLETE IN 12-18MOS)
  17          ID    - NEW MODEL FOR WATERSHED BETWEEN BELTWAY CHANNEL AND THE PHASE I LIMIT OF
  18          ID      THE FLAMINGO DIVERSION CHANNEL CHANNEL.
  19          ID    - ALL RUNOFF FROM THIS WATERSHED IS INTERCEPTED BY THE FLAMINGO DIVERSION
  20          ID      CHANNEL, PHASE I IMPROVEMENTS AND CONVEYED DIRECTLY TO THE TROPICANA
  21          ID      DETENTION BASIN.
  22          ID    - NO CONTRIBUTION FROM UPPER BLUE DIAMOND FOR FLAMINGO/RED ROCK STORM
  23          ID    - NO CONTRIBUTION FROM AREAS SOUTH OF THE LAS VEGAS BELTWAY
              *DIAGRAM
  24          IT       1       0       0    1000
  25          IO       5
  26          IN       5
  27          JD    2.77   0.001
  28          PC    0.00    0.02   0.057    0.07   0.087   0.108   0.124   0.130   0.130   0.130
  29          PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
  30          PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
  31          PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
  32          PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
  33          PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
  34          PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
  35          PC   0.998   0.999   1.000
  36          JD    2.72     0.5
  37          JD    2.69     1.0
  38          JD    2.58     2.0
  39          JD    2.52     4.0
              *  ***

  40          KK    FDC1  CONCENTRATION POINT C200
  41          KM    RUNOFF FROM SUBBASIN FDC1 AT C200
  42          BA    .109
  43          LS       0    88.0
  44          UK     400    .015    0.10     100
  45          RK    3500   0.016   0.040            TRAP      30       8
              *  ***
```

1 HEC-1 INPUT PAGE 2

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

  46          KK  200201
  47          KM    ROUTE RUNOFF FROM C200 TO C201
  48          RK    7600  0.0125   0.040            TRAP      30       8
              *  ***

  49          KK    FDC2  CONCENTRATION POINT C201
  50          KM    RUNOFF FROM SUBBASIN FDC2
```

```
 51          BA   0.305
 52          LS        88.8
 53          UK     400   0.015    0.10     100
 54          RK    7200  0.0125   0.040            TRAP      30       8
             *  ***

 55          KK    C201
 56          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC2 AND ROUTED FLOW FROM C200
 57          HC       2
             *  ***

 58          KK  201204
 59          KM    ROUTE RUNOFF FROM C201 TO C204
 60          RK    1700  0.0118   0.050            TRAP      45       6
             *  ***

 61          KK    FDC3  CONCENTRATION POINT C202R
 62          KM    RUNOFF FROM SUBBASIN FDC3 AT C202
 63          BA   0.294
 64          LS       0    88.0
 65          UK     400    .015    0.10     100
 66          RK    3500   0.015    0.04    0.15    TRAP      10       6
 67          RK    4500   0.016   0.040            TRAP      30       8
             *  ***

 68          KK    FDC4  CONCENTRATION POINT C202L
 69          KM    RUNOFF FROM SUBBASIN FDC4 AT C202
 70          BA   0.128
 71          LS       0    87.7
 72          UK     400    .015    0.10     100
 73          RK    6600   0.016   0.035            TRAP      30       4
             *  ***

 74          KK    C202
 75          KM    COMBINE HYDROGRAPHS: SUBBASINS FDC3 AND FDC4
 76          HC       2
             *  ***

 77          KK  202203
 78          KM    ROUTE RUNOFF FROM C202 TO C203
 79          RK     770   0.012   0.040            TRAP      50       4
             *  ***
```



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

 80          KK    FDC5  CONCENTRATION POINT C203
 81          KM    RUNOFF FROM SUBBASIN FDC5
 82          BA   0.026
 83          LS       0    84.0
 84          UK     400    .015    0.10     100
 85          RK     770   0.012   0.040            TRAP      50       4
             *  ***

 86          KK    C203
 87          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC5 AND ROUTED FLOWS FROM C202
 88          HC       2
             *  ***

 89          KK  203204
 90          KM    ROUTE RUNOFF FROM C203 TO C204
 91          RK    2400   0.012   0.040            TRAP      50       8
             *  ***

 92          KK    FDC6  CONCENTRATION POINT C204R
 93          KM    RUNOFF FROM SUBBASIN FDC6
 94          BA   0.059
 95          LS       0    84.0
 96          UK     400   0.010    0.10     100
 97          RK    2400   0.012   0.040            TRAP      50       8
             *  ***

 98          KK    C204
 99          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC6 AND ROUTED FLOWS FROM C201 AND C203
100          HC       3
             *  ***

101          KK  204206
102          KM    ROUTE RUNOFF FROM C204 TO C206
103          RK    1100  0.0089    0.05            TRAP      45       6
             *  ***

104          KK    FDC7  CONCENTRATION POINT C205
105          KM    RUNOFF FROM SUBBASIN FDC7 AT C205
106          BA   0.189
107          LS       0    88.0
108          UK     400    .015    0.10     100
109          RK    3200   0.015    0.04    0.05    TRAP      10       6
110          RK    1000   0.016   0.040            TRAP      30       8
             *  ***

111          KK  205206
112          KM    ROUTE RUNOFF FROM C205 TO C206
113          RK    4700   0.012   0.035            TRAP      20      10
             *  ***
```



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

```
114          KK    FDC8  CONCENTRATION POINT C206R
115          KM    RUNOFF FROM SUBBASIN FDC8
116          BA   0.204
117          LS       0    85.3
118          UK     400   0.015    0.10     100
119          RK    4300   0.012   0.040            TRAP      20      10
             *  ***

120          KK    C206
121          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC8 AND ROUTED FLOWS FROM C204 AND C205
122          HC       3
             *  ***

123          KK  206207
124          KM    ROUTE RUNOFF FROM C206 TO C207
125          RK    1900   0.010   0.040            TRAP      45       6
             *  ***

126          KK    FDC9  CONCENTRATION POINT C207
127          KM    RUNOFF FROM SUBBASIN FDC9
128          KM    BEGIN PHASE I FLAMINGO DIVERSION CHANNEL
129          BA   0.244
130          LS       0    86.4
131          UK     400   0.015    0.10     100
132          RK    7000   0.014   0.040     0.1    TRAP      10      10
133          RK    1900   0.010   0.040            TRAP      45       6
             *  ***

134          KK    C207
135          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC9 AND ROUTED FLOWS FROM C206
136          HC       2
             *  ***
             *  ********************************************************************************
             *  *** ALL FLOWS AT C207 ARE INTERCEPTED BY THE PHASE I FLAMINGO DIVERSION.***
             *  *** CHANNEL AND CONVEYED DIRECTLY TO THE TROPICANA DETENTION BASIN.     ***
             *  ********************************************************************************
             *  ***

137          KK   FDC10  CONCENTRATION POINT C 208
138          KM    RUNOFF FROM SUBBASIN FDC10 AT C208
139          BA    .099
140          LS       0    84.3
141          UK     400    .015    0.10     100
142          RK    5200   0.016   0.035            TRAP      10      10
             *  ***

143          KK  208209
144          KM    ROUTE RUNOFF FROM C208 TO C209
145          RK    2100  0.0125   0.025            TRAP      30       8
             *  ***
```



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

146          KK   FDC11  CONCENTRATION POINT C209
147          KM    RUNOFF FROM SUBBASIN FDC11 AND ROUTE
148          BA   0.067
149          LS            86.1
150          UK     400   0.015    0.10     100
151          RK    1700  0.0125   0.025            TRAP      30       8
             *  ***

152          KK    C209
153          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC11 AND ROUTED FLOWS FROM C208
154          HC       2
             *  ***
             *  ********************************************************************************
             *  *** ALL FLOWS AT C209 ARE INTERCEPTED BY THE PHASE I FLAMINGO DIVERSION.***
             *  *** CHANNEL AND CONVEYED DIRECTLY TO THE TROPICANA DETENTION BASIN.     ***
             *  ********************************************************************************
             *  ***

155          KK   FDC12  CONCENTRATION POINT C210
156          KM    RUNOFF FROM SUBBASIN FDC12 AT C210
157          BA   0.072
158          LS       0    88.0
159          UK     400    .015    0.10     100
160          RK    3000   0.015    0.04            TRAP      40       6
             *  ***

161          KK  210211
162          KM    ROUTE RUNOFF FROM C210 TO C211
163          RK    4600   0.013   0.040            TRAP      40       6
             *  ***

164          KK   FDC13  CONCENTRATION POINT C211
165          KM    RUNOFF FROM SUBBASIN FDC13
166          BA   0.086
167          LS            86.7
168          UK     400   0.015    0.10     100
169          RK    4200   0.013   0.040            TRAP      40       6
             *  ***

170          KK    C211
171          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC13 AND ROUTED FLOWS FROM C210
172          HC       2
```

```
*  ***

 173          KK  211212
 174          KM    ROUTE RUNOFF FROM C211 TO C212
 175          RK    2900   0.014   0.040            TRAP      20      10
              *  ***
```



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

 176          KK   FDC14  CONCENTRATION POINT C212
 177          KM    RUNOFF FROM SUBBASIN FDC14
 178          BA   0.114
 179          LS            84.0
 180          UK     400   0.015    0.10     100
 181          RK    2500   0.014   0.040            TRAP      20      10
              *  ***

 182          KK    C212
 183          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC14 AND ROUTED FLOWS FROM C211
 184          HC       2
              *  ***

 185          KK  212213
 186          KM    ROUTE RUNOFF FROM C212 TO C213
 187          RK    3800   0.013   0.040            TRAP      30       8
              *  ***

 188          KK   FDC15  CONCENTRATION POINT C213
 189          KM    RUNOFF FROM SUBBASIN FDC15
 190          BA   0.112
 191          LS            86.9
 192          UK     400   0.015    0.10     100
 193          RK    3400   0.013   0.040            TRAP      30       8
              *  ***

 194          KK    C213
 195          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC15 AND ROUTED FLOWS FROM C212
 196          HC       2
              *  ***
              *  ********************************************************************************
              *  *** ALL FLOWS AT C213 ARE INTERCEPTED BY THE PHASE I FLAMINGO DIVERSION.***
              *  *** CHANNEL AND CONVEYED DIRECTLY TO THE TROPICANA DETENTION BASIN.     ***
              *  ********************************************************************************
              *  ***

 197          KK   FDC16  CONCENTRATION POINT C214
 198          KM    RUNOFF FROM SUBBASIN FDC16 AT C214
 199          BA   0.166
 200          LS       0    87.2
 201          UK     400    .015    0.10     100
 202          RK    4800   0.015    0.04             TRAP      10      10
              *  ***

 203          KK  214215
 204          KM    ROUTE RUNOFF FROM C214 TO C215
 205          RK    4600   0.016   0.040            TRAP      30       8
              *  ***
```



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

 206          KK   FDC17  CONCENTRATION POINT C215
 207          KM    RUNOFF FROM SUBBASIN FDC17
 208          BA   0.310
 209          LS            84.3
 210          UK     400   0.010    0.10     100
 211          RK    1600   0.008   0.020    0.06     TRAP      30       8
 212          RK    4200   0.016   0.040             TRAP      30       8
              *  ***

 213          KK    C215
 214          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC17 AND ROUTED FLOWS FROM C214
 215          HC       2
              *  ***
              *  ********************************************************************************
              *  *** ALL FLOWS AT C215 ARE INTERCEPTED BY THE PHASE I FLAMINGO DIVERSION.***
              *  *** CHANNEL AND CONVEYED DIRECTLY TO THE TROPICANA DETENTION BASIN.     ***
              *  ********************************************************************************
              *  ***

 216          KK   FDC18  CONCENTRATION POINT C216
 217          KM    RUNOFF FROM SUBBASIN FDC18 AT C216
 218          BA   0.301
 219          LS       0    88.0
 220          UK     400    .015    0.10     100
 221          RK    4800   0.015   0.030    0.15     TRAP      10      10
 222          RK    3000   0.014   0.035             TRAP      40       6
              *  ***

 223          KK  216217
 224          KM    ROUTE RUNOFF FROM C216 TO C217
 225          RK    4600   0.012   0.040            TRAP      30       6
              *  ***

 226          KK   FDC19  CONCENTRATION POINT C217
 227          KM    RUNOFF FROM SUBBASIN FDC19
```

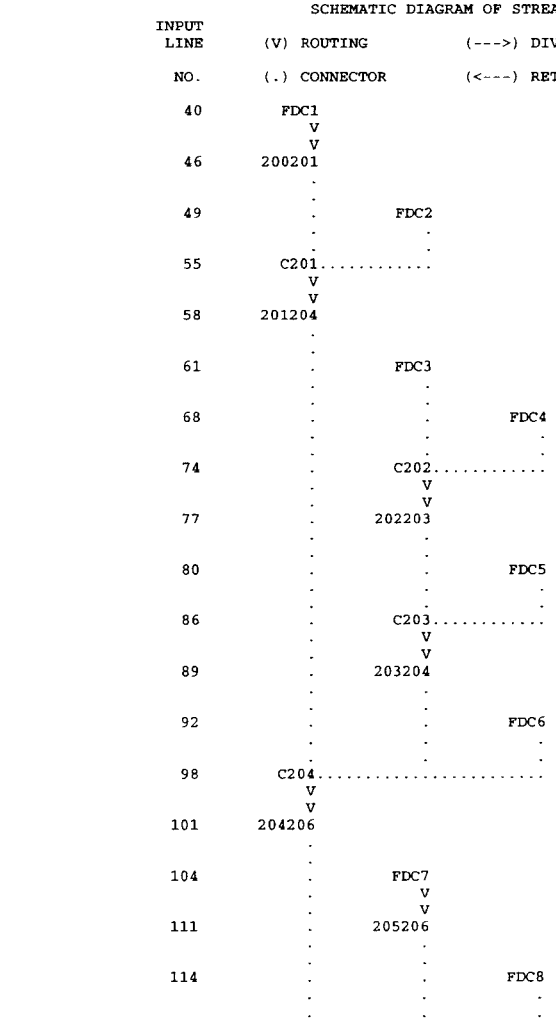
```
 228          BA   0.103
 229          LS            84.5
 230          UK     400   0.015    0.10     100
 231          RK    4200   0.012   0.040            TRAP      30       6
              *  ***

 232          KK    C217
 233          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC19 AND ROUTED FLOWS FROM C216
 234          HC       2
              *  ***

 235          KK  217218
 236          KM    ROUTE RUNOFF FROM C217 TO C218
 237          RK    3800   0.014   0.040            TRAP      40       6
              *  ***
```

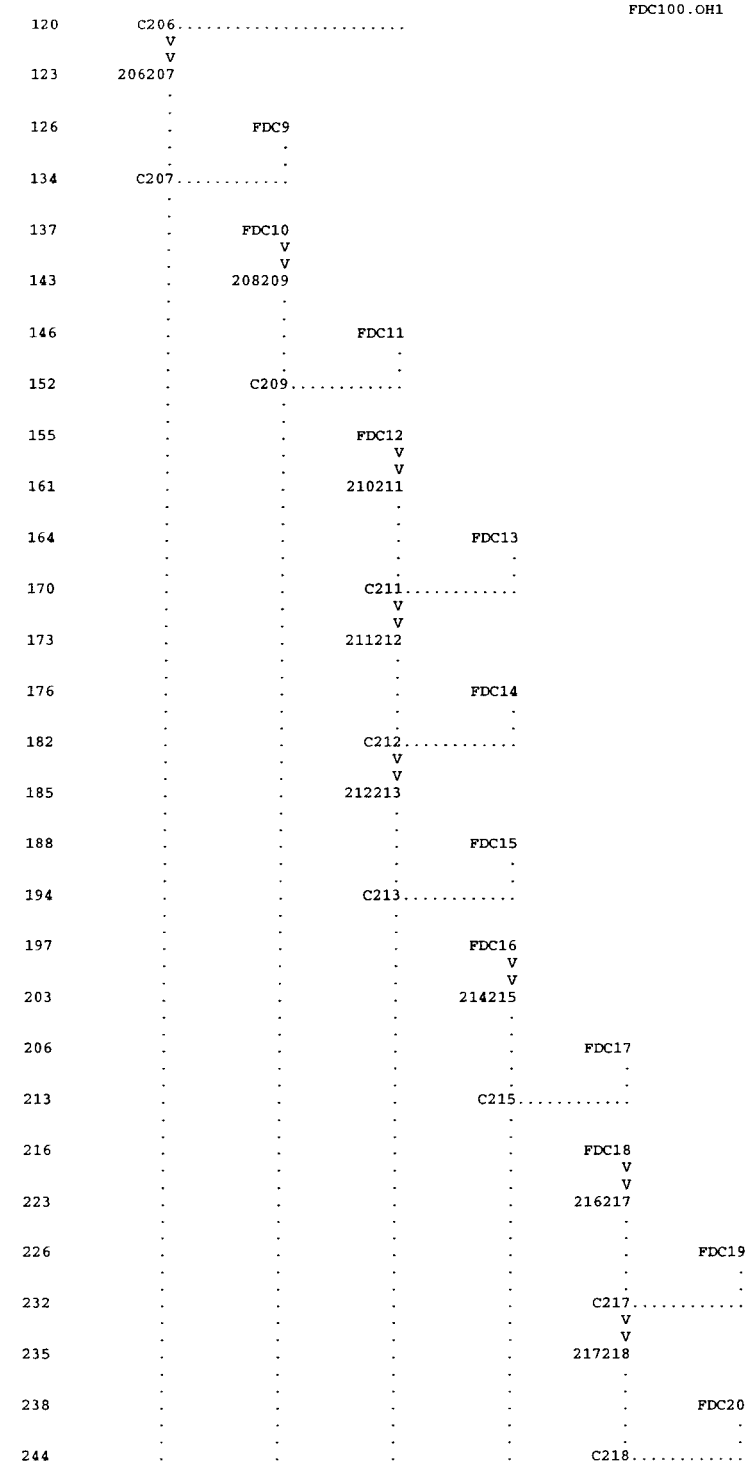


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 238          KK   FDC20  CONCENTRATION POINT C218
 239          KM    RUNOFF FROM SUBBASIN FDC20
 240          BA   0.118
 241          LS            84.7
 242          UK     400   0.015    0.10     100
 243          RK    3400   0.014   0.040            TRAP      40       6
              *  ***

 244          KK    C218
 245          KM    COMBINE HYDROGRAPHS: SUBBASIN FDC20 AND ROUTED FLOWS FROM C217
 246          HC       2
              *  ***
              *  ********************************************************************************
              *  *** ALL FLOWS AT C218 ARE INTERCEPTED BY THE PHASE I FLAMINGO DIVERSION.***
              *  *** CHANNEL AND CONVEYED DIRECTLY TO THE TROPICANA DETENTION BASIN.     ***
              *  ********************************************************************************
              *  ***
 247          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK





(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   27FEB02  TIME  07:04:41   *
*                                       *
*****************************************
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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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                    TROPICANA FLOOD INURANCE STUDY                                DATE: 05/14/01
                    PREPARED FOR:  CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
                    ENGINEER:  J.E. FULLER HYDROLOGY & GEOMORPHOLOGY, INC.            BY: WSO
                    FILE NAME: FDC100.IH1

                    - 100-YEAR, 6-HOUR MODEL
                    - LOCAL STORM RAINFALL DISTRIBUTION (SDN#3)
                    - JD RECORDS USED TO SIMULATE AREAL REDUCTION FACTORS FOLLOWING
                       TABLE 502 OF THE CCRFCD HYDROLOGIC CRITERIA AND DRNG DSGN MANUAL
                    - TROPICANA WASH WATERSHED WITH THE FOLLOWING DRAINAGE STRUCTURES IN PLACE:
                      ** BLUE DIAMOND DETENTION BASIN - (EXISTING)
                      ** LAS VEGAS BELTWAY CHANNEL, SECTIONS 7A AND 7B - (EXISTING)
                      ** LOWER BLUE DIAMOND CHANNEL - (EXISTING)
                      ** TROPICANA OUTLET CHANNEL - (EXISTING)
                      ** TROPICANA DETENTION BASIN - (EXISTING)
                      ** LOWER FLAMINGO DIVERSION CHANNEL, PH I - (TO BE COMPLETE IN 12-18MOS)
                    - NEW MODEL FOR WATERSHED BETWEEN BELTWAY CHANNEL AND THE PHASE I LIMIT OF
                       THE FLAMINGO DIVERSION CHANNEL CHANNEL.
                    - ALL RUNOFF FROM THIS WATERSHED IS INTERCEPTED BY THE FLAMINGO DIVERSION
                       CHANNEL, PHASE I IMPROVEMENTS AND CONVEYED DIRECTLY TO THE TROPICANA
                       DETENTION BASIN.
                    - NO CONTRIBUTION FROM UPPER BLUE DIAMOND FOR FLAMINGO/RED ROCK STORM
                    - NO CONTRIBUTION FROM AREAS SOUTH OF THE LAS VEGAS BELTWAY

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

   IT          HYDROGRAPH TIME DATA
                     NMIN           1  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1    0  STARTING DATE
                    ITIME        0000  STARTING TIME
                       NQ        1000  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      1    0  ENDING DATE
                   NDTIME        1639  ENDING TIME
                    ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL      .02 HOURS
                      TOTAL TIME BASE    16.65 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

27 JD          INDEX STORM NO. 1
                     STRM         2.77  PRECIPITATION DEPTH
                     TRDA          .00  TRANSPOSITION DRAINAGE AREA

28 PI            PRECIPITATION PATTERN
                   .00       .00       .00       .00       .00       .01       .01       .01       .01       .01
                   .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                   .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                   .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                   .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                   .01       .01       .01       .01       .01       .02       .02       .02       .02       .02
                   .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                   .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                   .01       .01       .01       .01       .01       .00       .00       .00       .00       .00
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                   .00       .00       .00       .00       .00       .00       .00       .00       .00       .00

36 JD          INDEX STORM NO. 2
                     STRM         2.72  PRECIPITATION DEPTH
                     TRDA          .50  TRANSPOSITION DRAINAGE AREA

 0 PI            PRECIPITATION PATTERN
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.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00

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

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

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

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

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

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

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 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	FDC1	127.	3.67	18.	7.	7.	.11		
+	ROUTED TO	200201	126.	4.08	19.	7.	7.	.11		
+	HYDROGRAPH AT	FDC2	320.	3.78	53.	19.	19.	.31		
+	2 COMBINED AT	C201	319.	3.78	71.	26.	26.	.41		
+	ROUTED TO	201204	318.	3.85	71.	26.	26.	.41		
+	HYDROGRAPH AT	FDC3	326.	3.77	49.	18.	18.	.29		
+	HYDROGRAPH AT	FDC4	131.	3.77	21.	8.	8.	.13		
+	2 COMBINED AT	C202	456.	3.77	70.	26.	26.	.42		
+	ROUTED TO	202203	455.	3.78	70.	26.	26.	.42		
+	HYDROGRAPH AT	FDC5	26.	3.60	4.	1.	1.	.03		
+	2 COMBINED AT	C203	475.	3.78	74.	27.	27.	.45		
+	ROUTED TO	203204	473.	3.87	74.	27.	27.	.45		
+	HYDROGRAPH AT	FDC6	52.	3.75	8.	3.	3.	.06		
+	3 COMBINED AT	C204	821.	3.85	151.	55.	55.	.92		
+	ROUTED TO	204206	819.	3.88	151.	55.	55.	.92		
	HYDROGRAPH AT									

+		FDC7	220.	3.70	32.	12.	12.	.19
	ROUTED TO							
+		205206	218.	3.90	32.	12.	12.	.19
	HYDROGRAPH AT							
+		FDC8	200.	3.72	30.	11.	11.	.20
	3 COMBINED AT							
+		C206	1142.	3.88	205.	75.	75.	1.31
	ROUTED TO							
+		206207	1139.	3.92	205.	75.	75.	1.31
	HYDROGRAPH AT							
+		FDC9	203.	3.93	38.	14.	14.	.24
	2 COMBINED AT							
+		C207	1305.	3.93	237.	87.	87.	1.56
	HYDROGRAPH AT							
+		FDC10	89.	3.75	14.	5.	5.	.10
	ROUTED TO							
+		208209	89.	3.83	14.	5.	5.	.10
	HYDROGRAPH AT							
+		FDC11	77.	3.60	10.	4.	4.	.07
	2 COMBINED AT							
+		C209	139.	3.78	24.	9.	9.	.17
	HYDROGRAPH AT							
+		FDC12	84.	3.68	12.	4.	4.	.07
	ROUTED TO							
+		210211	83.	3.95	12.	4.	4.	.07
	HYDROGRAPH AT							
+		FDC13	85.	3.77	14.	5.	5.	.09
	2 COMBINED AT							
+		C211	146.	3.92	25.	9.	9.	.16
	ROUTED TO							
+		211212	145.	4.07	25.	9.	9.	.16
	HYDROGRAPH AT							
+		FDC14	111.	3.67	16.	6.	6.	.11
	2 COMBINED AT							
+		C212	189.	4.05	41.	15.	15.	.27
	ROUTED TO							
+		212213	187.	4.23	41.	15.	15.	.27
	HYDROGRAPH AT							
+		FDC15	122.	3.68	18.	6.	6.	.11
	2 COMBINED AT							
+		C213	222.	4.23	58.	21.	21.	.38
	HYDROGRAPH AT							
+		FDC16	179.	3.72	27.	10.	10.	.17
	ROUTED TO							
+		214215	179.	3.92	27.	10.	10.	.17
	HYDROGRAPH AT							
+		FDC17	274.	3.77	43.	16.	16.	.31
	2 COMBINED AT							
+		C215	424.	3.85	70.	25.	25.	.48
	HYDROGRAPH AT							
+		FDC18	340.	3.73	50.	18.	18.	.30
	ROUTED TO							
+		216217	338.	3.92	50.	18.	18.	.30
	HYDROGRAPH AT							
+		FDC19	93.	3.77	15.	5.	5.	.10
	2 COMBINED AT							
+		C217	412.	3.90	65.	24.	24.	.40
	ROUTED TO							
+		217218	411.	4.02	65.	24.	24.	.40
	HYDROGRAPH AT							
+		FDC20	114.	3.70	17.	6.	6.	.12
	2 COMBINED AT							
+		C218	468.	4.02	81.	30.	30.	.52

1

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

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
FOR STORM = 1 STORM AREA (SQ MI) =				.00					
FDC1	MANE	1.00	130.22	220.06	1.61	1.00	130.18	220.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9389E+01 OUTFLOW= .9371E+01 BASIN STORAGE= .9486E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) =				.50					
FDC1	MANE	1.02	126.19	220.04	1.57	1.00	126.15	220.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9136E+01 OUTFLOW= .9116E+01 BASIN STORAGE= .9482E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) =				1.00					
FDC1	MANE	1.00	123.50	220.59	1.54	1.00	123.22	221.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8984E+01 OUTFLOW= .8960E+01 BASIN STORAGE= .9310E-02 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) =				2.00					
FDC1	MANE	1.00	114.34	221.66	1.45	1.00	114.29	221.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8430E+01 OUTFLOW= .8411E+01 BASIN STORAGE= .9752E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) =				4.00					
FDC1	MANE	1.16	109.71	221.08	1.40	1.00	109.63	221.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8130E+01 OUTFLOW= .8112E+01 BASIN STORAGE= .9679E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) =				.00					
200201	MANE	1.00	129.47	245.19	1.64	1.00	129.39	245.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9372E+01 EXCESS= .0000E+00 OUTFLOW= .9523E+01 BASIN STORAGE= .1967E-01 PERCENT ERROR= -1.8

FOR STORM = 2 STORM AREA (SQ MI) =				.50					
200201	MANE	1.04	125.49	245.61	1.60	1.00	125.23	246.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9118E+01 EXCESS= .0000E+00 OUTFLOW= .9299E+01 BASIN STORAGE= .1959E-01 PERCENT ERROR= -2.2

FOR STORM = 3 STORM AREA (SQ MI) =				1.00					
200201	MANE	1.00	122.15	246.31	1.59	1.00	122.09	246.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8960E+01 EXCESS= .0000E+00 OUTFLOW= .9265E+01 BASIN STORAGE= .1991E-01 PERCENT ERROR= -3.6

FOR STORM = 4 STORM AREA (SQ MI) =				2.00					
200201	MANE	1.00	113.20	247.29	1.51	1.00	113.08	247.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8411E+01 EXCESS= .0000E+00 OUTFLOW= .8766E+01 BASIN STORAGE= .1973E-01 PERCENT ERROR= -4.5

FOR STORM = 5 STORM AREA (SQ MI) =				4.00					
200201	MANE	1.00	108.67	248.05	1.46	1.00	108.66	248.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8112E+01 EXCESS= .0000E+00 OUTFLOW= .8478E+01 BASIN STORAGE= .1943E-01 PERCENT ERROR= -4.7

FOR STORM = 1 STORM AREA (SQ MI) =				.00					
FDC2	MANE	1.00	329.61	226.18	1.67	1.00	329.34	226.00	1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2728E+02 OUTFLOW= .2722E+02 BASIN STORAGE= .3316E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) =				.50					
FDC2	MANE	1.00	318.87	227.02	1.63	1.00	318.87	227.00	1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2656E+02 OUTFLOW= .2649E+02 BASIN STORAGE= .3324E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) =				1.00					
FDC2	MANE	1.16	313.42	226.43	1.60	1.00	313.07	227.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2613E+02 OUTFLOW= .2607E+02 BASIN STORAGE= .3449E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) =				2.00					
FDC2	MANE	1.00	290.22	227.26	1.51	1.00	289.82	227.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2456E+02 OUTFLOW= .2448E+02 BASIN STORAGE= .3459E-01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC2	MANE	1.00	278.17	227.88	1.45	1.00	278.02	228.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2370E+02 OUTFLOW= .2363E+02 BASIN STORAGE= .3306E-01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

201204	MANE	1.00	328.53	230.51	1.66	1.00	327.95	230.00	1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3674E+02 EXCESS= .0000E+00 OUTFLOW= .3670E+02 BASIN STORAGE= .1432E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

201204	MANE	1.00	318.26	231.16	1.62	1.00	318.18	231.00	1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3579E+02 EXCESS= .0000E+00 OUTFLOW= .3577E+02 BASIN STORAGE= .1399E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

201204	MANE	1.07	312.77	230.88	1.60	1.00	312.64	231.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3534E+02 EXCESS= .0000E+00 OUTFLOW= .3533E+02 BASIN STORAGE= .1416E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

201204	MANE	1.00	288.85	232.14	1.51	1.00	288.82	232.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3326E+02 EXCESS= .0000E+00 OUTFLOW= .3324E+02 BASIN STORAGE= .1399E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

201204	MANE	1.09	277.80	231.99	1.45	1.00	277.79	232.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3211E+02 EXCESS= .0000E+00 OUTFLOW= .3208E+02 BASIN STORAGE= .1416E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC3	MANE	1.00	335.32	225.66	1.61	1.00	334.71	226.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2533E+02 OUTFLOW= .2526E+02 BASIN STORAGE= .2180E-01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC3	MANE	1.00	325.34	226.12	1.57	1.00	325.23	226.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2464E+02 OUTFLOW= .2457E+02 BASIN STORAGE= .2178E-01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC3	MANE	1.00	318.00	226.44	1.54	1.00	317.82	226.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2423E+02 OUTFLOW= .2417E+02 BASIN STORAGE= .2132E-01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC3	MANE	1.08	295.03	226.95	1.45	1.00	294.94	227.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2274E+02 OUTFLOW= .2268E+02 BASIN STORAGE= .2236E-01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC3	MANE	1.00	282.38	227.74	1.39	1.00	282.25	227.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2193E+02 OUTFLOW= .2187E+02 BASIN STORAGE= .2237E-01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC4	MANE	1.00	134.56	225.81	1.59	1.00	134.39	226.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1087E+02 OUTFLOW= .1084E+02 BASIN STORAGE= .1538E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC4	MANE	1.00	130.25	225.86	1.54	1.00	130.18	226.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1057E+02 OUTFLOW= .1054E+02 BASIN STORAGE= .1623E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC4	MANE	1.00	127.54	226.20	1.52	1.00	127.46	226.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1040E+02 OUTFLOW= .1037E+02 BASIN STORAGE= .1577E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC4	MANE	1.00	118.15	227.15	1.42	1.00	118.13	227.00	1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9750E+01 OUTFLOW= .9722E+01 BASIN STORAGE= .1559E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC4	MANE	1.00	112.85	226.79	1.37	1.00	112.84	227.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9400E+01 OUTFLOW= .9371E+01 BASIN STORAGE= .1542E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

202203	MANE	.73	468.53	226.94	1.60	1.00	468.42	227.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3610E+02 EXCESS= .0000E+00 OUTFLOW= .3611E+02 BASIN STORAGE= .3804E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

202203	MANE	.68	454.67	226.90	1.56	1.00	454.63	227.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3511E+02 EXCESS= .0000E+00 OUTFLOW= .3512E+02 BASIN STORAGE= .3893E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

202203	MANE	.66	444.93	227.26	1.53	1.00	444.64	227.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3453E+02 EXCESS= .0000E+00 OUTFLOW= .3454E+02 BASIN STORAGE= .3869E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

202203	MANE	.59	412.87	227.96	1.44	1.00	412.82	228.00	1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3240E+02 EXCESS= .0000E+00 OUTFLOW= .3241E+02 BASIN STORAGE= .3870E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

202203	MANE	.65	394.93	228.42	1.39	1.00	394.37	229.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3124E+02 EXCESS= .0000E+00 OUTFLOW= .3125E+02 BASIN STORAGE= .3849E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC5	MANE	.95	26.92	216.44	1.33	1.00	26.89	216.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1843E+01 OUTFLOW= .1839E+01 BASIN STORAGE= .1943E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC5	MANE	1.00	25.92	216.55	1.29	1.00	25.87	217.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1788E+01 OUTFLOW= .1784E+01 BASIN STORAGE= .1978E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC5	MANE	1.00	25.29	216.88	1.26	1.00	25.27	217.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1754E+01 OUTFLOW= .1750E+01 BASIN STORAGE= .2012E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC5	MANE	.99	23.08	217.26	1.18	1.00	23.06	218.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1634E+01 OUTFLOW= .1630E+01 BASIN STORAGE= .1965E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC5	MANE	.94	21.93	217.81	1.13	1.00	21.92	218.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1569E+01 OUTFLOW= .1565E+01 BASIN STORAGE= .1955E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

203204	MANE	1.00	487.96	231.61	1.59	1.00	487.12	231.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3795E+02 EXCESS= .0000E+00 OUTFLOW= .3793E+02 BASIN STORAGE= .1579E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

203204	MANE	1.00	472.84	231.68	1.54	1.00	472.30	232.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3690E+02 EXCESS= .0000E+00 OUTFLOW= .3687E+02 BASIN STORAGE= .1552E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

203204	MANE	1.00	463.15	231.46	1.52	1.00	463.04	232.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3629E+02 EXCESS= .0000E+00 OUTFLOW= .3628E+02 BASIN STORAGE= .1596E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

203204	MANE	1.00	429.17	232.89	1.42	1.00	428.94	233.00	1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3404E+02 EXCESS= .0000E+00 OUTFLOW= .3401E+02 BASIN STORAGE= .1550E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

203204	MANE	1.00	410.73	233.68	1.37	1.00	410.27	233.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3282E+02 EXCESS= .0000E+00 OUTFLOW= .3279E+02 BASIN STORAGE= .1548E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC6	MANE	1.00	52.87	224.40	1.33	1.00	52.77	225.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4182E+01 OUTFLOW= .4170E+01 BASIN STORAGE= .7144E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC6	MANE	1.00	50.95	224.90	1.29	1.00	50.93	225.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4056E+01 OUTFLOW= .4044E+01 BASIN STORAGE= .7112E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC6	MANE	1.00	49.79	225.15	1.26	1.00	49.77	225.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3981E+01 OUTFLOW= .3969E+01 BASIN STORAGE= .6993E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC6	MANE	1.00	45.59	225.55	1.17	1.00	45.57	226.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3708E+01 OUTFLOW= .3695E+01 BASIN STORAGE= .6906E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC6	MANE	1.00	43.31	226.30	1.13	1.00	43.26	226.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3560E+01 OUTFLOW= .3548E+01 BASIN STORAGE= .6995E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

204206	MANE	.97	860.78	232.98	1.60	1.00	860.66	233.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7881E+02 EXCESS= .0000E+00 OUTFLOW= .7878E+02 BASIN STORAGE= .1396E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

204206	MANE	.98	833.07	233.43	1.56	1.00	832.83	233.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7669E+02 EXCESS= .0000E+00 OUTFLOW= .7669E+02 BASIN STORAGE= .1377E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

204206	MANE	1.00	817.38	233.50	1.54	1.00	816.75	233.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7558E+02 EXCESS= .0000E+00 OUTFLOW= .7556E+02 BASIN STORAGE= .1396E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

204206	MANE	1.00	755.78	233.72	1.44	1.00	755.54	234.00	1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7095E+02 EXCESS= .0000E+00 OUTFLOW= .7093E+02 BASIN STORAGE= .1392E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

204206	MANE	1.00	724.73	234.60	1.39	1.00	723.70	235.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6842E+02 EXCESS= .0000E+00 OUTFLOW= .6838E+02 BASIN STORAGE= .1364E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC7	MANE	.89	225.55	221.72	1.61	1.00	225.17	221.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1628E+02 OUTFLOW= .1625E+02 BASIN STORAGE= .7663E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC7	MANE	.91	218.66	221.54	1.57	1.00	218.54	222.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1584E+02 OUTFLOW= .1582E+02 BASIN STORAGE= .7770E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC7	MANE	.88	213.78	222.29	1.54	1.00	213.76	222.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1558E+02 OUTFLOW= .1554E+02 BASIN STORAGE= .7783E-02 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC7	MANE	.90	198.59	222.01	1.45	1.00	198.57	222.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1462E+02 OUTFLOW= .1459E+02 BASIN STORAGE= .7891E-02 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC7	MANE	1.00	190.30	223.17	1.40	1.00	190.23	223.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1410E+02 OUTFLOW= .1407E+02 BASIN STORAGE= .7723E-02 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

205206	MANE	1.00	224.56	233.54	1.61	1.00	224.39	233.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1625E+02 EXCESS= .0000E+00 OUTFLOW= .1623E+02 BASIN STORAGE= .9425E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

205206	MANE	1.13	216.75	233.52	1.57	1.00	216.40	234.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1582E+02 EXCESS= .0000E+00 OUTFLOW= .1580E+02 BASIN STORAGE= .9480E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

205206	MANE	1.00	213.43	233.71	1.54	1.00	213.22	234.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1554E+02 EXCESS= .0000E+00 OUTFLOW= .1553E+02 BASIN STORAGE= .9431E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

205206	MANE	1.00	196.89	234.58	1.45	1.00	196.58	235.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1459E+02 EXCESS= .0000E+00 OUTFLOW= .1457E+02 BASIN STORAGE= .9490E-02 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

205206	MANE	1.00	188.66	235.29	1.39	1.00	188.38	235.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1407E+02 EXCESS= .0000E+00 OUTFLOW= .1405E+02 BASIN STORAGE= .9435E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC8	MANE	1.00	206.28	222.33	1.41	1.00	206.28	223.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1543E+02 OUTFLOW= .1539E+02 BASIN STORAGE= .1695E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC8	MANE	1.00	199.12	223.58	1.37	1.00	199.04	223.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1498E+02 OUTFLOW= .1494E+02 BASIN STORAGE= .1755E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC8	MANE	1.00	194.62	223.60	1.35	1.00	194.36	223.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1471E+02 OUTFLOW= .1466E+02 BASIN STORAGE= .1664E-01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC8	MANE	1.00	179.35	223.59	1.26	1.00	179.28	224.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1373E+02 OUTFLOW= .1370E+02 BASIN STORAGE= .1756E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC8	MANE	1.00	171.06	224.10	1.21	1.00	170.92	224.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1321E+02 OUTFLOW= .1317E+02 BASIN STORAGE= .1746E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

206207	MANE	1.00	1240.95	234.67	1.58	1.00	1239.78	234.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1104E+03 EXCESS= .0000E+00 OUTFLOW= .1104E+03 BASIN STORAGE= .2510E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

206207	MANE	1.00	1198.40	234.99	1.53	1.00	1198.31	235.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1074E+03 EXCESS= .0000E+00 OUTFLOW= .1074E+03 BASIN STORAGE= .2500E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

206207	MANE	1.00	1176.57	234.90	1.51	1.00	1176.05	235.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1058E+03 EXCESS= .0000E+00 OUTFLOW= .1057E+03 BASIN STORAGE= .2539E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

206207	MANE	1.00	1087.12	236.01	1.41	1.00	1087.09	236.00	1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9920E+02 EXCESS= .0000E+00 OUTFLOW= .9915E+02 BASIN STORAGE= .2899E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

206207	MANE	1.00	1040.70	237.19	1.36	1.00	1040.66	237.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9560E+02 EXCESS= .0000E+00 OUTFLOW= .9555E+02 BASIN STORAGE= .2921E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC9	MANE	.98	209.35	235.61	1.49	1.00	209.28	235.00	1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1947E+02 OUTFLOW= .1941E+02 BASIN STORAGE= .2207E-01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC9	MANE	1.00	202.32	235.74	1.45	1.00	202.18	236.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1892E+02 OUTFLOW= .1886E+02 BASIN STORAGE= .2174E-01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC9	MANE	1.00	197.95	235.59	1.42	1.00	197.92	236.00	1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1859E+02 OUTFLOW= .1853E+02 BASIN STORAGE= .2144E-01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC9	MANE	1.00	182.19	236.45	1.33	1.00	182.17	237.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1739E+02 OUTFLOW= .1733E+02 BASIN STORAGE= .2177E-01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC9	MANE	1.16	174.24	237.80	1.28	1.00	174.13	238.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1674E+02 OUTFLOW= .1669E+02 BASIN STORAGE= .2181E-01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC10	MANE	1.00	91.63	225.17	1.35	1.00	91.57	225.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7124E+01 OUTFLOW= .7106E+01 BASIN STORAGE= .8135E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC10	MANE	1.00	88.40	225.54	1.31	1.00	88.24	225.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6911E+01 OUTFLOW= .6893E+01 BASIN STORAGE= .8417E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC10	MANE	1.00	86.50	226.25	1.28	1.00	86.50	226.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6784E+01 OUTFLOW= .6767E+01 BASIN STORAGE= .7991E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC10	MANE	1.00	79.39	226.49	1.19	1.00	79.25	226.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6322E+01 OUTFLOW= .6303E+01 BASIN STORAGE= .8179E-02 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC10	MANE	1.00	75.54	226.73	1.15	1.00	75.47	227.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6072E+01 OUTFLOW= .6054E+01 BASIN STORAGE= .8131E-02 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00

208209	MANE	.99	91.35	230.43	1.35	1.00	91.34	230.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7107E+01 EXCESS= .0000E+00 OUTFLOW= .7101E+01 BASIN STORAGE= .2060E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

208209	MANE	.97	88.22	230.11	1.31	1.00	88.16	230.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6893E+01 EXCESS= .0000E+00 OUTFLOW= .6891E+01 BASIN STORAGE= .2041E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

208209	MANE	.98	86.43	230.49	1.28	1.00	86.26	231.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6767E+01 EXCESS= .0000E+00 OUTFLOW= .6764E+01 BASIN STORAGE= .2053E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

208209	MANE	1.00	79.03	231.29	1.19	1.00	78.91	231.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6303E+01 EXCESS= .0000E+00 OUTFLOW= .6296E+01 BASIN STORAGE= .1995E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

208209	MANE	1.00	75.23	231.86	1.15	1.00	75.18	232.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6054E+01 EXCESS= .0000E+00 OUTFLOW= .6046E+01 BASIN STORAGE= .2028E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC11	MANE	.98	78.91	214.99	1.47	1.00	78.91	215.00	1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5268E+01 OUTFLOW= .5258E+01 BASIN STORAGE= .4609E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC11	MANE	1.00	76.09	215.16	1.43	1.00	76.02	216.00	1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5118E+01 OUTFLOW= .5109E+01 BASIN STORAGE= .4848E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC11	MANE	1.00	74.16	215.40	1.40	1.00	74.11	216.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5028E+01 OUTFLOW= .5017E+01 BASIN STORAGE= .4904E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC11	MANE	.96	68.24	216.15	1.31	1.00	68.14	216.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4702E+01 OUTFLOW= .4692E+01 BASIN STORAGE= .4711E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC11	MANE	.98	64.96	217.13	1.26	1.00	64.96	217.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .4525E+01 OUTFLOW= .4517E+01 BASIN STORAGE= .4831E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC12	MANE	1.00	85.66	220.52	1.61	1.00	85.46	220.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6202E+01 OUTFLOW= .6189E+01 BASIN STORAGE= .6919E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC12	MANE	1.00	82.82	220.39	1.57	1.00	82.69	221.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6034E+01 OUTFLOW= .6021E+01 BASIN STORAGE= .6929E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC12	MANE	1.00	81.06	220.67	1.54	1.00	80.95	221.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5934E+01 OUTFLOW= .5919E+01 BASIN STORAGE= .6861E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC12	MANE	1.00	75.08	220.81	1.45	1.00	75.08	221.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5568E+01 OUTFLOW= .5555E+01 BASIN STORAGE= .7192E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC12	MANE	1.05	72.02	221.46	1.40	1.00	71.88	222.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5370E+01 OUTFLOW= .5357E+01 BASIN STORAGE= .6996E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

210211	MANE	1.00	85.24	236.66	1.61	1.00	85.21	237.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6190E+01 EXCESS= .0000E+00 OUTFLOW= .6175E+01 BASIN STORAGE= .1052E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

210211	MANE	1.00	82.56	237.46	1.56	1.00	82.38	237.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6021E+01 EXCESS= .0000E+00 OUTFLOW= .6003E+01 BASIN STORAGE= .1035E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

210211	MANE	1.14	80.08	238.18	1.54	1.00	80.04	238.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5920E+01 EXCESS= .0000E+00 OUTFLOW= .5927E+01 BASIN STORAGE= .1059E-01 PERCENT ERROR= -.3

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

210211	MANE	1.00	74.62	238.94	1.45	1.00	74.60	239.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5556E+01 EXCESS= .0000E+00 OUTFLOW= .5579E+01 BASIN STORAGE= .1039E-01 PERCENT ERROR= -.6

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

210211	MANE	1.00	71.26	239.05	1.41	1.00	71.22	239.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5357E+01 EXCESS= .0000E+00 OUTFLOW= .5403E+01 BASIN STORAGE= .1062E-01 PERCENT ERROR= -1.1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC13	MANE	1.00	87.52	224.75	1.51	1.00	87.52	225.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6962E+01 OUTFLOW= .6943E+01 BASIN STORAGE= .1011E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC13	MANE	1.00	84.52	225.33	1.47	1.00	84.37	226.00	1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6766E+01 OUTFLOW= .6747E+01 BASIN STORAGE= .9609E-02 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC13	MANE	1.00	82.66	226.07	1.45	1.00	82.65	226.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6650E+01 OUTFLOW= .6632E+01 BASIN STORAGE= .9605E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC13	MANE	1.00	76.45	226.87	1.35	1.00	76.38	227.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6225E+01 OUTFLOW= .6206E+01 BASIN STORAGE= .9899E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC13	MANE	1.00	73.04	226.51	1.30	1.00	72.99	227.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5995E+01 OUTFLOW= .5977E+01 BASIN STORAGE= .9850E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

211212	MANE	1.01	150.84	242.14	1.56	1.00	150.62	243.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1312E+02 EXCESS= .0000E+00 OUTFLOW= .1311E+02 BASIN STORAGE= .8001E-02 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50

211212	MANE	1.00	144.25	243.74	1.51	1.00	144.08	244.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1275E+02 EXCESS= .0000E+00 OUTFLOW= .1274E+02 BASIN STORAGE= .7976E-02 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

211212	MANE	1.00	141.27	243.84	1.49	1.00	141.14	244.00	1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1256E+02 EXCESS= .0000E+00 OUTFLOW= .1255E+02 BASIN STORAGE= .7894E-02 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

211212	MANE	1.00	130.95	245.14	1.40	1.00	130.94	245.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1178E+02 EXCESS= .0000E+00 OUTFLOW= .1178E+02 BASIN STORAGE= .8012E-02 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

211212	MANE	1.00	124.66	245.52	1.35	1.00	124.52	246.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1138E+02 EXCESS= .0000E+00 OUTFLOW= .1137E+02 BASIN STORAGE= .8149E-02 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC14	MANE	1.00	114.33	219.47	1.33	1.00	114.05	219.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8081E+01 OUTFLOW= .8063E+01 BASIN STORAGE= .8245E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC14	MANE	1.00	109.94	219.11	1.29	1.00	109.90	220.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7838E+01 OUTFLOW= .7819E+01 BASIN STORAGE= .8454E-02 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC14	MANE	1.00	107.45	219.57	1.26	1.00	107.32	220.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7692E+01 OUTFLOW= .7673E+01 BASIN STORAGE= .8749E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC14	MANE	1.00	98.60	220.60	1.18	1.00	98.44	221.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7164E+01 OUTFLOW= .7147E+01 BASIN STORAGE= .8388E-02 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC14	MANE	.97	93.61	220.67	1.13	1.00	93.58	221.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6879E+01 OUTFLOW= .6861E+01 BASIN STORAGE= .8291E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

212213	MANE	1.00	194.66	253.21	1.46	1.00	193.69	254.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2118E+02 EXCESS= .0000E+00 OUTFLOW= .2114E+02 BASIN STORAGE= .1980E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

212213	MANE	1.00	186.20	253.82	1.41	1.00	186.14	254.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2056E+02 EXCESS= .0000E+00 OUTFLOW= .2052E+02 BASIN STORAGE= .1980E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

212213	MANE	1.00	184.43	253.52	1.39	1.00	184.06	254.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2022E+02 EXCESS= .0000E+00 OUTFLOW= .2020E+02 BASIN STORAGE= .1968E-01 PERCENT ERROR= .0

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

212213	MANE	1.00	170.57	255.73	1.30	1.00	170.42	255.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1893E+02 EXCESS= .0000E+00 OUTFLOW= .1890E+02 BASIN STORAGE= .2002E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

212213	MANE	1.00	163.07	256.10	1.26	1.00	162.93	256.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1823E+02 EXCESS= .0000E+00 OUTFLOW= .1822E+02 BASIN STORAGE= .1991E-01 PERCENT ERROR= -.1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC15	MANE	1.00	125.27	220.80	1.53	1.00	125.20	221.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9154E+01 OUTFLOW= .9133E+01 BASIN STORAGE= .9568E-02 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC15	MANE	1.13	121.18	221.19	1.49	1.00	121.02	221.00	1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8899E+01 OUTFLOW= .8878E+01 BASIN STORAGE= .1018E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC15	MANE	1.16	118.69	221.96	1.46	1.00	118.64	222.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8746E+01 OUTFLOW= .8726E+01 BASIN STORAGE= .9602E-02 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC15	MANE	1.00	109.79	221.81	1.37	1.00	109.76	222.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8191E+01 OUTFLOW= .8168E+01 BASIN STORAGE= .9745E-02 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC15	MANE	1.00	104.92	222.15	1.32	1.00	104.82	223.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7890E+01 OUTFLOW= .7870E+01 BASIN STORAGE= .9778E-02 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC16	MANE	1.00	184.25	222.56	1.55	1.00	183.94	222.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1376E+02 OUTFLOW= .1374E+02 BASIN STORAGE= .1333E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

FDC16	MANE	1.00	178.47	222.74	1.51	1.00	178.20	223.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1338E+02 OUTFLOW= .1335E+02 BASIN STORAGE= .1349E-01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

FDC16	MANE	1.00	175.16	222.57	1.48	1.00	174.94	223.00	1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1316E+02 OUTFLOW= .1312E+02 BASIN STORAGE= .1380E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

FDC16	MANE	1.06	161.91	222.96	1.39	1.00	161.90	223.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1233E+02 OUTFLOW= .1230E+02 BASIN STORAGE= .1374E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC16	MANE	1.00	155.03	224.23	1.34	1.00	155.00	224.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1188E+02 OUTFLOW= .1185E+02 BASIN STORAGE= .1355E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

214215	MANE	1.00	183.82	234.26	1.55	1.00	183.63	234.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1374E+02 EXCESS= .0000E+00 OUTFLOW= .1372E+02 BASIN STORAGE= .1030E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50

214215	MANE	1.00	178.03	234.41	1.51	1.00	177.82	235.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1335E+02 EXCESS= .0000E+00 OUTFLOW= .1333E+02 BASIN STORAGE= .1037E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00

214215	MANE	1.00	174.22	235.26	1.48	1.00	174.15	235.00	1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1313E+02 EXCESS= .0000E+00 OUTFLOW= .1310E+02 BASIN STORAGE= .1048E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00

214215	MANE	1.00	160.55	235.70	1.39	1.00	160.40	236.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1230E+02 EXCESS= .0000E+00 OUTFLOW= .1229E+02 BASIN STORAGE= .1051E-01 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

214215	MANE	1.10	153.96	236.05	1.34	1.00	153.90	236.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1185E+02 EXCESS= .0000E+00 OUTFLOW= .1183E+02 BASIN STORAGE= .1031E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00

FDC17	MANE	1.00	285.27	226.03	1.35	1.00	285.20	226.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2231E+02 OUTFLOW= .2224E+02 BASIN STORAGE= .1743E-01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC17 MANE 1.00 273.85 226.34 1.31 1.00 273.37 226.00 1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2164E+02 OUTFLOW= .2158E+02 BASIN STORAGE= .1714E-01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC17 MANE 1.00 267.68 227.12 1.28 1.00 267.65 227.00 1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2124E+02 OUTFLOW= .2118E+02 BASIN STORAGE= .1704E-01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC17 MANE 1.00 245.17 227.50 1.19 1.00 244.84 228.00 1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1980E+02 OUTFLOW= .1973E+02 BASIN STORAGE= .1708E-01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC17 MANE 1.00 232.97 228.09 1.15 1.00 232.89 228.00 1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1901E+02 OUTFLOW= .1895E+02 BASIN STORAGE= .1758E-01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC18 MANE 1.00 349.84 224.57 1.61 1.00 349.57 224.00 1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2593E+02 OUTFLOW= .2587E+02 BASIN STORAGE= .2091E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC18 MANE 1.00 339.79 224.51 1.57 1.00 339.18 224.00 1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2523E+02 OUTFLOW= .2517E+02 BASIN STORAGE= .2053E-01 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC18 MANE .94 332.33 224.19 1.54 1.00 332.04 225.00 1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2481E+02 OUTFLOW= .2474E+02 BASIN STORAGE= .2062E-01 PERCENT ERROR= .2

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC18 MANE .96 308.22 225.10 1.45 1.00 308.07 225.00 1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2328E+02 OUTFLOW= .2322E+02 BASIN STORAGE= .2143E-01 PERCENT ERROR= .2

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC18 MANE 1.00 295.16 225.36 1.40 1.00 294.79 226.00 1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .2245E+02 OUTFLOW= .2239E+02 BASIN STORAGE= .2111E-01 PERCENT ERROR= .2

FOR STORM = 1 STORM AREA (SQ MI) = .00
216217 MANE 1.00 347.29 234.47 1.61 1.00 346.59 234.00 1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2587E+02 EXCESS= .0000E+00 OUTFLOW= .2584E+02 BASIN STORAGE= .2071E-01 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50
216217 MANE 1.00 337.44 234.91 1.57 1.00 337.27 235.00 1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2517E+02 EXCESS= .0000E+00 OUTFLOW= .2515E+02 BASIN STORAGE= .2084E-01 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
216217 MANE 1.00 331.04 235.36 1.54 1.00 331.02 235.00 1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2474E+02 EXCESS= .0000E+00 OUTFLOW= .2471E+02 BASIN STORAGE= .2062E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
216217 MANE 1.16 306.34 236.07 1.45 1.00 306.29 236.00 1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2322E+02 EXCESS= .0000E+00 OUTFLOW= .2321E+02 BASIN STORAGE= .2031E-01 PERCENT ERROR= .0

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
216217 MANE 1.13 292.84 236.50 1.39 1.00 292.24 237.00 1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2240E+02 EXCESS= .0000E+00 OUTFLOW= .2236E+02 BASIN STORAGE= .2072E-01 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC19 MANE 1.00 95.14 224.96 1.36 1.00 95.14 225.00 1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7486E+01 OUTFLOW= .7460E+01 BASIN STORAGE= .1049E-01 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC19 MANE 1.00 92.12 225.74 1.32 1.00 91.99 226.00 1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7264E+01 OUTFLOW= .7243E+01 BASIN STORAGE= .1040E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC19 MANE 1.00 89.86 226.41 1.29 1.00 89.81 226.00 1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7131E+01 OUTFLOW= .7110E+01 BASIN STORAGE= .1056E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC19 MANE 1.00 82.60 226.85 1.21 1.00 82.52 227.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6647E+01 OUTFLOW= .6627E+01 BASIN STORAGE= .1038E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
FDC19 MANE 1.00 78.61 226.99 1.16 1.00 78.61 227.00 1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6386E+01 OUTFLOW= .6367E+01 BASIN STORAGE= .1081E-01 PERCENT ERROR= .1

FOR STORM = 1 STORM AREA (SQ MI) = .00
217218 MANE 1.00 421.81 241.23 1.55 1.00 421.60 241.00 1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3330E+02 EXCESS= .0000E+00 OUTFLOW= .3331E+02 BASIN STORAGE= .2799E-01 PERCENT ERROR= -.1

FOR STORM = 2 STORM AREA (SQ MI) = .50
217218 MANE 1.00 410.20 240.94 1.50 1.00 410.20 241.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3240E+02 EXCESS= .0000E+00 OUTFLOW= .3235E+02 BASIN STORAGE= .2831E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
217218 MANE .98 403.40 241.76 1.47 1.00 402.92 242.00 1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3182E+02 EXCESS= .0000E+00 OUTFLOW= .3177E+02 BASIN STORAGE= .2818E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
217218 MANE 1.00 371.52 242.73 1.38 1.00 371.23 243.00 1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2984E+02 EXCESS= .0000E+00 OUTFLOW= .2984E+02 BASIN STORAGE= .2837E-01 PERCENT ERROR= -.1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00
217218 MANE 1.00 354.23 243.47 1.33 1.00 353.79 244.00 1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2873E+02 EXCESS= .0000E+00 OUTFLOW= .2876E+02 BASIN STORAGE= .2808E-01 PERCENT ERROR= -.2

FOR STORM = 1 STORM AREA (SQ MI) = .00
FDC20 MANE 1.00 117.46 222.18 1.37 1.00 117.37 222.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8662E+01 OUTFLOW= .8641E+01 BASIN STORAGE= .1101E-01 PERCENT ERROR= .1

FOR STORM = 2 STORM AREA (SQ MI) = .50
FDC20 MANE 1.00 113.17 222.56 1.33 1.00 112.96 222.00 1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8406E+01 OUTFLOW= .8383E+01 BASIN STORAGE= .1142E-01 PERCENT ERROR= .1

FOR STORM = 3 STORM AREA (SQ MI) = 1.00
FDC20 MANE 1.00 110.50 223.16 1.31 1.00 110.49 223.00 1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .8253E+01 OUTFLOW= .8230E+01 BASIN STORAGE= .1151E-01 PERCENT ERROR= .1

FOR STORM = 4 STORM AREA (SQ MI) = 2.00
FDC20 MANE .98 101.60 223.19 1.22 1.00 101.44 223.00 1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7696E+01 OUTFLOW= .7675E+01 BASIN STORAGE= .1089E-01 PERCENT ERROR= .1

FOR STORM = 5 STORM AREA (SQ MI) = 4.00

FDC20	MANE	1.00	96.64	223.46	1.17	1.00	96.56	224.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7396E+01 OUTFLOW= .7376E+01 BASIN STORAGE= .1089E-01 PERCENT ERROR= .1

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

1000 0 1000 Feet

N

HDR

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

APPROXIMATE SURVEY LOCATIONS

Approxsurveylocations_merged.shp
- From "As-Builts"
- From 1995 HEC2
- From USGS Topo
- Surveyed

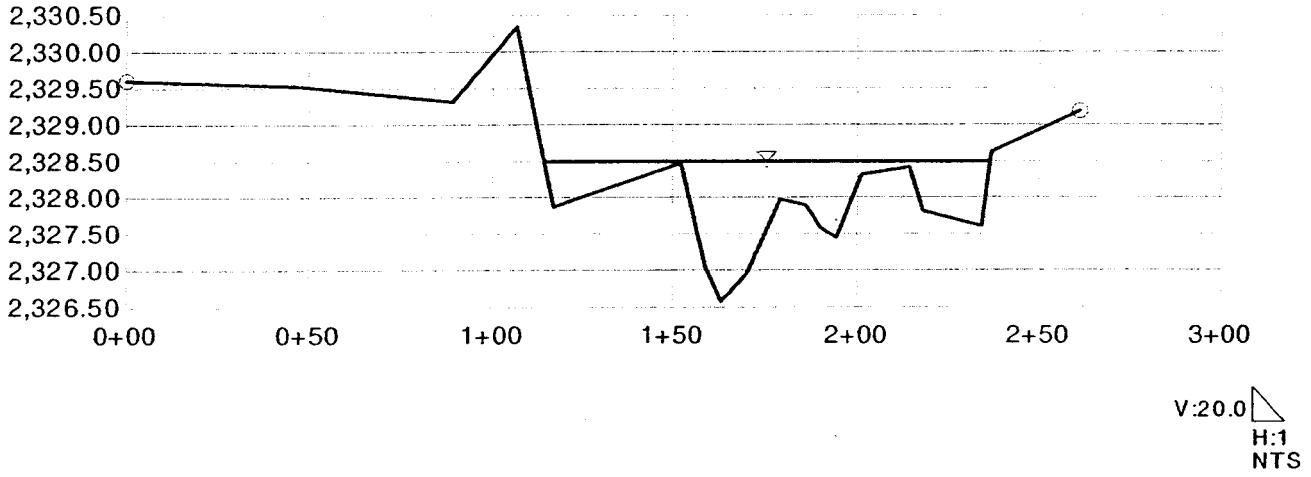
Studylimits_merge03.shp
- Approximate
- Detailed
- NIS
- Clark County Facilities
- Major Streets
- Flood Control Basins

* SURVEY SITES SHOWN ARE NOT TO SCALE. CIRCLED NUMBERS REFERENCE FLOWMASTER CALCULATIONS.

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 8 - South Side of Russel 900 Ea
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.045	
Slope	0.013400	ft/ft
Water Surface Elev.	2,328.49	ft
Elevation Range	26.56 to 2,330.33	
Discharge	220.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 9 - 300' North of Oquendo 270' W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	011900 ft/ft
Discharg	195.00 cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.045	
Water Surface Elev	2,340.16	ft
Elevation Range	38.56 to 2,341.63	
Flow Area	58.6	ft²
Wetted Perimeter	65.95	ft
Top Width	65.66	ft
Actual Depth	1.60	ft
Critical Elevation	2,339.83	ft
Critical Slope	0.032734	ft/ft
Velocity	3.33	ft/s
Velocity Head	0.17	ft
Specific Energy	2,340.33	ft
Froude Number	0.62	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+49	0.045

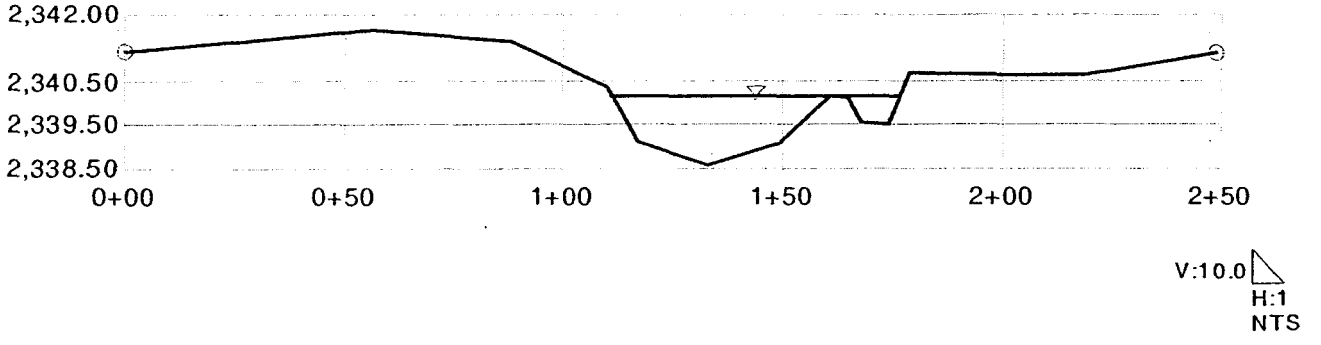
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	2,341.15
0+56	2,341.63
0+88	2,341.37
1+10	2,340.36
1+17	2,339.08
1+33	2,338.56
1+49	2,339.06
1+61	2,340.15
1+65	2,340.09
1+68	2,339.53
1+74	2,339.50
1+79	2,340.68
2+01	2,340.65
2+19	2,340.64
2+49	2,341.13

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 9 - 300' North of Oquendo 270' W.
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.045	
Slope	0.011900	ft/ft
Water Surface Elev.	2,340.16	ft
Elevation Range	38.56 to 2,341.63	
Discharge	195.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 10 - at Powerline 400' North (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	014600	ft/ft
Discharg	500.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.030	
Water Surface Elev.	2,298.03	ft
Elevation Range	95.84 to 2,306.34	
Flow Area	81.5	ft²
Wetted Perimeter	78.60	ft
Top Width	77.77	ft
Actual Depth	2.19	ft
Critical Elevation	2,298.07	ft
Critical Slope	0.012963	ft/ft
Velocity	6.13	ft/s
Velocity Head	0.58	ft
Specific Energy	2,298.61	ft
Froude Number	1.06	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	1+12	0.040
1+12	2+63	0.030
2+63	3+39	0.040

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	2,303.55
0+26	2,301.07
0+47	2,300.94
0+94	2,302.23
1+12	2,300.50
1+23	2,295.84
1+39	2,296.37
1+54	2,296.04
1+60	2,297.81
1+77	2,298.03

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+89	2,297.03
2+06	2,299.47
2+43	2,300.57
2+63	2,304.95
2+85	2,305.49
3+39	2,306.34

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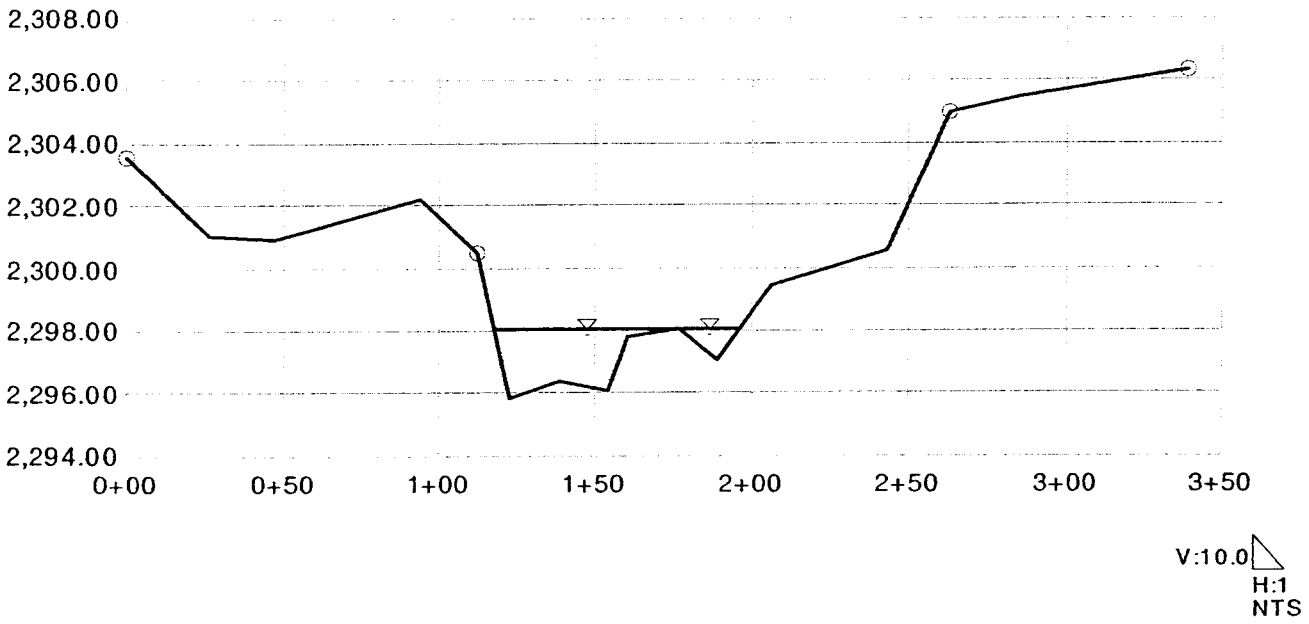
HDR Engineering Inc.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 10 - at Powerline 400' North (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.030	
Slope	0.014600	ft/ft
Water Surface Elev.	2,298.03	ft
Elevation Range	95.84 to 2,306.34	
Discharge	500.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 11 - 430 South of Oquendo 470' Ea
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	017200	ft/ft
Discharg	490.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.031	
Water Surface Elev.	2,316.24	ft
Elevation Range	13.34 to 2,319.72	
Flow Area	76.2	ft²
Wetted Perimeter	74.86	ft
Top Width	73.36	ft
Actual Depth	2.90	ft
Critical Elevation	2,316.33	ft
Critical Slope	0.013644	ft/ft
Velocity	6.43	ft/s
Velocity Head	0.64	ft
Specific Energy	2,316.89	ft
Froude Number	1.11	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+51	0.040
0+51	0+88	0.035
0+88	1+38	0.040
1+38	1+94	0.035
1+94	2+95	0.040

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	2,319.51
0+51	2,318.50
0+60	2,318.20
0+66	2,313.34
0+83	2,314.79
0+88	2,316.68
0+88	2,316.66
1+25	2,316.84

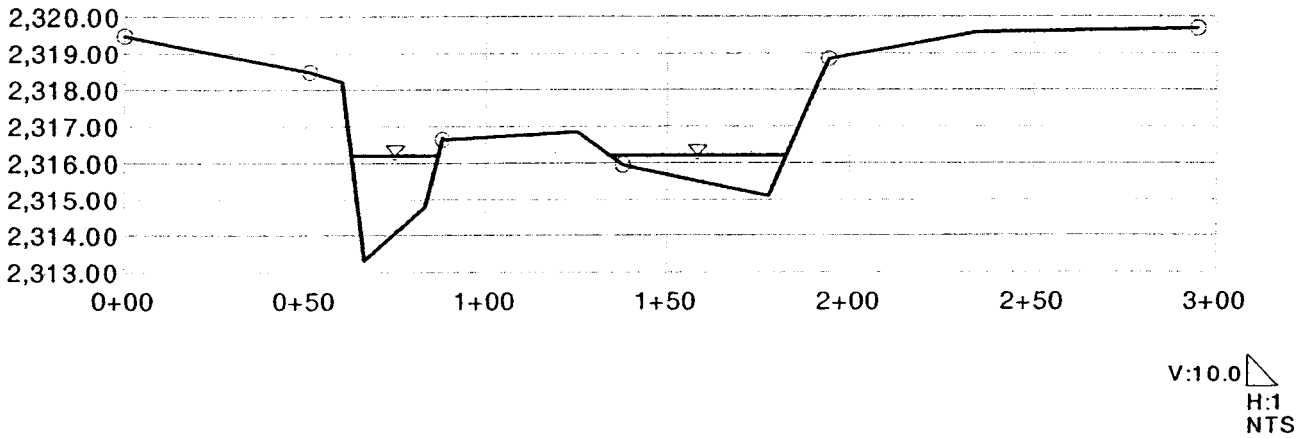
Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+38	2,315.96
1+78	2,315.13
1+94	2,318.88
2+34	2,319.59
2+95	2,319.72

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 11 - 430 South of Oquendo 470' Ea
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.031	
Slope	0.017200	ft/ft
Water Surface Elev.	2,316.24	ft
Elevation Range	13.34 to 2,319.72	
Discharge	490.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 12 - 540' North of Patrick 760' East of
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	015500 ft/ft
Discharge	460.00 cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.035	
Water Surface Elev	2,329.47	ft
Elevation Range	27.45 to 2,335.05	
Flow Area	82.9	ft²
Wetted Perimeter	77.17	ft
Top Width	76.64	ft
Actual Depth	2.02	ft
Critical Elevation	2,329.42	ft
Critical Slope	0.017774	ft/ft
Velocity	5.55	ft/s
Velocity Head	0.48	ft
Specific Energy	2,329.94	ft
Froude Number	0.94	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+17	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	2,329.76
0+26	2,330.76
0+29	2,329.79
0+33	2,329.48
0+64	2,329.98
0+67	2,331.48
0+73	2,330.36
0+78	2,328.26
0+99	2,328.50
1+04	2,327.45
1+13	2,327.54
1+25	2,328.64
1+51	2,329.02
1+60	2,334.21
1+89	2,335.05

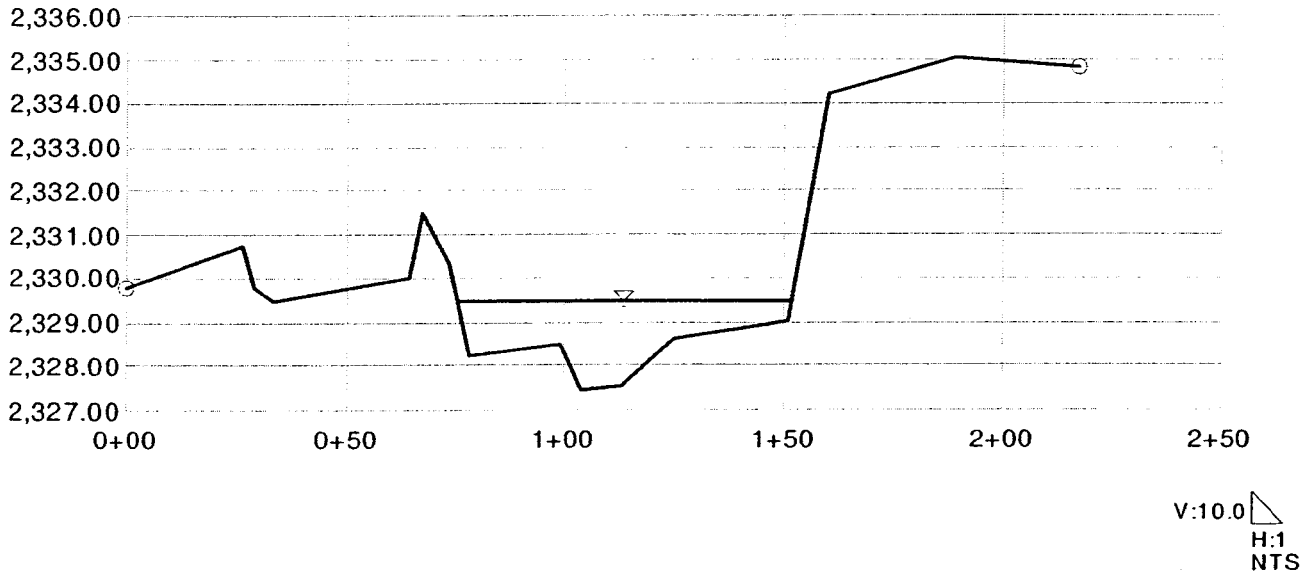
Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+17	2,334.84

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 12 - 540' North of Patrick 760' East of
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.035	
Slope	0.015500	ft/ft
Water Surface Elev.	2,329.47	ft
Elevation Range	27.45 to 2,335.05	
Discharge	460.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 13 - 135' East of Duneville 310' Sou
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	013300	ft/ft
Discharge	412.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.035	
Water Surface Elev.	2,343.92	ft
Elevation Range	11.56 to 2,348.08	
Flow Area	69.9	ft²
Wetted Perimeter	52.70	ft
Top Width	51.16	ft
Actual Depth	2.36	ft
Critical Elevation	2,343.77	ft
Critical Slope	0.016872	ft/ft
Velocity	5.90	ft/s
Velocity Head	0.54	ft
Specific Energy	2,344.46	ft
Froude Number	0.89	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+79	0.040
0+79	1+01	0.035
1+01	1+84	0.040

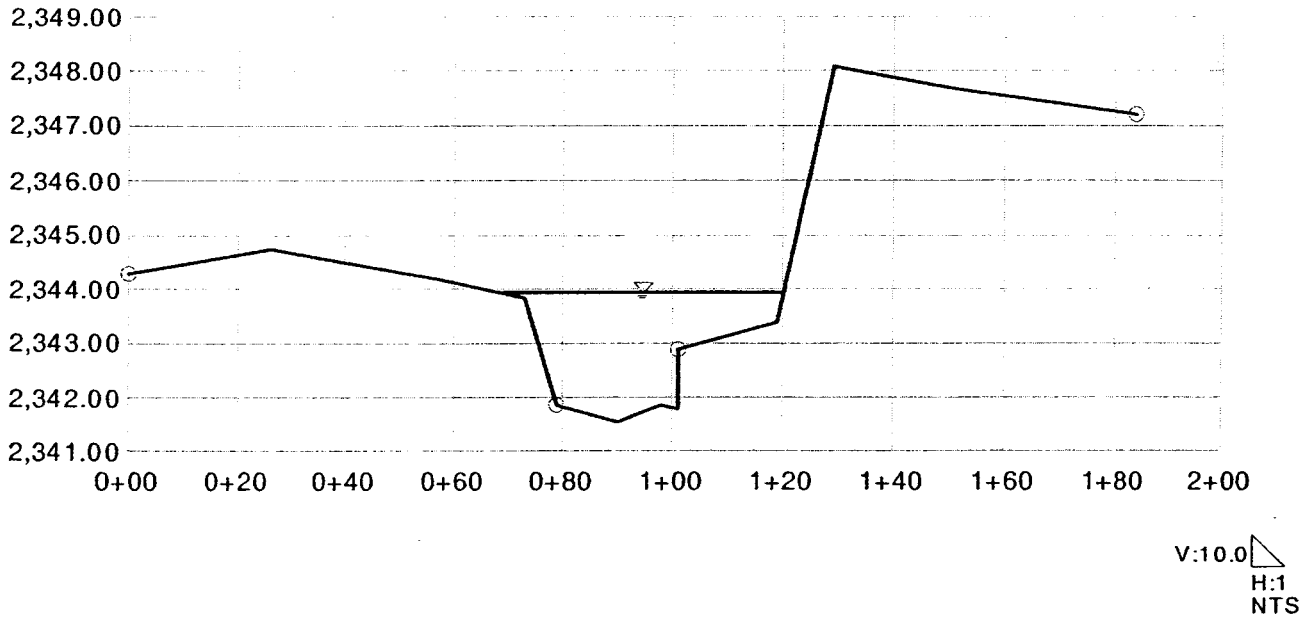
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	2,344.28
0+26	2,344.74
0+57	2,344.18
0+73	2,343.84
0+79	2,341.86
0+90	2,341.56
0+98	2,341.86
1+01	2,341.80
1+01	2,342.87
1+19	2,343.36
1+29	2,348.08
1+52	2,347.67
1+84	2,347.19

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 13 - 135' East of Duneville 310' Sou
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.035	
Slope	0.013300	ft/ft
Water Surface Elev.	2,343.92	ft
Elevation Range	11.56 to 2,348.08	
Discharge	412.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 14 - 250' North of Post 620' East
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	014300	ft/ft
Discharg	315.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.035	
Water Surface Elev.	2,355.36	ft
Elevation Range	53.40 to 2,361.33	
Flow Area	48.5	ft²
Wetted Perimeter	33.45	ft
Top Width	32.71	ft
Actual Depth	1.96	ft
Critical Elevation	2,355.30	ft
Critical Slope	0.016303	ft/ft
Velocity	6.50	ft/s
Velocity Head	0.66	ft
Specific Energy	2,356.01	ft
Froude Number	0.94	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+37	0.035

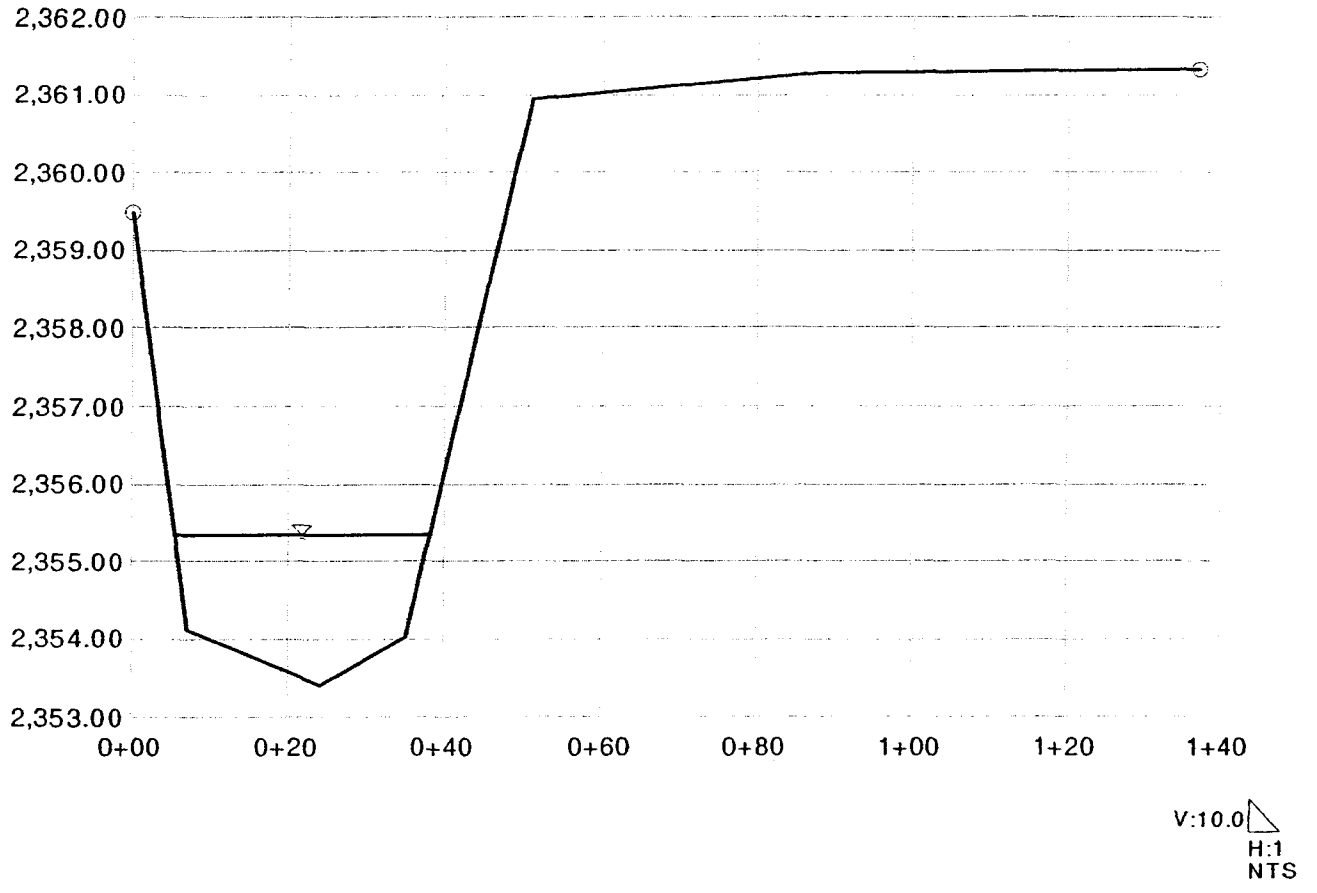
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	2,359.49
0+07	2,354.11
0+24	2,353.40
0+35	2,354.02
0+51	2,360.95
0+88	2,361.30
1+37	2,361.33

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 14 - 250' North of Post 620' East
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.035	
Slope	0.014300	ft/ft
Water Surface Elev.	2,355.36	ft
Elevation Range	53.40 to 2,361.33	
Discharge	315.00	cfs



Project Summary Report

Project Description	
Worksheet	X-Section 15 - 1600' South of Patrick 140' Eas
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	012950	ft/ft
Discharge	360.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.035	
Water Surface Elev.	2,368.45	ft
Elevation Range	36.24 to 2,371.57	
Flow Area	91.6	ft²
Wetted Perimeter	124.75	ft
Top Width	124.36	ft
Actual Depth	2.21	ft
Critical Elevation	2,368.35	ft
Critical Slope	0.020737	ft/ft
Velocity	3.93	ft/s
Velocity Head	0.24	ft
Specific Energy	2,368.69	ft
Froude Number	0.81	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	2+11	0.035

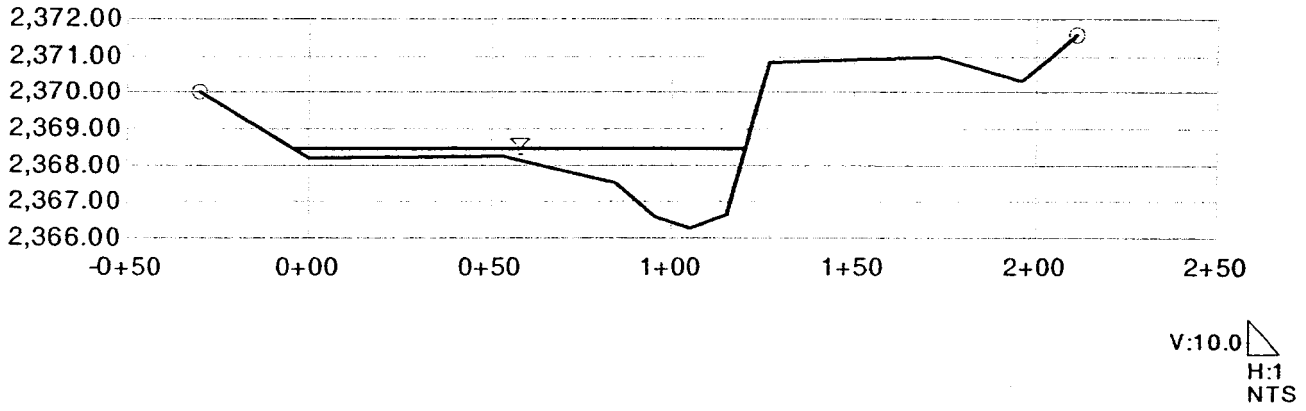
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	2,370.00
0+00	2,368.20
0+53	2,368.23
0+84	2,367.52
0+95	2,366.58
1+05	2,366.24
1+15	2,366.60
1+27	2,370.85
1+73	2,370.98
1+96	2,370.32
2+11	2,371.57

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	X-Section 15 - 1600' South of Patrick 140' Eas
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.035	
Slope	0.012950	ft/ft
Water Surface Elev.	2,368.45	ft
Elevation Range	36.24 to 2,371.57	
Discharge	360.00	cfs



Excerpts from "Flood Insurance Study Restudy Tropicana Wash and Tributaries (FISRTW)" by CH2M HILL (1992)
(Cross sections)

THIS RUN EXECUTED 6JUL92 14:46:49

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1     CCRFCD Tropicana Wash F.I.S.; RDD33832
T2     North Tropicana Wash, Approximate Methods
T3      NT-1-a.hc2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         0         0         0     0.0195         0         0       577      2295         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38         1        43         8        55        26        56        13        14        15
      4        53        54

J5  LPRNT    NUMSEC                  ********REQUESTED SECTION NUMBERS********

             -10

NC    0.047     0.047     0.047         0         0
X1        1         7       200       500         0         0         0         0         0         0
GR   2296.8         0    2296.9        60    2296.0       200    2294.6       270    2294.3       320
GR   2294.3       390    2296.0       500
```

THIS RUN EXECUTED 6JUL92 14:46:57

****
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

NT-1-a.hc2

SUMMARY PRINTOUT

SECNO	CWSEL	Q	DEPTH	VLOB	VCH	VROB	QLOB	QCH	QROB	TOPWID	SSTA	ENDST
1.000	2295.32	577.00	1.02	0.00	3.57	0.00	0.00	577.00	0.00	221.95	234.02	455.97

SUMMARY OF ERRORS AND SPECIAL NOTES

THIS RUN EXECUTED 8JUL92 15:35:46

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1  CCRFCD Tropicana Wash F.I.S.;     RDD33832
T2  Central Tropicana Wash, Approximate Methods
T3      CT-2-a.hc2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                                          0.0160                          882       2304

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38         1         43         8         55         26         56         13         14         15
      4         53        54

J5  LPRNT     NUMSEC                    ********REQUESTED SECTION NUMBERS********

       1        -10

NC    0.037     0.037     0.037
X1        1        10       250       330
GR   2308.8       100    2308.0       170    2304.0       250    2300.0       280    2298.8       285
GR   2298.8       305    2300.0       310      2304       330      2308       480    2310.2       600
```

THIS RUN EXECUTED 8JUL92 15:35:53

****
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

CT-2-a.hc2

SUMMARY PRINTOUT

SECNO	CWSEL	Q	DEPTH	VLOB	VCH	VROB	QLOB	QCH	QROB	TOPWID	SSTA	ENDST
1.000	2301.89	882.00	3.09	0.00	8.09	0.00	0.00	882.00	0.00	53.63	265.82	319.45

SUMMARY OF ERRORS AND SPECIAL NOTES

THIS RUN EXECUTED 8JUL92 15:39:51

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1  CCRFCD Tropicana Wash F.I.S.;     RDD33832
T2  Central Tropicana Wash, Approximate Methods
T3      CT-2-e.hc2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                                          0.0235                          608       2320

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38         1         43         8         55         26         56         13         14         15
      4        53         54

J5  LPRNT     NUMSEC                    ********REQUESTED SECTION NUMBERS********

      )        -10

NC    0.037     0.037     0.037
X1        1         8       340       500
GR   2329.3       100    2328.0       150    2324.0       340    2320.0       420    2317.5       450
GR   2317.5       460    2320.0       480    2322.7       500
```

THIS RUN EXECUTED 8JUL92 15:39:58

****
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

CT-2-e.hc2

SUMMARY PRINTOUT

	SECNO	CWSEL	Q	DEPTH	VLOB	VCH	VROB	QLOB	QCH	QROB	TOPWID	SSTA	ENDST
*	1.000	2320.01	608.00	2.51	0.00	6.89	0.00	0.00	608.00	0.00	60.36	419.74	480.10

SUMMARY OF ERRORS AND SPECIAL NOTES

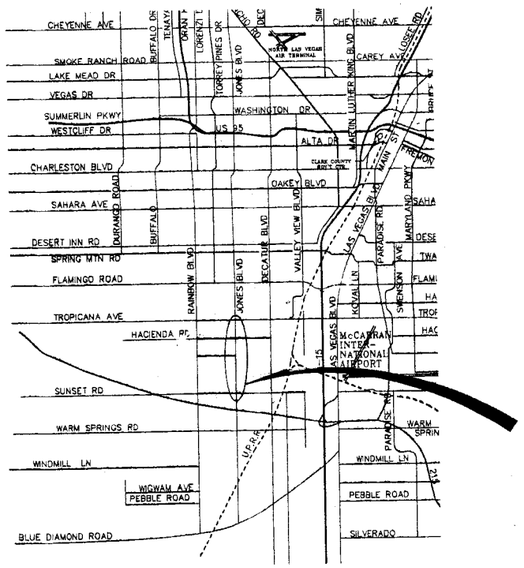
CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

APPENDIX F

Construction Plans

CONFORMING

DEPARTMENT OF PUBLIC WORKS



Vicinity Map

NOT TO SCALE

CLARK COUNTY NEVADA

"Progress as Promised"

Index of Sheets

1. COVER SHEET
2. SUMMARY OF QUANTITIES, BASIS OF BEARING, GENERAL & CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS

RECORD OF SURVEY

TYPICAL PAVEMENT SECTIONS

3. TYPICAL PAVEMENT SECTIONS (1 OF 2)
4. TYPICAL PAVEMENT SECTIONS (2 OF 2)

PLAN AND PROFILE SHEETS

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6. STA 38+00 TO STA 50+00
7. STA 50+00 TO STA 61+00
8. STA 61+00 TO STA 73+00
9. STA 73+00 TO STA 85+00
10. STA 85+00 TO STA 97+00
11. STA 97+00 TO STA 109+00
12. STA 109+00 TO STA 121+00
13. STA 121+00 TO STA 141+14.4±
14. STA 10+00 TO STA 14+25 (PATRICK LANE)
15. STA 58+44.40 TO STA 62+92.82 (RUSSELL ROAD)
16. STA 7+28± TO STA 12+10.2± (DEWEY DRIVE)

INTERSECTION GRADING PLANS

17. JONES BOULEVARD AND RUSSELL ROAD

17a. - JONES BOULEVARD AND HACIENDA AVENUE

DETAIL SHEETS

18. DETAIL SHEET (1 OF 1)

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24. STA 85+00 TO STA 97+00
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26. STA 109+00 TO STA 116+09.8±
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29. LATERAL DETAILS 2 OF 4
30. LATERAL DETAILS 3 OF 4
31. LATERAL DETAILS 4 OF 4

STORMDRAIN DETAILS

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33. SHEET 2 OF 6
34. SHEET 3 OF 6
35. SHEET 4 OF 6
36. SHEET 5 OF 6
37. SHEET 6 OF 6

WATER DETAILS

38. WATER DETAILS

STREETLIGHT / INTERCONNECT / PAVEMENT MARKING PLANS

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41. STA 73+00 TO STA 97+00
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43. STA 121+00 TO STA 140+85±
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46. SOUTHERN BELTWAY INTERCHANGE MODIFICATIONS

TRAFFIC SHEETS

47. TRAFFIC SIGNAL UNDERGROUND ~ SUNSET ROAD AND PATRICK LANE
48. TRAFFIC SIGNAL UNDERGROUND ~ JONES BOULEVARD & RUSSELL ROAD
49. TRAFFIC SIGNAL SYSTEM ~ JONES BOULEVARD & HACIENDA AVENUE
50. TRAFFIC SIGNAL SYSTEM ~ JONES BOULEVARD & RENO AVENUE

2001
IMPROVEMENT PLANS FOR
JONES BOULEVARD
FROM
SOUTHERN BELTWAY TO TROPICANA AVENUE

JONES BOULEVARD FROM SOUTHERN BELTWAY TO HACIENDA AVENUE

WELLS CARGO, INC.
RECORD
Project No. 1229-01
Date 11/16/01
Project Manager

County Manager

Thomas F. Reilly

Director of Public Works

Approved:

M.J. Manning

County Commissioners

Dario Herrera, Chairman
Myrna Williams, Vice Chair
Yvonne Atkinson Gates
Erin Kenny
Mary J Kincaid-Chauncey
Chip Maxfield
Bruce L Woodbury

NEVADA POWER COMPANY
THIS APPROVAL IS ONLY FOR THE PLACEMENT AND CLEARANCE OF STREET LIGHT AND SIGNAL LIGHT INSTALLATIONS.

FUNDED BY
REGIONAL TRANSPORTATION COMMISSION
OF SOUTHERN NEVADA
REGIONAL FLOOD CONTROL DISTRICT
AND
SPECIAL IMPROVEMENT DISTRICT NO 125

Clark County Regional Flood Control District

Approved:

Gale W.M. Fraser II, PE
General Manager / Chief Engineer

Regional Transportation Commission of Southern Nevada

Approved:

For Jacob L. Snow, General Manager

AGENCY	PLANS REVIEWED BY	DATE
SPRINT / CENTRAL TELEPHONE COMPANY		10.5.01
LAS VEGAS VALLEY WATER DISTRICT		10/30/01
SOUTHWEST GAS COMPANY		10/10/01
NEVADA POWER COMPANY (DISTRIBUTION DIVISION)		10-8-01
NEVADA POWER COMPANY (TRANSMISSION DIVISION)		10-11-01
COX COMMUNICATIONS		10-16-01
CLARK COUNTY SANITATION DISTRICT		10-12-01

DEPARTMENT OF PUBLIC WORKS	BY	DATE
DEPUTY DIRECTOR		10-16-01
COMMUNITY DEVELOPMENT DIVISION		10-16-01
CONSTRUCTION MANAGEMENT DIVISION		10/10/01
DESIGN ENGINEERING DIVISION		10-16-01
MAINTENANCE MANAGEMENT DIVISION		10-16-01
TRAFFIC MANAGEMENT DIVISION		10/15/01
COUNTY SURVEYOR'S OFFICE		10/16/01

REVISIONS NUMBER	DESCRIPTION	DATE

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-17-01

DESIGN ENGINEERING DIVISION

COVER SHEET

L-1616

SUMMARY OF APPROXIMATE QUANTITIES

Item No.	Description	Unit	Quantity
106.01	Allowance for Onsite Material Testing for Quality Control	LS	1
107.01	Traffic Control	LS	1
109.01	Construction Contract & Additional Work	LS	1
109.02A	Historical Owner Caused Delay Allowance	DAY	10
109.02B	Additional Amount Over $500 Per Day as Determined by Bidder	DAY	10
200.01	Mobilization	LS	1
201.01	Clearing & Grubbing	LS	1
202.01	Remove Concrete Valley Gutter	SF	2,045
202.02	Remove & Stockpile Concrete Barrier Rail	LF	172
202.03	Remove & Stockpile Type II Barricade	LF	242
202.04	Remove Trash On Median Island	SF	328
202.05	Cold Plane	SF	2,852
202.06	Remove Concrete Curb & Gutter	LF	168
202.07	Remove Concrete Sidewalk	SF	1,068
203.01	Roadway Excavation	CY	29,883
203.02	8" Scarify & Recompact Existing Type II Base	SY	2,540
203.03	4" Scarify & Recompact Existing Type II Base	SY	30,705
302.01	Type II Aggregate Base	CY	8,974
402.01	Plant(s) Bituminous Surface	TON	26,182
402.02	2" Planing (Bituminous Surface (Driveway Transition)	SF	1,318
402.03	Replace Bituminous Open Grade Surface (3/4")	SY	85,456
409.01	Tack Coat	TON	52
409.02	Prime Coat	TON	8
407.01	Seal Coat	TON	18
502.01	6" x 6" RCB	LF	300
502.02	7' x 6" RCB	LF	660
502.03	10' x 6" RCB	LF	636
502.04	6" x 7' RCB	LF	390
502.05	10' x 7' RCB	LF	600
502.06	12' x 6' RCB	LF	1,350
502.07	7'2" To 6' x 6' Transition Structure	EA	1
502.08	6' x 6' To 7' x 6' Transition Structure	EA	1
502.09	7' x 6' To 10' x 6' Transition Structure	EA	1
502.10	10' x 6' To 13' x 6' Transition Structure	EA	1
502.11	13' x 6' To 10' x 7' w/ 54" RCP Lateral Transition Structure	EA	1
502.12	10' x 7' To 8' x 7' Transition Structure	EA	1
502.13	8' x 7' To 10' x 6' Transition Structure	EA	1
502.14	54" To 60"w/ 60" x 36" Lateral Transition Structure	EA	1
502.15	6' x 6' Complex Headwall NDOT B3.2 7.1 (No Wingwalls) 36 LF	LS	1
601.01	18" Storm Drain	LF	510
601.02	24" Storm Drain	LF	960
601.03	30" Storm Drain	LF	480
601.04	36" Storm Drain	LF	1,128
603.01	42" RCP Class II	LF	580
603.02	48" RCP Class II	LF	300
603.03	54" RCP Class II	LF	280
603.04	60" Rcp Class II	LF	406
603.05	72" RCP Class II	LF	1008
603.06	48" x 29" HE RCP (Class II	LF	100
603.07	53" x 34" HE RCP (Class II	LF	36
603.08	60" x 38" HE RCP (Class II	LF	80
609.01	Modified Type I Manhole	EA	13
609.02	RCB Manhole	EA	13
609.03	8'-0" x 2'-0" x 8'-0" deep Catch Basin w/ 2 Neenah R4218C Dome Grates	EA	3
609.04	12'-0" x 2'-0" x 8'-0" deep Catch Basin w/ 4 Neenah R4218C Dome Grates	EA	13
609.05	Standard Type "D" Drop Inlet	EA	2
609.06	13' Type "C" Drop Inlet W/ 9' Grate	EA	1
609.07	Adjust Manhole Grade Rings (Storm Drain)	EA	5
610.01	7000 Standard Rip Rap	CY	380
613.01	4" Concrete Sidewalk	SF	17,986
613.02	Type "L" Curb and Gutter	LF	3,922
613.03	Concrete Valley Gutter	SF	5,042
613.04	Commercial Driveway (OPTION "A")	SF	615
613.05	Commercial Driveway (Type "R")	SF	480
613.06	Type On Median Island	SF	3,254
613.07	Sidewalk Ramp (sp East Sidewalk (no Valley Gutter)	EA	2
613.08	Sidewalk Ramp (sp East Sidewalk (with Valley Gutter)	EA	2
615.01	NDOT Guardrail Sct 1-1, Transport East Treatment	LF	150
618.01	Remove Object Marker, CM-3R	EA	2
618.02	CM-3R Object Marker (12" x 36")	EA	2
618.03	Type II Object Marker	EA	10
624.01	No. 3 1/2 Pullbox	EA	11
624.02	No. 5 Pullbox	EA	3
625.09	240W Street Light Assembly	EA	27
625.04	480W Street Light Assembly (Multi-Tap Mast Arm)	EA	1
627.01	Traffic Signal System (Jones & Hacienda)	LS	1
627.02	Traffic Signal Underground (Jones & Russell)	LS	1
627.03	Traffic Signal Underground (Jones & Pebble)	LS	1
627.04	Traffic Signal Underground (Jones & Sunset)	LS	1
627.05	Traffic Signal System (Jones & Reno/Foothill)	LS	1
627.06	2-3" Conduit (Interconnect)	LF	7,098
627.07	No 7 Pull Box (Interconnect) (In Existing Sidewalk)	EA	13
627.08	No 7 Pull Box (Interconnect)	EA	4
627.01	Relocate Permanent Sign Panel & Post	EA	10
627.02	Relocate Pole Mounted Sign Panel	EA	3
627.03	Remove Permanent Sign Panel & Post	EA	13
627.04	Remove Permanent Sign Panel	EA	21
627.05	Permanent Sign Post	EA	21
627.06	Permanent Sign Panel (R9-3N)	EA	18
627.07	Permanent Sign Panel (W4-1R) (30" X 30")	EA	1
627.08	Permanent Sign Panel (R2-1(45)) (24" x 30")	EA	8
627.09	Permanent Sign Panel (R1-1) (36" x 36")	EA	12
627.10	Permanent Sign Panel (R1-1) (48" x 48")	EA	2
627.11	Permanent Sign Panel (R5-1R) (30" x 30")	EA	5
627.12	Permanent Sign Panel (M8-3A) (30" X 30")	EA	1
627.13	Permanent Sign Panel (CCR-4)	EA	4
627.14	Permanent Sign Panel (R9-11B) (36" X 12")	EA	4
627.15	Permanent Sign Panel (M1-6CC)	EA	1
627.16	Permanent Sign Panel (M3-4) (24" X 12")	EA	1
627.17	Permanent Sign Panel (M8-1R) (21" X 18")	EA	1
628.01	White Cold Polymer - Type I Film	SF	3,219
628.02	Yellow Cold Polymer - Type I Film	SF	1,660
628.03	Cold Polymer Legend: "ONLY" - Type I Film	EA	24
628.04	Cold Polymer Legend: "ARROW" - Type I Film	EA	40
628.05	Cold Polymer Legend: "MERGING ARROW" - Type I Film	EA	3
628.06	White Painted Pavement Marking 4" Wide	LF	10,744
628.07	White Painted Pavement Marking 8" Wide	LF	541
628.08	White Painted Pavement Marking 24" Wide	LF	195
628.09	Yellow Painted Pavement Marking 4" Wide	LF	1,408
628.10	Yellow Painted Pavement Marking 24" Wide	LF	54
628.11	Misc Yellow Painted Pavement Marking	SF	217
628.12	Yellow Reflective Paint	SF	730
628.13	Remove Pavement Markings (East of Jones)	LS	1
628.14	Remove & Replace 24" Wide Yellow Markings - Type I Film	SF	128
628.15	Remove Pavement Markings (Reno Ave & Foothill Blvd)	LS	1
628.16	Remove Pavement Markings (Bellagio Fronteas West & Jones to Sta 27+00)	LS	1
628.17	Remove Temporary Guide Posts (Bellagio Fronteas West)	LS	1
629.01	Verbosity Adjust Water Valve Box	EA	54
629.02	Adjust Manhole Grade Rings (LVVWD)	EA	4
629.03	Adjust "End of Line" Blow Off (per LDACS Plate 4)	EA	3
721.04	Relocate Water Test Station Without Anodes	EA	1
629.05	6" PVC Water Lateral W/ Blow-Off Assembly	LF	121
629.06	8" PVC Water Lateral W/ Blow-Off Assembly	LF	115
629.07	12" X 6" Tapping Sleeve and 6" Valve	EA	4
629.08	12" X 8" Tapping Sleeve and 8" Valve	EA	2
629.09	Relocate 12" Water Line	LF	85
629.10	Verbosity Adjust 1" Water Meter (Per LDACS Plate 1D)	EA	1
629.11	Verbosity Adjust Fire Hydrant (Per LDACS Plate 7)	EA	1
630.01	Adjust Manhole Grade Rings (Sanitary Sewer)	EA	17
630.02	8" PVC Sewer Lateral (Public)	LF	70
630.03	8" PVC Sewer Lateral (Public)	LF	40
631.01	Permanent Sign Panel (D3) (12")	EA	48
633.01	Reflective Pavement Markers	EA	2,382
633.02	Non-Reflective Pavement Markers	EA	8,423
637.01	Dust Control	LS	1

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
212.01	ON-SITE MODIFICATION FOR NE. CORNER OF JONES BLVD. & RENO AVE.	LS	1
212.02	ON-SITE MODIFICATION FOR NW CORNER OF JONES BLVD. & FOOTHILL BLVD	LS	1

ADDITIVE/DEDUCTIVE ITEMS

ITEM No	DESCRIPTION	UNIT	QUANTITY
208.01	TRENCH OVER-EXCAVATION & COMPACTED AGGREGATE BEDDING	CY	
208.02	CHANGES IN EARTHWORK QUANTITIES BEFORE INITIAL TRENCHING	CY	
208.03	INCREASE IN EARTHWORK QUANTITIES AFTER INITIAL TRENCHING	CY	
502.16	CONCRETE ENCASEMENT	CY	
609.08	ADJUST STORM DRAIN MANHOLE CONE OR FLAT TOP	EA	
630.04	ADJUST SANITARY SEWER MANHOLE CONE OR FLAT TOP	EA	

GENERAL NOTES

1 ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA" AND "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", AND APPENDICES, CURRENT EDITION.

2 TRAFFIC SIGNAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA VOLUME II" CURRENT EDITION.

3 ALL UTILITIES SHOWN ARE BELIEVED TO BE ACCURATELY LOCATED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES LIKELY TO BE AFFECTED. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF SUSPECTED UTILITY INTERFERENCES, AND SHALL FURNISH INFORMATION ON THE SAME TO THE ENGINEER, NOT LESS THAN TEN (10) DAYS PRIOR TO THE ANTICIPATED IMPACT OF THESE SUSPECTED INTERFERENCES ON HIS WORK. IF CONFLICTS EXIST, THE CONTRACTOR WILL IMMEDIATELY CONTACT THE ENGINEER AND PROVIDE THE ENGINEER WITH ALL THE NECESSARY DATA SUCH AS ELEVATIONS, HORIZONTAL LOCATIONS, ETC., AND PROVIDE THE ENGINEER WITH SKETCHES INDICATING THE PROPOSED IMPROVEMENT AND THE UTILITY CONFLICT. THE ENGINEER WILL EXAMINE AND REVIEW ALL THE DATA AND SKETCHES PROVIDED, AND WILL PROVIDE THE CONTRACTOR WITH AN ALTERNATIVE DESIGN WITHIN FIVE (5) DAYS AFTER RECEIPT OF DATA AND SKETCHES.

4 CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO BEGINNING CONSTRUCTION

5 THE SPRINT TELEPHONE COMPANY SHALL BE RESPONSIBLE FOR THE ADJUSTMENT OF TELEPHONE MANHOLES AND RELOCATIONS OF TELEPHONE POLES AND UNDERGROUND TELEPHONE LINES THAT INTERFERE WITH THE REQUIRED IMPROVEMENTS AS SHOWN ON THE PLANS.

6 THE NEVADA POWER COMPANY SHALL BE RESPONSIBLE FOR THE RELOCATION OF UNDERGROUND OR OVERHEAD POWER LINES THAT INTERFERE WITH THE REQUIRED IMPROVEMENTS AS SHOWN ON THE PLANS.

7 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF ALL LAS VEGAS VALLEY WATER DISTRICT FACILITIES AND CLARK COUNTY SANITATION DISTRICT MANHOLES AS INDICATED ON THE PLANS OR IN THE SPECIAL PROVISIONS UNLESS OTHERWISE INDICATED.

8 THE CONTRACTOR SHALL NOT REMOVE TREES, SHRUBS, LAWNS, WALLS, FENCES, SIGNS, STRUCTURE, LIGHTS OR ANY OTHER IMPROVEMENTS OUTSIDE THE RIGHT-OF-WAY EXCEPT WHERE REQUIRED TO DO SO BY THE CONTRACT DRAWINGS OR AS DIRECTED BY THE ENGINEER.

9 EXACT LOCATIONS OF ALL SAWCUT LINES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER. THOSE SAWCUTS THAT ARE LONGITUDINAL TO THE ROADWAY MAY BE WHEEL CUT WITH EQUIPMENT AS APPROVED BY THE ENGINEER. ALL OTHER SAWCUTS SHALL BE MADE BY A ROTARY SAW.

10 FINISH GRADE SHOWN REFERS TO TOP OF DENSE GRADE FROM STA 27+75± TO STA 88+33.02, AND TOP OF OPEN GRADE FROM STA 88+33.02 TO STA 141+14.4±.

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 - 1986 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 CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING 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 STREETLIGHT 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. AND SHALL NOT BE PAINTED.

9 ALL STREET LIGHTING INSTALLATIONS EXCEPT AS NOTED ON THE STREET LIGHTING PLANS SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, LATEST EDITION.

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-INDUCT 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 "LED" 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 STREETLIGHTS 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 ON WHICH THE GALVANIZING HAS 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.

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE
AGG	AGGREGATE
BC	BACK OF CURB
CC	CLARK COUNTY
C&G	CURB AND GUTTER
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
COMM DWY	COMMERCIAL DRIVEWAY
CONC	CONCRETE
CONST	CONSTRUCTION OR CONSTRUCT
DI	DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DWG	DRAWING
DWY	DRIVEWAY
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FG	FINISHED GRADE
FL	FLOW LINE
GB	GRADE BREAK
HPS	HIGH PRESSURE SODIUM
INV	INVERT
LF	LINEAR FEET
LT	LEFT
MAT'L	MATERIAL
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
No	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
PE	PATENT EASEMENT
PVMT	PAVEMENT
PBS	PLANTMIX BITUMINOUS SURFACE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PT	POINT OF TANGENCY
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RP	RADIUS POINT
RT	RIGHT
R/W	RIGHT OF WAY
SD	STORM DRAIN
STD	STANDARD
SW	SIDEWALK
TC	TOP OF CURB
TRANS	TRANSITION
(TYP)	TYPICAL
USD	UNIFORM STANDARD DRAWING
UTACS	ULTRA THIN ASPHALT CONCRETE SURFACE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VG	VALLEY GUTTER
VPI	VERTICAL POINT OF INTERSECTION
VPC	VERTICAL POINT OF CURVE
VPT	VERTICAL POINT OF TANGENCY

LEGEND

REMOVAL ITEM, CONSTRUCTION ITEM, TRAFFIC ITEM

EXISTING/PROPOSED CONDUIT RUN NUMBER

CENTERLINE W/STATION

RIGHT-OF-WAY LINE

PROPERTY LINE

PATENT EASEMENT LINE

CONSTRUCTION EASEMENT LINE

LIMITS OF TYPICAL CROSS SECTION

GRADING DAYLIGHT LINE

FUTURE CONSTRUCTION

EXISTING/PROPOSED STREETLIGHT

EXISTING/PROPOSED/FUTURE DROP INLET

EXISTING/PROPOSED CURB & GUTTER

EXISTING/PROPOSED UNDERGROUND UTILITY SHOWN AT WIDTH WHEN > 12"

EXISTING/PROPOSED/ADJUST MANHOLE

EXISTING/PROPOSED/ADJUST PULLBOX

EXISTING/PROPOSED/ADJUST WATER OR GAS VALVE

EXISTING/PROPOSED EDGE OF PAVEMENT

EXISTING/PROPOSED DRIVEWAY

EXISTING BLOCKWALL/FENCE

(99.32)/99.32 EXISTING/PROPOSED ELEVATION

CURVE DATA NOTATION

EXISTING TELEPHONE AND/OR POWER POLE

EXISTING/PROPOSED FIRE HYDRANT

EXISTING/PROPOSED SERVICE PEDESTAL

PAVEMENT TRANSITION

EXISTING MAILBOX

BENCHMARK

POTHOLE NUMBER

EXISTING/ADJUST WATER METER

SAWCUT LINE

EXISTING/PROPOSED 1-1/4" PVC STREETLIGHT CONDUIT

EXISTING/PROPOSED CONTROLLER CABINET

EXISTING/PROPOSED SIDEWALK RAMP

COLD PLANE AREA

BASIS OF BEARING

THE EAST LINE OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 35, T21S, R60E, AS SHOWN ON A RECORD OF SURVEY IN FILE 109 PAGE 86, OF SURVEYS, CLARK COUNTY, NV, OFFICIAL RECORDS SAID EAST LINE ALSO BEING THE CENTERLINE OF REDWOOD STREET FROM SUNSET RD TO POST RD

SAID LINE BEARS: N 1°33'50" W

BENCHMARKS

BLM BRASS CAP - CENTERLINE INTERSECTION OF MAULE AVENUE AND JONES BOULEVARD, SHOWN AS CONTROL POINT #39 IN BOOK 1 L 98, PAGE 45, OFFICE OF THE COUNTY SURVEYOR, CLARK COUNTY, NEVADA
ELEVATION = 2,407.730 FT

HUB & TACK IN 2" IRON PIPE - CENTERLINE INTERSECTION OF OQUENDO ROAD AND JONES BOULEVARD, SHOWN AS CONTROL POINT #19 IN BOOK 1 L 98, PAGE 44, OFFICE OF THE COUNTY SURVEYOR, CLARK COUNTY, NEVADA, (SHOT TAKEN ON NORTH RIM OF PIPE)
ELEVATION = 2,352.882 FT

1/2" REBAR - CENTERLINE INTERSECTION OF RUSSELL ROAD AND JONES BOULEVARD, SHOWN AS CONTROL POINT #16 IN BOOK 1 L 98, PAGE 44, OFFICE OF THE COUNTY SURVEYOR, CLARK COUNTY, NEVADA
ELEVATION = 2,341.977 FT

2" BRASS CAP - CENTERLINE INTERSECTION OF HACIENDA AVENUE AND JONES BOULEVARD, SHOWN AS CONTROL POINT #8 IN BOOK 1 L 98, PAGE 44, OFFICE OF THE COUNTY SURVEYOR, CLARK COUNTY, NEVADA
ELEVATION = 2,320.967 FT

CONSTRUCTION NOTES

1 CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2 CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT, SEAL COAT
3 GRADE VERTICAL TRANSITION TO EXISTING 32' WIDE x 4" DEEP TYPE II AT 95% MAX REL DENSITY W/ 6:1 SHOULDER, NATIVE MATERIAL, TO EXIST
4 CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216.
5 CONSTRUCT 5' SIDEWALK PER STD DWG 234.
6 CONSTRUCT SIDEWALK RAMP PER STD DWG 235 (CASE I)
7 CONSTRUCT SIDEWALK RAMP PER STD DWG 235 IN EXIST SIDEWALK (CASE I)
8 CONSTRUCT 2" PBS OVER 8" TYPE II BASE W/ PRIME COAT
9 CONSTRUCT VALLEY GUTTER PER STD DWG 226
10 CONSTRUCT COMMERCIAL DRIVEWAY (OPTION B) PER STD DWG 225
11 CONSTRUCT COMMERCIAL DRIVEWAY (OPTION A) PER STD DWG 224
12 VERTICALLY ADJUST 1" WATER METER PER UDACS PLATE 1D
13 VERTICALLY ADJUST FIRE HYDRANT PER UDACS PLATE 7
14 CONSTRUCT TACK-ON MEDIAN ISLAND PER STD DWG 220
15 ADJUST END OF LINE BLOW-OFF ASSEMBLY PER UDACS PLATE NO 4

CONSTRUCTION ITEMS
PAVEMENT MARKINGS, TRAFFIC SIGNS, AND STREET LIGHTING

1 TYPE 4 LANE LINE PER STD DWG 244A.1
2 TYPE 1 CENTERLINE PER STD DWG 244
3 TYPE 2 CENTERLINE PER STD DWG 244
4 4" WHITE PAINT LINE
5 8" WHITE PAINT LINE
6 STORAGE LANE LINE PER STD DWG 246
7 24" WHITE STOP LINE (COLD POLYMER FILM TYPE I)
8 WHITE PAVEMENT ARROW (COLD POLYMER FILM TYPE I) PER DETAIL ON SHEET 45
9 WHITE PAVEMENT "ONLY" (COLD POLYMER FILM TYPE I) PER DETAIL ON SHEET 45
10 WHITE 24" LONGITUDINAL CROSSWALK LINES. LONGITUDINAL LINES SHALL ALIGN W/ LANE LINES AND CENTER OF LANES (COLD POLYMER FILM TYPE I) PER DETAIL ON SHEET 45.
11 YELLOW COLD POLYMER FILM TYPE I (MISC) PER STD DWG 245 (2 OF 3)
12 24" YELLOW DIAGONAL MARKINGS AT 25 OC (COLD POLYMER FILM TYPE I) PER STD DWG 245 (2 OF 3)
13 INSTALL POLE MOUNTED SIGN
14 INSTALL GROUND MOUNTED SIGN
15 REMOVE GROUND MOUNTED SIGN AND ANCHOR, PATCH CONCRETE (IF APPLICABLE)
16 REMOVE SIGN PANEL
17 RELOCATE GROUND MOUNTED SIGN
18 RELOCATE GROUND MOUNTED SIGN TO POLE MOUNT
19 1-1/4" CONDUIT W/ (2) #4, (1) #6 GND. THW COPPER WIRE
20 1-1/4" CONDUIT ONLY
21 INSTALL NO 3-1/2 PULL BOX PER STD DWG 326
22 STUB CONDUIT 5' AND CAP
23 INSTALL 250 HPS STREETLIGHT ~~W/5' LONG MAST ARM~~ PER STD DWG 3/4
24 INSTALL XX-A POLE WITH TYPE "L" FOUNDATION, PER STD DWGS 404.407 & 404.209, W/ (2) 400W HPS STREETLIGHTS, CONDUIT, AND WIRING (BID ITEM UNDER "TRAFFIC SIGNAL UNDERGROUND")
25 INSTALL (2) 3" INTERCONNECT CONDUIT W/1 #8 GREEN THW COPPER DETECTION WIRE
26 INSTALL NO 7 INTERCONNECT PULLBOX PER STD DWG 326 AND DETAIL ON SHEET 44
27 INSTALL NO 5 PULL BOX PER STD DWG 326
28 RELOCATE POLE MOUNTED SIGN PANEL
29 DROP LINE PATTERN PER STD DWG 246A
30 ADD NEW SIGN PANEL TO GROUND MOUNTED SIGN
31 REMOVE & REPLACE 24" YELLOW DIAGONAL MARKINGS (COLD POLYMER FILM TYPE I)
32 WHITE PAVEMENT "MERGING" ARROW (COLD POLYMER FILM TYPE I)
33 MEDIAN NOSE MARKINGS PER DETAIL ON SHEET 45

L1616PLAN2B1.DWG

REV No	DATE	DESCRIPTION	APPROVED
3	11-15-01	ADD BID ITEM	
2	11-15-01	DELETE BID ITEM	
1	11-15-01	REVISE NOTE OR BID ITEM	

CLARK COUNTY NEVADA

JONES BOULEVARD

QUANTITIES, BENCHMARK, GENERAL AND CONSTRUCTION NOTES, BASIS OF BEARING, LEGEND, TYPICAL SECTION AND ABBREVIATIONS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PAUL H. JUDD — PROFESSIONAL ENGINEER-STATE OF NEVADA — No. 7947 — CIVIL — 12-14-01

DESIGNED BY:	Ed, JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 17, 2001 - 1:30pm

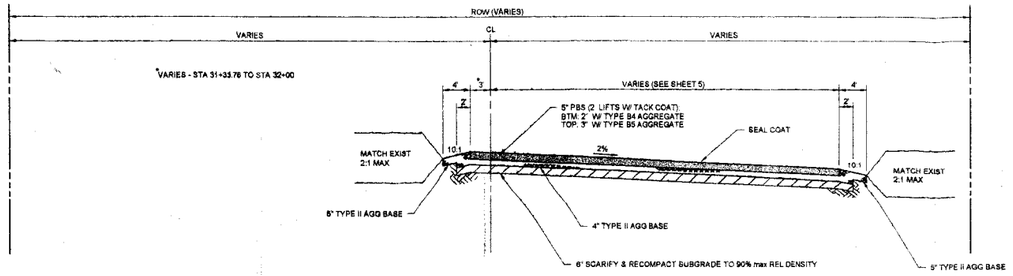
SCALE	
HORIZ:	N/A
VERT:	N/A
FIELD BOOK	NONE

SHEET No 2

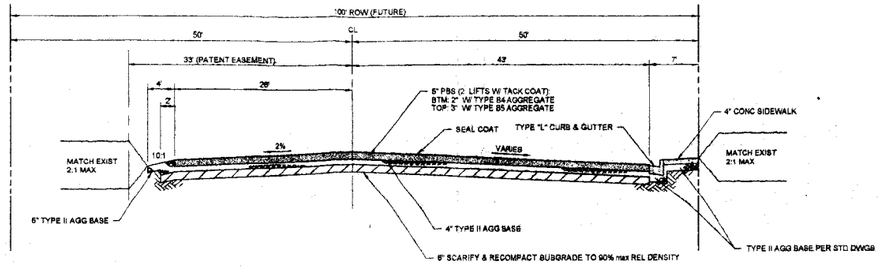
R99110A

L-1616

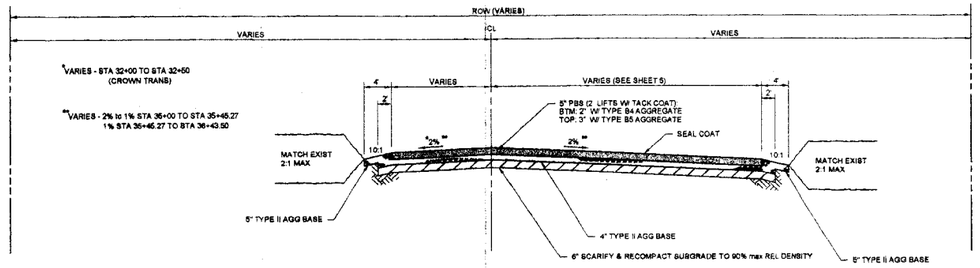
JONES BOULEVARD FROM SOUTHERN BELTWAY TO TROPICANA AVENUE



JONES BOULEVARD
STA 27+75± TO STA 32+00±
LOOKING NORTH

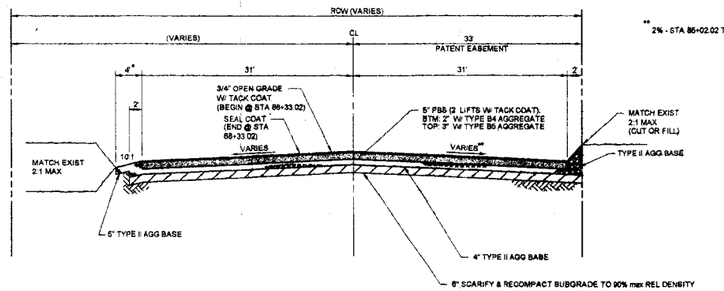


JONES BOULEVARD
STA 62+33.92 TO STA 65+63.92
LOOKING NORTH



JONES BOULEVARD
STA 32+00± TO STA 36+43.50
LOOKING NORTH

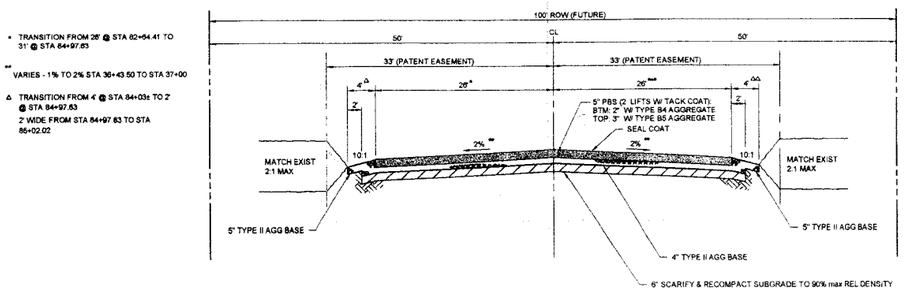
* 2' WIDE FROM STA 86+02.02 TO STA 85+46.57



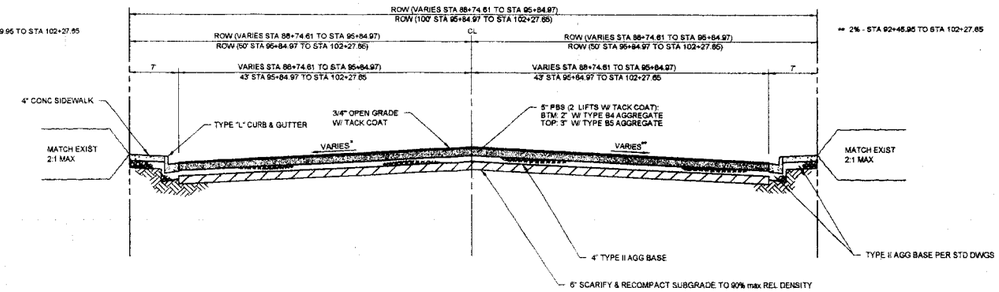
** 2% - STA 86+02.02 TO STA 86+80.38

JONES BOULEVARD
STA 85+02.02 TO STA 88+74.61
LOOKING NORTH

WELLS CARGO, INC.
RECORD
Project No. 5039-01
Date 11/14/02
Project Manager mf Lutz



JONES BOULEVARD
STA 36+43.50 TO STA 62+33.92
STA 65+63.92 TO STA 85+02.02
LOOKING NORTH



JONES BOULEVARD
STA 88+74.61 TO STA 102+27.65
LOOKING NORTH

L1616\PLANS\1616CS01.DWG

REV. NO.	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

TYPICAL PAVEMENT SECTIONS

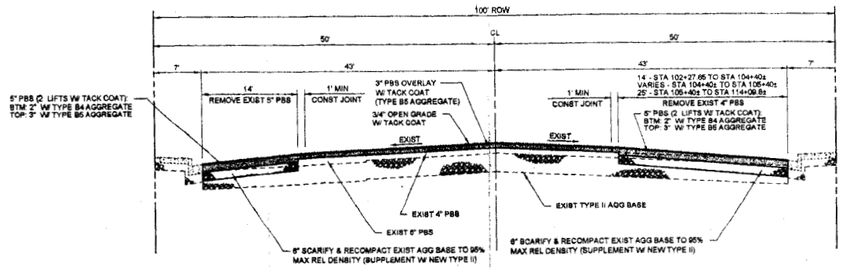
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

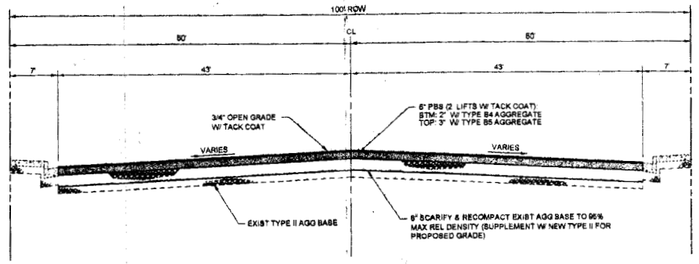
DESIGNED BY:	JAG, ed
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:10am

SCALE	
HORIZ:	NONE
VERT:	NONE
FIELD BOOK	60-21-30
	R99110A
	L-1616
SHEET No	3

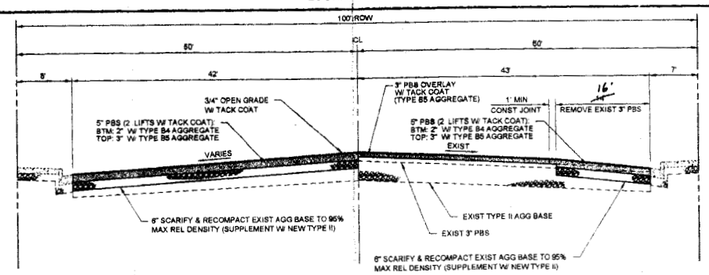
JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE



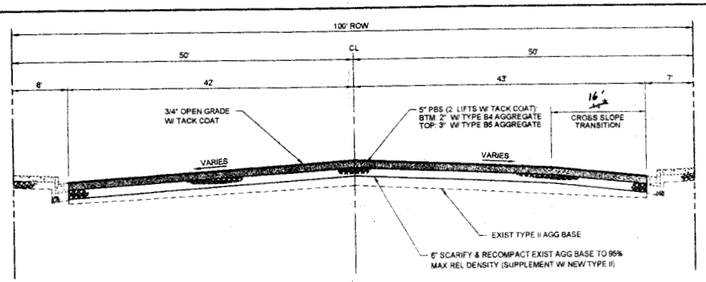
JONES BOULEVARD
STA 102+27.65 TO STA 114+09.8±
LOOKING NORTH



JONES BOULEVARD
STA 114+09.8± TO STA 116+09.8±
LOOKING NORTH

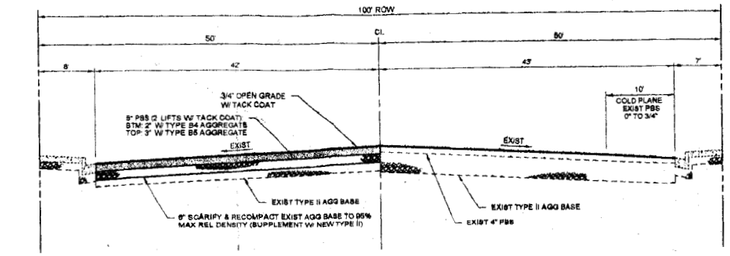


JONES BOULEVARD
STA 116+09.8± TO STA 138+00±
LOOKING NORTH

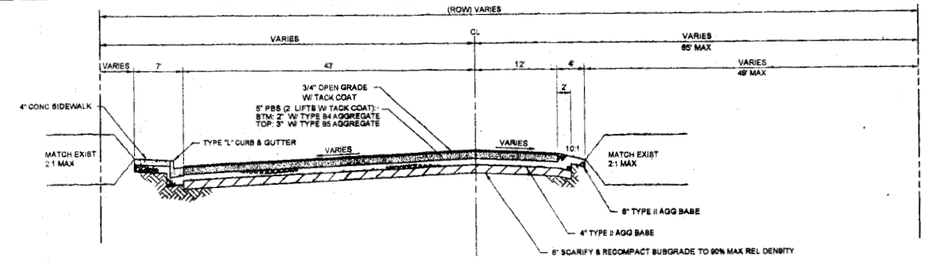


*VARIES 16' @ STA 138+00± TO 10' @ STA 139+13±

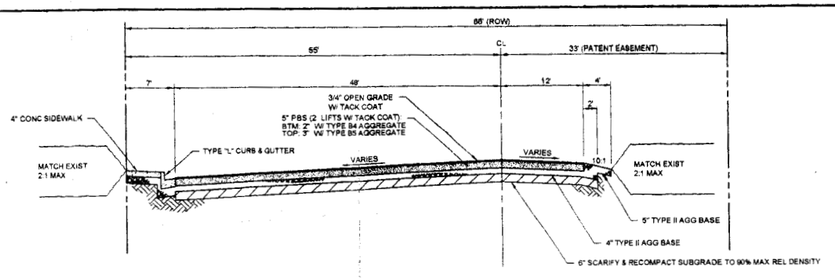
JONES BOULEVARD
STA 138+00± TO STA 139+13±
LOOKING NORTH



JONES BOULEVARD
STA 139+13± TO STA 141+14.4±
LOOKING NORTH



RUSSELL ROAD
STA 58+44.50 TO STA 61+65.36
LOOKING EAST



RUSSELL ROAD
STA 61+65.36 TO STA 64+89.61
LOOKING EAST

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

L1616\PLANS\1616C502.DWG

REV. NO.	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

TYPICAL PAVEMENT SECTIONS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
12-16-01

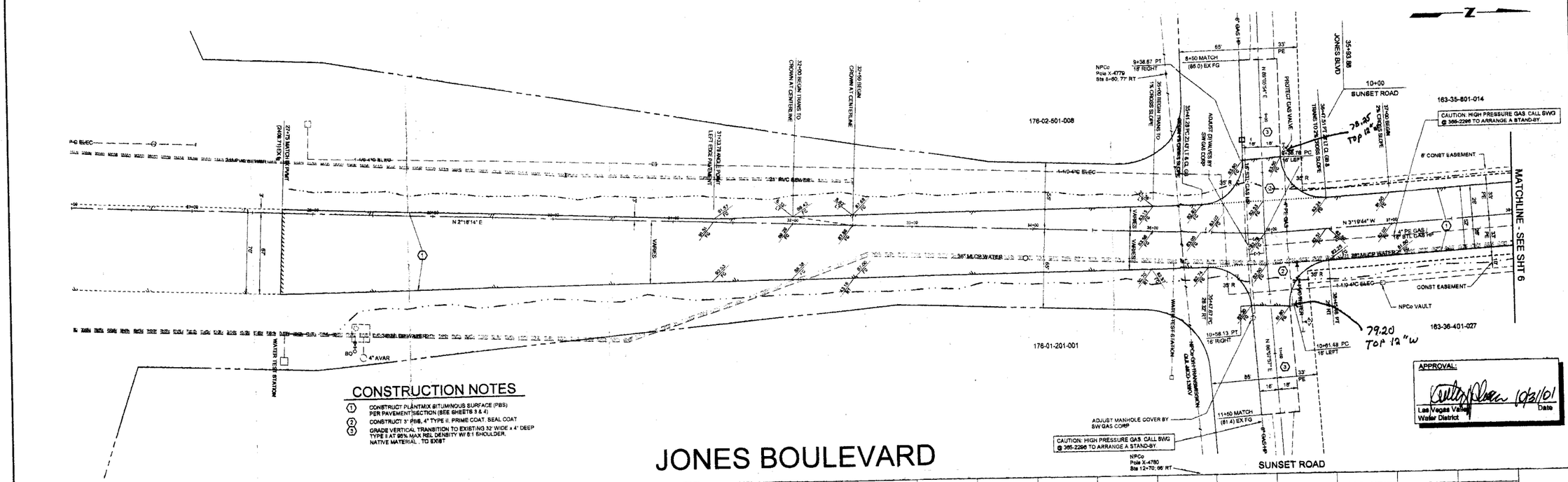
DESIGNED BY:	JAG, ed
DRAWN BY:	JAG, ed
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:13am

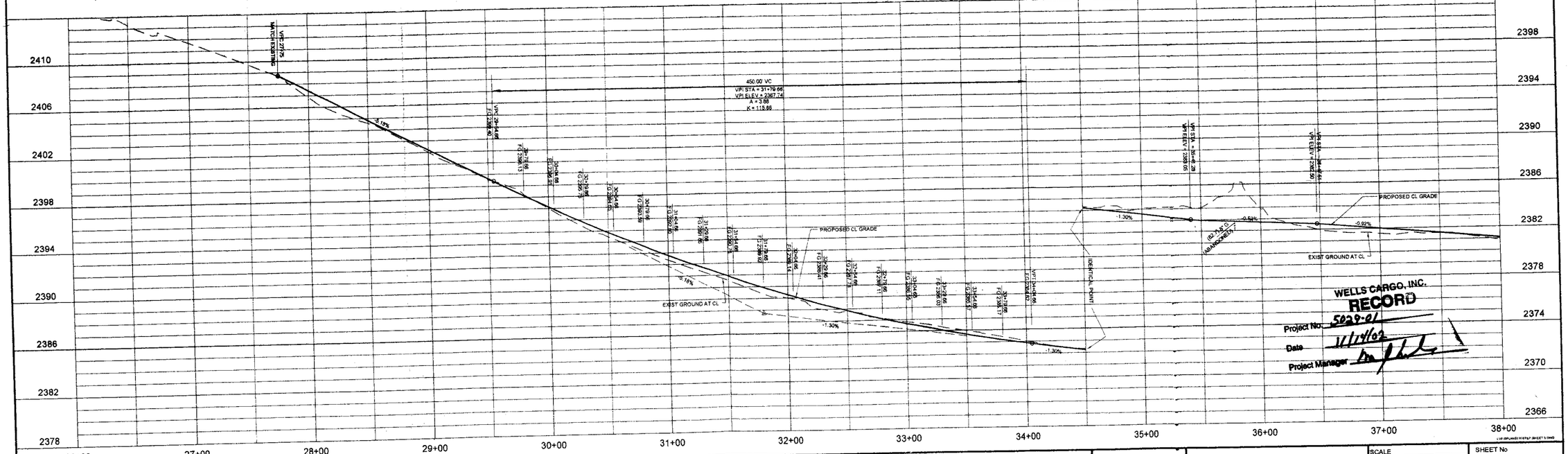
SCALE	
HORIZ:	NONE
VERT:	NONE
FIELD BOOK	60-21-30

SHEET No. 4

R99110A

L-1616





JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE

STA 27+75 - STA 38+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

REV No	DATE	DESCRIPTION	APPROVED

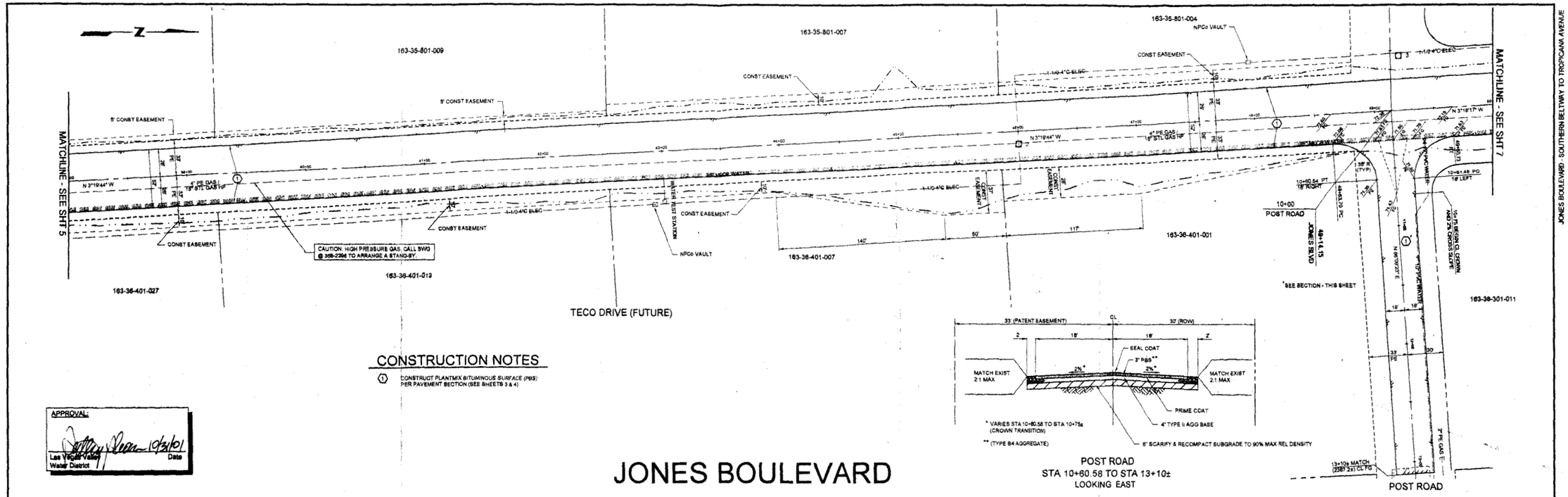
DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 12, 2001 - 3:06pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 5

R99110A

L-1616



CONSTRUCTION NOTES

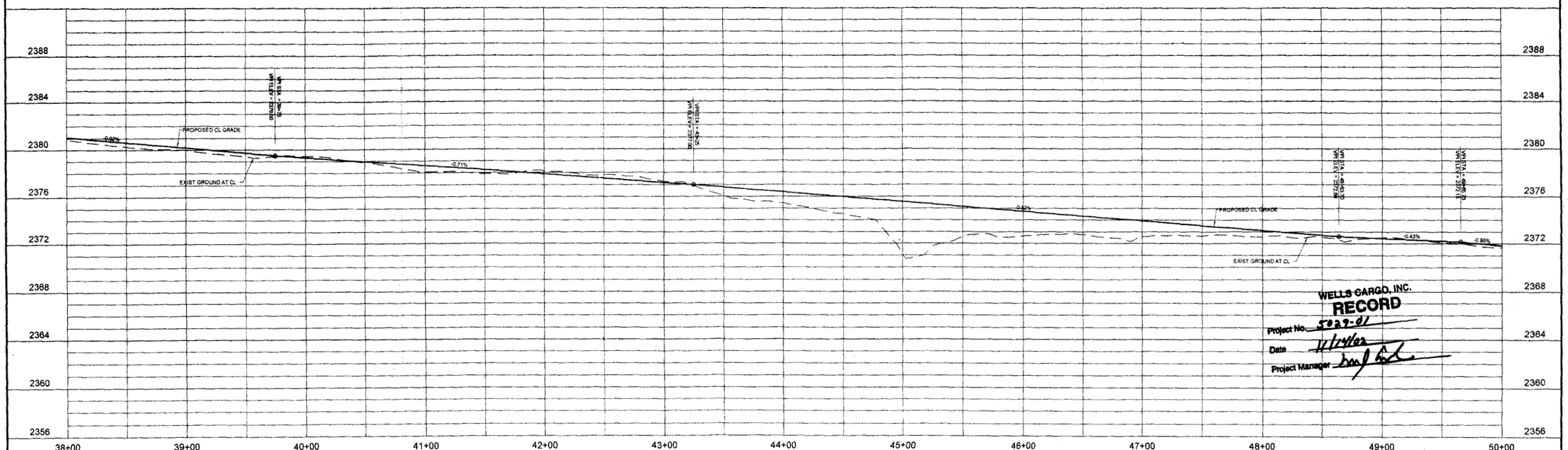
(1) CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)

APPROVAL:

Las Vegas Valley Water District — Date 10/31/01

POST ROAD
STA 10+60.58 TO STA 13+10±
LOOKING EAST

JONES BOULEVARD



WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE
STA 38+00 - STA 50+00
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
CIVIL
10-16-01

DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:17am

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

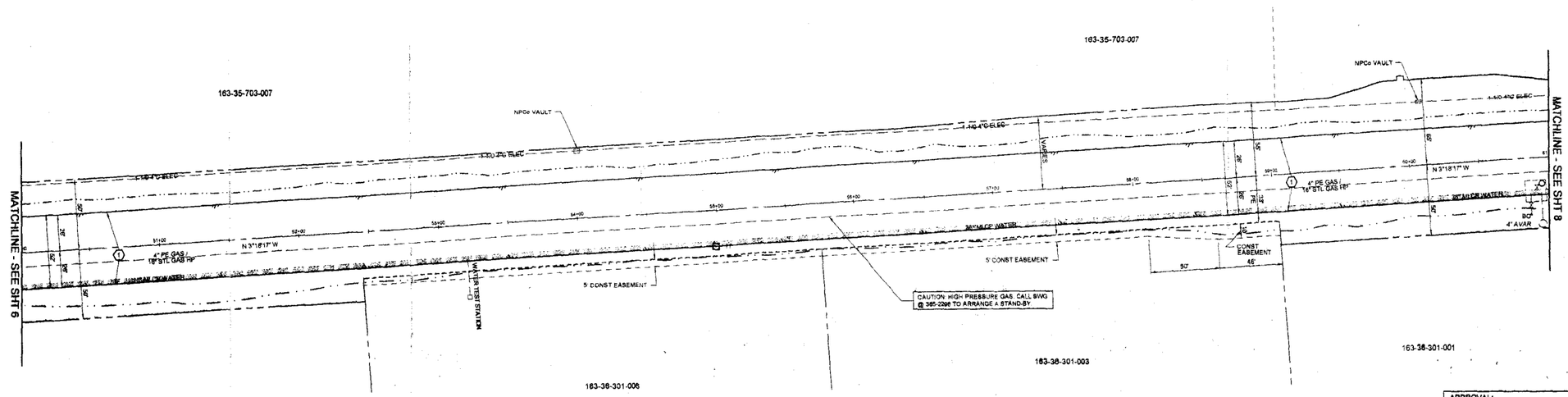
SHEET No 6

R99110A

L-1616

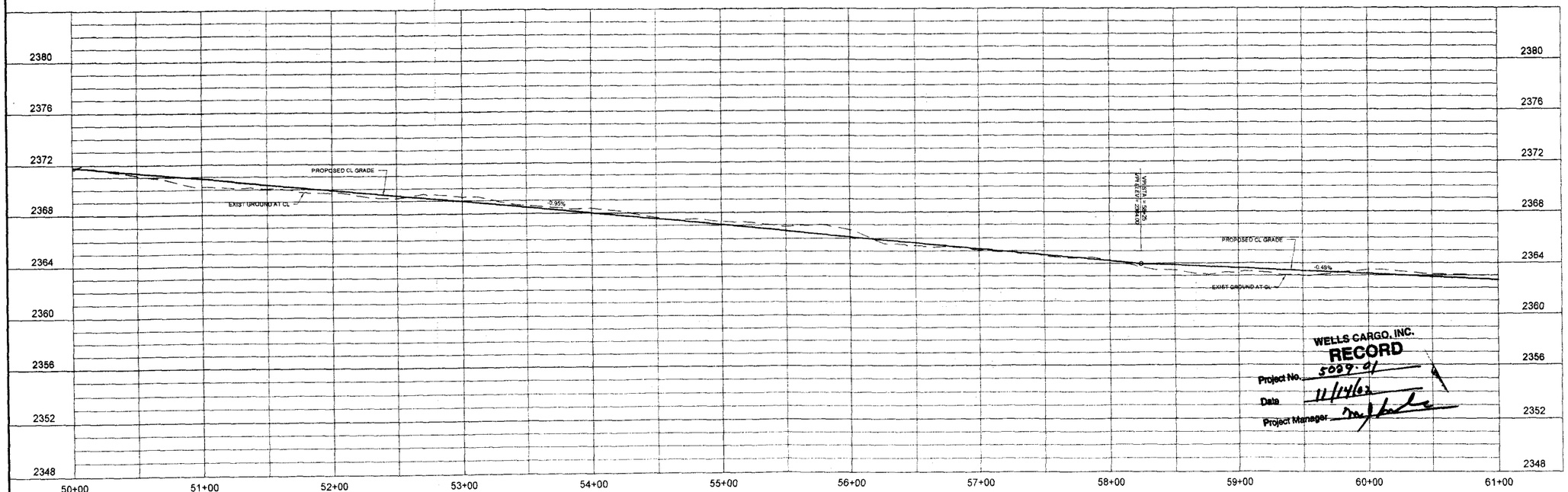
CONSTRUCTION NOTES

① CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)



JONES BOULEVARD

APPROVAL:
Las Vegas Valley Water District — Date 10/30/01



WELLS CARGO, INC.
RECORD
Project No. 5059-01
Date 11/14/01
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE
STA 50+00 - STA 61+00
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER, STATE OF NEVADA — PAUL H. JUDD — CIVIL — No. 7942 — 10-16-01

DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 12, 2001 - 2:14pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

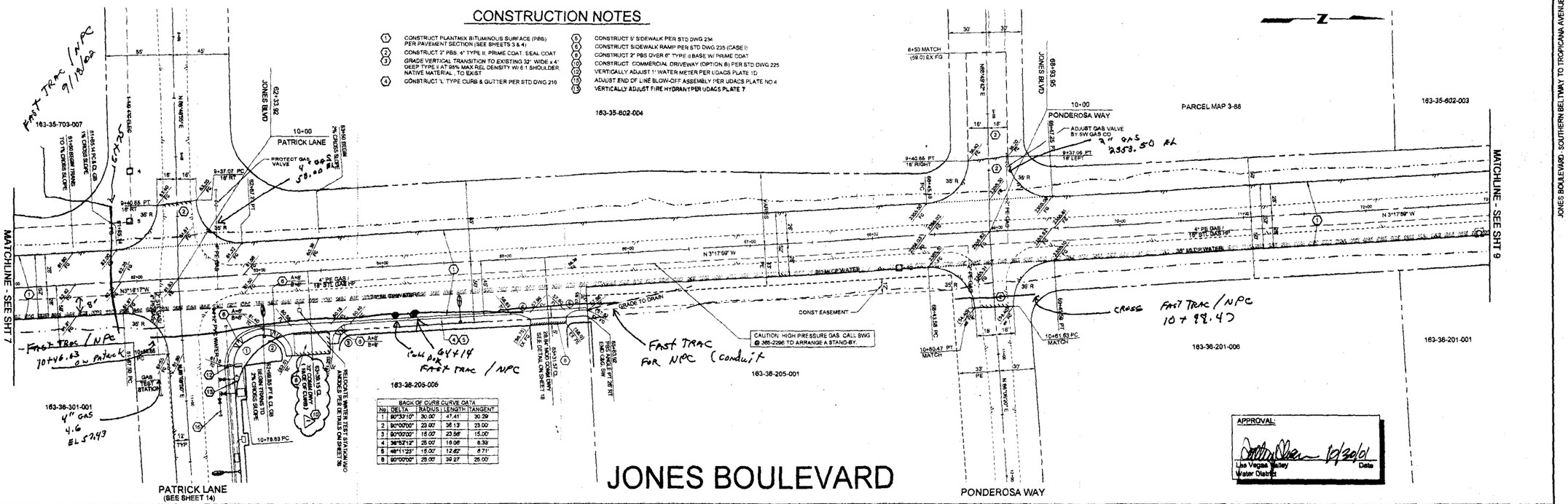
SHEET No 7

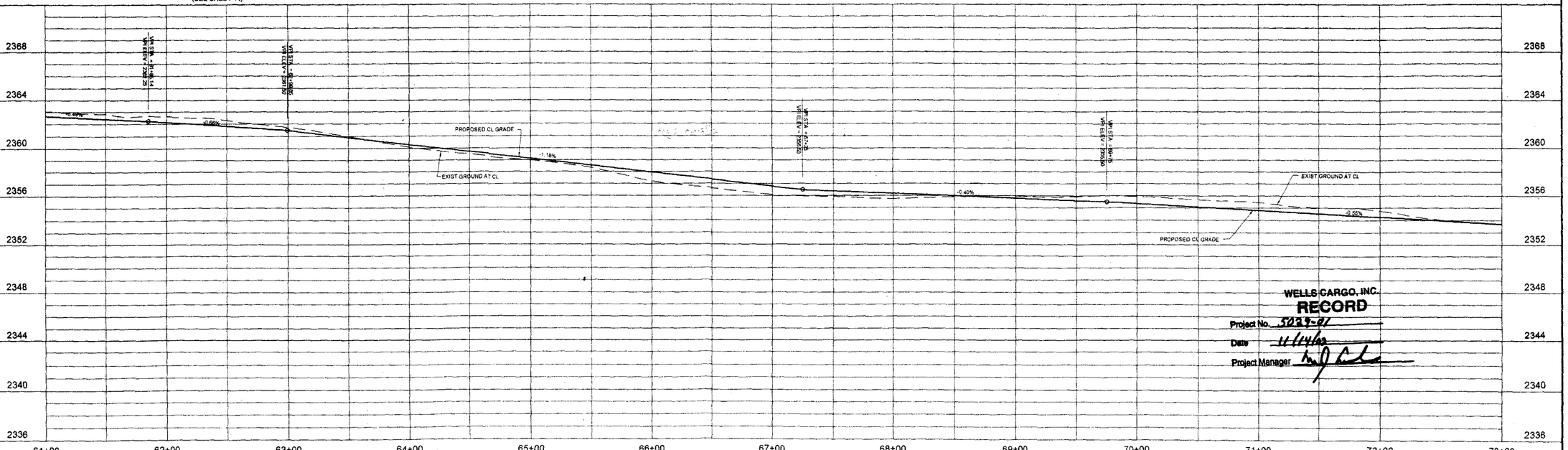
R99110A

L-1616

CONSTRUCTION NOTES

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT, SEAL COAT
3. GRADE VERTICAL TRANSITION TO EXISTING 32' WIDE x 4' DEEP TYPE II AT 95% MAX REL DENSITY W/ 6:1 SHOULDER NATIVE MATERIAL, TO EXIST
4. CONSTRUCT ½ TYPE CURB & GUTTER PER STD DWG 216
5. CONSTRUCT 5' SIDEWALK PER STD DWG 234
6. CONSTRUCT SIDEWALK RAMP PER STD DWG 235 (CASE I)
7. CONSTRUCT 2" PBS OVER 6" TYPE II BASE W/ PRIME COAT
8. CONSTRUCT COMMERCIAL DRIVEWAY (OPTION B) PER STD DWG 225
9. VERTICALLY ADJUST 1" WATER METER PER UDACS PLATE 1D
10. ADJUST END OF LINE BLOW-OFF ASSEMBLY PER UDACS PLATE NO 4
11. VERTICALLY ADJUST FIRE HYDRANT PER UDACS PLATE 7





APPROVAL:
Las Vegas Valley Water District
10/30/01

WELLS CARGO, INC.
RECORD
Project No. 5027-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
1	11-15-01	DWY DIMENSION FROM FACE OF CURB TO FACE OF CURB	RWM

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE

STA 61+00 - STA 73+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 12, 2001 - 2:20pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

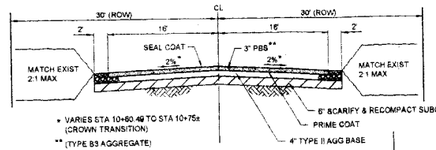
SHEET No 8

R99110A

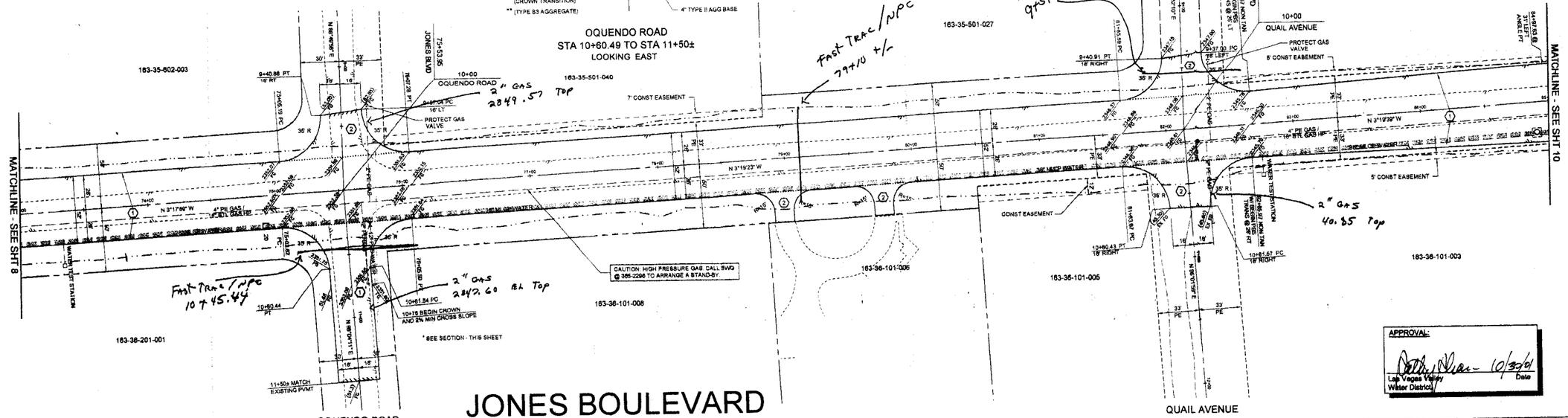
L-1616

CONSTRUCTION NOTES

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT, SEAL COAT
3. GRADE VERTICAL TRANSITION TO EXISTING 32' WIDE x 4" DEEP TYPE II AT 95% MAX REL DENSITY W/ 8:1 SHOULDER, NATIVE MATERIAL , TO EXIST

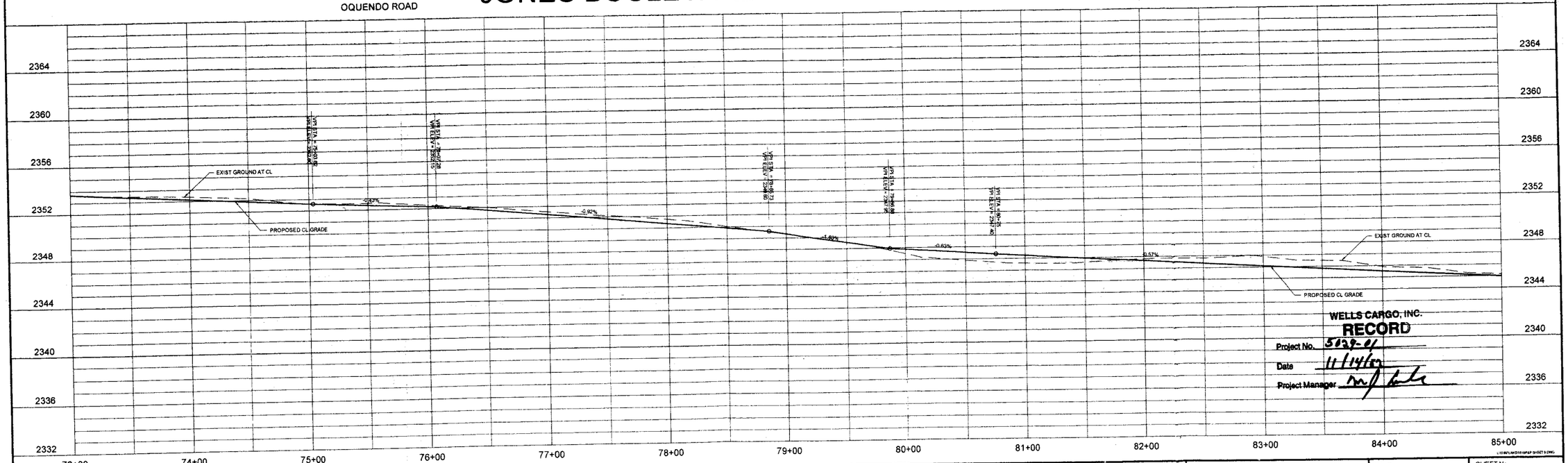


OQUENDO ROAD
STA 10+60.49 TO STA 11+50±
LOOKING EAST



JONES BOULEVARD

APPROVAL:
Las Vegas Valley Water District — Date 10/30/01



WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/01
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE
STA 73+00 - STA 85+00
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
CIVIL
10-16-01

DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:19am

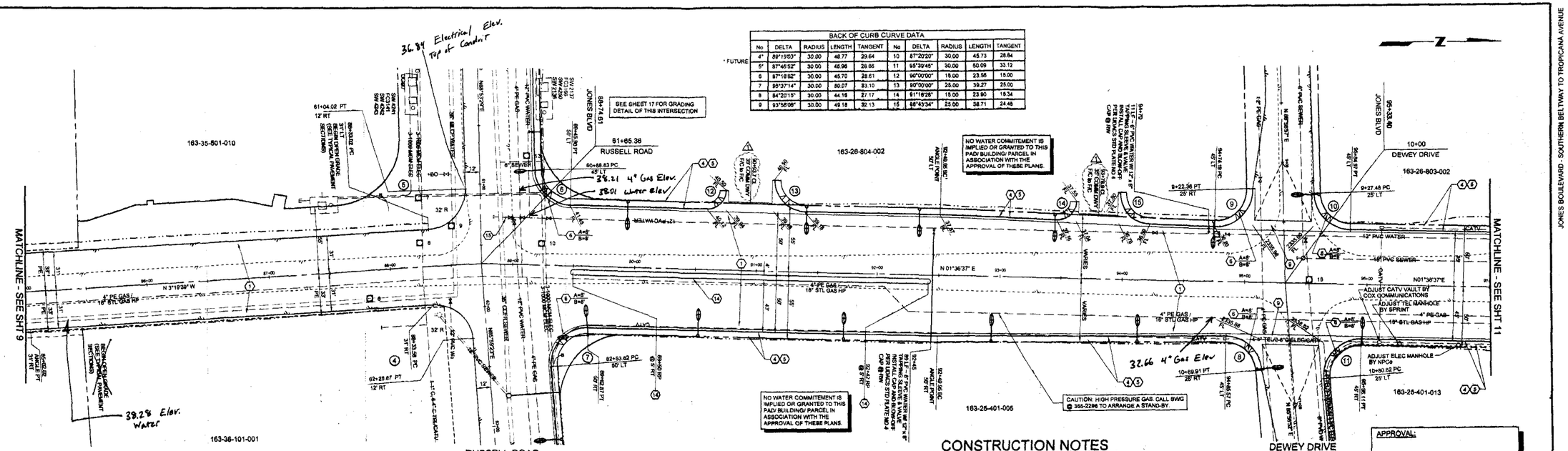
SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 9

R99110A

L-1616

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE



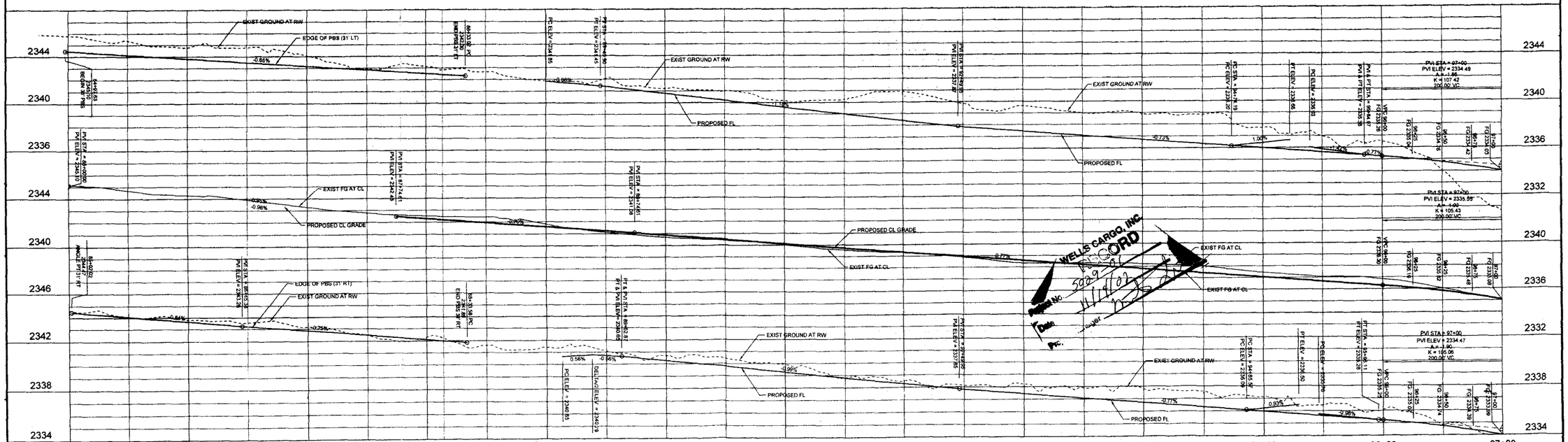
BACK OF CURB CURVE DATA									
No	DELTA	RADIUS	LENGTH	TANGENT	No	DELTA	RADIUS	LENGTH	TANGENT
4	89°19'03"	30.00	46.77	29.64	10	87°20'20"	30.00	45.73	28.84
5	87°46'52"	30.00	46.96	29.86	11	95°39'45"	30.00	50.09	33.12
6	87°16'52"	30.00	45.70	28.61	12	90°00'00"	18.00	23.56	15.00
7	98°37'14"	30.00	50.07	33.10	13	90°00'00"	28.00	39.27	25.00
8	84°20'15"	30.00	44.16	27.17	14	91°18'29"	18.00	23.90	16.34
9	93°56'06"	30.00	49.18	32.13	15	98°43'34"	25.00	38.71	24.48

* FUTURE

CONSTRUCTION NOTES

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216.
3. CONSTRUCT 5' SIDEWALK PER STD DWG 234.
4. CONSTRUCT SIDEWALK RAMP PER STD DWG 235 (CASE I)
5. CONSTRUCT VALLEY GUTTER PER STD DWG 226
6. ADJUST END OF LINE BLOW-OFF ASSEMBLY PER UDACS PLATE NO 4

JONES BOULEVARD



REV No	DATE	DESCRIPTION	
1	11 JUL 02	ADD COMM DWYS AT 90+93.7 & 93+78.9	J GLICK APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE

STA 85+00 - STA 97+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA — PAUL H. JUDD — CIVIL — No. 7942

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Jul 18, 2002 - 11:05am

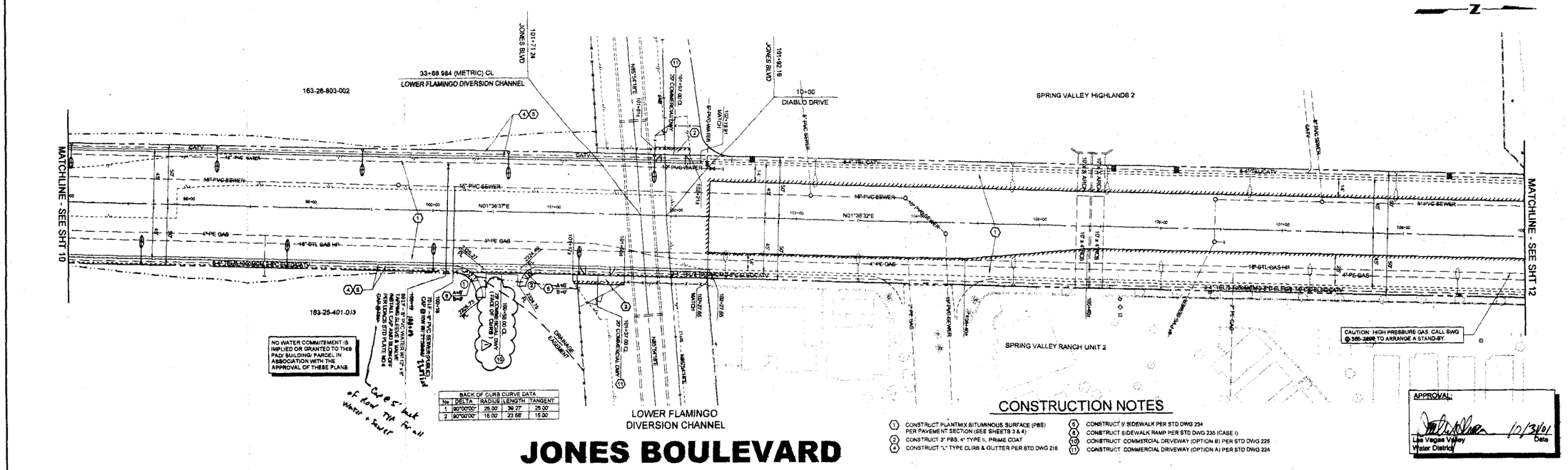
SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 10

R99110A

L-1616

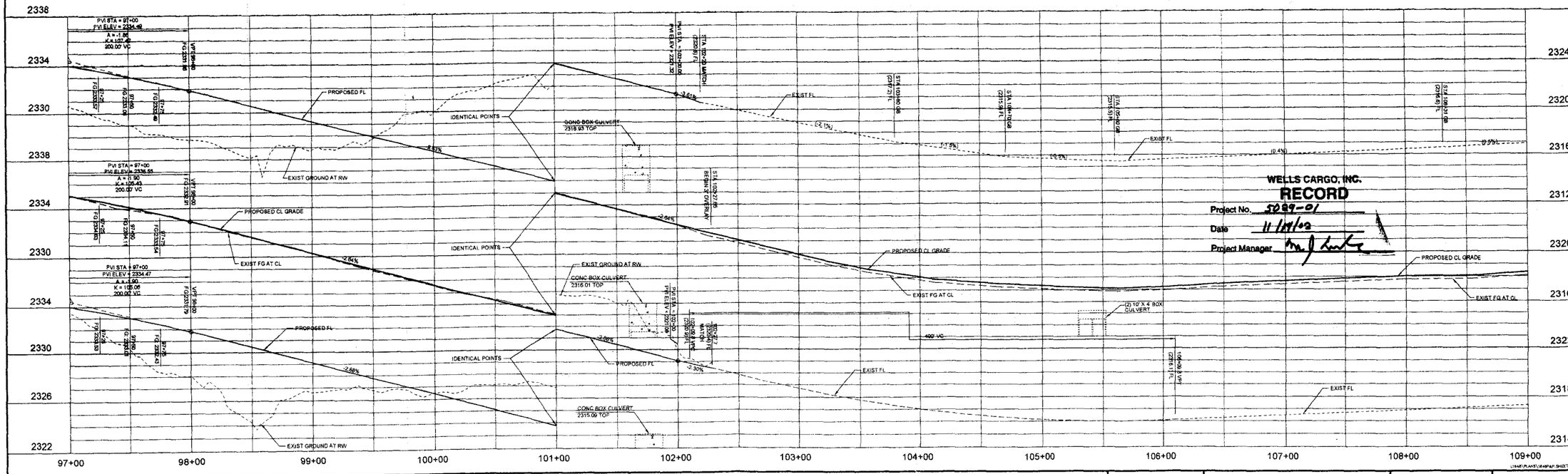
L:\648\PLANS\1648P4P SHEET 10.DWG



JONES BOULEVARD

CONSTRUCTION NOTES

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT
4. CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216
5. CONSTRUCT 5' SIDEWALK PER STD DWG 234
6. CONSTRUCT SIDEWALK RAMP PER STD DWG 235 (CASE I)
10. CONSTRUCT COMMERCIAL DRIVEWAY (OPTION B) PER STD DWG 225
11. CONSTRUCT COMMERCIAL DRIVEWAY (OPTION A) PER STD DWG 224



WELLS CARGO, INC.
RECORD
Project No. 5099-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
1	11-15-01	DRIVEWAY DIMENSION FROM FACE OF CURB TO FACE OF CURB	RWM

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE

STA 97+00 - STA 109+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA PAUL H. JUDD CIVIL No. 7942 10-16-01

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 10:14am

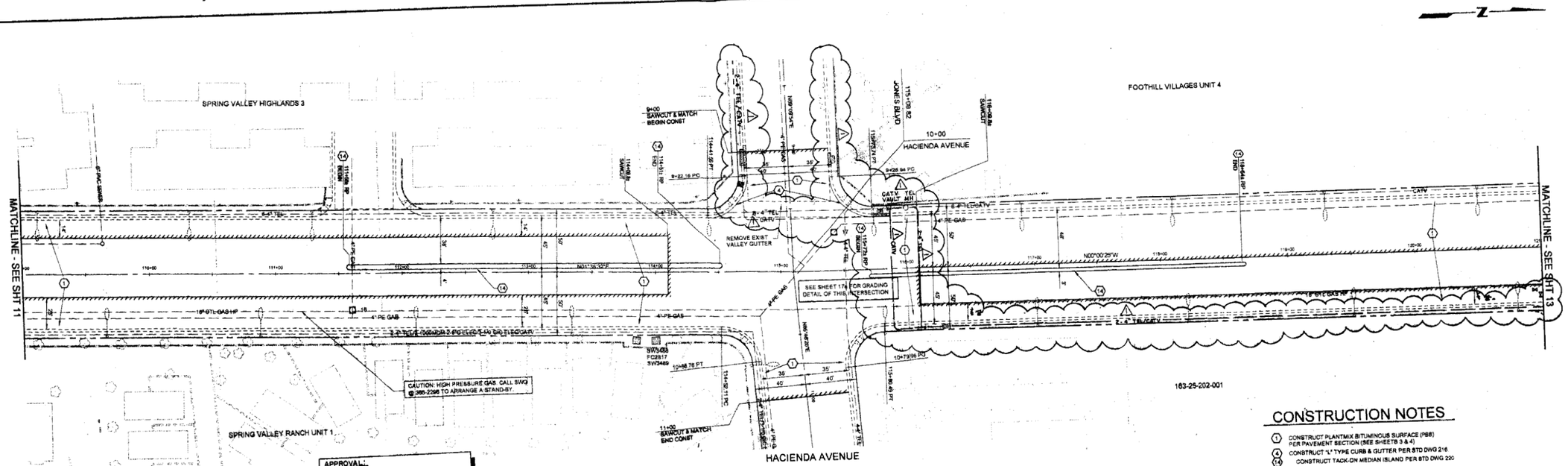
SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 11

R99110A

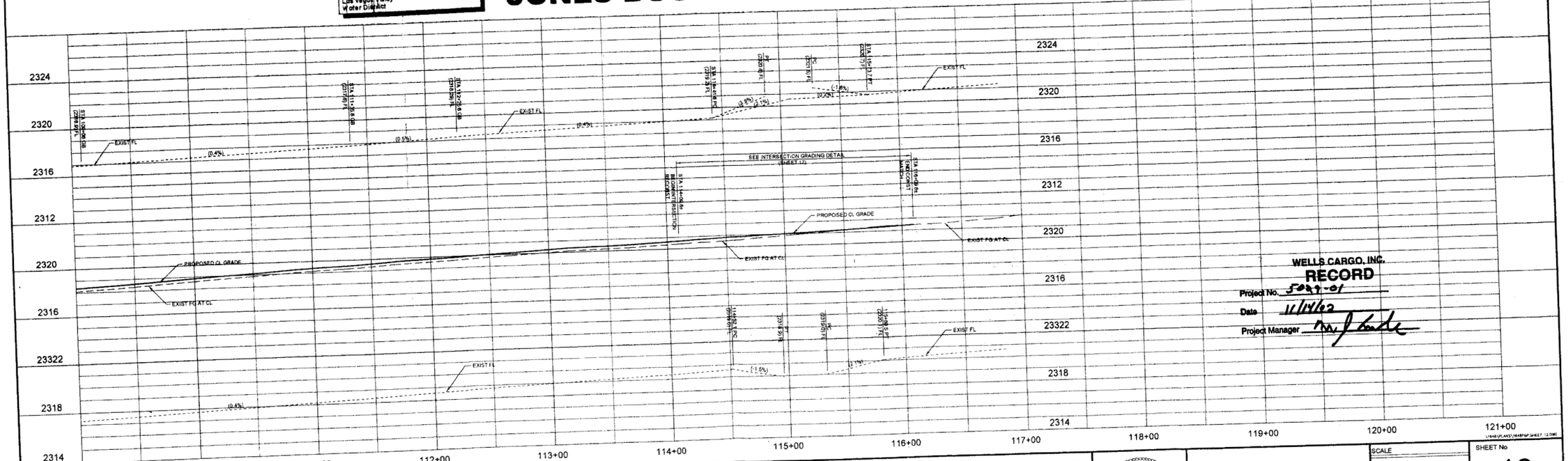
L-1616

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE



APPROVAL:
Las Vegas Valley Water District
10/30/01 Date

JONES BOULEVARD



WELLS CARGO, INC.
RECORD
Project No. 5099-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
1	11-07-01	REVISE TEL/CATV AT JONES/HACIENDA INTERSECTION	RWM

CLARK COUNTY NEVADA

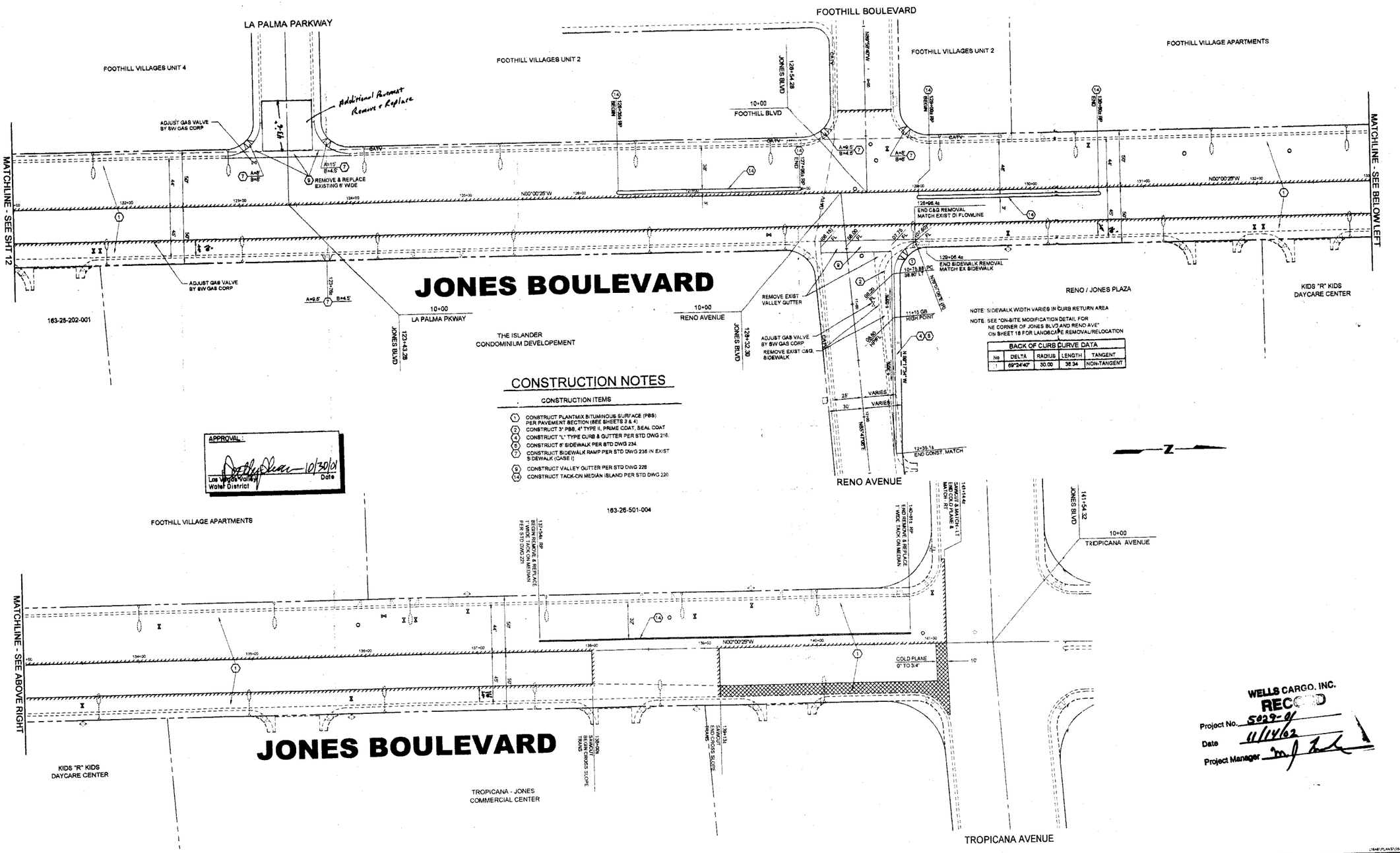
JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE
PLAN & PROFILE
STA 109+00 - STA 121+00
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD CIVIL No. 7942
10-12-01

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 12, 2001 - 1:30pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 12
R99110A
L-1616



BACK OF CURB CURVE DATA				
No	DELTA	RADIUS	LENGTH	TANGENT
1	69°24'40"	30.00	36.34	NON-TANGENT

CONSTRUCTION NOTES

CONSTRUCTION ITEMS

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT, SEAL COAT
4. CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216.
5. CONSTRUCT 6' SIDEWALK PER STD DWG 234.
7. CONSTRUCT SIDEWALK RAMP PER STD DWG 236 IN EXIST SIDEWALK (CASE I)
9. CONSTRUCT VALLEY GUTTER PER STD DWG 228
14. CONSTRUCT TACK-ON MEDIAN ISLAND PER STD DWG 220

APPROVAL:
Las Vegas Valley Water District
10/30/01
Date

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PLAN & PROFILE

STA 121+00 - STA 141+14.4±

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL H. JUDD
No. 7942
CIVIL
10-16-01

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 12, 2001 - 1:15pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 13

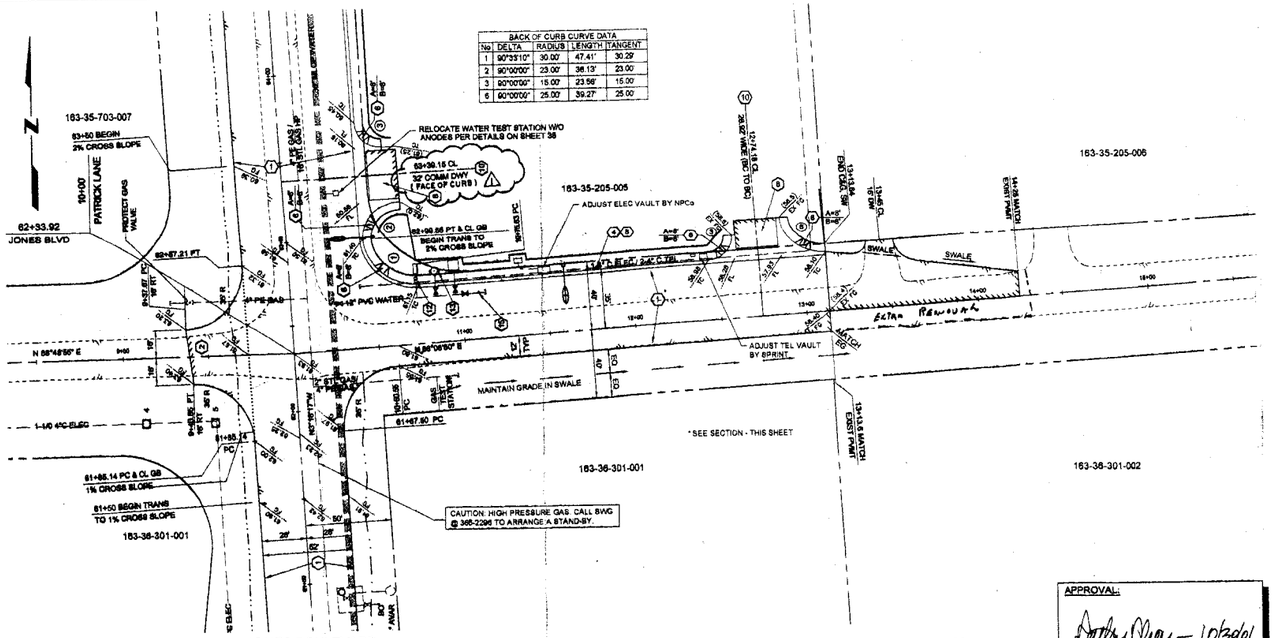
R99110A

L-1616

L:\R&R\PLANS\1646\MAP\SHEET 13.DWG

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

BACK OF CURB CURVE DATA				
No	DELTA	RADIUS	LENGTH	TANGENT
1	90°33'10"	30.00'	47.41'	30.29'
2	90°00'00"	23.00'	36.13'	23.00
3	90°00'00"	15.00'	23.56'	15.00
6	90°00'00"	25.00'	39.27'	25.00



PATRICK LANE

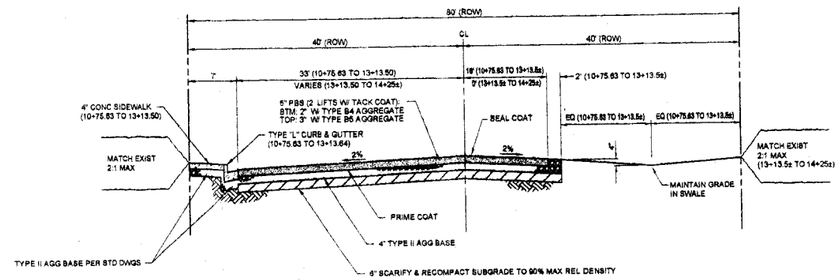
APPROVAL:

Las Vegas Valley Water District — Date 10/30/01

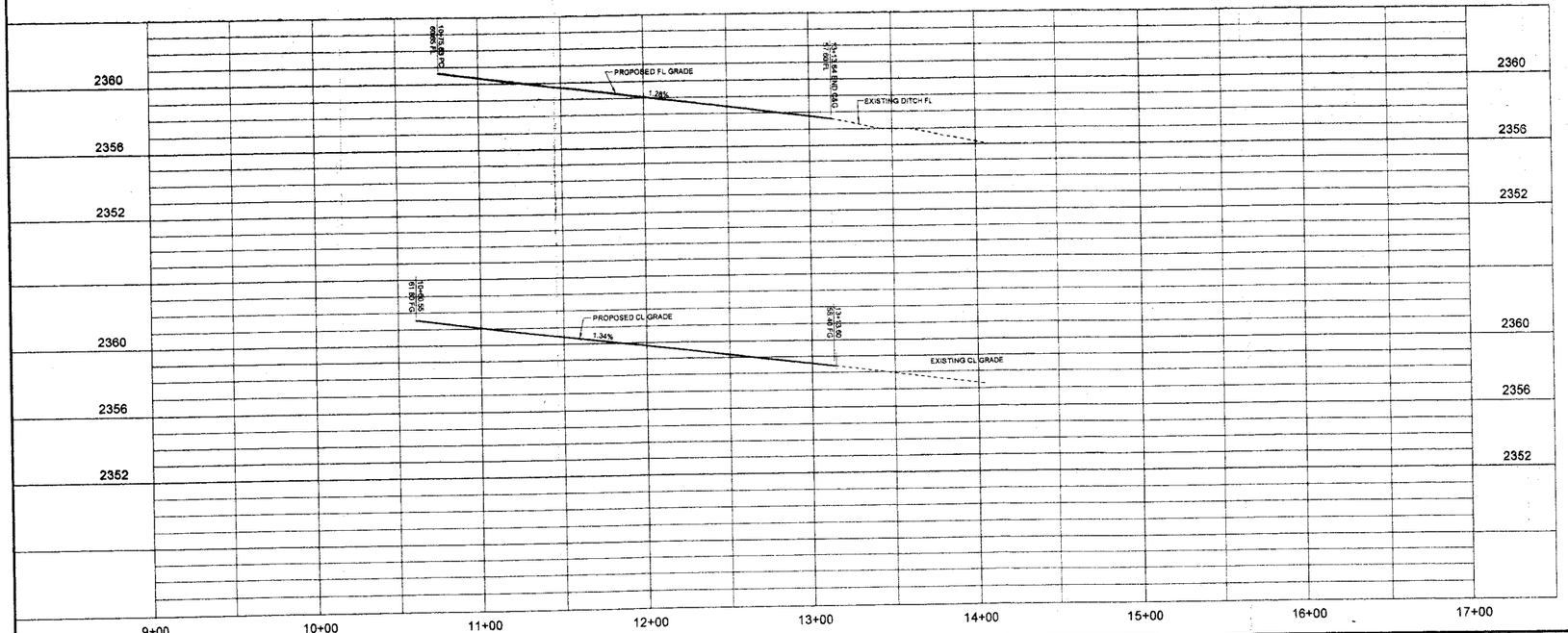
CONSTRUCTION NOTES

CONSTRUCTION ITEMS

1. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
2. CONSTRUCT 3" PBS, 4" TYPE II, PRIME COAT, SEAL COAT
3. CONSTRUCT 'L' TYPE CURB & GUTTER PER STD DWG 216
5. CONSTRUCT 5' SIDEWALK PER STD DWG 234
6. CONSTRUCT SIDEWALK RAMP PER STD DWG 235 (CASE I)
8. CONSTRUCT 2" PBS OVER 6" TYPE II BASE W/ PRIME COAT
10. CONSTRUCT COMMERCIAL DRIVEWAY (OPTION B) PER STD DWG 225
12. VERTICALLY ADJUST 1" WATER METER PER UDACS PLATE 10
13. VERTICALLY ADJUST FIRE HYDRANT PER UDACS PLAT 7
15. ADJUST END OF LINE BLOW - OFF ASSEMBLY PER UDACS PLATE 4



PATRICK LANE
STA 10+75.63 TO STA 14+25±
LOOKING EAST



WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
1	11-15-01	DRIVEWAY DIMENSION FROM FACE OF CURB TO FACE OF CURB	RWM

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

PATRICK ROAD PLAN & PROFILE
STA 10+00 - STA 14+25
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA — PAUL H. JUDD — No. 7942 — 10-16-01

DESIGNED BY:	GEA/JAG
DRAWN BY:	JAGed
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:25am

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 14

R99110A

L-1616

CLARK COUNTY SANITATION DISTRICT
GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IN ALL CASES, THESE STANDARDS 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. THESE STANDARDS SHALL APPLY TO ALL CONSTRUCTION.
3. SEWER MAINS ONLY TO BE LAID IN SEWER TRENCHES.
4. ALL LATERALS TO BE LAID AT NOT LESS THAN MINIMUM SLOPES AS SHOWN IN THESE 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 CONTROLLING AGENCY.
6. SOIL TESTING SHALL BE IN ACCORDANCE WITH SECTION 3.11 OF THESE STANDARDS.
7. ALL EXFILTRATION, INFILTRATION, AIR TESTING AND TELEVISING OF LINES SHALL BE IN ACCORDANCE WITH THESE STANDARDS.
8. CUT SHEETS MUST BE SUBMITTED TO THE AGENCY BEFORE CONSTRUCTION WILL BE PERMITTED TO START.
9. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CONTROLLING AGENCY MUST BE CLASS "A" CONTRACTORS.

CLARK COUNTY SANITATION DISTRICT _____ DATE

CCSD PROJECT CONTROL NUMBER IS: _____

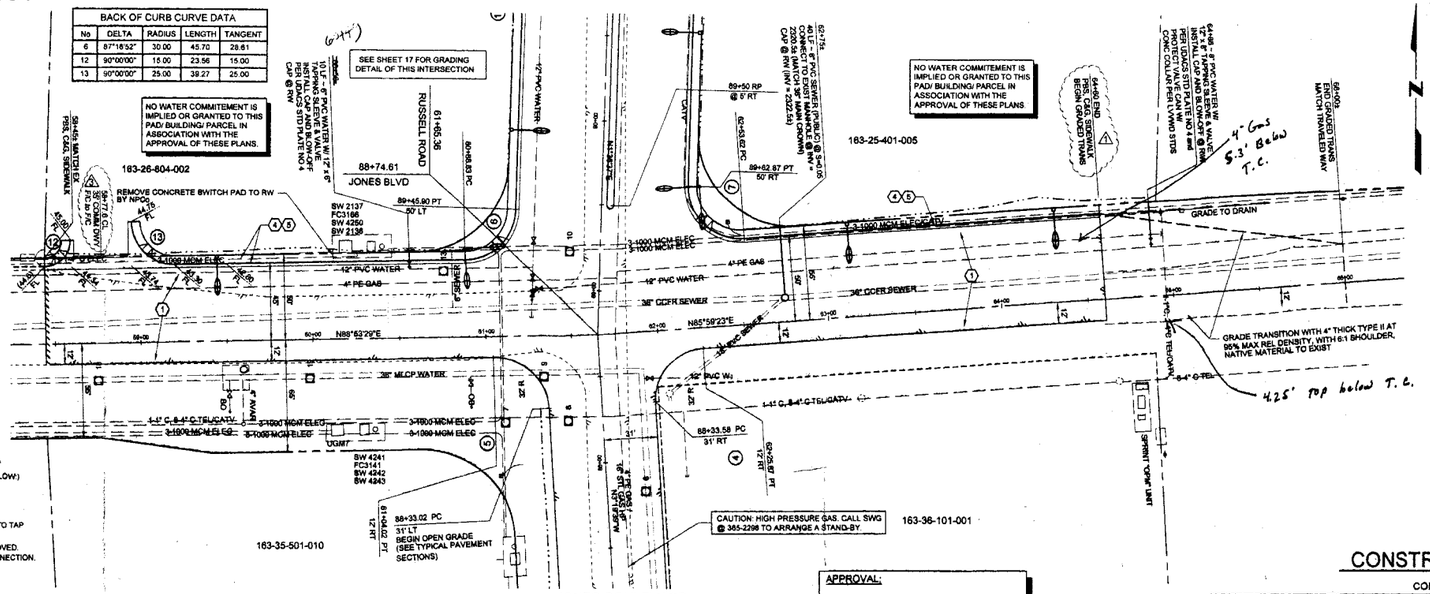
SIGNATURE ON THESE PLANS WILL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF CLARK COUNTY SANITATION DISTRICT RULES, REGULATIONS, OR DESIGN AND CONSTRUCTION STANDARDS. THE APPROVAL OF THESE DRAWINGS DOES NOT GUARANTEE CAPACITY IN THE DISTRICT'S COLLECTION OR TREATMENT SYSTEM.

CCSD LATERAL REQUIREMENTS ON CCPW SID PROJECTS:

(LATERAL CONNECTIONS ARE COVERED BY THE DISTRICT'S DESIGN AND CONSTRUCTION STANDARDS. EXCERPTS FOLLOW:)

1. MINIMUM SIZE RESIDENTIAL LATERAL IS 4".
2. MINIMUM SIZE COMMERCIAL LATERAL IS 6".
3. LATERALS 8" AND LARGER REQUIRE A MANHOLE CONNECTION. IF THE LATERALS ARE SMALLER THAN 8", YOU HAVE TO TAP INTO THE EXISTING MAIN. YOU CANNOT TAP 4" AND 6" LATERALS INTO A MANHOLE.
4. CCSD CONNECTION FEES SHALL BE PAID TO CCSD PRIOR TO CONSTRUCTION ONLY IF PROPERTY IS ALREADY IMPROVED. THE CCSD INSPECTOR WILL BE LOOKING FOR A COPY OF THIS RECEIPT WHEN HE COMES OUT TO INSPECT THE CONNECTION.
5. WHEN TAPPING INTO A VCP SEWER MAIN, ONLY ONE SERVICE PER LENGTH OF PIPE WILL BE ALLOWED.
6. WHEN TAPPING INTO PVC SEWER MAIN WITHOUT A "Y", A MINIMUM OF 5' IS REQUIRED BETWEEN LATERALS.
7. A CCSD INSPECTOR MUST INSPECT THE LATERAL INSTALLATION ON AN SID PROJECT. CALL 434-8602.
8. FOR LATE ADDITION OF LATERALS NOT APPROVED BY CCSD ON THE INITIAL SEWER PLANS, THE DISTRICT WILL "AS-BUILT" THE LOCATION OF THE LATERALS IN THE FIELD PROVIDED A MAIN LINE EXTENSION IS NOT REQUIRED.

BACK OF CURB CURVE DATA				
No	DELTA	RADIUS	LENGTH	TANGENT
6	87°16'52"	30.00	45.70	28.61
12	90°00'00"	15.00	23.56	15.00
13	90°00'00"	25.00	39.27	25.00



RUSSELL ROAD

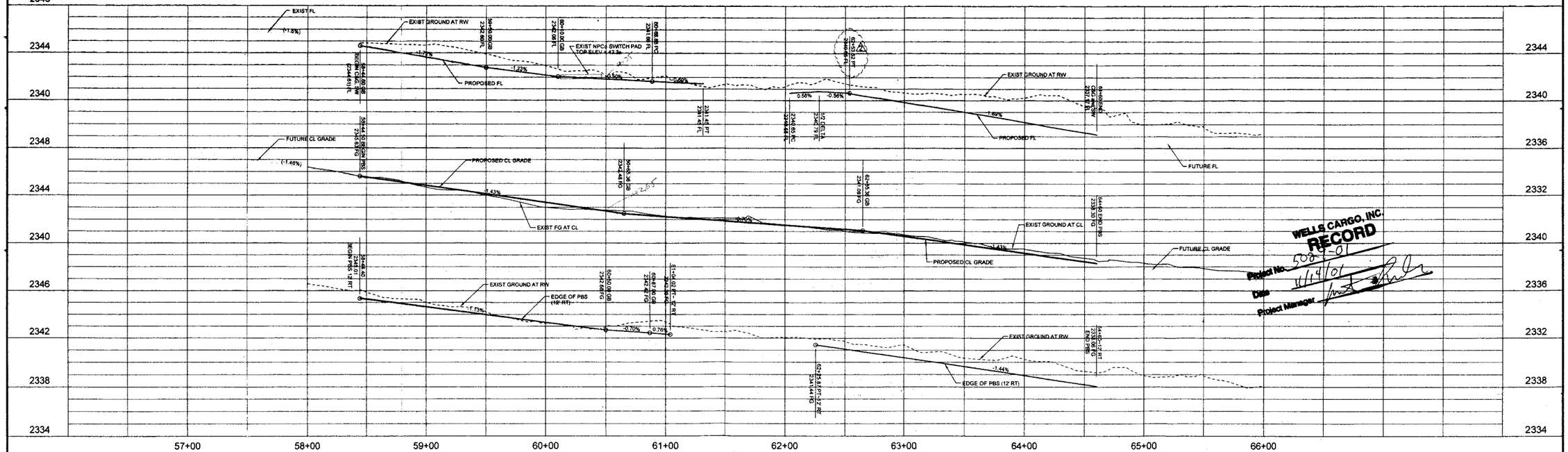
APPROVAL:

Las Vegas Valley Water District — Date

CONSTRUCTION NOTES

CONSTRUCTION ITEMS

1. CONSTRUCT PLANT MIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SHEETS 3 & 4)
4. CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216
5. CONSTRUCT 6' SIDEWALK PER STD DWG 234



WELLS CARGO, INC. RECORD
Project No. 508-01
Date 11/14/01
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
3	11 JUL 02	ADD COMMERCIAL DRIVEWAY AT 58+77.6	J GLICK
2	9 MAY 02	CORRECT RUSSELL PT STA IN PROFILE @ NE COR RUSSELL/JONES	GEA
1	9 MAY 02	END PBS AT STA 64+60 RUSSELL	GEA

RUSSELL ROAD
PLAN & PROFILE
STA 58+44.40 - STA 64+92.82
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA — PAUL H. JUDD — CIVIL — No. 7942

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Jul 18, 2002 - 11:08am

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 15

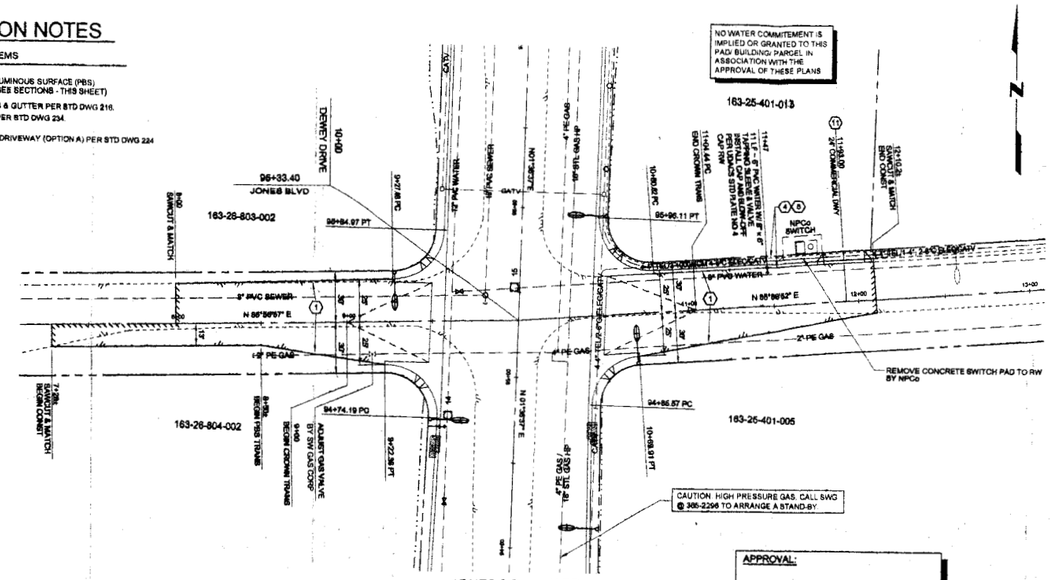
R99110A

L-1616

CONSTRUCTION NOTES

CONSTRUCTION ITEMS

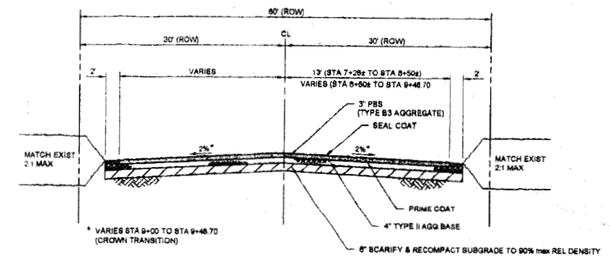
(1) CONSTRUCT PLANTMIX BITUMINOUS SURFACE (PBS) PER PAVEMENT SECTION (SEE SECTIONS - THIS SHEET)
(4) (5) CONSTRUCT "L" TYPE CURB & GUTTER PER STD DWG 216.
CONSTRUCT 5' SIDEWALK PER STD DWG 234.
(11) CONSTRUCT COMMERCIAL DRIVEWAY (OPTION A) PER STD DWG 224



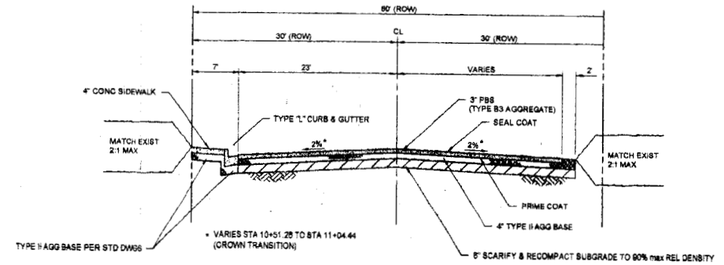
JONES BOULEVARD
(SEE SHEET 10)

DEWEY DRIVE

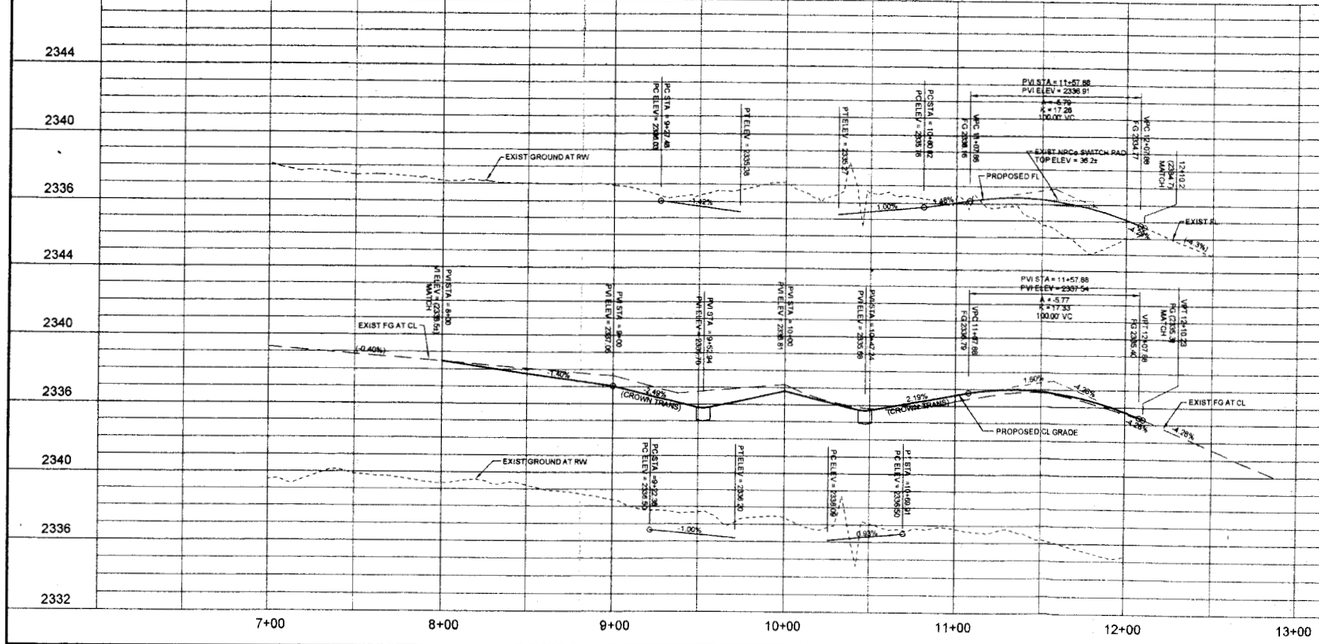
APPROVAL:
Las Vegas Valley Water District
Date 10/30/01



DEWEY DRIVE
STA 7+28± TO STA 9+48.70
LOOKING EAST



DEWEY DRIVE
STA 10+51.26 TO STA 12+08.3±
LOOKING EAST



WELLS CARGO, INC.
RECORD
Project No. 5089-01
Date 11/16/01
Project Manager

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

REV No	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

DEWEY DRIVE
PLAN & PROFILE
STA 7+28± - STA 12+10.23
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

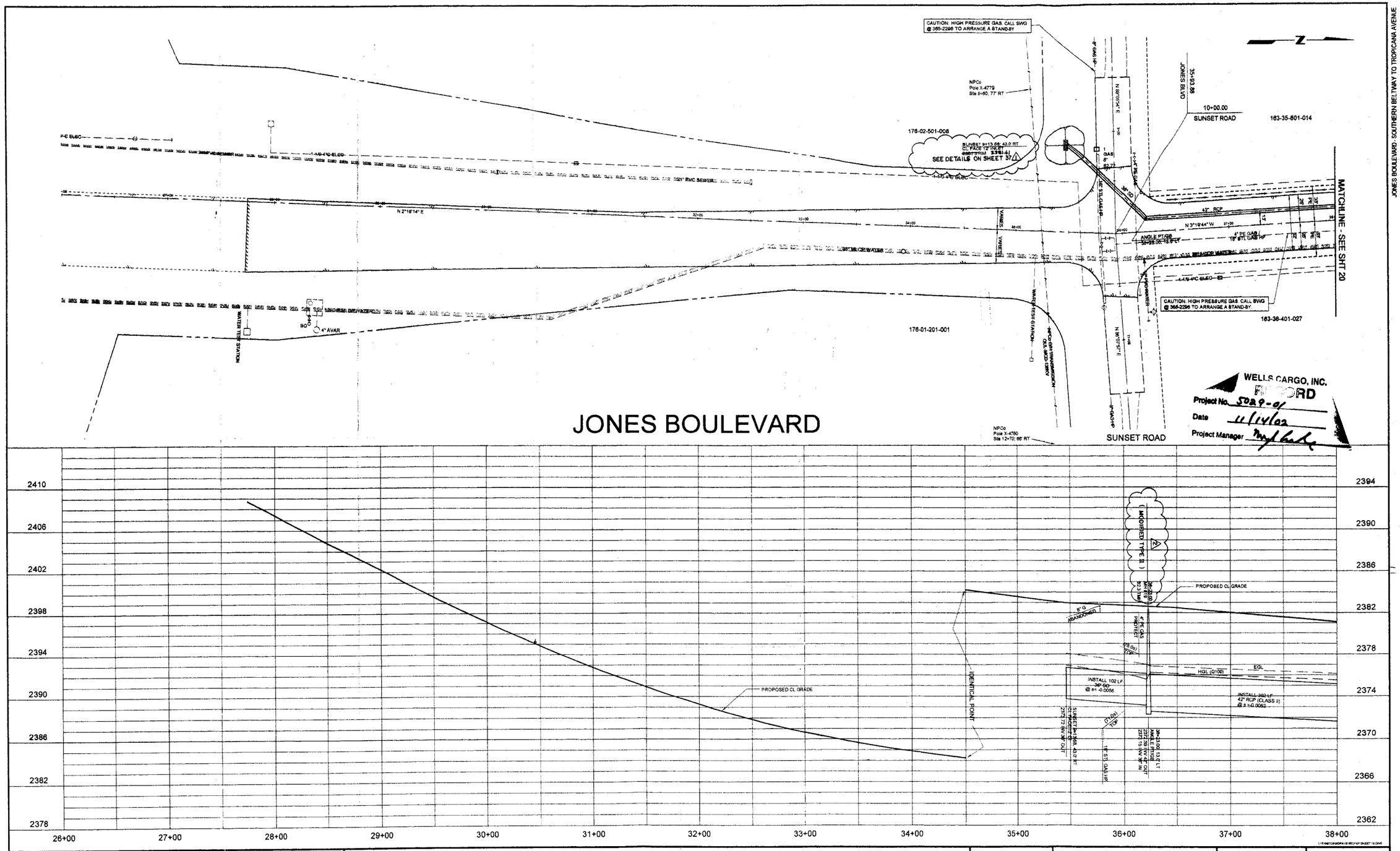
PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

DESIGNED BY:	JAG
DRAWN BY:	JAG
CHECKED BY:	RWM
DATE:	Oct 16, 2001 - 11:26am

L1648\PLANS\1648MAP SHEET 16.DWG

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 16
R99110A
L-1616



REV No	DATE	DESCRIPTION	APPROVED
2	11-15-01	ADD MANHOLE TYPE	
1	11-15-01	ADD NOTE "SEE DETAILS ON SHEET 37"	

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE
STA 27+75 - STA 38+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

DESIGNED BY:	KEW/RWM/JAG
DRAWN BY:	KEW,JAG, ed
CHECKED BY:	KEW / GEA
DATE:	Oct 17, 2001 - 3:14pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 19

R99110A

L-1616

JONES BOULEVARD

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

MATCHLINE - SEE SHT 19

MATCHLINE - SEE SHT 21

163-35-801-014 | 163-35-801-009 | 163-35-801-007 | 163-35-801-004 | 163-35-703-007 | 163-36-401-027 | 163-36-401-013 | 163-36-401-007 | 163-36-401-001 | 163-36-301-011

42" RCP | 48" RCP | 54" RCP | 60" RCP | 150 LF-NDOT GUARDRAIL R-8.1.1, TANGENT END TREATMENT | 4" PE GAS 16" STL GAS HP | 1-1/0-4"C ELEC | 1-#6 4"C ELEC | 4" ELEC | 8" PVC WATER | N 3°19'44" W | N 3°18'17" W | 10+00.00 POST ROAD | JONES BLVD | 49+14.15 | ANGLE PT 49+47.00, 13.6° LT

CAUTION: HIGH PRESSURE GAS. CALL SWG @ 365-2206 TO ARRANGE A STAND-BY.

Install 18" RCP 42+07 By RON (Jacobs) 7/12/02

41+84 Wate Vault

TECO DRIVE (FUTURE)

APPROVAL:

Las Vegas Valley Water District — 10/30/01 Date

POST ROAD

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/15/01
Project Manager Rae Lake

PROPOSED CL GRADE | EGL | HGL (Q100) | TOP FOOTING

INSTALL 302 LF 42" RCP (CLASS II) @ S = -0.0062

INSTALL 300 LF 48" RCP (CLASS II) @ S = -0.0057

INSTALL 286 LF 54" RCP (CLASS II) @ S = -0.0083

INSTALL 202 LF 60" RCP (CLASS II) @ S = -0.0001 S = 1.20%

INSTALL 220 LF 60" RCP (CLASS II) @ S = -0.0000 S = 1.20

44+82.00, 34.67' LT ELEV = 2376.00

45+18.00, 34.67' LT ELEV = 2376.00

RELOCATE ELEC COMMENTS BY NEVADA POWER CO

REV No	DATE	DESCRIPTION
2	11-15-01	ADD MANHOLE TYPE
1	11-15-01	ADD NOTE REFERRING TO DETAIL SHEET

APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

STA 38+00 - STA 50+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA — PAUL H. JUDD — No. 7942 — CIVIL — 10-16-01

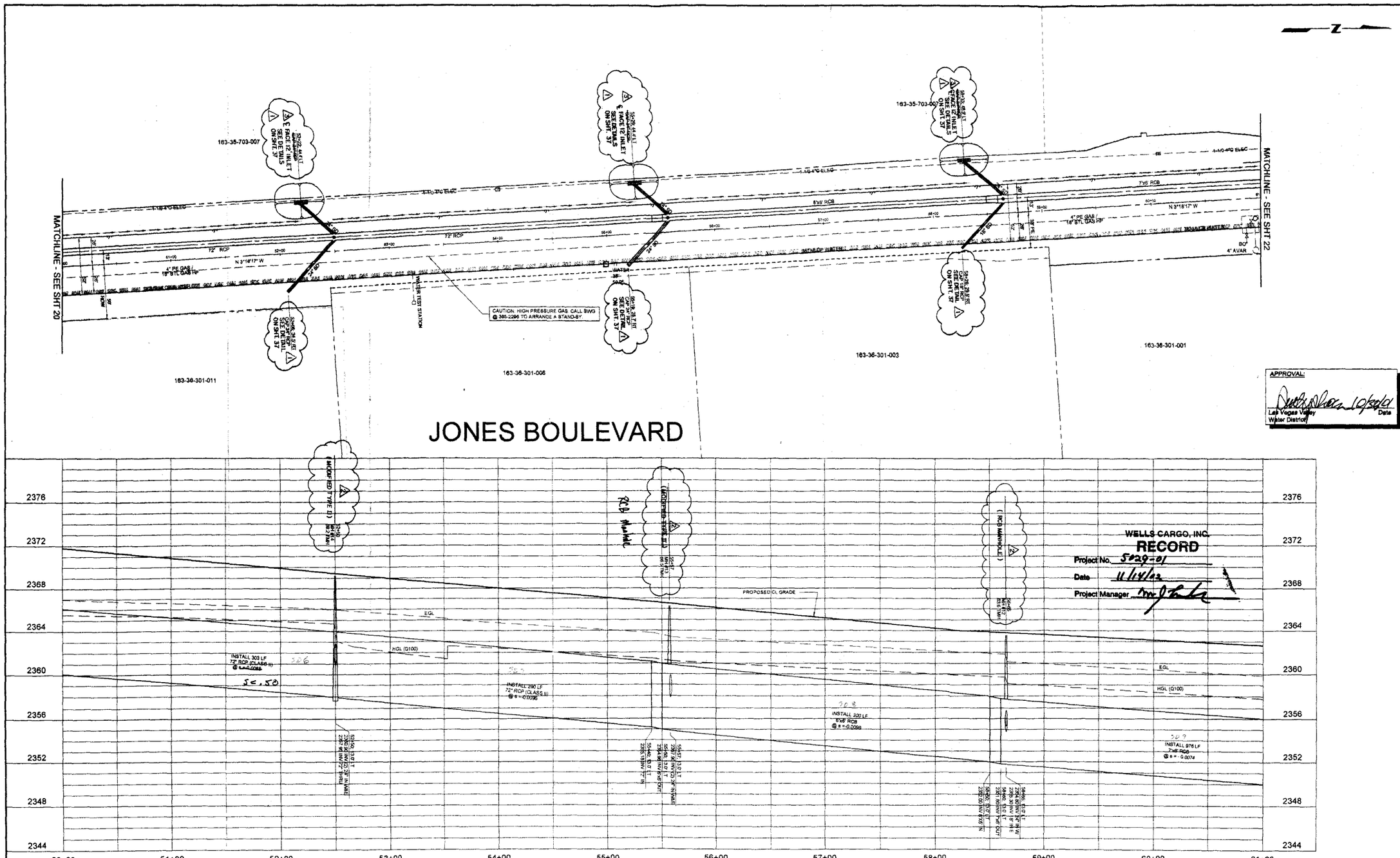
DESIGNED BY:	KEW/RWM/JAG
DRAWN BY:	KEW.JAG. ed
CHECKED BY:	KEW / GEA
DATE:	Oct 17. 2001 - 3:15pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 20

R99110A

L-1616



APPROVAL:

Las Vegas Valley Water District — Date 10/30/01

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
3	11-15-01	CORRECT NOTE REFE	
2	11-15-01	ADD MANHOLE TYPE	
1	11-15-01	ADD NOTE REFERRING TO DETAIL SHEET	

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE
STA 50+00 - STA 61+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — PAUL H. JUDD — CIVIL — No. 7942 — 12-16-01

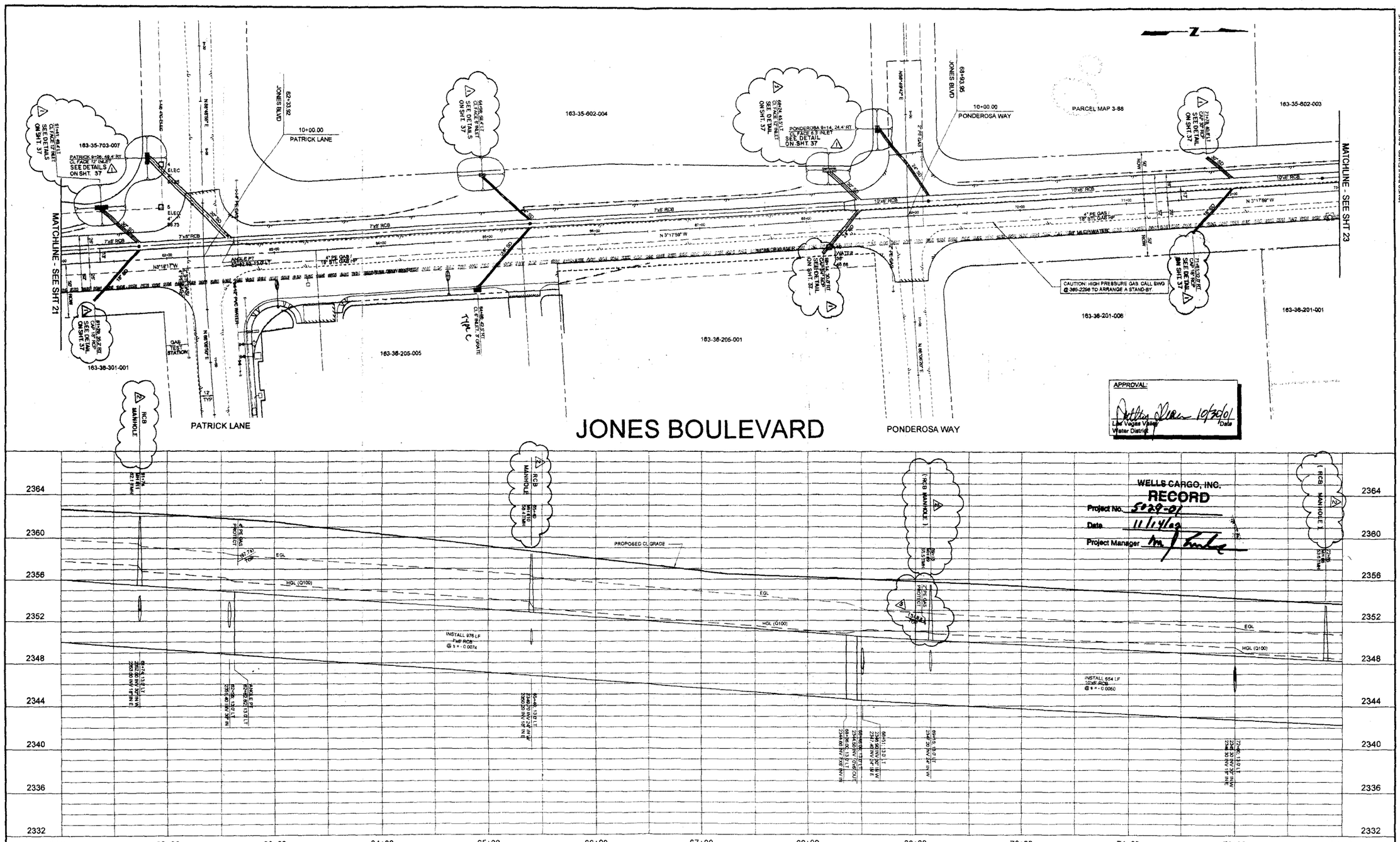
DESIGNED BY:	KEW/RWM/JAG
DRAWN BY:	KEW,JAG, ed
CHECKED BY:	KEW / GEA
DATE:	Oct 17, 2001 - 3:16pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 21

R99110A

L-1616



APPROVAL:
Las Vegas Valley Water District — Date 10/30/01

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/01
Project Manager

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

REV No	DATE	DESCRIPTION
3	11-15-01	UTILITY ELEVATION CORRECTION
2	11-15-01	ADD MANHOLE TYPE
1	11-15-01	ADD NOTE REFERRING TO DETAIL SHEET

APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

STA 61+00 - STA 73+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA — PAUL H. JUDD — No. 7942 — CIVIL — 10-16-01

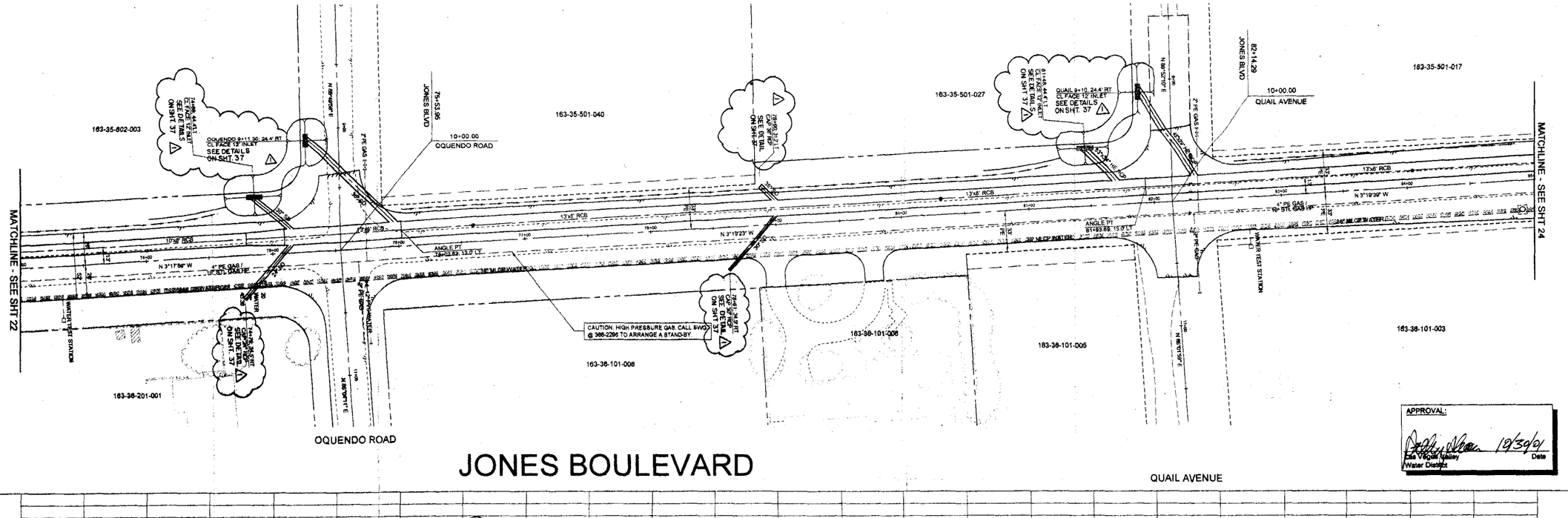
DESIGNED BY:	KEW/RWM/JAG
DRAWN BY:	KEW,JAG, ed
CHECKED BY:	KEW / GEA
DATE:	Oct 17, 2001 - 3:17pm

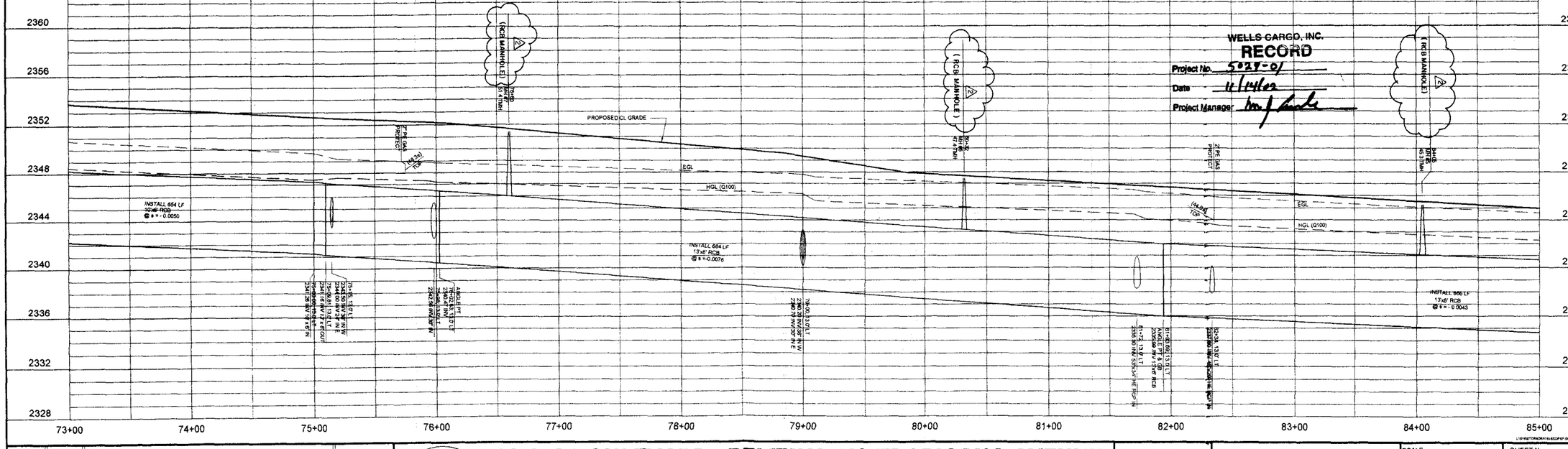
SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 22

R99110A

L-1616





REV No	DATE	DESCRIPTION	APPROVED
1	11-15-01	ADD MANHOLE TYPE	
2	11-15-01	ADD NOTE REFERRING TO DETAIL SHEET	

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE
STA 73+00 - STA 85+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD, CIVIL
No. 7942
10-16-01

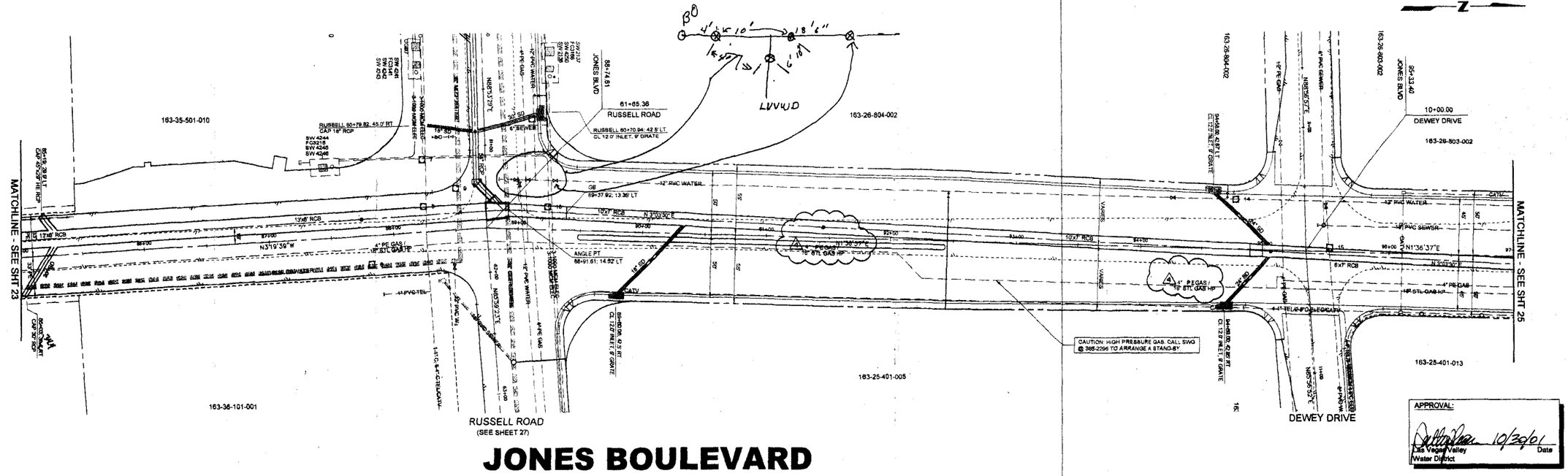
DESIGNED BY:	KEW/RWM/JAG
DRAWN BY:	KEW.JAG. ed
CHECKED BY:	KEW / GEA
DATE:	Oct 17, 2001 - 3:18pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

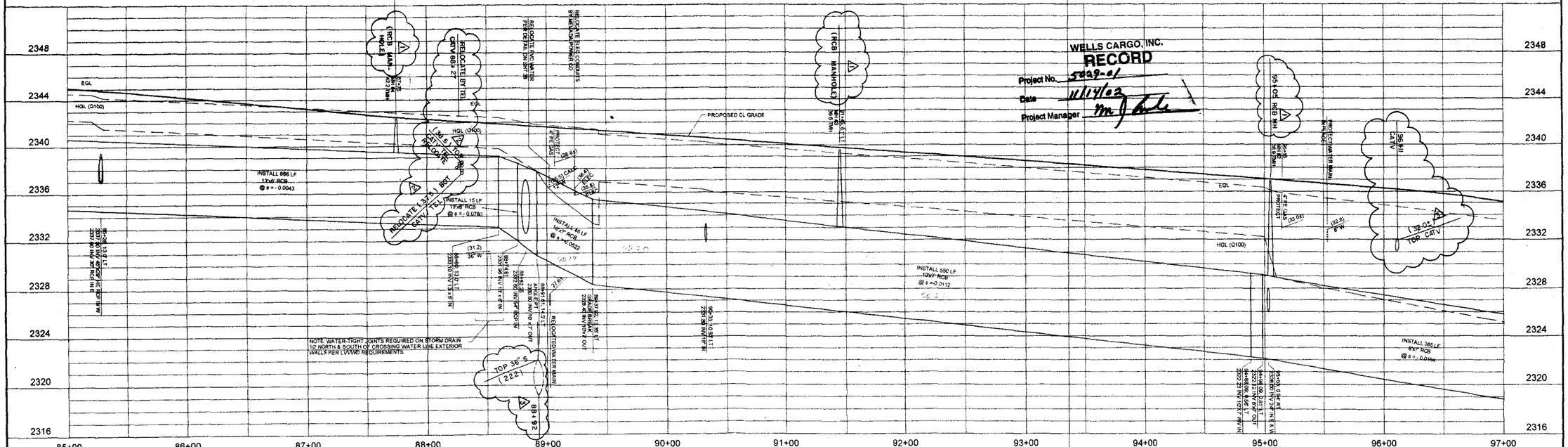
SHEET No 23

R99110A

L-1616



JONES BOULEVARD



REV No	DATE	DESCRIPTION
4	11-15-01	CORRECT 4" STL GAS TO 4" PE GAS
3	11-15-01	ADD PROFILE OF 36" SAN. SEWER & CATV
2	11-15-01	ADD PROFILE OF CATV/ TEL RELOCATE
1	11-15-01	ADD MANHOLE TYPE

APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

STA 85+00 - STA 97+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA PAUL H. JUDD CIVIL No. 7942 10-26-01

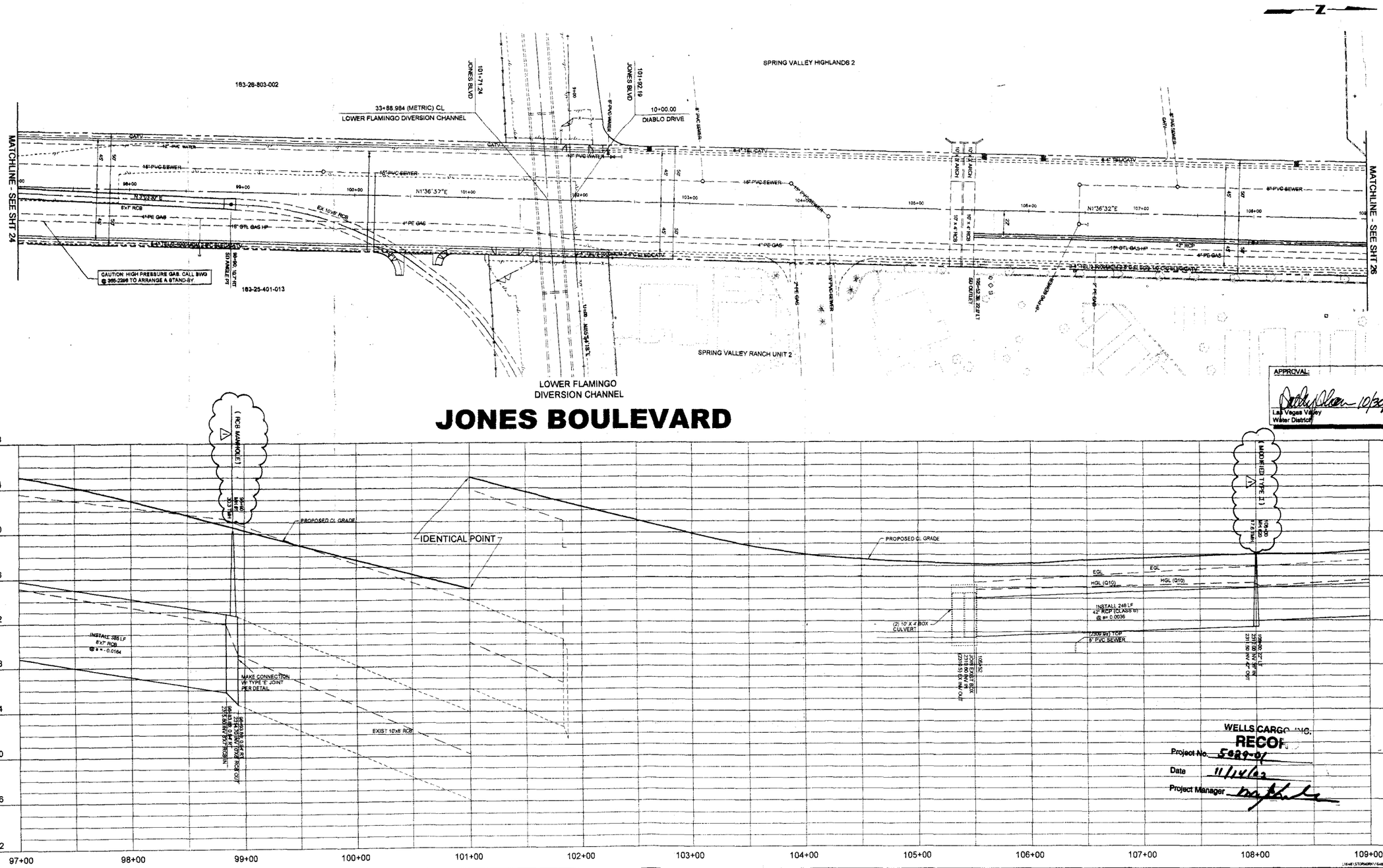
DESIGNED BY:	KEW, JAG
DRAWN BY:	JAG, Ed
CHECKED BY:	STAFF
DATE:	Oct 17, 2001 - 3:27pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 24

R99110A

L-1616



JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

STA 97+00 - STA 109+00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REV No	DATE	DESCRIPTION
1	11-5-01	ADD MANHOLE TYPE

APPROVED

PAUL H. JUDD CIVIL No. 7942 — PROFESSIONAL ENGINEER-STATE OF NEVADA — 10-26-01

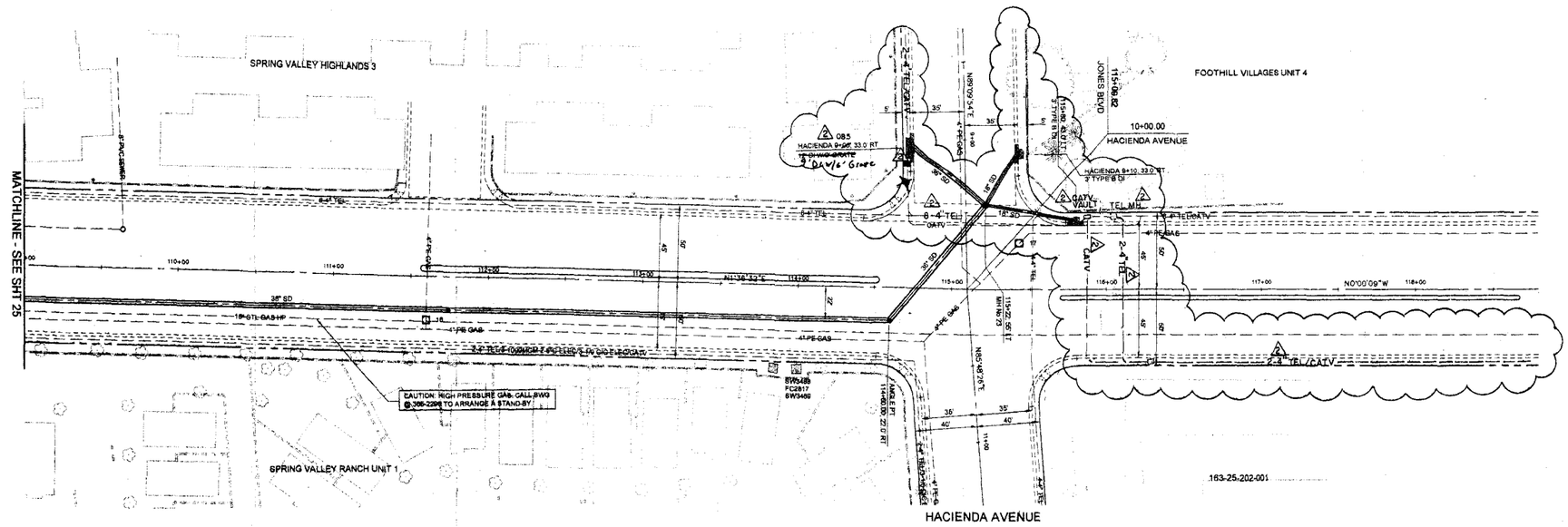
DESIGNED BY:	KEW, JAG
DRAWN BY:	JAG, Ed
CHECKED BY:	STAFF
DATE:	Oct 17, 2001 - 3:25pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

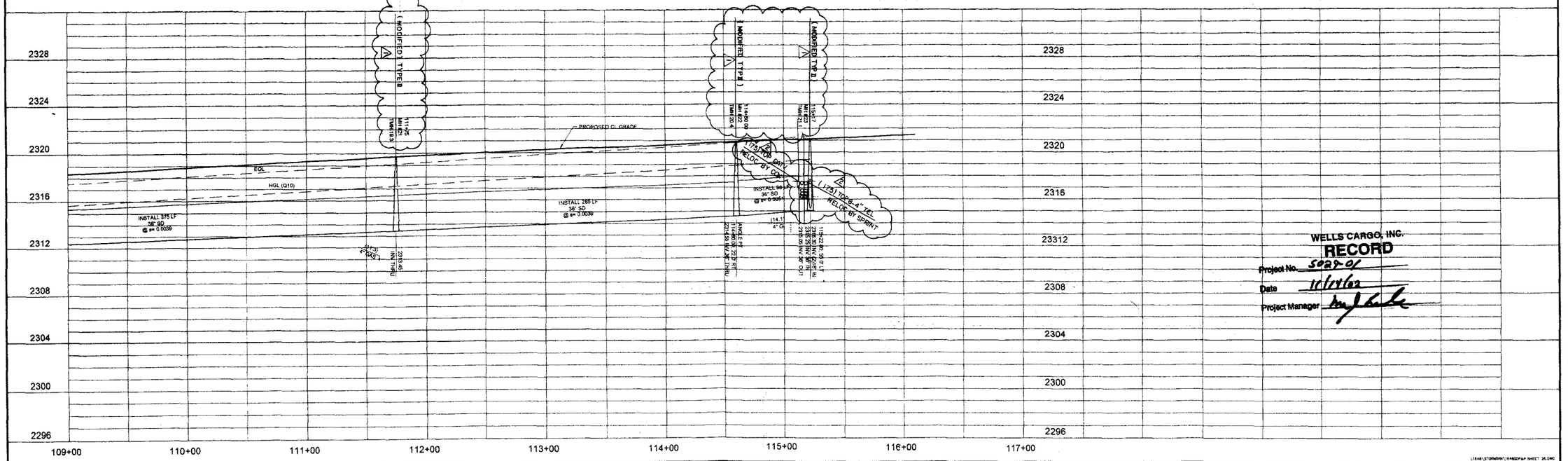
SHEET No 25

R99110A

L-1616



JONES BOULEVARD



WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 10/17/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
2	11-7-01	REVISE UTILITIES @ JONES / HACIENDA, ADD CATV & TEL IN	RWM
1	11-7-01	PROFILE MOVE SD INLET AT SW COR HACIENDA 3.5' EAST	RWM
1	11-15-01	ADD MANHOLE TYPE	RWM

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

STA 109+00 - STA 116+09.8±

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

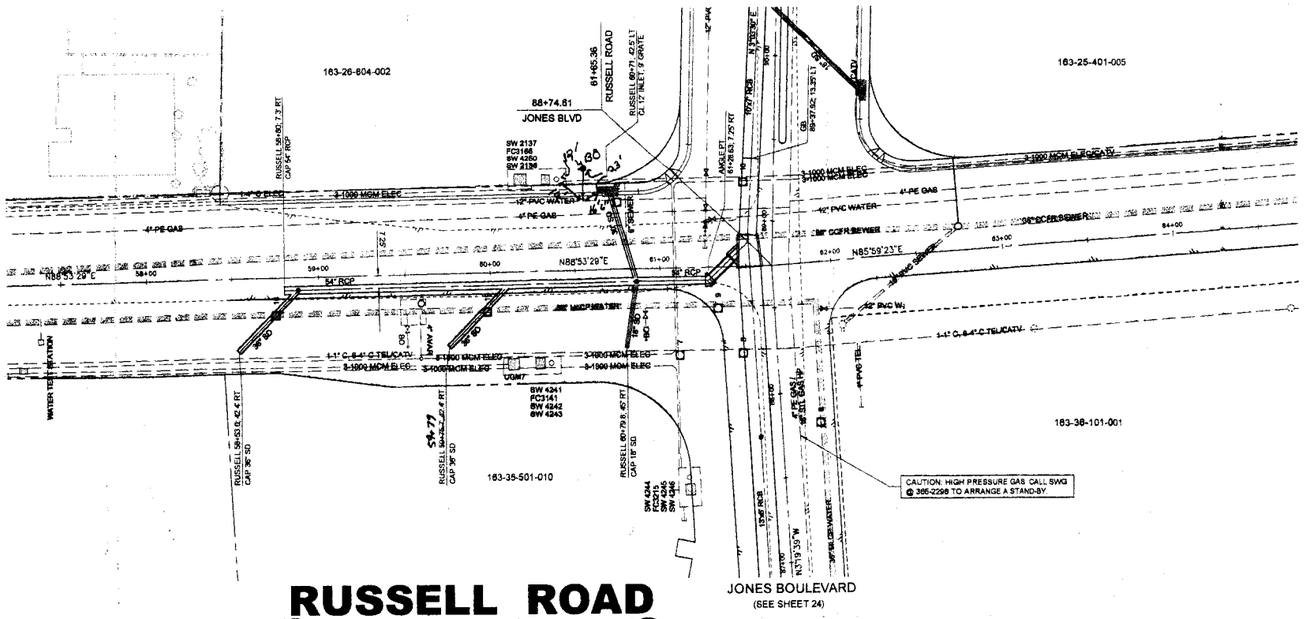
DESIGNED BY:	KEW, RWM
DRAWN BY:	JAG, Ed
CHECKED BY:	STAFF
DATE:	Oct 17, 2001 - 3:24pm

SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

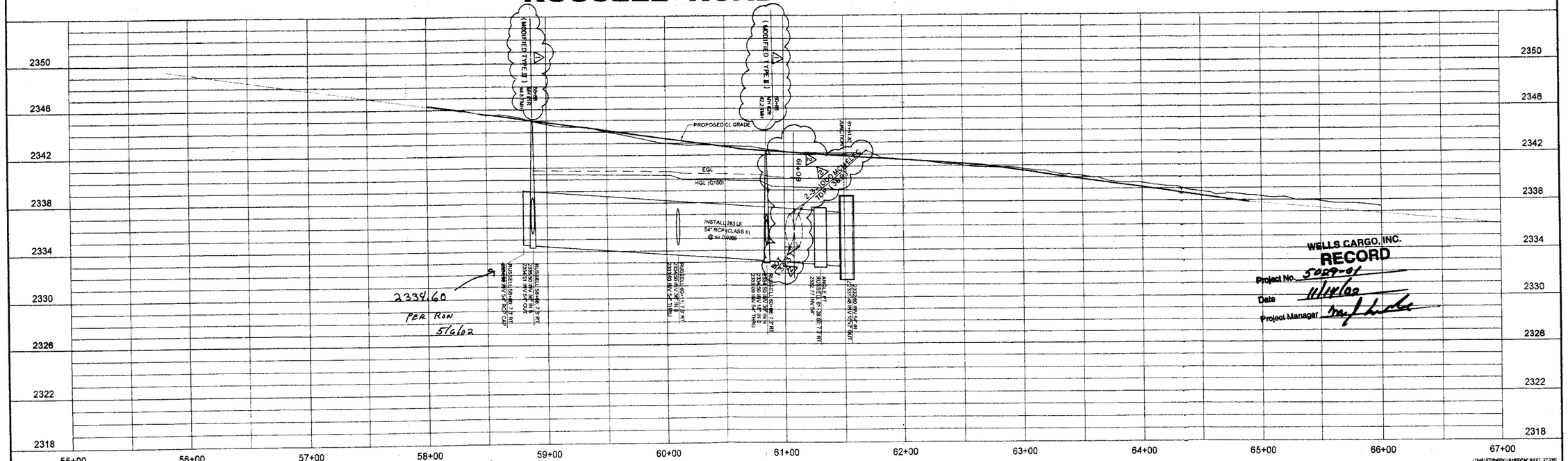
SHEET No 26

R99110A

L-1616



RUSSELL ROAD



APPROVAL:

Las Vegas Valley Water District / Date

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE

REV No	DATE	DESCRIPTION
2	11-15-01	TWO-3-1000 MCM ELEC CONDUIT TO PROFILE
1	11-15-01	ADD MANHOLE TYPE

APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORMDRAIN PLAN & PROFILE

RUSSELL ROAD

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
CIVIL
10/16/01

DESIGNED BY:	KEW, JAG
DRAWN BY:	JAG, Ed
CHECKED BY:	STAFF
DATE:	Oct 17, 2001 - 3:22pm

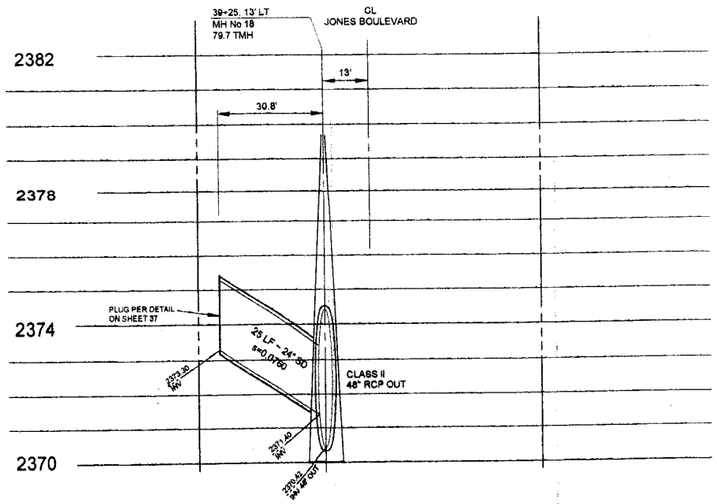
SCALE	
HORIZ:	1" = 40'
VERT:	1" = 4'
FIELD BOOK	60-21-30

SHEET No 27

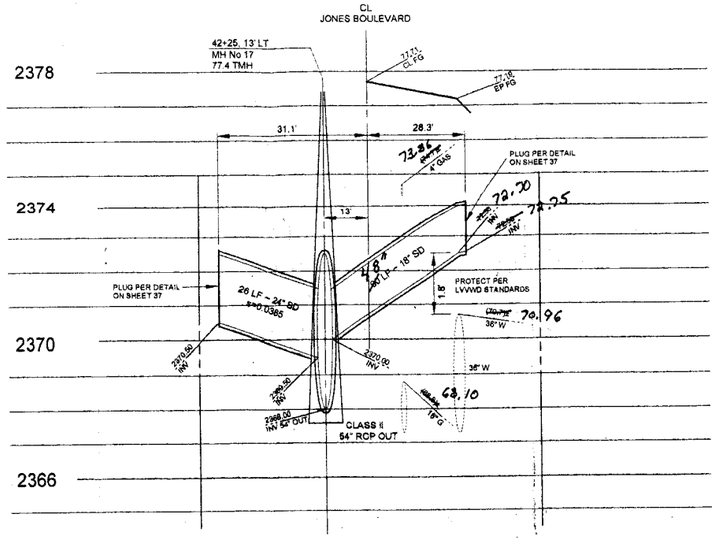
R99110A

L-1648

L1648\STORMDRN\1648SDP&P.SHEET 27.DWG



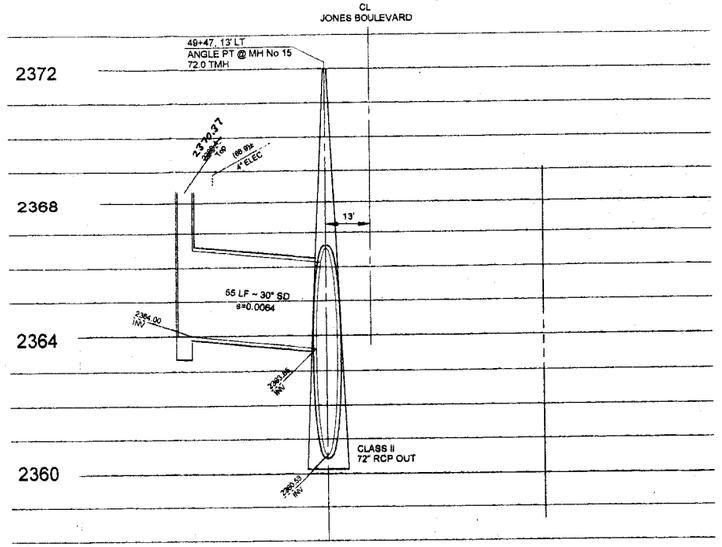
LATERAL JUNCTION STA 39+25



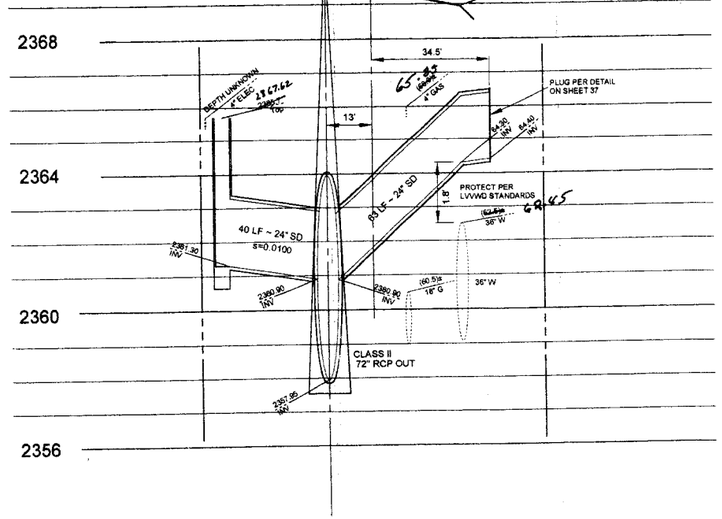
LATERAL JUNCTION STA 42+25

A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION (OUTSIDE PIPE TO OUTSIDE PIPE) MUST BE MAINTAINED WHEN THE WATER LINE IS INSTALLED OVER THE SANITARY OR STORM SEWER LINE. IF THE VERTICAL SEPARATION CAN NOT BE MAINTAINED OR IF THE WATER LINE MUST BE PLACED UNDER THE SANITARY OR STORM SEWER LINE, THE SANITARY OR STORM SEWER LINE MUST BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS OR, AS SHOWN ON THE PLANS, 10' EACH SIDE OF WATER LINES:

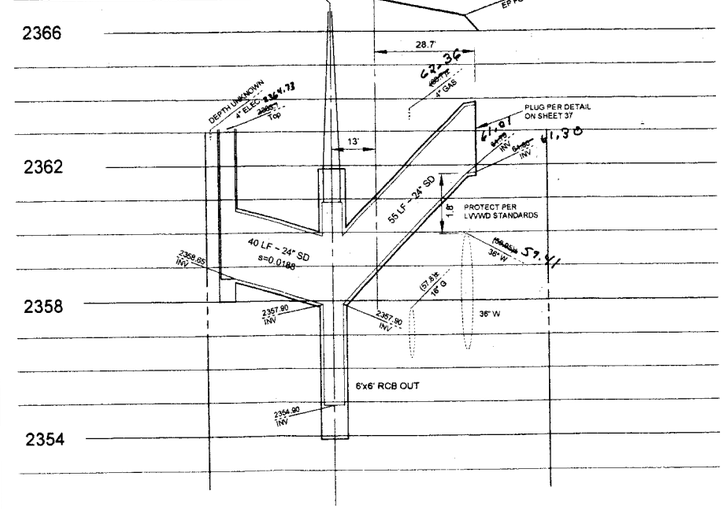
a. POTABLE WATER SUPPLY QUALITY MATERIAL
b. ENCASEMENT, WITH FOUR (4) INCH CONCRETE (MINIMUM)
c. SLEEVING WITH POTABLE WATER SUPPLY QUALITY PIPE



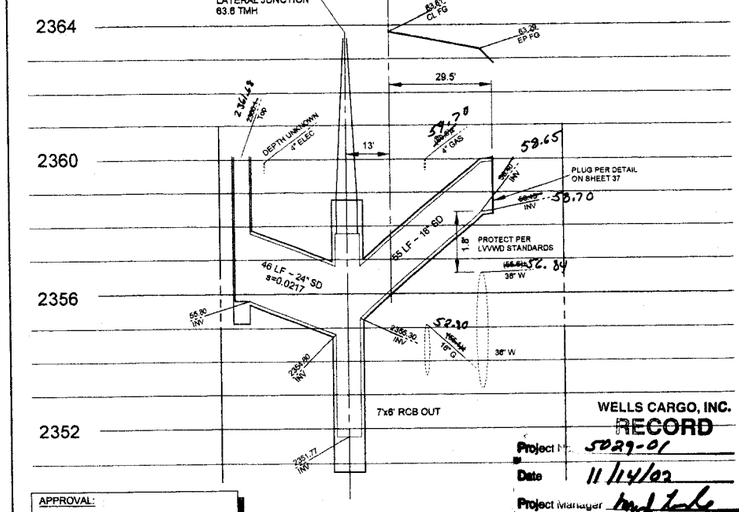
LATERAL JUNCTION STA 49+47



LATERAL JUNCTION STA 52+50



LATERAL JUNCTION STA 55+57



LATERAL JUNCTION STA 58+65

APPROVAL:

Las Vegas Valley Water District — Date 10/30/01

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

LATERAL DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

DESIGNED BY:	KEW
DRAWN BY:	Ed
CHECKED BY:	KEW
DATE	Oct 17, 2001

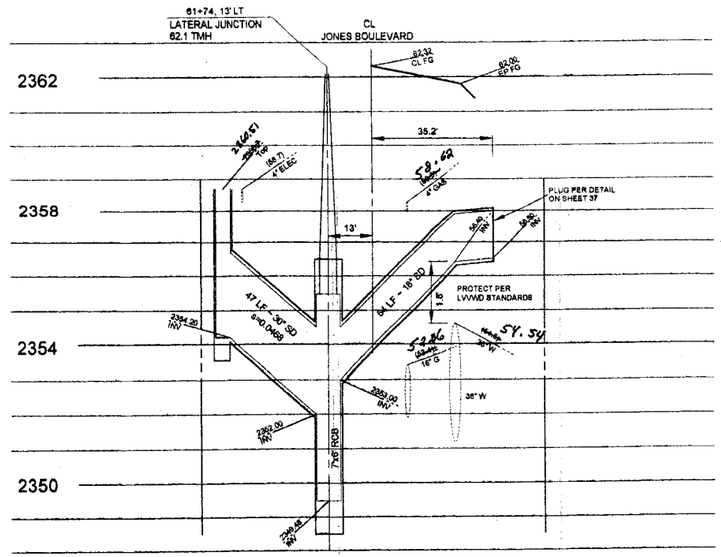
SCALE	
HORIZ:	N/A
VERT:	N/A
FIELD BOOK	60-21-30

SHEET No 28

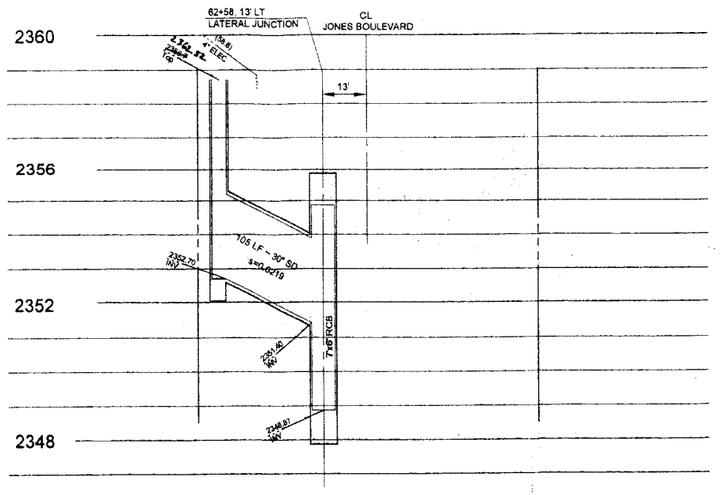
R99110A

L-1616

JONES BOULEVARD: SOUTHERN BELTWAY TO TROPICANA AVENUE



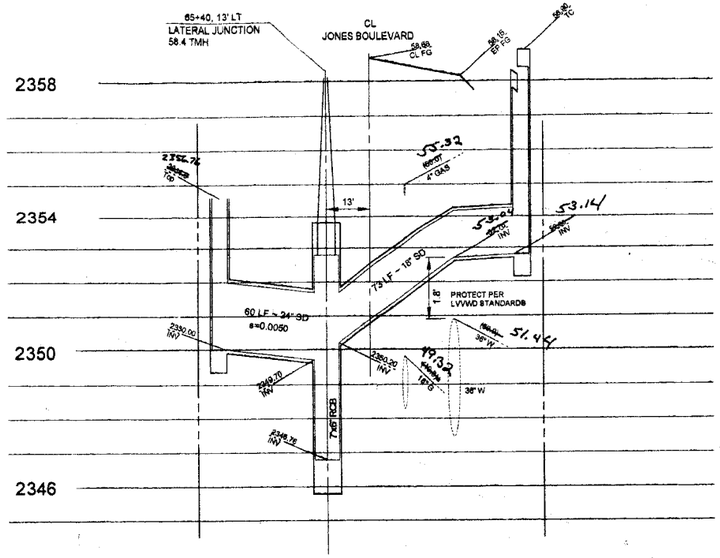
LATERAL JUNCTION STA 61+74



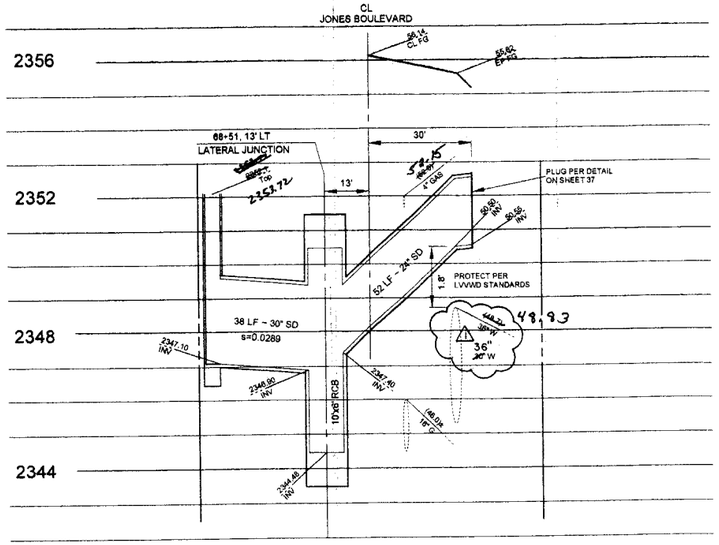
LATERAL JUNCTION STA 62+58

A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION (OUTSIDE PIPE TO OUTSIDE PIPE) MUST BE MAINTAINED WHEN THE WATER LINE IS INSTALLED OVER THE SANITARY OR STORM SEWER LINE. IF THE VERTICAL SEPARATION CAN NOT BE MAINTAINED OR IF THE WATER LINE MUST BE PLACED UNDER THE SANITARY OR STORM SEWER LINE, THE SANITARY OR STORM SEWER LINE MUST BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS OR, AS SHOWN ON THE PLANS, 10' EACH SIDE OF WATER LINES:

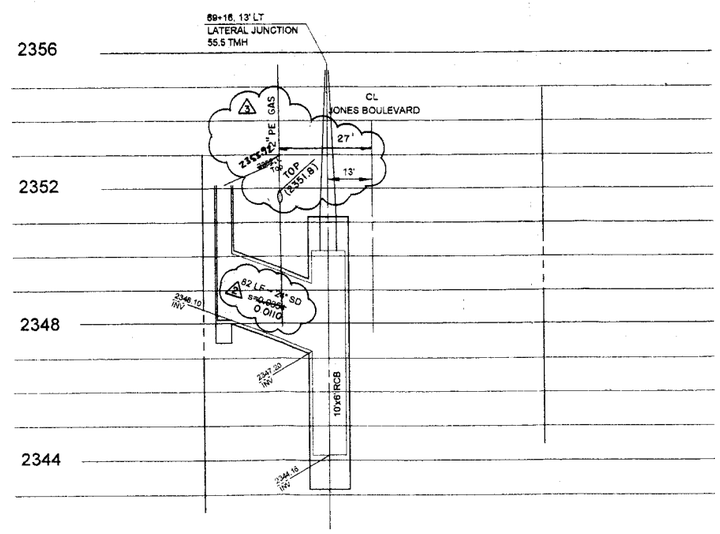
a. POTABLE WATER SUPPLY QUALITY MATERIAL
b. ENCASEMENT, WITH FOUR (4) INCH CONCRETE (MINIMUM)
c. SLEEVING WITH POTABLE WATER SUPPLY QUALITY PIPE



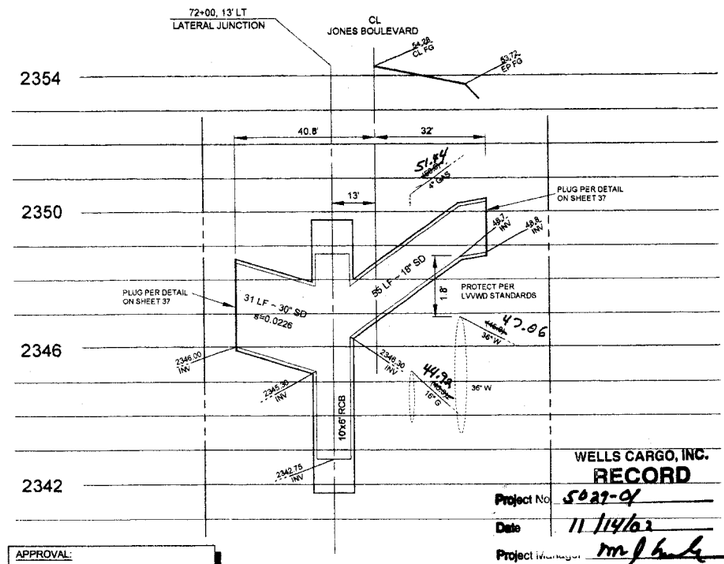
LATERAL JUNCTION STA 65+40



LATERAL JUNCTION STA 68+51



LATERAL JUNCTION STA 69+15



LATERAL JUNCTION STA 72+00

WELLS CARGO, INC.
RECORD
Project No. 5027-01
Date 11/14/02
Project Manager

APPROVAL:
Las Vegas Valley Water District — Date 10/30/01

REV No	DATE	DESCRIPTION	
3	11-15-01	ADD GAS LINE TO "LATERAL JUNCTION STA. 69+15"	RWM
2	11-15-01	CORRECT LATERAL GRADE	RWM
1	11-15-01	CORRECT PIP SIZE	RWM

APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

LATERAL DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

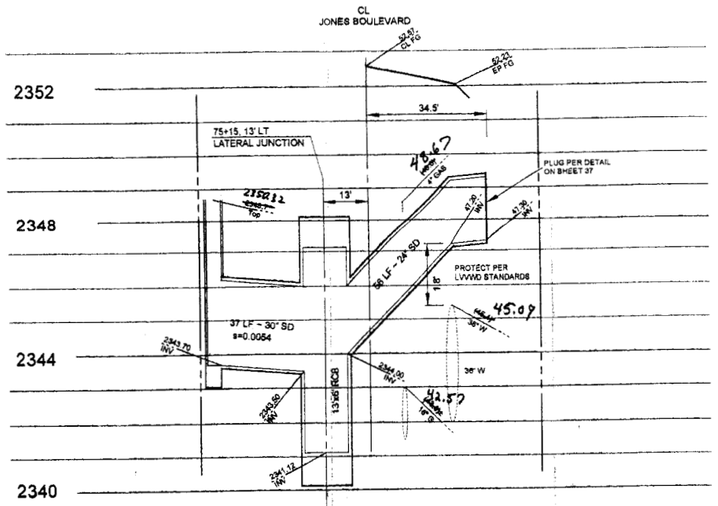
PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
CIVIL
10-16-01

DESIGNED BY:	KEW
DRAWN BY:	Ed
CHECKED BY:	KEW
DATE:	Oct 18, 2001

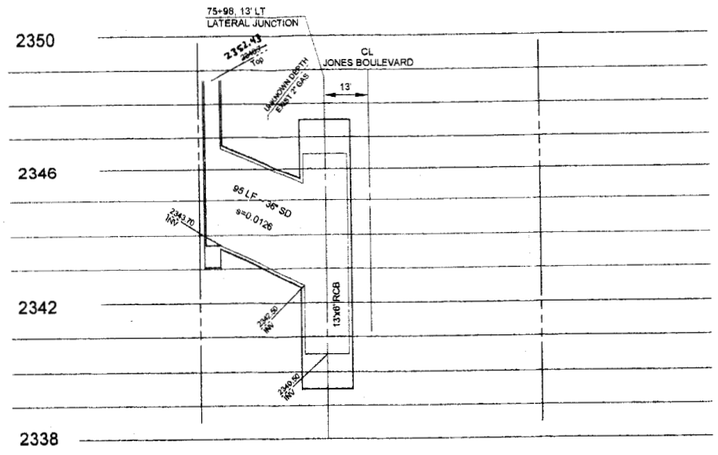
SCALE	
HORIZ:	N/A
VERT:	N/A
FIELD BOOK	60-21-30

SHEET No 29
R99110A
L-1616

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE



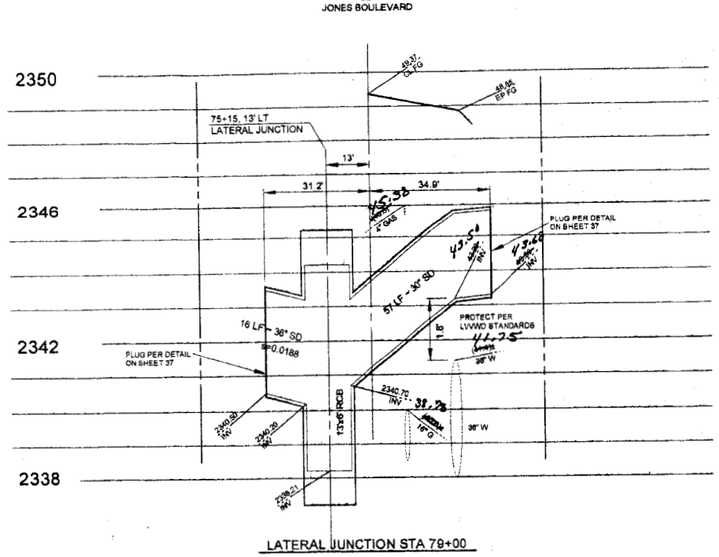
LATERAL JUNCTION STA 75+15



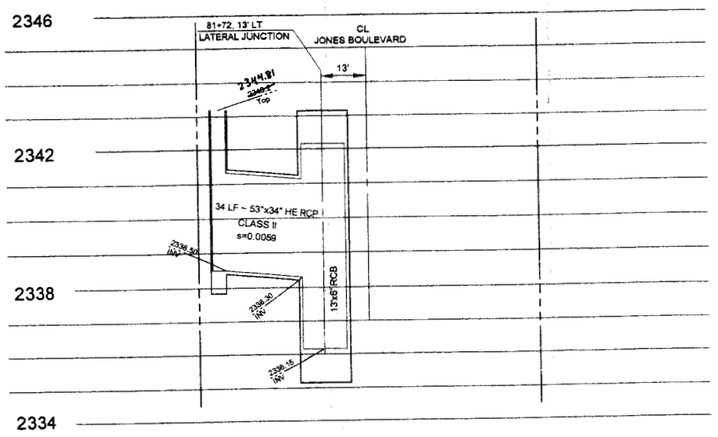
LATERAL JUNCTION STA 75+98

A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION (OUTSIDE PIPE TO OUTSIDE PIPE) MUST BE MAINTAINED WHEN THE WATER LINE IS INSTALLED OVER THE SANITARY OR STORM SEWER LINE. IF THE VERTICAL SEPARATION CAN NOT BE MAINTAINED OR IF THE WATER LINE MUST BE PLACED UNDER THE SANITARY OR STORM SEWER LINE, THE SANITARY OR STORM SEWER LINE MUST BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS OR, AS SHOWN ON THE PLANS, 10' EACH SIDE OF WATER LINE:

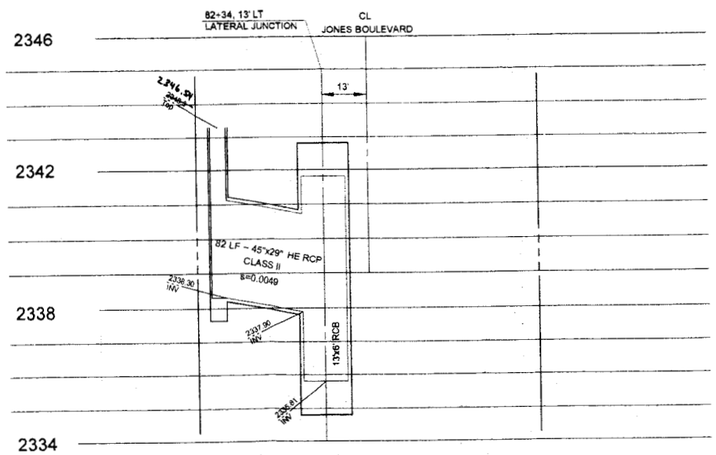
a. POTABLE WATER SUPPLY QUALITY MATERIAL
b. ENCASEMENT, WITH FOUR (4) INCH CONCRETE (MINIMUM)
c. SLEEVING WITH POTABLE WATER SUPPLY QUALITY PIPE



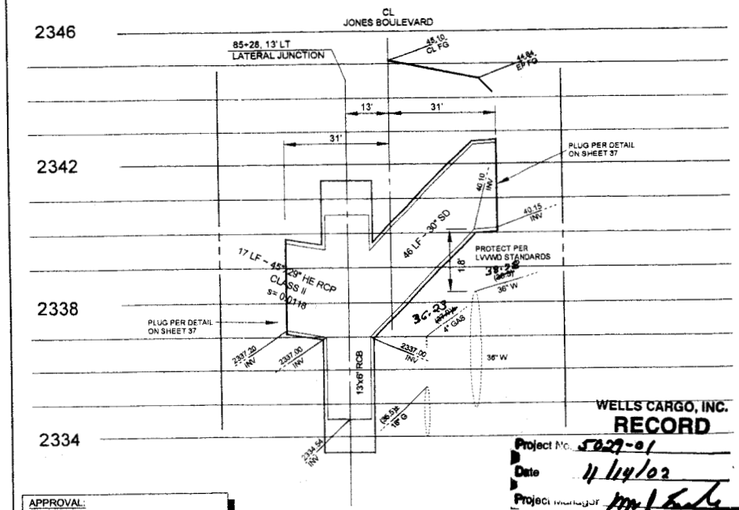
LATERAL JUNCTION STA 79+00



LATERAL JUNCTION STA 81+72



LATERAL JUNCTION STA 82+34



LATERAL JUNCTION STA 85+28

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

APPROVAL:
Las Vegas Valley Water District
10/30/01
Date

APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

LATERAL DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

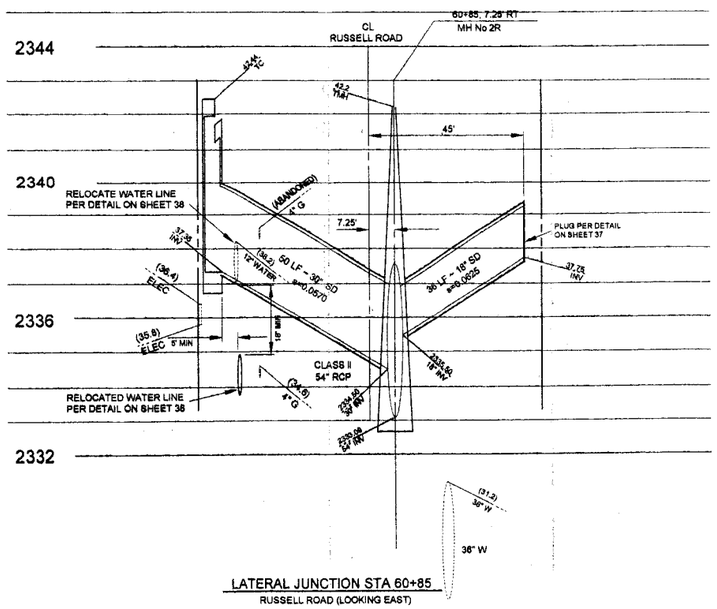
PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-6-01

DESIGNED BY:	KEW
DRAWN BY:	Ed
CHECKED BY:	KEW
DATE:	Oct 17, 2001

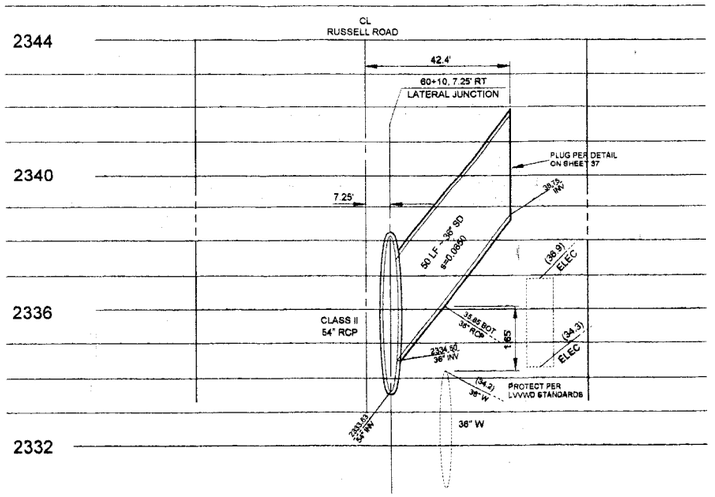
SCALE	
HORIZ:	N/A
VERT:	N/A
FIELD BOOK	60-21-30

SHEET No
30
R99110A
L-1616

JONES BOULEVARD - SOUTHERN BELTWAY TO TROPICANA AVENUE



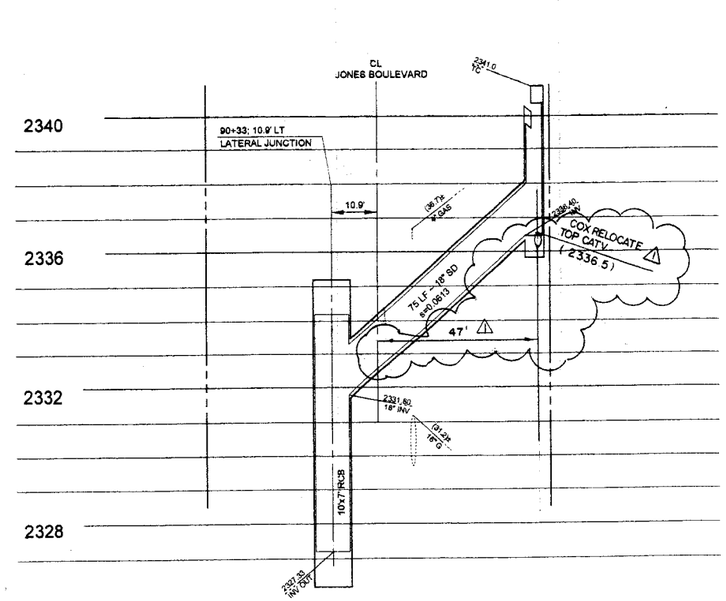
LATERAL JUNCTION STA 60+85
RUSSELL ROAD (LOOKING EAST)



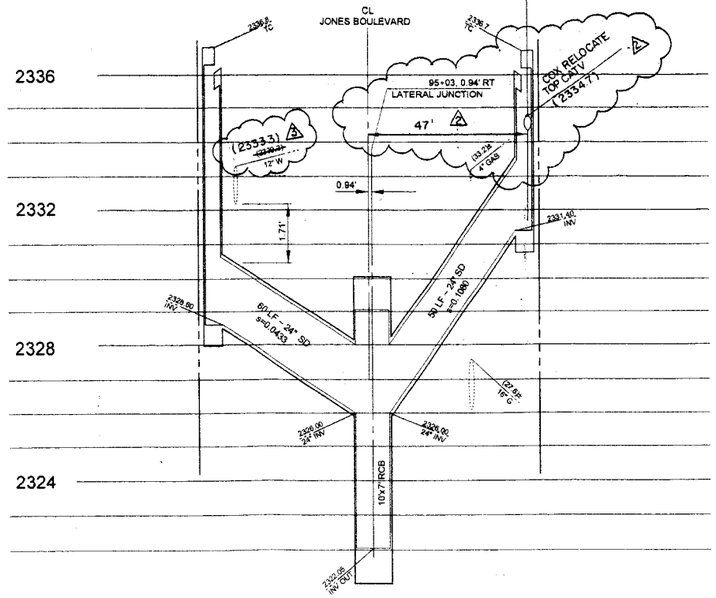
LATERAL JUNCTION STA 60+10
RUSSELL ROAD (LOOKING EAST)

A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION (OUTSIDE PIPE TO OUTSIDE PIPE) MUST BE MAINTAINED WHEN THE WATER LINE IS INSTALLED OVER THE SANITARY OR STORM SEWER LINE. IF THE VERTICAL SEPARATION CAN NOT BE MAINTAINED OR IF THE WATER LINE MUST BE PLACED UNDER THE SANITARY OR STORM SEWER LINE, THE SANITARY OR STORM SEWER LINE MUST BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS OR, AS SHOWN ON THE PLANS, 10' EACH SIDE OF WATER LINES:

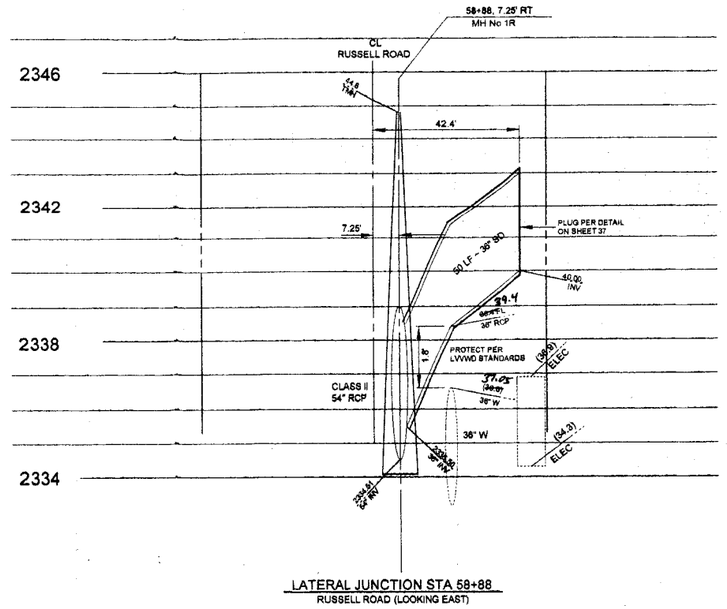
a. POTABLE WATER SUPPLY QUALITY MATERIAL
b. ENCASEMENT, WITH FOUR (4) INCH CONCRETE (MINIMUM)
c. SLEEVING WITH POTABLE WATER SUPPLY QUALITY PIPE



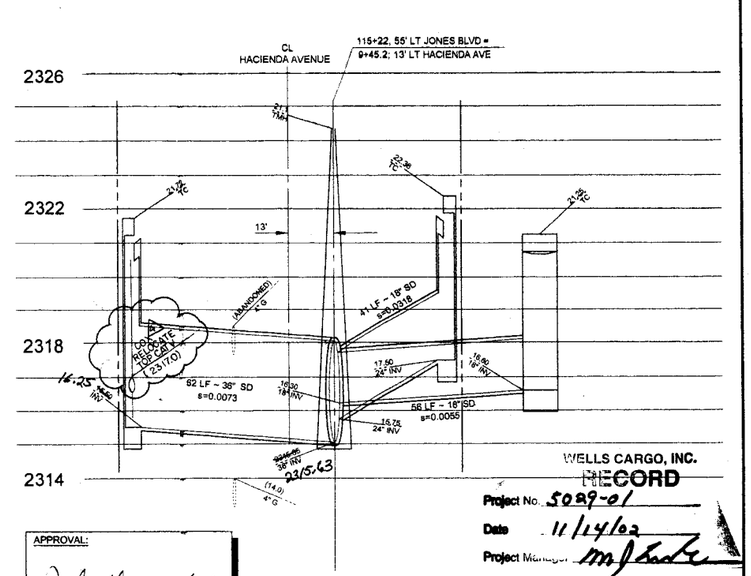
LATERAL JUNCTION STA 90+33



LATERAL JUNCTION STA 95+03



LATERAL JUNCTION STA 58+88
RUSSELL ROAD (LOOKING EAST)



LATERAL JUNCTION STA 115+22

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/02
Project Manager

APPROVAL:
Las Vegas Valley Water District — Date

REV No	DATE	DESCRIPTION	APPROVED
4	11-15-01	SHOW CATV IN "LATERAL JUNCTION STATION 115+22"	
3	11-15-01	PIPE ELEVATION CORRECTION	
2	11-15-01	SHOW CATV IN "LATERAL JUNCTION STA. 95+03"	
1	11-15-01	SHOW CATV IN "LATERAL JUNCTION STA 90+33"	

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

LATERAL DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
No. 7942
10-16-01

DESIGNED BY:	KEW
DRAWN BY:	Ed
CHECKED BY:	KEW
DATE:	Oct 17, 2001

SCALE	
HORIZ:	N/A
VERT:	N/A
FIELD BOOK	60-21-30

SHEET No 31

R99110A

L-1616

DRAINAGE STRUCTURE NOTES:

1. DESIGN OF DRAINAGE STRUCTURES HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING DESIGN SPECIFICATIONS/MANUALS/GUIDES:
   a. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (AASHTO) SIXTEENTH EDITION, 1996.
   b. EM 1110-2-2104, STRENGTH DESIGN FOR REINFORCED - CONCRETE HYDRAULIC STRUCTURES, 30 JUNE 1992./ U.S. ARMY CORPS OF ENGINEERS.
   c. STRUCTURAL DESIGN OF CONCRETE LINED FLOOD CONTROL CHANNELS - U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT DESIGN GUIDE.
   d. NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION, 1996.
   e. CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT HYDRAULIC CRITERIA AND DRAINAGE DESIGN MANUAL.
2. CONSTRUCTION SPECIFICATIONS: STATE OF NEVADA DEPARTMENT OF HIGHWAYS "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1996" AND SPECIAL PROVISIONS THERETO.
3. LOADING: SOIL WEIGHT: 140 LB/CF
   LIVE LOAD SURCHARGE: HS 20-44
   LATERAL SOIL PRESSURE: 0.40"VERTICAL PRESSURE
4. RIGHT WALL (RW) AND LEFT WALL (LW) ARE DETERMINED WHILE LOOKING IN A DOWNSTREAM DIRECTION. SECTIONS ARE CUT LOOKING DOWNSTREAM UNLESS NOTED OTHERWISE.
5. DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWINGS.
6. ALL STATIONING SHOWN IS ALONG THE PROJECT CENTERLINE, OR NORMAL TO CENTERLINE OF CONSTRUCTION.
7. TRANSVERSE CONSTRUCTION JOINTS IN WALLS AND SLABS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED. TRANSVERSE CONSTRUCTION JOINTS SHALL BE NORMAL OR RADIAL TO THE CENTERLINE OF CONSTRUCTION.
8. TRANSVERSE CONSTRUCTION JOINTS IN BOTH SLABS AND WALLS OF BOX CULVERTS SHALL BE PLACED AT THE END OF EACH POUR AND SHALL BE CONSTRUCTION JOINT TYPE "J". THE SPACING OF JOINTS SHALL NOT EXCEED 60 FT. OR BE LESS THAN 10 FT. UNLESS SHOWN OTHERWISE, OR AS APPROVED BY THE ENGINEER.
9. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4 INCH UNLESS OTHERWISE INDICATED.
10. ALL SINGLE LAYER REINFORCEMENT SHALL BE PLACED IN THE CENTER OF CONCRETE UNLESS NOTED OTHERWISE.
11. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 3 FT. OF A MANHOLE OR WITHIN 10 FT OF JUNCTION STRUCTURE OPENINGS UNLESS SHOWN OTHERWISE, OR AS APPROVED BY THE ENGINEER.
12. CONCRETE COMPRESSIVE STRENGTH SHALL BE: f'c = 4000 psi
13. REINFORCING STEEL ALL REINFORCING STEEL SHALL BE A706. REINFORCING STEEL STRENGTH, Fy=60,000 PSI.
14. NO WELDING WILL BE PERMITTED ON ANY REINFORCEMENT UNLESS SPECIFICALLY SHOWN OTHERWISE.
15. HOOKS AND BENDS FOR REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ACI318-95.
16. UNLESS DETAILED OTHERWISE, LAP SPLICES FOR REINFORCING BARS SHALL BE IN ACCORDANCE WITH TABLE 1 BELOW.

TABLE 1

f'c = 4000 psi & fy = 60000 psi

LAP SPLICE LENGTH IN INCHES

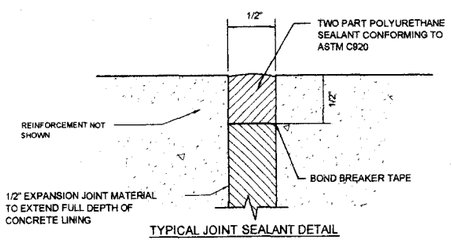
BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
TOP BARS	24	31	37	43	51	65	82	100
OTHER BARS	19	24	28	33	39	50	63	77

   a. ALL SPLICES TO BE THE SPLICE LENGTH OF THE SMALLER BAR BUT NOT LESS THAN 12 INCHES.
   b. SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF THE AREA OF STEEL IN A LAYER IS SPLICED WITHIN THE REQUIRED LAP LENGTH.
   c. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE BELOW THE BAR.
17. UNLESS DETAILED OTHERWISE, HOOKS FOR REINFORCING BARS SHALL BE IN ACCORDANCE WITH TABLE 2 BELOW.

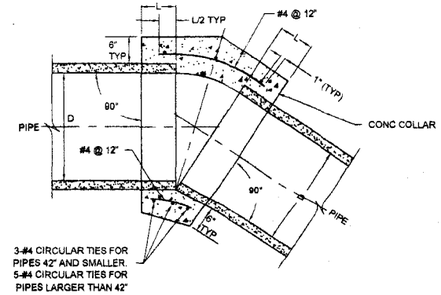
TABLE 2

LENGTHS OF STANDARD HOOKS (INCHES)

BAR SIZE	90 DEGREE BEND	180 DEGREE BEND	
		BEND RADIUS	LENGTH AFTER BEND
4	6.00	-	-
5	8.00	-	-
6	9.00	-	-
7	11.00	3.50	4.00
8	-	4.00	4.00
9	-	6.00	5.00



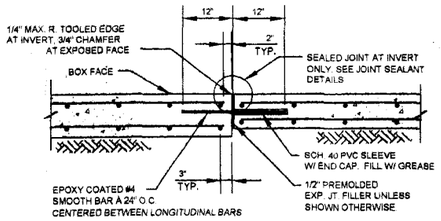
TYPICAL JOINT SEALANT DETAIL



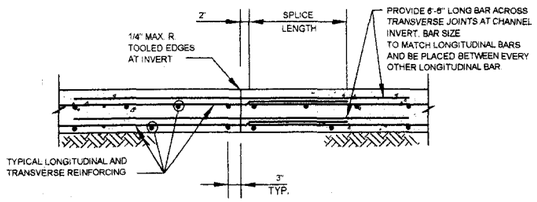
NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR AN ORDINARY JOINT.
2. L=12" FOR PIPES 24" OR LESS, L=18" FOR PIPES 27" TO 39", AND L=24" FOR PIPES 42" AND GREATER.
3. OMIT REINFORCING ON PIPES 24" OR LESS IN DIAMETER.
4. WHERE REINFORCING IS REQUIRED, THE DIAMETER OF CIRULAR TIES SHALL BE D+(2*WALL THICKNESS)+6". USE GRADE 60 REINFORCING STEEL.
5. NOT TO BE USED FOR A SIZE CHANGE IN THE MAINLINE

CONCRETE PIPE COLLAR

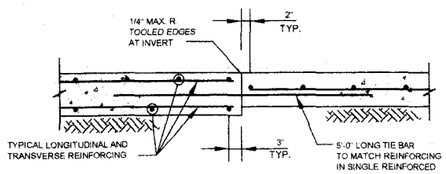


EXPANSION JOINT TYPE "H"



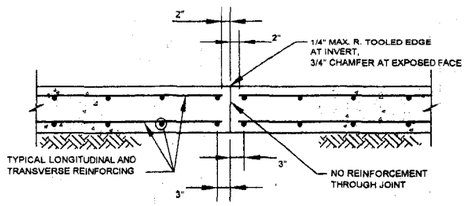
CONSTRUCTION JOINT TYPE "J"

(DOUBLE LAYER REINFORCING)

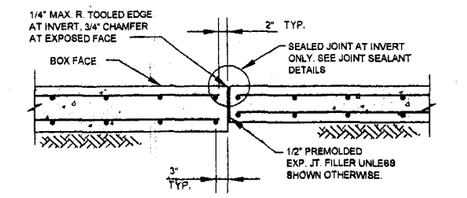


CONSTRUCTION JOINT TYPE "J"

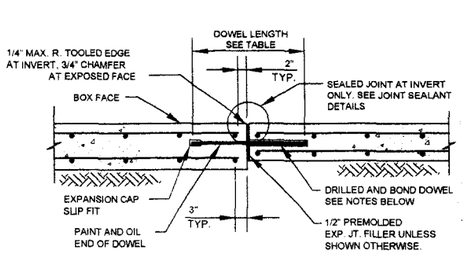
(SINGLE TO DOUBLE LAYER REINFORCING W/ TIE-BAR)



CONTRACTION JOINT TYPE "B"



EXPANSION JOINT TYPE "D"



NOTES:
DRILLED HOLE SHALL BE 2 TIMES THE DIAMETER OF THE DOWEL AND FILLED WITH GROUT.

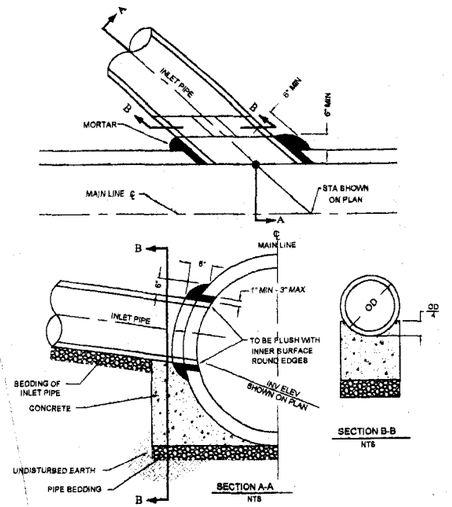
DOWEL SIZE AND SPACING:

SLAB OR WALL THICKNESS	MIN DOWEL LENGTH	MAX. DOWEL SPACING	DOWEL SIZE
LESS THAN 8"	18-INCH	12" O.C.	#6 BAR
8" TO 12"	20-INCH	12" O.C.	#8 BAR
12" TO 16"	22-INCH	12" O.C.	#10 BAR
16" TO 20"	24-INCH	18" O.C.	#12 BAR

DOWELS SHALL CONFORM TO ASTM A 675, GRADE 80, OR ASTM A 499.

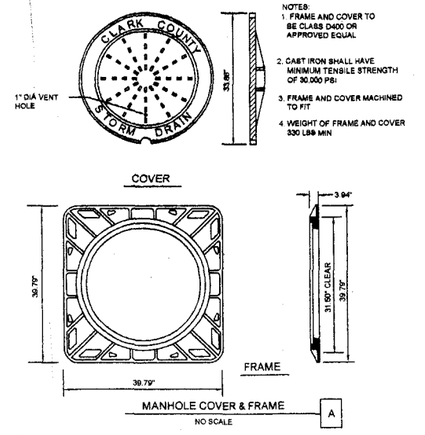
DOWEL SIZE SHALL BE SELECTED BASED ON THE THINNER MEMBER CONNECTED.

EXPANSION JOINT TYPE "E"



PIPE CUT AND JOIN DETAIL No 2

OUTSIDE DIAMETER OF INLET PIPE IS LESS THAN ONE HALF THE INSIDE DIAMETER OF MAIN LINE



WELLS [illegible], INC.
RECEIVED
Project No. 5029-01
Date 11/14/01
Project Manager

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

REV No	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORM DRAIN DETAILS

STORM DRAIN NOTES AND MISC. DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA PAUL H. JUDD CIVIL No. 7942 10-16-01

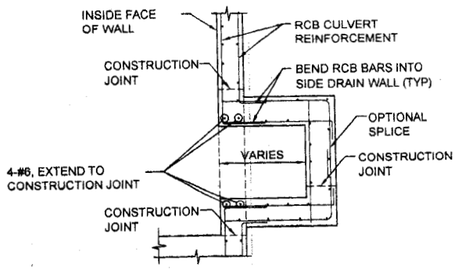
DESIGNED BY:	PHJ
DRAWN BY:	PHJ
CHECKED BY:	PHJ
DATE:	Oct 15, 2001 - 9:36am

SCALE	
HORIZ.	NTS
VERT:	NTS
FIELD BOOK	60-21-30

SHEET No 32

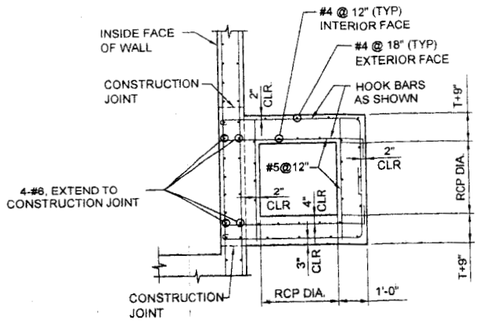
R99110A

L-1616

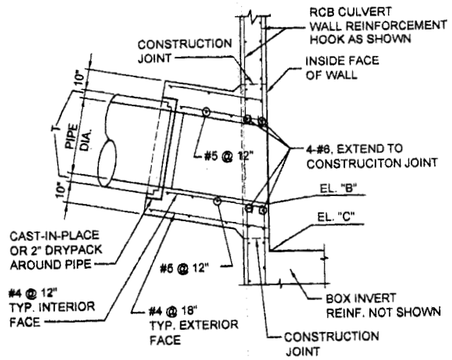


NOTE:
CONCRETE DIMENSIONS, REBAR SIZE, SPACING AND CLEARANCES ARE SAME SIZE WITH SECTION D-D.

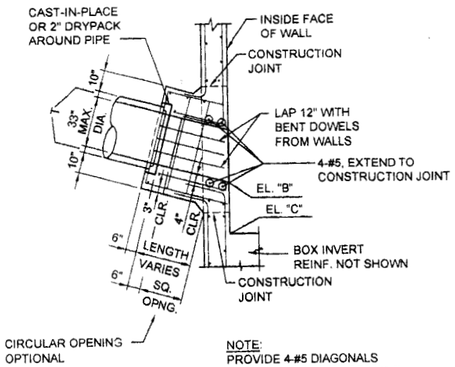
SECTION E-E



SECTION D-D

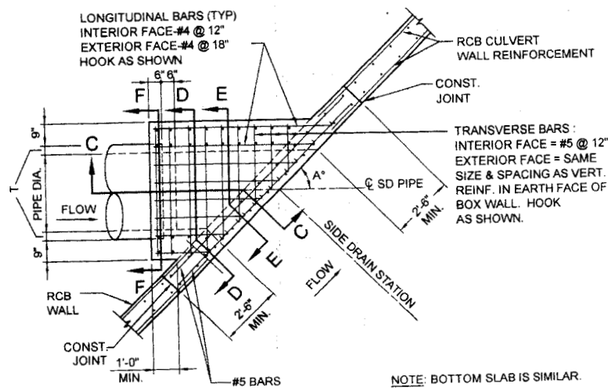


SECTION C-C



NOTE:
PROVIDE 4-#5 DIAGONALS EACH FACE OF PIPE OPENING (LENGTH OF PIPE DIAGONALS EQUALS PIPE DIA. & 2'-0"

SECTION A-A

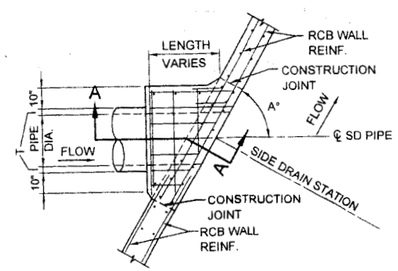


NOTE: BOTTOM SLAB IS SIMILAR.

PLAN - TOP SLAB

JUNCTION STRUCTURE TYPE "C"

FOR LATERAL SIZE GREATER THAN 33"



PLAN

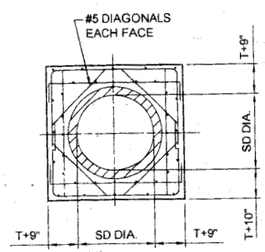
JUNCTION STRUCTURE TYPE "B"

FOR 33" MAXIMUM LATERAL SIZE

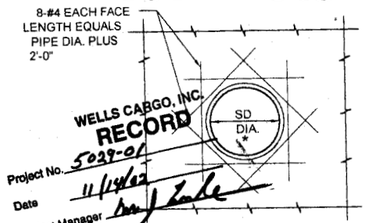
TABULATION OF SIDE DRAINS INTO REINFORCED CONCRETE BOXES

CHANNEL STATION	SHEET NUMBER	WALL	TYPE	PIPE DIA.	LENGTH	TYPE	ANGLE A°	ELEV. "B"	ELEV. "C"	COMMENTS
55+57	21	LEFT	SD	24"	47'	B	45°	2357.90	2354.90	STUB-OUT W/ PLUG
55+57	21	RIGHT	SD	24"	55'	B	45°	2357.90	2354.90	STUB-OUT W/ INLET
56+65	21	LEFT	SD	24"	48'	B	45°	2354.80	2351.77	STUB-OUT W/ PLUG
56+65	21	RIGHT	SD	18"	56'	B	45°	2356.30	2351.77	STUB-OUT W/INLET
61+74	22	LEFT	SD	30"	47'	B	45°	2352.00	2349.48	STUB-OUT W/ INLET
61+74	22	RIGHT	SD	18"	83'	B	45°	2353.00	2349.48	STUB-OUT W/ PLUG
62+58	22	LEFT	SD	30"	105'	B	45°	2351.40	2348.87	STUB-OUT W/ INLET
65+40	22	LEFT	SD	24"	50'	B	45°	2349.70	2348.78	STUB-OUT W/ INLET
65+40	22	RIGHT	SD	18"	73'	B	45°	2350.20	2348.78	STUB-OUT W/ INLET
68+51	22	LEFT	SD	30"	36'	B	45°	2348.90	2344.48	STUB-OUT W/ INLET
68+51	22	RIGHT	SD	24"	52'	B	45°	2347.40	2343.48	STUB-OUT W/ PLUG
69+15	22	LEFT	SD	24"	51'	B	58°	2347.20	2344.18	STUB-OUT W/ INLET
72+00	22	LEFT	SD	30"	31'	B	45°	2345.20	2342.75	STUB-OUT W/ PLUG
72+00	22	RIGHT	SD	18"	55'	B	45°	2346.30	2342.75	STUB-OUT W/ PLUG
75+15	23	LEFT	SD	30"	37'	B	40°	2343.50	2341.12	STUB-OUT W/ INLET
75+15	23	RIGHT	SD	24"	56'	B	45°	2344.00	2341.12	STUB-OUT W/ PLUG
75+98	23	LEFT	RCP	36"	92'	C	47°	2342.50	2340.50	STUB-OUT W/ INLET
79+00	23	LEFT	SD	36"	16'	C	41°	2340.20	2338.21	STUB-OUT W/ PLUG
79+00	23	RIGHT	SD	30"	57'	B	45°	2340.70	2338.21	STUB-OUT W/ PLUG
81+72	23	LEFT	RCP	53"x34"	34'	C	45°	2338.30	2336.15	STUB-OUT W/ INLET
82+34	23	LEFT	RCP	45"x29"	82'	C	60°	2337.90	2335.81	STUB-OUT W/ INLET
85+28	24	LEFT	RCP	45"x29"	15'	C	45°	2336.70	2334.54	STUB-OUT W/ PLUG
85+28	24	RIGHT	SD	30"	46'	B	55°	2337.00	2334.54	STUB-OUT W/ PLUG
90+33	24	RIGHT	SD	18"	75'	B	48°	2331.80	2327.33	STUB-OUT W/ INLET
96+03	24	LEFT	SD	24"	99'	B	40°	2328.00	2322.05	STUB-OUT W/ INLET
96+03	24	RIGHT	SD	24"	57'	B	50°	2325.50	2322.06	STUB-OUT W/ INLET

⚠ PAYMENT NOTE : SIDE DRAINS INTO RCB'S WILL NOT BE MEASURED FOR PAYMENT, AND THE COST THERE OF SHALL BE INCLUDED IN THE UNIT COSTS FOR RCB AND/OR STORM DRAIN PIPE.



SECTION F-F



* SEE PLAN AND PROFILE SHEETS FOR SD PIPE SIDE DRAIN LOCATIONS

NOTE: USE THIS REINF. DETAIL IF PIPE IS CAST-IN-PLACE.

SECTION B-B

NOTES:

CUT REINFORCEMENT 2-INCHES FROM OPENING IN CHANNEL WALL EXCEPT WHEN HOOK OR BEND IS REQUIRED.

"T" WALL THICKNESS OF PIPE.

ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2-INCHES CLEARANCE UNLESS OTHERWISE NOTED.

LOCATION OF ALL SPLICES SHALL BE SUBMITTED FOR APPROVAL BY THE CONTRACTING OFFICER.

ALL REINFORCING STEEL SHALL BE #5 @ 12" UNLESS NOTED OTHERWISE.

REV No	DATE	DESCRIPTION	APPROVED
⚠ 1	11-20-01	ADD PAYMENT NOTE	RWM

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORM DRAIN DETAIL SHEET
SIDE DRAIN INTO RCB
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

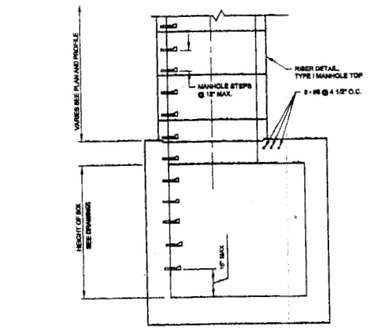
PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. NJOO
CIVIL
No. 7942
10-16-01

DESIGNED BY:	PHJ
DRAWN BY:	PHJ
CHECKED BY:	PHJ
DATE:	Oct 15, 2001 - 9:37am

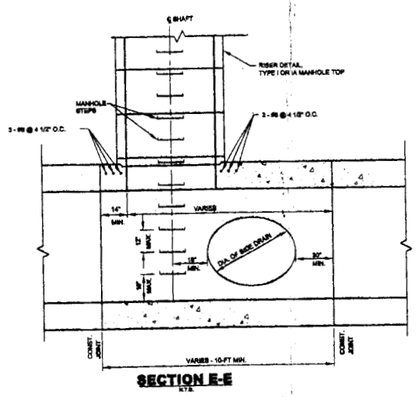
SCALE	
HORIZ.	NTS
VERT:	NTS
FIELD BOOK	60-21-30

SHEET No 33
R99110A
L-1616

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE



SECTION D-D
N.T.S.



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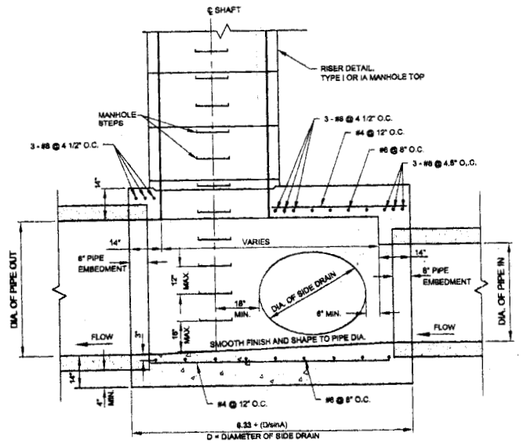

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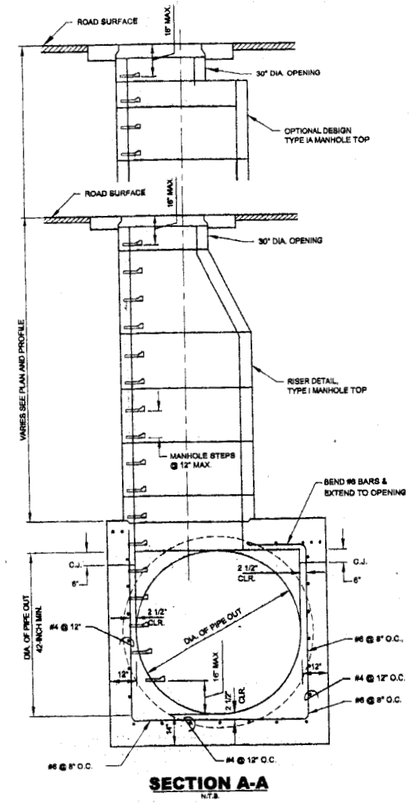
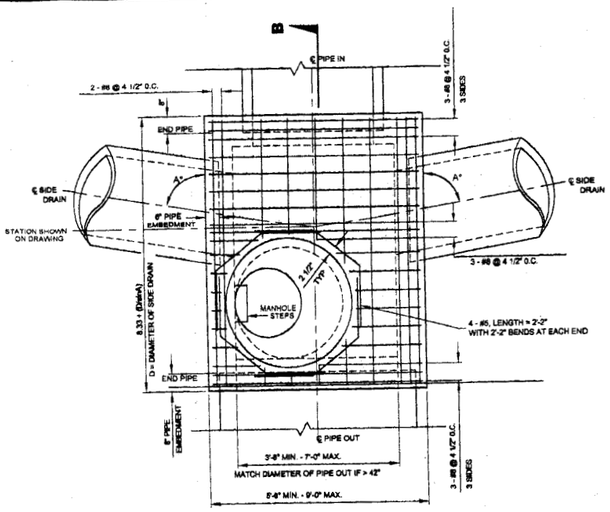
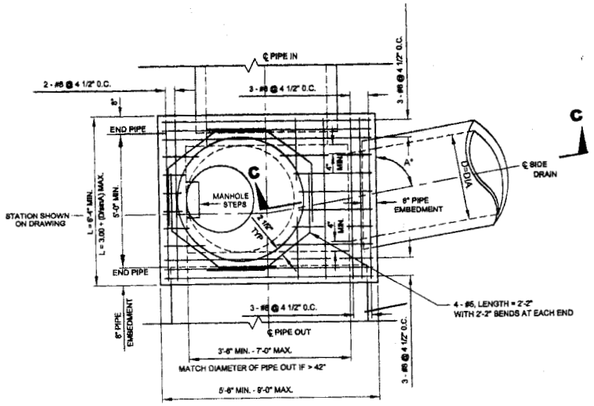


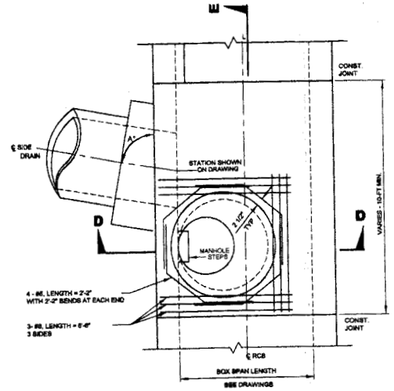
SECTION A-A
N.T.S.



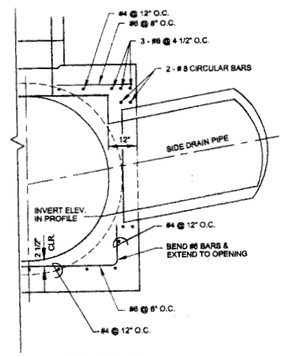
PLAN - DOUBLE SIDE DRAIN
N.T.S.



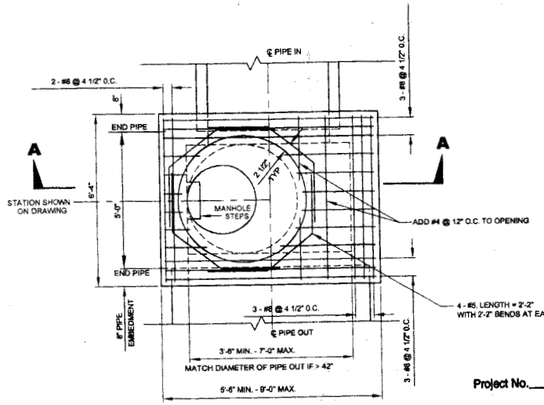
PLAN - SINGLE SIDE DRAIN
N.T.S.
POSITION MANHOLE ON OPPOSITE SIDE FROM THE SIDE DRAIN



PLAN - MANHOLE - RCB
N.T.S.



SECTION C-C
N.T.S.



PLAN - NO SIDE DRAIN
N.T.S.
POSITION MANHOLE ON EITHER SIDE

WELLS CARGO, INC.
RECORD
Project No. 5029-01
Date 11/14/01
Project Manager

NOTES:
1. ALL BARS SHALL BE DEFORMED BARS CONFORMING TO ASTM-615 GRADE 40.

2. CONCRETE SHALL BE MADE WITH TYPE V CEMENT IN ACCORDANCE WITH ASTM C-150. MINIMUM COMPRESSIVE 28 DAY STRENGTH = 4000 psi, MAX. SLUMP = 4"

3. CLEARANCE TO REINFORCING BARS TO BE 2 1/2" UNLESS NOTED OTHERWISE.

4. THIS DESIGN IS FOR PIPE SIZES 42-INCH TO 72-INCH. LARGER PIPE SIZES REQUIRES SPECIAL DESIGN.

RCB MANHOLE

MODIFIED TYPE II MANHOLE

REV No	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE
STORM DRAIN DETAILS
SPECIAL MANHOLE DETAILS
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL H. JUDDY
No. 7945
CIVIL
10-16-01

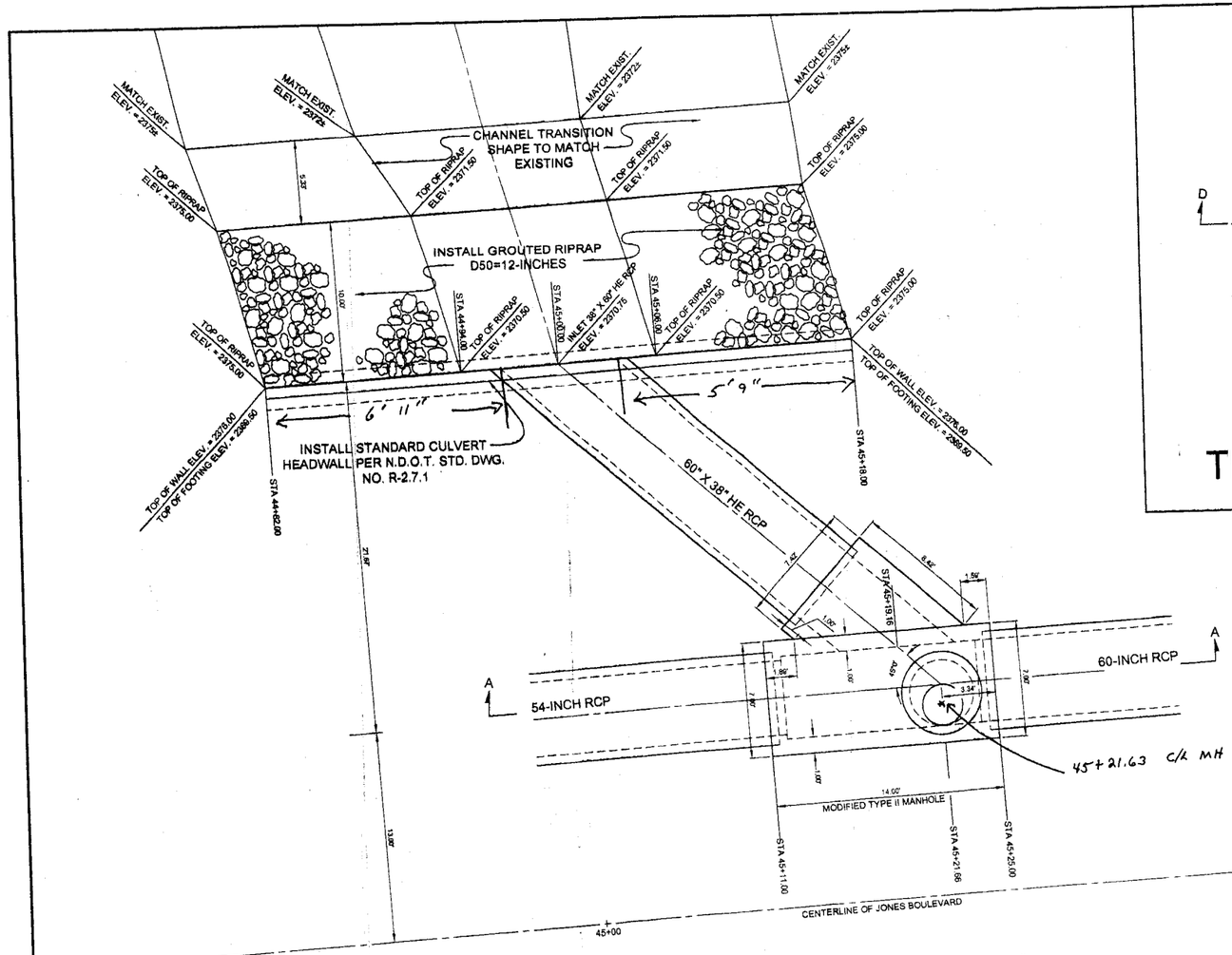
DESIGNED BY:	PHJ
DRAWN BY:	PHJ
CHECKED BY:	PHJ
DATE:	Oct 15, 2001 - 9:59am

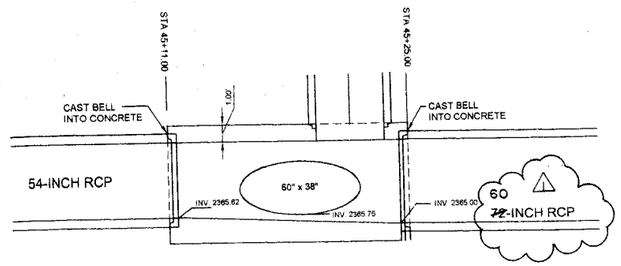
SCALE	
HORIZ:	NTS
VERT:	NTS
FIELD BOOK	60-21-30

SHEET No 34
R99110A
L-1616

MANHOLE DET.DWG

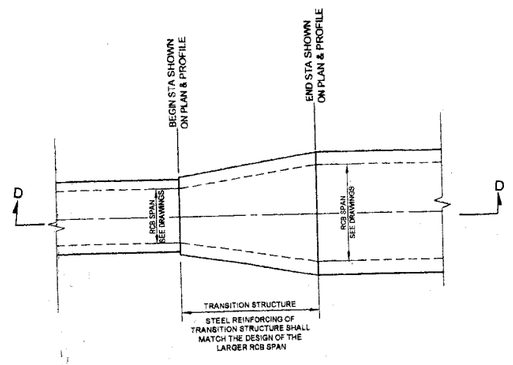
JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE



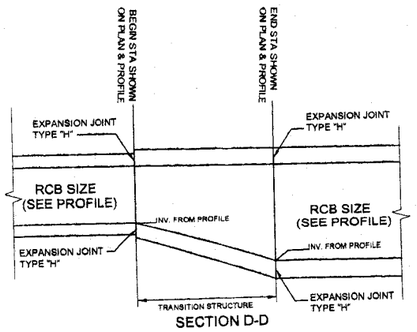


SECTION A-A

JUNCTION STRUCTURE - STA. 45+01



TYPICAL TRANSITION STRUCTURE
NTS



SECTION D-D

TRANSITION STRUCTURE TABLE

BEGIN STATION	RCB SIZE AT BEGINNING	END STATION	RCB SIZE AT END	LENGTH
55+40.00	72" (6' X 6')	55+50.00	6' X 6'	10.00'
58+50.00	6' X 6'	58+60.00	7' X 6'	10.00'
68+36.00	7' X 6'	68+46.00	10' X 6'	10.00'
75+00.00	10' X 6'	75+09.81	13' X 6'	9.81'
88+74.61	13' X 6'	88+91.61	10' X 7'	SEE DETAIL
94+88.09	10' X 7'	94+98.09	8' X 7'	10.00'
98+83.88	8' X 7'	98+93.88	10' X 8'	10.00'

TRANSITION STRUCTURES

RCB NOTES :
USE REINFORCING FOR 14'x 7' BOX PER NDOT STD. DWG. B-20. 1.2

RCB NOTES:

DESIGN AND CONSTRUCTION OF ALL REINFORCED CONCRETE BOX (RCB) STORM DRAIN SHALL CONFORM TO NEVADA DEPARTMENT OF TRANSPORTATION (N.D.O.T.) STANDARDS, AS SHOWN ON STANDARD DRAWINGS B-20.1.1 AND B-20.1.2

THE CONTRACTOR SHALL HAVE THE OPTION OF INSTALLING EITHER CAST-IN-PLACE RCB OR PRECAST RCB. PRECAST RCB SHALL CONFORM TO N.D.O.T. STANDARD DRAWING B20.1.8

THE UNIT PRICE BID FOR RCB (SIZE) SHALL BE FULL COMPENSATION FOR INSTALLING EITHER TYPE OF RCB.

THE LIMITS OF RCB FOR THE PROJECT (EXCLUDING TRANSITION STRUCTURES AND JUNCTION BOXES) ARE AS SHOWN IN TABLE A BELOW:

TABLE A - RCB STRUCTURE SUMMARY

BEGIN STATION	END STATION	RCB SIZE	CONCRETE QUANTITY CF / LF	REBAR QUANTITY LBS / LF
55+50.00	58+50.00	6' X 6'	15.9	124
58+60.00	68+36.00	7' X 6'	18.1	130
68+46.00	75+00.00	10' X 6'	23.0	233
75+09.81	88+74.61	13' X 6' *	36.2	374
88+91.61	94+88.09	10' X 7'	24.3	260
94+98.09	98+83.88	8' X 7'	22.1	160

RCB NOTES AND TABLE

WELLS CARGO INC.
RE( )
Project No. 5029-01
Date 11/14/01
Project Manager

REV No	DATE	DESCRIPTION	
2	11-15-01	ADD REINFORCING NOTE TO "RCB NOTES AND TABLE"	RWM
1	11-15-01	CORRECT 72 INCH RCP TO 60 INCH RCP IN SEC A-A	RWM
			APPROVED

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

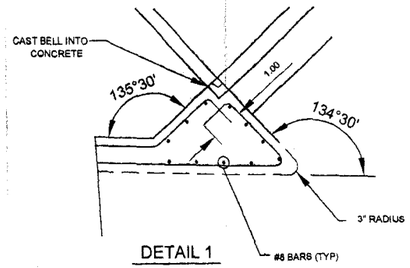
STORM DRAIN DETAIL SHEET
TRANSITIONS - JUNCTIONS & RCB DETAILS
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7942
10-16-01

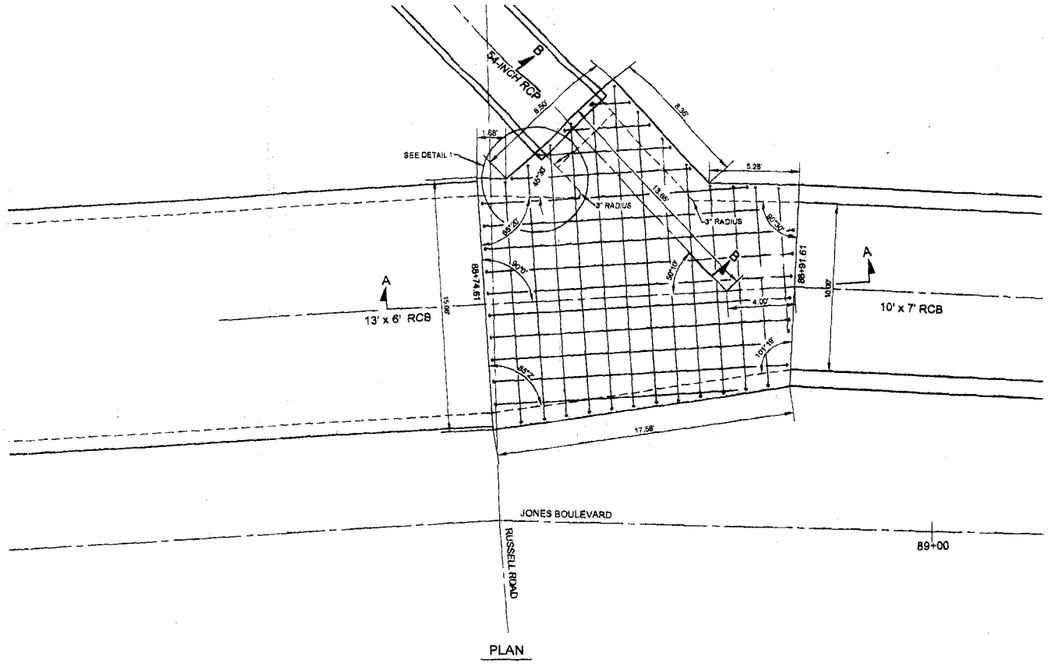
DESIGNED BY:	PHJ
DRAWN BY:	PHJ
CHECKED BY:	PHJ
DATE:	Oct 15, 2001 - 10.01am

SCALE	
HORIZ:	NTS
VERT:	NTS
FIELD BOOK	60-21-30

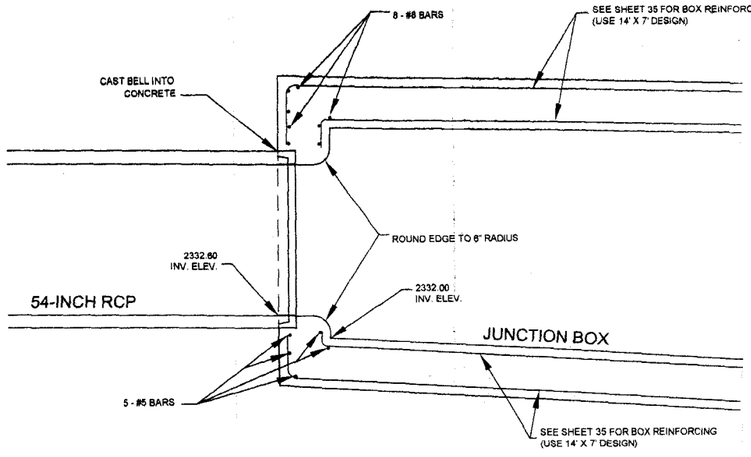
SHEET No 35
R99110A
L-1616



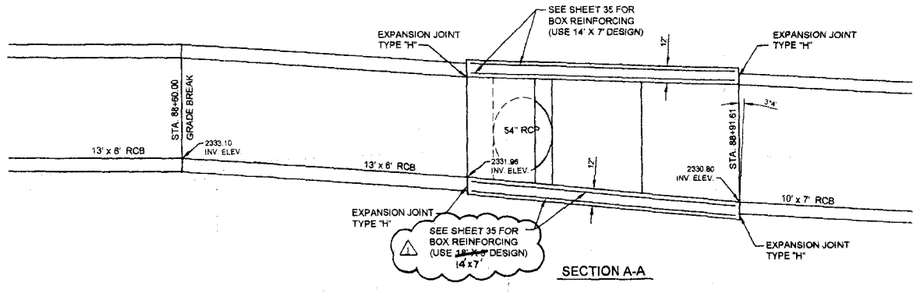
DETAIL 1



PLAN



SECTION B-B



SECTION A-A

WELLS CARGO, INC.
RECEIVED
Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED
1	11-15-01	CORRECT NOTE IN SECTION A - A	

CLARK COUNTY NEVADA

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

STORM DRAIN DETAIL SHEET

JUNCTION STRUCTURE AT STA. 88+74.61

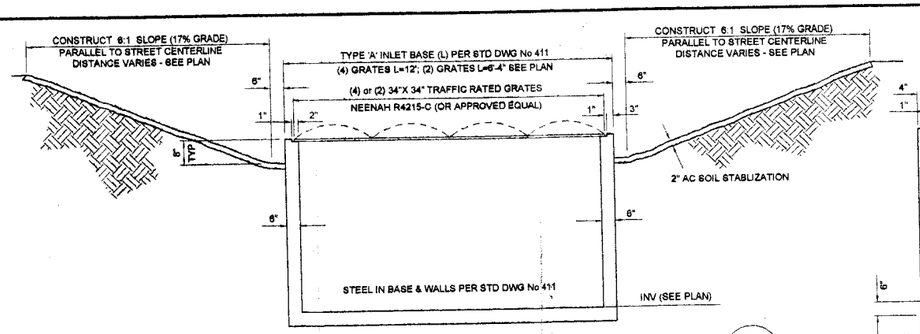
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL H. JUDD
CIVIL
No. 7943
10-16-01

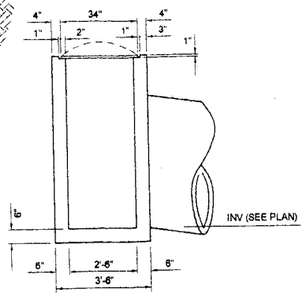
DESIGNED BY:	PHJ
DRAWN BY:	PHJ
CHECKED BY:	PHJ
DATE:	Oct 15, 2001 - 11:05am

SCALE	
HORIZ:	NTS
VERT:	NTS
FIELD BOOK	60-21-30

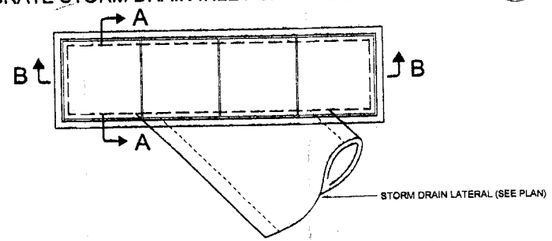
SHEET No	36
	R99110A
	L-1616



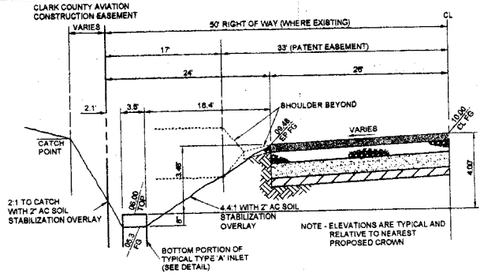
TYPICAL SECTION THRU (4) GRATE STORM DRAIN INLET
(2) GRATE STORM DRAIN INLET SIMILAR L= 6'-4" B



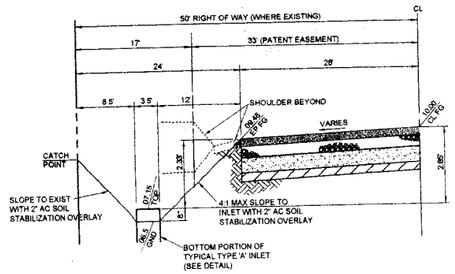
TYPICAL SECTION A



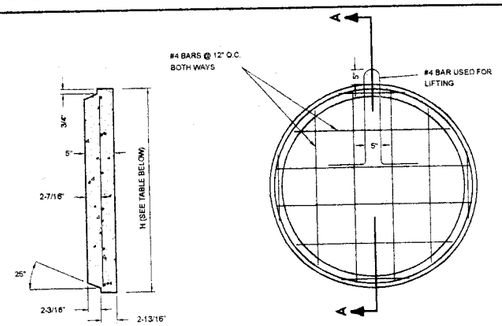
TYPICAL PLAN (4) GRATE STORM DRAIN INLET
(2) GRATE STORM DRAIN INLET SIMILAR L= 6'-4"



JONES BOULEVARD
INTERIM SUMP CONDITION INLETS AT ULTIMATE INLET LOCATIONS
LOOKING NORTH



JONES BOULEVARD
INTERIM SUMP CONDITION INLETS AT DISPOSABLE INLET LOCATIONS
LOOKING NORTH



SECTION A-A
NOT TO SCALE

ELEVATION
NOT TO SCALE

RCP DIA	H
18"	21-1/2"
24"	28-1/2"
30"	35-1/2"

NOTES:
1. USE CLASS 'A' CONCRETE
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. PLUG IS TO BE GROUTED INTO GROOVED END OF LAST PIPE LAID
4. PAYMENT FOR PLUG TO BE INCLUDED IN THE PRICE BID FOR INSTALLATION OF STORM DRAIN PIPE

REINFORCED CONCRETE PLUG
NOT TO SCALE

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

WELLS CARGO, INC.
RECORD

Project No. 5029-01
Date 11/14/02
Project Manager

REV No	DATE	DESCRIPTION	APPROVED

JONES BOULEVARD - BELTWAY TO TROPICANA AVENUE

DETAIL SHEET

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
PAUL H. WEDD
CIVIL
No. 7942
10-16-01

DESIGNED BY:	GEA/KEW
DRAWN BY:	Ed
CHECKED BY:	KEW
DATE:	Oct 15, 2001 - 11:20am

SCALE	
HORIZ:	AS NOTED
VERT:	AS NOTED
FIELD BOOK	60-21-30

SHEET No 37
R99110A
L-1616

I:\DETAILS\81\SDTN1.DWG

APPENDIX G

Data CD