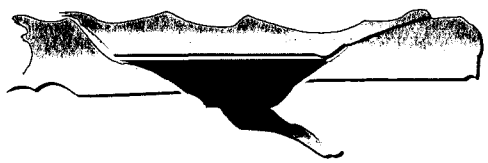
04-09-0166P

Request for Letter of Map Revision
Flamingo Wash
Mojave Road to Boulder Highway
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



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October 15, 2003

TABLE OF CONTENTS

APPENDICES

A. FEMA Forms

FEMA 'Overview and Concurrence Form' – MT-2 Form 1
FEMA 'Riverine Hydrology & Hydraulics Form' – MT-2 Form 2
FEMA 'Hydraulic Structures Form' – MT-2 Form 3
Statement of Explanations

B. Figures

Figure 1 - Existing FEMA Flood Zone Map
Figure 2 - Annotated FEMA Flood Zone Map
Photographs
Figure 3a and Figures 3b – Work Map

C. Hydraulic Models

Effective FIS Subcritical HEC-2 Output File (NGVD29)
Effective FIS Supercritical HEC-2 Output File (NGVD29)
Corrected Effective FIS Model (Pre-Project) Subcritical HEC-2 Output File
Corrected Effective FIS Model (Pre-Project) Supercritical HEC-2 Output File
Post-Project Conditions HEC-RAS Model Output
Check-RAS Output Files
NGVD29 to NAVD88 Datum Conversion Calculation

D. As-Built Plans

As-built plans - Boulder Highway Bridge over the Flamingo Wash (Phase I)
As-built plans - Improvement Plans for Flamingo Wash from Mojave Road to Interstate 515, Phase II

E. Data CD

Hydraulic Models electronic files
Check-RAS Output files
Work Maps

1.0 INTRODUCTION

This study provides hydraulic models and as-built plans in support of the Letter of Map Revision for the Flamingo Wash improvements from Mojave Road to Boulder Highway in Clark County, Nevada. The flood control improvements were constructed in two phases. The first phase involved reconstruction of the Boulder Highway Bridge at Flamingo Wash and included concrete transition structures upstream and downstream of the bridge (see Photo 2 Appendix B). The second phase consisted of concrete lining the wash between Boulder Highway and Mojave Road (see Photo 1 Appendix B).

2.0 PRE-PROJECT CONDITIONS

Previous to construction of the Flamingo Wash Phase I and II improvements, the reinforced box culverts at Boulder Highway did not have the capacity to convey the 100-year flood. The wash between Mojave Road and Boulder Highway was earthen without erosion protection. In July 1999, floodwater caused severe erosion of the banks in the project reach and overtopped the Boulder Highway Bridge.

Figure 1 of Appendix B shows the limits of the pre-project (effective) 100-year special flood hazard area, Zone A, reflecting the backwater at the Boulder Highway bridge. The effective 100-year flow in the project reach is 5,800 cfs between Mojave Road and Boulder Highway, and 6,300 cfs downstream of Boulder Highway. The effective special flood hazard area was modeled and delineated in the 1997 Flood Insurance Study (FIS) Restudy for the Flamingo Wash in Clark County, Nevada prepared by G.C. Wallace Inc. for the Clark County Regional Flood Control District.

3.0 POST-PROJECT CONDITIONS

Phase I of the Flamingo Wash improvements included the construction of the Boulder Highway Bridge. As part of the Phase I improvements, the three 7 ft x 11 ft box culverts under Boulder Highway were replaced with a double span bridge. The new bridge has an opening height of 7.7 ft, a span of 75 ft, and a 3 ft wide pier in the center. The total open area is 575 square feet.

Phase II was a channel lining project from Mojave Road to Boulder Highway. The concrete channel lining included both rectangular and trapezoidal sections. The rectangular section begins at Boulder Highway and consists of a 60 ft wide concrete rectangular channel that varies in height from 7.6 ft to 8.7 ft. The

rectangular channel then transitions into a 7 ft deep concrete trapezoidal channel with a 60' wide bottom and 2:1 side slopes.

As-built plans of the Phase I and II improvements are included in Appendix D. It should be noted that the HGL shown on the as-built plans is based on the channel 100-year design flow of 6,600 cfs. The 6,600 cfs is based on a future development in the upstream watershed.

With construction of the Flamingo Wash Phase I and II improvements, the 100-year flood is now contained within the channel as shown on the annotated FIRM, Figure 2 of Appendix B.

4.0 HYDRAULIC MODELS

4.2 Effective and Corrective Effective HEC-2 Models

Two hydraulic models, subcritical and supercritical, were prepared in the FIS for the reach of Flamingo Wash between Eastern Avenue and US 95 (aka I-515). Models were prepared using the US Army Corps of Engineers HEC-2 Water Surface Profile computer program.

Since the existing wash in the project reach was previously unlined, the subcritical model established the effective base flood elevations (BFEs). However, upstream of Mojave Road, the wash is concrete lined and the supercritical model established the effective BFEs.

For this study, the basic input for the effective FIS models was used with two modifications. First, the effective subcritical model was truncated to eliminate irrelevant sections, maintaining only the sections in the vicinity of the project improvements. All five sections of the effective FIS supercritical model were used in this study. Second, the elevations were raised by a factor of 2.26 ft to adjust them from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North America Vertical Datum of 1988 (NAVD88). Datum conversion calculations are provided in Appendix C.

The modified FIS models are referred to herein as the "corrected" effective models. Both the effective and corrected effective HEC-2 models are provided in Appendix C.

4.2 Post-Project HEC-RAS Model

For post-project conditions, the study reach was modeled with HEC-RAS using the supercritical flow option. The results show that supercritical flow is maintained throughout the project length and that the flow is contained within the concrete channel walls and under the Boulder Highway Bridge.

Figures 3a and 3b in Appendix B are work maps showing the locations of the model cross-sections, the effective and revised Zone A boundaries, and the upstream and downstream limits of this study. On Figures 3a and 3b, circled station numbers were taken directly from the corrected effective FIS model, and those enclosed by a square were created for the purposes of this study.

The limits of the post-project models were extended upstream and downstream of the project improvements a sufficient distance to "tie" into the effective corrected FIS models. At the upstream end, the post-project model ties into the supercritical corrective effective FIS model at Station 640, BFE equal to 1862.90 ft (critical depth). The post-project model ties into the subcritical corrected effective FIS model at Station 390, BFE equal to 1797.18 ft (critical depth).

5.0 CONCLUSION

Project improvements, including the Boulder Highway Bridge and concrete channel lining, were incorporated into the corrected effective FIS HEC-1 model. The results of the hydraulic analysis indicate that the 100-year flood will be contained within the channel for the entire length of the project.

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	2190E	9/27/02

2. Flooding Source: Flamingo Wash

3. Project Name/Identifier: Flamingo Wash Improvements from Mojave Road to Boulder Highway

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: 10/15/03

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: David 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: 10/15/03

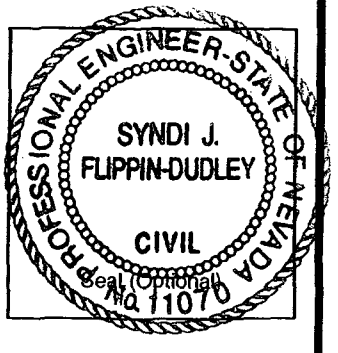
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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	License No.: 11070	Expiration Date: 6/30/05
Company Name: The Louis Berger Group, Inc.	Telephone No.: (702)-736-6632	Fax No.: (702)-736-0704
Signature: Syndi J. Flippin-Dudley		Date: 10/15/03

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



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

A. HYDROLOGY

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

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

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

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

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	Proposed/Revised
Downstream Limit	Downstream of Boulder Highway	390	1797.18	1797.18
Upstream Limit	Upstream of Mojave Road	640	1862.89	1862.91

2. Hydraulic Method Used

Hydraulic Analysis HEC-2 & HEC-RAS [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: See Attached	Floodway File Name:
Corrected Effective Model*	Natural File Name: See Attached	Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name: See Attached	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name: See Attached	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.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

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

PAPERWORK REDUCTION ACT

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

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. **Name of Structure: Boulder Highway Bridge over the Flamingo Wash**

   Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: Boulder Highway

   Downstream Limit/Cross Section: 430

   Upstream Limit/Cross Section: 440

2. **Name of Structure: Flamingo Wash Improvements from Mojave Road to I-515 - Phase II**

   Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: Flamingo Wash from Mojave Road to Boulder Highway

   Downstream Limit/Cross Section: 415

   Upstream Limit/Cross Section: 590

3. **Name of Structure:**

   Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure:

   Downstream Limit/Cross Section:

   Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Flamingo Wash

Name of Structure: Flamingo Wash from Mojave Road to Boulder Highway

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☐ Other (Describe):
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 5,800 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

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

C. BRIDGE/CULVERT

Flooding Source: Flamingo Wash

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☒ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-2 with special bridge
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☒ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☒ Skew Angle
- ☒ Distances Between Cross Sections
- ☐ Erosion Protection
- ☒ Low Chord Elevations – Upstream and Downstream
- ☒ Top of Road Elevations – Upstream and Downstream
- ☒ Structure Invert Elevations – Upstream and Downstream
- ☒ Stream Invert Elevations – Upstream and Downstream
- ☒ Cross-Section Locations

4. Sediment Transport Considerations

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

D. DAM

Flooding Source:

Name of Structure:

1. This request is for (check one): ☐ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ Local government agency

   ☐ Private organization Name of the agency or organization:

3. Does the project involve revised hydrology? ☐ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

4. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

5. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

6. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- ☐ upgrading of an existing levee/floodwall system
- ☐ a newly constructed levee/floodwall system
- ☐ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☐ earthen embankment, dike, berm, etc.	Station	to
☐ structural floodwall	Station	to
☐ Other (describe):	Station	to

c. Structural Type (check one):

- ☐ monolithic cast-in place reinforced concrete
- ☐ reinforced concrete masonry block
- ☐ sheet piling
- ☐ Other (describe):

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☐ No

If Yes, by which agency?

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures. Sheet Numbers:
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system. Sheet Numbers:
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure. Sheet Numbers:
4. A layout detail for the embankment protection measures. Sheet Numbers:
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations. Sheet Numbers:

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

3.0 feet or more at the downstream end and throughout	☐ Yes	☐ No
3.5 feet or more at the upstream end	☐ Yes	☐ No
4.0 feet within 100 feet upstream of all structures and/or constrictions	☐ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☐ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☐ Yes	☐ No

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☐ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☐ does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is:

b. The maximum levee slope floodside is:

c. The range of velocities along the levee during the base flood is: (min.) to (max.)

d. Embankment material is protected by (describe what kind):

e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D_{100}	D_{50}	Thickness	
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								

(Extend table on an added sheet as needed and reference each entry)

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☐ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:

☐ Overall height: Sta. ; height ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

c. Summary of stability analysis results:

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction		1.3
II	Sudden drawdown		1.0
III	Critical flood stage		1.4
IV	Steady seepage at flood stage		1.4
VI	Earthquake (Case I)		1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☐ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☐ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☐ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☐ No

h. The duration of the base flood hydrograph against the embankment is hours.

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☐ Other (specify):

b. Stability analysis submitted provides for:

☐ Overturning ☐ Sliding If not, explain:

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☐ Wind @ P_w = psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☐ 1%-annual-chance significant wave height: ft.

☐ 1%-annual-chance significant wave period: sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection ☐ is, ☐ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☐ Yes ☐ No

b. The computed range of settlement is ft. to ft.

c. Settlement of the levee crest is determined to be primarily from :

☐ Foundation consolidation
☐ Embankment compression
☐ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☐ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: acres
Draining to ponding area: acres

b. Relationships Established

Ponding elevation vs. storage	☐ Yes	☐ No
Ponding elevation vs. gravity flow	☐ Yes	☐ No
Differential head vs. gravity flow	☐ Yes	☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☐ No

d. Specify the discharge capacity of the head pressure conduit: cfs

e. Which flooding conditions were analyzed?

• Gravity flow (Interior Watershed)	☐ Yes	☐ No
• Common storm (River Watershed)	☐ Yes	☐ No
• Historical ponding probability	☐ Yes	☐ No
• Coastal wave overtopping	☐ Yes	☐ No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☐ Yes ☐ No

If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage? ☐ Yes ☐ No

If Yes, include the number of pumping plants:
For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic? ☐ Yes ☐ No

If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☐ is not a problem
Hydrocompaction ☐ is ☐ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☐ is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☐ No

Attach supporting documentation

d. Sediment Transport Considerations:

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

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☐ Yes ☐ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
☐ Yes ☐ No

If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No
If No, please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source:

Name of Structure:

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume acre-feet

Debris load associated with the base flood discharge: Volume acre-feet

Sediment transport rate (percent concentration by volume)

Method used to estimate sediment transport:

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition:

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

EXPLANATIONS

Explanation of Upstream Water Surface Elevation (Form 2, Section B-1)

See Report Text Section 4.2

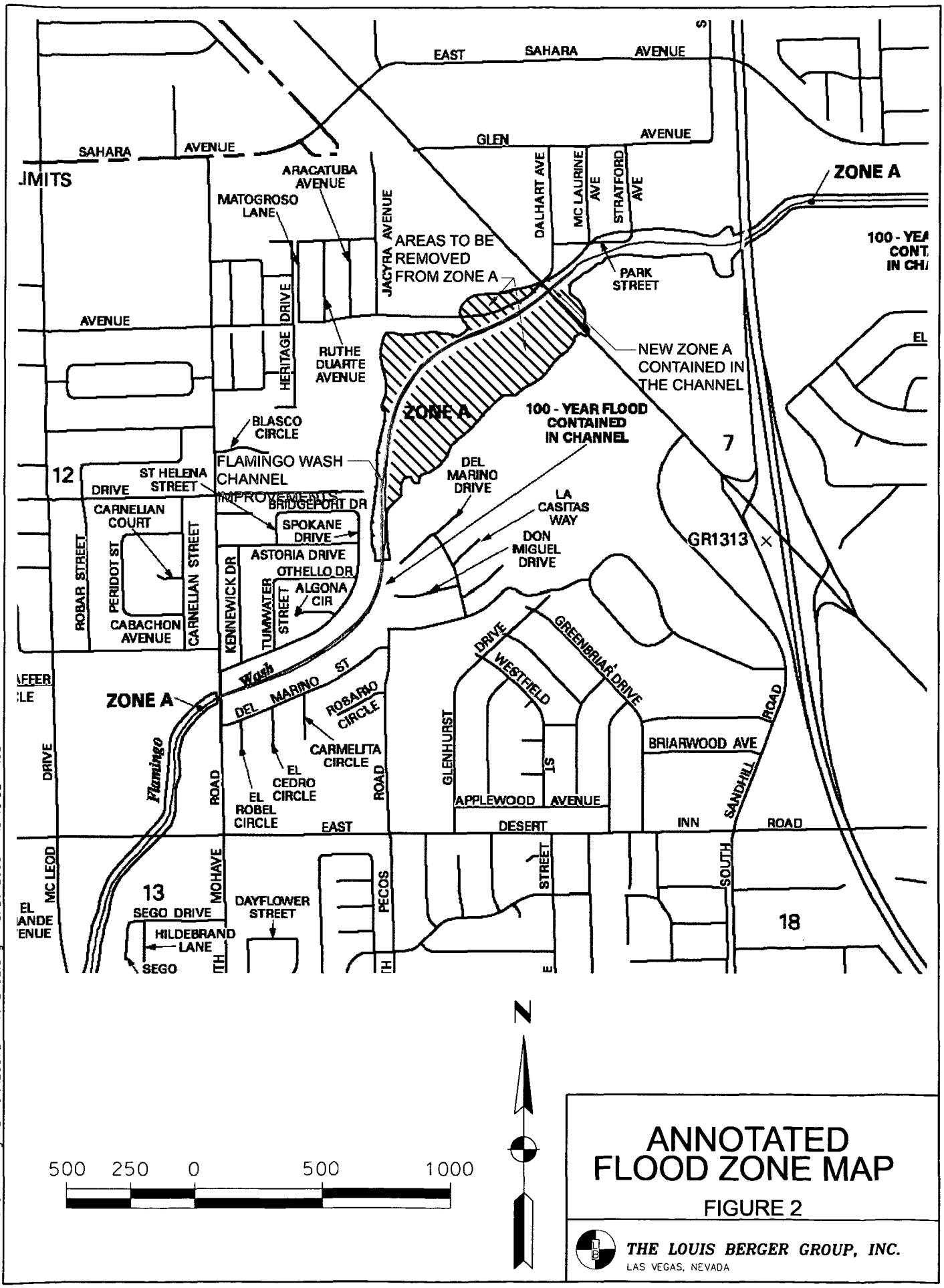
List of Hydraulic Models Submitted (Form 2, Section B-4)

Duplicate Effective Model - base3-4.01 (Subcritical Flow)
Duplicate Effective Model - base3-4.02 (Supercritical Flow)
Corrected Effective Model (Pre-Project Conditions) – 879-F-C-sub.dat (Subcritical Flow)
Corrected Effective Model (Pre-Project Conditions) – 879-F-C-super.dat (Supercritical Flow)
Post-Project Conditions Model – 879-P-Flamingo-sub.prj (Subcritical Flow)

Explanation of Sediment Transport (Form 3, Section B-4 & Section C-4)

Sediment transport was not considered because its effect on water surface elevations is negligible.

APPENDIX B
Figures

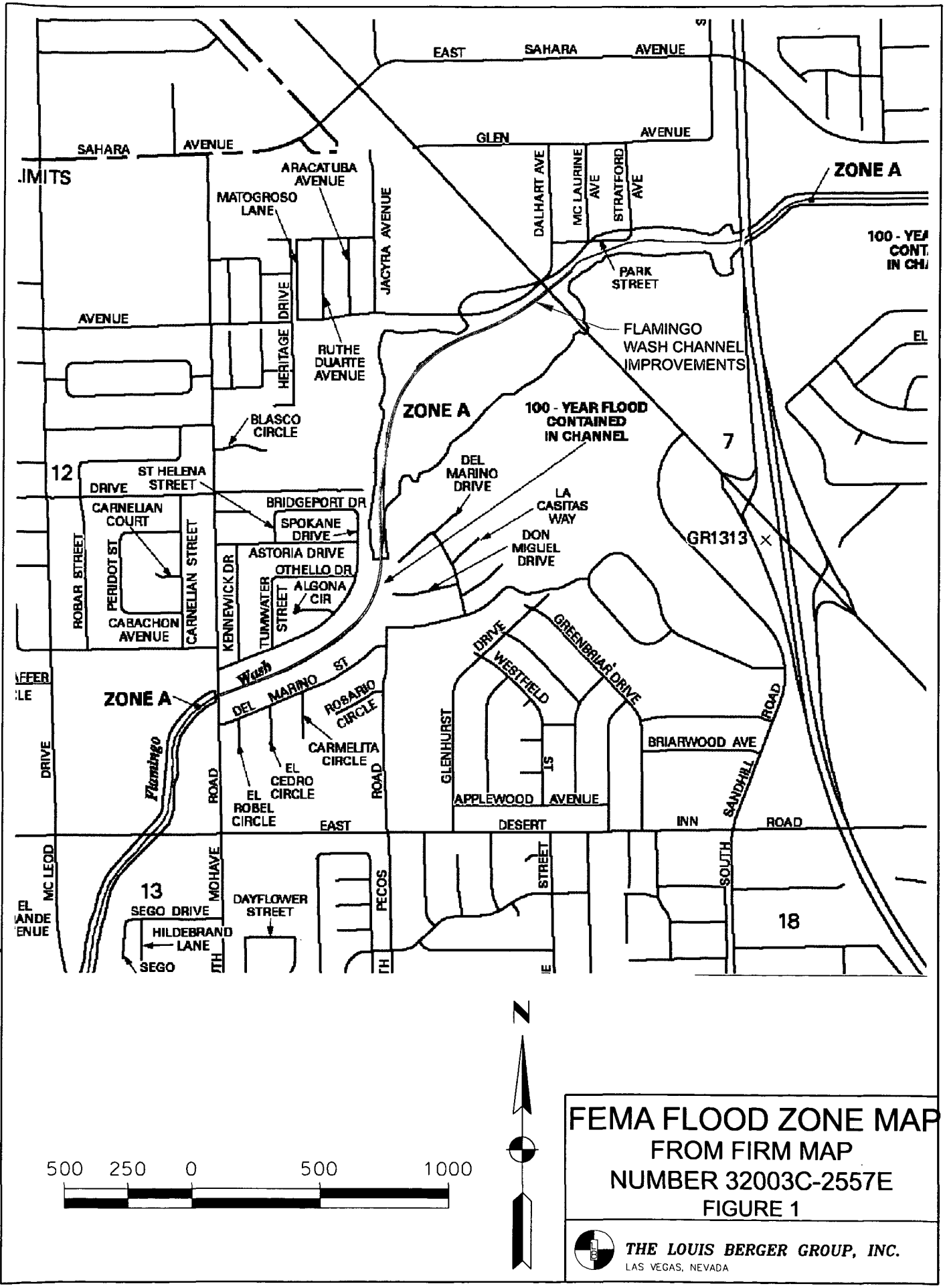


ANNOTATED FLOOD ZONE MAP

FIGURE 2

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE: X:\879-Flamingo\Exhibit\2557E-FIGURE-02.dwg - 8/26/2003 - 13:49:52 RGS



FEMA FLOOD ZONE MAP
FROM FIRM MAP NUMBER 32003C-2557E
FIGURE 1

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

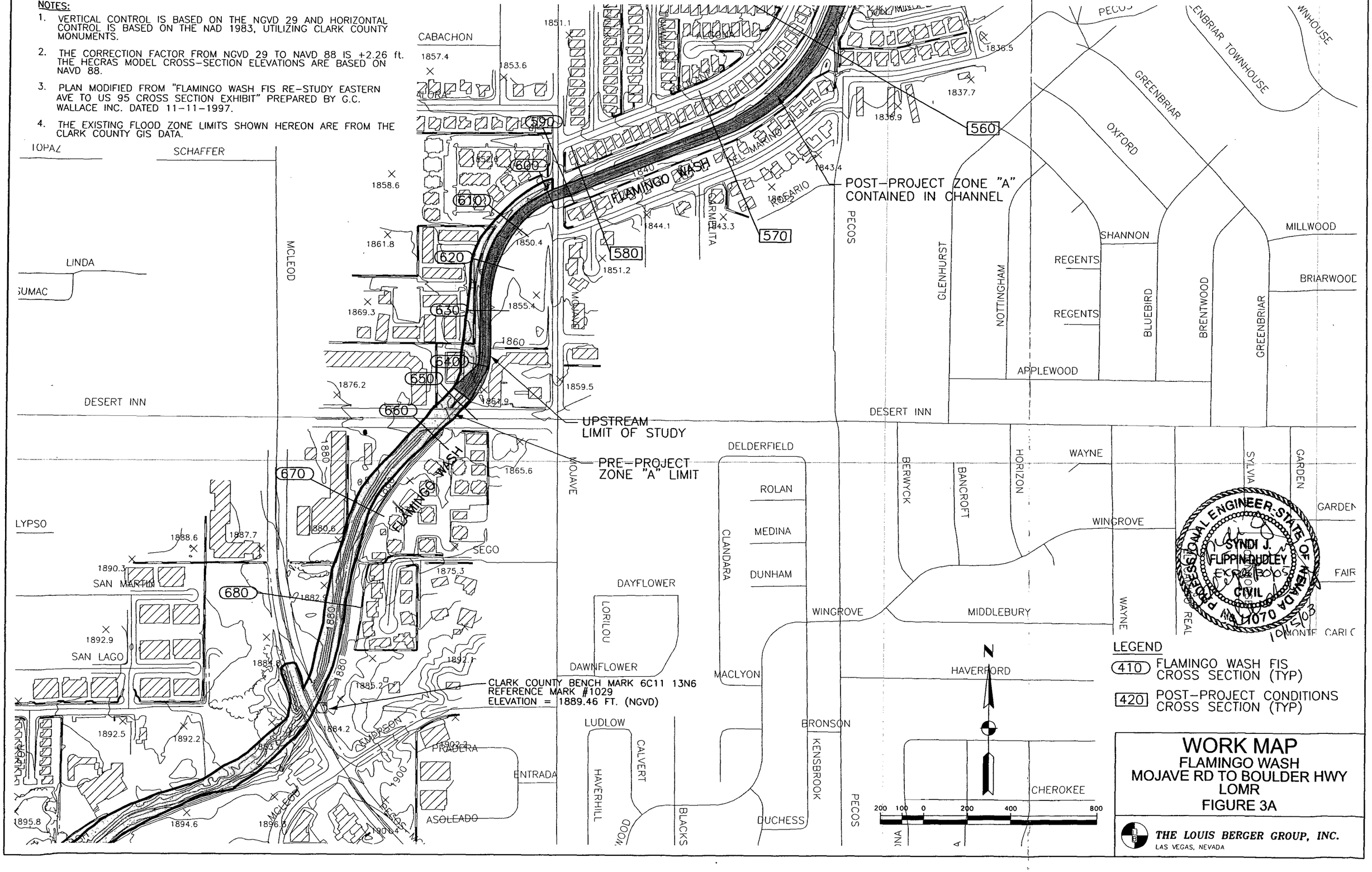
FILE: X:\879-Flamingo\Exhibit\2557E-FIGURE-01.dwg - 8/26/2003 - 13:06:29 RGS

Photo 1 - Flamingo Wash Improvements from Mojave Road to Boulder Highway looking downstream towards Boulder Highway. Mojave Road is located in the lower right hand corner of the photo and Boulder Highway is across the top of the photo.

Photo 2 - Flamingo Wash Improvements looking upstream of Boulder Highway.

NOTES:

1. VERTICAL CONTROL IS BASED ON THE NGVD 29 AND HORIZONTAL CONTROL IS BASED ON THE NAD 1983, UTILIZING CLARK COUNTY MONUMENTS.
2. THE CORRECTION FACTOR FROM NGVD 29 TO NAVD 88 IS +2.26 ft. THE HECRAS MODEL CROSS-SECTION ELEVATIONS ARE BASED ON NAVD 88.
3. PLAN MODIFIED FROM "FLAMINGO WASH FIS RE-STUDY EASTERN AVE TO US 95 CROSS SECTION EXHIBIT" PREPARED BY G.C. WALLACE INC. DATED 11-11-1997.
4. THE EXISTING FLOOD ZONE LIMITS SHOWN HEREON ARE FROM THE CLARK COUNTY GIS DATA.



SYNDI J. FLIPPIN-DUDLEY
CIVIL
No. 11070
10/15/03

LEGEND

(410) FLAMINGO WASH FIS CROSS SECTION (TYP)

[420] POST-PROJECT CONDITIONS CROSS SECTION (TYP)

WORK MAP
FLAMINGO WASH
MOJAVE RD TO BOULDER HWY
LOMR
FIGURE 3A

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-05.dgn ~ 10/15/2003 ~ 12:14:46 JPS

NOTES:

1. VERTICAL CONTROL IS BASED ON THE NGVD 29 AND HORIZONTAL CONTROL IS BASED ON THE NAD 1983, UTILIZING CLARK COUNTY MONUMENTS.
2. THE CORRECTION FACTOR FROM NGVD 29 TO NAVD 88 IS +2.26 ft. THE HECRAS MODEL CROSS-SECTION ELEVATIONS ARE BASED ON NAVD 88.
3. PLAN MODIFIED FROM "FLAMINGO WASH FIS RE-STUDY EASTERN AVE TO US 95 CROSS SECTION EXHIBIT" PREPARED BY G.C. WALLACE INC. DATED 11-11-1997.
4. THE EXISTING FLOOD ZONE LIMITS SHOWN HEREON ARE FROM THE CLARK COUNTY GIS DATA.

CLARK COUNTY BENCH MARK 6C12 7NW6
REFERENCE MARK #1021
ELEVATION = 1804.74 FT. (NGVD)

CLARK COUNTY BENCH MARK 6C12 7C4
REFERENCE MARK #1020
ELEVATION = 1814.92 FT. (NGVD)

POST-PROJECT ZONE "A" CONTAINED IN CHANNEL

PRE-PROJECT ZONE "A" LIMIT PER FLAMINGO WASH RESTUDY

100-YEAR FLOOD CONTAINED IN CHANNEL

BOULDER HIGHWAY BRIDGE

DOWNSTREAM LIMIT OF STUDY

LEGEND

(410) FLAMINGO WASH FIS CROSS SECTION (TYP)

[420] POST-PROJECT CONDITIONS CROSS SECTION (TYP)

WORK MAP
FLAMINGO WASH
MOJAVE RD TO BOULDER HWY
LOMR
FIGURE 3B

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

PROFESSIONAL ENGINEER-STATE OF NEVADA
SYNDI A. FLIPPIN-DUDLEY
No. 10107
CIVIL
10/15/03

FILE NAME: X:\879-Flamingo\Exhibit\879-FIGURE-04.dgn - 10/15/2003 - 11:59:52 JPS

APPENDIX C
Hydraulic Models

Effective FIS Subcritical Flow HEC-2 Model Output File
(NGVD29)

```
1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    06OCT97    TIME   14:22:41  *
*****************************************
```


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


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

1

THIS RUN EXECUTED 06OCT97 14:22:41

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
```

```
T1      550.032
T2      FLAMINGO WASH FIS RESTUDY
T3      FLOODPLAIN DELINEATION - NGVD28
T4      FILES: BASE3-4.DWG, BASE3-4.D1
T4      STARTING WSE = NORMAL DEPTH
T4      SUBCRITICAL RUN
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		2			0.004			6400	1705	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1		-1				-2	-6		

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

100 150

NC	0.03	0.03	0.03	0.1	0.3					
X1	10	18	1000	1126.64						
GR	1710	1000	1710.07	1002.71	1710	1003.06	1708	1012.39	1706	1021.7
GR	1704	1031.01	1702	1040.32	1701.54	1042.48	1700.33	1049.9	1700.55	1089.4
GR	1702	1095.84	1704	1104.89	1706	1114.24	1708	1123.66	1708.6	1126.64
GR	1710	1152.79	1710.41	1160.64	1712	1288.04				

NC	0.03	0.03	0.03							
X1	20	17	1182.02	1322.04	483.22	497.54	488.53			
GR	1712	1000	1711.97	1182.02	1710	1190.86	1708	1199.75	1706	1208.56
GR	1704	1217.31	1703.12	1221.12	1703.59	1267.53	1704	1269.51	1706	1279.06
GR	1708	1288.6	1710	1298.12	1711.95	1307.42	1712	1307.8	1713.45	1322.04
GR	1712.7	1343.21	1713.7	1500.75						
NC	0.03	0.03	0.03							
X1	30	16	1053.23	1154.72	494.86	503.84	498.03			
GR	1714.3	1000	1714	1012.26	1712.41	1053.23	1712	1055.19	1710	1064.74
GR	1708	1074.25	1706	1083.68	1705.86	1084.33	1705.85	1124.71	1706	1125.31
GR	1708	1133.14	1710	1140.87	1712	1148.55	1713.61	1154.72	1714	1175.89
GR	1715.8	1316.21								
NC	0.03	0.03	0.03							
X1	40	20	1146.2	1238.76	500.14	481.13	491.57			
GR	1718	1000	1717.12	1101.53	1716	1146.2	1715.85	1152.03	1714	1159.77
GR	1712	1168.18	1710	1176.59	1708	1185.01	1707.75	1186.07	1707.38	1196.73
GR	1707.2	1216.01	1708	1218.57	1710	1225.27	1712	1231.97	1714	1238.76
GR	1714.1	1239.39	1716	1283.03	1716.17	1284.32	1716.77	1316.26	1718	1327.96

1

NC	0.03	0.03	0.03							
X1	50	21	1066.67	1235.55	334.29	277.63	305.6			
GR	1723	1000	1722	1020.92	1721.42	1037.11	1720.56	1066.67	1720	1068.75
GR	1718	1076.4	1716	1084.26	1714	1092.32	1712	1100.45	1710	1108.62
GR	1708.9	1112.98	1709	1152.91	1710	1158.04	1712	1168.25	1714	1178.41
GR	1714.6	1181.82	1716	1195.46	1717.14	1207.5	1718	1214.02	1720	1235.55
GR	1720	1249.78								
NC	0.03	0.03	0.03							
X1	60	31	1120.14	1223.41	499.62	502.1	499.27			
GR	1720	1000	1718.36	1013.98	1718	1035.26	1717.58	1105.92	1718	1119.77
GR	1718	1120.01	1718.01	1120.14	1716	1128.57	1714	1136.9	1712	1145.29
GR	1710.1	1153.14	1710	1183.08	1709.94	1194.72	1710	1194.99	1712	1203.55
GR	1714	1212.13	1716	1220.71	1716.63	1223.41	1717.35	1277.47	1718.05	1286.74
GR	1718	1287.48	1718	1296.95	1717.48	1310.09	1718	1314.87	1718.69	1321.04
GR	1718	1336.07	1717.62	1343.02	1718	1362.12	1718.73	1381.28	1718.4	1394.59
GR	1720	1400.91								
NC	0.03	0.03	0.03							
X1	70	17	1084.1	1197.56	493.27	498.08	497.95			
GR	1723.3	1000	1723.69	1084.1	1722	1090.63	1720	1098.35	1718	1106.05
GR	1716	1113.75	1714	1121.45	1712	1129.17	1712	1129.24	1712	1129.36
GR	1712.6	1169.17	1714	1174.59	1716	1182.8	1718	1191.03	1719.59	1197.56
GR	1720	1230.27	1720.07	1233.61						
NC	0.03	0.03	0.03							
X1	80	18	1147.29	1269.91	455.76	481.96	470.68			
GR	1726	1000	1725.4	1007.66	1724.07	1115.85	1724	1116.84	1723.19	1147.29
GR	1722	1152.02	1720	1159.92	1718	1167.78	1716	1175.62	1714.38	1181.94
GR	1714.9	1227.68	1716	1232.07	1718	1240.31	1720	1248.54	1722	1256.76
GR	1724	1264.99	1725.21	1269.91	1724.85	1287.78				
NC	0.03	0.03	0.03							
X1	90	20	1056.45	1168.18	495.14	465.14	482.19			
GR	1726	1000	1725.75	1009.38	1724.96	1031.29	1724.64	1056.45	1724	1058.67

GR	1722	1065.64	1720	1072.62	1718	1079.6	1716	1086.6	1715.19	1089.42
GR	1716	1103.03	1717.15	1124.51	1718	1128.2	1720	1136.83	1722	1145.32
GR	1724	1153.73	1726	1162.18	1727.42	1168.18	1728	1186.62	1728.02	1187.5
NC	0.03	0.03	0.03							
X1	100	25	1022.27	1132.68	289.86	299.75	295.13			
GR	1732	1000	1732	1001	1732.08	1001.22	1730	1011.88	1728	1022.27
GR	1727.6	1024.44	1726	1027.45	1724	1031.2	1722	1034.85	1720	1038.4
GR	1718.7	1040.93	1719.04	1047.62	1718.99	1102.02	1719.04	1118.34	1720	1119.65
GR	1722	1123	1724	1126.5	1726	1130.15	1727.26	1132.68	1727.45	1139.16
GR	1728	1142.93	1728.68	1147.57	1730	1157.98	1730.09	1158.86	1730	1162.48
NC	0.03	0.03	0.015							
X1	110	21	1022.67	1137.41	25.99	26.18	25.69			
GR	1732.5	1000	1732	1002.64	1730	1012.69	1728	1022.67	1727.56	1024.87
GR	1726	1027.45	1724	1030.85	1722	1034.42	1720.5	1036.37	1720.5	1099.9
GR	1720.5	1122.88	1720.5	1123.19	1720.5	1123.29	1722	1126.96	1724	1130.74
GR	1726	1134.53	1727.52	1137.41	1728	1142.14	1729.05	1148.68	1730	1154.29

1

GR	1731.7	1164.66								
NC	0.03	0.03	0.015							
X1	120	7	1029.49	1136.49	88.77	93.13	90.11			
X3	10			1029.49	1730	1136.49	1730			
GR	1730.3	1000	1730	1006.09	1728	1029.49	1721.9	1029.49	1721.9	1136.49
GR	1728	1136.49	1728	1146.34						
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	145	107	7	500	0	1722.53	1721.9
X1	130	8	1035.81	1142.81	120.77	117.86	119.69			
X2			1	1727.53	1731.43			1.33		
X3	10			1035.81	1731	1142.81	1731			
GR	1728.6	1000	1728.71	1018.83	1728	1035.81	1722.53	1035.81	1722.53	1142.81
GR	1728	1142.81	1728.87	1157.29	1728.69	1174.35				
NC	0.02	0.02	0.015							
X1	140	13	1149.72	1265.63	64.74	64.09	64.14			
X3	10			1149.72	1730	1265.63	1730			
GR	1729.5	1000	1728.41	1149.72	1728	1150.76	1726	1155.81	1724	1161.07
GR	1722.8	1165.81	1722.6	1250.59	1724	1254.37	1726	1259.66	1728	1264.74
GR	1728.3	1265.63	1728.8	1316.23	1728.18	1343.83				
NC	0.02	0.02	0.02							
QT	1	6300								
X1	150	18	1018.39	1152.46	491.39	488.88	489.94			
GR	1732	1000	1731.69	1018.39	1730	1024.12	1728	1030.88	1726.48	1035.9
GR	1726.1	1066.83	1726	1067.43	1724.2	1074.87	1724	1083.96	1723.53	1107.26
GR	1724	1108.86	1725.23	1113.02	1726	1135.88	1725.99	1136.31	1728	1142.71
GR	1730	1149.03	1731.09	1152.46	1731.43	1169.72				
NC	0.02	0.02	0.02							
X1	160	22	1042.38	1195.86	501.43	502.7	501.51			
GR	1734	1000	1734.52	1002.52	1734	1015.73	1733.26	1042.38	1732	1045.87
GR	1730	1051.46	1728	1057.16	1727.61	1058.29	1727.59	1089.49	1726.47	1097.9
GR	1726	1115.47	1725.61	1127.39	1726	1131.14	1727.46	1145.07	1728	1162.54
GR	1728.2	1169.98	1730	1173.77	1732	1178.13	1733.38	1181.15	1734	1195.86
GR	1734.2	1200.57	1735.81	1203.67						

NC	0.02	0.02	0.02							
X1	170	20	1042.95	1183.42	486.67	487.82	487.26			
GR	1734.6	1000	1735.53	1003.78	1734.5	1042.95	1734	1044.42	1732	1050.31
GR	1730	1056.26	1728.7	1060.18	1728.42	1095.07	1728	1097.52	1727.66	1099.65
GR	1727.3	1123.92	1728	1128.46	1729.82	1140.57	1730	1146.01	1730.66	1167.12
GR	1732	1172.19	1734	1179.55	1735.09	1183.42	1735.4	1201.5	1736	1203.33
NC	0.02	0.02	0.02							
X1	180	19	1037.9	1178.31	490.6	492.37	491.83			
GR	1738.4	1000	1738	1017.86	1736.58	1037.9	1736	1039.45	1734	1044.91
GR	1732	1050.47	1730.22	1055.47	1730.42	1062.62	1730	1097.25	1729.6	1099.77
GR	1730	1119.42	1730.04	1121.41	1731.15	1155.75	1732	1158.51	1734	1165.22
GR	1736	1172.22	1737.72	1178.31	1738	1187.42	1738.27	1197.86		

1

06OCT97 14:22:41 PAGE 4

NC	0.02	0.02	0.02							
X1	190	22	1000	1121.49	499.18	497.1	497.74			
GR	1743.5	950.33	1742.46	998.69	1742	1000	1740	1005.6	1738	1011
GR	1736	1016.29	1735.23	1018.97	1734.5	1040.24	1734	1042.17	1732.79	1046.61
GR	1732.9	1078.44	1734	1082	1734.71	1084.43	1736	1101.82	1736.3	1105.68
GR	1738	1110.9	1740	1116.85	1741.63	1121.49	1742	1135.5	1742.24	1142.58
GR	1742	1143.57	1741.64	1144.92						
NC	0.02	0.02	0.02							
X1	200	22	1000	1122.87	494.16	496.56	495.37			
GR	1748.8	956.38	1748	992.25	1747.84	995.39	1746	1000	1744	1004.98
GR	1742	1009.94	1740	1014.87	1738	1019.77	1737.9	1020.02	1737.52	1027.73
GR	1736.7	1037.66	1736.7	1061.55	1737.76	1074.9	1738	1083.37	1738.49	1103
GR	1740	1106.13	1742	1110.31	1744	1114.5	1746	1118.68	1748	1122.87
GR	1748.4	1123.7	1748.36	1144.3						
NC	0.02	0.02	0.02							
X1	210	25	1000	1113.22	499.74	500.05	500.38			
GR	1752	951.7	1752	1000	1750	1005.42	1748	1010.97	1746	1016.52
GR	1744	1022.03	1742	1027.65	1741.66	1028.59	1740.5	1037.62	1740	1039.36
GR	1738	1047.1	1737.52	1048.91	1737.8	1061.69	1738	1062.13	1740	1067.4
GR	1741.2	1071.1	1742	1079.44	1742.89	1088.66	1744	1091.26	1746	1095.98
GR	1748	1100.7	1750	1105.41	1752	1110.13	1753.31	1113.22	1753.21	1141.88
NC	0.02	0.02	0.02							
X1	220	26	1041.51	1160.79	464.69	489.34	476.72			
GR	1759.7	1000	1759.83	1041.51	1758	1045.1	1756	1049.03	1754	1052.95
GR	1752	1056.86	1750	1060.75	1748	1064.59	1747.25	1066.03	1746.15	1087.16
GR	1746	1087.54	1744.18	1092.6	1744	1106.98	1744	1109.94	1743.96	1110.03
GR	1745.8	1113.56	1746	1116.26	1748	1139.68	1747.99	1139.83	1750	1144.13
GR	1752	1148.41	1754	1152.7	1756	1156.99	1757.77	1160.79	1758	1173.7
GR	1758.3	1199.32								
NC	0.02	0.02	0.02							
X1	230	28	1034.85	1169.03	490.46	498.91	494.76			
GR	1763.6	1000	1763.36	1034.85	1762	1040.25	1761.13	1043.65	1760.31	1056.95
GR	1760	1057.18	1758	1062.98	1756	1068.2	1754	1073.41	1753.53	1074.65
GR	1752.6	1090.81	1752	1093.04	1750.12	1100.45	1750.12	1113.46	1751.49	1119.83
GR	1752	1124.28	1753.26	1136.24	1754	1137.93	1756	1142.51	1758	1147.1
GR	1760	1151.69	1761.94	1156.15	1762	1156.82	1763.75	1168.26	1764	1169.03
GR	1766	1176.57	1766.64	1178.93	1766.86	1205.52				
NC	0.02	0.02	0.02							

X1	240	29	1026.08	1194.47	496.31	488.69	492			
GR	1774.8	1000	1774.34	1026.08	1774	1026.81	1772	1030.67	1770	1034.53
GR	1768	1038.38	1766	1042.19	1764	1045.88	1762	1049.77	1760	1053.67
GR	1758	1057.57	1757.43	1059.06	1757.79	1143.57	1758	1145.62	1758.74	1152.68
GR	1759.2	1157.83	1760	1159.46	1762	1163.99	1764	1168.57	1766	1173.21
GR	1768	1177.84	1770	1181.98	1772	1185.85	1774	1189.72	1776	1193.59
GR	1776.4	1194.47	1776.87	1267.84	1776	1276.18	1775.49	1280.88		

1

NC	0.02	0.02	0.015							
X1	250	24	1036.04	1171.85	57.45	58.44	58.6			
GR	1775.4	1000	1775.23	1020.11	1774	1022.51	1772	1025.97	1770	1029.5
GR	1768	1033.08	1766.5	1036.04	1766	1037.59	1764	1043.3	1762	1047.58
GR	1760	1050.92	1758	1053.04	1758.34	1154.39	1760	1154.67	1762	1155.12
GR	1764	1155.69	1766	1162.7	1766.67	1171.85	1768	1174.97	1770	1178.13
GR	1772	1180.86	1774	1183.9	1776	1187.8	1776.99	1190.22		
NC	0.02	0.02	0.015							
X1	260	20	1033.31	1171.52	1	1	1			
GR	1775.4	1000	1775.24	1020.49	1774	1022.9	1772	1026.35	1770	1029.81
GR	1768	1033.31	1767.3	1042.07	1766	1048.18	1764	1050.85	1762	1051.85
GR	1762	1154.61	1764	1155.13	1766	1155.64	1766.66	1171.52	1767.82	1173.98
GR	1768	1174.12	1770	1176.75	1772	1179.4	1774	1183.08	1776	1187.74
NC	0.02	0.02	0.015							
X1	270	20	1008.92	1116.05	33.84	8.99	21.92			
GR	1775.8	964	1775	1000	1774	1003.1	1772	1008.92	1772.04	1008.94
GR	1770	1009.59	1768	1010.24	1766	1010.83	1764	1011.18	1762	1011.54
GR	1762	1113.08	1762	1114.49	1762	1114.56	1764	1114.95	1766	1115.24
GR	1768	1115.55	1770	1115.92	1771.04	1116.05	1772	1122.67	1774	1132.66
NC	0.02	0.02	0.015							
X1	280	18	1044.87	1151.21	1	1	1			
GR	1775.8	1000	1775.02	1036.1	1774	1039.28	1772.37	1044.87	1772	1044.99
GR	1770	1045.65	1768	1046.31	1766	1047.17	1766	1103.57	1766.18	1146.5
GR	1766	1148.22	1766	1149.86	1768	1150.4	1770	1150.81	1772	1151.16
GR	1772.2	1151.21	1774.03	1160.57	1774	1160.65				
NC	0.02	0.02	0.015							
X1	290	7	1047.98	1151	14.68	12.7	14.95			
X3	10			1047.98	1775	1150.91	1775			
GR	1775.6	1000	1775.05	1036.02	1774	1047.98	1766.55	1047.98	1766.55	1151
GR	1774	1151	1774.77	1160.59						
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	106	103.02	5.02	588	0	1766.92	1766.55
X1	300	8	1025.54	1128.56	102.54	98.55	102.75			
X2			1	1772.92	1776.92			1.33		
X3	10			1025.54	1775.19	1128.56	1775.56			
GR	1774.8	1000	1775.19	1017.87	1775.12	1025.54	1766.92	1025.54	1766.92	1128.56
GR	1775.1	1128.56	1775.56	1133.94	1775.35	1147.13				
NC	0.02	0.02	0.015							
X1	310	20	1022.98	1171.53	102.64	105.7	100.28			
GR	1776.8	1000	1776	1016.17	1775.68	1022.98	1774	1028.26	1772	1034.5
GR	1770	1040.77	1768.95	1044.12	1768	1047.77	1767.87	1048.18	1767.78	1072.14
GR	1767.8	1131.12	1768	1132.45	1768.79	1137.38	1768.62	1147.75	1770	1152.28
GR	1772	1158.91	1774	1165.6	1775.77	1171.53	1776	1177.59	1776.8	1198.8

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NC      0.02        0.02        0.02
X1       320          20     1022.11     1155.09      489.89      487.69      489.1
GR    1779.4        1000     1778.04     1022.01        1778     1022.11       1776     1030.73        1774     1039.26
GR      1772     1047.79     1770.85     1052.67     1770.51     1061.45       1770     1063.83     1769.24     1067.59
GR      1770     1104.76     1770.04     1107.08     1771.21     1112.55     1771.76     1130.75        1772     1131.67
GR      1774     1139.29        1776     1146.67     1777.98     1153.84       1778     1155.09     1779.33      1191.2

NC      0.02        0.02        0.02
X1       330          21     1027.28     1156.48      500.62      500.93      500.1
GR      1781        1000     1780.94     1027.28        1780     1031.83       1778     1041.53        1776     1051.25
GR      1774     1060.96      1773.4      1063.9     1773.58     1078.46       1772     1084.27     1771.79     1085.02
GR    1771.8     1109.74        1772     1110.11        1774     1116.37     1774.53     1118.12     1774.72     1134.82
GR      1776      1138.9        1778     1145.34        1780     1151.87      1781.4     1156.48        1782     1173.24
GR    1782.3     1189.26

NC      0.02        0.02        0.02
X1       340          19        1000     1116.66      496.19      495.64      496.21
GR    1783.7      907.67     1782.39        1000        1782     1002.25       1780     1013.68        1778     1025.11
GR      1777     1030.73     1776.57     1040.34        1776     1043.31     1774.53     1051.15     1774.37     1080.76
GR      1776      1084.3        1778     1088.43     1778.07     1088.55     1778.69     1101.43        1780      1107.4
GR      1782     1116.66        1784     1125.98     1785.09     1131.04      1785.6     1161.06

NC      0.02        0.02        0.02
X1       350          22     1042.74     1155.28      460.23      420.27      436.71
GR      1786        1000     1786.37     1024.16      1787.1     1042.74       1786      1046.9        1784     1054.53
GR      1782     1062.22        1780     1069.93        1778     1077.61     1776.25     1084.32     1778.03     1100.93
GR    1777.2     1111.98        1778     1120.32     1779.54     1134.41     1778.08     1145.13        1780      1148.5
GR      1782     1151.93        1784     1155.28     1784.22     1155.66     1785.25     1168.43        1786     1172.75
GR    1787.2     1179.81      1787.3     1201.99

NC      0.02        0.02        0.02
X1       360          26     1014.07     1129.57      341.79      294.05      314.29
X3        10                             1014.07        1792     1129.57        1792
GR      1798        1000        1796     1005.44        1794     1009.82        1792     1014.07        1790     1018.52
GR      1788     1023.42     1787.25     1025.48        1786     1027.93        1784     1030.77        1782     1033.57
GR    1781.8     1036.36     1781.62     1056.13     1780.02     1067.23        1780        1073     1779.67     1111.44
GR      1780     1112.32        1782     1117.65        1784     1122.81        1786     1127.74     1786.74     1129.57
GR    1786.9     1190.42     1786.92     1217.35        1788     1239.83     1788.97     1260.98      1789.6     1274.74
GR      1790     1319.61

NC      0.02        0.02        0.02
SB                  1.56         2.6         150          80                      943         1.5     1781.68     1779.67
X1       370          26     1019.93     1180.43      188.4      272.56      232.15
X2                                1           1791.68     1803.16
X3        10                             1019.93        1800     1180.43        1800
GR    1801.2        1000        1800     1006.14        1798     1012.48        1796     1019.93        1794     1026.84
GR      1792     1033.63        1790      1039.5        1788     1044.33     1787.04     1047.52        1786     1050.99
GR      1784     1063.28     1782.66     1069.39        1782     1116.66     1781.68     1141.49        1782     1142.19
GR      1784     1147.19        1786     1151.46     1787.43     1154.02        1788     1156.17        1790     1161.17
GR      1792     1166.33        1794        1173        1796     1180.43        1798     1186.39        1800     1192.83
GR    1800.7     1196.96
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NC	0.03	0.03	0.02							
X1	380	14	1091.25	1151.34	174.12	176.08	170.96			
X3	10			1091.25	1794	1151.34	1794			
GR	1792	1090.66	1792.75	1091.25	1792	1091.78	1790	1093.21	1788	1094.63
GR	1786	1096.06	1785.68	1096.29	1785.8	1149.56	1786	1149.61	1788	1150.11
GR	1790	1150.6	1792	1151.08	1793.07	1151.34	1794	1227.86		
NC	0.03	0.03	0.02							
X1	390	21	1045.15	1103.45	420.9	420.21	420.9			
X3	10			1045.15	1797	1103.45	1797			
GR	1792.6	1000	1793.3	1031.19	1793.78	1040.57	1794	1041.52	1794.81	1045.15
GR	1794	1045.61	1792	1046.74	1790	1047.86	1788	1049.03	1787.41	1049.38
GR	1787.2	1074.16	1787.54	1100.36	1788	1100.54	1790	1101.34	1792	1102.12
GR	1794	1102.9	1795.44	1103.45	1795.23	1128.39	1795.21	1144.16	1796	1147.04
GR	1797.3	1153.05								
NC	0.03	0.03	0.02							
X1	400	18	1042.29	1103.68	216.05	217.6	216.12			
X3	10			1042.29	1797	1103.68	1797			
GR	1795.3	1000	1795.77	1024.49	1795.76	1038.23	1796	1040.26	1796.25	1042.29
GR	1796	1042.47	1794	1043.62	1792	1044.73	1790	1045.83	1789.06	1046.34
GR	1788.6	1075.55	1788.96	1100.77	1790	1101.12	1792	1101.81	1794	1102.54
GR	1796	1103.31	1796.96	1103.68	1796.49	1128.41				
NC	0.03	0.03	0.02							
X1	410	21	1041.49	1100.98	236.79	212.87	222.64			
GR	1799	1000	1799.04	1002.09	1799.01	1019.84	1798	1026.7	1797.57	1029.5
GR	1797.2	1041.49	1796	1044.75	1794	1049.87	1792	1054.82	1790	1059.57
GR	1789.3	1061.07	1789.8	1078.69	1790	1092.24	1790.1	1099.54	1792	1099.88
GR	1794	1100.24	1796	1100.6	1798	1100.94	1798.24	1100.98	1798.57	1108.1
GR	1799.4	1170.81								
NC	0.03	0.03	0.02							
X1	420	24	1148.62	1204.8	228.48	213.43	218.15			
GR	1805.1	1000	1804.85	1087.59	1804.56	1107.49	1804	1110.27	1802	1120.11
GR	1800	1129.91	1799.62	1132.29	1798.49	1148.62	1798	1150.2	1796	1155.64
GR	1794	1161.15	1792	1166.99	1790.86	1170.59	1791.29	1186.61	1790.88	1202.56
GR	1792	1202.83	1794	1203.37	1796	1203.9	1798	1204.44	1799.34	1204.8
GR	1800	1213.14	1800	1213.21	1800.65	1276.28	1800.8	1276.28		
NC	0.03	0.03	0.015							
X1	430	6	1034.79	1072.54	228.08	218.61	221.27			
X3	10			1034.79	1805	1072.54	1805			
GR	1804.5	1000	1804.31	1034.79	1793.29	1034.79	1793.29	1072.54	1803.82	1072.54
GR	1803.7	1113.05								
NC	0.03	0.03	0.015							
SB	0.9	1.56	2.6	78	37.75	1.75	246	0	1794.3	1793.29
X1	440	9	1048.13	1085.88	183.21	206.01	197.38			
X2			1	1801.3	1802.38			1.33		
X3	10			1048.13	1805	1085.88	1805			
GR	1804	1000	1803.68	1007.43	1803.75	1048.13	1794.3	1048.13	1794.3	1085.88
GR	1803.7	1085.88	1803.91	1101.01	1804	1103.62	1805.3	1113.11		

1
06OCT97 14:22:41 PAGE 8

NC	0.025	0.025	0.04				
QT	1	5800					
X1	450	23	1056.87	1133.42	163.22	162.13	163.47

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X3      10                      1056.87      1809      1133.42      1809
GR    1804      1000   1804.07  1006.32   1804.32      1034.41   1804.73  1043.05  1804.96  1056.87
GR    1804   1058.72      1802  1062.07      1800      1065.72      1798  1069.89     1796  1074.12
GR  1795.5   1075.14      1796  1079.17   1797.92      1096.15      1798  1097.82  1799.19  1110.76
GR    1800   1121.55      1802  1125.68      1804      1129.41      1806  1133.42  1806.22  1133.91
GR  1806.3   1148.02   1806.93  1155.61   1806.39      1170.62

NC    0.025    0.025     0.04
X1      460       23  1048.18  1141.84    281.81       289.57    285.08
X3       10                    1048.18      1810      1141.84      1810
GR    1808      1000   1808.02  1003.22      1808      1005.04   1807.55  1048.18     1806  1052.89
GR    1804   1059.32   1802.11  1065.59      1802      1067.54   1800.57  1088.15     1800  1090.66
GR    1798   1099.31   1797.57  1101.27   1797.83      1115.39      1798  1115.66     1800  1118.79
GR    1802   1121.96      1804  1125.23   1804.77      1126.62   1805.59  1139.81     1806  1140.19
GR  1808.4   1141.84      1808  1142.64      1808      1161.75

NC    0.025    0.025     0.04
X1      470       20  1035.45  1104.62    277.36       272.97    275.07
X3       10                    1035.45      1812      1104.62      1812
GR  1810.7      1000   1810.44  1019.05    1811.3      1035.45      1810  1039.08     1808  1044.69
GR    1806   1050.13      1804  1055.32      1802      1061.49   1800.02  1066.39     1800  1067.21
GR  1799.3   1081.38      1800  1082.49      1802      1085.74      1804  1089.17     1806  1092.65
GR  1806.1   1092.79      1808  1096.72      1810      1100.89   1810.59  1104.62  1810.87  1120.75

NC    0.025    0.025     0.04
SB               1.56      2.6      100        20                   288        2  1799.67  1799.29
X1      480       23  1049.96  1121.92    29.43        28.85     29.16
X2                 1      1808  1811.3
X3       10                    1049.96      1815      1121.92      1815
GR  1810.8      1000   1810.29  1022.32   1810.42      1043.96   1811.06  1049.96     1810  1052.71
GR    1808   1057.64      1806  1063.42      1804      1071.44      1802  1076.07  1800.34  1079.25
GR    1800   1088.82   1799.67  1097.89      1800      1098.19      1802  1100.01     1804  1101.93
GR    1806   1109.03      1808  1115.05      1810      1119.54   1810.67  1121.92  1811.24   1130.7
GR    1810   1145.14   1809.57  1148.54   1809.64      1162.76

NC    0.025    0.025     0.04
X1      490       27  1050.08  1127.64    421.17       376.41    404.91
X3       10                       1050      1816      1127.64      1816
GR    1816      1000   1816.02  1001.56    1814.9      1019.89   1814.74  1038.47  1815.04  1050.08
GR    1814    1052.5      1812  1057.09      1810      1061.66      1808  1066.16     1806  1070.64
GR    1804    1075.1   1803.66  1075.85      1804      1083.12   1804.15  1088.63     1806  1092.46
GR    1808    1096.8      1810  1101.52   1810.26      1101.82      1810  1113.29  1809.88  1118.54
GR    1810   1119.08      1812  1125.39   1812.71      1127.64   1812.65  1132.54  1812.36  1149.58
GR  1812.4   1162.71   1812.58  1182.47
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NC    0.025    0.025     0.04
X1      500       27  1035.57   1117.1    475.67       455.34    467.9
X3       10                    1035.57      1821      1117.1      1821
GR  1820.6      1000   1820.49  1017.79      1820      1035.57   1820.01  1036.35     1818  1038.99
GR    1816   1041.72      1814  1044.53      1812      1047.45      1810  1050.47     1808  1053.53
GR  1807.5   1054.17      1808  1059.53   1808.27       1062.4      1810  1077.16  1811.11  1085.69
GR    1812   1088.38      1814  1094.42      1816      1100.48   1817.15  1103.98     1818  1112.84
GR  1818.4    1117.1      1818  1130.34   1817.52      1146.76   1817.56  1162.65  1817.78   1176.1
GR    1818   1181.93   1818.33  1189.71

NC     0.02     0.02      0.03
X1      510       21  1051.63      1118    410.79       403.61    413.47
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GR	1822.7	1000	1822	1014.17	1821.1	1051.63	1820	1053.73	1818	1057.54
GR	1816	1061.35	1814	1065.16	1812	1068.96	1811.08	1070.77	1810.29	1084.94
GR	1812	1091.3	1814	1098.08	1816	1104.27	1818	1110.29	1820	1116.14
GR	1820.6	1118	1821.24	1184.8	1821.07	1201.95	1821.84	1211.83	1822	1218.61
GR	1822.5	1218.61								
NC	0.02	0.02	0.03							
X1	520	29	1020.76	1156.45	494.67	471.93	477.37			
GR	1830.9	1000	1830	1005.42	1829.57	1007.86	1828.53	1020.76	1828	1022.81
GR	1826	1030.61	1824	1038.4	1822	1046.19	1820	1053.98	1818.67	1059.18
GR	1818.1	1072.9	1818	1073.42	1816	1079.92	1814.82	1084.01	1816	1106.79
GR	1816.3	1112.44	1817.17	1120.26	1818	1123.13	1820	1130.03	1822	1136.92
GR	1824	1143.81	1825.52	1149.11	1826	1150.07	1828	1153.82	1829.41	1156.45
GR	1828	1169.03	1830	1185.2	1832	1235.46	1832.56	1257.15		
NC	0.02	0.02	0.03							
X1	530	25	1016.88	1152.68	371.54	424.3	399.2			
GR	1832	1000	1831.88	1004.01	1831.69	1016.88	1830	1021.18	1828	1026.26
GR	1826	1031.34	1824	1036.37	1822.35	1040.5	1822.35	1059.95	1822	1060.65
GR	1820	1064.77	1818	1068.85	1817.83	1069.21	1817.62	1090.03	1818	1090.71
GR	1820	1093.58	1822	1096.4	1823.81	1099.05	1824	1102.34	1826	1121.49
GR	1828	1130.45	1828.88	1133.79	1830	1143.91	1830.93	1152.68	1831.19	1159.85
NC	0.02	0.02	0.03							
X1	540	26	1018.16	1117.46	460.35	522.62	489.72			
GR	1834.9	1000	1834.9	1018.16	1834	1020.8	1832	1026.45	1830	1031.95
GR	1828	1037.42	1827.86	1037.75	1828	1041.19	1828.5	1054.97	1828	1055.74
GR	1826	1058.87	1824	1062.02	1823.45	1062.88	1823.47	1092.33	1824	1093.02
GR	1826	1095.58	1828	1098.1	1828.7	1098.97	1828.48	1106.52	1830	1108.88
GR	1832	1111.99	1834	1115.1	1835.51	1117.46	1836	1133.36	1836.3	1144.44
GR	1836.7	1152.23								
NC	0.02	0.02	0.03							
X1	550	28	1021.09	1124.94	438.1	474.94	456.26			
GR	1840.1	1000	1840	1001.92	1839.99	1006.32	1839.32	1021.09	1838	1024.57
GR	1836	1029.84	1833.93	1035.32	1834	1035.34	1833.46	1054.03	1832	1056.65
GR	1830	1060.26	1828	1063.9	1826.66	1066.34	1826.79	1083.14	1828	1085.42
GR	1830	1089.19	1832	1092.91	1834.1	1096.67	1834	1097.34	1834	1105.63
GR	1834	1111.84	1833.95	1114.36	1836	1119.24	1838	1124.12	1838.31	1124.94
GR	1839.6	1150.68	1840	1160.26	1840.11	1162.86				

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NC	0.02	0.02	0.03							
X1	560	32	1011.15	1130.99	332.03	327.26	330.24			
GR	1847.8	1000	1846.27	1003.9	1846	1006.41	1845.43	1011.15	1844	1015.37
GR	1842	1021.39	1840	1027.57	1838	1033.9	1836.1	1039.95	1836	1045.57
GR	1835.9	1053.25	1834	1056.42	1832	1059.77	1830	1063.2	1829.01	1064.93
GR	1828	1072.16	1827.85	1073.13	1828	1074.51	1828.64	1080.27	1830	1082.3
GR	1832	1085.3	1834	1088.32	1836	1091.45	1836.23	1091.7	1836.22	1110.34
GR	1838	1115.46	1840	1121.18	1842	1126.85	1843.5	1130.99	1844	1135.55
GR	1845.8	1151.17	1845.91	1156.17						
NC	0.02	0.02	0.03							
X1	570	31	1064.51	1140.01	229.29	230.35	228.38			
GR	1847.9	1000	1846	1056.21	1845.65	1064.51	1844	1065.7	1842	1067.16
GR	1840	1068.62	1838	1070.08	1836	1071.54	1834	1072.98	1832	1073.78
GR	1832	1074.63	1832	1075.05	1832	1084.35	1832	1091.24	1831.69	1120.28
GR	1832	1120.51	1832	1120.78	1832	1121.95	1834	1124.47	1836	1126.81

GR	1838	1129.15	1840	1131.49	1842	1133.85	1844	1136.23	1846	1138.69
GR	1847	1140.01	1847.35	1156.32	1848	1159.82	1849.6	1168.44	1850	1170.12
GR	1850.7	1172.42								
NC	0.02	0.02	0.015							
X1	580	30	1055.05	1128.8	1	1	1			
GR	1847.7	1000	1847.49	1012.37	1846	1049.98	1845.83	1055.05	1844	1056.21
GR	1842	1057.48	1840	1058.71	1838	1059.87	1836	1060.93	1834	1061.78
GR	1834	1062.46	1834	1063.07	1834	1063.47	1834	1064.19	1834	1080.22
GR	1834	1109.26	1834	1109.31	1834	1114.45	1836	1116.75	1838	1119.03
GR	1840	1121.3	1842	1123.52	1844	1125.65	1846	1127.71	1847.09	1128.8
GR	1847.5	1145.88	1848	1148.67	1849.67	1157.77	1850	1158.89	1851.05	1161.45
NC	0.02	0.02	0.015							
X1	590	11	1031.2	1085.04	16.02	16.7	15.77			
X3	10			1031.2	1848	1085.04	1848			
GR	1847.3	1000	1847.01	1010.93	1846.27	1031.2	1834.21	1031.2	1834.21	1085.04
GR	1846.2	1085.04	1847.07	1099.88	1848	1120.18	1849.73	1131.49	1850	1132.09
GR	1851.3	1134.18								
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	60	53.84	3.84	400	0	1835.13	1834.21
X1	600	15	1081.85	1135.69	93.41	94.92	93.51			
X2			1	1843.13	1846.5			1.33		
X3	10			1081.85	1848	1135.69	1848			
GR	1851	1000	1850	1003.75	1848	1011.09	1847.6	1012.57	1847.64	1032.47
GR	1848	1035.82	1849.27	1065.44	1848	1070.71	1847.2	1074.22	1846	1081.85
GR	1835.1	1081.85	1835.13	1135.69	1847.56	1135.69	1847.68	1152.6	1848	1170.43
NC	0.02	0.02	0.015							
X1	610	20	1083.2	1136.14	230.78	201.73	215.38			
X3	10			1061.48	1853	1207.54	1853			
GR	1851.7	1000	1851.08	1029.96	1852	1046.46	1852.83	1061.48	1852.52	1068.39
GR	1852	1080.06	1851.91	1083.2	1850	1085.83	1848	1088.59	1846	1091.36
GR	1844	1094.17	1842.71	1095.99	1842.62	1124.12	1844	1126.53	1846	1130
GR	1848	1133.45	1849.56	1136.14	1850	1155.27	1852	1197.8	1852.45	1207.54

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NC	0.02	0.02	0.015							
X1	620	20	1033.45	1086.27	223.64	202.43	212.31			
GR	1859.3	1000	1858	1007.7	1857.16	1012.48	1856	1018.28	1855.25	1022.06
GR	1855.4	1033.45	1854	1035.35	1852	1037.9	1850	1040.44	1848	1042.97
GR	1846	1045.49	1845.48	1046.14	1845.66	1075.97	1846	1076.49	1848	1079.51
GR	1850	1082.53	1852	1085.57	1852.46	1086.27	1854	1135.67	1855.53	1176.03
NC	0.02	0.02	0.015							
X1	630	18	1031	1084.55	229.09	213.86	221.03			
GR	1861.2	1000	1860	1004.03	1858.27	1009.63	1858	1010.62	1856	1018.67
GR	1855.9	1018.82	1855.06	1031	1854	1032.96	1852	1036.68	1850	1040.45
GR	1848.1	1044.02	1848.28	1071.6	1850	1074.89	1852	1078.71	1854	1082.53
GR	1855	1084.55	1856	1129.14	1857	1165.99				
NC	0.02	0.02	0.015	0.1	0.3					
X1	640	19	1026.88	1079.43	251.59	262.14	258.21			
GR	1864.5	1000	1864.16	1004.77	1864	1005.12	1862	1009.4	1860	1013.41
GR	1858.6	1016.12	1858.09	1026.88	1858	1027.05	1856	1030.75	1854	1034.43
GR	1852	1038.12	1851.39	1039.25	1851.37	1067.22	1852	1068.01	1854	1070.51
GR	1856	1073	1858	1075.48	1860	1077.94	1861.23	1079.43		

NC	0.02	0.02	0.015							
X1	650	8	1035.35	1088.02	196.87	225.93	211.31			
X3	10			1035.35	1867	1088.02	1867			
GR	1866	941.77	1867.8	1000	1866.17	1035.35	1853.8	1035.35	1853.8	1088.02
GR	1866.1	1088.02	1866.1	1156.84	1866	1161.59				
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	150	52.67	2.67	400	0	1856.17	1853.8
X1	660	11	1077.26	1129.93	191.11	191.17	191.78			
X2			1	1864.17	1869.17			1.33		
X3	10			1077.26	1870	1129.93	1870			
GR	1870.6	1000	1870	1032.33	1869.6	1060.4	1869.67	1077.26	1856.17	1077.26
GR	1856.1	1129.93	1869.5	1129.93	1870.02	1166.85	1870	1168.76	1870	1172.88
GR	1868.6	1207.45								
NC	0.025	0.025	0.025							
QT	1	5500								
X1	670	31	1067.82	1168.26	476.18	438.91	452.82			
GR	1879.4	1000	1878	1007.84	1877.77	1009.03	1877.27	1027.56	1876.26	1048.09
GR	1876	1049.44	1875	1054.05	1874.27	1067.82	1874	1068.59	1872	1072.93
GR	1870	1077.28	1868	1081.62	1866	1085.96	1864	1090.29	1862	1094.57
GR	1860	1098.77	1859.16	1100.51	1859	1121.06	1860	1131.32	1860.34	1134.65
GR	1860.7	1147.65	1862	1149.57	1864	1152.62	1866	1155.67	1868	1158.72
GR	1870	1161.77	1872	1164.82	1874	1167.84	1874.29	1168.26	1875	1189.7
GR	1875.3	1193.35								
NC	0.025	0.025	0.025							
X1	680	28	1032.41	1126.45	478.66	448	461.54			
GR	1882.6	1000	1882	1011.76	1880.87	1032.41	1880	1034.16	1878	1038.48
GR	1876	1042.78	1874	1047.09	1872	1051.41	1870	1055.75	1868	1060.1
GR	1866	1064.48	1864.4	1067.99	1864	1071.62	1862.6	1085.72	1864.01	1092.79
GR	1864	1093.89	1864.2	1101.75	1866	1104.88	1868	1108.34	1870	1111.81

1
06OCT97 14:22:41 PAGE 12

GR	1872	1115.28	1874	1118.74	1876	1122.22	1878	1125.69	1878.44	1126.45
GR	1878.7	1156.41	1878	1161.77	1876.53	1173.07				
NC	0.025	0.025	0.025							
X1	690	10	1057.3	1141.3	408.17	434.4	422.9			
X3	10			1057.3	1894	1141.3	1894			
GR	1894	1000	1894	1014.18	1886	1057.29	1877	1057.3	1866	1079.3
GR	1866	1119.3	1877	1141.3	1886	1141.31	1894	1162.81	1894	1172.96
NC	0.025	0.025	0.025							
SB		1.56	2.6	90	40		1240	2	1866	1866
X1	700	8	1011.47	1095.49	132.78	172.81	153.08			
X2			1	1886	1894					
GR	1894	1000	1886	1011.47	1877	1011.48	1866	1033.48	1866	1073.48
GR	1877	1095.48	1886	1095.49	1894	1097.52				
NC	0.025	0.025	0.025							
X1	710	22	1055.32	1141.88	416	467.23	424.6			
GR	1887	1000	1887.65	1055.32	1886	1058.98	1884	1063.38	1882	1067.76
GR	1880	1072.17	1878	1076.59	1876.67	1079.53	1876.5	1091.93	1878	1098.6
GR	1878.2	1099.74	1880	1110.14	1880.28	1112.24	1882	1115.7	1884	1119.72
GR	1886	1123.75	1888	1127.78	1890	1131.82	1892	1135.86	1894	1139.91
GR	1894.9	1141.88	1896	1168.62						

NC	0.025	0.025	0.025							
X1	720	28	1031.02	1123.52	499.28	495.17	498.02			
GR	1895.4	1000	1895.51	1008.85	1894	1013.03	1892	1018.46	1890.74	1021.86
GR	1890.3	1031.02	1890	1031.86	1888	1036.41	1886	1041.01	1884	1045.63
GR	1882	1050.25	1882	1050.99	1881.59	1059.51	1882	1063.99	1882.46	1068.23
GR	1882.7	1085.75	1884	1093.67	1884.05	1094.02	1885.72	1102.19	1886	1102.68
GR	1888	1106.25	1890	1109.82	1892	1113.4	1894	1117.01	1896	1120.66
GR	1897.5	1123.52	1898	1138.24	1898	1204.99				
NC	0.025	0.025	0.025							
X1	730	27	1056.08	1126.41	484.5	472.89	480.56			
GR	1895.5	980.55	1890	997.92	1888.44	1014.84	1888.81	1032	1890	1034.91
GR	1892	1040.78	1892.61	1042.69	1892.66	1056.08	1892	1058.03	1890	1063.82
GR	1888	1069.32	1887.87	1069.57	1887.34	1076.5	1886	1080.07	1885.41	1081.64
GR	1885.1	1105.73	1886	1106.9	1888	1109.69	1890	1112.46	1892	1115.21
GR	1894	1117.97	1896	1120.72	1898	1123.48	1900	1126.26	1900.12	1126.41
GR	1900.5	1149.64	1900	1152.55						
NC	0.025	0.025	0.025							
X1	740	30	1042.02	1119.91	502.08	483.58	492.38			
GR	1901.2	1000	1902	1005.26	1904	1021.59	1904.51	1025.97	1904	1027.47
GR	1902	1034.42	1900	1042.02	1900.03	1042.1	1898	1046.77	1896	1051.39
GR	1894	1056.04	1893.01	1058.37	1892.51	1063.92	1892	1064.96	1890	1068.86
GR	1889.5	1069.72	1889.67	1082.45	1889.35	1096.82	1890	1098.41	1892	1103.02
GR	1892.5	1104.29	1894	1106.26	1896	1108.92	1898	1111.43	1900	1113.86
GR	1902	1116.25	1904	1118.59	1905.14	1119.91	1904.81	1126.67	1904	1127.41

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NC	0.025	0.025	0.025							
X1	750	40	1044.53	1148.05	361.65	431.03	391.69			
GR	1906.9	1000	1906	1004.65	1905.04	1009.47	1906	1015.43	1906.84	1019.12
GR	1906	1021.92	1904	1031.78	1903.79	1032.81	1903.79	1044.53	1902	1048.63
GR	1900	1053.26	1898	1057.91	1895.97	1062.64	1896	1063.05	1894.93	1077.63
GR	1894	1083.07	1893.44	1086.12	1893.85	1093.82	1894	1094.65	1895.88	1107.68
GR	1896	1108	1898	1113.7	1900	1119.39	1900.96	1122.14	1902	1123.57
GR	1904	1126.35	1906	1129.15	1908	1131.96	1910	1134.78	1912	1137.6
GR	1914	1140.41	1916	1143.23	1918	1146.05	1919.42	1148.05	1918	1155.65
GR	1916.8	1161.99	1916.93	1173.3	1916.59	1183.77	1916.83	1193	1918	1211.96
NC	0.025	0.025	0.025							
X1	760	24	1035.23	1131.59	409.52	457.63	428.24			
GR	1906.9	1000	1906.7	1035.23	1906	1036.91	1904	1042.08	1902	1047.23
GR	1901.2	1049.24	1900	1056.11	1898.24	1065.72	1898.23	1068.7	1899.02	1080.49
GR	1899.8	1088.61	1899.92	1101.11	1900	1101.27	1902	1105.14	1904	1109.01
GR	1906	1112.87	1908	1116.71	1910	1120.52	1912	1124.3	1914	1128.06
GR	1915.9	1131.59	1914.4	1139.1	1914	1153.98	1912.9	1195.72		
NC	0.025	0.025	0.025							
X1	770	24	1015.76	1126.99	456.52	419.22	434.78			
GR	1915	1000	1914	1015.76	1913.93	1016.79	1912	1022.95	1910	1029.33
GR	1908	1035.7	1906	1042.07	1905.12	1044.87	1904.51	1063.27	1904	1066.58
GR	1903.2	1072.95	1903.42	1081.93	1903.73	1095.61	1903.96	1105.84	1904	1105.97
GR	1906	1113.03	1906.63	1115.29	1908	1117.4	1910	1120.69	1912	1124.57
GR	1913.1	1126.99	1912.81	1130.93	1912.89	1143.7	1914	1148.24		
NC	0.025	0.025	0.015							
X1	780	8	1058.72	1114.05	52.99	49.44	49.44			
X3	10			1058.72	1916.5	1114.05	1916.5			

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GR   1916.4      1000       1916      1003.3      1914.9     1058.72     1903.78     1058.72     1903.78     1114.05
GR     1914   1114.05       1914      1121.8     1915.01     1149.26

NC    0.025     0.025      0.015
SB     1.25      1.56        2.6          80       55.33        5.33         400           0     1905.12     1903.78
X1      790        10    1028.58     1083.91      108.42      108.26      108.02
X2                            1     1913.12     1917.12                                 2
X3       10                         1028.58        1916     1083.91        1916
GR     1916      1000     1915.8     1001.42     1915.93     1017.77     1914.87     1028.58     1905.12     1028.58
GR   1905.1   1083.91     1914.59     1083.91        1916     1104.86     1916.37      1109.9        1916     1131.78

NC    0.035     0.035       0.03
X1      800        14    1012.48     1094.47       100.8       88.06        95.8
X3       10                            1000      1915.5     1094.47      1915.5
GR   1914.6      1000     1914.21     1012.48        1914     1012.99        1912     1017.82        1910     1022.59
GR     1908    1027.3     1904.86     1031.73     1904.86     1053.16     1904.86      1061.2        1908     1072.68
GR     1910   1078.88        1912     1084.82        1914     1090.67     1915.12     1094.47
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1

06OCT97 14:22:41 PAGE 14

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NC    0.035     0.035       0.03         0.1         0.3
X1      810        28    1144.23     1205.12      221.84      144.84      185.09
GR     1918    980.65     1917.34      990.58        1916        1000        1914     1016.18     1913.61     1019.48
GR     1912   1086.58     1911.68     1097.61     1911.77     1130.03     1911.33     1144.23     1910.82     1158.38
GR     1910   1162.77        1908     1167.25        1906     1172.16     1905.36     1173.67      1905.8     1185.18
GR     1906    1185.5        1908     1188.52        1910     1192.61     1910.28     1194.53     1911.05     1205.12
GR   1911.2   1228.44      1911.5     1247.06        1912     1258.22        1914     1295.39     1914.12     1296.38
GR   1915.1   1324.03        1916      1338.5        1918     1370.57
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1

06OCT97 14:22:41 PAGE 15

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
ALLOWABLE ERROR FOR CRITICAL DEPTH DETERMINATION (ALLDC) =  2.000 PERCENT OF THE DEPTH

CCHV=     .100 CEHV=     .300
*SECNO 10.000
    10.000      8.37   1708.70   1707.40   1705.00   1710.19      1.48       .00       .00   1710.00
    6400.0        .0    6400.0        .0        .0     654.9        .1        .0        .0   1708.60
       .00       .00      9.77       .03      .000      .030      .030      .000   1700.33   1009.11
   .004017        0.        0.        0.         0        14         5       .00    119.45   1128.56


*SECNO 20.000
    20.000      7.61   1710.73   1710.04       .00   1712.55      1.82      2.27       .10   1711.97
    6400.0        .0    6400.0        .0        .0     591.5        .0       7.0       1.3   1713.45
       .01       .00     10.82       .00      .000      .030      .000      .000   1703.12   1187.56
   .005416      483.      489.      498.         2        12         0       .00    114.06   1301.62
```

*SECNO 30.000

30.000	7.51	1713.36	1712.99	.00	1715.48	2.12	2.84	.09	1712.41
6400.0	27.4	6372.6	.0	11.7	544.1	.0	13.5	2.7	1713.61
.02	2.34	11.71	.00	.030	.030	.000	.000	1705.85	1028.67
.006014	495.	498.	504.	2	12	0	.00	125.10	1153.77

*SECNO 40.000

40.000	9.07	1716.27	1715.79	.00	1718.18	1.91	2.67	.02	1716.00
6400.0	1.4	6177.9	220.7	1.5	548.8	55.2	20.1	4.3	1714.00
.04	.92	11.26	4.00	.030	.030	.030	.000	1707.20	1135.37
.004947	500.	492.	481.	2	8	0	.00	154.35	1289.72

*SECNO 50.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.40

50.000	9.46	1718.36	1716.06	.00	1719.32	.96	1.04	.10	1720.56
6400.0	.0	6400.0	.0	.0	815.2	.0	25.1	5.3	1720.00
.05	.00	7.85	.00	.000	.030	.000	.000	1708.90	1075.00
.002510	334.	306.	278.	2	15	0	.00	142.96	1217.96

1

06OCT97 14:22:41 PAGE 16

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

*SECNO 60.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

60.000	9.73	1719.67	1717.29	.00	1720.20	.53	.84	.04	1718.01
6400.0	498.6	4971.7	929.7	199.2	769.7	335.3	37.2	8.4	1716.63
.07	2.50	6.46	2.77	.030	.030	.030	.000	1709.94	1002.76
.001193	500.	499.	502.	2	12	0	.00	396.87	1399.63

*SECNO 70.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70.000	7.53	1719.53	1719.53	.00	1722.12	2.59	1.23	.62	1723.69
6400.0	.0	6400.0	.0	.0	495.4	.0	47.5	11.2	1719.59
.08	.00	12.92	.00	.000	.030	.000	.000	1712.00	1100.15
.007946	493.	498.	498.	0	12	0	.00	97.17	1197.32

*SECNO 80.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.54

80.000	8.83	1723.21	1721.50	.00	1724.56	1.35	2.31	.12	1723.19
6400.0	.0	6400.0	.0	.0	686.0	.0	53.9	12.3	1725.21
.10	.03	9.33	.00	.030	.030	.000	.000	1714.38	1146.51
.003339	456.	471.	482.	2	11	0	.00	115.23	1261.74

*SECNO 90.000

3301 HV CHANGED MORE THAN HVINS

90.000	9.58	1724.77	1723.80	.00	1726.63	1.85	1.91	.15	1724.64
6400.0	.4	6399.6	.0	.7	585.5	.0	60.9	13.6	1727.42
.11	.55	10.93	.00	.030	.030	.000	.000	1715.19	1046.26
.004785	495.	482.	465.	3	8	0	.00	110.73	1156.98

1

06OCT97 14:22:41 PAGE 17

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

*SECNO 100.000

100.000	7.72	1726.42	1724.67	.00	1727.81	1.40	1.14	.05	1728.00
6400.0	.0	6400.0	.0	.0	674.4	.0	65.2	14.3	1727.26
.12	.00	9.49	.00	.000	.030	.000	.000	1718.70	1026.65
.003204	290.	295.	300.	2	14	0	.00	104.36	1131.01

*SECNO 110.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

110.000	5.29	1725.79	1725.79	.00	1728.22	2.43	.06	.31	1728.00
6400.0	.0	6400.0	.0	.0	512.0	.0	65.5	14.4	1727.52
.12	.00	12.50	.00	.000	.015	.000	.000	1720.50	1027.80
.002026	26.	26.	26.	0	14	0	.00	106.34	1134.14

*SECNO 120.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1029.5 1136.5 TYPE= 1 TARGET= 107.000
ELENCL= 1730.00 ELENCR= 1730.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1728.00 ELREA= 1730.00

120.000	4.79	1726.69	1726.69	.00	1729.11	2.42	.19	.00	1728.00
6400.0	.0	6400.0	.0	.0	512.5	.0	66.6	14.6	1730.00
.12	.00	12.49	.00	.000	.015	.000	.000	1721.90	1029.49
.002207	89.	90.	93.	0	11	0	.00	107.00	1136.49

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1725.83 , NOT 1726.69 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	145.00	107.00	7.00	500.00	.00	1722.53	1721.90

*SECNO 130.000
3280 CROSS SECTION 130.00 EXTENDED .83 FEET

1
06OCT97 14:22:41 PAGE 18

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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.85

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1730.66	1730.30	.00	0.	6400.	500.	500.	1727.53	1731.43	0.

3470 ENCROACHMENT STATIONS= 1035.8 1142.8 TYPE= 1 TARGET= 107.000
ELENCL= 1731.00 ELENCR= 1731.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1728.00 ELREA= 1731.00

130.000	6.99	1729.52	.00	.00	1730.66	1.14	1.55	.00	1728.00
6400.0	.0	6400.0	.0	.0	748.4	.0	68.3	14.9	1731.00
.12	.00	8.55	.00	.000	.015	.000	.000	1722.53	1035.81
.000645	121.	120.	118.	3	0	0	.00	107.00	1142.81

*SECNO 140.000
3280 CROSS SECTION 140.00 EXTENDED 1.27 FEET

3470 ENCROACHMENT STATIONS= 1149.7 1265.6 TYPE= 1 TARGET= 115.910
ELENCL= 1730.00 ELENCR= 1730.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1728.41 ELREA= 1730.00

140.000	6.85	1729.45	1727.93	.00	1730.75	1.30	.05	.05	1728.41
6400.0	.0	6400.0	.0	.0	698.7	.0	69.4	15.1	1730.00
.13	.00	9.16	.00	.000	.015	.000	.000	1722.60	1149.72
.000808	65.	64.	64.	2	15	0	.00	115.91	1265.63

*SECNO 150.000

1

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

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

150.000	6.46	1729.99	1729.99	.00	1732.17	2.18	.73	.26	1731.69
6300.0	.0	6300.0	.0	.0	532.2	.0	76.3	16.4	1731.09
.14	.00	11.84	.00	.000	.020	.000	.000	1723.53	1024.14
.003737	491.	490.	489.	0	11	0	.00	124.87	1149.01

*SECNO 160.000

3301 HV CHANGED MORE THAN HVINS

160.000	6.50	1732.11	1731.56	.00	1733.75	1.64	1.53	.05	1733.26
6300.0	.0	6300.0	.0	.0	613.0	.0	82.9	17.9	1734.00
.15	.00	10.28	.00	.000	.020	.000	.000	1725.61	1045.54
.002537	501.	502.	503.	2	11	0	.00	132.85	1178.39

*SECNO 170.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

170.000	6.04	1733.34	1733.34	.00	1735.45	2.11	1.49	.14	1734.50
6300.0	.0	6300.0	.0	.0	540.6	.0	89.4	19.4	1735.09
.16	.00	11.65	.00	.000	.020	.000	.000	1727.30	1046.37
.003759	487.	487.	488.	0	11	0	.00	130.75	1177.12

*SECNO 180.000

180.000	5.61	1735.21	1735.03	.00	1737.18	1.97	1.72	.01	1736.58
6300.0	.0	6300.0	.0	.0	559.5	.0	95.6	20.8	1737.72
.18	.00	11.26	.00	.000	.020	.000	.000	1729.60	1041.60
.003261	491.	492.	492.	2	11	0	.00	127.87	1169.47

*SECNO 190.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

190.000	6.70	1739.49	1739.49	.00	1741.88	2.39	1.71	.13	1742.00
6300.0	.0	6300.0	.0	.0	508.1	.0	101.7	22.2	1741.63
.19	.00	12.40	.00	.000	.020	.000	.000	1732.79	1006.97

.003627	499.	498.	497.	0	11	0	.00	108.37	1115.34

1

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

*SECNO 200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

200.000	6.16	1742.86	1742.86	.00	1745.31	2.45	1.79	.02	1746.00
6300.0	.0	6300.0	.0	.0	502.0	.0	107.4	23.4	1748.00
.20	.00	12.55	.00	.000	.020	.000	.000	1736.70	1007.81
.003603	494.	495.	497.	0	11	0	.00	104.30	1112.11

*SECNO 210.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

210.000	9.31	1746.83	1746.83	.00	1749.68	2.85	1.78	.12	1752.00
6300.0	.0	6300.0	.0	.0	465.2	.0	113.0	24.5	1753.31
.21	.00	13.54	.00	.000	.020	.000	.000	1737.52	1014.22
.003528	500.	500.	500.	0	14	0	.00	83.71	1097.93

*SECNO 220.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

220.000	7.97	1751.93	1751.93	.00	1754.61	2.68	1.69	.02	1759.83
6300.0	.0	6300.0	.0	.0	479.2	.0	118.1	25.4	1757.77
.22	.00	13.15	.00	.000	.020	.000	.000	1743.96	1056.99
.003578	465.	477.	489.	0	15	0	.00	91.27	1148.26

*SECNO 230.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

230.000	8.28	1758.40	1758.40	.00	1761.19	2.78	1.75	.03	1763.36
6300.0	.0	6300.0	.0	.0	470.5	.0	123.5	26.4	1764.00
.23	.00	13.39	.00	.000	.020	.000	.000	1750.12	1061.81
.003514	490.	495.	499.	0	8	0	.00	86.22	1148.03

*SECNO 240.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

240.000	5.18	1762.61	1762.61	.00	1764.88	2.26	1.77	.05	1774.34
6300.0	.0	6300.0	.0	.0	522.0	.0	129.1	27.6	1776.40
.24	.00	12.07	.00	.000	.020	.000	.000	1757.43	1048.58
.003668	496.	492.	489.	0	14	0	.00	116.82	1165.40

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

*SECNO 250.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

250.000	5.05	1763.05	1763.05	.00	1765.39	2.34	.16	.02	1766.50
6300.0	.0	6300.0	.0	.0	513.2	.0	129.8	27.7	1766.67
.24	.00	12.28	.00	.000	.015	.000	.000	1758.00	1045.34
.002101	57.	59.	58.	0	8	0	.00	110.08	1155.42

*SECNO 260.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

260.000	4.97	1766.97	1766.97	.00	1769.12	2.15	.00	.02	1768.00
6300.0	.0	6299.9	.1	.0	536.0	.1	129.8	27.7	1766.66
.24	.00	11.75	.95	.000	.015	.020	.000	1762.00	1043.60
.002196	1.	1.	1.	0	5	0	.00	128.59	1172.19

*SECNO 270.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

270.000	4.86	1766.86	1766.86	.00	1769.28	2.42	.05	.08	1772.00
6300.0	.0	6300.0	.0	.0	504.7	.0	130.1	27.8	1771.04
.24	.00	12.48	.00	.000	.015	.000	.000	1762.00	1010.58
.002156	34.	22.	9.	0	8	0	.00	104.80	1115.37

*SECNO 280.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

280.000	4.89	1770.89	1770.89	.00	1773.30	2.41	.00	.00	1772.37
6300.0	.0	6300.0	.0	.0	505.9	.0	130.1	27.8	1772.20
.24	.00	12.45	.00	.000	.015	.000	.000	1766.00	1045.36
.002139	1.	1.	1.	0	5	0	.00	105.61	1150.97

*SECNO 290.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1048.0 1150.9 TYPE= 1 TARGET= 102.930
ELENCL= 1775.00 ELENCR= 1775.00

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1774.00 ELREA= 1775.00

290.000	4.86	1771.41	1771.41	.00	1773.87	2.46	.03	.02	1774.00
6300.0	.0	6300.0	.0	.0	500.6	.0	130.3	27.8	1775.00
.24	.00	12.58	.00	.000	.015	.000	.000	1766.55	1047.98
.002208	15.	15.	13.	0	5	0	.00	102.93	1150.91

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1770.65 , NOT 1771.41 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	106.00	103.02	5.02	588.00	.00	1766.92	1766.55

*SECNO 300.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.46

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1771.78 BRIDGE VELOCITY= 12.74 CALCULATED CHANNEL AREA= 476.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1774.19	1774.61	.00	0.	6300.	588.	588.	1772.92	1776.92	0.

3470 ENCROACHMENT STATIONS= 1025.5 1128.6 TYPE= 1 TARGET= 103.020
ELENCL= 1775.19 ELENCR= 1775.56

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1775.12 ELREA= 1775.56

300.000	6.16	1773.08	.00	.00	1774.61	1.53	.74	.00	1775.12
6300.0	.0	6300.0	.0	.0	634.9	.0	131.6	28.1	1775.56
.24	.00	9.92	.00	.000	.015	.000	.000	1766.92	1025.54
.001032	103.	103.	99.	0	0	0	.00	103.02	1128.56

1

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

*SECNO 310.000

310.000	5.24	1773.02	1772.67	.00	1774.82	1.80	.13	.08	1775.68
6300.0	.0	6300.0	.0	.0	584.9	.0	133.0	28.4	1775.77
.25	.00	10.77	.00	.000	.015	.000	.000	1767.78	1031.30
.001633	103.	100.	106.	2	15	0	.00	131.04	1162.34

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*SECNO 320.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   320.000      6.59   1775.83   1775.83       .00   1778.13      2.30      1.15       .15   1778.00
    6300.0        .0    6300.0        .0        .0     517.7        .0     139.2      29.7   1778.00
       .26       .00     12.17       .00      .000      .020      .000      .000   1769.24   1031.46
   .003649      490.      489.      488.         0        11         0       .00    114.58   1146.04


*SECNO 330.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   330.000      7.07   1778.86   1778.86       .00   1781.22      2.35      1.82       .02   1780.94
    6300.0        .0    6300.0        .0        .0     511.8        .0     145.1      31.0   1781.40
       .27       .00     12.31       .00      .000      .020      .000      .000   1771.79   1037.34
   .003649      501.      500.      501.         0         8         0       .00    110.82   1148.16


*SECNO 340.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   340.000      7.48   1781.85   1781.85       .00   1784.18      2.33      1.82       .00   1782.39
    6300.0        .0    6300.0        .0        .0     514.5        .0     151.0      32.3   1782.00
       .28       .00     12.24       .00      .000      .020      .000      .000   1774.37   1003.10
   .003670      496.      496.      496.         0         8         0       .00    112.87   1115.97


*SECNO 350.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   350.000      7.59   1783.84   1783.84       .00   1786.34      2.50      1.58       .05   1787.10
    6300.0        .0    6300.0        .0        .0     496.9        .0     156.1      33.4   1784.00
       .29       .00     12.68       .00      .000      .020      .000      .000   1776.25   1055.14
   .003560      460.      437.      420.         0         5         0       .00     99.87   1155.01


1
   06OCT97      14:22:41                                                                    PAGE   24

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


*SECNO 360.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1014.1    1129.6  TYPE=       1  TARGET=      115.500
 ELENCL=    1792.00  ELENCR=   1792.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1792.00 ELREA=      1792.00

   360.000      6.39   1786.06   1786.06       .00   1788.58      2.51      1.13       .01   1792.00
    6300.0        .0    6300.0        .0        .0     495.1        .0     159.6      34.1   1792.00
       .30       .00     12.72       .00      .000      .020      .000      .000   1779.67   1027.81
   .003601      342.      314.      294.         0        15         0       .00    100.08   1127.89
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SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	1.56	2.60	150.00	80.00	.00	943.00	1.50	1781.68	1779.67

*SECNO 370.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= .000 EGLWC= 1790.131 ELLC= 1791.680 PCWSE= 1786.061 ELTRD= 1803.160

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 1803.16 MAX ELLC= 1791.68

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1019.9 1180.4 TYPE= 1 TARGET= 160.500
ELENCL= 1800.00 ELENCR= 1800.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1796.00 ELREA= 1800.00

370.000	6.08	1787.76	1787.76	.00	1790.11	2.35	.84	.02	1796.00
6300.0	.0	6300.0	.0	.0	512.6	.0	162.3	34.6	1800.00
.30	.00	12.29	.00	.000	.020	.000	.000	1781.68	1045.12
.003601	188.	232.	273.	0	15	0	.00	110.15	1155.27

*SECNO 380.000

1

06OCT97 14:22:41 PAGE 25

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

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1091.3 1151.3 TYPE= 1 TARGET= 60.090
ELENCL= 1794.00 ELENCR= 1794.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1792.75 ELREA= 1794.00

380.000	7.42	1793.10	1793.10	.00	1796.62	3.52	.63	.35	1792.75
6300.0	.0	6300.0	.0	.0	418.2	.0	164.1	35.0	1794.00
.31	.00	15.06	.00	.000	.020	.000	.000	1785.68	1091.25
.003753	174.	171.	176.	0	11	0	.00	60.09	1151.34

*SECNO 390.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1045.2 1103.4 TYPE= 1 TARGET= 58.300
ELENCL= 1797.00 ELENCR= 1797.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1794.81 ELREA= 1797.00

390.000	7.72	1794.92	1794.92	.00	1798.52	3.60	1.58	.02	1794.81
6300.0	.0	6300.0	.0	.0	413.7	.0	168.2	35.6	1797.00
.31	.00	15.23	.00	.000	.020	.000	.000	1787.20	1045.15
.003749	421.	421.	420.	0	8	0	.00	58.10	1103.25

*SECNO 400.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1042.3 1103.7 TYPE= 1 TARGET= 61.390
ELENCL= 1797.00 ELENCR= 1797.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1796.25 ELREA= 1797.00

400.000	7.54	1796.14	1796.14	.00	1799.60	3.46	.80	.01	1796.25
6300.0	.0	6300.0	.0	.0	421.9	.0	170.2	35.8	1797.00
.32	.00	14.93	.00	.000	.020	.000	.000	1788.60	1042.37
.003696	216.	216.	218.	0	8	0	.00	60.99	1103.36

1
06OCT97 14:22:41 PAGE 26

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

*SECNO 410.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

410.000	8.94	1798.24	1798.24	.00	1801.57	3.33	.78	.01	1797.20
6300.0	28.9	6271.1	.0	11.7	427.1	.0	172.4	36.2	1798.24
.32	2.46	14.68	.00	.030	.020	.000	.000	1789.30	1025.06
.003361	237.	223.	213.	0	12	0	.00	75.96	1101.01

*SECNO 420.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

420.000	9.85	1800.71	1800.71	.00	1803.49	2.78	.62	.06	1798.49
6300.0	98.3	6149.1	52.6	30.3	454.1	32.8	174.8	36.8	1799.34
.33	3.24	13.54	1.60	.030	.020	.030	.000	1790.86	1126.45
.002436	228.	218.	213.	0	8	0	.00	149.83	1276.28

*SECNO 430.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1034.8 1072.5 TYPE= 1 TARGET= 37.750
ELENCL= 1805.00 ELENCR= 1805.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1804.31 ELREA= 1805.00

430.000	9.52	1802.81	1802.81	.00	1807.58	4.77	.56	.60	1804.31
6300.0	.0	6300.0	.0	.0	359.3	.0	177.1	37.2	1805.00
.33	.00	17.53	.00	.000	.015	.000	.000	1793.29	1034.79
.002676	228.	221.	219.	0	8	0	.00	37.75	1072.54

1
06OCT97 14:22:41 PAGE 27

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

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1801.33 , NOT 1802.81 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	78.00	37.75	1.75	246.00	.00	1794.30	1793.29

*SECNO 440.000
PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1818.70	1811.23	.00	2706.	3603.	246.	252.	1801.30	1802.38	78.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3470 ENCROACHMENT STATIONS= 1048.1 1085.9 TYPE= 1 TARGET= 37.750
ELENCL= 1805.00 ELENCR= 1805.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1803.75 ELREA= 1805.00

440.000	9.55	1803.85	1803.80	.00	1808.59	4.74	.53	-.10	1803.75
6300.0	.0	6300.0	.0	.0	360.4	.0	178.7	37.4	1805.00
.33	.00	17.48	.00	.000	.015	.000	.000	1794.30	1048.13
.002647	183.	197.	206.	20	5	3	.00	37.75	1085.88

*SECNO 450.000
3280 CROSS SECTION 450.00 EXTENDED 1.94 FEET

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 1056.9 1133.4 TYPE= 1 TARGET= 76.550
ELENCL= 1809.00 ELENCR= 1809.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1804.96 ELREA= 1809.00

450.000	12.84	1808.34	1804.77	.00	1809.41	1.08	.46	.37	1804.96
5800.0	.0	5800.0	.0	.0	696.1	.0	180.7	37.6	1809.00
.34	.00	8.33	.00	.000	.040	.000	.000	1795.50	1056.87
.002944	163.	163.	162.	4	8	0	.00	76.55	1133.42

1

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

*SECNO 460.000
3280 CROSS SECTION 460.00 EXTENDED 1.28 FEET

3470 ENCROACHMENT STATIONS= 1048.2 1141.8 TYPE= 1 TARGET= 93.660
ELENCL= 1810.00 ELENCR= 1810.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1807.55 ELREA= 1810.00

460.000	11.72	1809.29	1806.55	.00	1810.35	1.06	.93	.00	1807.55
5800.0	.0	5800.0	.0	.0	702.3	.0	185.2	38.2	1810.00
.35	.00	8.26	.00	.000	.040	.000	.000	1797.57	1048.18
.003634	282.	285.	290.	2	19	0	.00	93.66	1141.84

*SECNO 470.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1035.4 1104.6 TYPE= 1 TARGET= 69.170
ELENCL= 1812.00 ELENCR= 1812.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1811.30 ELREA= 1812.00

470.000	10.99	1810.29	1810.29	.00	1813.45	3.16	1.75	.63	1811.30
5800.0	.0	5800.0	.0	.0	406.6	.0	188.7	38.7	1812.00
.35	.00	14.27	.00	.000	.040	.000	.000	1799.30	1038.28
.013868	277.	275.	273.	0	11	0	.00	64.43	1102.71

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD

.00	1.56	2.60	100.00	20.00	.00	288.00	2.00	1799.67	1799.29

*SECNO 480.000
3280 CROSS SECTION 480.00 EXTENDED 4.18 FEET

3301 HV CHANGED MORE THAN HVINS

1
06OCT97 14:22:41 PAGE 29

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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.10

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1820.11	1813.45	.00	1830.	4005.	288.	305.	1808.00	1811.30	100.

3470 ENCROACHMENT STATIONS= 1050.0 1121.9 TYPE= 1 TARGET= 71.960
ELENCL= 1815.00 ELENCR= 1815.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1811.06 ELREA= 1815.00

480.000	14.15	1813.82	.00	.00	1814.97	1.15	1.53	.00	1811.06
5800.0	.0	5800.0	.0	.0	672.6	.0	189.1	38.7	1815.00
.35	.00	8.62	.00	.000	.040	.000	.000	1799.67	1049.96
.003157	29.	29.	29.	3	0	2	.00	71.96	1121.92

*SECNO 490.000
3280 CROSS SECTION 490.00 EXTENDED 2.62 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

3470 ENCROACHMENT STATIONS= 1050.0 1127.6 TYPE= 1 TARGET= 77.640
ELENCL= 1816.00 ELENCR= 1816.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1815.04 ELREA= 1816.00

490.000	11.54	1815.20	1813.93	.00	1817.13	1.93	1.93	.23	1815.04
5800.0	.0	5800.0	.0	.0	519.9	.0	194.7	39.4	1816.00
.36	.05	11.16	.00	.025	.040	.000	.000	1803.66	1050.00
.007968	421.	405.	376.	3	19	0	.00	77.64	1127.64

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

*SECNO 500.000
3280 CROSS SECTION 500.00 EXTENDED .67 FEET

3470 ENCROACHMENT STATIONS= 1035.6 1117.1 TYPE= 1 TARGET= 81.530
ELENCL= 1821.00 ELENCR= 1821.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1820.00 ELREA= 1821.00

500.000	11.50	1819.00	1817.86	.00	1821.00	2.00	3.85	.02	1820.00
5800.0	.0	5800.0	.0	.0	511.4	.0	200.2	40.3	1821.00
.38	.00	11.34	.00	.000	.040	.000	.000	1807.50	1037.67
.008504	476.	468.	455.	3	11	0	.00	79.43	1117.10

*SECNO 510.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

510.000	11.75	1822.04	1822.04	.00	1823.68	1.64	2.10	.04	1821.10
5800.0	48.7	5326.1	425.2	18.2	500.3	96.3	205.5	41.6	1820.60
.39	2.67	10.65	4.42	.020	.030	.020	.000	1810.29	1013.43
.003383	411.	413.	404.	0	8	0	.00	205.18	1218.61

*SECNO 520.000

520.000	9.13	1823.95	1822.70	.00	1825.46	1.51	1.77	.01	1828.53
5800.0	.0	5800.0	.0	.0	588.5	.0	212.1	43.3	1829.41
.40	.00	9.86	.00	.000	.030	.000	.000	1814.82	1038.59
.004091	495.	477.	472.	3	14	0	.00	105.06	1143.65

*SECNO 530.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

530.000	9.16	1826.78	1826.78	.00	1829.24	2.45	2.26	.28	1831.69
5800.0	.0	5800.0	.0	.0	461.5	.0	216.9	44.2	1830.93
.41	.00	12.57	.00	.000	.030	.000	.000	1817.62	1029.35
.008341	372.	399.	424.	0	5	0	.00	95.65	1125.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
*SECNO 540.000									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
540.000	8.31	1831.76	1831.76	.00	1834.43	2.67	4.08	.07	1834.90
5800.0	.0	5800.0	.0	.0	442.1	.0	222.0	45.2	1835.51
.42	.00	13.12	.00	.000	.030	.000	.000	1823.45	1027.12
.008330	460.	490.	523.	0	11	0	.00	84.49	1111.61
*SECNO 550.000									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
550.000	10.00	1836.66	1836.66	.00	1839.20	2.54	3.86	.01	1839.32
5800.0	.0	5800.0	.0	.0	453.2	.0	226.7	46.2	1838.31
.43	.00	12.80	.00	.000	.030	.000	.000	1826.66	1028.11
.008600	438.	456.	475.	0	11	0	.00	92.74	1120.84
*SECNO 560.000									
560.000	11.65	1839.50	1839.24	.00	1841.81	2.31	2.59	.02	1845.43
5800.0	.0	5800.0	.0	.0	475.4	.0	230.2	46.9	1843.50
.44	.00	12.20	.00	.000	.030	.000	.000	1827.85	1029.17
.007179	332.	330.	327.	0	8	0	.00	90.56	1119.73
*SECNO 570.000									
570.000	9.35	1841.04	1839.22	.00	1843.02	1.98	1.17	.03	1845.65
5800.0	.0	5800.0	.0	.0	514.1	.0	232.8	47.3	1847.00
.44	.00	11.28	.00	.000	.030	.000	.000	1831.69	1067.86
.003860	229.	228.	230.	2	14	0	.00	64.87	1132.73
*SECNO 580.000									
3301 HV CHANGED MORE THAN HVINS									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
580.000	6.94	1840.94	1840.94	.00	1844.13	3.18	.00	.36	1845.83
5800.0	.0	5800.0	.0	.0	405.1	.0	232.8	47.3	1847.09
.44	.00	14.32	.00	.000	.015	.000	.000	1834.00	1058.13
.002051	1.	1.	1.	0	15	0	.00	64.22	1122.35

1

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

*SECNO 590.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1031.2 1085.0 TYPE= 1 TARGET= 53.840
ELENCL= 1848.00 ELENCR= 1848.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1846.27 ELREA= 1848.00

590.000	7.09	1841.30	1841.30	.00	1844.88	3.58	.03	.12	1846.27
5800.0	.0	5800.0	.0	.0	381.8	.0	233.0	47.3	1848.00
.44	.00	15.19	.00	.000	.015	.000	.000	1834.21	1031.20
.002356	16.	16.	17.	0	8	0	.00	53.84	1085.04

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1839.99 , NOT 1841.30 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	60.00	53.84	3.84	400.00	.00	1835.13	1834.21

*SECNO 600.000
6840, FLOW IS BY WEIR AND LOW FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.51

3420 BRIDGE W.S.= 1844.25 BRIDGE VELOCITY= 12.07 CALCULATED CHANNEL AREA= 456.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1846.40	1846.51	2.94	0.	5781.	400.	400.	1843.13	1846.50	60.

3470 ENCROACHMENT STATIONS= 1081.8 1135.7 TYPE= 1 TARGET= 53.840
ELENCL= 1848.00 ELENCR= 1848.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1846.00 ELREA= 1848.00

600.000	9.34	1844.44	.00	.00	1846.51	2.07	1.63	.00	1846.00
5800.0	.0	5800.0	.0	.0	501.8	.0	233.9	47.4	1848.00
.44	.00	11.56	.00	.000	.015	.000	.000	1835.10	1081.85
.001031	93.	94.	95.	4	0	0	.00	53.84	1135.69

1
06OCT97 14:22:41 PAGE 33

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

*SECNO 610.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1061.5 1207.5 TYPE= 1 TARGET= 146.060

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 ELENCL=   1853.00  ELENCR=   1853.00
   610.000      9.68   1852.30   1852.30       .00   1854.80      2.50       .25       .13   1851.91
    5800.0       2.2    5382.6     415.1       2.1     410.1     104.7     236.4      47.9   1849.56
       .45      1.05     13.13      3.97      .020      .015      .020      .000   1842.62   1073.26
   .001287      231.      215.      202.         0         8         0       .00    131.09   1204.36


*SECNO 620.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   620.000      9.83   1855.31   1855.31       .00   1857.66      2.35       .26       .02   1855.40
    5800.0        .0    5322.5     477.4        .2     416.2     125.6     239.0      48.5   1852.46
       .45       .24     12.79      3.80      .020      .015      .020      .000   1845.48   1021.74
   .001208      224.      212.      202.         0         5         0       .00    141.80   1170.30


*SECNO 630.000
3280 CROSS SECTION    630.00 EXTENDED       .66 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   630.000      9.56   1857.66   1857.66       .00   1859.80      2.14       .25       .02   1855.06
    5800.0     121.6    5170.6     507.8      32.3     417.9     138.7     241.8      49.2   1855.00
       .46      3.77     12.37      3.66      .020      .015      .020      .000   1848.10   1012.01
   .001093      229.      221.      214.         0         8         0       .00    153.98   1165.99


CCHV=     .100 CEHV=     .300
*SECNO 640.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   640.000      9.28   1860.65   1860.65       .00   1863.91      3.25       .35       .33   1858.09
    5800.0     146.1    5653.9        .0      29.0     386.3        .0     244.8      49.9   1861.23
       .46      5.04     14.64       .00      .020      .015      .000      .000   1851.37   1012.10
   .001695      252.      258.      262.         0         8         0       .00     66.64   1078.73


1
   06OCT97      14:22:41                                                                    PAGE   34

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


*SECNO 650.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1035.3    1088.0  TYPE=       1  TARGET=       52.670
 ELENCL=   1867.00  ELENCR=   1867.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1866.17 ELREA=      1867.00
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650.000	7.20	1861.00	1861.00	.00	1864.63	3.64	.42	.12	1866.17
5800.0	.0	5800.0	.0	.0	379.0	.0	246.7	50.2	1867.00
.47	.00	15.30	.00	.000	.015	.000	.000	1853.80	1035.35
.002370	197.	211.	226.	0	15	0	.00	52.67	1088.02

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1859.85 , NOT 1861.00 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	150.00	52.67	2.67	400.00	.00	1856.17	1853.80

*SECNO 660.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1862.46 BRIDGE VELOCITY= 15.52 CALCULATED CHANNEL AREA= 314.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1866.09	1867.56	.00	0.	5800.	400.	400.	1864.17	1869.17	0.

3470 ENCROACHMENT STATIONS= 1077.3 1129.9 TYPE= 1 TARGET= 52.670
ELENCL= 1870.00 ELENCR= 1870.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1869.67 ELREA= 1870.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
660.000	9.24	1865.34	.00	.00	1867.56	2.22	2.93	.00	1869.67
5800.0	.0	5800.0	.0	.0	484.6	.0	248.6	50.4	1870.00
.47	.00	11.97	.00	.000	.015	.000	.000	1856.10	1077.26
.001128	191.	192.	191.	0	0	0	.00	52.67	1129.93

*SECNO 670.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

670.000	7.49	1866.49	1866.49	.00	1869.36	2.87	.95	.19	1874.27
5500.0	.0	5500.0	.0	.0	404.4	.0	253.2	51.1	1874.29

```
      .48        .00      13.60        .00       .000       .025       .000       .000    1859.00    1084.90
   .005530      476.       453.       439.          0         15          0        .00      71.51    1156.41


*SECNO 680.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   680.000       9.22    1871.82    1871.82        .00    1874.94       3.13       2.54        .08    1880.87
    5500.0         .0     5500.0         .0         .0      387.6         .0      257.4       51.8    1878.44
       .49        .00      14.19        .00       .000       .025       .000       .000    1862.60    1051.81
   .005493      479.       462.       448.          0         11          0        .00      63.15    1114.96


*SECNO 690.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.42


3470 ENCROACHMENT STATIONS=     1057.3     1141.3  TYPE=       1  TARGET=        84.000
 ELENCL=    1894.00  ELENCR=    1894.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1877.00 ELREA=      1894.00

   690.000       8.87    1874.87    1873.33        .00    1876.66       1.79       1.59        .13    1877.00
    5500.0         .0     5500.0         .0         .0      512.4         .0      261.8       52.5    1894.00
       .50        .00      10.73        .00       .000       .025       .000       .000    1866.00    1061.55
   .002727      408.       423.       434.          3         15          0        .00      75.49    1137.05


1
   06OCT97      14:22:41                                                                                PAGE   36

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


SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      .00       1.56       2.60      90.00      40.00        .00    1240.00       2.00    1866.00    1866.00

*SECNO 700.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=        .000  EGLWC=    1876.664  ELLC=    1886.000  PCWSE=    1874.875  ELTRD=    1894.000

3370 NORMAL BRIDGE, NRD=    0 MIN ELTRD=  1894.00 MAX ELLC=  1886.00

   700.000       9.60    1875.60    1873.33        .00    1877.06       1.45        .36        .03    1886.00
    5500.0         .0     5500.0         .0         .0      568.2         .0      263.7       52.7    1886.00
       .51        .00       9.68        .00       .000       .025       .000       .000    1866.00    1014.28
   .002037      133.       153.       173.          3         19          0        .00      78.39    1092.68
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*SECNO 710.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

710.000	9.42	1885.92	1885.92	.00	1888.98	3.06	1.33	.48	1887.65
5500.0	.0	5500.0	.0	.0	391.6	.0	268.4	53.4	1894.90
.52	.00	14.04	.00	.000	.025	.000	.000	1876.50	1059.17
.005417	416.	425.	467.	0	8	0	.00	64.41	1123.58

*SECNO 720.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

720.000	7.74	1889.33	1889.33	.00	1892.11	2.78	2.73	.03	1890.30
5500.0	.0	5500.0	.0	.0	411.0	.0	273.0	54.2	1897.50
.53	.00	13.38	.00	.000	.025	.000	.000	1881.59	1033.38
.005533	499.	498.	495.	0	15	0	.00	75.25	1108.63

*SECNO 730.000

3301 HV CHANGED MORE THAN HVINS

1
06OCT97 14:22:41 PAGE 37

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

730.000	7.69	1892.79	1892.79	.00	1894.82	2.02	2.47	.08	1892.66
5500.0	1557.3	3942.7	.0	167.8	324.5	.0	278.0	55.3	1900.12
.54	9.28	12.15	.00	.025	.025	.000	.000	1885.10	989.10
.004791	485.	481.	473.	0	5	0	.00	127.21	1116.31

*SECNO 740.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

740.000	8.50	1897.85	1897.85	.00	1900.93	3.08	2.53	.32	1900.00
5500.0	.0	5500.0	.0	.0	390.7	.0	283.0	56.4	1905.14
.55	.00	14.08	.00	.000	.025	.000	.000	1889.35	1047.11
.005489	502.	492.	484.	0	8	0	.00	64.13	1111.24

*SECNO 750.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

750.000	8.37	1901.81	1901.81	.00	1904.64	2.83	2.17	.02	1903.79
5500.0	.0	5500.0	.0	.0	407.5	.0	286.6	57.0	1919.42

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      .56       .00     13.50       .00      .000      .025      .000      .000   1893.44   1049.07
   .005581      362.      392.      431.         0         5         0       .00     74.23   1123.31


*SECNO 760.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   760.000      7.79   1906.02   1906.02       .00   1908.81      2.79      2.40       .00   1906.70
    5500.0        .0    5500.0        .0        .0     410.3        .0     290.6      57.8   1915.90
      .56       .00     13.40       .00      .000      .025      .000      .000   1898.23   1036.86
   .005630      410.      428.      458.         0         9         0       .00     76.05   1112.91


*SECNO 770.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   770.000      6.57   1909.77   1909.77       .00   1912.24      2.46      2.45       .03   1914.00
    5500.0        .0    5500.0        .0        .0     436.8        .0     294.8      58.6   1913.10
      .57       .00     12.59       .00      .000      .025      .000      .000   1903.20   1030.05
   .005652      457.      435.      419.         0        15         0       .00     90.26   1120.32


1
   06OCT97      14:22:41                                                                    PAGE   38

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

*SECNO 780.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1058.7    1114.1  TYPE=       1  TARGET=       55.330
 ELENCL=   1916.50  ELENCR=   1916.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1914.90 ELREA=      1916.50

   780.000      6.72   1910.50   1910.50       .00   1913.90      3.40       .17       .28   1914.90
    5500.0        .0    5500.0        .0        .0     371.9        .0     295.3      58.7   1916.50
      .57       .00     14.79       .00      .000      .015      .000      .000   1903.78   1058.72
   .002347       53.       49.       49.         0         8         0       .00     55.33   1114.05


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS    1909.08 , NOT    1910.50 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.56       2.60      80.00      55.33       5.33     400.00        .00   1905.12    1903.78

*SECNO 790.000

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.72

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1911.67 BRIDGE VELOCITY= 15.25 CALCULATED CHANNEL AREA= 327.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1915.08	1916.39	.00	0.	5500.	400.	400.	1913.12	1917.12	0.

3470 ENCROACHMENT STATIONS= 1028.6 1083.9 TYPE= 1 TARGET= 55.330
ELENCL= 1916.00 ELENCR= 1916.00

1

06OCT97 14:22:41 PAGE 39

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1914.87 ELREA= 1916.00

790.000	9.63	1914.73	.00	.00	1916.39	1.66	2.49	.00	1914.87
5500.0	.0	5500.0	.0	.0	532.3	.0	296.4	58.8	1916.00
.58	.00	10.33	.00	.000	.015	.000	.000	1905.10	1028.58
.000791	108.	108.	108.	0	0	0	.00	55.33	1083.91

*SECNO 800.000
3280 CROSS SECTION 800.00 EXTENDED .05 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .53

3470 ENCROACHMENT STATIONS= 1000.0 1094.5 TYPE= 1 TARGET= 94.470
ELENCL= 1915.50 ELENCR= 1915.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1914.21 ELREA= 1915.50

800.000	10.31	1915.17	1912.90	.00	1916.55	1.38	.13	.03	1914.21
5500.0	17.7	5482.3	.0	9.6	581.3	.0	297.6	59.0	1915.50
.58	1.84	9.43	.00	.035	.030	.000	.000	1904.86	1000.00
.002830	101.	96.	88.	2	15	0	.00	94.47	1094.47

CCHV= .100 CEHV= .300
*SECNO 810.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.02

810.000	11.29	1916.65	1914.06	.00	1916.89	.24	.23	.11	1911.33
5500.0	1697.2	2353.7	1449.1	580.4	471.5	495.9	302.2	60.0	1911.05
.59	2.92	4.99	2.92	.035	.030	.035	.000	1905.36	995.44
.000695	222.	185.	145.	3	9	0	.00	353.45	1348.89

1

THIS RUN EXECUTED 06OCT97 14:22:48

****
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

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 100

	SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG
*	130.000	1730.30	1727.53	1730.66	1731.43	6400.00	.00	10.00	.00	6.99	1729.52	8.55	1730.66
*	300.000	1774.61	1772.92	1774.19	1776.92	6300.00	.00	2.00	.00	6.16	1773.08	9.92	1774.61
*	370.000	1790.13	1791.68	.00	1803.16	6300.00	.00	59.00	.00	6.08	1787.76	12.29	1790.11
*	440.000	1811.23	1801.30	1818.70	1802.38	3603.15	2705.88	30.00	.00	9.55	1803.85	17.48	1808.59
*	480.000	1813.45	1808.00	1820.11	1811.30	4005.47	1830.21	30.00	.00	14.15	1813.82	8.62	1814.97
*	600.000	1846.51	1843.13	1846.40	1846.50	5780.91	.16	15.00	2.94	9.34	1844.44	11.56	1846.51
*	660.000	1867.56	1864.17	1866.09	1869.17	5800.00	.00	2.00	.00	9.24	1865.34	11.97	1867.56
	700.000	1876.66	1886.00	.00	1894.00	5500.00	.00	59.00	.00	9.60	1875.60	9.68	1877.06
*	790.000	1916.39	1913.12	1915.08	1917.12	5500.00	.00	2.00	.00	9.63	1914.73	10.33	1916.39

1

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
10.000	.00	.00	.00	1700.33	6400.00	1708.70	1707.40	1710.19	40.17	9.77	654.99	1009.81

	20.000	488.53	.00	.00	1703.12	6400.00	1710.73	1710.04	1712.55	54.16	10.82	591.46	869.66
	30.000	498.03	.00	.00	1705.85	6400.00	1713.36	1712.99	1715.48	60.14	11.71	555.76	825.31
	40.000	491.57	.00	.00	1707.20	6400.00	1716.27	1715.79	1718.18	49.47	11.26	605.53	909.92
*	50.000	305.60	.00	.00	1708.90	6400.00	1718.36	1716.06	1719.32	25.10	7.85	815.17	1277.56
*	60.000	499.27	.00	.00	1709.94	6400.00	1719.67	1717.29	1720.20	11.93	6.46	1304.23	1852.60
*	70.000	497.95	.00	.00	1712.00	6400.00	1719.53	1719.53	1722.12	79.46	12.92	495.38	717.97
*	80.000	470.68	.00	.00	1714.38	6400.00	1723.21	1721.50	1724.56	33.39	9.33	685.96	1107.62
	90.000	482.19	.00	.00	1715.19	6400.00	1724.77	1723.80	1726.63	47.85	10.93	586.21	925.18
	100.000	295.13	.00	.00	1718.70	6400.00	1726.42	1724.67	1727.81	32.04	9.49	674.45	1130.66
*	110.000	25.69	.00	.00	1720.50	6400.00	1725.79	1725.79	1728.22	20.26	12.50	512.01	1421.91
*	120.000	90.11	.00	.00	1721.90	6400.00	1726.69	1726.69	1729.11	22.07	12.49	512.45	1362.37
*	130.000	119.69	1731.43	1727.53	1722.53	6400.00	1729.52	.00	1730.66	6.45	8.55	748.45	2519.99
	140.000	64.14	.00	.00	1722.60	6400.00	1729.45	1727.93	1730.75	8.08	9.16	698.74	2252.04
*	150.000	489.94	.00	.00	1723.53	6300.00	1729.99	1729.99	1732.17	37.37	11.84	532.17	1030.53
	160.000	501.51	.00	.00	1725.61	6300.00	1732.11	1731.56	1733.75	25.37	10.28	612.98	1250.86
*	170.000	487.26	.00	.00	1727.30	6300.00	1733.34	1733.34	1735.45	37.59	11.65	540.60	1027.52
	180.000	491.83	.00	.00	1729.60	6300.00	1735.21	1735.03	1737.18	32.61	11.26	559.45	1103.29
*	190.000	497.74	.00	.00	1732.79	6300.00	1739.49	1739.49	1741.88	36.27	12.40	508.15	1046.09
*	200.000	495.37	.00	.00	1736.70	6300.00	1742.86	1742.86	1745.31	36.03	12.55	501.99	1049.50
*	210.000	500.38	.00	.00	1737.52	6300.00	1746.83	1746.83	1749.68	35.28	13.54	465.25	1060.72
*	220.000	476.72	.00	.00	1743.96	6300.00	1751.93	1751.93	1754.61	35.78	13.15	479.23	1053.22
*	230.000	494.76	.00	.00	1750.12	6300.00	1758.40	1758.40	1761.19	35.14	13.39	470.48	1062.73
*	240.000	492.00	.00	.00	1757.43	6300.00	1762.61	1762.61	1764.88	36.68	12.07	521.97	1040.16

1

06OCT97 14:22:41 PAGE 42

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	250.000	58.60	.00	.00	1758.00	6300.00	1763.05	1763.05	1765.39	21.01	12.28	513.16	1374.32
*	260.000	1.00	.00	.00	1762.00	6300.00	1766.97	1766.97	1769.12	21.96	11.75	536.10	1344.52
*	270.000	21.92	.00	.00	1762.00	6300.00	1766.86	1766.86	1769.28	21.56	12.48	504.71	1356.90
*	280.000	1.00	.00	.00	1766.00	6300.00	1770.89	1770.89	1773.30	21.39	12.45	505.92	1362.04
*	290.000	14.95	.00	.00	1766.55	6300.00	1771.41	1771.41	1773.87	22.08	12.58	500.64	1340.65

*	300.000	102.75	1776.92	1772.92	1766.92	6300.00	1773.08	.00	1774.61	10.32	9.92	634.90	1960.95
	310.000	100.28	.00	.00	1767.78	6300.00	1773.02	1772.67	1774.82	16.33	10.77	584.86	1558.77
*	320.000	489.10	.00	.00	1769.24	6300.00	1775.83	1775.83	1778.13	36.49	12.17	517.70	1042.95
*	330.000	500.10	.00	.00	1771.79	6300.00	1778.86	1778.86	1781.22	36.49	12.31	511.82	1042.99
*	340.000	496.21	.00	.00	1774.37	6300.00	1781.85	1781.85	1784.18	36.70	12.24	514.52	1039.97
*	350.000	436.71	.00	.00	1776.25	6300.00	1783.84	1783.84	1786.34	35.60	12.68	496.89	1055.87
*	360.000	314.29	.00	.00	1779.67	6300.00	1786.06	1786.06	1788.58	36.01	12.72	495.11	1049.91
*	370.000	232.15	1803.16	1791.68	1781.68	6300.00	1787.76	1787.76	1790.11	36.01	12.29	512.65	1049.85
*	380.000	170.96	.00	.00	1785.68	6300.00	1793.10	1793.10	1796.62	37.53	15.06	418.21	1028.38
*	390.000	420.90	.00	.00	1787.20	6300.00	1794.92	1794.92	1798.52	37.49	15.23	413.68	1028.90
*	400.000	216.12	.00	.00	1788.60	6300.00	1796.14	1796.14	1799.60	36.96	14.93	421.85	1036.24
*	410.000	222.64	.00	.00	1789.30	6300.00	1798.24	1798.24	1801.57	33.61	14.68	438.82	1086.66
*	420.000	218.15	.00	.00	1790.86	6300.00	1800.71	1800.71	1803.49	24.36	13.54	517.22	1276.55
*	430.000	221.27	.00	.00	1793.29	6300.00	1802.81	1802.81	1807.58	26.76	17.53	359.32	1217.88
*	440.000	197.38	1802.38	1801.30	1794.30	6300.00	1803.85	1803.80	1808.59	26.47	17.48	360.40	1224.55
	450.000	163.47	.00	.00	1795.50	5800.00	1808.34	1804.77	1809.41	29.44	8.33	696.14	1068.91
	460.000	285.08	.00	.00	1797.57	5800.00	1809.29	1806.55	1810.35	36.34	8.26	702.34	962.09
*	470.000	275.07	.00	.00	1799.30	5800.00	1810.29	1810.29	1813.45	138.68	14.27	406.58	492.51
*	480.000	29.16	1811.30	1808.00	1799.67	5800.00	1813.82	.00	1814.97	31.57	8.62	672.62	1032.30
*	490.000	404.91	.00	.00	1803.66	5800.00	1815.20	1813.93	1817.13	79.68	11.16	519.90	649.77
	500.000	467.90	.00	.00	1807.50	5800.00	1819.00	1817.86	1821.00	85.04	11.34	511.37	628.96

1

06OCT97 14:22:41 PAGE 43

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	510.000	413.47	.00	.00	1810.29	5800.00	1822.04	1822.04	1823.68	33.83	10.65	614.81	997.24
	520.000	477.37	.00	.00	1814.82	5800.00	1823.95	1822.70	1825.46	40.91	9.86	588.48	906.77
*	530.000	399.20	.00	.00	1817.62	5800.00	1826.78	1826.78	1829.24	83.41	12.57	461.47	635.06
*	540.000	489.72	.00	.00	1823.45	5800.00	1831.76	1831.76	1834.43	83.30	13.12	442.12	635.50
*	550.000	456.26	.00	.00	1826.66	5800.00	1836.66	1836.66	1839.20	86.00	12.80	453.18	625.44
	560.000	330.24	.00	.00	1827.85	5800.00	1839.50	1839.24	1841.81	71.79	12.20	475.41	684.51

	570.000	228.38	.00	.00	1831.69	5800.00	1841.04	1839.22	1843.02	38.60	11.28	514.15	933.54
*	580.000	1.00	.00	.00	1834.00	5800.00	1840.94	1840.94	1844.13	20.51	14.32	405.06	1280.79
*	590.000	15.77	.00	.00	1834.21	5800.00	1841.30	1841.30	1844.88	23.56	15.19	381.84	1194.84
*	600.000	93.51	1846.50	1843.13	1835.10	5800.00	1844.44	.00	1846.51	10.31	11.56	501.84	1806.12
*	610.000	215.38	.00	.00	1842.62	5800.00	1852.30	1852.30	1854.80	12.87	13.13	516.84	1616.89
*	620.000	212.31	.00	.00	1845.48	5800.00	1855.31	1855.31	1857.66	12.08	12.79	541.92	1668.78
*	630.000	221.03	.00	.00	1848.10	5800.00	1857.66	1857.66	1859.80	10.93	12.37	588.88	1754.17
*	640.000	258.21	.00	.00	1851.37	5800.00	1860.65	1860.65	1863.91	16.95	14.64	415.21	1408.60
*	650.000	211.31	.00	.00	1853.80	5800.00	1861.00	1861.00	1864.63	23.70	15.30	378.99	1191.31
*	660.000	191.78	1869.17	1864.17	1856.10	5800.00	1865.34	.00	1867.56	11.28	11.97	484.63	1726.55
*	670.000	452.82	.00	.00	1859.00	5500.00	1866.49	1866.49	1869.36	55.30	13.60	404.44	739.57
*	680.000	461.54	.00	.00	1862.60	5500.00	1871.82	1871.82	1874.94	54.93	14.19	387.58	742.12
*	690.000	422.90	.00	.00	1866.00	5500.00	1874.87	1873.33	1876.66	27.27	10.73	512.41	1053.31
	700.000	153.08	1894.00	1886.00	1866.00	5500.00	1875.60	1873.33	1877.06	20.37	9.68	568.21	1218.51
*	710.000	424.60	.00	.00	1876.50	5500.00	1885.92	1885.92	1888.98	54.17	14.04	391.63	747.29
*	720.000	498.02	.00	.00	1881.59	5500.00	1889.33	1889.33	1892.11	55.33	13.38	410.97	739.40
*	730.000	480.56	.00	.00	1885.10	5500.00	1892.79	1892.79	1894.82	47.91	12.15	492.26	794.59
*	740.000	492.38	.00	.00	1889.35	5500.00	1897.85	1897.85	1900.93	54.89	14.08	390.66	742.38
*	750.000	391.69	.00	.00	1893.44	5500.00	1901.81	1901.81	1904.64	55.81	13.50	407.50	736.20
*	760.000	428.24	.00	.00	1898.23	5500.00	1906.02	1906.02	1908.81	56.30	13.40	410.34	733.03

1
06OCT97 14:22:41 PAGE 44

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	770.000	434.78	.00	.00	1903.20	5500.00	1909.77	1909.77	1912.24	56.52	12.59	436.79	731.56
*	780.000	49.44	.00	.00	1903.78	5500.00	1910.50	1910.50	1913.90	23.47	14.79	371.91	1135.21
*	790.000	108.02	1917.12	1913.12	1905.10	5500.00	1914.73	.00	1916.39	7.91	10.33	532.29	1955.06
*	800.000	95.80	.00	.00	1904.86	5500.00	1915.17	1912.90	1916.55	28.30	9.43	590.89	1033.90
*	810.000	185.09	.00	.00	1905.36	5500.00	1916.65	1914.06	1916.89	6.95	4.99	1547.86	2086.34

1
06OCT97 14:22:41 PAGE 45

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10.000	6400.00	1708.70	.00	.00	3.70	119.45	.00
	20.000	6400.00	1710.73	.00	2.03	.00	114.06	488.53
	30.000	6400.00	1713.36	.00	2.63	.00	125.10	498.03
	40.000	6400.00	1716.27	.00	2.91	.00	154.35	491.57
*	50.000	6400.00	1718.36	.00	2.09	.00	142.96	305.60
*	60.000	6400.00	1719.67	.00	1.31	.00	396.87	499.27
*	70.000	6400.00	1719.53	.00	-.14	.00	97.17	497.95
*	80.000	6400.00	1723.21	.00	3.68	.00	115.23	470.68
	90.000	6400.00	1724.77	.00	1.56	.00	110.73	482.19
	100.000	6400.00	1726.42	.00	1.65	.00	104.36	295.13
*	110.000	6400.00	1725.79	.00	-.62	.00	106.34	25.69
*	120.000	6400.00	1726.69	.00	.90	.00	107.00	90.11
*	130.000	6400.00	1729.52	.00	2.83	.00	107.00	119.69
	140.000	6400.00	1729.45	.00	-.07	.00	115.91	64.14
*	150.000	6300.00	1729.99	.00	.54	.00	124.87	489.94
	160.000	6300.00	1732.11	.00	2.12	.00	132.85	501.51
*	170.000	6300.00	1733.34	.00	1.23	.00	130.75	487.26
	180.000	6300.00	1735.21	.00	1.87	.00	127.87	491.83
*	190.000	6300.00	1739.49	.00	4.28	.00	108.37	497.74
*	200.000	6300.00	1742.86	.00	3.37	.00	104.30	495.37
*	210.000	6300.00	1746.83	.00	3.97	.00	83.71	500.38
*	220.000	6300.00	1751.93	.00	5.10	.00	91.27	476.72
*	230.000	6300.00	1758.40	.00	6.47	.00	86.22	494.76
*	240.000	6300.00	1762.61	.00	4.21	.00	116.82	492.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	250.000	6300.00	1763.05	.00	.43	.00	110.08	58.60

*	260.000	6300.00	1766.97	.00	3.93	.00	128.59	1.00
*	270.000	6300.00	1766.86	.00	-.12	.00	104.80	21.92
*	280.000	6300.00	1770.89	.00	4.03	.00	105.61	1.00
*	290.000	6300.00	1771.41	.00	.52	.00	102.93	14.95
*	300.000	6300.00	1773.08	.00	1.67	.00	103.02	102.75
	310.000	6300.00	1773.02	.00	-.06	.00	131.04	100.28
*	320.000	6300.00	1775.83	.00	2.81	.00	114.58	489.10
*	330.000	6300.00	1778.86	.00	3.04	.00	110.82	500.10
*	340.000	6300.00	1781.85	.00	2.99	.00	112.87	496.21
*	350.000	6300.00	1783.84	.00	1.99	.00	99.87	436.71
*	360.000	6300.00	1786.06	.00	2.22	.00	100.08	314.29
*	370.000	6300.00	1787.76	.00	1.70	.00	110.15	232.15
*	380.000	6300.00	1793.10	.00	5.34	.00	60.09	170.96
*	390.000	6300.00	1794.92	.00	1.82	.00	58.10	420.90
*	400.000	6300.00	1796.14	.00	1.21	.00	60.99	216.12
*	410.000	6300.00	1798.24	.00	2.10	.00	75.96	222.64
*	420.000	6300.00	1800.71	.00	2.47	.00	149.83	218.15
*	430.000	6300.00	1802.81	.00	2.10	.00	37.75	221.27
*	440.000	6300.00	1803.85	.00	1.04	.00	37.75	197.38
	450.000	5800.00	1808.34	.00	4.49	.00	76.55	163.47
	460.000	5800.00	1809.29	.00	.95	.00	93.66	285.08
*	470.000	5800.00	1810.29	.00	1.00	.00	64.43	275.07
*	480.000	5800.00	1813.82	.00	3.53	.00	71.96	29.16
*	490.000	5800.00	1815.20	.00	1.38	.00	77.64	404.91
	500.000	5800.00	1819.00	.00	3.81	.00	79.43	467.90

1
06OCT97 14:22:41 PAGE 47

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	510.000	5800.00	1822.04	.00	3.03	.00	205.18	413.47
	520.000	5800.00	1823.95	.00	1.92	.00	105.06	477.37

*	530.000	5800.00	1826.78	.00	2.83	.00	95.65	399.20
*	540.000	5800.00	1831.76	.00	4.97	.00	84.49	489.72
*	550.000	5800.00	1836.66	.00	4.90	.00	92.74	456.26
	560.000	5800.00	1839.50	.00	2.85	.00	90.56	330.24
	570.000	5800.00	1841.04	.00	1.54	.00	64.87	228.38
*	580.000	5800.00	1840.94	.00	-.10	.00	64.22	1.00
*	590.000	5800.00	1841.30	.00	.36	.00	53.84	15.77
*	600.000	5800.00	1844.44	.00	3.13	.00	53.84	93.51
*	610.000	5800.00	1852.30	.00	7.87	.00	131.09	215.38
*	620.000	5800.00	1855.31	.00	3.01	.00	141.80	212.31
*	630.000	5800.00	1857.66	.00	2.34	.00	153.98	221.03
*	640.000	5800.00	1860.65	.00	3.00	.00	66.64	258.21
*	650.000	5800.00	1861.00	.00	.34	.00	52.67	211.31
*	660.000	5800.00	1865.34	.00	4.34	.00	52.67	191.78
*	670.000	5500.00	1866.49	.00	1.15	.00	71.51	452.82
*	680.000	5500.00	1871.82	.00	5.33	.00	63.15	461.54
*	690.000	5500.00	1874.87	.00	3.06	.00	75.49	422.90
	700.000	5500.00	1875.60	.00	.73	.00	78.39	153.08
*	710.000	5500.00	1885.92	.00	10.31	.00	64.41	424.60
*	720.000	5500.00	1889.33	.00	3.42	.00	75.25	498.02
*	730.000	5500.00	1892.79	.00	3.46	.00	127.21	480.56
*	740.000	5500.00	1897.85	.00	5.06	.00	64.13	492.38
*	750.000	5500.00	1901.81	.00	3.96	.00	74.23	391.69
*	760.000	5500.00	1906.02	.00	4.21	.00	76.05	428.24

1
06OCT97 14:22:41 PAGE 48

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	770.000	5500.00	1909.77	.00	3.75	.00	90.26	434.78
*	780.000	5500.00	1910.50	.00	.73	.00	55.33	49.44
*	790.000	5500.00	1914.73	.00	4.23	.00	55.33	108.02
*	800.000	5500.00	1915.17	.00	.44	.00	94.47	95.80

* 810.000 5500.00 1916.65 .00 1.48 .00 353.45 185.09

1
06OCT97 14:22:41 PAGE 49

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=     50.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     60.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     70.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     70.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     80.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    110.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    110.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    120.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    120.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    130.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    130.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    150.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    150.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    170.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    170.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    190.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    190.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    200.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    200.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    210.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    210.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    220.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    220.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    230.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    230.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    240.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    240.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    250.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    250.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    260.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    260.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    270.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
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 CAUTION SECNO=    270.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
1
    06OCT97       14:22:41                                                    PAGE   50


 CAUTION SECNO=    280.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    280.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    290.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    290.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    300.000  PROFILE=  1  HYDRAULIC JUMP D.S.
 WARNING SECNO=    300.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=    320.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    320.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    330.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    330.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    340.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    340.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

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 CAUTION SECNO=    350.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    360.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    360.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    370.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    370.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    380.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    380.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    390.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    390.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    400.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    400.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    410.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    410.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    420.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    420.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    430.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    430.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    440.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=    440.000  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
 CAUTION SECNO=    440.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=    440.000  PROFILE=  1  HYDRAULIC JUMP D.S.

 CAUTION SECNO=    470.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    470.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 WARNING SECNO=    480.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=    490.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    510.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    510.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    530.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    530.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    540.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    540.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    550.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    550.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    580.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    580.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    590.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    590.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    600.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    600.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    610.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    610.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    620.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    620.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    630.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    630.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    640.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    640.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    650.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    650.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    660.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    660.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    670.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    670.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    680.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    680.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    690.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    710.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    710.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    720.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
1
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CAUTION SECNO=    720.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    730.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    730.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    740.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    740.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    750.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    750.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    760.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    760.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    770.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    770.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    780.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    780.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    790.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    790.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    800.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    810.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

Effective FIS Supercritical Flow HEC-2 Model Output File
(NGVD29)

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES         *
 *                                       *
 *  Version   4.6.2;  May 1991           *
 *                                       *
 *  RUN DATE    06OCT97    TIME   14:23:05  *
 *****************************************
```


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


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

1

THIS RUN EXECUTED 06OCT97 14:23:05

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
```

```
T1      550.032
T2      FLAMINGO WASH FIS RESTUDY
T3      FLOODPLAIN DELINEATION
T4      FILES: BASE3-4.DWG, BASE3-4.D2
T4      STARTING WSE = CRITICAL DEPTH
T4      SUPERCRITICAL RUN
T4      CONCRETE CHANNEL LINING BETWEEN D.I. ROAD & MOJAVE ROAD
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		2		1	-1			5800	1860.44	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1		-1				-2	-6		

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

150 100

NC	0.02	0.02	0.015	0.1	0.3					
X1	640	19	1026.88	1079.43	251.59	262.14	258.21			
GR	1864.5	1000	1864.16	1004.77	1864	1005.12	1862	1009.4	1860	1013.41
GR	1858.6	1016.12	1858.09	1026.88	1858	1027.05	1856	1030.75	1854	1034.43
GR	1852	1038.12	1851.39	1039.25	1851.37	1067.22	1852	1068.01	1854	1070.51
GR	1856	1073	1858	1075.48	1860	1077.94	1861.23	1079.43		
NC	0.02	0.02	0.015							
X1	630	18	1031	1084.55	229.09	213.86	221.03			
GR	1861.2	1000	1860	1004.03	1858.27	1009.63	1858	1010.62	1856	1018.67
GR	1855.9	1018.82	1855.06	1031	1854	1032.96	1852	1036.68	1850	1040.45
GR	1848.1	1044.02	1848.28	1071.6	1850	1074.89	1852	1078.71	1854	1082.53
GR	1855	1084.55	1856	1129.14	1857	1165.99				
NC	0.02	0.02	0.015							
X1	620	20	1033.45	1086.27	223.64	202.43	212.31			
GR	1859.3	1000	1858	1007.7	1857.16	1012.48	1856	1018.28	1855.25	1022.06
GR	1855.4	1033.45	1854	1035.35	1852	1037.9	1850	1040.44	1848	1042.97
GR	1846	1045.49	1845.48	1046.14	1845.66	1075.97	1846	1076.49	1848	1079.51
GR	1850	1082.53	1852	1085.57	1852.46	1086.27	1854	1135.67	1855.53	1176.03

1

NC	0.02	0.02	0.015							
X1	610	20	1083.2	1136.14	230.78	201.73	215.38			
X3	10			1061.48	1853	1207.54	1853			
GR	1851.7	1000	1851.08	1029.96	1852	1046.46	1852.83	1061.48	1852.52	1068.39
GR	1852	1080.06	1851.91	1083.2	1850	1085.83	1848	1088.59	1846	1091.36
GR	1844	1094.17	1842.71	1095.99	1842.62	1124.12	1844	1126.53	1846	1130
GR	1848	1133.45	1849.56	1136.14	1850	1155.27	1852	1197.8	1852.45	1207.54
NC	0.02	0.02	0.015							
X1	600	15	1081.85	1135.69						
X3	10			1081.85	1848	1135.69	1848			
GR	1851	1000	1850	1003.75	1848	1011.09	1847.6	1012.57	1847.64	1032.47
GR	1848	1035.82	1849.27	1065.44	1848	1070.71	1847.2	1074.22	1846	1081.85
GR	1835.1	1081.85	1835.1	1135.69	1847.56	1135.69	1847.68	1152.6	1848	1170.43

1

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
ALLOWABLE ERROR FOR CRITICAL DEPTH DETERMINATION (ALLDC) = 2.000 PERCENT OF THE DEPTH

0

```
 CCHV=      .100 CEHV=      .300
 *SECNO 640.000
 3720 CRITICAL DEPTH ASSUMED
    640.000      9.27   1860.64   1860.64   1860.44   1863.91      3.27       .00       .00   1858.09
     5800.0     144.5    5655.5        .0      28.7     385.3        .0        .0        .0   1861.23
        .00      5.04     14.68       .00      .020      .015      .000      .000   1851.37   1012.14
    .001710        0.        0.        0.         0         7         0       .00     66.57   1078.71


 *SECNO 630.000

 3301 HV CHANGED MORE THAN HVINS


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.00

    630.000      6.51   1854.61   1857.62       .00   1862.65      8.04       .78       .48   1855.06
     5800.0        .0    5800.0        .0        .0     254.9        .0       2.0        .4   1855.00
        .00       .00     22.75       .00      .000      .015      .000      .000   1848.10   1031.84
    .006841      252.      258.      262.         9         8         0       .00     51.91   1083.75


 *SECNO 620.000

 3301 HV CHANGED MORE THAN HVINS

    620.000      6.31   1851.79   1855.32       .00   1860.94      9.15      1.60       .11   1855.40
     5800.0        .0    5800.0        .0        .0     238.9        .0       3.2        .6   1852.46
        .01       .00     24.27       .00      .000      .015      .000      .000   1845.48   1038.17
    .007680      229.      221.      214.        10        17         0       .00     47.08   1085.25


 *SECNO 610.000

 3301 HV CHANGED MORE THAN HVINS
```

1


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


 3470 ENCROACHMENT STATIONS=     1061.5    1207.5  TYPE=      1  TARGET=      146.060
  ELENCL=   1853.00  ELENCR=   1853.00

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1851.91 ELREA=      1849.56

    610.000      6.01   1848.63   1852.30       .00   1859.02     10.39      1.79       .12   1851.91
     5800.0        .0    5800.0        .0        .0     224.2        .0       4.4        .8   1849.56
```

.01	.00	25.86	.00	.000	.015	.000	.000	1842.62	1087.71
.009304	224.	212.	202.	9	14	0	.00	46.85	1134.55

*SECNO 600.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.69

3470 ENCROACHMENT STATIONS= 1081.8 1135.7 TYPE= 1 TARGET= 53.840
ELENCL= 1848.00 ELENCR= 1848.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1846.00 ELREA= 1848.00

600.000	3.26	1838.36	1842.19	.00	1855.21	16.85	3.16	.65	1846.00
5800.0	.0	5800.0	.0	.0	176.1	.0	5.4	1.1	1848.00
.01	.00	32.94	.00	.000	.015	.000	.000	1835.10	1081.85
.026536	231.	215.	202.	6	11	0	.00	53.84	1135.69

1
06OCT97 14:23:05 PAGE 5

THIS RUN EXECUTED 06OCT97 14:23:06

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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

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 100

SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG

1
06OCT97 14:23:05 PAGE 6

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	640.000	.00	.00	.00	1851.37	5800.00	1860.64	1860.64	1863.91	17.10	14.68	413.92	1402.59
*	630.000	258.21	.00	.00	1848.10	5800.00	1854.61	1857.62	1862.65	68.41	22.75	254.90	701.25
	620.000	221.03	.00	.00	1845.48	5800.00	1851.79	1855.32	1860.94	76.80	24.27	238.94	661.84
	610.000	212.31	.00	.00	1842.62	5800.00	1848.63	1852.30	1859.02	93.04	25.86	224.25	601.29
*	600.000	215.38	.00	.00	1835.10	5800.00	1838.36	1842.19	1855.21	265.36	32.94	176.07	356.05

1

FLOODPLAIN DELINEATION

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	640.000	5800.00	1860.64	.00	.00	.20	66.57	.00
*	630.000	5800.00	1854.61	.00	-6.03	.00	51.91	258.21
	620.000	5800.00	1851.79	.00	-2.82	.00	47.08	221.03
	610.000	5800.00	1848.63	.00	-3.15	.00	46.85	212.31
*	600.000	5800.00	1838.36	.00	-10.27	.00	53.84	215.38

1

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 640.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 630.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 600.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

Corrected Effective Model (Pre-Project Conditions)
Subcritical Flow HEC-2 Output File (NAVD88)

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES           *
 *                                         *
 *  Version   4.6.2;  May 1991             *
 *                                         *
 *  RUN DATE    01JUL03    TIME   14:17:43  *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
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```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX     XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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01JUL03 14:17:43 PAGE 1

THIS RUN EXECUTED 01JUL03 14:17:43

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 ************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ************************************
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```
T1      REQUEST FOR LETTER OF MAP REVISION - FLAMINGO WASH
T2      CORRECTED EFFECTIVE MODEL
T3      DATUM = NAVD88
T4      ORIGINAL MODEL CREATED BY GC WALLACE INC FOR FLAMINGO WASH FIS RESTUDY
T4      ELEVATIONS RAISED BY BERGER 2.26 FEET TO CONVERT FROM NGVD 29 TO NAVD 88
T4      FILE: 879-F-C-SUB.DAT
T4      STARTING WSE = 1707.26
T4      SUBCRITICAL RUN
T4      CONCRETE CHANNEL LINING BETWEEN D.I. ROAD & MOJAVE ROAD
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		2			0.004			6400	1707.26	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1		-1				-2	-6		

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

100 150

```
NC     0.03       0.03       0.03        0.1        0.3
* FIELD X1.9 MODIFIED BY LBG
* 2.26 REPRESENTS DATUM CONVERSION FROM NGVD 29 TO NAVD 88
X1       10         18       1000    1126.64                                                2.26
GR     1710       1000    1710.07    1002.71       1710    1003.06       1708    1012.39       1706     1021.7
GR     1704    1031.01       1702    1040.32    1701.54    1042.48    1700.33     1049.9    1700.55     1089.4
GR     1702    1095.84       1704    1104.89       1706    1114.24       1708    1123.66     1708.6    1126.64
GR     1710    1152.79    1710.41    1160.64       1712    1288.04

NC     0.03       0.03       0.03
X1       20         17    1182.02    1322.04     483.22     497.54     488.53                2.26
GR     1712       1000    1711.97    1182.02       1710    1190.86       1708    1199.75       1706    1208.56
GR     1704    1217.31    1703.12    1221.12    1703.59    1267.53       1704    1269.51       1706    1279.06
GR     1708     1288.6       1710    1298.12    1711.95    1307.42       1712     1307.8    1713.45    1322.04
GR   1712.7    1343.21     1713.7    1500.75

NC     0.03       0.03       0.03
X1       30         16    1053.23    1154.72     494.86     503.84     498.03                2.26
GR   1714.3       1000       1714    1012.26    1712.41    1053.23       1712    1055.19       1710    1064.74
GR     1708    1074.25       1706    1083.68    1705.86    1084.33    1705.85    1124.71       1706    1125.31
GR     1708    1133.14       1710    1140.87       1712    1148.55    1713.61    1154.72       1714    1175.89
GR   1715.8    1316.21

NC     0.03       0.03       0.03
X1       40         20     1146.2    1238.76     500.14     481.13     491.57                2.26
GR     1718       1000    1717.12    1101.53       1716     1146.2    1715.85    1152.03       1714    1159.77
GR     1712    1168.18       1710    1176.59       1708    1185.01    1707.75    1186.07    1707.38    1196.73
GR   1707.2    1216.01       1708    1218.57       1710    1225.27       1712    1231.97       1714    1238.76
GR   1714.1    1239.39       1716    1283.03    1716.17    1284.32    1716.77    1316.26       1718    1327.96

NC     0.03       0.03       0.03
X1       50         21    1066.67    1235.55     334.29     277.63      305.6                2.26
GR     1723       1000       1722    1020.92    1721.42    1037.11    1720.56    1066.67       1720    1068.75
GR     1718     1076.4       1716    1084.26       1714    1092.32       1712    1100.45       1710    1108.62
GR   1708.9    1112.98       1709    1152.91       1710    1158.04       1712    1168.25       1714    1178.41
GR   1714.6    1181.82       1716    1195.46    1717.14     1207.5       1718    1214.02       1720    1235.55
GR     1720    1249.78

NC     0.03       0.03       0.03
X1       60         31    1120.14    1223.41     499.62      502.1     499.27                2.26
GR     1720       1000    1718.36    1013.98       1718    1035.26    1717.58    1105.92       1718    1119.77
GR     1718    1120.01    1718.01    1120.14       1716    1128.57       1714     1136.9       1712    1145.29
GR   1710.1    1153.14       1710    1183.08    1709.94    1194.72       1710    1194.99       1712    1203.55
GR     1714    1212.13       1716    1220.71    1716.63    1223.41    1717.35    1277.47    1718.05    1286.74
GR     1718    1287.48       1718    1296.95    1717.48    1310.09       1718    1314.87    1718.69    1321.04
GR     1718    1336.07    1717.62    1343.02       1718    1362.12    1718.73    1381.28     1718.4    1394.59
GR     1720    1400.91

NC     0.03       0.03       0.03
X1       70         17     1084.1    1197.56     493.27     498.08     497.95                2.26
GR   1723.3       1000    1723.69     1084.1       1722    1090.63       1720    1098.35       1718    1106.05
GR     1716    1113.75       1714    1121.45       1712    1129.17       1712    1129.24       1712    1129.36
GR   1712.6    1169.17       1714    1174.59       1716     1182.8       1718    1191.03    1719.59    1197.56
GR     1720    1230.27    1720.07    1233.61
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NC      0.03       0.03       0.03
X1        80         18    1147.29    1269.91     455.76     481.96     470.68                2.26
GR      1726       1000     1725.4    1007.66    1724.07    1115.85       1724    1116.84    1723.19    1147.29
GR      1722    1152.02       1720    1159.92       1718    1167.78       1716    1175.62    1714.38    1181.94
GR    1714.9    1227.68       1716    1232.07       1718    1240.31       1720    1248.54       1722    1256.76
GR      1724    1264.99    1725.21    1269.91    1724.85    1287.78

NC      0.03       0.03       0.03
X1        90         20    1056.45    1168.18     495.14     465.14     482.19                2.26
GR      1726       1000    1725.75    1009.38    1724.96    1031.29    1724.64    1056.45       1724    1058.67
GR      1722    1065.64       1720    1072.62       1718     1079.6       1716     1086.6    1715.19    1089.42
GR      1716    1103.03    1717.15    1124.51       1718     1128.2       1720    1136.83       1722    1145.32
GR      1724    1153.73       1726    1162.18    1727.42    1168.18       1728    1186.62    1728.02     1187.5

NC      0.03       0.03       0.03
X1       100         25    1022.27    1132.68     289.86     299.75     295.13                2.26
GR      1732       1000       1732       1001    1732.08    1001.22       1730    1011.88       1728    1022.27
GR    1727.6    1024.44       1726    1027.45       1724     1031.2       1722    1034.85       1720     1038.4
GR    1718.7    1040.93    1719.04    1047.62    1718.99    1102.02    1719.04    1118.34       1720    1119.65
GR      1722       1123       1724     1126.5       1726    1130.15    1727.26    1132.68    1727.45    1139.16
GR      1728    1142.93    1728.68    1147.57       1730    1157.98    1730.09    1158.86       1730    1162.48

NC      0.03       0.03      0.015
X1       110         21    1022.67    1137.41      25.99      26.18      25.69                2.26
GR    1732.5       1000       1732    1002.64       1730    1012.69       1728    1022.67    1727.56    1024.87
GR      1726    1027.45       1724    1030.85       1722    1034.42     1720.5    1036.37     1720.5     1099.9
GR    1720.5    1122.88     1720.5    1123.19     1720.5    1123.29       1722    1126.96       1724    1130.74
GR      1726    1134.53    1727.52    1137.41       1728    1142.14    1729.05    1148.68       1730    1154.29
GR    1731.7    1164.66

NC      0.03       0.03      0.015
X1       120          7    1029.49    1136.49      88.77      93.13      90.11                2.26
X3        10                          1029.49    1732.26    1136.49    1732.26
GR    1730.3       1000       1730    1006.09       1728    1029.49    1721.9     1029.49     1721.9    1136.49
GR      1728    1136.49       1728    1146.34

NC      0.02       0.02      0.015
SB       0.9       1.56        2.6        145        107          7        500          0    1724.79    1724.16
X1       130          8    1035.81    1142.81     120.77     117.86     119.69                2.26
X2                              1     1729.79    1733.69                                1.33
X3        10                          1035.81    1733.26    1142.81    1733.26
GR    1728.6       1000    1728.71    1018.83       1728    1035.81    1722.53     1035.81    1722.53    1142.81
GR      1728    1142.81    1728.87    1157.29    1728.69    1174.35

NC      0.02       0.02      0.015
X1       140         13.    1149.72    1265.63      64.74      64.09      64.14                2.26
X3        10                          1149.72    1732.26    1265.63    1732.26
GR    1729.5       1000    1728.41    1149.72       1728    1150.76       1726    1155.81       1724    1161.07
GR    1722.8    1165.81     1722.6    1250.59       1724    1254.37       1726    1259.66       1728    1264.74
GR    1728.3    1265.63     1728.8    1316.23    1728.18    1343.83

NC      0.02       0.02       0.02
QT         1       6300
X1       150         18    1018.39    1152.46     491.39     488.88     489.94                2.26
GR      1732       1000    1731.69    1018.39       1730    1024.12       1728    1030.88    1726.48     1035.9
GR    1726.1    1066.83       1726    1067.43     1724.2    1074.87       1724    1083.96    1723.53    1107.26
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GR	1724	1108.86	1725.23	1113.02	1726	1135.88	1725.99	1136.31	1728	1142.71
GR	1730	1149.03	1731.09	1152.46	1731.43	1169.72				
NC	0.02	0.02	0.02							
X1	160	22	1042.38	1195.86	501.43	502.7	501.51		2.26	
GR	1734	1000	1734.52	1002.52	1734	1015.73	1733.26	1042.38	1732	1045.87
GR	1730	1051.46	1728	1057.16	1727.61	1058.29	1727.59	1089.49	1726.47	1097.9
GR	1726	1115.47	1725.61	1127.39	1726	1131.14	1727.46	1145.07	1728	1162.54
GR	1728.2	1169.98	1730	1173.77	1732	1178.13	1733.38	1181.15	1734	1195.86
GR	1734.2	1200.57	1735.81	1203.67						
NC	0.02	0.02	0.02							
X1	170	20	1042.95	1183.42	486.67	487.82	487.26		2.26	
GR	1734.6	1000	1735.53	1003.78	1734.5	1042.95	1734	1044.42	1732	1050.31
GR	1730	1056.26	1728.7	1060.18	1728.42	1095.07	1728	1097.52	1727.66	1099.65
GR	1727.3	1123.92	1728	1128.46	1729.82	1140.57	1730	1146.01	1730.66	1167.12
GR	1732	1172.19	1734	1179.55	1735.09	1183.42	1735.4	1201.5	1736	1203.33
NC	0.02	0.02	0.02							
X1	180	19	1037.9	1178.31	490.6	492.37	491.83		2.26	
GR	1738.4	1000	1738	1017.86	1736.58	1037.9	1736	1039.45	1734	1044.91
GR	1732	1050.47	1730.22	1055.47	1730.42	1062.62	1730	1097.25	1729.6	1099.77
GR	1730	1119.42	1730.04	1121.41	1731.15	1155.75	1732	1158.51	1734	1165.22
GR	1736	1172.22	1737.72	1178.31	1738	1187.42	1738.27	1197.86		

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NC	0.02	0.02	0.02							
X1	190	22	1000	1121.49	499.18	497.1	497.74		2.26	
GR	1743.5	950.33	1742.46	998.69	1742	1000	1740	1005.6	1738	1011
GR	1736	1016.29	1735.23	1018.97	1734.5	1040.24	1734	1042.17	1732.79	1046.61
GR	1732.9	1078.44	1734	1082	1734.71	1084.43	1736	1101.82	1736.3	1105.68
GR	1738	1110.9	1740	1116.85	1741.63	1121.49	1742	1135.5	1742.24	1142.58
GR	1742	1143.57	1741.64	1144.92						
NC	0.02	0.02	0.02							
X1	200	22	1000	1122.87	494.16	496.56	495.37		2.26	
GR	1748.8	956.38	1748	992.25	1747.84	995.39	1746	1000	1744	1004.98
GR	1742	1009.94	1740	1014.87	1738	1019.77	1737.9	1020.02	1737.52	1027.73
GR	1736.7	1037.66	1736.7	1061.55	1737.76	1074.9	1738	1083.37	1738.49	1103
GR	1740	1106.13	1742	1110.31	1744	1114.5	1746	1118.68	1748	1122.87
GR	1748.4	1123.7	1748.36	1144.3						
NC	0.02	0.02	0.02							
X1	210	25	1000	1113.22	499.74	500.05	500.38		2.26	
GR	1752	951.7	1752	1000	1750	1005.42	1748	1010.97	1746	1016.52
GR	1744	1022.03	1742	1027.65	1741.66	1028.59	1740.5	1037.62	1740	1039.36
GR	1738	1047.1	1737.52	1048.91	1737.8	1061.69	1738	1062.13	1740	1067.4
GR	1741.2	1071.1	1742	1079.44	1742.89	1088.66	1744	1091.26	1746	1095.98
GR	1748	1100.7	1750	1105.41	1752	1110.13	1753.31	1113.22	1753.21	1141.88
NC	0.02	0.02	0.02							
X1	220	26	1041.51	1160.79	464.69	489.34	476.72		2.26	
GR	1759.7	1000	1759.83	1041.51	1758	1045.1	1756	1049.03	1754	1052.95

GR	1752	1056.86	1750	1060.75	1748	1064.59	1747.25	1066.03	1746.15	1087.16
GR	1746	1087.54	1744.18	1092.6	1744	1106.98	1744	1109.94	1743.96	1110.03
GR	1745.8	1113.56	1746	1116.26	1748	1139.68	1747.99	1139.83	1750	1144.13
GR	1752	1148.41	1754	1152.7	1756	1156.99	1757.77	1160.79	1758	1173.7
GR	1758.3	1199.32								
NC	0.02	0.02	0.02							
X1	230	28	1034.85	1169.03	490.46	498.91	494.76		2.26	
GR	1763.6	1000	1763.36	1034.85	1762	1040.25	1761.13	1043.65	1760.31	1056.95
GR	1760	1057.18	1758	1062.98	1756	1068.2	1754	1073.41	1753.53	1074.65
GR	1752.6	1090.81	1752	1093.04	1750.12	1100.45	1750.12	1113.46	1751.49	1119.83
GR	1752	1124.28	1753.26	1136.24	1754	1137.93	1756	1142.51	1758	1147.1
GR	1760	1151.69	1761.94	1156.15	1762	1156.82	1763.75	1168.26	1764	1169.03
GR	1766	1176.57	1766.64	1178.93	1766.86	1205.52				
NC	0.02	0.02	0.02							
X1	240	29	1026.08	1194.47	496.31	488.69	492		2.26	
GR	1774.8	1000	1774.34	1026.08	1774	1026.81	1772	1030.67	1770	1034.53
GR	1768	1038.38	1766	1042.19	1764	1045.88	1762	1049.77	1760	1053.67
GR	1758	1057.57	1757.43	1059.06	1757.79	1143.57	1758	1145.62	1758.74	1152.68
GR	1759.2	1157.83	1760	1159.46	1762	1163.99	1764	1168.57	1766	1173.21
GR	1768	1177.84	1770	1181.98	1772	1185.85	1774	1189.72	1776	1193.59
GR	1776.4	1194.47	1776.87	1267.84	1776	1276.18	1775.49	1280.88		

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NC	0.02	0.02	0.015							
X1	250	24	1036.04	1171.85	57.45	58.44	58.6		2.26	
GR	1775.4	1000	1775.23	1020.11	1774	1022.51	1772	1025.97	1770	1029.5
GR	1768	1033.08	1766.5	1036.04	1766	1037.59	1764	1043.3	1762	1047.58
GR	1760	1050.92	1758	1053.04	1758.34	1154.39	1760	1154.67	1762	1155.12
GR	1764	1155.69	1766	1162.7	1766.67	1171.85	1768	1174.97	1770	1178.13
GR	1772	1180.86	1774	1183.9	1776	1187.8	1776.99	1190.22		
NC	0.02	0.02	0.015							
X1	260	20	1033.31	1171.52	1	1	1		2.26	
GR	1775.4	1000	1775.24	1020.49	1774	1022.9	1772	1026.35	1770	1029.81
GR	1768	1033.31	1767.3	1042.07	1766	1048.18	1764	1050.85	1762	1051.85
GR	1762	1154.61	1764	1155.13	1766	1155.64	1766.66	1171.52	1767.82	1173.98
GR	1768	1174.12	1770	1176.75	1772	1179.4	1774	1183.08	1776	1187.74
NC	0.02	0.02	0.015							
X1	270	20	1008.92	1116.05	33.84	8.99	21.92		2.26	
GR	1775.8	964	1775	1000	1774	1003.1	1772	1008.92	1772.04	1008.94
GR	1770	1009.59	1768	1010.24	1766	1010.83	1764	1011.18	1762	1011.54
GR	1762	1113.08	1762	1114.49	1762	1114.56	1764	1114.95	1766	1115.24
GR	1768	1115.55	1770	1115.92	1771.04	1116.05	1772	1122.67	1774	1132.66
NC	0.02	0.02	0.015							
X1	280	18	1044.87	1151.21	1	1	1		2.26	
GR	1775.8	1000	1775.02	1036.1	1774	1039.28	1772.37	1044.87	1772	1044.99
GR	1770	1045.65	1768	1046.31	1766	1047.17	1766	1103.57	1766.18	1146.5
GR	1766	1148.22	1766	1149.86	1768	1150.4	1770	1150.81	1772	1151.16
GR	1772.2	1151.21	1774.03	1160.57	1774	1160.65				

NC	0.02	0.02	0.015							
X1	290	7	1047.98	1151	14.68	12.7	14.95		2.26	
X3	10			1047.98	1777.26	1150.91	1777.26			
GR	1775.6	1000	1775.05	1036.02	1774	1047.98	1766.55	1047.98	1766.55	1151
GR	1774	1151	1774.77	1160.59						
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	106	103.02	5.02	588	0	1769.18	1768.81
X1	300	8	1025.54	1128.56	102.54	98.55	102.75		2.26	
X2			1	1775.18	1779.18			1.33		
X3	10			1025.54	1777.45	1128.56	1777.82			
GR	1774.8	1000	1775.19	1017.87	1775.12	1025.54	1766.92	1025.54	1766.92	1128.56
GR	1775.1	1128.56	1775.56	1133.94	1775.35	1147.13				
NC	0.02	0.02	0.015							
X1	310	20	1022.98	1171.53	102.64	105.7	100.28		2.26	
GR	1776.8	1000	1776	1016.17	1775.68	1022.98	1774	1028.26	1772	1034.5
GR	1770	1040.77	1768.95	1044.12	1768	1047.77	1767.87	1048.18	1767.78	1072.14
GR	1767.8	1131.12	1768	1132.45	1768.79	1137.38	1768.62	1147.75	1770	1152.28
GR	1772	1158.91	1774	1165.6	1775.77	1171.53	1776	1177.59	1776.8	1198.8

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NC	0.02	0.02	0.02							
X1	320	20	1022.11	1155.09	489.89	487.69	489.1		2.26	
GR	1779.4	1000	1778.04	1022.01	1778	1022.11	1776	1030.73	1774	1039.26
GR	1772	1047.79	1770.85	1052.67	1770.51	1061.45	1770	1063.83	1769.24	1067.59
GR	1770	1104.76	1770.04	1107.08	1771.21	1112.55	1771.76	1130.75	1772	1131.67
GR	1774	1139.29	1776	1146.67	1777.98	1153.84	1778	1155.09	1779.33	1191.2
NC	0.02	0.02	0.02							
X1	330	21	1027.28	1156.48	500.62	500.93	500.1		2.26	
GR	1781	1000	1780.94	1027.28	1780	1031.83	1778	1041.53	1776	1051.25
GR	1774	1060.96	1773.4	1063.9	1773.58	1078.46	1772	1084.27	1771.79	1085.02
GR	1771.8	1109.74	1772	1110.11	1774	1116.37	1774.53	1118.12	1774.72	1134.82
GR	1776	1138.9	1778	1145.34	1780	1151.87	1781.4	1156.48	1782	1173.24
GR	1782.3	1189.26								
NC	0.02	0.02	0.02							
X1	340	19	1000	1116.66	496.19	495.64	496.21		2.26	
GR	1783.7	907.67	1782.39	1000	1782	1002.25	1780	1013.68	1778	1025.11
GR	1777	1030.73	1776.57	1040.34	1776	1043.31	1774.53	1051.15	1774.37	1080.76
GR	1776	1084.3	1778	1088.43	1778.07	1088.55	1778.69	1101.43	1780	1107.4
GR	1782	1116.66	1784	1125.98	1785.09	1131.04	1785.6	1161.06		
NC	0.02	0.02	0.02							
X1	350	22	1042.74	1155.28	460.23	420.27	436.71		2.26	
GR	1786	1000	1786.37	1024.16	1787.1	1042.74	1786	1046.9	1784	1054.53
GR	1782	1062.22	1780	1069.93	1778	1077.61	1776.25	1084.32	1778.03	1100.93
GR	1777.2	1111.98	1778	1120.32	1779.54	1134.41	1778.08	1145.13	1780	1148.5
GR	1782	1151.93	1784	1155.28	1784.22	1155.66	1785.25	1168.43	1786	1172.75
GR	1787.2	1179.81	1787.3	1201.99						

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NC      0.02       0.02       0.02
X1       360         26    1014.07    1129.57     341.79     294.05     314.29                2.26
X3        10                           1014.07    1794.26    1129.57    1794.26
GR      1798       1000       1796    1005.44       1794    1009.82       1792    1014.07       1790    1018.52
GR      1788    1023.42    1787.25    1025.48       1786    1027.93       1784    1030.77       1782    1033.57
GR    1781.8    1036.36    1781.62    1056.13    1780.02    1067.23       1780       1073    1779.67    1111.44
GR      1780    1112.32       1782    1117.65       1784    1122.81       1786    1127.74    1786.74    1129.57
GR    1786.9    1190.42    1786.92    1217.35       1788    1239.83    1788.97    1260.98     1789.6    1274.74
GR      1790    1319.61

NC      0.02       0.02       0.02
SB                 1.56        2.6        150         80                   943        1.5    1783.94    1781.93
X1       370         26    1019.93    1180.43      188.4     272.56     232.15                2.26
X2                                1          1793.94    1805.42
X3        10                           1019.93    1802.26    1180.43    1802.26
GR    1801.2       1000       1800    1006.14       1798    1012.48       1796    1019.93       1794    1026.84
GR      1792    1033.63       1790     1039.5       1788    1044.33    1787.04    1047.52       1786    1050.99
GR      1784    1063.28    1782.66    1069.39       1782    1116.66    1781.68    1141.49       1782    1142.19
GR      1784    1147.19       1786    1151.46    1787.43    1154.02       1788    1156.17       1790    1161.17
GR      1792    1166.33       1794       1173       1796    1180.43       1798    1186.39       1800    1192.83
GR    1800.7    1196.96
1
    01JUL03       14:17:43                                                                          PAGE     7


NC      0.03       0.03       0.02
X1       380         14    1091.25    1151.34     174.12     176.08     170.96                2.26
X3        10                           1091.25    1796.26    1151.34    1796.26
GR      1792    1090.66    1792.75    1091.25       1792    1091.78       1790    1093.21       1788    1094.63
GR      1786    1096.06    1785.68    1096.29     1785.8    1149.56       1786    1149.61       1788    1150.11
GR      1790     1150.6       1792    1151.08    1793.07    1151.34       1794    1227.86

NC      0.03       0.03       0.02
X1       390         21    1045.15    1103.45      420.9     420.21      420.9                2.26
X3        10                           1045.15    1799.26    1103.45    1799.26
GR    1792.6       1000     1793.3    1031.19    1793.78    1040.57       1794    1041.52    1794.81    1045.15
GR      1794    1045.61       1792    1046.74       1790    1047.86       1788    1049.03    1787.41    1049.38
GR    1787.2    1074.16    1787.54    1100.36       1788    1100.54       1790    1101.34       1792    1102.12
GR      1794     1102.9    1795.44    1103.45    1795.23    1128.39    1795.21    1144.16       1796    1147.04
GR    1797.3    1153.05

NC      0.03       0.03       0.02
X1       400         18    1042.29    1103.68     216.05      217.6     216.12                2.26
X3        10                           1042.29    1799.26    1103.68    1799.26
GR    1795.3       1000    1795.77    1024.49    1795.76    1038.23       1796    1040.26    1796.25    1042.29
GR      1796    1042.47       1794    1043.62       1792    1044.73       1790    1045.83    1789.06    1046.34
GR    1788.6    1075.55    1788.96    1100.77       1790    1101.12       1792    1101.81       1794    1102.54
GR      1796    1103.31    1796.96    1103.68    1796.49    1128.41

NC      0.03       0.03       0.02
X1       410         21    1041.49    1100.98     236.79     212.87     222.64                2.26
GR      1799       1000    1799.04    1002.09    1799.01    1019.84       1798     1026.7    1797.57     1029.5
GR    1797.2    1041.49       1796    1044.75       1794    1049.87       1792    1054.82       1790    1059.57
GR    1789.3    1061.07     1789.8    1078.69       1790    1092.24     1790.1    1099.54       1792    1099.88
GR      1794    1100.24       1796     1100.6       1798    1100.94    1798.24    1100.98    1798.57     1108.1
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GR	1799.4	1170.81								
NC	0.03	0.03	0.02							
X1	420	24	1148.62	1204.8	228.48	213.43	218.15		2.26	
GR	1805.1	1000	1804.85	1087.59	1804.56	1107.49	1804	1110.27	1802	1120.11
GR	1800	1129.91	1799.62	1132.29	1798.49	1148.62	1798	1150.2	1796	1155.64
GR	1794	1161.15	1792	1166.99	1790.86	1170.59	1791.29	1186.61	1790.88	1202.56
GR	1792	1202.83	1794	1203.37	1796	1203.9	1798	1204.44	1799.34	1204.8
GR	1800	1213.14	1800	1213.21	1800.65	1276.28	1800.8	1276.28		
NC	0.03	0.03	0.015							
X1	430	6	1034.79	1072.54	228.08	218.61	221.27		2.26	
X3	10			1034.79	1807.26	1072.54	1807.26			
GR	1804.5	1000	1804.31	1034.79	1793.29	1034.79	1793.29	1072.54	1803.82	1072.54
GR	1803.7	1113.05								
NC	0.03	0.03	0.015							
SB	0.9	1.56	2.6	78	37.75	1.75	246	0	1796.56	1795.55
X1	440	9	1048.13	1085.88	183.21	206.01	197.38		2.26	
X2			1	1803.56	1804.64			1.33		
X3	10			1048.13	1807.26	1085.88	1807.26			
GR	1804	1000	1803.68	1007.43	1803.75	1048.13	1794.3	1048.13	1794.3	1085.88
GR	1803.7	1085.88	1803.91	1101.01	1804	1103.62	1805.3	1113.11		

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NC	0.025	0.025	0.04							
QT	1	5800								
X1	450	23	1056.87	1133.42	163.22	162.13	163.47		2.26	
X3	10			1056.87	1811.26	1133.42	1811.26			
GR	1804	1000	1804.07	1006.32	1804.32	1034.41	1804.73	1043.05	1804.96	1056.87
GR	1804	1058.72	1802	1062.07	1800	1065.72	1798	1069.89	1796	1074.12
GR	1795.5	1075.14	1796	1079.17	1797.92	1096.15	1798	1097.82	1799.19	1110.76
GR	1800	1121.55	1802	1125.68	1804	1129.41	1806	1133.42	1806.22	1133.91
GR	1806.3	1148.02	1806.93	1155.61	1806.39	1170.62				
NC	0.025	0.025	0.04							
X1	460	23	1048.18	1141.84	281.81	289.57	285.08		2.26	
X3	10			1048.18	1812.26	1141.84	1812.26			
GR	1808	1000	1808.02	1003.22	1808	1005.04	1807.55	1048.18	1806	1052.89
GR	1804	1059.32	1802.11	1065.59	1802	1067.54	1800.57	1088.15	1800	1090.66
GR	1798	1099.31	1797.57	1101.27	1797.83	1115.39	1798	1115.66	1800	1118.79
GR	1802	1121.96	1804	1125.23	1804.77	1126.62	1805.59	1139.81	1806	1140.19
GR	1808.4	1141.84	1808	1142.64	1808	1161.75				
NC	0.025	0.025	0.04							
X1	470	20	1035.45	1104.62	277.36	272.97	275.07		2.26	
X3	10			1035.45	1814.26	1104.62	1814.26			
GR	1810.7	1000	1810.44	1019.05	1811.3	1035.45	1810	1039.08	1808	1044.69
GR	1806	1050.13	1804	1055.32	1802	1061.49	1800.02	1066.39	1800	1067.21
GR	1799.3	1081.38	1800	1082.49	1802	1085.74	1804	1089.17	1806	1092.65
GR	1806.1	1092.79	1808	1096.72	1810	1100.89	1810.59	1104.62	1810.87	1120.75
NC	0.025	0.025	0.04							

SB		1.56	2.6	100	20		288	2	1801.93	1801.55
X1	480	23	1049.96	1121.92	29.43	28.85	29.16		2.26	
X2			1	1810.26	1813.56					
X3	10			1049.96	1817.26	1121.92	1817.26			
GR	1810.8	1000	1810.29	1022.32	1810.42	1043.96	1811.06	1049.96	1810	1052.71
GR	1808	1057.64	1806	1063.42	1804	1071.44	1802	1076.07	1800.34	1079.25
GR	1800	1088.82	1799.67	1097.89	1800	1098.19	1802	1100.01	1804	1101.93
GR	1806	1109.03	1808	1115.05	1810	1119.54	1810.67	1121.92	1811.24	1130.7
GR	1810	1145.14	1809.57	1148.54	1809.64	1162.76				
NC	0.025	0.025	0.04							
X1	490	27	1050.08	1127.64	421.17	376.41	404.91		2.26	
X3	10			1050	1818.26	1127.64	1818.26			
GR	1816	1000	1816.02	1001.56	1814.9	1019.89	1814.74	1038.47	1815.04	1050.08
GR	1814	1052.5	1812	1057.09	1810	1061.66	1808	1066.16	1806	1070.64
GR	1804	1075.1	1803.66	1075.85	1804	1083.12	1804.15	1088.63	1806	1092.46
GR	1808	1096.8	1810	1101.52	1810.26	1101.82	1810	1113.29	1809.88	1118.54
GR	1810	1119.08	1812	1125.39	1812.71	1127.64	1812.65	1132.54	1812.36	1149.58
GR	1812.4	1162.71	1812.58	1182.47						

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01JUL03 14:17:43 PAGE 9

NC	0.025	0.025	0.04							
X1	500	27	1035.57	1117.1	475.67	455.34	467.9		2.26	
X3	10			1035.57	1823.26	1117.1	1823.26			
GR	1820.6	1000	1820.49	1017.79	1820	1035.57	1820.01	1036.35	1818	1038.99
GR	1816	1041.72	1814	1044.53	1812	1047.45	1810	1050.47	1808	1053.53
GR	1807.5	1054.17	1808	1059.53	1808.27	1062.4	1810	1077.16	1811.11	1085.69
GR	1812	1088.38	1814	1094.42	1816	1100.48	1817.15	1103.98	1818	1112.84
GR	1818.4	1117.1	1818	1130.34	1817.52	1146.76	1817.56	1162.65	1817.78	1176.1
GR	1818	1181.93	1818.33	1189.71						
NC	0.02	0.02	0.03							
X1	510	21	1051.63	1118	410.79	403.61	413.47		2.26	
GR	1822.7	1000	1822	1014.17	1821.1	1051.63	1820	1053.73	1818	1057.54
GR	1816	1061.35	1814	1065.16	1812	1068.96	1811.08	1070.77	1810.29	1084.94
GR	1812	1091.3	1814	1098.08	1816	1104.27	1818	1110.29	1820	1116.14
GR	1820.6	1118	1821.24	1184.8	1821.07	1201.95	1821.84	1211.83	1822	1218.61
GR	1822.5	1218.61								
NC	0.02	0.02	0.03							
X1	520	29	1020.76	1156.45	494.67	471.93	477.37		2.26	
GR	1830.9	1000	1830	1005.42	1829.57	1007.86	1828.53	1020.76	1828	1022.81
GR	1826	1030.61	1824	1038.4	1822	1046.19	1820	1053.98	1818.67	1059.18
GR	1818.1	1072.9	1818	1073.42	1816	1079.92	1814.82	1084.01	1816	1106.79
GR	1816.3	1112.44	1817.17	1120.26	1818	1123.13	1820	1130.03	1822	1136.92
GR	1824	1143.81	1825.52	1149.11	1826	1150.07	1828	1153.82	1829.41	1156.45
GR	1828	1169.03	1830	1185.2	1832	1235.46	1832.56	1257.15		
NC	0.02	0.02	0.03							
X1	530	25	1016.88	1152.68	371.54	424.3	399.2		2.26	
GR	1832	1000	1831.88	1004.01	1831.69	1016.88	1830	1021.18	1828	1026.26
GR	1826	1031.34	1824	1036.37	1822.35	1040.5	1822.35	1059.95	1822	1060.65
GR	1820	1064.77	1818	1068.85	1817.83	1069.21	1817.62	1090.03	1818	1090.71

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GR     1820    1093.58      1822     1096.4   1823.81   1099.05      1824   1102.34      1826   1121.49
GR     1828    1130.45   1828.88    1133.79      1830   1143.91   1830.93   1152.68   1831.19   1159.85

NC     0.02       0.02      0.03
X1      540         26   1018.16   1117.46    460.35    522.62    489.72                2.26
GR   1834.9       1000    1834.9   1018.16      1834    1020.8      1832   1026.45      1830   1031.95
GR     1828    1037.42   1827.86   1037.75      1828   1041.19    1828.5   1054.97      1828   1055.74
GR     1826    1058.87      1824   1062.02   1823.45   1062.88   1823.47   1092.33      1824   1093.02
GR     1826    1095.58      1828    1098.1    1828.7   1098.97   1828.48   1106.52      1830   1108.88
GR     1832    1111.99      1834    1115.1   1835.51   1117.46      1836   1133.36    1836.3   1144.44
GR   1836.7    1152.23

NC     0.02       0.02      0.03
X1      550         28   1021.09   1124.94    438.1    474.94    456.26                2.26
GR   1840.1       1000      1840   1001.92   1839.99   1006.32   1839.32   1021.09      1838   1024.57
GR     1836    1029.84   1833.93   1035.32      1834   1035.34   1833.46   1054.03      1832   1056.65
GR     1830    1060.26      1828    1063.9   1826.66   1066.34   1826.79   1083.14      1828   1085.42
GR     1830    1089.19      1832   1092.91    1834.1   1096.67      1834   1097.34      1834   1105.63
GR     1834    1111.84   1833.95   1114.36      1836   1119.24      1838   1124.12   1838.31   1124.94
GR   1839.6    1150.68      1840   1160.26   1840.11   1162.86
1
    01JUL03      14:17:43                                                                  PAGE   10


NC     0.02       0.02      0.03
X1      560         32   1011.15   1130.99    332.03    327.26    330.24                2.26
GR   1847.8       1000   1846.27    1003.9      1846   1006.41   1845.43   1011.15      1844   1015.37
GR     1842    1021.39      1840   1027.57      1838    1033.9    1836.1   1039.95      1836   1045.57
GR   1835.9    1053.25      1834   1056.42      1832   1059.77      1830    1063.2   1829.01   1064.93
GR     1828    1072.16   1827.85   1073.13      1828   1074.51   1828.64   1080.27      1830    1082.3
GR     1832     1085.3      1834   1088.32      1836   1091.45   1836.23    1091.7   1836.22   1110.34
GR     1838    1115.46      1840   1121.18      1842   1126.85    1843.5   1130.99      1844   1135.55
GR   1845.8    1151.17   1845.91   1156.17

NC     0.02       0.02      0.03
X1      570         31   1064.51   1140.01    229.29    230.35    228.38                2.26
GR   1847.9       1000      1846   1056.21   1845.65   1064.51      1844    1065.7      1842   1067.16
GR     1840    1068.62      1838   1070.08      1836   1071.54      1834   1072.98      1832   1073.78
GR     1832    1074.63      1832   1075.05      1832   1084.35      1832   1091.24   1831.69   1120.28
GR     1832    1120.51      1832   1120.78      1832   1121.95      1834   1124.47      1836   1126.81
GR     1838    1129.15      1840   1131.49      1842   1133.85      1844   1136.23      1846   1138.69
GR     1847    1140.01   1847.35   1156.32      1848   1159.82    1849.6   1168.44      1850   1170.12
GR   1850.7    1172.42

NC     0.02       0.02     0.015
X1      580         30   1055.05    1128.8         1         1         1                2.26
GR   1847.7       1000   1847.49   1012.37      1846   1049.98   1845.83   1055.05      1844   1056.21
GR     1842    1057.48      1840   1058.71      1838   1059.87      1836   1060.93      1834   1061.78
GR     1834    1062.46      1834   1063.07      1834   1063.47      1834   1064.19      1834   1080.22
GR     1834    1109.26      1834   1109.31      1834   1114.45      1836   1116.75      1838   1119.03
GR     1840     1121.3      1842   1123.52      1844   1125.65      1846   1127.71   1847.09    1128.8
GR   1847.5    1145.88      1848   1148.67   1849.67   1157.77      1850   1158.89   1851.05   1161.45

NC     0.02       0.02     0.015
X1      590         11    1031.2   1085.04     16.02      16.7     15.77                2.26
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X3	10			1031.2	1850.26	1085.04	1850.26			
GR	1847.3	1000	1847.01	1010.93	1846.27	1031.2	1834.21	1031.2	1834.21	1085.04
GR	1846.2	1085.04	1847.07	1099.88	1848	1120.18	1849.73	1131.49	1850	1132.09
GR	1851.3	1134.18								
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	60	53.84	3.84	400	0	1837.39	1836.47
X1	600	15	1081.85	1135.69	93.41	94.92	93.51		2.26	
X2			1	1845.39	1848.76			1.33		
X3	10			1081.85	1850.26	1135.69	1850.26			
GR	1851	1000	1850	1003.75	1848	1011.09	1847.6	1012.57	1847.64	1032.47
GR	1848	1035.82	1849.27	1065.44	1848	1070.71	1847.2	1074.22	1846	1081.85
GR	1835.1	1081.85	1835.13	1135.69	1847.56	1135.69	1847.68	1152.6	1848	1170.43
NC	0.02	0.02	0.015							
X1	610	20	1083.2	1136.14	230.78	201.73	215.38		2.26	
X3	10			1061.48	1855.26	1207.54	1855.26			
GR	1851.7	1000	1851.08	1029.96	1852	1046.46	1852.83	1061.48	1852.52	1068.39
GR	1852	1080.06	1851.91	1083.2	1850	1085.83	1848	1088.59	1846	1091.36
GR	1844	1094.17	1842.71	1095.99	1842.62	1124.12	1844	1126.53	1846	1130
GR	1848	1133.45	1849.56	1136.14	1850	1155.27	1852	1197.8	1852.45	1207.54

1

01JUL03 14:17:43 PAGE 11

NC	0.02	0.02	0.015							
X1	620	20	1033.45	1086.27	223.64	202.43	212.31		2.26	
GR	1859.3	1000	1858	1007.7	1857.16	1012.48	1856	1018.28	1855.25	1022.06
GR	1855.4	1033.45	1854	1035.35	1852	1037.9	1850	1040.44	1848	1042.97
GR	1846	1045.49	1845.48	1046.14	1845.66	1075.97	1846	1076.49	1848	1079.51
GR	1850	1082.53	1852	1085.57	1852.46	1086.27	1854	1135.67	1855.53	1176.03
NC	0.02	0.02	0.015							
X1	630	18	1031	1084.55	229.09	213.86	221.03		2.26	
GR	1861.2	1000	1860	1004.03	1858.27	1009.63	1858	1010.62	1856	1018.67
GR	1855.9	1018.82	1855.06	1031	1854	1032.96	1852	1036.68	1850	1040.45
GR	1848.1	1044.02	1848.28	1071.6	1850	1074.89	1852	1078.71	1854	1082.53
GR	1855	1084.55	1856	1129.14	1857	1165.99				
NC	0.02	0.02	0.015	0.1	0.3					
X1	640	19	1026.88	1079.43	251.59	262.14	258.21		2.26	
GR	1864.5	1000	1864.16	1004.77	1864	1005.12	1862	1009.4	1860	1013.41
GR	1858.6	1016.12	1858.09	1026.88	1858	1027.05	1856	1030.75	1854	1034.43
GR	1852	1038.12	1851.39	1039.25	1851.37	1067.22	1852	1068.01	1854	1070.51
GR	1856	1073	1858	1075.48	1860	1077.94	1861.23	1079.43		
NC	0.02	0.02	0.015							
X1	650	8	1035.35	1088.02	196.87	225.93	211.31		2.26	
X3	10			1035.35	1869.26	1088.02	1869.26			
GR	1866	941.77	1867.8	1000	1866.17	1035.35	1853.8	1035.35	1853.8	1088.02
GR	1866.1	1088.02	1866.1	1156.84	1866	1161.59				
NC	0.02	0.02	0.015							
SB	0.9	1.56	2.6	150	52.67	2.67	400	0	1858.43	1856.06
X1	660	11	1077.26	1129.93	191.11	191.17	191.78		2.26	

X2			1	1866.43	1871.43			1.33		
X3	10			1077.26	1872.26	1129.93	1872.26			
GR	1870.6	1000	1870	1032.33	1869.6	1060.4	1869.67	1077.26	1856.17	1077.26
GR	1856.1	1129.93	1869.5	1129.93	1870.02	1166.85	1870	1168.76	1870	1172.88
GR	1868.6	1207.45								
NC	0.025	0.025	0.025							
QT	1	5500								
X1	670	31	1067.82	1168.26	476.18	438.91	452.82		2.26	
GR	1879.4	1000	1878	1007.84	1877.77	1009.03	1877.27	1027.56	1876.26	1048.09
GR	1876	1049.44	1875	1054.05	1874.27	1067.82	1874	1068.59	1872	1072.93
GR	1870	1077.28	1868	1081.62	1866	1085.96	1864	1090.29	1862	1094.57
GR	1860	1098.77	1859.16	1100.51	1859	1121.06	1860	1131.32	1860.34	1134.65
GR	1860.7	1147.65	1862	1149.57	1864	1152.62	1866	1155.67	1868	1158.72
GR	1870	1161.77	1872	1164.82	1874	1167.84	1874.29	1168.26	1875	1189.7
GR	1875.3	1193.35								
NC	0.025	0.025	0.025							
X1	680	28	1032.41	1126.45	478.66	448	461.54		2.26	
GR	1882.6	1000	1882	1011.76	1880.87	1032.41	1880	1034.16	1878	1038.48
GR	1876	1042.78	1874	1047.09	1872	1051.41	1870	1055.75	1868	1060.1
GR	1866	1064.48	1864.4	1067.99	1864	1071.62	1862.6	1085.72	1864.01	1092.79
GR	1864	1093.89	1864.2	1101.75	1866	1104.88	1868	1108.34	1870	1111.81

1

01JUL03 14:17:43 PAGE 12

GR	1872	1115.28	1874	1118.74	1876	1122.22	1878	1125.69	1878.44	1126.45
GR	1878.7	1156.41	1878	1161.77	1876.53	1173.07				
NC	0.025	0.025	0.025							
X1	690	10	1057.3	1141.3	408.17	434.4	422.9		2.26	
X3	10			1057.3	1896.26	1141.3	1896.26			
GR	1894	1000	1894	1014.18	1886	1057.29	1877	1057.3	1866	1079.3
GR	1866	1119.3	1877	1141.3	1886	1141.31	1894	1162.81	1894	1172.96
NC	0.025	0.025	0.025							
SB		1.56	2.6	90	40		1240	2	1868.26	1868.26
X1	700	8	1011.47	1095.49	132.78	172.81	153.08		2.26	
X2			1	1888.26	1896.26					
GR	1894	1000	1886	1011.47	1877	1011.48	1866	1033.48	1866	1073.48
GR	1877	1095.48	1886	1095.49	1894	1097.52				
NC	0.025	0.025	0.025							
X1	710	22	1055.32	1141.88	416	467.23	424.6		2.26	
GR	1887	1000	1887.65	1055.32	1886	1058.98	1884	1063.38	1882	1067.76
GR	1880	1072.17	1878	1076.59	1876.67	1079.53	1876.5	1091.93	1878	1098.6
GR	1878.2	1099.74	1880	1110.14	1880.28	1112.24	1882	1115.7	1884	1119.72
GR	1886	1123.75	1888	1127.78	1890	1131.82	1892	1135.86	1894	1139.91
GR	1894.9	1141.88	1896	1168.62						
NC	0.025	0.025	0.025							
X1	720	28	1031.02	1123.52	499.28	495.17	498.02		2.26	
GR	1895.4	1000	1895.51	1008.85	1894	1013.03	1892	1018.46	1890.74	1021.86
GR	1890.3	1031.02	1890	1031.86	1888	1036.41	1886	1041.01	1884	1045.63
GR	1882	1050.25	1882	1050.99	1881.59	1059.51	1882	1063.99	1882.46	1068.23

GR	1882.7	1085.75	1884	1093.67	1884.05	1094.02	1885.72	1102.19	1886	1102.68
GR	1888	1106.25	1890	1109.82	1892	1113.4	1894	1117.01	1896	1120.66
GR	1897.5	1123.52	1898	1138.24	1898	1204.99				
NC	0.025	0.025	0.025							
X1	730	27	1056.08	1126.41	484.5	472.89	480.56		2.26	
GR	1895.5	980.55	1890	997.92	1888.44	1014.84	1888.81	1032	1890	1034.91
GR	1892	1040.78	1892.61	1042.69	1892.66	1056.08	1892	1058.03	1890	1063.82
GR	1888	1069.32	1887.87	1069.57	1887.34	1076.5	1886	1080.07	1885.41	1081.64
GR	1885.1	1105.73	1886	1106.9	1888	1109.69	1890	1112.46	1892	1115.21
GR	1894	1117.97	1896	1120.72	1898	1123.48	1900	1126.26	1900.12	1126.41
GR	1900.5	1149.64	1900	1152.55						
NC	0.025	0.025	0.025							
X1	740	30	1042.02	1119.91	502.08	483.58	492.38		2.26	
GR	1901.2	1000	1902	1005.26	1904	1021.59	1904.51	1025.97	1904	1027.47
GR	1902	1034.42	1900	1042.02	1900.03	1042.1	1898	1046.77	1896	1051.39
GR	1894	1056.04	1893.01	1058.37	1892.51	1063.92	1892	1064.96	1890	1068.86
GR	1889.5	1069.72	1889.67	1082.45	1889.35	1096.82	1890	1098.41	1892	1103.02
GR	1892.5	1104.29	1894	1106.26	1896	1108.92	1898	1111.43	1900	1113.86
GR	1902	1116.25	1904	1118.59	1905.14	1119.91	1904.81	1126.67	1904	1127.41

1

NC	0.025	0.025	0.025							
X1	750	40	1044.53	1148.05	361.65	431.03	391.69		2.26	
GR	1906.9	1000	1906	1004.65	1905.04	1009.47	1906	1015.43	1906.84	1019.12
GR	1906	1021.92	1904	1031.78	1903.79	1032.81	1903.79	1044.53	1902	1048.63
GR	1900	1053.26	1898	1057.91	1895.97	1062.64	1896	1063.05	1894.93	1077.63
GR	1894	1083.07	1893.44	1086.12	1893.85	1093.82	1894	1094.65	1895.88	1107.68
GR	1896	1108	1898	1113.7	1900	1119.39	1900.96	1122.14	1902	1123.57
GR	1904	1126.35	1906	1129.15	1908	1131.96	1910	1134.78	1912	1137.6
GR	1914	1140.41	1916	1143.23	1918	1146.05	1919.42	1148.05	1918	1155.65
GR	1916.8	1161.99	1916.93	1173.3	1916.59	1183.77	1916.83	1193	1918	1211.96
NC	0.025	0.025	0.025							
X1	760	24	1035.23	1131.59	409.52	457.63	428.24		2.26	
GR	1906.9	1000	1906.7	1035.23	1906	1036.91	1904	1042.08	1902	1047.23
GR	1901.2	1049.24	1900	1056.11	1898.24	1065.72	1898.23	1068.7	1899.02	1080.49
GR	1899.8	1088.61	1899.92	1101.11	1900	1101.27	1902	1105.14	1904	1109.01
GR	1906	1112.87	1908	1116.71	1910	1120.52	1912	1124.3	1914	1128.06
GR	1915.9	1131.59	1914.4	1139.1	1914	1153.98	1912.9	1195.72		
NC	0.025	0.025	0.025							
X1	770	24	1015.76	1126.99	456.52	419.22	434.78		2.26	
GR	1915	1000	1914	1015.76	1913.93	1016.79	1912	1022.95	1910	1029.33
GR	1908	1035.7	1906	1042.07	1905.12	1044.87	1904.51	1063.27	1904	1066.58
GR	1903.2	1072.95	1903.42	1081.93	1903.73	1095.61	1903.96	1105.84	1904	1105.97
GR	1906	1113.03	1906.63	1115.29	1908	1117.4	1910	1120.69	1912	1124.57
GR	1913.1	1126.99	1912.81	1130.93	1912.89	1143.7	1914	1148.24		
NC	0.025	0.025	0.015							
X1	780	8	1058.72	1114.05	52.99	49.44	49.44		2.26	
X3	10			1058.72	1918.76	1114.05	1918.76			

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GR   1916.4      1000      1916     1003.3     1914.9     1058.72     1903.78     1058.72     1903.78     1114.05
GR     1914   1114.05      1914     1121.8    1915.01     1149.26

NC    0.025     0.025     0.015
SB     1.25      1.56       2.6         80      55.33        5.33         400           0     1907.38     1906.04
X1      790        10   1028.58    1083.91     108.42      108.26      108.02                    2.26
X2                            1    1915.38    1919.38                                  2
X3       10                      1028.58    1918.26     1083.91     1918.26
GR     1916      1000    1915.8    1001.42    1915.93     1017.77     1914.87     1028.58     1905.12     1028.58
GR   1905.1   1083.91   1914.59    1083.91       1916     1104.86     1916.37      1109.9        1916     1131.78

NC    0.035     0.035      0.03
X1      800        14   1012.48    1094.47      100.8       88.06        95.8                    2.26
X3       10                      1000     1917.76     1094.47     1917.76
GR   1914.6      1000    1914.21    1012.48        1914     1012.99        1912     1017.82        1910     1022.59
GR     1908    1027.3    1904.86    1031.73    1904.86     1053.16     1904.86      1061.2        1908     1072.68
GR     1910   1078.88       1912    1084.82        1914     1090.67     1915.12     1094.47
1
    01JUL03       14:17:43                                                                                  PAGE   14


NC    0.035     0.035      0.03       0.1        0.3
X1      810        28   1144.23    1205.12     221.84      144.84      185.09                    2.26
GR     1918    980.65    1917.34     990.58       1916        1000        1914     1016.18     1913.61     1019.48
GR     1912   1086.58    1911.68    1097.61    1911.77     1130.03     1911.33     1144.23     1910.82     1158.38
GR     1910   1162.77       1908    1167.25       1906     1172.16     1905.36     1173.67      1905.8     1185.18
GR     1906    1185.5       1908    1188.52       1910     1192.61     1910.28     1194.53     1911.05     1205.12
GR   1911.2   1228.44     1911.5    1247.06       1912     1258.22        1914     1295.39     1914.12     1296.38
GR   1915.1   1324.03       1916     1338.5       1918     1370.57


1
    01JUL03       14:17:43                                                                                  PAGE   15

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

 *PROF 1

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
 ALLOWABLE ERROR FOR CRITICAL DEPTH DETERMINATION (ALLDC) =  2.000 PERCENT OF THE DEPTH

 CCHV=      .100 CEHV=      .300
 *SECNO 10.000
     10.000       8.37    1710.96    1709.66    1707.26    1712.45       1.48        .00        .00    1712.26
     6400.0         .0     6400.0         .0         .0      654.9         .1         .0         .0    1710.86
        .00        .00       9.77        .03       .000       .030       .030       .000    1702.59    1009.11
    .004017         0.         0.         0.          0         14          5        .00     119.45    1128.56
```

*SECNO 20.000

20.000	7.61	1712.99	1712.30	.00	1714.81	1.82	2.27	.10	1714.23
6400.0	.0	6400.0	.0	.0	591.5	.0	7.0	1.3	1715.71
.01	.00	10.82	.00	.000	.030	.000	.000	1705.38	1187.56
.005416	483.	489.	498.	2	12	0	.00	114.06	1301.62

*SECNO 30.000

30.000	7.51	1715.62	1715.25	.00	1717.74	2.12	2.84	.09	1714.67
6400.0	27.4	6372.6	.0	11.7	544.1	.0	13.5	2.7	1715.87
.02	2.34	11.71	.00	.030	.030	.000	.000	1708.11	1028.67
.006014	495.	498.	504.	2	12	0	.00	125.10	1153.77

*SECNO 40.000

40.000	9.07	1718.53	1718.05	.00	1720.44	1.91	2.67	.02	1718.26
6400.0	1.4	6177.9	220.7	1.5	548.8	55.2	20.1	4.3	1716.26
.04	.92	11.26	4.00	.030	.030	.030	.000	1709.46	1135.37
.004947	500.	492.	481.	2	8	0	.00	154.35	1289.72

*SECNO 50.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.40

50.000	9.46	1720.62	1718.32	.00	1721.58	.96	1.04	.10	1722.82
6400.0	.0	6400.0	.0	.0	815.2	.0	25.1	5.3	1722.26
.05	.00	7.85	.00	.000	.030	.000	.000	1711.16	1075.00
.002510	334.	306.	278.	2	15	0	.00	142.96	1217.96

1

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

*SECNO 60.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

60.000	9.73	1721.93	1719.55	.00	1722.46	.53	.84	.04	1720.27
6400.0	498.6	4971.7	929.7	199.2	769.7	335.3	37.2	8.4	1718.89
.07	2.50	6.46	2.77	.030	.030	.030	.000	1712.20	1002.76
.001193	500.	499.	502.	2	12	0	.00	396.87	1399.63

*SECNO 70.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70.000	7.53	1721.79	1721.79	.00	1724.38	2.59	1.23	.62	1725.95
6400.0	.0	6400.0	.0	.0	495.4	.0	47.5	11.2	1721.85
.08	.00	12.92	.00	.000	.030	.000	.000	1714.26	1100.15
.007946	493.	498.	498.	0	12	0	.00	97.17	1197.32

*SECNO 80.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.54

80.000	8.83	1725.47	1723.76	.00	1726.82	1.35	2.31	.12	1725.45
6400.0	.0	6400.0	.0	.0	686.0	.0	53.9	12.3	1727.47
.10	.03	9.33	.00	.030	.030	.000	.000	1716.64	1146.51
.003339	456.	471.	482.	2	11	0	.00	115.23	1261.74

*SECNO 90.000

3301 HV CHANGED MORE THAN HVINS

90.000	9.58	1727.03	1726.06	.00	1728.89	1.85	1.91	.15	1726.90
6400.0	.4	6399.6	.0	.7	585.5	.0	60.9	13.6	1729.68
.11	.55	10.93	.00	.030	.030	.000	.000	1717.45	1046.26
.004785	495.	482.	465.	3	8	0	.00	110.73	1156.98

1
01JUL03 14:17:43 PAGE 17

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

*SECNO 100.000

100.000	7.72	1728.68	1726.93	.00	1730.07	1.40	1.14	.05	1730.26
6400.0	.0	6400.0	.0	.0	674.4	.0	65.2	14.3	1729.52
.12	.00	9.49	.00	.000	.030	.000	.000	1720.96	1026.65
.003204	290.	295.	300.	2	14	0	.00	104.36	1131.01

*SECNO 110.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

110.000	5.29	1728.05	1728.05	.00	1730.48	2.43	.06	.31	1730.26
6400.0	.0	6400.0	.0	.0	512.0	.0	65.5	14.4	1729.78
.12	.00	12.50	.00	.000	.015	.000	.000	1722.76	1027.80
.002026	26.	26.	26.	0	14	0	.00	106.34	1134.14

*SECNO 120.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1029.5 1136.5 TYPE= 1 TARGET= 107.000
ELENCL= 1732.26 ELENCR= 1732.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1730.26 ELREA= 1732.26

120.000	4.79	1728.95	1728.95	.00	1731.37	2.42	.19	.00	1730.26
6400.0	.0	6400.0	.0	.0	512.5	.0	66.6	14.6	1732.26
.12	.00	12.49	.00	.000	.015	.000	.000	1724.16	1029.49
.002207	89.	90.	93.	0	11	0	.00	107.00	1136.49

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1728.09 , NOT 1728.95 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	145.00	107.00	7.00	500.00	.00	1724.79	1724.16

*SECNO 130.000
1
01JUL03 14:17:43 PAGE 18

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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.85

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1732.92	1732.56	.00	0.	6400.	500.	500.	1729.79	1733.69	0.

3470 ENCROACHMENT STATIONS= 1035.8 1142.8 TYPE= 1 TARGET= 107.000

ELENCL= 1733.26 ELENCR= 1733.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1730.26 ELREA= 1733.26

130.000	6.99	1731.78	.00	.00	1732.92	1.14	1.55	.00	1730.26
6400.0	.0	6400.0	.0	.0	748.4	.0	68.3	14.9	1733.26
.12	.00	8.55	.00	.000	.015	.000	.000	1724.79	1035.81
.000645	121.	120.	118.	3	0	0	.00	107.00	1142.81

*SECNO 140.000

3470 ENCROACHMENT STATIONS= 1149.7 1265.6 TYPE= 1 TARGET= 115.910
ELENCL= 1732.26 ELENCR= 1732.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1730.67 ELREA= 1732.26

140.000	6.85	1731.71	1730.19	.00	1733.01	1.30	.05	.05	1730.67
6400.0	.0	6400.0	.0	.0	698.7	.0	69.4	15.1	1732.26
.13	.00	9.16	.00	.000	.015	.000	.000	1724.86	1149.72
.000808	65.	64.	64.	2	15	0	.00	115.91	1265.63

*SECNO 150.000

3301 HV CHANGED MORE THAN HVINS

1
01JUL03 14:17:43 PAGE 19

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

150.000	6.46	1732.25	1732.25	.00	1734.43	2.18	.73	.26	1733.95
6300.0	.0	6300.0	.0	.0	532.2	.0	76.3	16.4	1733.35
.14	.00	11.84	.00	.000	.020	.000	.000	1725.79	1024.14
.003737	491.	490.	489.	0	11	0	.00	124.87	1149.01

*SECNO 160.000

3301 HV CHANGED MORE THAN HVINS

160.000	6.50	1734.37	1733.82	.00	1736.01	1.64	1.53	.05	1735.52
6300.0	.0	6300.0	.0	.0	613.0	.0	82.9	17.9	1736.26
.15	.00	10.28	.00	.000	.020	.000	.000	1727.87	1045.54
.002537	501.	502.	503.	2	11	0	.00	132.85	1178.39

*SECNO 170.000

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

170.000	6.04	1735.60	1735.60	.00	1737.71	2.11	1.49	.14	1736.76
6300.0	.0	6300.0	.0	.0	540.6	.0	89.4	19.4	1737.35
.16	.00	11.65	.00	.000	.020	.000	.000	1729.56	1046.37
.003759	487.	487.	488.	0	11	0	.00	130.75	1177.12

*SECNO 180.000

180.000	5.61	1737.47	1737.29	.00	1739.44	1.97	1.72	.01	1738.84
6300.0	.0	6300.0	.0	.0	559.5	.0	95.6	20.8	1739.98
.18	.00	11.26	.00	.000	.020	.000	.000	1731.86	1041.60
.003261	491.	492.	492.	2	11	0	.00	127.87	1169.47

*SECNO 190.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

190.000	6.70	1741.75	1741.75	.00	1744.14	2.39	1.71	.13	1744.26
6300.0	.0	6300.0	.0	.0	508.1	.0	101.7	22.2	1743.89
.19	.00	12.40	.00	.000	.020	.000	.000	1735.05	1006.97
.003627	499.	498.	497.	0	11	0	.00	108.37	1115.34

1
01JUL03 14:17:43 PAGE 20

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

*SECNO 200.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

200.000	6.16	1745.12	1745.12	.00	1747.57	2.45	1.79	.02	1748.26
6300.0	.0	6300.0	.0	.0	502.0	.0	107.4	23.4	1750.26
.20	.00	12.55	.00	.000	.020	.000	.000	1738.96	1007.81
.003603	494.	495.	497.	0	11	0	.00	104.30	1112.11

*SECNO 210.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

210.000	9.31	1749.09	1749.09	.00	1751.94	2.85	1.78	.12	1754.26
6300.0	.0	6300.0	.0	.0	465.2	.0	113.0	24.5	1755.57
.21	.00	13.54	.00	.000	.020	.000	.000	1739.78	1014.22
.003528	500.	500.	500.	0	14	0	.00	83.71	1097.93

*SECNO 220.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

220.000	7.97	1754.19	1754.19	.00	1756.87	2.68	1.69	.02	1762.09

6300.0	.0	6300.0	.0	.0	479.2	.0	118.1	25.4	1760.03
.22	.00	13.15	.00	.000	.020	.000	.000	1746.22	1056.99
.003578	465.	477.	489.	0	15	0	.00	91.27	1148.26

*SECNO 230.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

230.000	8.28	1760.66	1760.66	.00	1763.45	2.78	1.75	.03	1765.62
6300.0	.0	6300.0	.0	.0	470.5	.0	123.5	26.4	1766.26
.23	.00	13.39	.00	.000	.020	.000	.000	1752.38	1061.81
.003514	490.	495.	499.	0	8	0	.00	86.22	1148.03

*SECNO 240.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

240.000	5.18	1764.87	1764.87	.00	1767.14	2.26	1.77	.05	1776.60
6300.0	.0	6300.0	.0	.0	522.0	.0	129.1	27.6	1778.66
.24	.00	12.07	.00	.000	.020	.000	.000	1759.69	1048.58
.003668	496.	492.	489.	0	14	0	.00	116.82	1165.40

1
01JUL03 14:17:43 PAGE 21

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

*SECNO 250.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

250.000	5.05	1765.31	1765.31	.00	1767.65	2.34	.16	.02	1768.76
6300.0	.0	6300.0	.0	.0	513.2	.0	129.8	27.7	1768.93
.24	.00	12.28	.00	.000	.015	.000	.000	1760.26	1045.34
.002101	57.	59.	58.	0	8	0	.00	110.08	1155.42

*SECNO 260.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

260.000	4.97	1769.23	1769.23	.00	1771.38	2.15	.00	.02	1770.26
6300.0	.0	6299.9	.1	.0	536.0	.1	129.8	27.7	1768.92
.24	.00	11.75	.95	.000	.015	.020	.000	1764.26	1043.60
.002196	1.	1.	1.	0	5	0	.00	128.59	1172.19

*SECNO 270.000
7185 MINIMUM SPECIFIC ENERGY

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3720 CRITICAL DEPTH ASSUMED
   270.000      4.86   1769.12   1769.12       .00   1771.54      2.42       .05       .08   1774.26
    6300.0        .0    6300.0        .0        .0     504.7        .0     130.1      27.8   1773.30
       .24       .00     12.48       .00      .000      .015      .000      .000   1764.26   1010.58
   .002156       34.       22.        9.         0         8         0       .00    104.80   1115.37


*SECNO 280.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   280.000      4.89   1773.15   1773.15       .00   1775.56      2.41       .00       .00   1774.63
    6300.0        .0    6300.0        .0        .0     505.9        .0     130.1      27.8   1774.46
       .24       .00     12.45       .00      .000      .015      .000      .000   1768.26   1045.36
   .002139        1.        1.        1.         0         5         0       .00    105.61   1150.97


*SECNO 290.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1048.0    1150.9  TYPE=       1  TARGET=      102.930
 ELENCL=   1777.26  ELENCR=   1777.26
1
   01JUL03       14:17:43                                                                  PAGE   22

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1776.26 ELREA=      1777.26

   290.000      4.86   1773.67   1773.67       .00   1776.13      2.46       .03       .02   1776.26
    6300.0        .0    6300.0        .0        .0     500.6        .0     130.3      27.8   1777.26
       .24       .00     12.58       .00      .000      .015      .000      .000   1768.81   1047.98
   .002208       15.       15.       13.         0         5         0       .00    102.93   1150.91


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS    1772.91 , NOT    1773.67 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      .90       1.56       2.60     106.00     103.02       5.02     588.00        .00    1769.18    1768.81

*SECNO 300.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46
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CLASS B LOW FLOW

3420 BRIDGE W.S.= 1774.04 BRIDGE VELOCITY= 12.74 CALCULATED CHANNEL AREA= 476.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1776.45	1776.87	.00	0.	6300.	588.	588.	1775.18	1779.18	0.

3470 ENCROACHMENT STATIONS= 1025.5 1128.6 TYPE= 1 TARGET= 103.020
ELENCL= 1777.45 ELENCR= 1777.82

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1777.38 ELREA= 1777.82

300.000	6.16	1775.34	.00	.00	1776.87	1.53	.74	.00	1777.38
6300.0	.0	6300.0	.0	.0	634.9	.0	131.6	28.1	1777.82
.24	.00	9.92	.00	.000	.015	.000	.000	1769.18	1025.54
.001032	103.	103.	99.	0	0	0	.00	103.02	1128.56

1

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

*SECNO 310.000

310.000	5.24	1775.28	1774.93	.00	1777.08	1.80	.13	.08	1777.94
6300.0	.0	6300.0	.0	.0	584.9	.0	133.0	28.4	1778.03
.25	.00	10.77	.00	.000	.015	.000	.000	1770.04	1031.30
.001633	103.	100.	106.	2	15	0	.00	131.04	1162.34

*SECNO 320.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

320.000	6.59	1778.09	1778.09	.00	1780.39	2.30	1.15	.15	1780.26
6300.0	.0	6300.0	.0	.0	517.7	.0	139.2	29.7	1780.26
.26	.00	12.17	.00	.000	.020	.000	.000	1771.50	1031.46
.003649	490.	489.	488.	0	11	0	.00	114.58	1146.04

*SECNO 330.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

330.000	7.07	1781.12	1781.12	.00	1783.48	2.35	1.82	.02	1783.20
6300.0	.0	6300.0	.0	.0	511.8	.0	145.1	31.0	1783.66
.27	.00	12.31	.00	.000	.020	.000	.000	1774.05	1037.34
.003649	501.	500.	501.	0	8	0	.00	110.82	1148.16

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*SECNO 340.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   340.000      7.48   1784.11   1784.11       .00   1786.44      2.33      1.82       .00   1784.65
    6300.0        .0    6300.0        .0        .0     514.5        .0     151.0      32.3   1784.26
       .28       .00     12.24       .00      .000      .020      .000      .000   1776.63   1003.10
   .003670      496.      496.      496.         0         8         0       .00    112.87   1115.97


*SECNO 350.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   350.000      7.59   1786.10   1786.10       .00   1788.60      2.50      1.58       .05   1789.36
    6300.0        .0    6300.0        .0        .0     496.9        .0     156.1      33.4   1786.26
       .29       .00     12.68       .00      .000      .020      .000      .000   1778.51   1055.14
   .003560      460.      437.      420.         0         5         0       .00     99.87   1155.01


1
   01JUL03      14:17:43                                                                          PAGE   24

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


*SECNO 360.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1014.1    1129.6  TYPE=      1  TARGET=      115.500
 ELENCL=   1794.26  ELENCR=   1794.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1794.26 ELREA=      1794.26

   360.000      6.39   1788.32   1788.32       .00   1790.84      2.51      1.13       .01   1794.26
    6300.0        .0    6300.0        .0        .0     495.1        .0     159.6      34.1   1794.26
       .30       .00     12.72       .00      .000      .020      .000      .000   1781.93   1027.81
   .003601      342.      314.      294.         0        15         0       .00    100.08   1127.89


SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      .00       1.56       2.60     150.00      80.00        .00     943.00       1.50    1783.94    1781.93

*SECNO 370.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=        .000  EGLWC=   1792.391  ELLC=   1793.940  PCWSE=   1788.321  ELTRD=   1805.420

3370 NORMAL BRIDGE, NRD=    0 MIN ELTRD=  1805.42 MAX ELLC=  1793.94
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1019.9    1180.4  TYPE=      1  TARGET=      160.500
 ELENCL=    1802.26  ELENCR=    1802.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1798.26 ELREA=      1802.26

   370.000      6.08   1790.02   1790.02       .00   1792.37      2.35       .84       .02   1798.26
    6300.0        .0    6300.0        .0        .0     512.6        .0     162.3      34.6   1802.26
       .30       .00     12.29       .00      .000      .020      .000      .000   1783.94   1045.12
   .003603      188.      232.      273.         0        15         0       .00    110.15   1155.27


 *SECNO 380.000
1
    01JUL03       14:17:43                                                                    PAGE   25

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


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1091.3    1151.3  TYPE=      1  TARGET=       60.090
 ELENCL=    1796.26  ELENCR=    1796.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1795.01 ELREA=      1796.26

   380.000      7.42   1795.36   1795.36       .00   1798.88      3.52       .63       .35   1795.01
    6300.0        .0    6300.0        .0        .0     418.2        .0     164.1      35.0   1796.26
       .31       .00     15.07       .00      .000      .020      .000      .000   1787.94   1091.25
   .003754      174.      171.      176.         0        11         0       .00     60.09   1151.34


 *SECNO 390.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1045.2    1103.4  TYPE=      1  TARGET=       58.300
 ELENCL=    1799.26  ELENCR=    1799.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1797.07 ELREA=      1799.26

   390.000      7.72   1797.18   1797.18       .00   1800.78      3.60      1.58       .02   1797.07
    6300.0        .0    6300.0        .0        .0     413.7        .0     168.2      35.6   1799.26
       .31       .00     15.23       .00      .000      .020      .000      .000   1789.46   1045.15
   .003749      421.      421.      420.         0         8         0       .00     58.10   1103.25
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*SECNO 400.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1042.3    1103.7  TYPE=      1  TARGET=       61.390
 ELENCL=   1799.26  ELENCR=   1799.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1798.51 ELREA=      1799.26

   400.000      7.54   1798.40   1798.40       .00   1801.86      3.46       .80       .01   1798.51
    6300.0        .0    6300.0        .0        .0     421.9        .0     170.2      35.8   1799.26
       .32       .00     14.93       .00      .000      .020      .000      .000   1790.86   1042.37
   .003696      216.      216.      218.         0         8         0       .00     60.99   1103.36


1
   01JUL03      14:17:43                                                                          PAGE   26

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


*SECNO 410.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   410.000      8.94   1800.50   1800.50       .00   1803.83      3.33       .78       .01   1799.46
    6300.0      28.9    6271.1        .0      11.7     427.1        .0     172.4      36.2   1800.50
       .32      2.46     14.68       .00      .030      .020      .000      .000   1791.56   1025.06
   .003361      237.      223.      213.         0        12         0       .00     75.96   1101.01


*SECNO 420.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   420.000      9.85   1802.97   1802.97       .00   1805.75      2.78       .62       .06   1800.75
    6300.0      98.3    6149.1      52.6      30.3     454.1      32.8     174.8      36.8   1801.60
       .33      3.24     13.54      1.60      .030      .020      .030      .000   1793.12   1126.45
   .002436      228.      218.      213.         0         8         0       .00     149.83   1276.28


*SECNO 430.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1034.8    1072.5  TYPE=      1  TARGET=       37.750
```

ELENCL= 1807.26 ELENCR= 1807.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1806.57 ELREA= 1807.26

430.000	9.52	1805.07	1805.07	.00	1809.84	4.77	.56	.60	1806.57
6300.0	.0	6300.0	.0	.0	359.3	.0	177.1	37.2	1807.26
.33	.00	17.53	.00	.000	.015	.000	.000	1795.55	1034.79
.002676	228.	221.	219.	0	8	0	.00	37.75	1072.54

1

01JUL03 14:17:43 PAGE 27

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

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1803.59 , NOT 1805.07 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	78.00	37.75	1.75	246.00	.00	1796.56	1795.55

*SECNO 440.000
PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1820.96	1813.49	.00	2706.	3603.	246.	252.	1803.56	1804.64	78.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3470 ENCROACHMENT STATIONS= 1048.1 1085.9 TYPE= 1 TARGET= 37.750
ELENCL= 1807.26 ELENCR= 1807.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1806.01 ELREA= 1807.26

440.000	9.55	1806.11	1806.06	.00	1810.85	4.74	.53	-.10	1806.01
6300.0	.0	6300.0	.0	.0	360.4	.0	178.7	37.4	1807.26
.33	.00	17.48	.00	.000	.015	.000	.000	1796.56	1048.13
.002647	183.	197.	206.	20	5	3	.00	37.75	1085.88

*SECNO 450.000

3301 HV CHANGED MORE THAN HVINS

```
3470 ENCROACHMENT STATIONS=     1056.9     1133.4  TYPE=       1  TARGET=        76.550
 ELENCL=    1811.26  ELENCR=    1811.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       1807.22 ELREA=       1811.26

   450.000      12.84    1810.60    1807.03        .00    1811.67       1.08        .46        .37    1807.22
    5800.0         .0     5800.0         .0         .0     696.1          .0      180.7       37.6    1811.26
       .34        .00       8.33        .00       .000       .040       .000       .000    1797.76    1056.87
   .002944       163.       163.       162.          4          8          0        .00      76.55    1133.42


1
    01JUL03       14:17:43                                                                                PAGE   28

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

 *SECNO 460.000

 3470 ENCROACHMENT STATIONS=     1048.2     1141.8  TYPE=       1  TARGET=        93.660
  ELENCL=    1812.26  ELENCR=    1812.26

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       1809.81 ELREA=       1812.26

   460.000      11.72    1811.55    1808.81        .00    1812.61       1.06        .93        .00    1809.81
    5800.0         .0     5800.0         .0         .0     702.3          .0      185.2       38.2    1812.26
       .35        .00       8.26        .00       .000       .040       .000       .000    1799.83    1048.18
   .003634       282.       285.       290.          2         19          0        .00      93.66    1141.84


 *SECNO 470.000

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     1035.4     1104.6  TYPE=       1  TARGET=        69.170
  ELENCL=    1814.26  ELENCR=    1814.26

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       1813.56 ELREA=       1814.26

   470.000      10.99    1812.55    1812.55        .00    1815.71       3.16       1.75        .63    1813.56
    5800.0         .0     5800.0         .0         .0     406.6          .0      188.7       38.7    1814.26
       .35        .00      14.27        .00       .000       .040       .000       .000    1801.56    1038.28
   .013868       277.       275.       273.          0         11          0        .00      64.43    1102.71


 SPECIAL BRIDGE
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SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	1.56	2.60	100.00	20.00	.00	288.00	2.00	1801.93	1801.55

*SECNO 480.000
3280 CROSS SECTION 480.00 EXTENDED 1.92 FEET

3301 HV CHANGED MORE THAN HVINS

1
01JUL03 14:17:43 PAGE 29

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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.10

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1822.37	1815.71	.00	1830.	4005.	288.	305.	1810.26	1813.56	100.

3470 ENCROACHMENT STATIONS= 1050.0 1121.9 TYPE= 1 TARGET= 71.960
ELENCL= 1817.26 ELENCR= 1817.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1813.32 ELREA= 1817.26

480.000	14.15	1816.08	.00	.00	1817.23	1.15	1.53	.00	1813.32
5800.0	.0	5800.0	.0	.0	672.6	.0	189.1	38.7	1817.26
.35	.00	8.62	.00	.000	.040	.000	.000	1801.93	1049.96
.003157	29.	29.	29.	3	0	2	.00	71.96	1121.92

*SECNO 490.000
3280 CROSS SECTION 490.00 EXTENDED .36 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

3470 ENCROACHMENT STATIONS= 1050.0 1127.6 TYPE= 1 TARGET= 77.640
ELENCL= 1818.26 ELENCR= 1818.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1817.30 ELREA= 1818.26

490.000	11.54	1817.46	1816.19	.00	1819.39	1.93	1.93	.23	1817.30
5800.0	.0	5800.0	.0	.0	519.9	.0	194.7	39.4	1818.26
.36	.05	11.16	.00	.025	.040	.000	.000	1805.92	1050.00
.007968	421.	405.	376.	3	19	0	.00	77.64	1127.64

1

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

*SECNO 500.000

3470 ENCROACHMENT STATIONS= 1035.6 1117.1 TYPE= 1 TARGET= 81.530
ELENCL= 1823.26 ELENCR= 1823.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1822.26 ELREA= 1823.26

500.000	11.50	1821.26	1820.12	.00	1823.26	2.00	3.85	.02	1822.26
5800.0	.0	5800.0	.0	.0	511.4	.0	200.2	40.3	1823.26
.38	.00	11.34	.00	.000	.040	.000	.000	1809.76	1037.67
.008504	476.	468.	455.	3	11	0	.00	79.43	1117.10

*SECNO 510.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

510.000	11.75	1824.30	1824.30	.00	1825.94	1.64	2.10	.04	1823.36
5800.0	48.7	5326.1	425.2	18.2	500.3	96.3	205.5	41.6	1822.86
.39	2.67	10.65	4.42	.020	.030	.020	.000	1812.55	1013.43
.003383	411.	413.	404.	0	8	0	.00	205.18	1218.61

*SECNO 520.000

520.000	9.13	1826.21	1824.96	.00	1827.72	1.51	1.77	.01	1830.79
5800.0	.0	5800.0	.0	.0	588.5	.0	212.1	43.3	1831.67
.40	.00	9.86	.00	.000	.030	.000	.000	1817.08	1038.59
.004091	495.	477.	472.	3	14	0	.00	105.06	1143.65

*SECNO 530.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

530.000	9.16	1829.04	1829.04	.00	1831.50	2.45	2.26	.28	1833.95
5800.0	.0	5800.0	.0	.0	461.5	.0	216.9	44.2	1833.19
.41	.00	12.57	.00	.000	.030	.000	.000	1819.88	1029.35
.008341	372.	399.	424.	0	5	0	.00	95.65	1125.00

*SECNO 540.000
7185 MINIMUM SPECIFIC ENERGY
1
01JUL03 14:17:43 PAGE 31

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

3720 CRITICAL DEPTH ASSUMED

540.000	8.31	1834.02	1834.02	.00	1836.69	2.67	4.08	.07	1837.16
5800.0	.0	5800.0	.0	.0	442.1	.0	222.0	45.2	1837.77
.42	.00	13.12	.00	.000	.030	.000	.000	1825.71	1027.12
.008330	460.	490.	523.	0	11	0	.00	84.49	1111.61

*SECNO 550.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

550.000	10.00	1838.92	1838.92	.00	1841.46	2.54	3.86	.01	1841.58
5800.0	.0	5800.0	.0	.0	453.2	.0	226.7	46.2	1840.57
.43	.00	12.80	.00	.000	.030	.000	.000	1828.92	1028.11
.008600	438.	456.	475.	0	11	0	.00	92.74	1120.84

*SECNO 560.000

560.000	11.65	1841.76	1841.50	.00	1844.07	2.31	2.59	.02	1847.69
5800.0	.0	5800.0	.0	.0	475.4	.0	230.2	46.9	1845.76
.44	.00	12.20	.00	.000	.030	.000	.000	1830.11	1029.17
.007179	332.	330.	327.	0	8	0	.00	90.56	1119.73

*SECNO 570.000

570.000	9.35	1843.30	1841.48	.00	1845.28	1.98	1.17	.03	1847.91
5800.0	.0	5800.0	.0	.0	514.1	.0	232.8	47.3	1849.26
.44	.00	11.28	.00	.000	.030	.000	.000	1833.95	1067.86
.003860	229.	228.	230.	2	14	0	.00	64.87	1132.73

*SECNO 580.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

580.000	6.94	1843.20	1843.20	.00	1846.39	3.18	.00	.36	1848.09
5800.0	.0	5800.0	.0	.0	405.1	.0	232.8	47.3	1849.35
.44	.00	14.32	.00	.000	.015	.000	.000	1836.26	1058.13
.002051	1.	1.	1.	0	15	0	.00	64.22	1122.35

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

*SECNO 590.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1031.2 1085.0 TYPE= 1 TARGET= 53.840
ELENCL= 1850.26 ELENCR= 1850.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1848.53 ELREA= 1850.26

590.000	7.09	1843.56	1843.56	.00	1847.14	3.58	.03	.12	1848.53
5800.0	.0	5800.0	.0	.0	381.8	.0	233.0	47.3	1850.26
.44	.00	15.19	.00	.000	.015	.000	.000	1836.47	1031.20
.002356	16.	16.	17.	0	8	0	.00	53.84	1085.04

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1842.25 , NOT 1843.56 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	60.00	53.84	3.84	400.00	.00	1837.39	1836.47

*SECNO 600.000
6840, FLOW IS BY WEIR AND LOW FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.51

3420 BRIDGE W.S.= 1846.51 BRIDGE VELOCITY= 12.07 CALCULATED CHANNEL AREA= 456.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1848.66	1848.77	2.94	0.	5781.	400.	400.	1845.39	1848.76	60.

3470 ENCROACHMENT STATIONS= 1081.8 1135.7 TYPE= 1 TARGET= 53.840
ELENCL= 1850.26 ELENCR= 1850.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1848.26 ELREA= 1850.26

600.000	9.34	1846.70	.00	.00	1848.77	2.07	1.63	.00	1848.26
5800.0	.0	5800.0	.0	.0	501.8	.0	233.9	47.4	1850.26

.44	.00	11.56	.00	.000	.015	.000	.000	1837.36	1081.85
.001031	93.	94.	95.	4	0	0	.00	53.84	1135.69

1

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

*SECNO 610.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1061.5 1207.5 TYPE= 1 TARGET= 146.060
ELENCL= 1855.26 ELENCR= 1855.26

610.000	9.68	1854.56	1854.56	.00	1857.06	2.50	.25	.13	1854.17
5800.0	2.2	5382.6	415.1	2.1	410.1	104.7	236.4	47.9	1851.82
.45	1.05	13.13	3.97	.020	.015	.020	.000	1844.88	1073.26
.001287	231.	215.	202.	0	8	0	.00	131.09	1204.36

*SECNO 620.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

620.000	9.83	1857.57	1857.57	.00	1859.92	2.35	.26	.02	1857.66
5800.0	.0	5322.5	477.4	.2	416.2	125.6	239.0	48.5	1854.72
.45	.24	12.79	3.80	.020	.015	.020	.000	1847.74	1021.74
.001208	224.	212.	202.	0	5	0	.00	141.80	1170.30

*SECNO 630.000
3280 CROSS SECTION 630.00 EXTENDED .66 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

630.000	9.56	1859.92	1859.92	.00	1862.06	2.14	.25	.02	1857.32
5800.0	121.6	5170.6	507.8	32.3	417.9	138.7	241.8	49.2	1857.26
.46	3.77	12.37	3.66	.020	.015	.020	.000	1850.36	1012.01
.001093	229.	221.	214.	0	8	0	.00	153.98	1165.99

CCHV= .100 CEHV= .300
*SECNO 640.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

640.000	9.28	1862.91	1862.91	.00	1866.17	3.25	.35	.33	1860.35
5800.0	146.1	5653.9	.0	29.0	386.3	.0	244.8	49.9	1863.49
.46	5.04	14.64	.00	.020	.015	.000	.000	1853.63	1012.10
.001695	252.	258.	262.	0	8	0	.00	66.64	1078.73

1

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

*SECNO 650.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1035.3 1088.0 TYPE= 1 TARGET= 52.670
ELENCL= 1869.26 ELENCR= 1869.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1868.43 ELREA= 1869.26

650.000	7.20	1863.26	1863.26	.00	1866.89	3.64	.42	.12	1868.43
5800.0	.0	5800.0	.0	.0	379.0	.0	246.7	50.2	1869.26
.47	.00	15.30	.00	.000	.015	.000	.000	1856.06	1035.35
.002370	197.	211.	226.	0	15	0	.00	52.67	1088.02

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1862.11 , NOT 1863.26 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.56	2.60	150.00	52.67	2.67	400.00	.00	1858.43	1856.06

*SECNO 660.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1864.72 BRIDGE VELOCITY= 15.52 CALCULATED CHANNEL AREA= 314.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1868.35	1869.82	.00	0.	5800.	400.	400.	1866.43	1871.43	0.

3470 ENCROACHMENT STATIONS= 1077.3 1129.9 TYPE= 1 TARGET= 52.670
ELENCL= 1872.26 ELENCR= 1872.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1871.93 ELREA= 1872.26

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
660.000	9.24	1867.60	.00	.00	1869.82	2.22	2.93	.00	1871.93
5800.0	.0	5800.0	.0	.0	484.6	.0	248.6	50.4	1872.26
.47	.00	11.97	.00	.000	.015	.000	.000	1858.36	1077.26
.001128	191.	192.	191.	0	0	0	.00	52.67	1129.93

*SECNO 670.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

670.000	7.49	1868.75	1868.75	.00	1871.62	2.87	.95	.19	1876.53
5500.0	.0	5500.0	.0	.0	404.4	.0	253.2	51.1	1876.55
.48	.00	13.60	.00	.000	.025	.000	.000	1861.26	1084.90
.005530	476.	453.	439.	0	15	0	.00	71.51	1156.41

*SECNO 680.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

680.000	9.22	1874.08	1874.08	.00	1877.20	3.13	2.54	.08	1883.13
5500.0	.0	5500.0	.0	.0	387.6	.0	257.4	51.8	1880.70
.49	.00	14.19	.00	.000	.025	.000	.000	1864.86	1051.81
.005493	479.	462.	448.	0	11	0	.00	63.15	1114.96

*SECNO 690.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.42

3470 ENCROACHMENT STATIONS= 1057.3 1141.3 TYPE= 1 TARGET= 84.000
ELENCL= 1896.26 ELENCR= 1896.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1879.26 ELREA= 1896.26

690.000	8.87	1877.13	1875.59	.00	1878.92	1.79	1.59	.13	1879.26

5500.0	.0	5500.0	.0	.0	512.4	.0	261.8	52.5	1896.26
.50	.00	10.73	.00	.000	.025	.000	.000	1868.26	1061.55
.002727	408.	423.	434.	3	15	0	.00	75.49	1137.05

1

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

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	1.56	2.60	90.00	40.00	.00	1240.00	2.00	1868.26	1868.26

*SECNO 700.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= .000 EGLWC= 1878.924 ELLC= 1888.260 PCWSE= 1877.135 ELTRD= 1896.260

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 1896.26 MAX ELLC= 1888.26

700.000	9.60	1877.86	1875.59	.00	1879.32	1.45	.36	.03	1888.26
5500.0	.0	5500.0	.0	.0	568.2	.0	263.7	52.7	1888.26
.51	.00	9.68	.00	.000	.025	.000	.000	1868.26	1014.28
.002037	133.	153.	173.	3	19	0	.00	78.39	1092.68

*SECNO 710.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

710.000	9.42	1888.18	1888.18	.00	1891.24	3.06	1.33	.48	1889.91
5500.0	.0	5500.0	.0	.0	391.6	.0	268.4	53.4	1897.16
.52	.00	14.04	.00	.000	.025	.000	.000	1878.76	1059.17
.005417	416.	425.	467.	0	8	0	.00	64.41	1123.58

*SECNO 720.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

720.000	7.74	1891.59	1891.59	.00	1894.37	2.78	2.73	.03	1892.56
5500.0	.0	5500.0	.0	.0	411.0	.0	273.0	54.2	1899.76
.53	.00	13.38	.00	.000	.025	.000	.000	1883.85	1033.38
.005533	499.	498.	495.	0	15	0	.00	75.25	1108.63

*SECNO 730.000

3301 HV CHANGED MORE THAN HVINS

1
01JUL03 14:17:43 PAGE 37

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

730.000	7.69	1895.05	1895.05	.00	1897.08	2.02	2.47	.08	1894.92
5500.0	1557.3	3942.7	.0	167.8	324.5	.0	278.0	55.3	1902.38
.54	9.28	12.15	.00	.025	.025	.000	.000	1887.36	989.10
.004791	485.	481.	473.	0	5	0	.00	127.21	1116.31

*SECNO 740.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

740.000	8.50	1900.11	1900.11	.00	1903.19	3.08	2.53	.32	1902.26
5500.0	.0	5500.0	.0	.0	390.7	.0	283.0	56.4	1907.40
.55	.00	14.08	.00	.000	.025	.000	.000	1891.61	1047.11
.005489	502.	492.	484.	0	8	0	.00	64.13	1111.24

*SECNO 750.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

750.000	8.37	1904.07	1904.07	.00	1906.90	2.83	2.17	.02	1906.05
5500.0	.0	5500.0	.0	.0	407.5	.0	286.6	57.0	1921.68
.56	.00	13.50	.00	.000	.025	.000	.000	1895.70	1049.07
.005581	362.	392.	431.	0	5	0	.00	74.23	1123.31

*SECNO 760.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

760.000	7.79	1908.28	1908.28	.00	1911.07	2.79	2.40	.00	1908.96
5500.0	.0	5500.0	.0	.0	410.3	.0	290.6	57.8	1918.16
.56	.00	13.40	.00	.000	.025	.000	.000	1900.49	1036.86
.005630	410.	428.	458.	0	9	0	.00	76.05	1112.91

*SECNO 770.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

770.000	6.57	1912.03	1912.03	.00	1914.50	2.46	2.45	.03	1916.26

5500.0	.0	5500.0	.0	.0	436.8	.0	294.8	58.6	1915.36
.57	.00	12.59	.00	.000	.025	.000	.000	1905.46	1030.05
.005652	457.	435.	419.	0	15	0	.00	90.26	1120.32

1

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

*SECNO 780.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1058.7 1114.1 TYPE= 1 TARGET= 55.330
ELENCL= 1918.76 ELENCR= 1918.76

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1917.16 ELREA= 1918.76

780.000	6.72	1912.76	1912.76	.00	1916.16	3.40	.17	.28	1917.16
5500.0	.0	5500.0	.0	.0	371.9	.0	295.3	58.7	1918.76
.57	.00	14.79	.00	.000	.015	.000	.000	1906.04	1058.72
.002347	53.	49.	49.	0	8	0	.00	55.33	1114.05

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 1911.34 , NOT 1912.76 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.56	2.60	80.00	55.33	5.33	400.00	.00	1907.38	1906.04

*SECNO 790.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.72

CLASS B LOW FLOW

3420 BRIDGE W.S.= 1913.93 BRIDGE VELOCITY= 15.25 CALCULATED CHANNEL AREA= 327.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1917.34	1918.65	.00	0.	5500.	400.	400.	1915.38	1919.38	0.

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 3470 ENCROACHMENT STATIONS=     1028.6     1083.9  TYPE=       1  TARGET=        55.330
  ELENCL=    1918.26  ELENCR=    1918.26
1
    01JUL03       14:17:43                                                                  PAGE   39

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


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1917.13 ELREA=      1918.26

    790.000       9.63    1916.99        .00        .00    1918.65       1.66       2.49        .00    1917.13
     5500.0         .0     5500.0         .0         .0      532.3         .0      296.4       58.8    1918.26
        .58        .00      10.33        .00       .000       .015       .000       .000    1907.36    1028.58
    .000791       108.       108.       108.          0          0          0        .00      55.33    1083.91


 *SECNO 800.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .53


 3470 ENCROACHMENT STATIONS=     1000.0     1094.5  TYPE=       1  TARGET=        94.470
  ELENCL=    1917.76  ELENCR=    1917.76

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1916.47 ELREA=      1917.76

    800.000      10.31    1917.43    1915.16        .00    1918.81       1.38        .13        .03    1916.47
     5500.0       17.7     5482.3         .0        9.6      581.3         .0      297.6       59.0    1917.76
        .58       1.84       9.43        .00       .035       .030       .000       .000    1907.12    1000.00
    .002830       101.        96.        88.          2         15          0        .00      94.47    1094.47


 CCHV=      .100 CEHV=      .300
 *SECNO 810.000

 3301 HV CHANGED MORE THAN HVINS


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.02

    810.000      11.29    1918.91    1916.32        .00    1919.15        .24        .23        .11    1913.59
     5500.0     1697.2     2353.7     1449.1      580.4      471.5      495.9      302.2       60.0    1913.31
        .59       2.92       4.99       2.92       .035       .030       .035       .000    1907.62     995.44
    .000695       222.       185.       145.          3          9          0        .00      353.45    1348.89


1
    01JUL03       14:17:43                                                                  PAGE   40
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THIS RUN EXECUTED 01JUL03 14:17:44

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 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLOODPLAIN DELINEATION -

SUMMARY PRINTOUT TABLE 100

	SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG
*	130.000	1732.56	1729.79	1732.92	1733.69	6400.00	.00	10.00	.00	6.99	1731.78	8.55	1732.92
*	300.000	1776.87	1775.18	1776.45	1779.18	6300.00	.00	2.00	.00	6.16	1775.34	9.92	1776.87
*	370.000	1792.39	1793.94	.00	1805.42	6300.00	.00	59.00	.00	6.08	1790.02	12.29	1792.37
*	440.000	1813.49	1803.56	1820.96	1804.64	3603.15	2705.88	30.00	.00	9.55	1806.11	17.48	1810.85
*	480.000	1815.71	1810.26	1822.37	1813.56	4005.47	1830.21	30.00	.00	14.15	1816.08	8.62	1817.23
*	600.000	1848.77	1845.39	1848.66	1848.76	5780.91	.16	15.00	2.94	9.34	1846.70	11.56	1848.77
*	660.000	1869.82	1866.43	1868.35	1871.43	5800.00	.00	2.00	.00	9.24	1867.60	11.97	1869.82
	700.000	1878.92	1888.26	.00	1896.26	5500.00	.00	59.00	.00	9.60	1877.86	9.68	1879.32
*	790.000	1918.65	1915.38	1917.34	1919.38	5500.00	.00	2.00	.00	9.63	1916.99	10.33	1918.65

1
01JUL03 14:17:43 PAGE 41

FLOODPLAIN DELINEATION -

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
10.000	.00	.00	.00	1702.59	6400.00	1710.96	1709.66	1712.45	40.17	9.77	654.99	1009.81
20.000	488.53	.00	.00	1705.38	6400.00	1712.99	1712.30	1714.81	54.16	10.82	591.46	869.66
30.000	498.03	.00	.00	1708.11	6400.00	1715.62	1715.25	1717.74	60.14	11.71	555.76	825.31

	40.000	491.57	.00	.00	1709.46	6400.00	1718.53	1718.05	1720.44	49.47	11.26	605.53	909.92
*	50.000	305.60	.00	.00	1711.16	6400.00	1720.62	1718.32	1721.58	25.10	7.85	815.17	1277.56
*	60.000	499.27	.00	.00	1712.20	6400.00	1721.93	1719.55	1722.46	11.93	6.46	1304.23	1852.60
*	70.000	497.95	.00	.00	1714.26	6400.00	1721.79	1721.79	1724.38	79.46	12.92	495.38	717.97
*	80.000	470.68	.00	.00	1716.64	6400.00	1725.47	1723.76	1726.82	33.39	9.33	685.96	1107.62
	90.000	482.19	.00	.00	1717.45	6400.00	1727.03	1726.06	1728.89	47.85	10.93	586.21	925.18
	100.000	295.13	.00	.00	1720.96	6400.00	1728.68	1726.93	1730.07	32.04	9.49	674.45	1130.66
*	110.000	25.69	.00	.00	1722.76	6400.00	1728.05	1728.05	1730.48	20.26	12.50	512.01	1421.91
*	120.000	90.11	.00	.00	1724.16	6400.00	1728.95	1728.95	1731.37	22.07	12.49	512.45	1362.37
*	130.000	119.69	1733.69	1729.79	1724.79	6400.00	1731.78	.00	1732.92	6.45	8.55	748.45	2519.99
	140.000	64.14	.00	.00	1724.86	6400.00	1731.71	1730.19	1733.01	8.08	9.16	698.74	2252.04
*	150.000	489.94	.00	.00	1725.79	6300.00	1732.25	1732.25	1734.43	37.37	11.84	532.17	1030.53
	160.000	501.51	.00	.00	1727.87	6300.00	1734.37	1733.82	1736.01	25.37	10.28	612.98	1250.86
*	170.000	487.26	.00	.00	1729.56	6300.00	1735.60	1735.60	1737.71	37.59	11.65	540.60	1027.52
	180.000	491.83	.00	.00	1731.86	6300.00	1737.47	1737.29	1739.44	32.61	11.26	559.45	1103.29
*	190.000	497.74	.00	.00	1735.05	6300.00	1741.75	1741.75	1744.14	36.27	12.40	508.15	1046.09
*	200.000	495.37	.00	.00	1738.96	6300.00	1745.12	1745.12	1747.57	36.03	12.55	501.99	1049.50
*	210.000	500.38	.00	.00	1739.78	6300.00	1749.09	1749.09	1751.94	35.28	13.54	465.25	1060.72
*	220.000	476.72	.00	.00	1746.22	6300.00	1754.19	1754.19	1756.87	35.78	13.15	479.23	1053.22
*	230.000	494.76	.00	.00	1752.38	6300.00	1760.66	1760.66	1763.45	35.14	13.39	470.48	1062.73
*	240.000	492.00	.00	.00	1759.69	6300.00	1764.87	1764.87	1767.14	36.68	12.07	521.97	1040.16

1

01JUL03 14:17:43 PAGE 42

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	250.000	58.60	.00	.00	1760.26	6300.00	1765.31	1765.31	1767.65	21.01	12.28	513.16	1374.32
*	260.000	1.00	.00	.00	1764.26	6300.00	1769.23	1769.23	1771.38	21.96	11.75	536.10	1344.52
*	270.000	21.92	.00	.00	1764.26	6300.00	1769.12	1769.12	1771.54	21.56	12.48	504.71	1356.90
*	280.000	1.00	.00	.00	1768.26	6300.00	1773.15	1773.15	1775.56	21.39	12.45	505.92	1362.04

*	290.000	14.95	.00	.00	1768.81	6300.00	1773.67	1773.67	1776.13	22.08	12.58	500.64	1340.65
*	300.000	102.75	1779.18	1775.18	1769.18	6300.00	1775.34	.00	1776.87	10.32	9.92	634.90	1960.95
	310.000	100.28	.00	.00	1770.04	6300.00	1775.28	1774.93	1777.08	16.33	10.77	584.86	1558.77
*	320.000	489.10	.00	.00	1771.50	6300.00	1778.09	1778.09	1780.39	36.49	12.17	517.70	1042.95
*	330.000	500.10	.00	.00	1774.05	6300.00	1781.12	1781.12	1783.48	36.49	12.31	511.82	1042.99
*	340.000	496.21	.00	.00	1776.63	6300.00	1784.11	1784.11	1786.44	36.70	12.24	514.52	1039.97
*	350.000	436.71	.00	.00	1778.51	6300.00	1786.10	1786.10	1788.60	35.60	12.68	496.89	1055.87
*	360.000	314.29	.00	.00	1781.93	6300.00	1788.32	1788.32	1790.84	36.01	12.72	495.11	1049.91
*	370.000	232.15	1805.42	1793.94	1783.94	6300.00	1790.02	1790.02	1792.37	36.03	12.29	512.55	1049.57
*	380.000	170.96	.00	.00	1787.94	6300.00	1795.36	1795.36	1798.88	37.54	15.07	418.16	1028.18
*	390.000	420.90	.00	.00	1789.46	6300.00	1797.18	1797.18	1800.78	37.49	15.23	413.68	1028.90
*	400.000	216.12	.00	.00	1790.86	6300.00	1798.40	1798.40	1801.86	36.96	14.93	421.85	1036.24
*	410.000	222.64	.00	.00	1791.56	6300.00	1800.50	1800.50	1803.83	33.61	14.68	438.82	1086.66
*	420.000	218.15	.00	.00	1793.12	6300.00	1802.97	1802.97	1805.75	24.36	13.54	517.22	1276.55
*	430.000	221.27	.00	.00	1795.55	6300.00	1805.07	1805.07	1809.84	26.76	17.53	359.32	1217.88
*	440.000	197.38	1804.64	1803.56	1796.56	6300.00	1806.11	1806.06	1810.85	26.47	17.48	360.40	1224.55
	450.000	163.47	.00	.00	1797.76	5800.00	1810.60	1807.03	1811.67	29.44	8.33	696.14	1068.91
	460.000	285.08	.00	.00	1799.83	5800.00	1811.55	1808.81	1812.61	36.34	8.26	702.34	962.09
*	470.000	275.07	.00	.00	1801.56	5800.00	1812.55	1812.55	1815.71	138.68	14.27	406.58	492.51
*	480.000	29.16	1813.56	1810.26	1801.93	5800.00	1816.08	.00	1817.23	31.57	8.62	672.62	1032.30
*	490.000	404.91	.00	.00	1805.92	5800.00	1817.46	1816.19	1819.39	79.68	11.16	519.90	649.77
	500.000	467.90	.00	.00	1809.76	5800.00	1821.26	1820.12	1823.26	85.04	11.34	511.37	628.96

1

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	510.000	413.47	.00	.00	1812.55	5800.00	1824.30	1824.30	1825.94	33.83	10.65	614.81	997.24
	520.000	477.37	.00	.00	1817.08	5800.00	1826.21	1824.96	1827.72	40.91	9.86	588.48	906.77
*	530.000	399.20	.00	.00	1819.88	5800.00	1829.04	1829.04	1831.50	83.41	12.57	461.47	635.06

*	540.000	489.72	.00	.00	1825.71	5800.00	1834.02	1834.02	1836.69	83.30	13.12	442.12	635.50
*	550.000	456.26	.00	.00	1828.92	5800.00	1838.92	1838.92	1841.46	86.00	12.80	453.18	625.44
	560.000	330.24	.00	.00	1830.11	5800.00	1841.76	1841.50	1844.07	71.79	12.20	475.41	684.51
	570.000	228.38	.00	.00	1833.95	5800.00	1843.30	1841.48	1845.28	38.60	11.28	514.15	933.54
*	580.000	1.00	.00	.00	1836.26	5800.00	1843.20	1843.20	1846.39	20.51	14.32	405.06	1280.79
*	590.000	15.77	.00	.00	1836.47	5800.00	1843.56	1843.56	1847.14	23.56	15.19	381.84	1194.84
*	600.000	93.51	1848.76	1845.39	1837.36	5800.00	1846.70	.00	1848.77	10.31	11.56	501.84	1806.12
*	610.000	215.38	.00	.00	1844.88	5800.00	1854.56	1854.56	1857.06	12.87	13.13	516.84	1616.89
*	620.000	212.31	.00	.00	1847.74	5800.00	1857.57	1857.57	1859.92	12.08	12.79	541.92	1668.78
*	630.000	221.03	.00	.00	1850.36	5800.00	1859.92	1859.92	1862.06	10.93	12.37	588.88	1754.17
*	640.000	258.21	.00	.00	1853.63	5800.00	1862.91	1862.91	1866.17	16.95	14.64	415.21	1408.60
*	650.000	211.31	.00	.00	1856.06	5800.00	1863.26	1863.26	1866.89	23.70	15.30	378.99	1191.31
*	660.000	191.78	1871.43	1866.43	1858.36	5800.00	1867.60	.00	1869.82	11.28	11.97	484.63	1726.55
*	670.000	452.82	.00	.00	1861.26	5500.00	1868.75	1868.75	1871.62	55.30	13.60	404.44	739.57
*	680.000	461.54	.00	.00	1864.86	5500.00	1874.08	1874.08	1877.20	54.93	14.19	387.58	742.12
*	690.000	422.90	.00	.00	1868.26	5500.00	1877.13	1875.59	1878.92	27.27	10.73	512.41	1053.31
	700.000	153.08	1896.26	1888.26	1868.26	5500.00	1877.86	1875.59	1879.32	20.37	9.68	568.21	1218.51
*	710.000	424.60	.00	.00	1878.76	5500.00	1888.18	1888.18	1891.24	54.17	14.04	391.63	747.29
*	720.000	498.02	.00	.00	1883.85	5500.00	1891.59	1891.59	1894.37	55.33	13.38	410.97	739.40
*	730.000	480.56	.00	.00	1887.36	5500.00	1895.05	1895.05	1897.08	47.91	12.15	492.26	794.59
*	740.000	492.38	.00	.00	1891.61	5500.00	1900.11	1900.11	1903.19	54.89	14.08	390.66	742.38
*	750.000	391.69	.00	.00	1895.70	5500.00	1904.07	1904.07	1906.90	55.81	13.50	407.50	736.20
*	760.000	428.24	.00	.00	1900.49	5500.00	1908.28	1908.28	1911.07	56.30	13.40	410.34	733.03

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01JUL03 14:17:43 PAGE 44

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	770.000	434.78	.00	.00	1905.46	5500.00	1912.03	1912.03	1914.50	56.52	12.59	436.79	731.56
*	780.000	49.44	.00	.00	1906.04	5500.00	1912.76	1912.76	1916.16	23.47	14.79	371.91	1135.21

*	790.000	108.02	1919.38	1915.38	1907.36	5500.00	1916.99	.00	1918.65	7.91	10.33	532.29	1955.06
*	800.000	95.80	.00	.00	1907.12	5500.00	1917.43	1915.16	1918.81	28.30	9.43	590.89	1033.90
*	810.000	185.09	.00	.00	1907.62	5500.00	1918.91	1916.32	1919.15	6.95	4.99	1547.86	2086.34

1

FLOODPLAIN DELINEATION -

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	10.000	6400.00	1710.96	.00	.00	3.70	119.45	.00
	20.000	6400.00	1712.99	.00	2.03	.00	114.06	488.53
	30.000	6400.00	1715.62	.00	2.63	.00	125.10	498.03
	40.000	6400.00	1718.53	.00	2.91	.00	154.35	491.57
*	50.000	6400.00	1720.62	.00	2.09	.00	142.96	305.60
*	60.000	6400.00	1721.93	.00	1.31	.00	396.87	499.27
*	70.000	6400.00	1721.79	.00	-.14	.00	97.17	497.95
*	80.000	6400.00	1725.47	.00	3.68	.00	115.23	470.68
	90.000	6400.00	1727.03	.00	1.56	.00	110.73	482.19
	100.000	6400.00	1728.68	.00	1.65	.00	104.36	295.13
*	110.000	6400.00	1728.05	.00	-.62	.00	106.34	25.69
*	120.000	6400.00	1728.95	.00	.90	.00	107.00	90.11
*	130.000	6400.00	1731.78	.00	2.83	.00	107.00	119.69
	140.000	6400.00	1731.71	.00	-.07	.00	115.91	64.14
*	150.000	6300.00	1732.25	.00	.54	.00	124.87	489.94
	160.000	6300.00	1734.37	.00	2.12	.00	132.85	501.51
*	170.000	6300.00	1735.60	.00	1.23	.00	130.75	487.26
	180.000	6300.00	1737.47	.00	1.87	.00	127.87	491.83
*	190.000	6300.00	1741.75	.00	4.28	.00	108.37	497.74
*	200.000	6300.00	1745.12	.00	3.37	.00	104.30	495.37

*	210.000	6300.00	1749.09	.00	3.97	.00	83.71	500.38
*	220.000	6300.00	1754.19	.00	5.10	.00	91.27	476.72
*	230.000	6300.00	1760.66	.00	6.47	.00	86.22	494.76
*	240.000	6300.00	1764.87	.00	4.21	.00	116.82	492.00

1
01JUL03 14:17:43 PAGE 46

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	250.000	6300.00	1765.31	.00	.43	.00	110.08	58.60
*	260.000	6300.00	1769.23	.00	3.93	.00	128.59	1.00
*	270.000	6300.00	1769.12	.00	-.12	.00	104.80	21.92
*	280.000	6300.00	1773.15	.00	4.03	.00	105.61	1.00
*	290.000	6300.00	1773.67	.00	.52	.00	102.93	14.95
*	300.000	6300.00	1775.34	.00	1.67	.00	103.02	102.75
	310.000	6300.00	1775.28	.00	-.06	.00	131.04	100.28
*	320.000	6300.00	1778.09	.00	2.81	.00	114.58	489.10
*	330.000	6300.00	1781.12	.00	3.04	.00	110.82	500.10
*	340.000	6300.00	1784.11	.00	2.99	.00	112.87	496.21
*	350.000	6300.00	1786.10	.00	1.99	.00	99.87	436.71
*	360.000	6300.00	1788.32	.00	2.22	.00	100.08	314.29
*	370.000	6300.00	1790.02	.00	1.70	.00	110.15	232.15
*	380.000	6300.00	1795.36	.00	5.34	.00	60.09	170.96
*	390.000	6300.00	1797.18	.00	1.82	.00	58.10	420.90
*	400.000	6300.00	1798.40	.00	1.21	.00	60.99	216.12
*	410.000	6300.00	1800.50	.00	2.10	.00	75.96	222.64
*	420.000	6300.00	1802.97	.00	2.47	.00	149.83	218.15
*	430.000	6300.00	1805.07	.00	2.10	.00	37.75	221.27
*	440.000	6300.00	1806.11	.00	1.04	.00	37.75	197.38
	450.000	5800.00	1810.60	.00	4.49	.00	76.55	163.47

	460.000	5800.00	1811.55	.00	.95	.00	93.66	285.08
*	470.000	5800.00	1812.55	.00	1.00	.00	64.43	275.07
*	480.000	5800.00	1816.08	.00	3.53	.00	71.96	29.16
*	490.000	5800.00	1817.46	.00	1.38	.00	77.64	404.91
	500.000	5800.00	1821.26	.00	3.81	.00	79.43	467.90

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	510.000	5800.00	1824.30	.00	3.03	.00	205.18	413.47
	520.000	5800.00	1826.21	.00	1.92	.00	105.06	477.37
*	530.000	5800.00	1829.04	.00	2.83	.00	95.65	399.20
*	540.000	5800.00	1834.02	.00	4.97	.00	84.49	489.72
*	550.000	5800.00	1838.92	.00	4.90	.00	92.74	456.26
	560.000	5800.00	1841.76	.00	2.85	.00	90.56	330.24
	570.000	5800.00	1843.30	.00	1.54	.00	64.87	228.38
*	580.000	5800.00	1843.20	.00	-.10	.00	64.22	1.00
*	590.000	5800.00	1843.56	.00	.36	.00	53.84	15.77
*	600.000	5800.00	1846.70	.00	3.13	.00	53.84	93.51
*	610.000	5800.00	1854.56	.00	7.87	.00	131.09	215.38
*	620.000	5800.00	1857.57	.00	3.01	.00	141.80	212.31
*	630.000	5800.00	1859.92	.00	2.34	.00	153.98	221.03
*	640.000	5800.00	1862.91	.00	3.00	.00	66.64	258.21
*	650.000	5800.00	1863.26	.00	.34	.00	52.67	211.31
*	660.000	5800.00	1867.60	.00	4.34	.00	52.67	191.78
*	670.000	5500.00	1868.75	.00	1.15	.00	71.51	452.82
*	680.000	5500.00	1874.08	.00	5.33	.00	63.15	461.54
*	690.000	5500.00	1877.13	.00	3.06	.00	75.49	422.90
	700.000	5500.00	1877.86	.00	.73	.00	78.39	153.08

*	710.000	5500.00	1888.18	.00	10.31	.00	64.41	424.60
*	720.000	5500.00	1891.59	.00	3.42	.00	75.25	498.02
*	730.000	5500.00	1895.05	.00	3.46	.00	127.21	480.56
*	740.000	5500.00	1900.11	.00	5.06	.00	64.13	492.38
*	750.000	5500.00	1904.07	.00	3.96	.00	74.23	391.69
*	760.000	5500.00	1908.28	.00	4.21	.00	76.05	428.24

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	770.000	5500.00	1912.03	.00	3.75	.00	90.26	434.78
*	780.000	5500.00	1912.76	.00	.73	.00	55.33	49.44
*	790.000	5500.00	1916.99	.00	4.23	.00	55.33	108.02
*	800.000	5500.00	1917.43	.00	.44	.00	94.47	95.80
*	810.000	5500.00	1918.91	.00	1.48	.00	353.45	185.09

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=     50.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     60.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     70.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     70.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     80.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    110.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    110.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    120.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    120.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=    130.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    130.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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 CAUTION SECNO=    150.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    150.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    170.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    170.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    190.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    190.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    200.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    200.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    210.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    210.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    220.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    220.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    230.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    230.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    240.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    240.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    250.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    250.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    260.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    260.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    270.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    270.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
1
    01JUL03      14:17:43                                                PAGE   50


 CAUTION SECNO=    280.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    280.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    290.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    290.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    300.000  PROFILE=  1  HYDRAULIC JUMP D.S.
 WARNING SECNO=    300.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=    320.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    320.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    330.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    330.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    340.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    340.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    350.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
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 CAUTION SECNO=    350.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    360.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    360.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    370.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    370.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    380.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    380.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    390.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    390.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    400.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    400.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    410.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    410.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    420.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    420.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    430.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    430.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    440.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=    440.000  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
 CAUTION SECNO=    440.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=    440.000  PROFILE=  1  HYDRAULIC JUMP D.S.

 CAUTION SECNO=    470.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    470.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 WARNING SECNO=    480.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
    01JUL03      14:17:43                                                    PAGE   51


 WARNING SECNO=    490.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=    510.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    510.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    530.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    530.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    540.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    540.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    550.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    550.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

 CAUTION SECNO=    580.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=    580.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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Corrected Effective Model (Pre-Project Conditions)
Supercritical Flow HEC-2 Output File (NAVD88)

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES           *
 *                                         *
 *  Version   4.6.2;  May 1991             *
 •                                         *
 *  RUN DATE    13AUG03    TIME   11:13:13  *
 *****************************************
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 ***************************************
 *  U.S. ARMY CORPS OF ENGINEERS       *
 *  HYDROLOGIC ENGINEERING CENTER      *
 *  609 SECOND STREET, SUITE D         *
 *  DAVIS, CALIFORNIA 95616-4687       •
 *          (916) 756-1104             *
 ***************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1

13AUG03 11:13:13

THIS RUN EXECUTED 13AUG03 11:13:13

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 ************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ************************************
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 T1      REQUEST FOR LETTER OF MAP REVISION - FLAMINGO WASH
 T2      CORRECTED EFFECTIVE MODEL
 T3      ORIGINAL MODEL CREATED BY GC WALLACE  FOR FLAMINGO WASH FIS
 T4      ELEVATIONS RAISED BY BERGER 2.26 FEET TO CONVERT FROM NGVD29 TO NAVD88
 T4      DATUM = NAVD88
 T4      FILE: 879-F-C-SUPER.DAT
 T4      STARTING WSE = CRITICAL DEPTH
 T4      SUPERCRITICAL RUN
 T4      CONCRETE CHANNEL LINING BETWEEN D.I. ROAD & MOJAVE ROAD

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                   1        -1                            5800   1862.70

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      -1                 -1                                      -2        -6

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     150                  100
```

NC	0.02	0.02	0.015	0.1	0.3					
X1	640	19	1026.88	1079.43	251.59	262.14	258.21		2.26	
GR	1864.5	1000	1864.16	1004.77	1864	1005.12	1862	1009.4	1860	1013.41
GR	1858.6	1016.12	1858.09	1026.88	1858	1027.05	1856	1030.75	1854	1034.43
GR	1852	1038.12	1851.39	1039.25	1851.37	1067.22	1852	1068.01	1854	1070.51
GR	1856	1073	1858	1075.48	1860	1077.94	1861.23	1079.43		
NC	0.02	0.02	0.015							
X1	630	18	1031	1084.55	229.09	213.86	221.03		2.26	
GR	1861.2	1000	1860	1004.03	1858.27	1009.63	1858	1010.62	1856	1018.67
GR	1855.9	1018.82	1855.06	1031	1854	1032.96	1852	1036.68	1850	1040.45
GR	1848.1	1044.02	1848.28	1071.6	1850	1074.89	1852	1078.71	1854	1082.53
GR	1855	1084.55	1856	1129.14	1857	1165.99				
NC	0.02	0.02	0.015							
X1	620	20	1033.45	1086.27	223.64	202.43	212.31		2.26	
GR	1859.3	1000	1858	1007.7	1857.16	1012.48	1856	1018.28	1855.25	1022.06
GR	1855.4	1033.45	1854	1035.35	1852	1037.9	1850	1040.44	1848	1042.97
GR	1846	1045.49	1845.48	1046.14	1845.66	1075.97	1846	1076.49	1848	1079.51
GR	1850	1082.53	1852	1085.57	1852.46	1086.27	1854	1135.67	1855.53	1176.03

1

NC	0.02	0.02	0.015							
X1	610	20	1083.2	1136.14	230.78	201.73	215.38		2.26	
X3	10			1061.48	1855.26	1207.54	1855.26			
GR	1851.7	1000	1851.08	1029.96	1852	1046.46	1852.83	1061.48	1852.52	1068.39
GR	1852	1080.06	1851.91	1083.2	1850	1085.83	1848	1088.59	1846	1091.36
GR	1844	1094.17	1842.71	1095.99	1842.62	1124.12	1844	1126.53	1846	1130
GR	1848	1133.45	1849.56	1136.14	1850	1155.27	1852	1197.8	1852.45	1207.54
NC	0.02	0.02	0.015							
X1	600	15	1081.85	1135.69					2.26	
X3	10			1081.85	1850.26	1135.69	1850.26			
GR	1851	1000	1850	1003.75	1848	1011.09	1847.6	1012.57	1847.64	1032.47
GR	1848	1035.82	1849.27	1065.44	1848	1070.71	1847.2	1074.22	1846	1081.85
GR	1835.1	1081.85	1835.1	1135.69	1847.56	1135.69	1847.68	1152.6	1848	1170.43

1

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

ALLOWABLE ERROR FOR CRITICAL DEPTH DETERMINATION (ALLDC) = 2.000 PERCENT OF THE DEPTH
0

CCHV= .100 CEHV= .300
*SECNO 640.000
3720 CRITICAL DEPTH ASSUMED

640.000	9.27	1862.90	1862.90	1862.70	1866.17	3.27	.00	.00	1860.35
5800.0	144.5	5655.5	.0	28.7	385.3	.0	.0	.0	1863.49
.00	5.04	14.68	.00	.020	.015	.000	.000	1853.63	1012.14
.001710	0.	0.	0.	0	7	0	.00	66.57	1078.71

*SECNO 630.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.00

630.000	6.51	1856.87	1859.88	.00	1864.91	8.04	.78	.48	1857.32
5800.0	.0	5800.0	.0	.0	254.9	.0	2.0	.4	1857.26
.00	.00	22.75	.00	.000	.015	.000	.000	1850.36	1031.84
.006841	252.	258.	262.	9	8	0	.00	51.91	1083.75

*SECNO 620.000

3301 HV CHANGED MORE THAN HVINS

620.000	6.31	1854.05	1857.58	.00	1863.20	9.15	1.60	.11	1857.66
5800.0	.0	5800.0	.0	.0	238.9	.0	3.2	.6	1854.72
.01	.00	24.27	.00	.000	.015	.000	.000	1847.74	1038.17
.007680	229.	221.	214.	10	17	0	.00	47.08	1085.25

*SECNO 610.000

3301 HV CHANGED MORE THAN HVINS

1
13AUG03 11:13:13 PAGE 4

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

3470 ENCROACHMENT STATIONS= 1061.5 1207.5 TYPE= 1 TARGET= 146.060
ELENCL= 1855.26 ELENCR= 1855.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1854.17 ELREA= 1851.82

610.000	6.01	1850.89	1854.56	.00	1861.28	10.39	1.79	.12	1854.17

5800.0	.0	5800.0	.0	.0	224.2	.0	4.4	.8	1851.82
.01	.00	25.86	.00	.000	.015	.000	.000	1844.88	1087.71
.009304	224.	212.	202.	9	14	0	.00	46.85	1134.55

*SECNO 600.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.69

3470 ENCROACHMENT STATIONS= 1081.8 1135.7 TYPE= 1 TARGET= 53.840
ELENCL= 1850.26 ELENCR= 1850.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1848.26 ELREA= 1850.26

600.000	3.26	1840.62	1844.45	.00	1857.47	16.85	3.16	.65	1848.26
5800.0	.0	5800.0	.0	.0	176.1	.0	5.4	1.1	1850.26
.01	.00	32.94	.00	.000	.015	.000	.000	1837.36	1081.85
.026536	231.	215.	202.	6	11	0	.00	53.84	1135.69

1
13AUG03 11:13:13 PAGE 5

THIS RUN EXECUTED 13AUG03 11:13:13

****
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

DATUM = NAVD88

SUMMARY PRINTOUT TABLE 100

SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG

1
13AUG03 11:13:13 PAGE 6

DATUM = NAVD88

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	640.000	.00	.00	.00	1853.63	5800.00	1862.90	1862.90	1866.17	17.10	14.68	413.92	1402.59
*	630.000	258.21	.00	.00	1850.36	5800.00	1856.87	1859.88	1864.91	68.41	22.75	254.90	701.25
	620.000	221.03	.00	.00	1847.74	5800.00	1854.05	1857.58	1863.20	76.80	24.27	238.94	661.84
	610.000	212.31	.00	.00	1844.88	5800.00	1850.89	1854.56	1861.28	93.04	25.86	224.25	601.29
*	600.000	215.38	.00	.00	1837.36	5800.00	1840.62	1844.45	1857.47	265.36	32.94	176.07	356.05

DATUM = NAVD88

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	640.000	5800.00	1862.90	.00	.00	.20	66.57	.00
*	630.000	5800.00	1856.87	.00	-6.03	.00	51.91	258.21
	620.000	5800.00	1854.05	.00	-2.82	.00	47.08	221.03
	610.000	5800.00	1850.89	.00	-3.15	.00	46.85	212.31
*	600.000	5800.00	1840.62	.00	-10.27	.00	53.84	215.38

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 640.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 630.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 600.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

Post-Project Conditions HEC-RAS Output File

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Request for Letter of Map Revision
Project File : 879_P_Flamingo.prj
Run Date and Time: 8/29/2003 4:22:25 PM

Project in English units

Project Description:
REQUEST FOR LETTER OF MAP REVISION - FLAMINGO WASH
POST PROJECT CONDITIONS MODEL
DATUM - NAVD88
FILE: 879_P_FLAMINGO.PRJ
STARTING WSE = CRITICAL DEPTH
SUPERCRITICAL RUN
PHASE 1&2 OF THE FLAMINGO WASH IMPROVEMENTS FROM MOJAVE ROAD TO BOULDER HIGHWAY

PLAN DATA

Plan Title: Post Project Conditions
Plan File : E:\879-Flamingo\HEC-Ras\879_P_Flamingo.p02

Geometry Title: Flamingo Wash - Mojave Road to Boulder Highway
Geometry File : E:\879-Flamingo\HEC-Ras\879_P_Flamingo.g02

Flow Title : Flamingo Wash 100-year Storm
Flow File : E:\879-Flamingo\HEC-Ras\879_P_Flamingo.f02

Plan Summary Information:

Number of:	Cross Sections	= 30	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 2	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20

Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Supercritical Flow

FLOW DATA

Flow Title: Flamingo Wash 100-year Storm
Flow File : E:\879-Flamingo\HEC-Ras\879_P_Flamingo.f02

Flow Data (cfs)

River	Reach	RS	PF 1
RIVER-1	Reach-1	640	5800
RIVER-1	Reach-1	420	6300

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1	Critical	

GEOMETRY DATA

Geometry Title: Flamingo Wash - Mojave Road to Boulder Highway
Geometry File : E:\879-Flamingo\HEC-Ras\879_P_Flamingo.g02

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 640

INPUT
Description: FIS Cross Section
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1866.76	1004.77	1866.42	1005.12	1866.26	1009.4	1864.26	1013.41	1862.26
1016.12	1860.86	1026.88	1860.35	1027.05	1860.26	1030.75	1858.26	1034.43	1856.26
1038.12	1854.26	1039.25	1853.65	1067.22	1853.63	1068.01	1854.26	1070.51	1856.26
1073	1858.26	1075.48	1860.26	1077.94	1862.26	1079.43	1863.49		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1026.88	.015	1079.43	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1026.88	1079.43	251.59 258.21	262.14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1866.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.29	Wt. n-Val.	0.020	0.015	
W.S. Elev (ft)	1862.89	Reach Len. (ft)	251.59	258.21	262.14
Crit W.S. (ft)	1862.89	Flow Area (sq ft)	28.60	385.00	
E.G. Slope (ft/ft)	0.001720	Area (sq ft)	28.60	385.00	
Q Total (cfs)	5800.00	Flow (cfs)	134.08	5665.92	
Top Width (ft)	66.56	Top Width (ft)	14.73	51.82	
Vel Total (ft/s)	14.02	Avg. Vel. (ft/s)	4.69	14.72	
Max Chl Dpth (ft)	9.26	Hydr. Depth (ft)	1.94	7.43	
Conv. Total (cfs)	139845.0	Conv. (cfs)	3232.9	136612.1	
Length Wtd. (ft)	258.13	Wetted Per. (ft)	15.23	56.79	
Min Ch El (ft)	1853.63	Shear (lb/sq ft)	0.20	0.73	
Alpha	1.08	Stream Power (lb/ft s)	0.95	10.71	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.11	44.54	
C & E Loss (ft)		Cum SA (acres)	0.10	10.12	

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 630

INPUT
Description: FIS Cross Section
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1863.46	1004.03	1862.26	1009.63	1860.53	1010.62	1860.26	1018.67	1858.26
1018.82	1858.16	1031	1857.32	1032.96	1856.26	1036.68	1854.26	1040.45	1852.26
1044.02	1850.36	1071.6	1850.54	1074.89	1852.26	1078.71	1854.26	1082.53	1856.26
1084.55	1857.26	1129.14	1858.26	1165.99	1859.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1031	.015	1084.55	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1031	1084.55	229.09 221.03	213.86	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1864.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.06	Wt. n-Val.		0.015	
W.S. Elev (ft)	1856.86	Reach Len. (ft)	229.09	221.03	213.86
Crit W.S. (ft)	1859.94	Flow Area (sq ft)		254.51	
E.G. Slope (ft/ft)	0.006872	Area (sq ft)		254.51	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	51.88	Top Width (ft)		51.88	
Vel Total (ft/s)	22.79	Avg. Vel. (ft/s)		22.79	
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)		4.91	
Conv. Total (cfs)	69965.0	Conv. (cfs)		69965.0	
Length Wtd. (ft)	221.03	Wetted Per. (ft)		55.05	

Min Ch El (ft)	1850.36	Shear (lb/sq ft)		1.98
Alpha	1.00	Stream Power (lb/ft s)		45.20
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	0.03	42.65
C & E Loss (ft)	0.48	Cum SA (acres)	0.06	9.81

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 620

INPUT
Description: FIS Cross Section
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1861.56	1007.7	1860.26	1012.48	1859.42	1018.28	1858.26	1022.06	1857.51
1033.45	1857.66	1035.35	1856.26	1037.9	1854.26	1040.44	1852.26	1042.97	1850.26
1045.49	1848.26	1046.14	1847.74	1075.97	1847.92	1076.49	1848.26	1079.51	1850.26
1082.53	1852.26	1085.57	1854.26	1086.27	1854.72	1135.67	1856.26	1176.03	1857.79

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1033.45	.015	1086.27	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1033.45	1086.27	223.64	212.31	202.43	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1863.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	9.17	Wt. n-Val.		0.015	
W.S. Elev (ft)	1854.04	Reach Len. (ft)	223.64	212.31	202.43
Crit W.S. (ft)	1857.57	Flow Area (sq ft)		238.69	
E.G. Slope (ft/ft)	0.007704	Area (sq ft)		238.69	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	47.06	Top Width (ft)		47.06	
Vel Total (ft/s)	24.30	Avg. Vel. (ft/s)		24.30	
Max Chl Dpth (ft)	6.30	Hydr. Depth (ft)		5.07	
Conv. Total (cfs)	66078.2	Conv. (cfs)		66078.2	
Length Wtd. (ft)	212.31	Wetted Per. (ft)		51.09	
Min Ch El (ft)	1847.74	Shear (lb/sq ft)		2.25	
Alpha	1.00	Stream Power (lb/ft s)		54.60	
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	0.03	41.40	
C & E Loss (ft)	0.11	Cum SA (acres)	0.06	9.56	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 610

INPUT
Description: FIS Cross Section
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1853.96	1029.96	1853.34	1046.46	1854.26	1061.48	1855.09	1068.39	1854.78
1080.06	1854.26	1083.2	1854.17	1085.83	1852.26	1088.59	1850.26	1091.36	1848.26
1094.17	1846.26	1095.99	1844.97	1124.12	1844.88	1126.53	1846.26	1130	1848.26
1133.45	1850.26	1136.14	1851.82	1155.27	1852.26	1197.8	1854.26	1207.54	1854.71

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1083.2	.015	1136.14	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1083.2	1136.14	230.78	215.38	201.73	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1083.2	1854.17	F
1136.14	1207.54	1851.82	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1061.48	1855.26	1207.54	1207.54	1855.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1861.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	10.39	Wt. n-Val.		0.015	
W.S. Elev (ft)	1850.90	Reach Len. (ft)	230.78	215.38	201.73
Crit W.S. (ft)	1854.54	Flow Area (sq ft)		224.17	
E.G. Slope (ft/ft)	0.009315	Area (sq ft)		224.17	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	46.84	Top Width (ft)		46.84	
Vel Total (ft/s)	25.87	Avg. Vel. (ft/s)		25.87	
Max Chl Dpth (ft)	6.02	Hydr. Depth (ft)		4.79	
Conv. Total (cfs)	60094.6	Conv. (cfs)		60094.6	
Length Wtd. (ft)	215.38	Wetted Per. (ft)		50.36	
Min Ch El (ft)	1844.88	Shear (lb/sq ft)		2.59	
Alpha	1.00	Stream Power (lb/ft s)		66.98	
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	0.03	40.27	
C & E Loss (ft)	0.12	Cum SA (acres)	0.06	9.33	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 600

INPUT
Description: FIS Cross Section
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1853.26	1003.75	1852.26	1011.09	1850.26	1012.57	1849.86	1032.47	1849.9
1035.82	1850.26	1065.44	1851.53	1070.71	1850.26	1074.22	1849.46	1081.85	1848.26
1081.85	1837.36	1135.69	1837.39	1135.69	1849.82	1152.6	1849.94	1170.43	1850.26

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1081.85	.015	1135.69	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1081.85	1135.69	93.41	93.51	94.92	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1081.85	1848.26	F
1135.69	1170.43	1849.82	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1081.85	1850.26	1135.69	1170.43	1850.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1857.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	16.84	Wt. n-Val.		0.015	
W.S. Elev (ft)	1840.65	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	1844.49	Flow Area (sq ft)		176.13	
E.G. Slope (ft/ft)	0.026515	Area (sq ft)		176.13	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	53.84	Top Width (ft)		53.84	
Vel Total (ft/s)	32.93	Avg. Vel. (ft/s)		32.93	
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)		3.27	
Conv. Total (cfs)	35619.2	Conv. (cfs)		35619.2	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		60.38	
Min Ch El (ft)	1837.36	Shear (lb/sq ft)		4.83	
Alpha	1.00	Stream Power (lb/ft s)		159.00	
Frctn Loss (ft)	3.16	Cum Volume (acre-ft)	0.03	39.28	
C & E Loss (ft)	0.64	Cum SA (acres)	0.06	9.09	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

BRIDGE

```
RIVER: RIVER-1
REACH: Reach-1            RS: 595

INPUT
Description: Bridge #1

Distance from Upstream XS =       1
Deck/Roadway Width        =   91.51
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    1000 1848.76 1836.47 1081.85 1848.76 1836.47 1081.85 1848.76 1845.39
 1134.18 1848.76 1845.39 1135.69 1848.76 1845.39

Upstream Bridge Cross Section Data
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    1000 1853.26 1003.75 1852.26 1011.09 1850.26 1012.57 1849.86 1032.47  1849.9
 1035.82 1850.26 1065.44 1851.53 1070.71 1850.26 1074.22 1849.46 1081.85 1848.26
 1081.85 1837.36 1135.69 1837.39 1135.69 1849.82  1152.6 1849.94 1170.43 1850.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    1000     .02 1081.85    .015 1135.69     .02

Bank Sta: Left   Right    Coeff Contr.   Expan.
       1081.85 1135.69            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    1000 1081.85 1848.26       F
 1135.69 1170.43 1849.82       F
Blocked Obstructions     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    1000 1081.85 1850.26 1135.69 1170.43 1850.26

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    1000 1848.76 1836.47  1031.2 1848.76 1836.47  1031.2 1848.76 1845.39
 1085.04 1848.76 1845.39 1085.04 1848.76 1836.47 1134.18 1848.76 1836.47

Downstream Bridge Cross Section Data
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    1000 1849.56 1010.93 1849.27  1031.2 1848.53  1031.2 1836.47 1085.04 1836.47
 1085.04 1848.46 1099.88 1849.33 1120.18 1850.26 1131.49 1851.99 1132.09 1852.26
 1134.18 1853.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    1000     .02  1031.2    .015 1085.04     .02

Bank Sta: Left   Right    Coeff Contr.   Expan.
       1031.2 1085.04            .3       .5
Ineffective Flow     num=       2
```

```
   Sta L   Sta R    Elev  Permanent
    1000  1031.2 1848.53       F
 1085.04 1134.18 1848.46       F
Blocked Obstructions     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    1000  1031.2 1850.26 1085.04 1134.18 1850.26

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         = 1848.76
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  1

Pier Data
Pier Station     Upstream= 1108.77    Downstream= 1058.12
Upstream     num=       2
    Width   Elev    Width   Elev
    3.84 1837.36    3.84 1845.39
Downstream     num=       2
    Width   Elev    Width   Elev
    3.84 1836.47    3.84 1845.39

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Yarnell                KVal =      .9
Selected Low Flow Methods = Yarnell

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =.8006408
           Max Low Cord                = 1845.39

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1

  E.G. US. (ft)              1857.49    Element                Inside BR US  Inside BR DS
  W.S. US. (ft)              1840.65    E.G. Elev (ft)            1857.33       1854.40
  Q Total (cfs)              5800.00    W.S. Elev (ft)            1840.95       1840.32
  Q Bridge (cfs)             5800.00    Crit W.S. (ft)            1844.87       1843.96
  Q Weir (cfs)                          Max Chl Dpth (ft)            3.59          3.85
  Weir Sta Lft (ft)                     Vel Total (ft/s)            32.48         30.11
  Weir Sta Rgt (ft)                     Flow Area (sq ft)          178.55        192.63
  Weir Submerg                          Froude # Chl                 3.03          2.70
  Weir Max Depth (ft)                   Specif Force (cu ft)      6170.05       5794.45
  Min El Weir Flow (ft)      1848.77    Hydr Depth (ft)              3.57          3.85
```

Min El Prs (ft)	1845.39	W.P. Total (ft)	64.28	65.41
Delta EG (ft)	3.14	Conv. Total (cfs)	34947.9	39206.3
Delta WS (ft)	0.63	Top Width (ft)	50.00	50.00
BR Open Area (sq ft)	400.75	Frctn Loss (ft)	0.03	2.24
BR Open Vel (ft/s)	32.48	C & E Loss (ft)	0.14	0.69
Coef of Q		Shear Total (lb/sq ft)	4.78	4.02
Br Sel Method	Energy only	Power Total (lb/ft s)	155.14	121.15

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 590

INPUT
Description: END OF PHASE II IMPROVEMENTS
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1849.56	1010.93	1849.27	1031.2	1848.53	1031.2	1836.47	1085.04	1836.47
1085.04	1848.46	1099.88	1849.33	1120.18	1850.26	1131.49	1851.99	1132.09	1852.26
1134.18	1853.56								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.02	1031.2	.015	1085.04	.02

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1031.2	1085.04	16.02	15.77	16.7	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1031.2	1848.53	F
1085.04	1134.18	1848.46	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1031.2	1850.26	1085.04	1134.18	1850.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1854.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	14.33	Wt. n-Val.		0.015	
W.S. Elev (ft)	1840.02	Reach Len. (ft)	16.02	15.77	16.70
Crit W.S. (ft)	1843.60	Flow Area (sq ft)		190.90	
E.G. Slope (ft/ft)	0.020517	Area (sq ft)		190.90	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	53.84	Top Width (ft)		53.84	

Vel Total (ft/s)	30.38	Avg. Vel. (ft/s)			30.38
Max Chl Dpth (ft)	3.55	Hydr. Depth (ft)			3.55
Conv. Total (cfs)	40492.1	Conv. (cfs)			40492.1
Length Wtd. (ft)	15.77	Wetted Per. (ft)			60.93
Min Ch El (ft)	1836.47	Shear (lb/sq ft)			4.01
Alpha	1.00	Stream Power (lb/ft s)			121.93
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		0.03	38.88
C & E Loss (ft)	0.03	Cum SA (acres)		0.06	8.98

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 580

INPUT
Description: Station 74+05 - Transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1843.79	1070	1836.29	1100	1835.69	1130	1836.29	1145	1843.79

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	658	658	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1853.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	14.92	Wt. n-Val.		0.015	
W.S. Elev (ft)	1838.88	Reach Len. (ft)	658.00	658.00	658.00
Crit W.S. (ft)	1842.21	Flow Area (sq ft)		187.13	
E.G. Slope (ft/ft)	0.027202	Area (sq ft)		187.13	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	70.38	Top Width (ft)		70.38	
Vel Total (ft/s)	31.00	Avg. Vel. (ft/s)		31.00	
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)		2.66	
Conv. Total (cfs)	35166.4	Conv. (cfs)		35166.4	
Length Wtd. (ft)	658.00	Wetted Per. (ft)		71.61	
Min Ch El (ft)	1835.69	Shear (lb/sq ft)		4.44	
Alpha	1.00	Stream Power (lb/ft s)		137.54	
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.03	38.81	
C & E Loss (ft)	0.18	Cum SA (acres)	0.06	8.96	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 570

INPUT
Description: Station 67+47 - PT
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1837.58	1070	1830.08	1100	1829.48	1130	1830.08	1145	1837.58

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	566.67	584.2 601.73	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1841.47	Element			
Vel Head (ft)	7.80	Wt. n-Val.		0.015	
W.S. Elev (ft)	1833.66	Reach Len. (ft)	566.67	584.20	601.73
Crit W.S. (ft)	1836.00	Flow Area (sq ft)		258.76	
E.G. Slope (ft/ft)	0.010002	Area (sq ft)		258.76	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	74.34	Top Width (ft)		74.34	
Vel Total (ft/s)	22.41	Avg. Vel. (ft/s)		22.41	
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)		3.48	
Conv. Total (cfs)	57993.0	Conv. (cfs)		57993.0	
Length Wtd. (ft)	584.20	Wetted Per. (ft)		76.04	
Min Ch El (ft)	1829.48	Shear (lb/sq ft)		2.12	
Alpha	1.00	Stream Power (lb/ft s)		47.63	
Frctn Loss (ft)	10.20	Cum Volume (acre-ft)	0.03	35.45	
C & E Loss (ft)	2.13	Cum SA (acres)	0.06	7.86	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 560

INPUT
Description: Station 61+63- PCC
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1832.08	1070	1824.58	1100	1823.98	1130	1824.58	1145	1832.08

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	252.78	262.84	272.87	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1835.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.47	Wt. n-Val.		0.015	
W.S. Elev (ft)	1828.24	Reach Len. (ft)	252.78	262.84	272.87
Crit W.S. (ft)	1830.50	Flow Area (sq ft)		264.36	
E.G. Slope (ft/ft)	0.009369	Area (sq ft)		264.36	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	74.64	Top Width (ft)		74.64	
Vel Total (ft/s)	21.94	Avg. Vel. (ft/s)		21.94	
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)		3.54	
Conv. Total (cfs)	59920.5	Conv. (cfs)		59920.5	
Length Wtd. (ft)	262.84	Wetted Per. (ft)		76.38	
Min Ch El (ft)	1823.98	Shear (lb/sq ft)		2.02	
Alpha	1.00	Stream Power (lb/ft s)		44.42	
Frctn Loss (ft)	5.65	Cum Volume (acre-ft)	0.03	31.94	
C & E Loss (ft)	0.10	Cum SA (acres)	0.06	6.86	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 550

INPUT
Description: Station 59+00 - Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1829.6	1070	1822.1	1100	1821.5	1130	1822.1	1145	1829.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	209.44	217.76	226.09	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1833.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.50	Wt. n-Val.		0.015	
W.S. Elev (ft)	1825.75	Reach Len. (ft)	209.44	217.76	226.09
Crit W.S. (ft)	1828.02	Flow Area (sq ft)		263.93	
E.G. Slope (ft/ft)	0.009416	Area (sq ft)		263.93	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	74.62	Top Width (ft)		74.62	
Vel Total (ft/s)	21.98	Avg. Vel. (ft/s)		21.98	
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)		3.54	
Conv. Total (cfs)	59772.2	Conv. (cfs)		59772.2	

Length Wtd. (ft)	217.76	Wetted Per. (ft)		76.35
Min Ch El (ft)	1821.50	Shear (lb/sq ft)		2.03
Alpha	1.00	Stream Power (lb/ft s)		44.65
Frctn Loss (ft)	2.47	Cum Volume (acre-ft)	0.03	30.34
C & E Loss (ft)	0.00	Cum SA (acres)	0.06	6.41

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 540

INPUT
Description: Station 56+82 - PC
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1828.18	1070	1820.68	1100	1820.08	1130	1820.68	1145	1828.18

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	232.24	232.24	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1831.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.54	Wt. n-Val.		0.015	
W.S. Elev (ft)	1824.58	Reach Len. (ft)	232.24	232.24	232.24
Crit W.S. (ft)	1826.60	Flow Area (sq ft)		282.55	
E.G. Slope (ft/ft)	0.007647	Area (sq ft)		282.55	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	75.61	Top Width (ft)		75.61	
Vel Total (ft/s)	20.53	Avg. Vel. (ft/s)		20.53	
Max Chl Dpth (ft)	4.50	Hydr. Depth (ft)		3.74	
Conv. Total (cfs)	66326.0	Conv. (cfs)		66326.0	
Length Wtd. (ft)	232.24	Wetted Per. (ft)		77.46	
Min Ch El (ft)	1820.08	Shear (lb/sq ft)		1.74	
Alpha	1.00	Stream Power (lb/ft s)		35.75	
Frctn Loss (ft)	1.84	Cum Volume (acre-ft)	0.03	28.98	
C & E Loss (ft)	0.29	Cum SA (acres)	0.06	6.04	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 530

INPUT
Description: Station 54+50 - Grade Break / Transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1055	1826.67	1070	1819.17	1100	1818.57	1130	1819.17	1145	1826.67

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1055	.025	1055	.015	1145	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1055	1145	100	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1829.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.11	Wt. n-Val.		0.015	
W.S. Elev (ft)	1823.20	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	1825.09	Flow Area (sq ft)		292.38	
E.G. Slope (ft/ft)	0.006892	Area (sq ft)		292.38	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	76.13	Top Width (ft)		76.13	
Vel Total (ft/s)	19.84	Avg. Vel. (ft/s)		19.84	
Max Chl Dpth (ft)	4.63	Hydr. Depth (ft)		3.84	
Conv. Total (cfs)	69866.7	Conv. (cfs)		69866.7	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		78.04	
Min Ch El (ft)	1818.57	Shear (lb/sq ft)		1.61	
Alpha	1.00	Stream Power (lb/ft s)		31.98	
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)	0.03	27.45	
C & E Loss (ft)	0.13	Cum SA (acres)	0.06	5.63	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 520

INPUT
Description: Station 53+50 - Grade Break / Transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1824.3	1070	1817.32	1100	1816.72	1130	1817.32	1130	1824.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	201.5	201.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1828.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.94	Wt. n-Val.		0.015	
W.S. Elev (ft)	1821.59	Reach Len. (ft)	201.50	201.50	201.50
Crit W.S. (ft)	1823.64	Flow Area (sq ft)		274.31	
E.G. Slope (ft/ft)	0.007172	Area (sq ft)		274.31	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	21.14	Avg. Vel. (ft/s)		21.14	
Max Chl Dpth (ft)	4.87	Hydr. Depth (ft)		4.57	
Conv. Total (cfs)	68487.6	Conv. (cfs)		68487.6	
Length Wtd. (ft)	201.50	Wetted Per. (ft)		68.56	
Min Ch El (ft)	1816.72	Shear (lb/sq ft)		1.79	
Alpha	1.00	Stream Power (lb/ft s)		37.88	
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	0.03	26.79	
C & E Loss (ft)	0.08	Cum SA (acres)	0.06	5.48	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 510

INPUT
Description: Station 51+48.5 - PT
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1822.26	1070	1815.28	1100	1814.68	1130	1815.28	1130	1822.26

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	806.7 793.47	780.25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1826.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.57	Wt. n-Val.		0.015	
W.S. Elev (ft)	1819.36	Reach Len. (ft)	806.70	793.47	780.25
Crit W.S. (ft)	1821.58	Flow Area (sq ft)		262.68	
E.G. Slope (ft/ft)	0.008224	Area (sq ft)		262.68	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	22.08	Avg. Vel. (ft/s)		22.08	
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)		4.38	
Conv. Total (cfs)	63957.8	Conv. (cfs)		63957.8	
Length Wtd. (ft)	793.47	Wetted Per. (ft)		68.17	
Min Ch El (ft)	1814.68	Shear (lb/sq ft)		1.98	
Alpha	1.00	Stream Power (lb/ft s)		43.68	
Frctn Loss (ft)	1.55	Cum Volume (acre-ft)	0.03	25.55	
C & E Loss (ft)	0.06	Cum SA (acres)	0.06	5.20	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 505

INPUT
Description: Station 43+55 - PC
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1814.25	1070	1807.27	1100	1806.67	1130	1807.27	1130	1814.25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	59	59	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1819.65	Element			
Vel Head (ft)	8.56	Wt. n-Val.		0.015	
W.S. Elev (ft)	1811.09	Reach Len. (ft)	59.00	59.00	59.00
Crit W.S. (ft)	1813.57	Flow Area (sq ft)		247.05	
E.G. Slope (ft/ft)	0.009987	Area (sq ft)		247.05	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	23.48	Avg. Vel. (ft/s)		23.48	
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)		4.12	
Conv. Total (cfs)	58037.9	Conv. (cfs)		58037.9	
Length Wtd. (ft)	59.00	Wetted Per. (ft)		67.65	
Min Ch El (ft)	1806.67	Shear (lb/sq ft)		2.28	
Alpha	1.00	Stream Power (lb/ft s)		53.46	
Frctn Loss (ft)	7.17	Cum Volume (acre-ft)	0.03	20.91	
C & E Loss (ft)	0.10	Cum SA (acres)	0.06	4.11	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 500

INPUT

Description: Station 42+96 - PT
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1813.66	1070	1806.68	1100	1806.08	1130	1806.68	1130	1813.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	454.21	432.58	410.95	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1819.05	Element			
Vel Head (ft)	8.54	Wt. n-Val.		0.015	
W.S. Elev (ft)	1810.50	Reach Len. (ft)	454.21	432.58	410.95
Crit W.S. (ft)	1812.98	Flow Area (sq ft)		247.26	
E.G. Slope (ft/ft)	0.009960	Area (sq ft)		247.26	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	23.46	Avg. Vel. (ft/s)		23.46	
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)		4.12	
Conv. Total (cfs)	58115.7	Conv. (cfs)		58115.7	
Length Wtd. (ft)	432.58	Wetted Per. (ft)		67.65	
Min Ch El (ft)	1806.08	Shear (lb/sq ft)		2.27	
Alpha	1.00	Stream Power (lb/ft s)		53.31	
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	0.03	20.58	
C & E Loss (ft)	0.00	Cum SA (acres)	0.06	4.03	

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 490

INPUT
Description: Station 38+63 - PC
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1809.28	1070	1802.3	1100	1801.7	1130	1802.3	1130	1809.28

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	64.61	64.61	64.61	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1814.71	Element			
Vel Head (ft)	8.60	Wt. n-Val.		0.015	
W.S. Elev (ft)	1806.11	Reach Len. (ft)	64.61	64.61	64.61
Crit W.S. (ft)	1808.60	Flow Area (sq ft)		246.45	
E.G. Slope (ft/ft)	0.010065	Area (sq ft)		246.45	

Q Total (cfs)	5800.00	Flow (cfs)			5800.00
Top Width (ft)	60.00	Top Width (ft)			60.00
Vel Total (ft/s)	23.53	Avg. Vel. (ft/s)			23.53
Max Chl Dpth (ft)	4.41	Hydr. Depth (ft)			4.11
Conv. Total (cfs)	57813.0	Conv. (cfs)			57813.0
Length Wtd. (ft)	64.61	Wetted Per. (ft)			67.63
Min Ch El (ft)	1801.70	Shear (lb/sq ft)			2.29
Alpha	1.00	Stream Power (lb/ft s)			53.89
Frctn Loss (ft)	4.33	Cum Volume (acre-ft)		0.03	18.12
C & E Loss (ft)	0.01	Cum SA (acres)		0.06	3.43

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 480

INPUT
Description: Station 37+98.5
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1808.65	1070	1801.67	1100	1801.07	1130	1801.67	1130	1808.65

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1814.06	Element			
Vel Head (ft)	8.58	Wt. n-Val.		0.015	
W.S. Elev (ft)	1805.48	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)	1807.97	Flow Area (sq ft)		246.76	
E.G. Slope (ft/ft)	0.010024	Area (sq ft)		246.76	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	23.50	Avg. Vel. (ft/s)		23.50	
Max Chl Dpth (ft)	4.41	Hydr. Depth (ft)		4.11	
Conv. Total (cfs)	57930.2	Conv. (cfs)		57930.2	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		67.64	
Min Ch El (ft)	1801.07	Shear (lb/sq ft)		2.28	
Alpha	1.00	Stream Power (lb/ft s)		53.66	
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	0.03	17.76	
C & E Loss (ft)	0.01	Cum SA (acres)	0.06	3.34	

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 470

INPUT
Description: Station 37+78.5
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1808.57	1070	1801.59	1100	1800.99	1130	1801.59	1130	1808.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	342.31	342.31	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1813.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.32	Wt. n-Val.		0.015	
W.S. Elev (ft)	1805.47	Reach Len. (ft)	342.31	342.31	342.31
Crit W.S. (ft)	1807.89	Flow Area (sq ft)		250.49	
E.G. Slope (ft/ft)	0.009558	Area (sq ft)		250.49	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	23.15	Avg. Vel. (ft/s)		23.15	
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)		4.17	
Conv. Total (cfs)	59324.9	Conv. (cfs)		59324.9	
Length Wtd. (ft)	342.31	Wetted Per. (ft)		67.76	
Min Ch El (ft)	1800.99	Shear (lb/sq ft)		2.21	
Alpha	1.00	Stream Power (lb/ft s)		51.08	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.03	17.64	
C & E Loss (ft)	0.08	Cum SA (acres)	0.06	3.31	

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 460

INPUT
Description: Station 37+36 PT
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1807.32	1070	1800.34	1100	1799.74	1130	1800.34	1130	1807.32

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	232.69	236.24	239.78	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1810.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	5.45	Wt. n-Val.		0.015	

W.S. Elev (ft)	1805.20	Reach Len. (ft)	232.69	236.24	239.78
Crit W.S. (ft)	1806.64	Flow Area (sq ft)		309.67	
E.G. Slope (ft/ft)	0.004897	Area (sq ft)		309.67	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	18.73	Avg. Vel. (ft/s)		18.73	
Max Chl Dpth (ft)	5.46	Hydr. Depth (ft)		5.16	
Conv. Total (cfs)	82878.4	Conv. (cfs)		82878.4	
Length Wtd. (ft)	236.24	Wetted Per. (ft)		69.73	
Min Ch El (ft)	1799.74	Shear (lb/sq ft)		1.36	
Alpha	1.00	Stream Power (lb/ft s)		25.43	
Frctn Loss (ft)	2.28	Cum Volume (acre-ft)	0.03	15.44	
C & E Loss (ft)	0.86	Cum SA (acres)	0.06	2.84	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 450

INPUT
Description: Station 32+00 - Transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1070	1806.46	1070	1799.48	1100	1798.88	1130	1799.48	1130	1806.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1070	.025	1070	.015	1130	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1070	1130	48.98	49.72	50.47	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1809.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.57	Wt. n-Val.		0.015	
W.S. Elev (ft)	1804.82	Reach Len. (ft)	48.98	49.72	50.47
Crit W.S. (ft)	1805.78	Flow Area (sq ft)		338.23	
E.G. Slope (ft/ft)	0.003716	Area (sq ft)		338.23	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	60.00	Top Width (ft)		60.00	
Vel Total (ft/s)	17.15	Avg. Vel. (ft/s)		17.15	
Max Chl Dpth (ft)	5.94	Hydr. Depth (ft)		5.64	
Conv. Total (cfs)	95140.3	Conv. (cfs)		95140.3	
Length Wtd. (ft)	49.72	Wetted Per. (ft)		70.69	
Min Ch El (ft)	1798.88	Shear (lb/sq ft)		1.11	
Alpha	1.00	Stream Power (lb/ft s)		19.04	
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	0.03	13.69	
C & E Loss (ft)	0.26	Cum SA (acres)	0.06	2.52	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 445

INPUT
Description: Station 31+50 - Transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1062.5	1807.03	1062.5	1799.45	1100	1798.7	1137.5	1799.45	1137.5	1807.03

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1062.5	.025	1062.5	.015	1137.5	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1062.5	1137.5	94.83	106.25	100.54	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1808.99	Element			
Vel Head (ft)	5.97	Wt. n-Val.		0.015	
W.S. Elev (ft)	1803.02	Reach Len. (ft)	94.83	106.25	100.54
Crit W.S. (ft)	1804.76	Flow Area (sq ft)		295.72	
E.G. Slope (ft/ft)	0.007105	Area (sq ft)		295.72	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	75.00	Top Width (ft)		75.00	
Vel Total (ft/s)	19.61	Avg. Vel. (ft/s)		19.61	
Max Chl Dpth (ft)	4.32	Hydr. Depth (ft)		3.94	
Conv. Total (cfs)	68808.3	Conv. (cfs)		68808.3	
Length Wtd. (ft)	106.25	Wetted Per. (ft)		82.15	
Min Ch El (ft)	1798.70	Shear (lb/sq ft)		1.60	
Alpha	1.00	Stream Power (lb/ft s)		31.32	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.03	13.32	
C & E Loss (ft)	0.14	Cum SA (acres)	0.06	2.44	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 440

INPUT
Description: Upstream Face - Mojave Road Bridge
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
   1000  1806.3 1007.43 1805.94 1010.88 1806.82 1010.88 1797.82 1085.88 1797.82
1085.88  1806.8 1101.01 1806.17 1103.62 1806.26 1113.11 1807.56

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    1000     .03 1010.88    .015 1085.88     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1010.88 1085.88           183.21  197.38  206.01            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    1000 1010.88 1806.82       F
 1085.88 1113.11  1806.8       F
Blocked Obstructions     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    1000 1010.88 1806.82 1085.88 1113.11  1806.8

CROSS SECTION OUTPUT  Profile #PF 1

  E.G. Elev (ft)           1808.12    Element                Left OB    Channel   Right OB
  Vel Head (ft)               6.53    Wt. n-Val.                        0.015
  W.S. Elev (ft)           1801.59    Reach Len. (ft)           1.00       1.00      1.00
  Crit W.S. (ft)           1803.54    Flow Area (sq ft)                  282.82
  E.G. Slope (ft/ft)       0.008297   Area (sq ft)                       282.82
  Q Total (cfs)            5800.00    Flow (cfs)                        5800.00
  Top Width (ft)             75.00    Top Width (ft)                      75.00
  Vel Total (ft/s)           20.51    Avg. Vel. (ft/s)                    20.51
  Max Chl Dpth (ft)           3.77    Hydr. Depth (ft)                     3.77
  Conv. Total (cfs)        63673.7    Conv. (cfs)                       63673.7
  Length Wtd. (ft)            1.00    Wetted Per. (ft)                    82.54
  Min Ch El (ft)           1797.82    Shear (lb/sq ft)                     1.77
  Alpha                       1.00    Stream Power (lb/ft s)              36.40
  Frctn Loss (ft)             0.81    Cum Volume (acre-ft)      0.03      12.62
  C & E Loss (ft)             0.06    Cum SA (acres)            0.06       2.26


Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

BRIDGE


RIVER: RIVER-1
REACH: Reach-1            RS: 435

INPUT
Description: Bridge #2

Distance from Upstream XS =       1
Deck/Roadway Width        =  195.38
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
     900 1807.75 1796.29 1010.88 1807.75 1796.29 1010.88 1807.75 1805.75
```

1085.88 1807.75 1805.75 1085.88 1807.75 1796.29 1113.05 1807.75 1796.29

Upstream Bridge Cross Section Data
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1806.3	1007.43	1805.94	1010.88	1806.82	1010.88	1797.82	1085.88	1797.82
1085.88	1806.8	1101.01	1806.17	1103.62	1806.26	1113.11	1807.56		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1010.88	.015	1085.88	.03

Bank Sta: Left Right Coeff Contr. Expan.
1010.88 1085.88 .3 .5
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1010.88	1806.82	F
1085.88	1113.11	1806.8	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1010.88	1806.82	1085.88	1113.11	1806.8

Downstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
900	1807.75	1796.29	1000	1807.75	1796.29	1000	1807.75	1805.75
1075	1807.75	1805.75	1075	1807.75	1796.29	1113.05	1807.75	1796.29

Downstream Bridge Cross Section Data
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
900	1806.8	1000	1806.29	1000	1796.29	1075	1796.29	1075	1806.29
1113.05	1806								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
900	.03	1000	.015	1075	.03

Bank Sta: Left Right Coeff Contr. Expan.
1000 1075 .3 .5
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
900	1000	1806.29	F
1075	1113.05	1806.29	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
900	1000	1806.29	1075	1113.05	1806.29

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 1807.75
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data
Pier Station Upstream= 1048.38 Downstream= 1037.5
Upstream num= 2
  Width Elev Width Elev
    3 1797.82   3 1805.75
Downstream num= 2
  Width Elev Width Elev
    3 1796.29   3 1805.75

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
  Yarnell KVal = .9
Selected Low Flow Methods = Yarnell

High Flow Method
  Pressure and Weir flow
    Submerged Inlet Cd =
    Submerged Inlet + Outlet Cd =.8006408
    Max Low Cord = 1805.75

Additional Bridge Parameters
  Add Friction component to Momentum
  Do not add Weight component to Momentum
  Class B flow critical depth computations use critical depth
    inside the bridge at the upstream end
  Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	1808.12	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	1801.59	E.G. Elev (ft)	1807.63	1806.19
Q Total (cfs)	5800.00	W.S. Elev (ft)	1802.08	1800.50
Q Bridge (cfs)	5800.00	Crit W.S. (ft)	1803.68	1802.14
Q Weir (cfs)		Max Chl Dpth (ft)	4.26	4.21
Weir Sta Lft (ft)		Vel Total (ft/s)	18.90	19.15
Weir Sta Rgt (ft)		Flow Area (sq ft)	306.89	302.92
Weir Submerg		Froude # Chl	1.61	1.65
Weir Max Depth (ft)		Specif Force (cu ft)	4058.27	4086.03
Min El Weir Flow (ft)	1807.76	Hydr Depth (ft)	4.26	4.21
Min El Prs (ft)	1805.75	W.P. Total (ft)	89.05	88.83
Delta EG (ft)	1.99	Conv. Total (cfs)	69361.1	67986.5
Delta WS (ft)	1.32	Top Width (ft)	72.00	72.00
BR Open Area (sq ft)	570.96	Frctn Loss (ft)	0.01	1.39
BR Open Vel (ft/s)	19.15	C & E Loss (ft)	0.49	0.04
Coef of Q		Shear Total (lb/sq ft)	1.50	1.55
Br Sel Method	Energy only	Power Total (lb/ft s)	28.43	29.67

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 430

INPUT
Description: Downstream Face - Mojave Road Bridge
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
900	1806.8	1000	1806.29	1000	1796.29	1075	1796.29	1075	1806.29
1113.05	1806								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
900	.03	1000	.015	1075	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1075	193.4	187.5	181.7	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
900	1000	1806.29	F
1075	1113.05	1806.29	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
900	1000	1806.29	1075	1113.05	1806.29

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1806.13	Element			
Vel Head (ft)	5.86	Wt. n-Val.		0.015	
W.S. Elev (ft)	1800.27	Reach Len. (ft)	193.40	187.50	181.70
Crit W.S. (ft)	1802.01	Flow Area (sq ft)		298.52	
E.G. Slope (ft/ft)	0.006977	Area (sq ft)		298.52	
Q Total (cfs)	5800.00	Flow (cfs)		5800.00	
Top Width (ft)	75.00	Top Width (ft)		75.00	
Vel Total (ft/s)	19.43	Avg. Vel. (ft/s)		19.43	
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)		3.98	
Conv. Total (cfs)	69439.2	Conv. (cfs)		69439.2	
Length Wtd. (ft)	187.50	Wetted Per. (ft)		82.96	
Min Ch El (ft)	1796.29	Shear (lb/sq ft)		1.57	
Alpha	1.00	Stream Power (lb/ft s)		30.45	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.03	11.24	
C & E Loss (ft)	0.05	Cum SA (acres)	0.06	1.93	

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 420

INPUT
Description: Station 19+10 (Phase 1)
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1803	1016	1794.97	1061	1794.52	1098.5	1794.9	1098.5	1802.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1000	.02	1098.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1098.5	143.6	140	136.6	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1804.36	Element			
Vel Head (ft)	5.84	Wt. n-Val.		0.020	
W.S. Elev (ft)	1798.52	Reach Len. (ft)	143.60	140.00	136.60
Crit W.S. (ft)	1800.26	Flow Area (sq ft)		324.85	
E.G. Slope (ft/ft)	0.013045	Area (sq ft)		324.85	
Q Total (cfs)	6300.00	Flow (cfs)		6300.00	
Top Width (ft)	89.56	Top Width (ft)		89.56	
Vel Total (ft/s)	19.39	Avg. Vel. (ft/s)		19.39	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		3.63	
Conv. Total (cfs)	55158.4	Conv. (cfs)		55158.4	
Length Wtd. (ft)		Wetted Per. (ft)		94.02	
Min Ch El (ft)	1794.52	Shear (lb/sq ft)		2.81	
Alpha	1.00	Stream Power (lb/ft s)		54.57	
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	0.03	9.90	
C & E Loss (ft)	0.01	Cum SA (acres)	0.06	1.58	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 415

INPUT
Description: Station 17+70 - Begining of Phase 1 Improvements
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1801.5	1016	1793.48	1031.5	1793.32	1069	1793.7	1069	1801.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1000	.02	1069	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1069	109.9	108.5	106.7	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1803.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.24	Wt. n-Val.		0.020	
W.S. Elev (ft)	1800.72	Reach Len. (ft)	109.90	108.50	106.70
Crit W.S. (ft)	1800.72	Flow Area (sq ft)		436.27	
E.G. Slope (ft/ft)	0.003688	Area (sq ft)		436.27	
Q Total (cfs)	6300.00	Flow (cfs)		6300.00	
Top Width (ft)	67.45	Top Width (ft)		67.45	
Vel Total (ft/s)	14.44	Avg. Vel. (ft/s)		14.44	
Max Chl Dpth (ft)	7.40	Hydr. Depth (ft)		6.47	
Conv. Total (cfs)	103746.3	Conv. (cfs)		103746.3	
Length Wtd. (ft)	108.50	Wetted Per. (ft)		76.19	
Min Ch El (ft)	1793.32	Shear (lb/sq ft)		1.32	
Alpha	1.00	Stream Power (lb/ft s)		19.04	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.03	8.67	
C & E Loss (ft)		Cum SA (acres)	0.06	1.32	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 410

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1801.26	1002.09	1801.3	1019.84	1801.27	1026.7	1800.26	1029.5	1799.83
1041.49	1799.46	1044.75	1798.26	1049.87	1796.26	1054.82	1794.26	1059.57	1792.26
1061.07	1791.56	1078.69	1792.06	1092.24	1792.26	1099.54	1792.36	1099.88	1794.26
1100.24	1796.26	1100.6	1798.26	1100.94	1800.26	1100.98	1800.5	1108.1	1800.83
1170.81	1801.66								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1041.49	.02	1100.98	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1041.49	1100.98	236.79	222.64	212.87	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1803.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.61	Wt. n-Val.	0.030	0.020	
W.S. Elev (ft)	1800.24	Reach Len. (ft)	236.79	222.64	212.87
Crit W.S. (ft)	1800.52	Flow Area (sq ft)	7.69	411.56	
E.G. Slope (ft/ft)	0.003800	Area (sq ft)	7.69	411.56	
Q Total (cfs)	6300.00	Flow (cfs)	15.25	6284.75	
Top Width (ft)	74.11	Top Width (ft)	14.66	59.45	

Vel Total (ft/s)	15.03	Avg. Vel. (ft/s)	1.98	15.27
Max Chl Dpth (ft)	8.68	Hydr. Depth (ft)	0.52	6.92
Conv. Total (cfs)	102194.9	Conv. (cfs)	247.3	101947.6
Length Wtd. (ft)	222.66	Wetted Per. (ft)	14.70	67.60
Min Ch El (ft)	1791.56	Shear (lb/sq ft)	0.12	1.44
Alpha	1.03	Stream Power (lb/ft s)	0.25	22.06
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	0.02	7.62
C & E Loss (ft)	0.02	Cum SA (acres)	0.04	1.17

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 400

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1797.56	1024.49	1798.03	1038.23	1798.02	1040.26	1798.26	1042.29	1798.51
1042.47	1798.26	1043.62	1796.26	1044.73	1794.26	1045.83	1792.26	1046.34	1791.32
1075.55	1790.86	1100.77	1791.22	1101.12	1792.26	1101.81	1794.26	1102.54	1796.26
1103.31	1798.26	1103.68	1799.22	1128.41	1798.75				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1042.29	.02	1103.68	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1042.29	1103.68	216.05 216.12	217.6	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1042.29	1798.51	F
1103.68	1128.41	1799.22	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1042.29	1799.26	1103.68	1128.41	1799.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1802.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	5.58	Wt. n-Val.		0.020	
W.S. Elev (ft)	1796.91	Reach Len. (ft)	216.05	216.12	217.60
Crit W.S. (ft)	1798.52	Flow Area (sq ft)		332.48	
E.G. Slope (ft/ft)	0.007665	Area (sq ft)		332.48	
Q Total (cfs)	6300.00	Flow (cfs)		6300.00	
Top Width (ft)	59.55	Top Width (ft)		59.55	
Vel Total (ft/s)	18.95	Avg. Vel. (ft/s)		18.95	
Max Chl Dpth (ft)	6.05	Hydr. Depth (ft)		5.58	
Conv. Total (cfs)	71957.2	Conv. (cfs)		71957.2	
Length Wtd. (ft)	216.12	Wetted Per. (ft)		66.87	
Min Ch El (ft)	1790.86	Shear (lb/sq ft)		2.38	

Alpha	1.00	Stream Power (lb/ft s)	45.08
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	5.72
C & E Loss (ft)	0.20	Cum SA (acres)	0.86

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 390

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1794.86	1031.19	1795.56	1040.57	1796.04	1041.52	1796.26	1045.15	1797.07
1045.61	1796.26	1046.74	1794.26	1047.86	1792.26	1049.03	1790.26	1049.38	1789.67
1074.16	1789.46	1100.36	1789.8	1100.54	1790.26	1101.34	1792.26	1102.12	1794.26
1102.9	1796.26	1103.45	1797.7	1128.39	1797.49	1144.16	1797.47	1147.04	1798.26
1153.05	1799.56								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.03	1045.15	.02	1103.45	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1045.15	1103.45	420.9	420.9 420.21	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1045.15	1797.07	F
1103.45	1153.05	1797.7	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1000	1045.15	1799.26	1103.45	1153.05	1799.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1800.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.61	Wt. n-Val.		0.020	
W.S. Elev (ft)	1797.18	Reach Len. (ft)	420.90	420.90	420.21
Crit W.S. (ft)	1797.22	Flow Area (sq ft)		413.22	
E.G. Slope (ft/ft)	0.003763	Area (sq ft)		413.22	
Q Total (cfs)	6300.00	Flow (cfs)		6300.00	
Top Width (ft)	58.10	Top Width (ft)		58.10	
Vel Total (ft/s)	15.25	Avg. Vel. (ft/s)		15.25	
Max Chl Dpth (ft)	7.72	Hydr. Depth (ft)		7.11	
Conv. Total (cfs)	102703.2	Conv. (cfs)		102703.2	

Length Wtd. (ft)	420.90	Wetted Per. (ft)	67.53
Min Ch El (ft)	1789.46	Shear (lb/sq ft)	1.44
Alpha	1.00	Stream Power (lb/ft s)	21.91
Frctn Loss (ft)	1.12	Cum Volume (acre-ft)	3.87
C & E Loss (ft)	0.59	Cum SA (acres)	0.57

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 380

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1090.66	1794.26	1091.25	1795.01	1091.78	1794.26	1093.21	1792.26	1094.63	1790.26
1096.06	1788.26	1096.29	1787.94	1149.56	1788.06	1149.61	1788.26	1150.11	1790.26
1150.6	1792.26	1151.08	1794.26	1151.34	1795.33	1227.86	1796.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1090.66	.03	1091.25	.02	1151.34	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1091.25	1151.34	0 420.9	0	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1090.66	1091.25	1795.01	F
1151.34	1227.86	1795.33	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
1090.66	1091.25	1796.26	1151.34	1227.86	1796.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1798.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.12	Wt. n-Val.		0.020	
W.S. Elev (ft)	1794.84	Reach Len. (ft)			
Crit W.S. (ft)	1795.41	Flow Area (sq ft)		386.94	
E.G. Slope (ft/ft)	0.004794	Area (sq ft)		386.94	
Q Total (cfs)	6300.00	Flow (cfs)		6300.00	
Top Width (ft)	59.85	Top Width (ft)		59.85	
Vel Total (ft/s)	16.28	Avg. Vel. (ft/s)		16.28	
Max Chl Dpth (ft)	6.90	Hydr. Depth (ft)		6.47	
Conv. Total (cfs)	90986.1	Conv. (cfs)		90986.1	
Length Wtd. (ft)		Wetted Per. (ft)		68.72	
Min Ch El (ft)	1787.94	Shear (lb/sq ft)		1.69	

Alpha	1.00	Stream Power (lb/ft s)	27.44
Frctn Loss (ft)	1.78	Cum Volume (acre-ft)	
C & E Loss (ft)	0.05	Cum SA (acres)	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3
Reach-1	640	.02	.015	.02
Reach-1	630	.02	.015	.02
Reach-1	620	.02	.015	.02
Reach-1	610	.02	.015	.02
Reach-1	600	.02	.015	.02
Reach-1	595	Bridge		
Reach-1	590	.02	.015	.02
Reach-1	580	.025	.015	.025
Reach-1	570	.025	.015	.025
Reach-1	560	.025	.015	.025
Reach-1	550	.025	.015	.025
Reach-1	540	.025	.015	.025
Reach-1	530	.025	.015	.025
Reach-1	520	.025	.015	.025
Reach-1	510	.025	.015	.025
Reach-1	505	.025	.015	.025
Reach-1	500	.025	.015	.025
Reach-1	490	.025	.015	.025
Reach-1	480	.025	.015	.025
Reach-1	470	.025	.015	.025
Reach-1	460	.025	.015	.025
Reach-1	450	.025	.015	.025
Reach-1	445	.025	.015	.025
Reach-1	440	.03	.015	.03
Reach-1	435	Bridge		
Reach-1	430	.03	.015	.03
Reach-1	420	.03	.02	.03
Reach-1	415	.03	.02	.03
Reach-1	410	.03	.02	.03
Reach-1	400	.03	.02	.03
Reach-1	390	.03	.02	.03
Reach-1	380	.03	.02	.03

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	640	251.59	258.21	262.14
Reach-1	630	229.09	221.03	213.86
Reach-1	620	223.64	212.31	202.43
Reach-1	610	230.78	215.38	201.73
Reach-1	600	93.41	93.51	94.92
Reach-1	595	Bridge		
Reach-1	590	16.02	15.77	16.7
Reach-1	580	658	658	658
Reach-1	570	566.67	584.2	601.73
Reach-1	560	252.78	262.84	272.87
Reach-1	550	209.44	217.76	226.09
Reach-1	540	232.24	232.24	232.24
Reach-1	530	100	100	100
Reach-1	520	201.5	201.5	201.5
Reach-1	510	806.7	793.47	780.25
Reach-1	505	59	59	59
Reach-1	500	454.21	432.58	410.95
Reach-1	490	64.61	64.61	64.61
Reach-1	480	20	20	20
Reach-1	470	342.31	342.31	342.31
Reach-1	460	232.69	236.24	239.78
Reach-1	450	48.98	49.72	50.47
Reach-1	445	94.83	106.25	100.54
Reach-1	440	183.21	197.38	206.01
Reach-1	435	Bridge		
Reach-1	430	193.4	187.5	181.7
Reach-1	420	143.6	140	136.6
Reach-1	415	109.9	108.5	106.7
Reach-1	410	236.79	222.64	212.87
Reach-1	400	216.05	216.12	217.6
Reach-1	390	420.9	420.9	420.21
Reach-1	380	0	420.9	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: RIVER-1

Reach	River Sta.	Contr.	Expan.
Reach-1	640	.1	.3
Reach-1	630	.1	.3
Reach-1	620	.1	.3
Reach-1	610	.1	.3
Reach-1	600	.1	.3
Reach-1	595	Bridge	
Reach-1	590	.3	.5
Reach-1	580	.1	.3
Reach-1	570	.1	.3
Reach-1	560	.1	.3
Reach-1	550	.1	.3

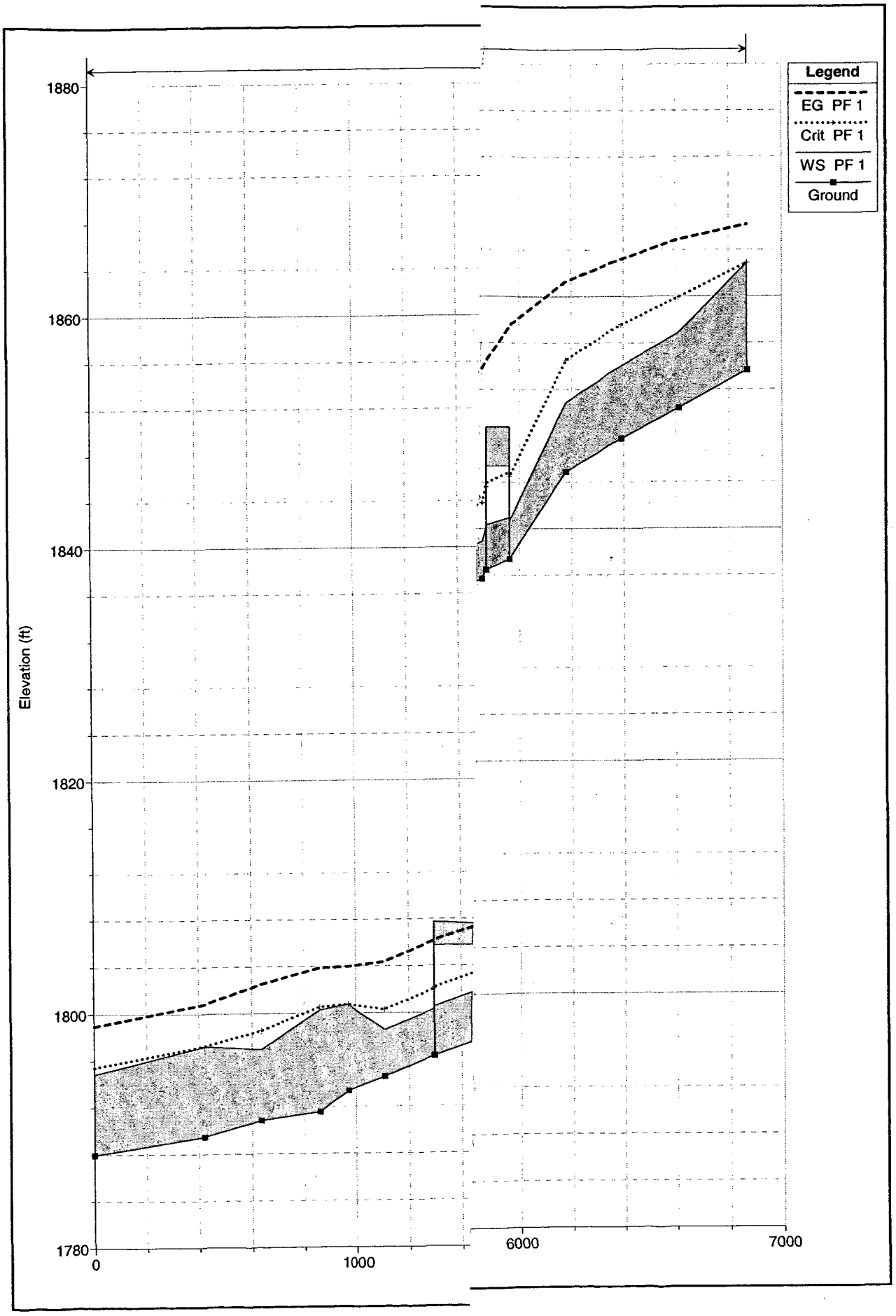
Reach-1	540		.1	.3
Reach-1	530		.1	.3
Reach-1	520		.1	.3
Reach-1	510		.1	.3
Reach-1	505		.1	.3
Reach-1	500		.1	.3
Reach-1	490		.1	.3
Reach-1	480		.1	.3
Reach-1	470		.1	.3
Reach-1	460		.1	.3
Reach-1	450		.1	.3
Reach-1	445		.1	.3
Reach-1	440		.3	.5
Reach-1	435	Bridge		
Reach-1	430		.3	.5
Reach-1	420		.3	.5
Reach-1	415		.3	.5
Reach-1	410		.1	.3
Reach-1	400		.1	.3
Reach-1	390		.1	.3
Reach-1	380		.1	.3

HEC-RAS Plan: Post River: RIVER-1 Reach: Reach-1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	640	PF 1	5800.00	1853.63	1862.89	1862.89	1866.18	0.001720	14.72	413.60	66.56	0.95
Reach-1	630	PF 1	5800.00	1850.36	1856.86	1859.94	1864.92	0.006872	22.79	254.51	51.88	1.81
Reach-1	620	PF 1	5800.00	1847.74	1854.04	1857.57	1863.21	0.007704	24.30	238.69	47.06	1.90
Reach-1	610	PF 1	5800.00	1844.88	1850.90	1854.54	1861.29	0.009315	25.87	224.17	46.84	2.08
Reach-1	600	PF 1	5800.00	1837.36	1840.65	1844.49	1857.49	0.026515	32.93	176.13	53.84	3.21
Reach-1	595		Bridge									
Reach-1	590	PF 1	5800.00	1836.47	1840.02	1843.60	1854.35	0.020517	30.38	190.90	53.84	2.84
Reach-1	580	PF 1	5800.00	1835.69	1838.88	1842.21	1853.80	0.027202	31.00	187.13	70.38	3.35
Reach-1	570	PF 1	5800.00	1829.48	1833.66	1836.00	1841.47	0.010002	22.41	258.76	74.34	2.12
Reach-1	560	PF 1	5800.00	1823.98	1828.24	1830.50	1835.71	0.009369	21.94	264.36	74.64	2.05
Reach-1	550	PF 1	5800.00	1821.50	1825.75	1828.02	1833.25	0.009416	21.98	263.93	74.62	2.06
Reach-1	540	PF 1	5800.00	1820.08	1824.58	1826.60	1831.13	0.007647	20.53	282.55	75.61	1.87
Reach-1	530	PF 1	5800.00	1818.57	1823.20	1825.09	1829.31	0.006892	19.84	292.38	76.13	1.78
Reach-1	520	PF 1	5800.00	1816.72	1821.59	1823.64	1828.53	0.007172	21.14	274.31	60.00	1.74
Reach-1	510	PF 1	5800.00	1814.68	1819.36	1821.58	1826.93	0.008224	22.08	262.68	60.00	1.86
Reach-1	505	PF 1	5800.00	1806.67	1811.09	1813.57	1819.65	0.009987	23.48	247.05	60.00	2.04
Reach-1	500	PF 1	5800.00	1806.08	1810.50	1812.98	1819.05	0.009960	23.46	247.26	60.00	2.04
Reach-1	490	PF 1	5800.00	1801.70	1806.11	1808.60	1814.71	0.010065	23.53	246.45	60.00	2.05
Reach-1	480	PF 1	5800.00	1801.07	1805.48	1807.97	1814.06	0.010024	23.50	246.76	60.00	2.04
Reach-1	470	PF 1	5800.00	1800.99	1805.47	1807.89	1813.79	0.009558	23.15	250.49	60.00	2.00
Reach-1	460	PF 1	5800.00	1799.74	1805.20	1806.64	1810.65	0.004897	18.73	309.67	60.00	1.45
Reach-1	450	PF 1	5800.00	1798.88	1804.82	1805.78	1809.38	0.003716	17.15	338.23	60.00	1.27
Reach-1	445	PF 1	5800.00	1798.70	1803.02	1804.76	1808.99	0.007105	19.61	295.72	75.00	1.74
Reach-1	440	PF 1	5800.00	1797.82	1801.59	1803.54	1808.12	0.008297	20.51	282.82	75.00	1.86
Reach-1	435		Bridge									
Reach-1	430	PF 1	5800.00	1796.29	1800.27	1802.01	1806.13	0.006977	19.43	298.52	75.00	1.72
Reach-1	420	PF 1	6300.00	1794.52	1798.52	1800.26	1804.36	0.013045	19.39	324.85	89.56	1.79
Reach-1	415	PF 1	6300.00	1793.32	1800.72	1800.72	1803.96	0.003688	14.44	436.27	67.45	1.00
Reach-1	410	PF 1	6300.00	1791.56	1800.24	1800.52	1803.85	0.003800	15.27	419.25	74.11	1.02
Reach-1	400	PF 1	6300.00	1790.86	1796.91	1798.52	1802.49	0.007665	18.95	332.48	59.55	1.41
Reach-1	390	PF 1	6300.00	1789.46	1797.18	1797.22	1800.79	0.003763	15.25	413.22	58.10	1.01
Reach-1	380	PF 1	6300.00	1787.94	1794.84	1795.41	1798.96	0.004794	16.28	386.94	59.85	1.13

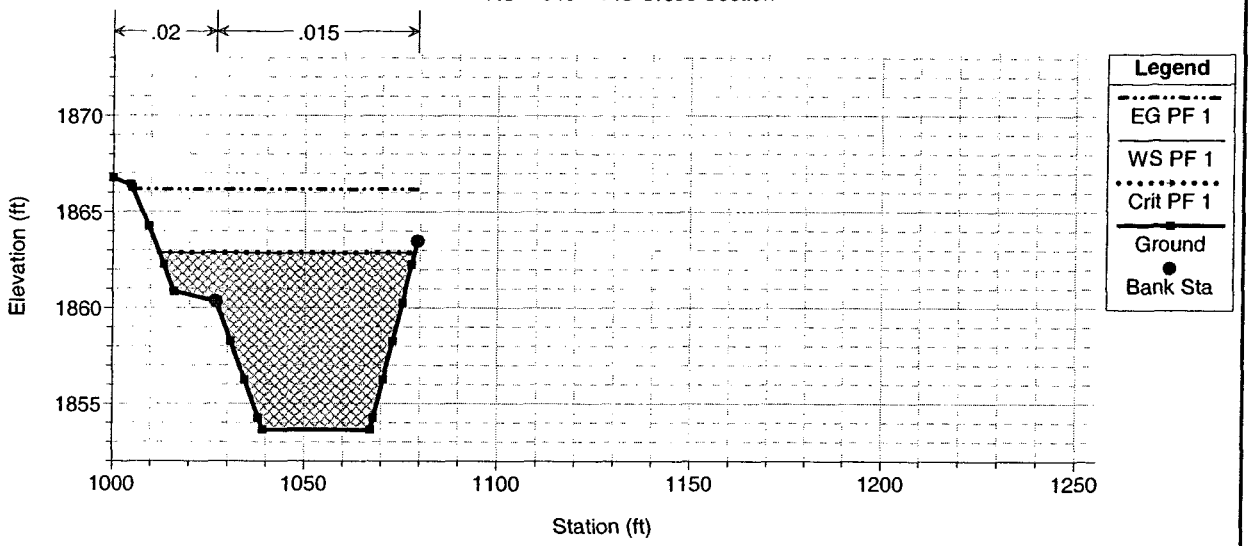
HEC-RAS Plan: Post River: RIVER-1 Reach: Reach-1 Profile: PF 1

Reach	River Sta	Profile	E.G. US.	Min El Prs	BR Open Area	Prs O WS	Q Total	Min El Weir Flow	Q Weir	Delta EG
			(ft)	(ft)	(sq ft)	(ft)	(cfs)	(ft)	(cfs)	(ft)
Reach-1	595	PF 1	1857.49	1845.39	400.75	1840.65	5800.00	1848.77		3.14
Reach-1	435	PF 1	1808.12	1805.75	570.96	1801.59	5800.00	1807.76		1.99


Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Elevation (ft)
1880
1860
1840
1820
1800
1780
0
1000
6000
7000

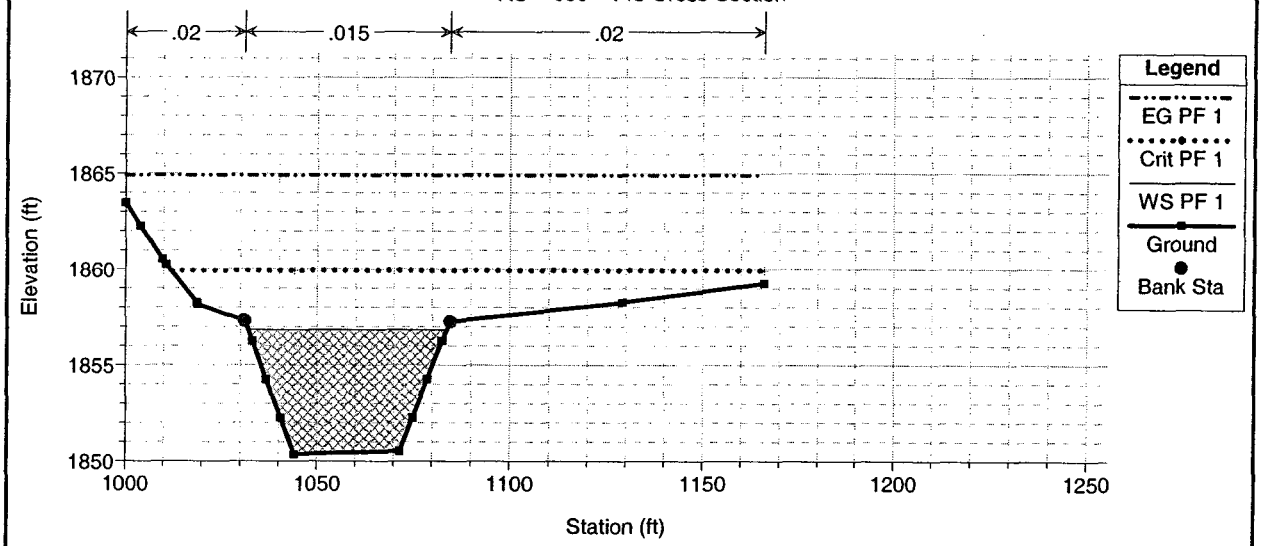
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 640 FIS Cross Section



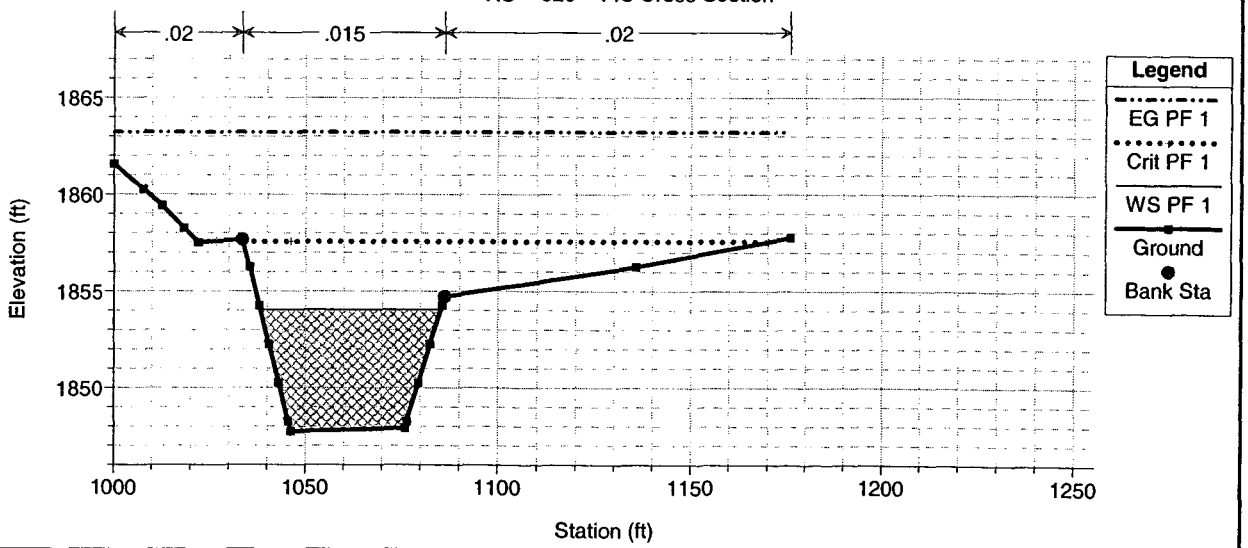
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 630 FIS Cross Section

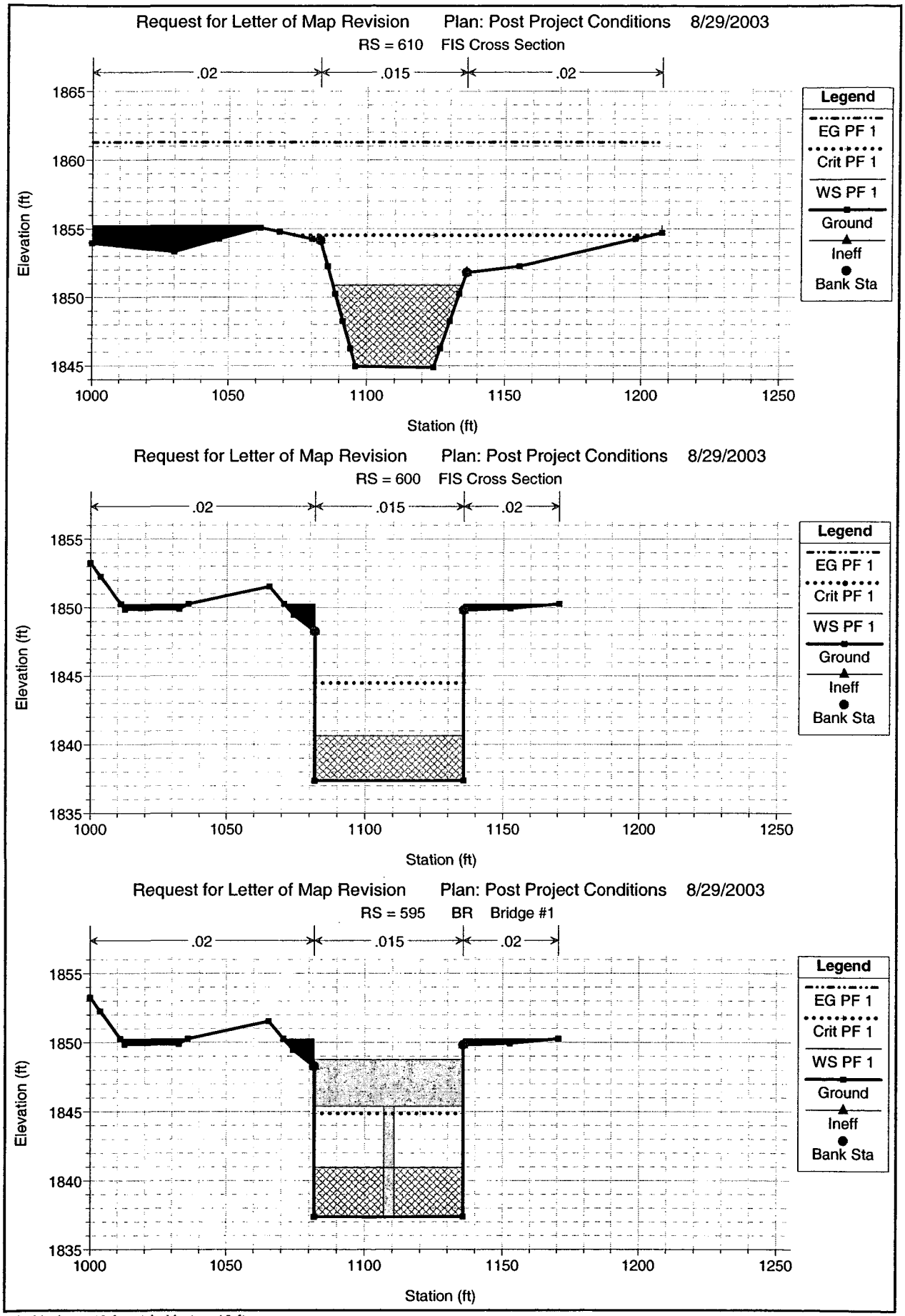


Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 620 FIS Cross Section



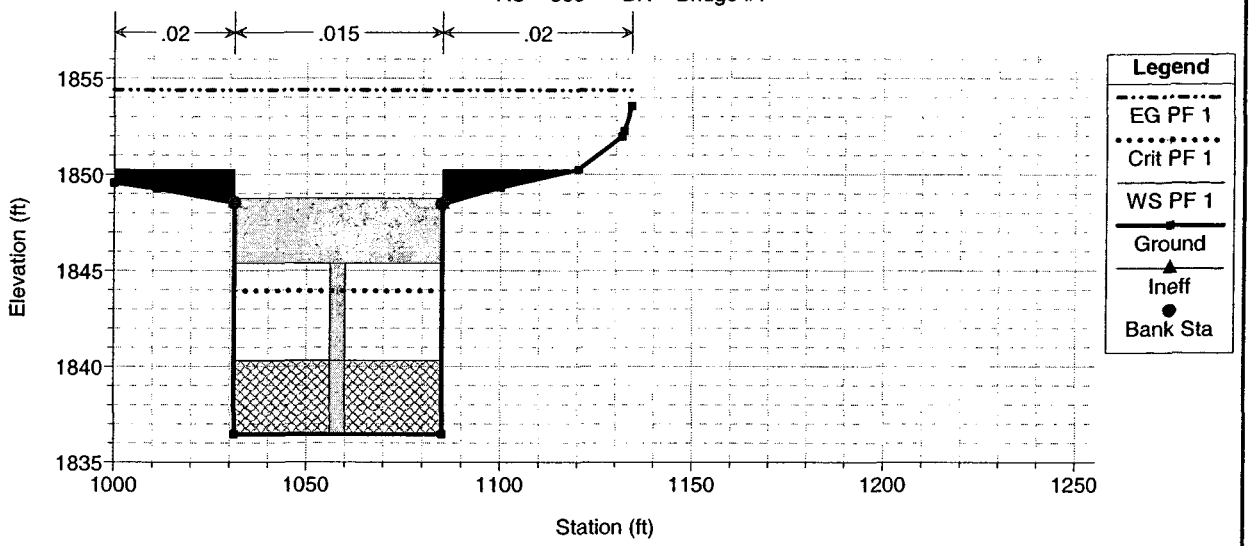
1 in Horiz. = 50 ft 1 in Vert. = 10 ft



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

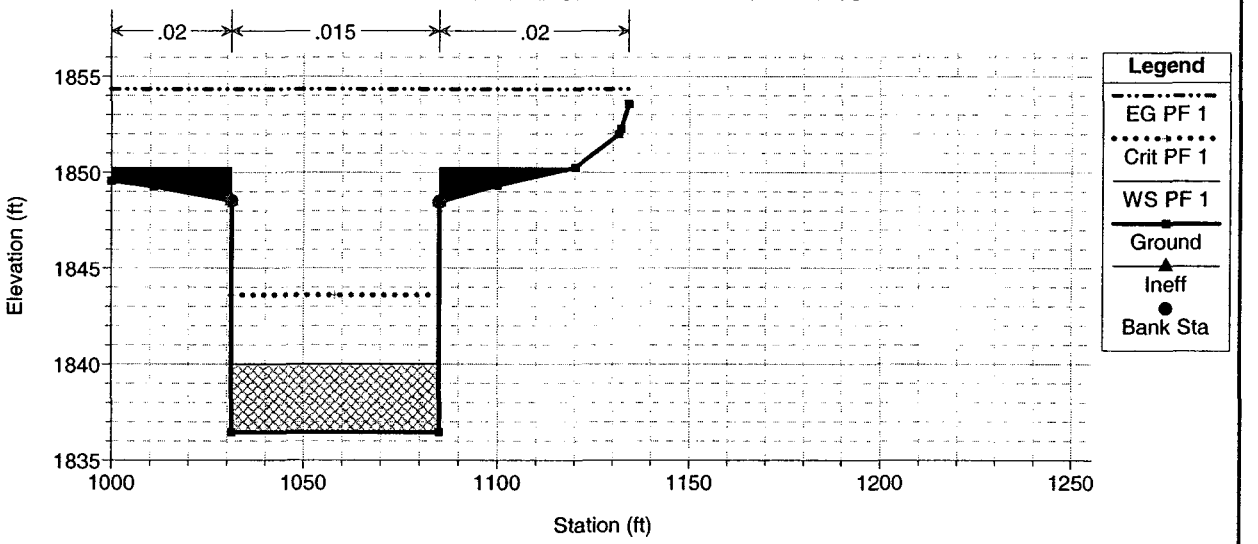
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 595 BR Bridge #1



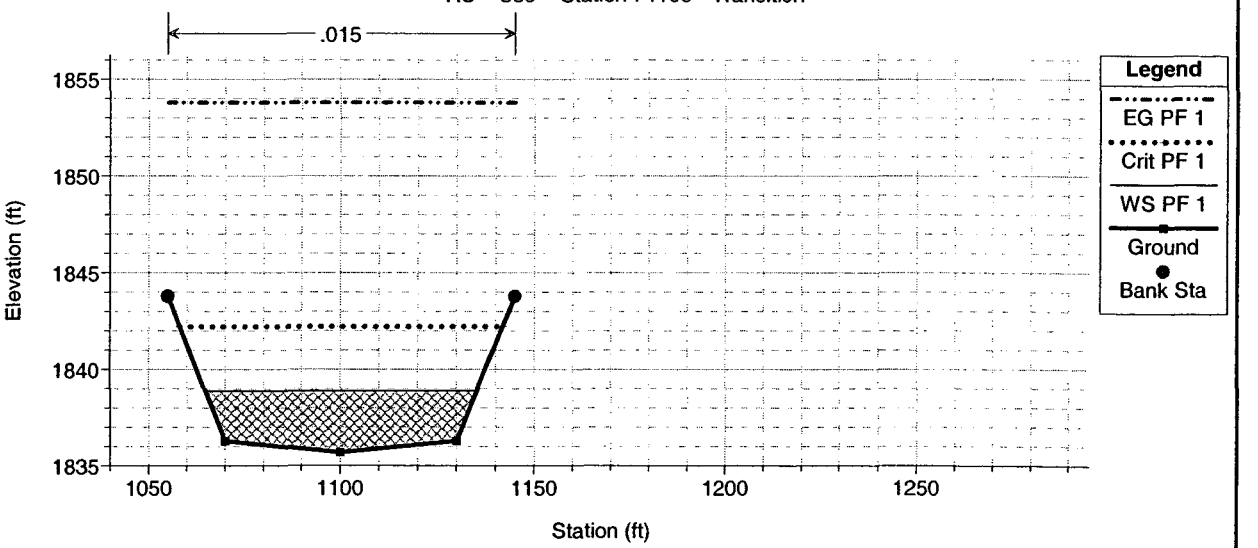
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 590 END OF PHASE II IMPROVEMENTS



Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

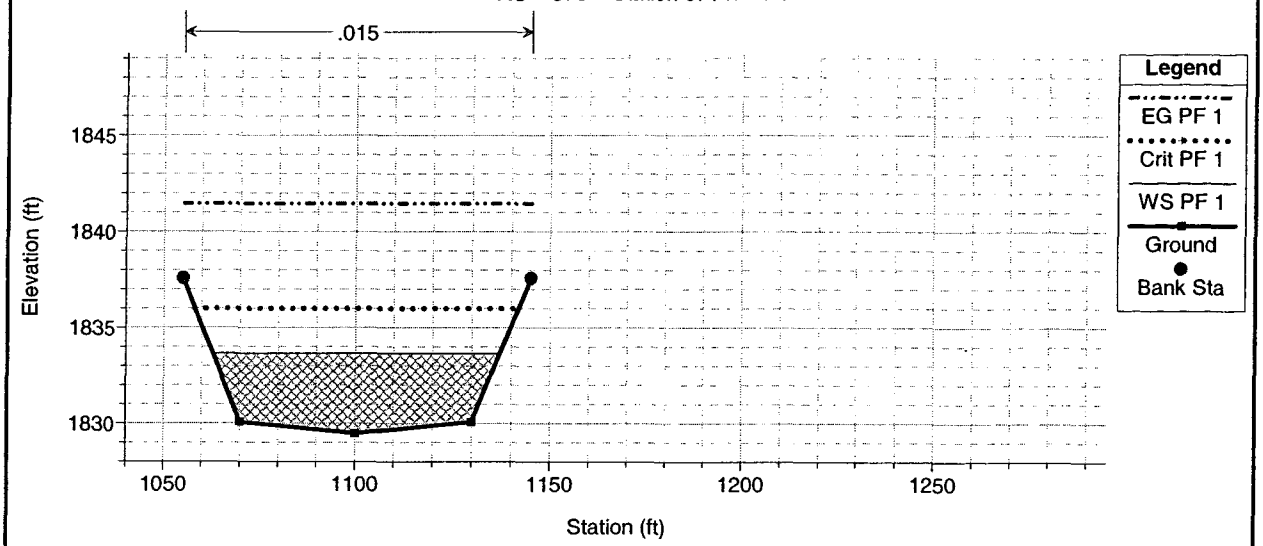
RS = 580 Station 74+05 - Transition



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

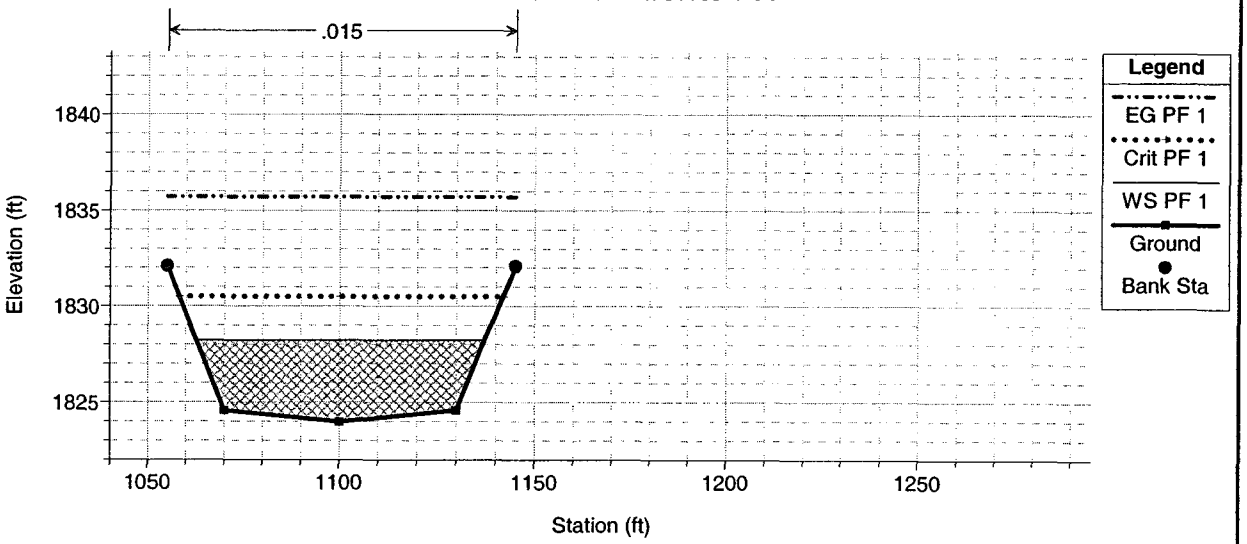
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 570 Station 67+47 - PT



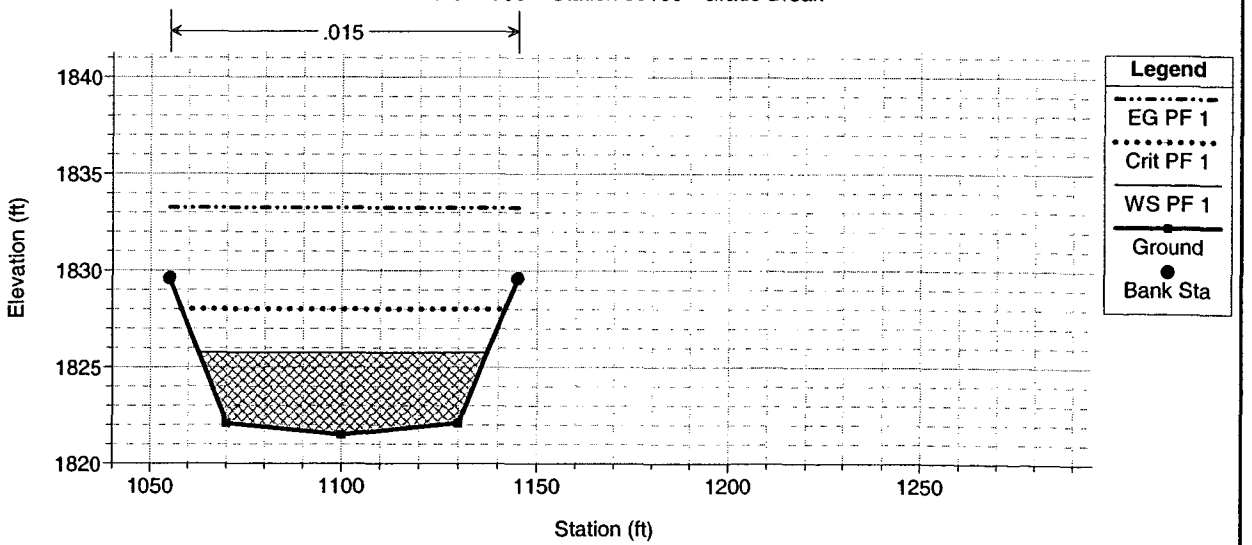
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 560 Station 61+63- PCC



Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

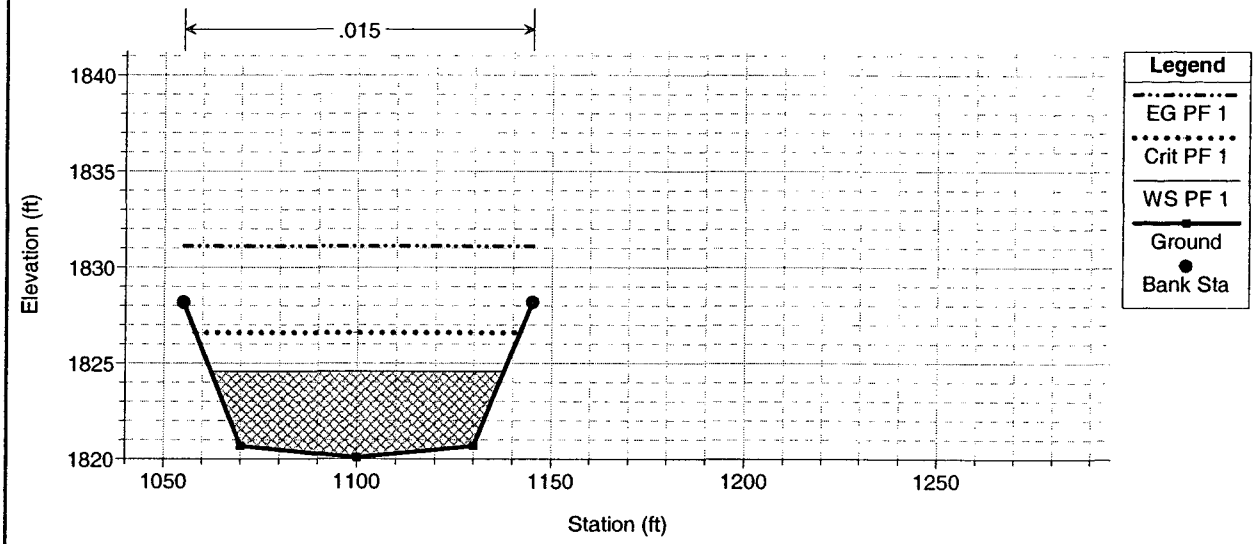
RS = 550 Station 59+00 - Grade Break



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

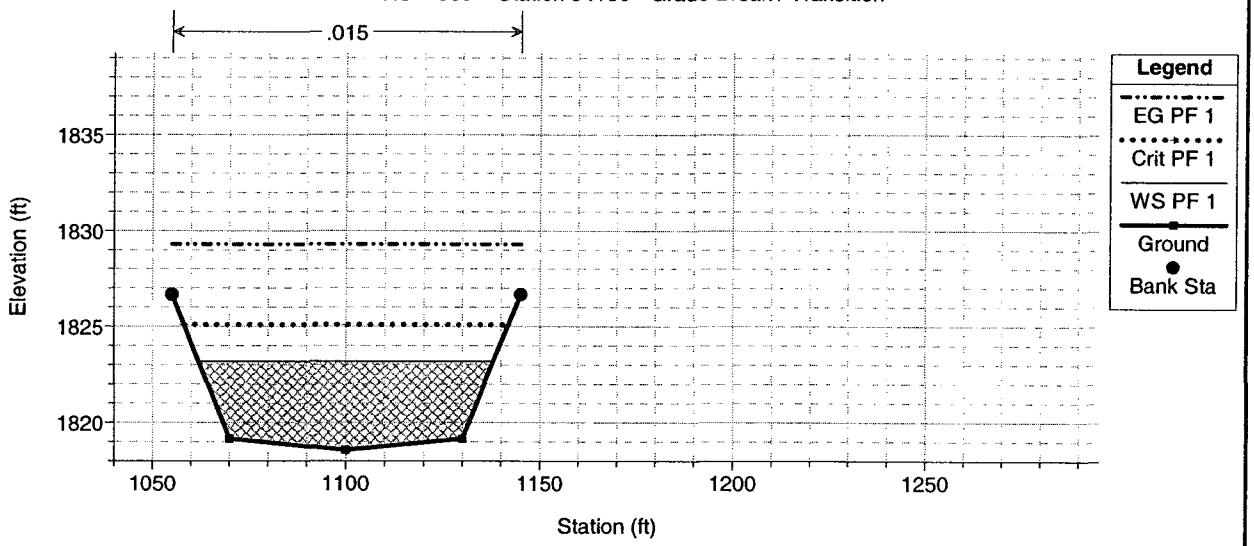
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 540 Station 56+82 - PC



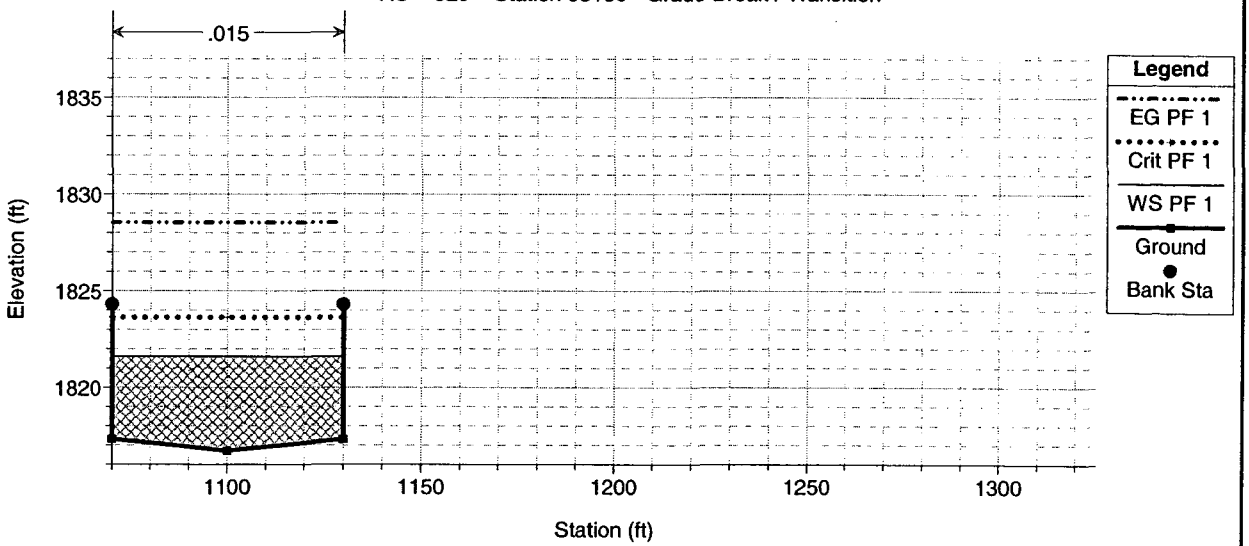
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 530 Station 54+50 - Grade Break / Transition

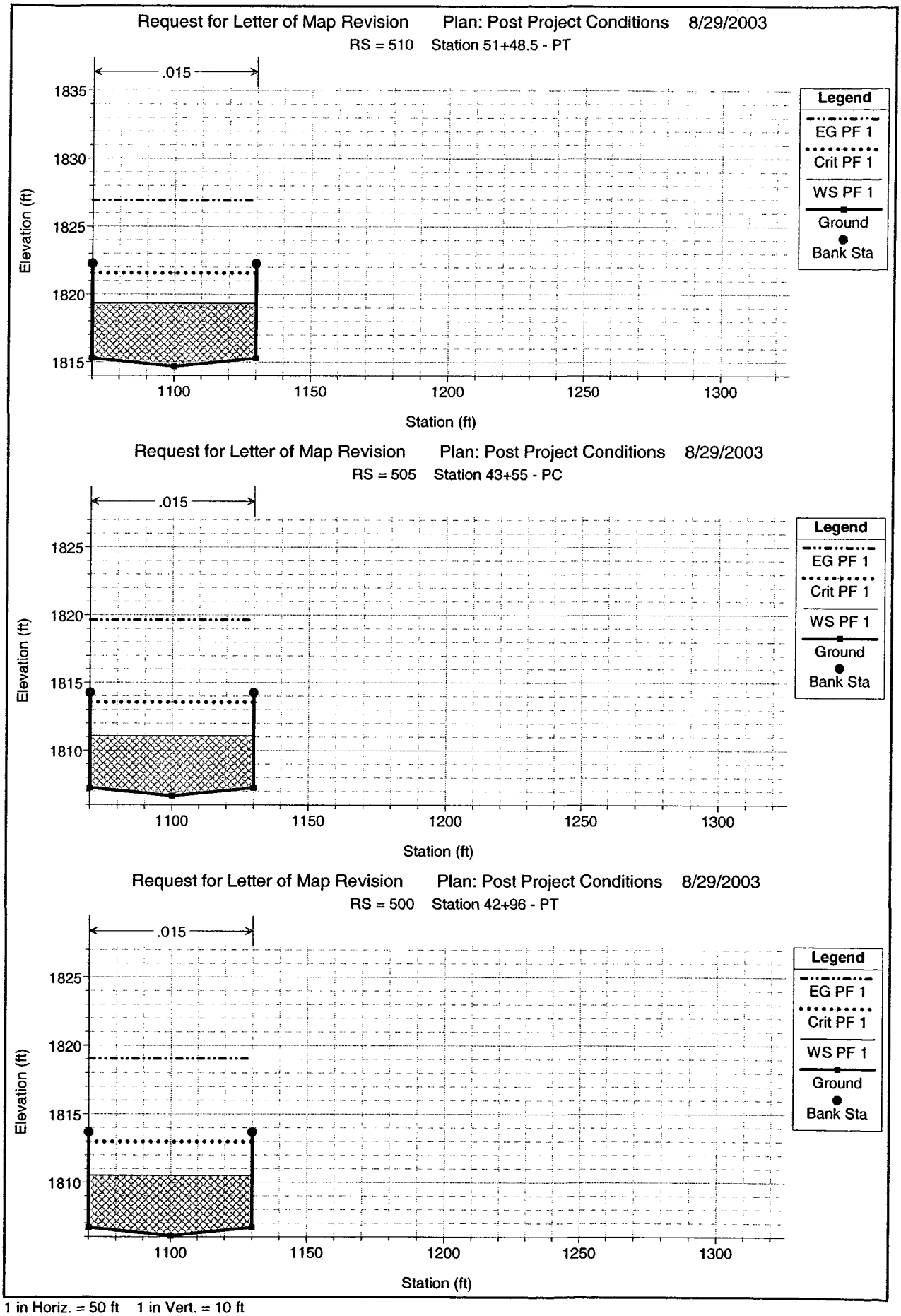


Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 520 Station 53+50 - Grade Break / Transition



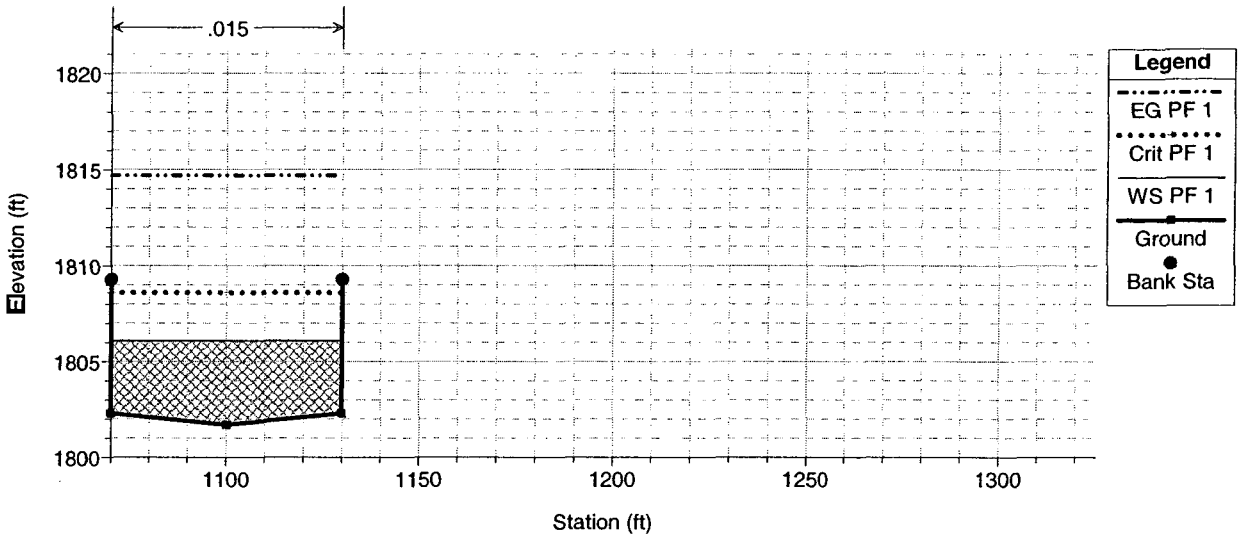
1 in Horiz. = 50 ft 1 in Vert. = 10 ft



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

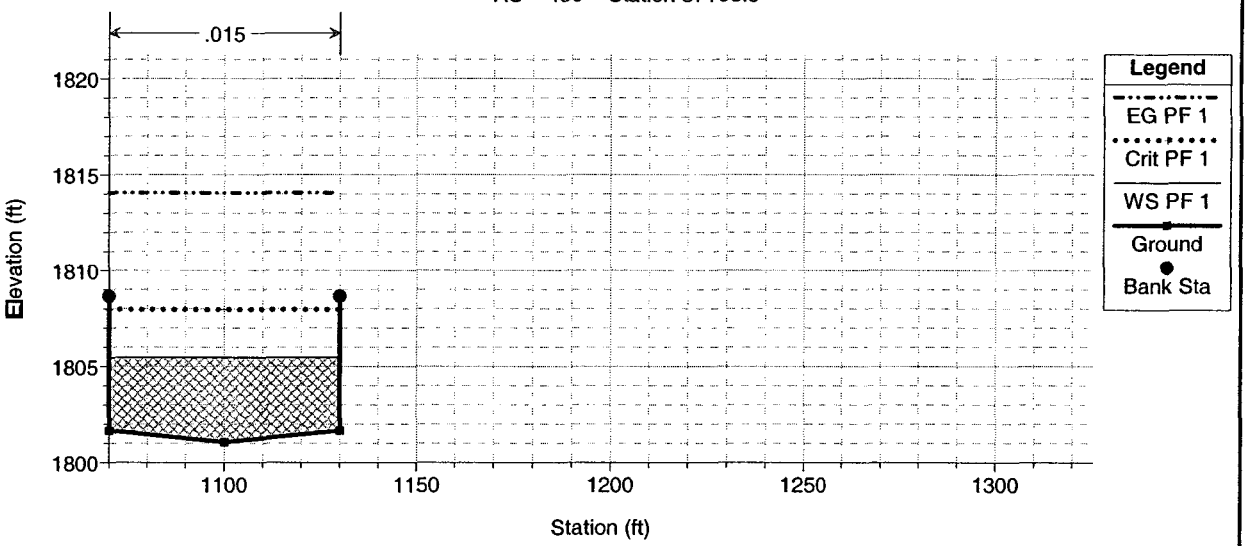
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 490 Station 38+63 - PC



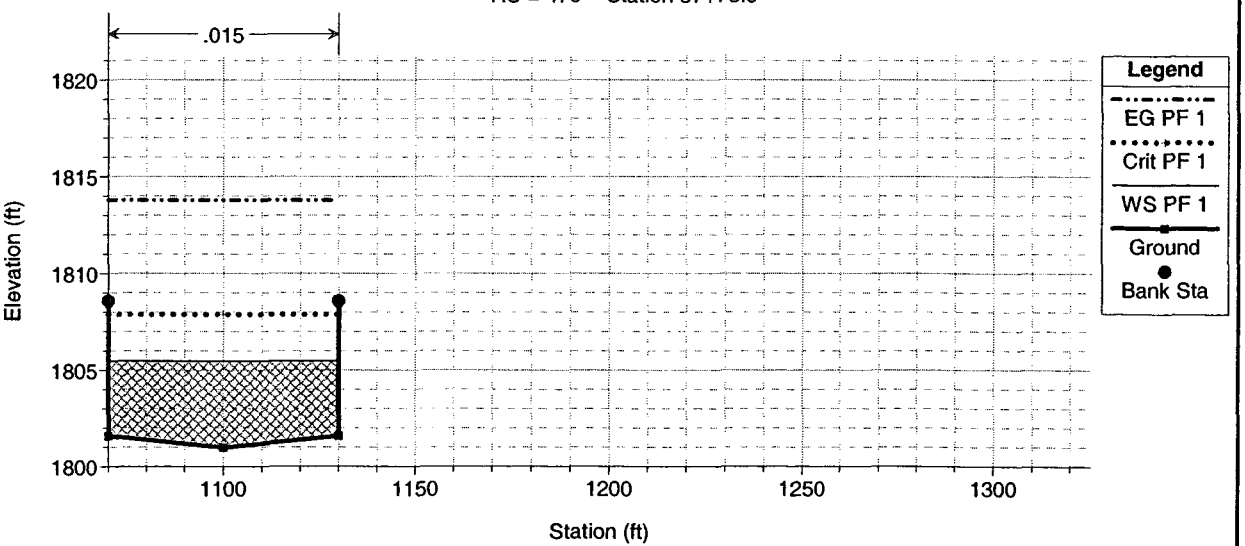
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 480 Station 37+98.5



Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

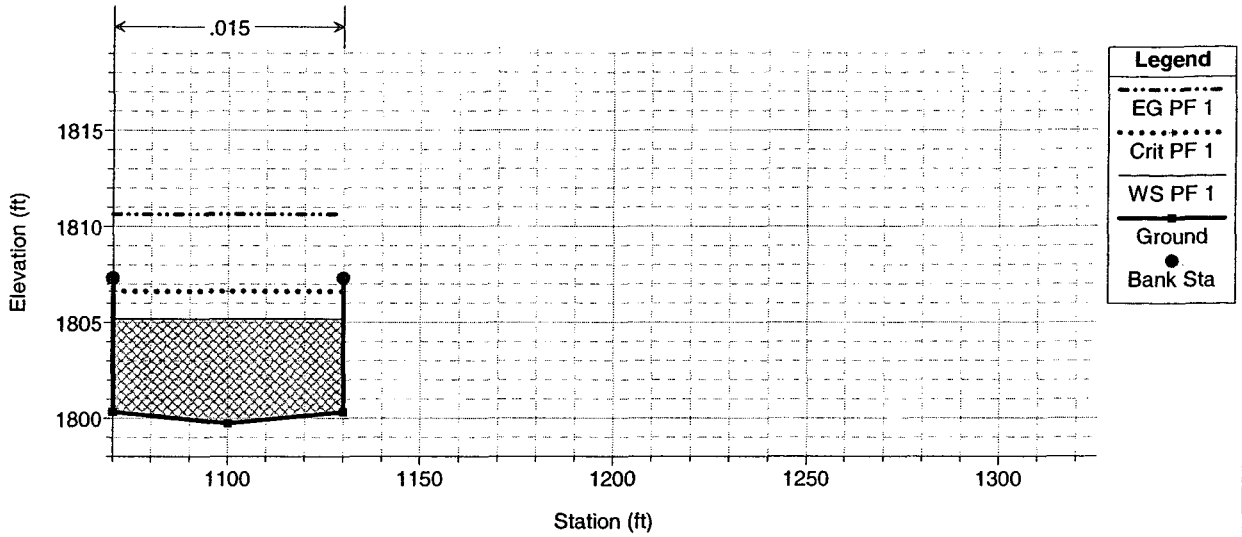
RS = 470 Station 37+78.5



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

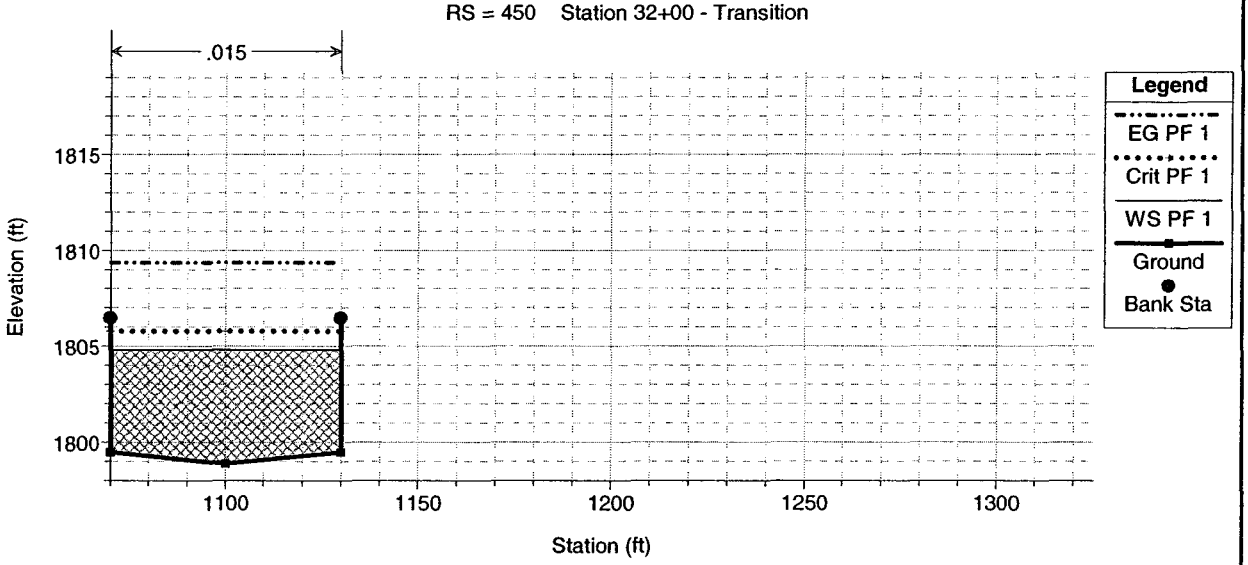
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 460 Station 37+36 PT



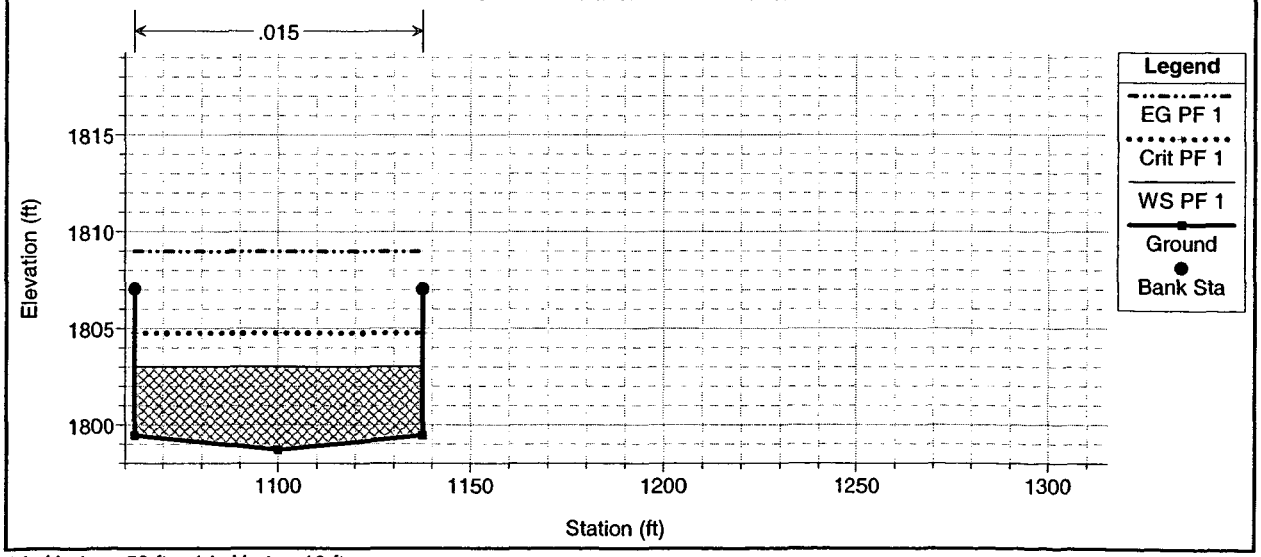
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 450 Station 32+00 - Transition

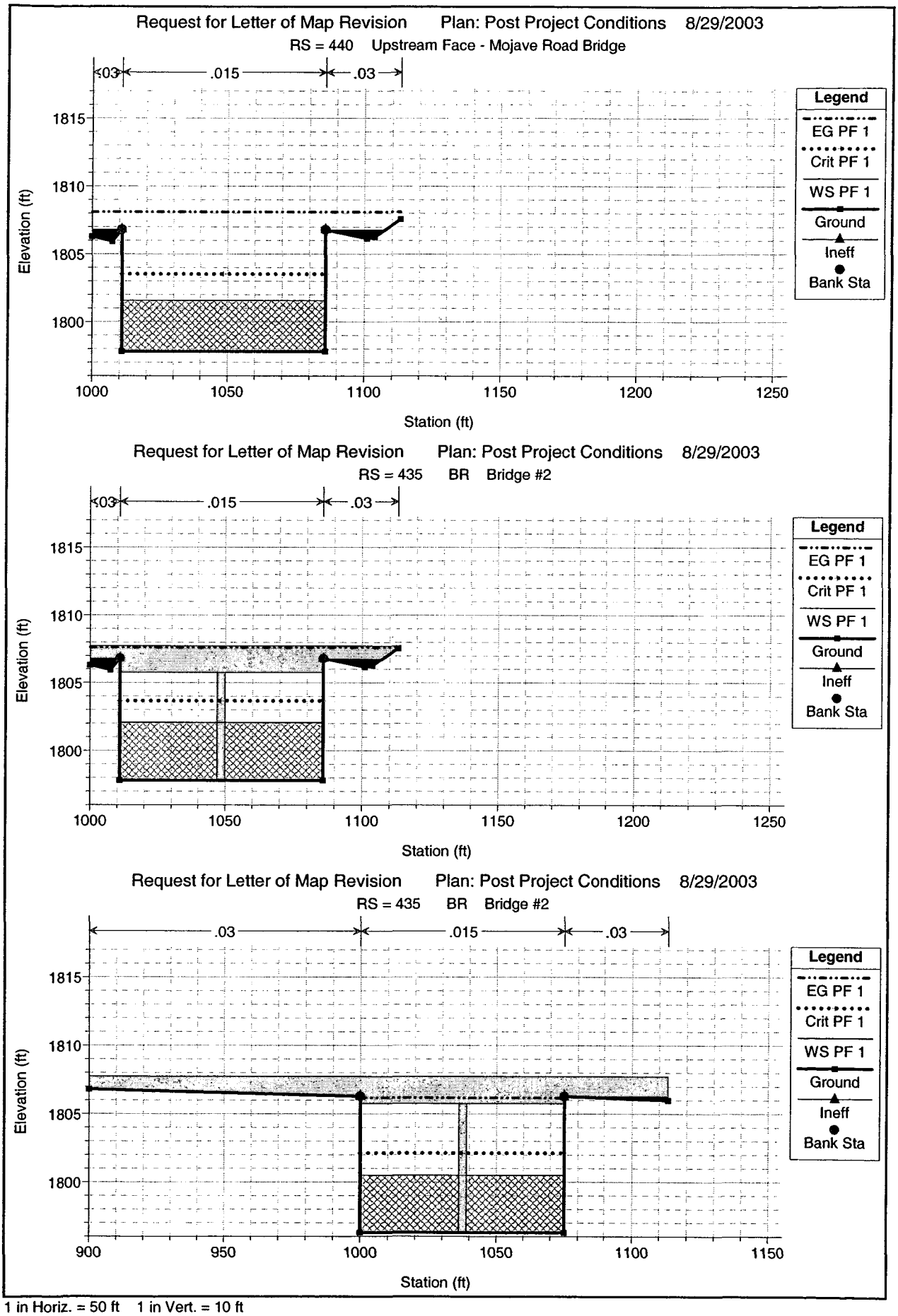


Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 445 Station 31+50 - Transition



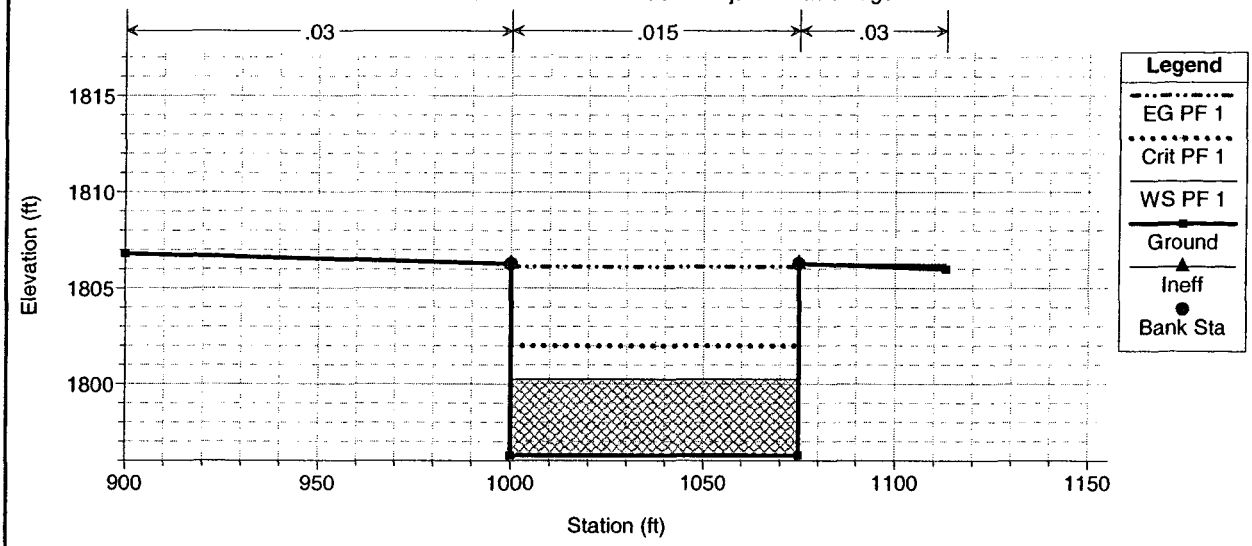
1 in Horiz. = 50 ft 1 in Vert. = 10 ft



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

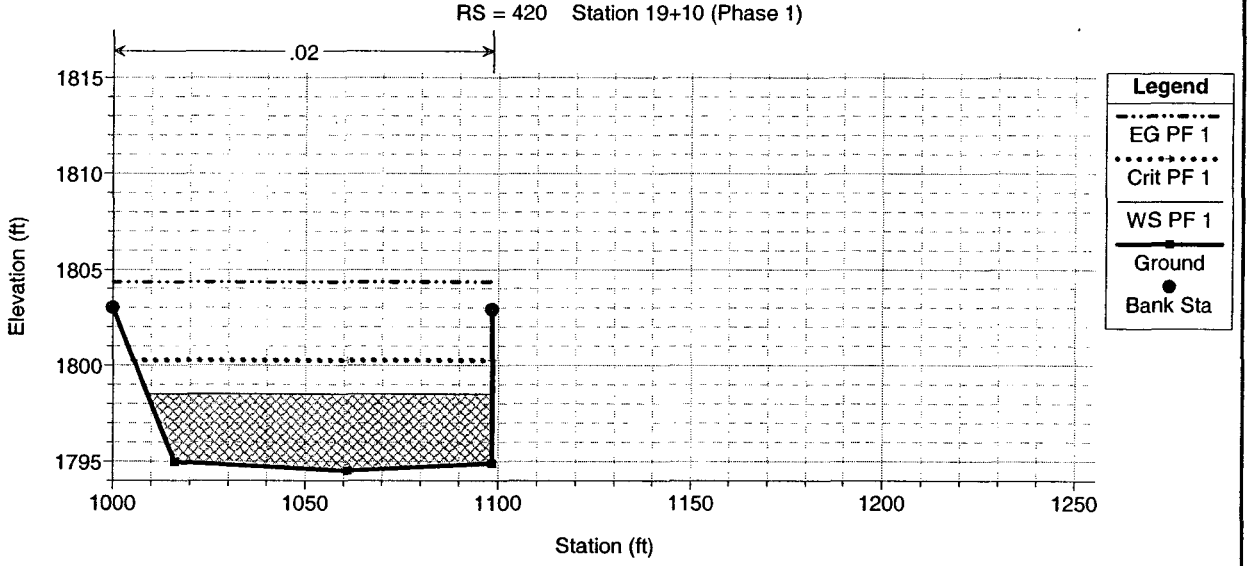
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 430 Downstream Face - Mojave Road Bridge



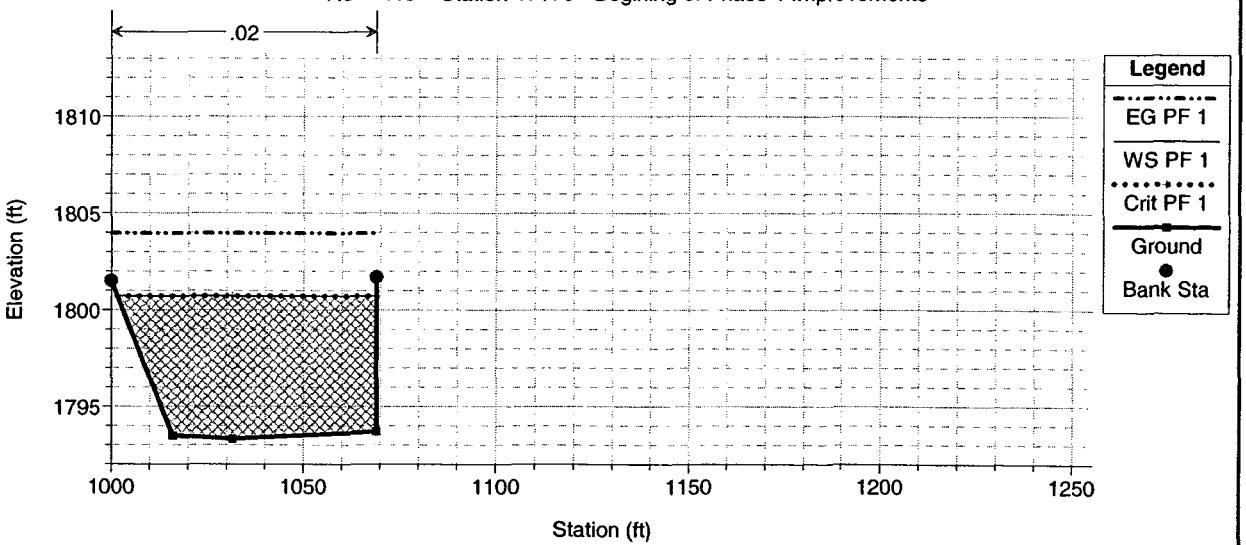
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 420 Station 19+10 (Phase 1)



Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

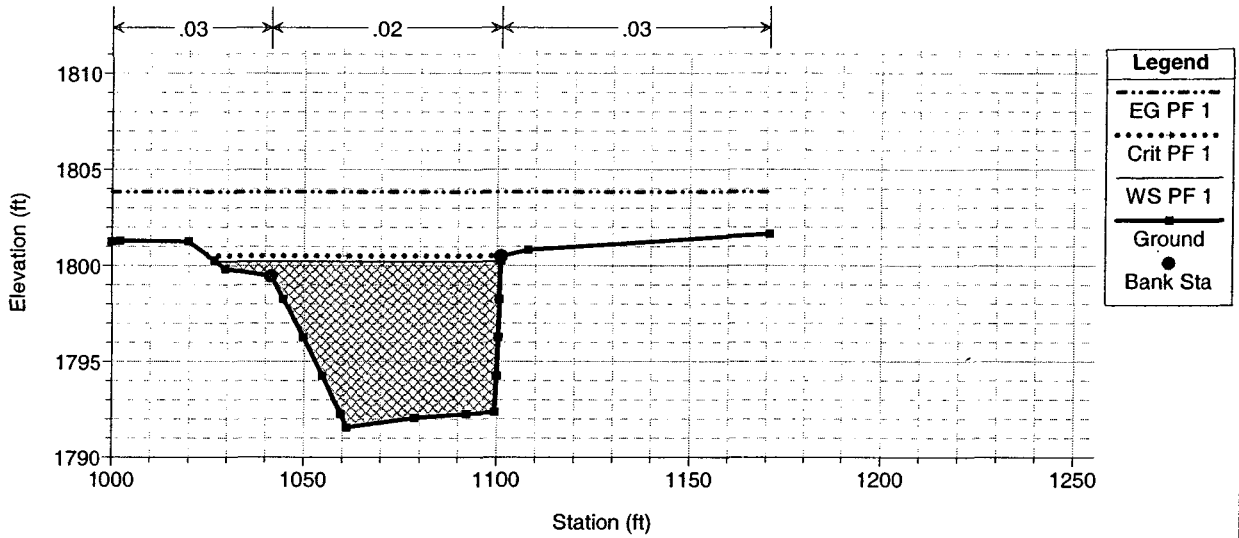
RS = 415 Station 17+70 - Begining of Phase 1 Improvements



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

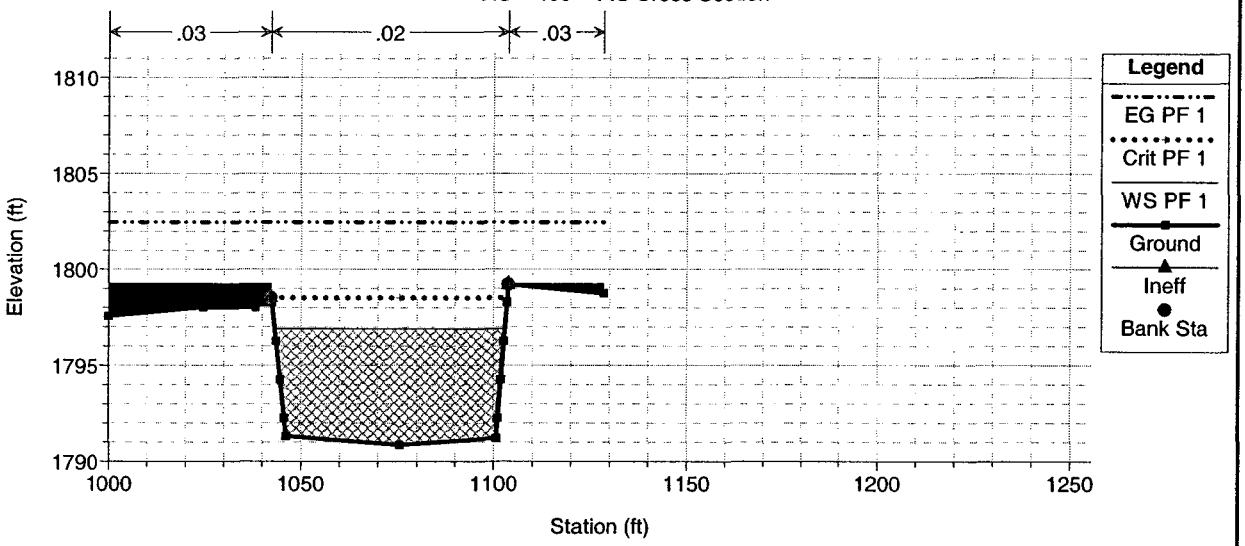
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 410 FIS Cross Section



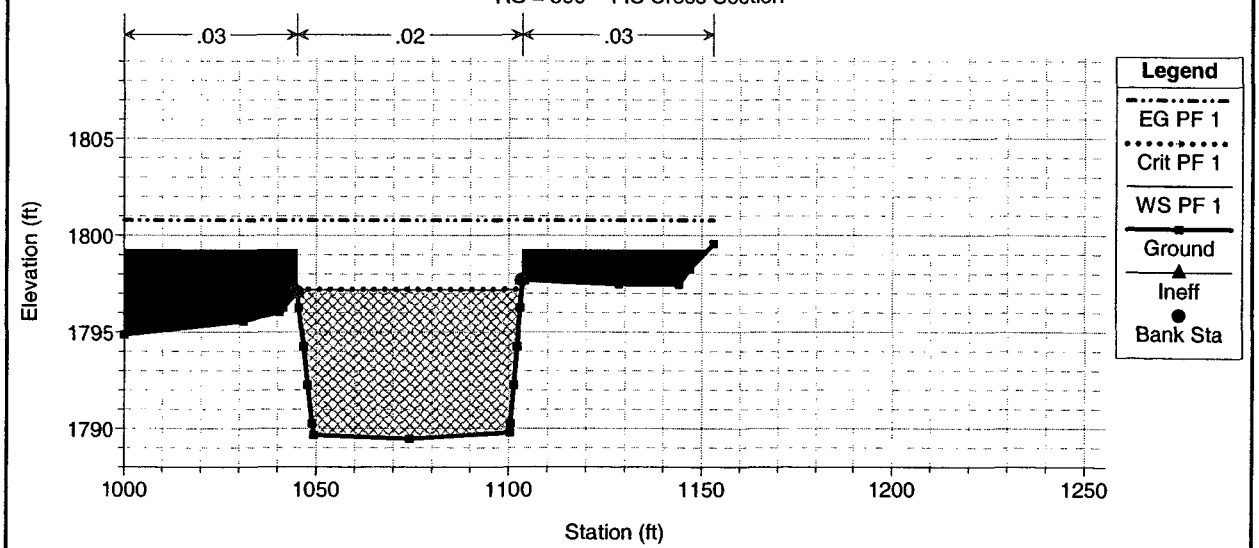
Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 400 FIS Cross Section

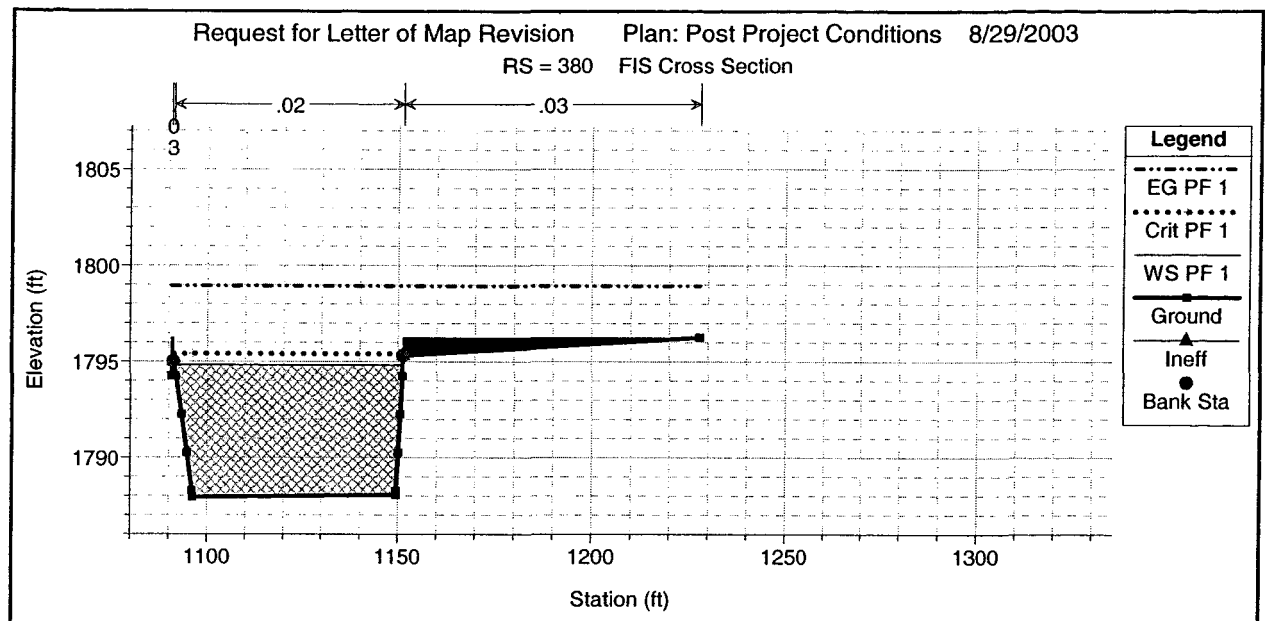


Request for Letter of Map Revision Plan: Post Project Conditions 8/29/2003

RS = 390 FIS Cross Section



1 in Horiz. = 50 ft 1 in Vert. = 10 ft



1 in Horiz. = 50 ft 1 in Vert. = 10 ft

CHECK-RAS Output Files

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.prj
Plan File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.p02
Geometry File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.g02
Flow File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.f02
Report File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.nt
Selected profiles: PF 1
Date: 9/5/2003
Time: 10:12:33 AM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
RIVER-1,Reach-1						
640		0.02	0.015	0.02	0.1	0.3
630		0.02	0.015	0.02	0.1	0.3
620		0.02	0.015	0.02	0.1	0.3
610		0.02	0.015	0.02	0.1	0.3
600		0.02	0.015	0.02	0.1	0.3
595	Bridge-Up	0.02	0.015	0.02	0.1	0.3
595	Bridge-Dn	0.02	0.015	0.02	0.3	0.5
590		0.02	0.015	0.02	0.3	0.5
580		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
570		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
560		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
550		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
540		-----	0.015	0.025	0.1	0.3
		-----	0.025	-----		
530		-----	0.015	0.025	0.1	0.3
		-----	0.025	-----		
520		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
510		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
505		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
500		-----	0.015	0.025	0.1	0.3
		-----	0.025	-----		
490		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
480		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
470		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
460		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
450		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
445		-----	0.025	0.025	0.1	0.3
		-----	0.015	-----		
440		0.03	0.015	0.03	0.3	0.5
435	Bridge-Up	0.03	0.015	0.03	0.3	0.5
435	Bridge-Dn	0.03	0.015	0.03	0.3	0.5
430		0.03	0.015	0.03	0.3	0.5
420		-----	0.03	0.03	0.3	0.5
		-----	0.02	-----		
415		-----	0.02	0.03	0.3	0.5
		-----	0.03	-----		
410		0.03	0.02	0.03	0.1	0.3
400		0.03	0.02	0.03	0.1	0.3
390		0.03	0.02	0.03	0.1	0.3
380		0.03	0.02	0.03	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.02	0.03
Right Overbank n Value:	0.02	0.03

Channel n Value:	0.015	0.03
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

RS: 640
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 640
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 640
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 630
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 630
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 630
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 620
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 620
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 620
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 610
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 610
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 610
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 600

NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 600
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 600
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 595
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 595
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 595
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 595
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 595
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 595
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 590
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 590
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 590
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 580
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 580
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

```
RS:       570
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        570
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       560
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        560
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       550
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        550
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       540
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        540
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       530
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        530
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       520
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        520
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       510
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        510
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
```

The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 505
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 505
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 500
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 500
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 490
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 490
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 480
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 480
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 470
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 470
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 460
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 460
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 450
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

```
RS:       450
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       445
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       445
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       440
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       440
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       440
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       435
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       435
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       435
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       435
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       435
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       435
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       430
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       430
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.
```

```
RS:       430
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       420
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       415
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       410
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       410
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       410
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       400
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       400
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       400
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       390
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       390
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       390
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

TRANSITION LOSS COEFFICIENT CHECK
---------------------------------

RS:       610
NT TL 01 This is section 4
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:       600
```

```
NT TL 01 This is section 3
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:      595
NT TL 01 This is section Bridge-Up
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:      445
NT TL 01 This is section 4
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:      420
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      415
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

ROUGHNESS COEFFICIENT AT STRUCTURES
-----------------------------------

RS:      595
NT RS 02 The channel n value of 0.015 for the upstream internal bridge opening
         section is equal or larger than the channel n value of 0.015 at Section 3.
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 3.
         The selection of the n value(s) should be reevaluated.

RS:      595
NT RS 02 The channel n value of 0.015 for the downstream internal bridge opening
         section is equal or larger than the channel n value of 0.015 at Section 2
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 2.
         The selection of the n value(s) should be reevaluated.

RS:      435
NT RS 02 The channel n value of 0.015 for the upstream internal bridge opening
         section is equal or larger than the channel n value of 0.015 at Section 3.
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 3.
         The selection of the n value(s) should be reevaluated.

RS:      435
NT RS 02 The channel n value of 0.015 for the downstream internal bridge opening
         section is equal or larger than the channel n value of 0.015 at Section 2
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 2.
         The selection of the n value(s) should be reevaluated.

---END---
```

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.prj
Plan File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.p02
Geometry File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.g02
Flow File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.f02
Report File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.xs
Selected profiles: PF 1
Date: 9/5/2003
Time: 10:12:11 AM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
RIVER-1,Reach-1						
640	251.59	258.21	262.14	66.56	5800	C
630	229.09	221.03	213.86	51.88	5800	
620	223.64	212.31	202.43	47.06	5800	
610	230.78	215.38	201.73	46.84	5800	B
600	93.41	93.51	94.92	53.84	5800	B
595	Single BR-Up					
595	Single BR-Dn					
590	16.02	15.77	16.7	53.84	5800	B
580	658	658	658	70.38	5800	
570	566.67	584.2	601.73	74.34	5800	
560	252.78	262.84	272.87	74.64	5800	
550	209.44	217.76	226.09	74.62	5800	
540	232.24	232.24	232.24	75.61	5800	
530	100	100	100	76.13	5800	
520	201.5	201.5	201.5	60	5800	
510	806.7	793.47	780.25	60	5800	
505	59	59	59	60	5800	
500	454.21	432.58	410.95	60	5800	
490	64.61	64.61	64.61	60	5800	
480	20	20	20	60	5800	
470	342.31	342.31	342.31	60	5800	
460	232.69	236.24	239.78	60	5800	
450	48.98	49.72	50.47	60	5800	
445	94.83	106.25	100.54	75	5800	
440	183.21	197.38	206.01	75	5800	B
435	Single BR-Up					
435	Single BR-Dn					
430	193.4	187.5	181.7	75	5800	B
420	143.6	140	136.6	89.56	6300	
415	109.9	108.5	106.7	67.45	6300	C
410	236.79	222.64	212.87	74.11	6300	
400	216.05	216.12	217.6	59.55	6300	B
390	420.9	420.9	420.21	58.1	6300	E,B
380	0	420.9	0	59.85	6300	E,B

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

RS: 590
XS DT 01 Both right and left overbank distances are longer than the channel distance.

SPACING CHECK

INEFFECTIVE FLOW CHECK

```
DISCHARGE CHECK
---------------


LOCATION CHECK
--------------


BOUNDARY CONDITION CHECK
------------------------

XS BC 02 The name of the stream is RIVER-1,Reach-1
         Critical is specified as the upstream boundary
         for profile PF 1

XS FR 01 The profile is computed as supercritical flow regime.

---END---
```

CHECK-RAS Program: Structure Check

Project File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.prj
Plan File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.p02
Geometry File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.g02
Flow File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.f02
Report File: E:\879-Flamingo\HEC-Ras\879_P_Flamingo.br
Selected profiles: PF 1
Date: 9/5/2003
Time: 10:12:14 AM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
RIVER-1,Reach-1						
640			1866.18	1862.89	1853.63	
630			1864.92	1856.86	1850.36	
620			1863.21	1854.04	1847.74	
610			1861.29	1850.9	1844.88	
600			1857.49	1840.65	1837.36	
590			1854.35	1840.02	1836.47	
580			1853.8	1838.88	1835.69	
570			1841.47	1833.66	1829.48	
560			1835.71	1828.24	1823.98	
550			1833.25	1825.75	1821.5	
540			1831.13	1824.58	1820.08	
530			1829.31	1823.2	1818.57	
520			1828.53	1821.59	1816.72	
510			1826.93	1819.36	1814.68	
505			1819.65	1811.09	1806.67	
500			1819.05	1810.5	1806.08	
490			1814.71	1806.11	1801.7	
480			1814.06	1805.48	1801.07	
470			1813.79	1805.47	1800.99	
460			1810.65	1805.2	1799.74	
450			1809.38	1804.82	1798.88	
445			1808.99	1803.02	1798.7	
440			1808.12	1801.59	1797.82	
430			1806.13	1800.27	1796.29	
420			1804.36	1798.52	1794.52	
415			1803.96	1800.72	1793.32	
410			1803.85	1800.24	1791.56	
400			1802.49	1796.91	1790.86	
390			1800.79	1797.18	1789.46	
380			1798.96	1794.84	1787.94	

RIVER/REACH: RIVER-1, Reach-1
RIVER STATION: 595
TYPE OF STRUCTURE: Bridge

Description:	Bridge #1
Distance from Upstream XS:	1
Deck/Roadway Width:	91.51
Weir Coefficient:	2.6
Maximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	1848.76
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	610	215.38	1850.9		1861.29	46.84	
3	600	93.51	1840.65		1857.49	53.84	
	595	91.51	0		0	Null	Single BR-Up
	595	1.00	0		0	Null	Single BR-Dn
2	590	15.77	1840.02		1854.35	53.84	
1	580	658.00	1838.88		1853.8	70.38	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	888	0	0	888	0	0
2	0	0	0	0	0	0

BRIDGE:
Bridge Name: Single BR
LowFlowMethod: Yarnell
Momentum Cd: 0
HighFlowMethod: Pressure and Weir flow
SluiceGate Cd: 0 Submerged Cd: 0.8006408

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

---

MaxLowChord: 1845.39 MinTopRd: 0 MinElPrs: 1845.39

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Bridge					0		U
					0		D

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Single BR	1081.85	1135.69	1837.39	1837.39	1837.39	1845.39	U
	1031.20	1085.04	1848.76	1848.76	1848.76	1845.39	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Single BR	5800	5800	0	Energy only	UNKNOWN

GEOMETRIC CHECK

RS: 595
ST GD 03 The end station of 1135.69 from upstream road/weir data
is less than the end station of 1170.43 from upstream internal
section/section 3.
The high chord elevation of 1848.76 for the end road/weir station is
greater than the ground elevation of 1837.39 for the same ground station.
The road/weir profile may need to be extended.

TYPE OF FLOW CHECK

RS: 595 This is Single BR
BR TF 01 Type of flow is UNKNOWN.
CHECKRAS can not find MxLoCd or MnTpRd elevation
or the given conditions do not satisfy the type of flow
specified in the CHECK-RAS program.
Please review the ground and road data, and encroachment stations.
or please review the messages, BR LF 01, BR PF 01, BR PF 02, BR LW 01
BR PW 01 for bridges to determine the type of flow.

RIVER/REACH: RIVER-1, Reach-1
RIVER STATION: 435
TYPE OF STRUCTURE: Bridge

Description:	Bridge #2
Distance from Upstream XS:	1
Deck/Roadway Width:	195.38
Weir Coefficient:	2.6
Maximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	1807.75
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	445	106.25	1803.02		1808.99	75	
3	440	197.38	1801.59		1808.12	75	
	435	195.38	0		0	Null	Single BR-Up
	435	1.00	0		0	Null	Single BR-Dn
2	430	187.50	1800.27		1806.13	75	
1	420	140.00	1798.52		1804.36	89.56	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	888	0	0	888	0	0
2	0	0	0	0	0	0

BRIDGE:
Bridge Name: Single BR
LowFlowMethod: Yarnell
Momentum Cd: 0
HighFlowMethod: Pressure and Weir flow
SluiceGate Cd: 0 Submerged Cd: 0.8006408

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

MaxLowChord: 1805.75 MinTopRd: 0 MinElPrs: 1805.75

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Bridge					0		U
					0		D

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Single BR	1010.88	1085.88	1807.75	1807.55	1807.55	1805.75	U
	1000.00	1075.00	1807.75	1807.75	1807.75	1805.75	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Single BR	5800	5800	0	Energy only	UNKNOWN

GEOMETRIC CHECK

RS: 435
ST GD 03 The starting station of 900 from upstream road/weir data
is less than the starting station of 1000 from upstream internal
section/ secion 3.
The high chord elevation of 1807.75 for the starting road/weir station is

greater than the ground elevation of 1806.3 for the starting ground station.
The EGEL at section 3 of 1808.12 is greater than the ground elevation.
The road/weir data should be included in the ground data

RS: 435
ST GD 03 The end station of 1113.05 from upstream road/weir data
is less than the end station of 1113.11 from upstream internal
section/section 3.
The high chord elevation of 1807.75 for the end road/weir station is
greater than the ground elevation of 1807.552 for the same ground station.
The road/weir profile may need to be extended.

RS: 435
ST GD 04 There is only one bridge. This is upstream bridge section.
However, the low chord line crosses the ground line at more than
two locations.
The ground and deck/roadway data should be checked.

---END

```
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998             *
*           VERSION 4.1             *
*                                   *
*  RUN DATE   28AUG03  TIME  14:25:39   *
*                                   *
*************************************
```

```
*************************************
*                                   *
*    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


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

              *DIAGRAM
    1         ID              McCARRAN INTERNATIONAL AIRPORT, LAS VEGAS, NV.
    2         ID            HYDROLOGIC MODEL PREPARED BY: LOUIS BERGER GROUP
    3         ID       ---------PRELIMINARY DESIGN, RUSSELL RD RELOCATION----------
    4         ID
    5         ID            ---------EXISTING CONDITIONS ANALYSIS------------
    6         ID
    7         ID       THIS FILE IS A COMPOSITE OF THREE HYDROLOGIC MODELS DEVELOPED BY:
    8         ID          PENTACORE ENGINEERING, PARADISE ROAD EXTENSION, JUNE 1992
    9         ID            BOYLE ENGINEERING, RUNWAY 7L-25R EXTENSION, MARCH 1993
   10         ID       PBS&J ENGINEERING,TERMINAL "D" SITEWORK AND TAXIWAY, JULY 2000
   11         ID
   12         ID       ********************************************************************
   13         ID       * WASH NAME/          AREA          D.A.R.F.          RATIO         *
   14         ID       * CONCEN. PT.         SQ. MI.                         NUMBER        *
   15         ID       * ----------------------------------------------------------------*
   16         ID       * 100-YEAR             0.0000         1.000              1
   17         ID       * SPENCER POND          .9376         0.971              2          *
   18         ID       * EAST AIRPORT POND    1.9542         0.932              3          *
   19         ID       * RAWHIDE CHANNEL      2.8953         0.921              4          *
   20         ID       * 10-YEAR                             0.570              5
   21         ID       ********************************************************************
   22         ID
   23         ID
   24         IT       3       0       0     300
   25         IN       5       0       0
   26         IO       5       0       0
   27         JR     PREC   0.971    .971    .932    .921   0.570

   28         KK       B1 DRAINAGE AREA B1
   29         KM       ********************************************************************
   30         KM        THE FOLLOWING DATA WAS DEVLOPED BY PENTACORE ENGINEERING, FOR THE
   31         KM                    PARADISE ROAD EXTENSION, JUNE 1992
   32         KM       ********************************************************************
   33         BA     .0173
   34         PC      .000   0.020    .057    .070    .087    .108    .124    .130    .130    .130
   35         PC      .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   36         PC      .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   37         PC      .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   38         PC      .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
   39         PC      .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
   40         PC      .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   41         PC      .998    .999   1.00
   42         PB     2.77
   43         LS        0      95
   44         UD      .12

   45         KK       R1 ROUTE FLOWS NORTH IN 30" SD
   46         RK      300    .006    .013       0    CIRC     2.5
```

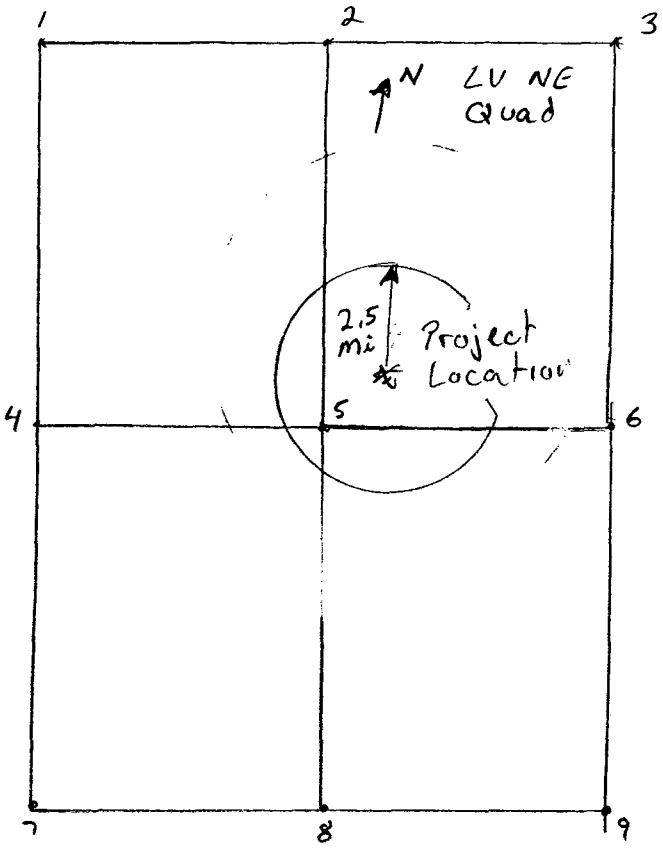


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   47         KK       B2 DRAINAGE AREA B2
   48         BA     .0581
   49         LS        0      95
   50         UD      .16

   51         KK       C1 COMBINE FLOWS IN 48" SD CP#1
   52         HC        2

   53         KK     DIV2 DIVERT FLOWS TO DETENTION BASIN 1 IN 48" SD
   54         DT       D2
   55         DI        0      50     100     200     400    1000
   56         DQ        0      50     100     100     100     100

   57         KK       A1 DRAINAGE AREA A1
   58         BA     .0302
   59         LS        0      95
   60         UD      .24

   61         KK       C2 COMBINE FLOWS AT CP#2
   62         HC        2
```

NGVD29 to NAVD88 Datum Conversion

The Louis Berger Group, Inc.

BY GSD DATE 7-1-03 SHEET NO. 1 OF 1
CHKD. BY ___ DATE ___ PROJECT 879
SUBJECT Flamingo Wash Datum Conversion



Quad Name	Corner (#)	Latitude	Longitude	NGVD → NAVD Conversion
Las Vegas NE	SW (5)	36° 07' 30"	115° 07' 30"	+ 2.14 feet
	NW (2)	36° 15' 00"	115° 07' 30"	+ 2.23 feet
	NE (3)	36° 15' 0"	115° 0" 0"	+ 2.36 feet
	SE (6)	36° 07' 30"	115° 0' 0"	+ 2.30 feet

Average Conversion Factor = (2.14 + 2.23 + 2.36 + 2.30) / 4 = +2.26

Maximum Offset = 2.26 - 2.14 = 0.12 feet

0.12 < 0.25 ∴ Multiple Conversion is NOT Required

APPENDIX D
As-Built Plans

As-built plans of the Boulder Highway Bridge over the Flamingo Wash

AS-BUILTS

CONTRACT 3022

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	1

INDEX OF SHEETS

GENERAL NOTE:
SEE BOOK OF STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION JANUARY 1999 EDITION AND ERRATA 1,2,3

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

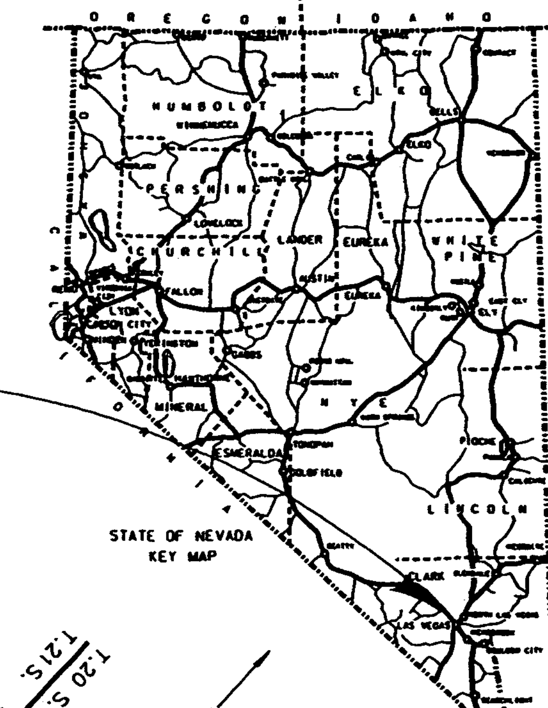
CONSTRUCTION PLANS

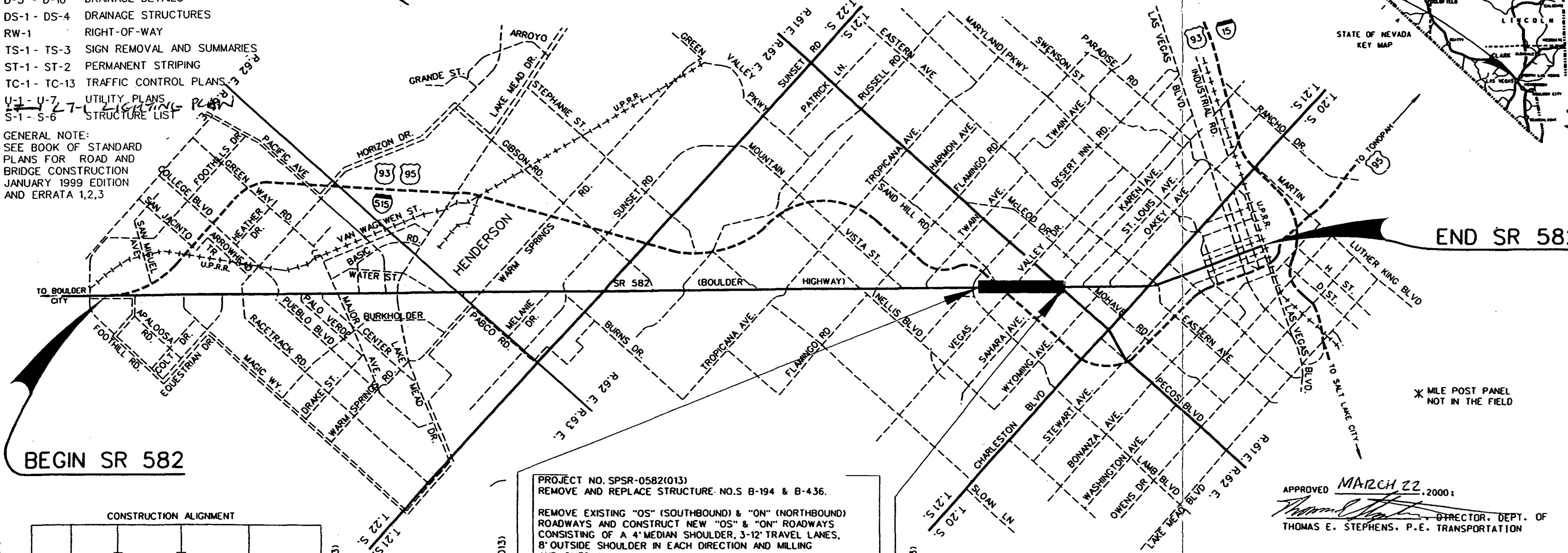
CLARK COUNTY

SR582 FROM JCT. OF US 93/95 NORTHERLY TO SAHARA AVENUE

PROJECT SPSR-0582(013)

SR582-CL 27.77* TO 28.37*





* MILE POST PANEL NOT IN THE FIELD

CONSTRUCTION ALIGNMENT

BEGIN PROJECT SPSR-0582(013)
BEGIN MILLING AND OVERLAY
"OS" 152+50
"ON" 154+00

END MILLING AND OVERLAY
BEGIN CONSTRUCTION
"OS" 165+00
"ON" 165+20

"ON" 167+40.29
STRUCTURE B-436
"ON" 168+19.04

"OS" 167+28.58
STRUCTURE B-194
"OS" 168+07.33

END CONSTRUCTION
BEGIN MILLING AND OVERLAY
"OS" 171+80
"ON" 172+50

"OS" 184+00
"ON" 184+00
END MILLING & OVERLAY
END PROJECT SPSR-0582(013)

CONTRACT NO. 2266 BACK
BEGIN PROJECT SPSR-0582(013)
"OS" 152+50
"ON" 154+00

PROJECT NO. SPSR-0582(013)
REMOVE AND REPLACE STRUCTURE NO.S B-194 & B-436.

REMOVE EXISTING "OS" (SOUTHBOUND) & "ON" (NORTHBOUND) ROADWAYS AND CONSTRUCT NEW "OS" & "ON" ROADWAYS CONSISTING OF A 4' MEDIAN SHOULDER, 3-12' TRAVEL LANES, 8' OUTSIDE SHOULDER IN EACH DIRECTION AND MILLING AND OVERLAY.

CONSTRUCT CONCRETE CHANNEL INVERT SLAB AND WALLS.

REMOVE EXISTING MEDIAN CONCRETE CHANNEL LINING AND REINFORCED CONCRETE BOX CULVERT.

CONSTRUCT NEW MULTI-CELL REINFORCED BOX CULVERT.

LENGTH OF CONSTRUCTION ON SOUTHBOUND LANES - 0.60 MILE
LENGTH OF CONSTRUCTION ON NORTHBOUND LANES - 0.57 MILE

LENGTH OF ROUTE SECTION 17.74 MILES

TO BE CONTRACTED

"OS" 184+00
"ON" 184+00
END PROJECT SPSR-0582(013)
CONTRACT NO. 1444 AHEAD

0 1 2 4
STATUTE MILES

RESIDENT ENGINEER: ERNEST PATTON
: JEFF SHAPIRO
DATE STARTED: JULY 10, 2000
DATE COMPLETE: JUNE 12, 2001

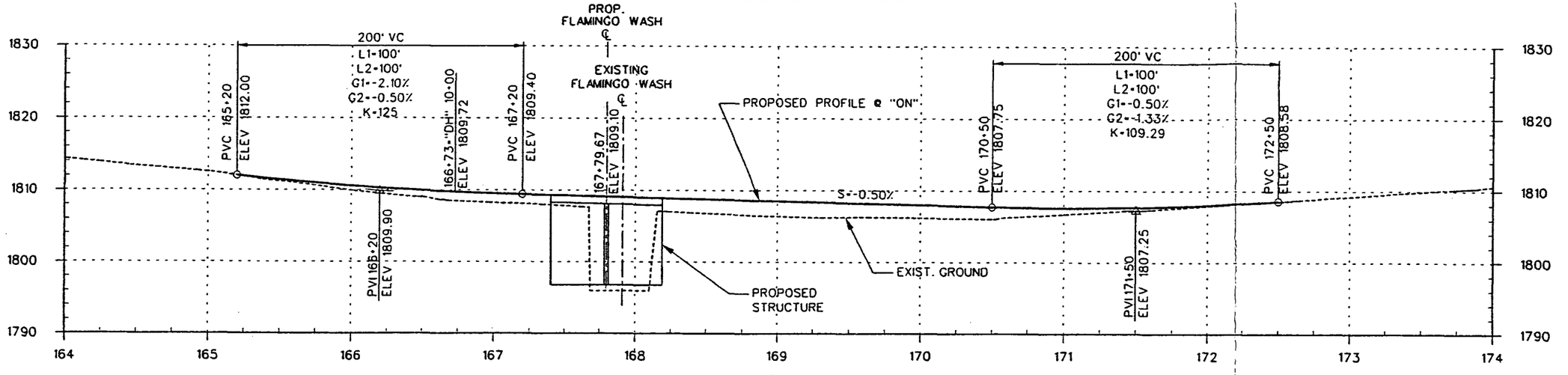
APPROVED MARCH 22, 2000;
THOMAS E. STEPHENS, P.E. DIRECTOR, DEPT. OF TRANSPORTATION

GOVERNOR KENNY C. GUINN
CHAIRMAN, TRANSPORTATION BOARD

PROFESSIONAL ENGINEER STATE OF NEVADA
CHARLES E. JOSEPH
CIVIL
No. 12258

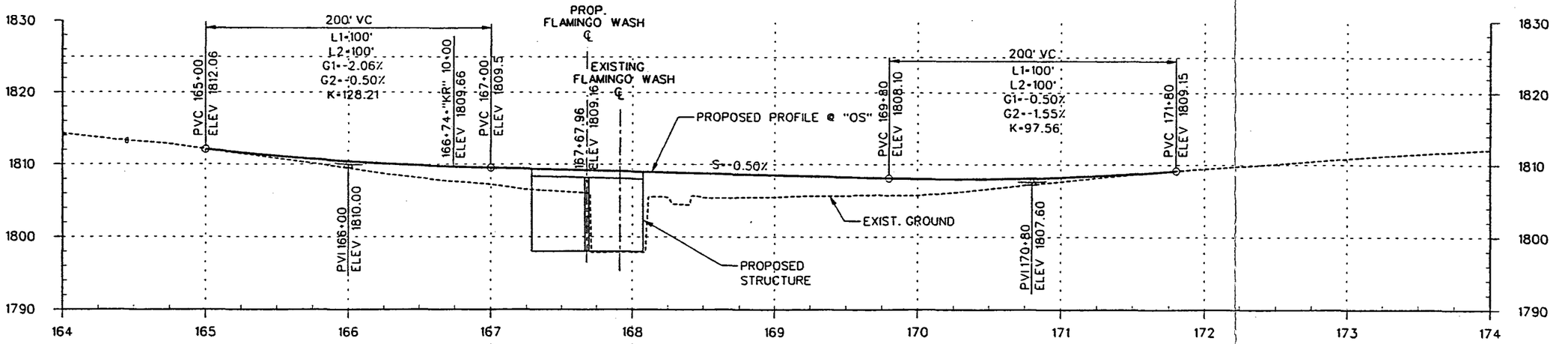
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHE NO
9	NEVADA	SPSR-0582(013)	CLARK	9

NORTHBOUND SR 582

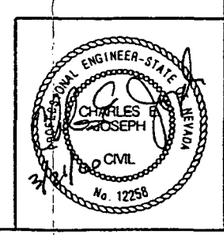


"ON"

SOUTHBOUND SR 582



"OS"



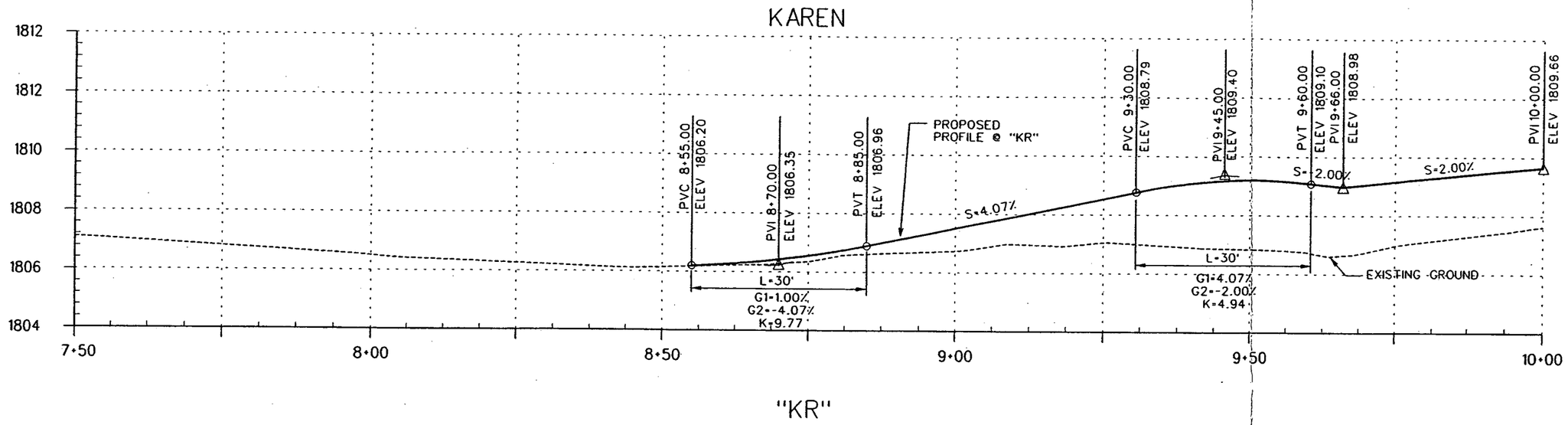
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

BOULDER HIGHWAY (SR 582) PROFILES

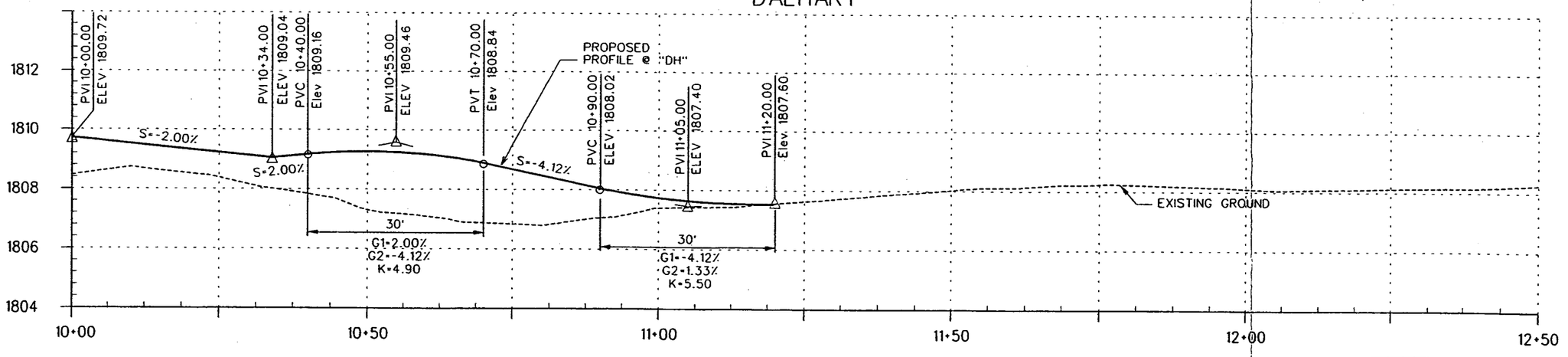
PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2316
FAX (702) 435-8412

DRAWN BY: GP
DESIGNED BY: MM
CHECKED BY: RF
APPROVED BY: JS

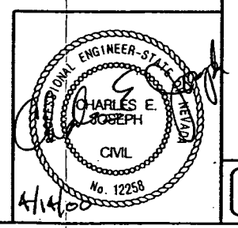
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	10



"KR"



"DH"



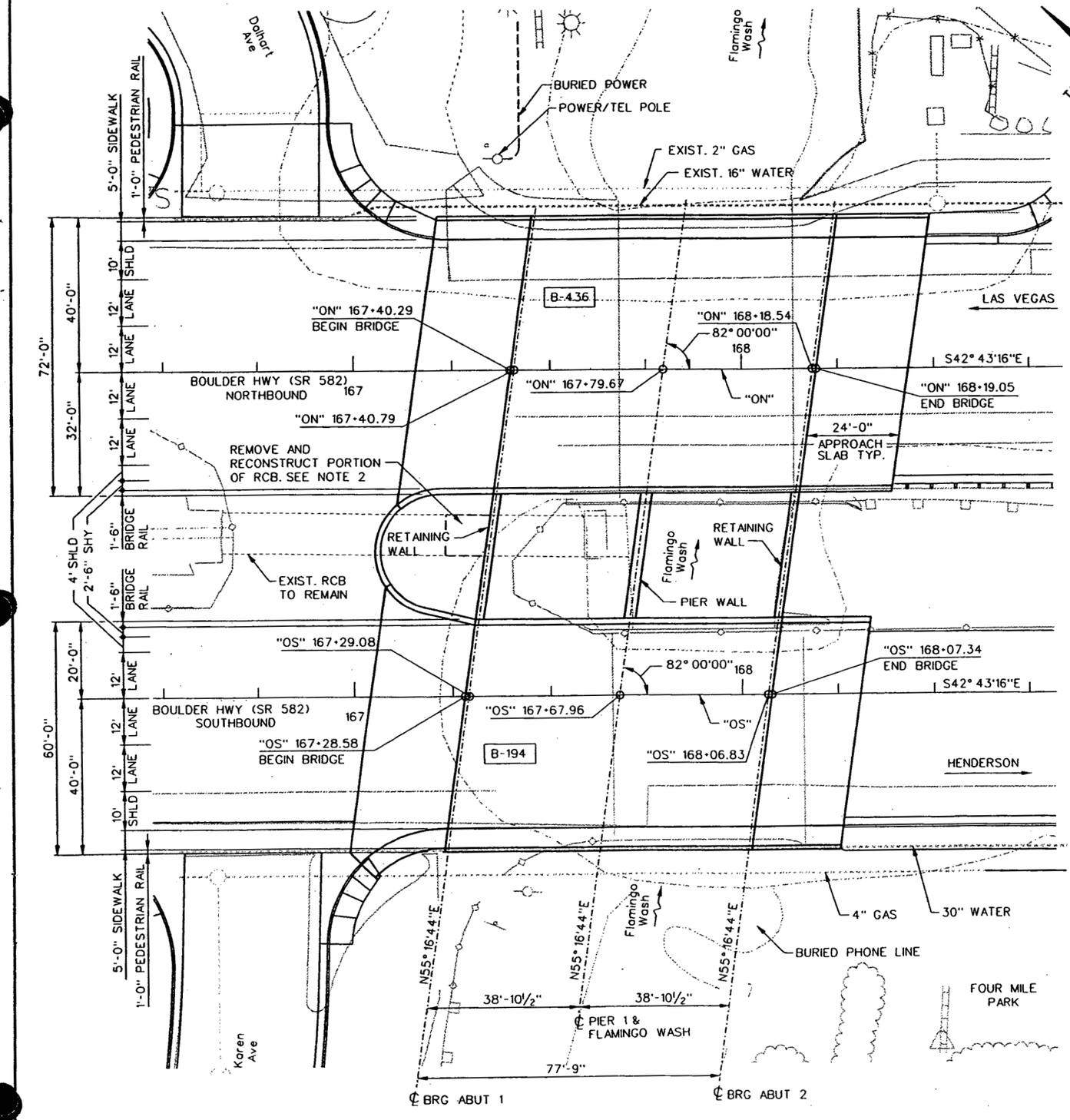
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

KAREN AND DALHART PROFILES

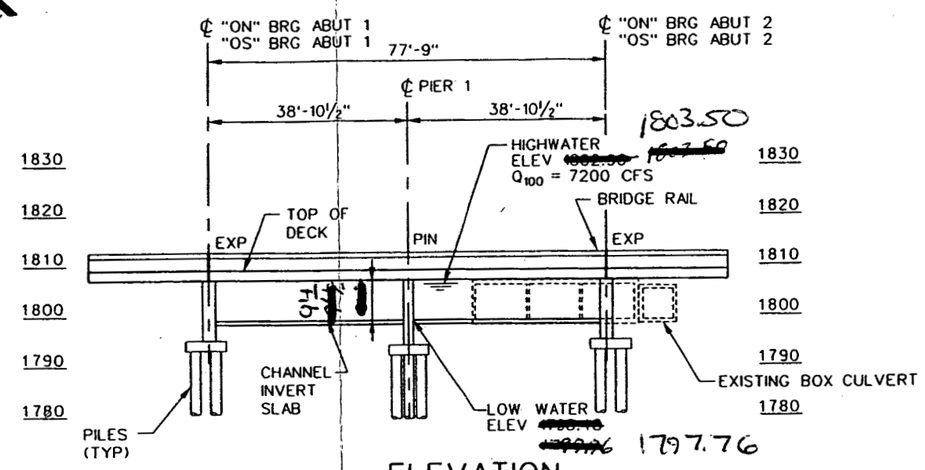
PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: GPR
DESIGNED BY: MM
CHECKED BY: RF
APPROVED BY: JJC

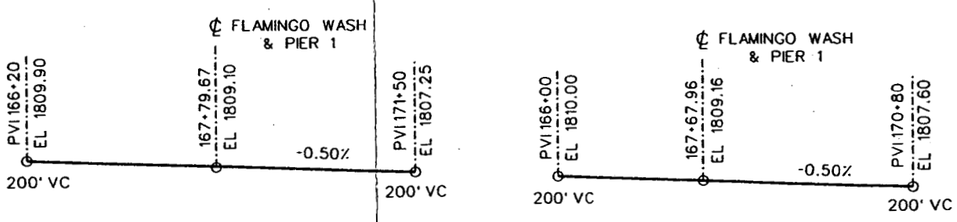
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-1



PLAN
(PRECAST PRESTRESSED SLAB BRIDGES)



ELEVATION



"ON" SR 582 NORTHBOUND

"OS" SR 582 SOUTHBOUND

PROFILE LINE SR 582

NOTES:
1. SEE SHEETS RF-1 - RF-9 FOR EXISTING CONSTRUCTION.
2. ~~REMOVE AND RECONSTRUCT 20' OF EXISTING 12' X 3' RCB. RECONSTRUCT PER NDOT STD. PLAN B-20.1.2~~

(2) Change Note 2 to read "Remove 65' +/- of the existing 12' X 3' RCB. Reconstruct 20' +/- of new 12' X 3' RCB per Standard Plan Sheet B-20.1.2 (12' X 4' RCB). Payment for new portion of RCB included in bridge quantities.

ORIGINAL CONTRACTS

BRIDGE B-194 - CONTRACT #235,273,1444
BRIDGE B-436 - CONTRACT #637,1444,1566

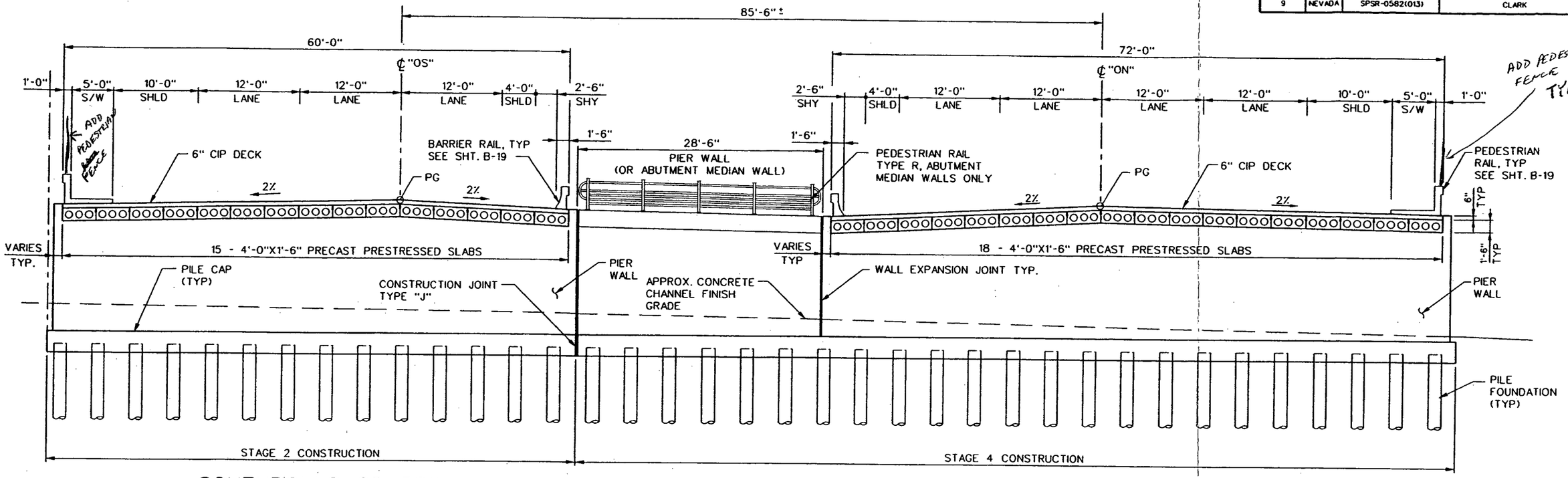
PROFESSIONAL ENGINEER — CHARLES RAY JOSEPH — STATE OF NEVADA — CIVIL — No. 12258

BOULDER HIGHWAY PARKWAY
BRIDGE REPLACEMENTS
B-194 & B-436

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

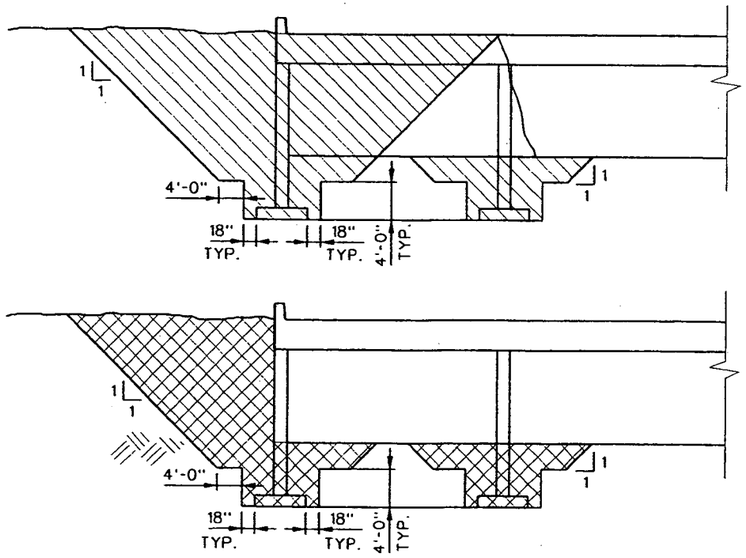
DRAWN BY: GPR
DESIGNED BY: CEJ
CHECKED BY: CDA
APPROVED BY: JJC

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-2



SOUTHBOUND SR 582
(LOOKING NORTH)

NORTHBOUND SR 582
(LOOKING NORTH)



LIMITS OF EXCAVATION AND BACKFILL

LEGEND:

STRUCTURAL EXCAVATION

GRANULAR BACKFILL

1. SEE SHEETS RF-1 - RF-9 FOR EXISTING STRUCTURES TO BE REMOVED.
2. SEE SHEET B-3 FOR PILE LAYOUT.

PROFESSIONAL ENGINEER-STATE OF NEVADA
CHARLES E. JOSEPH
CIVIL
No. 12258
3/14/08

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

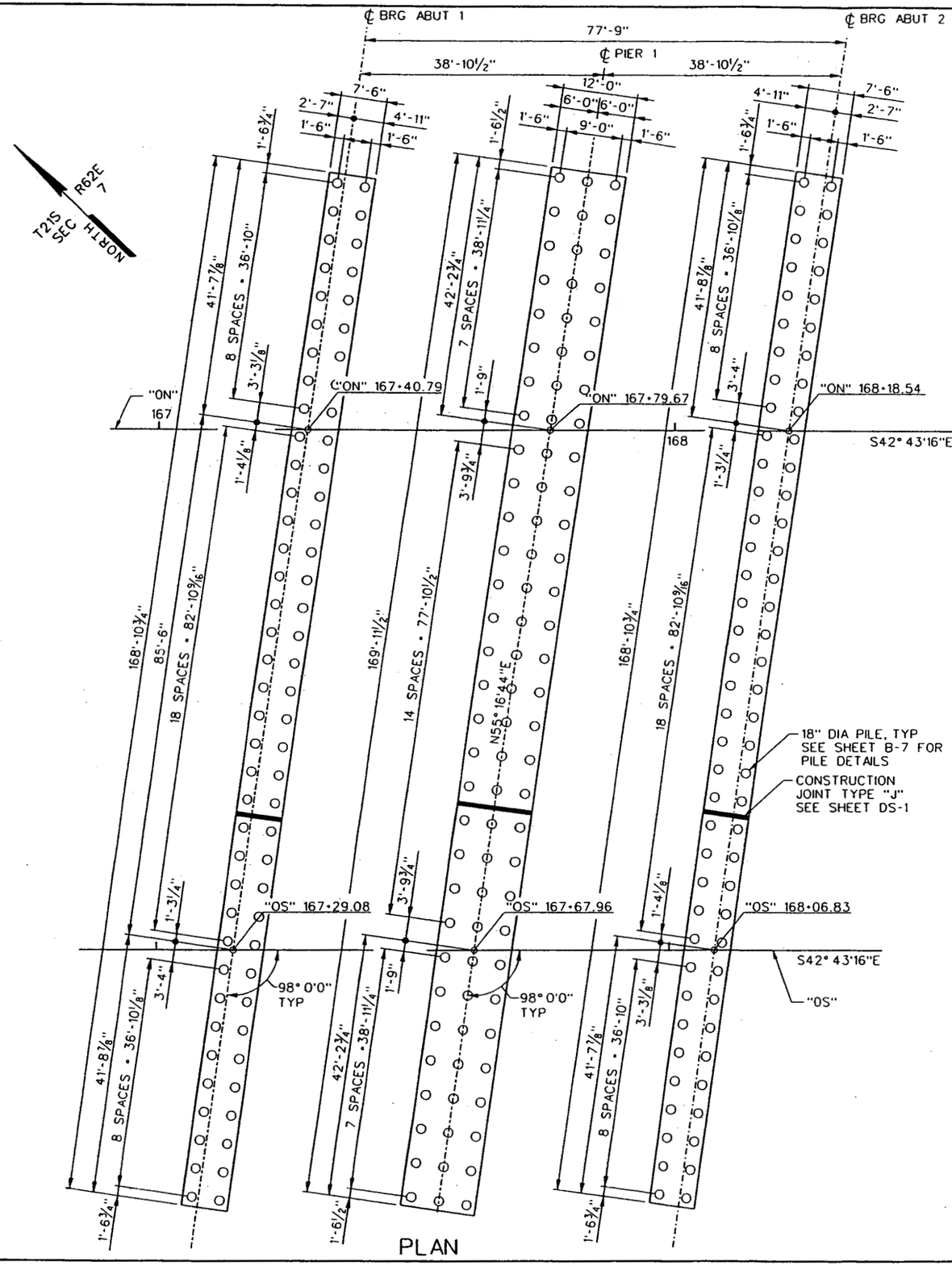
TYPICAL SECTION

B-194 & B-436

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: CPR
DESIGNED BY: MJS
CHECKED BY: DRD
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO
9	NEVADA	SPSR-0582(013)	CLARK	B-



PLAN

GENERAL NOTES:

1. DESIGN SPECIFICATIONS: AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES," 1996, INCLUDING INTERIMS THROUGH 1998. LOAD FACTOR METHOD.

2. CONTRACT SPECIFICATIONS: STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 1986" EXCEPT AS NOTED BELOW AND IN SPECIAL PROVISIONS FOR THIS CONTRACT.

3. LIVE LOADS: AASHTO STANDARD HS25-44 OR ALTERNATE MILITARY LOADING. OVERLOAD DESIGN BASE ON CALIFORNIA "STANDARD PERMIT DESIGN VEHICLES" (MAXIMUM OVERLOAD P-13 TRUCK).

4. SEISMIC LOAD: EFFECTIVE PEAK ACCELERATION COEFFICIENT=0.15g. ATC-6 RESPONSE SPECTRA WITH TYPE III SOIL. DETAILED TO AASHTO SEISMIC PERFORMANCE CATEGORY C REQUIREMENTS.

5. OVERLAY: PROVISION IS INCLUDED FOR FUTURE 3" OVERLAY AT 150 PCF.

6. CONCRETE: CLASS A MODIFIED (MAJOR) f'c=4000 psi, UNLESS NOTED OTHERWISE.

7. REINFORCING STEEL: ALL REINFORCING SHALL BE ASTM A706, GRADE 60. DIMENSIONS RELATING TO BAR SPACING ARE CENTER TO CENTER. BENDING DIMENSIONS ARE FROM OUT TO OUT OF THE BARS. BAR SIZES THREE (3) TO NINE (9) ARE INDICATED BY THE FIRST NUMBER IN THE BAR MARK, TEN (10) AND LARGER BY THE FIRST TWO NUMBERS. THE LENGTH OF BAR SIZES FOUR (4) AND FIVE (5) WHICH ARE CONSIDERED BARS TO CONTROL TEMPERATURE, SHRINKAGE, AND DISTRIBUTION STRESSES BY THE ENGINEER MAY BE ADJUSTED BY THE CONTRACTOR UPON CONCURRENCE AND APPROVAL OF THE BRIDGE ENGINEER.

8. FOUNDATION:

TYPE	DESIGN CAPACITY	ULTIMATE CAPACITY
1'-6" DIA DRIVEN STEEL PIPE PILES	65 KIPS	195 KIPS

DESIGN TYPE - COMBINATION
MAXIMUM ALLOWABLE DRIVING STRESS = 0.9 Fy

A TOTAL OF THREE (3) DYNAMIC PILE TESTS SHALL BE PERFORMED ON THE FIRST DRIVEN PILE AT THE FOLLOWING LOCATIONS:
A. PIER 1 OF BRIDGE B-194
B. ABUTMENT 1 ON BRIDGE B-194
C. ABUTMENT 2 ON BRIDGE B-436
EACH DYNAMICALLY TESTED PILE SHALL BE 4 FEET LONGER THAN THE STANDARD PILE LENGTH.

9. CAMBER SHALL BE AS SHOWN IN THE PLANS.

10. CONSTRUCTION TYPE CODE: X080

QUANTITIES:

ITEM NUMBER	ITEM	UNIT	TOTAL
202-0040	REMOVAL OF REINFORCED CONCRETE BOX CULVERT	LS	1
206-0500	STRUCTURE EXCAVATION	CU. YD.	1116
207-0504	GRANULAR BACKFILL	CU. YD.	1232
502-0065	LAMINATED ELASTOMERIC BEARING PAD	EACH	132
502-0828	CLASS A CONCRETE MODIFIED (MAJOR)	CU. YD.	1499
502-0910	EXPANSION JOINT SEAL	LF	271
502-1008	GROOVE CONCRETE DECK SLAB	SQ. YD	1646
502-1010	BRIDGE DECK CURING COMPOUND	GALLON	84
503-0556	40' PRECAST CONCRETE MEMBERS	EA	66
505-0500	REINFORCING STEEL	POUND	604,198
506-0500	STRUCTURAL STEEL	LB	5300 [illegible]
506-0580	PEDESTRIAN RAIL, TYPE R	LF	57
508-0016	DRIVE STEEL SHELL FOR PILES	EA	241
508-0020	REDRIVE PILES	FORCE ACCOUNT	--
508-0040	SPLICES	EA	25
508-0540	FURNISH STEEL SHELL FOR PILES	LF	13,026
508-0052	DYNAMIC PILE LOAD TEST	FORCE ACCOUNT	--

PROFESSIONAL ENGINEER - STATE OF NEVADA
CHARLES JOSEPH
CIVIL
No. 12258
4/14/00

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

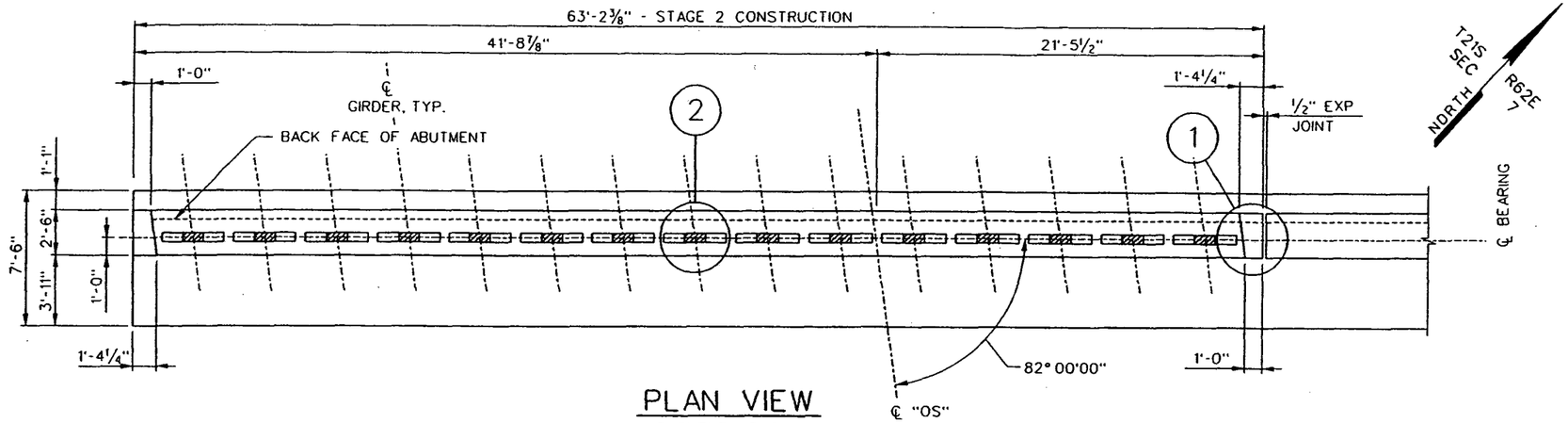
GEOMETRICS, GENERAL NOTES & QUANTITIES

B-194 & B-436

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

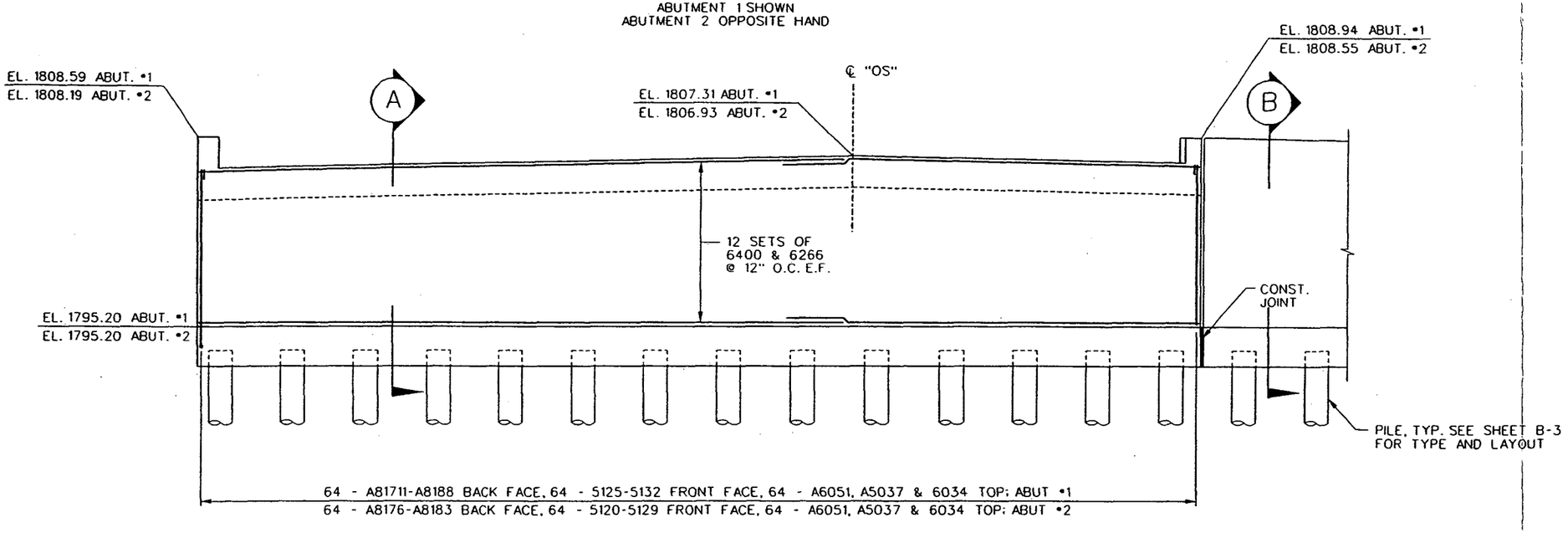
DRAWN BY: RH
DESIGNED BY: MJS
CHECKED BY: DRD
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-4

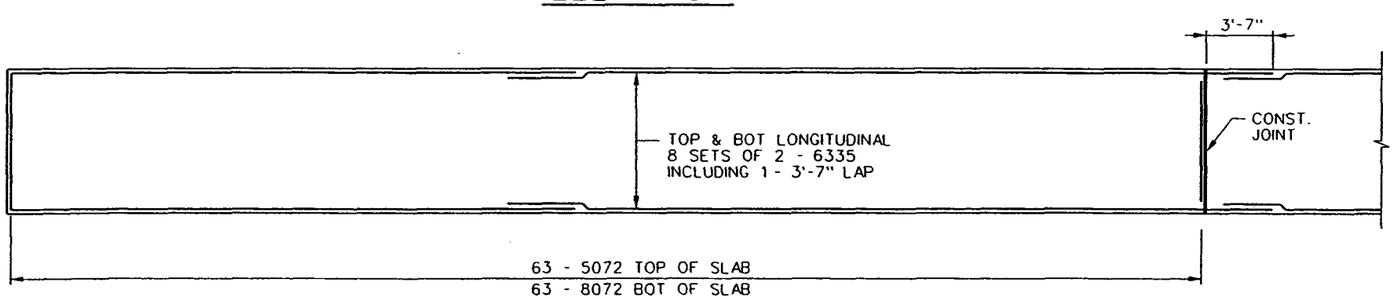


PLAN VIEW

ABUTMENT 1 SHOWN
ABUTMENT 2 OPPOSITE HAND



ELEVATION



FOOTING PLAN

NOTES:

1. FOR DETAILS (1) AND (2) SEE SHEET B-5.
2. SEE SHEET B-9 FOR EXPANSION JOINT DETAILS.
3. PLACE SHEAR BLOCKS AFTER PRECAST SLABS HAVE BEEN PLACED AND TIE RODS TENSIONED.
4. SEE SHEET B-6 FOR SECTIONS A AND B.

REGISTERED PROFESSIONAL ENGINEER-STATE OF NEVADA
CHARLES F. JOSEPH
CIVIL
No. 12258
4/14/00

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

"OS" ABUTMENT PLAN AND ELEVATION

B-194

PARSONS TRANSPORTATION GROUP
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DRAWN BY: GPR
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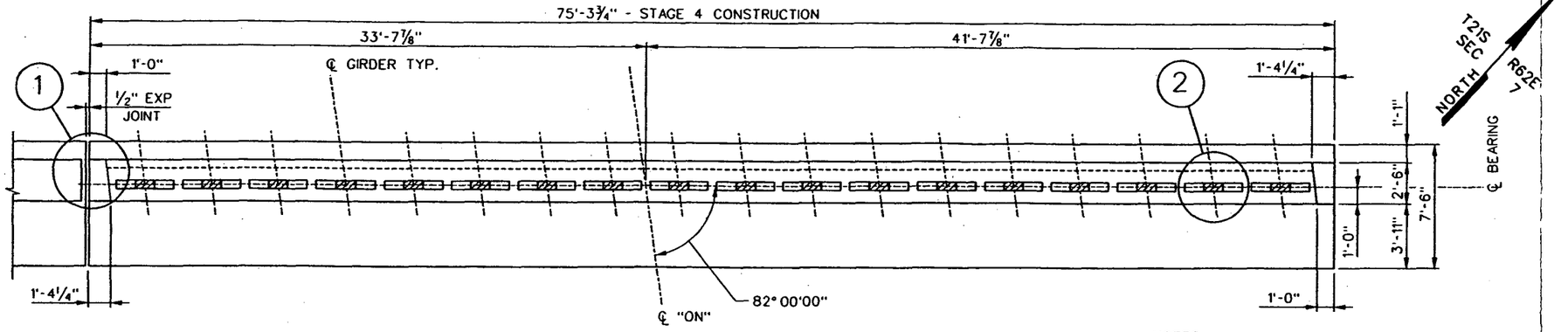
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-5

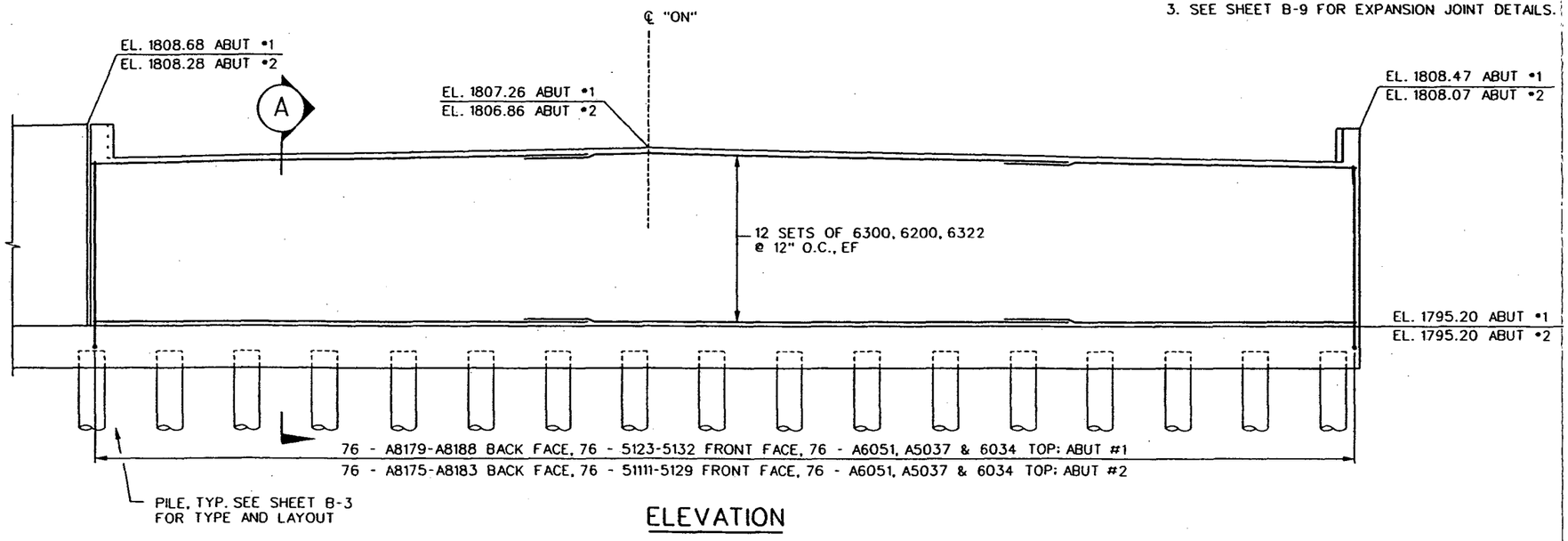


PLAN VIEW

ABUTMENT 1 SHOWN
ABUTMENT 2 SIMILAR

NOTES:

1. SEE SHEET B-6 FOR SECTION A.
2. PLACE SHEAR BLOCS AFTER PRECAST SLABS HAVE BEEN PLACED AND TIE RODS TENSIONED.
3. SEE SHEET B-9 FOR EXPANSION JOINT DETAILS.



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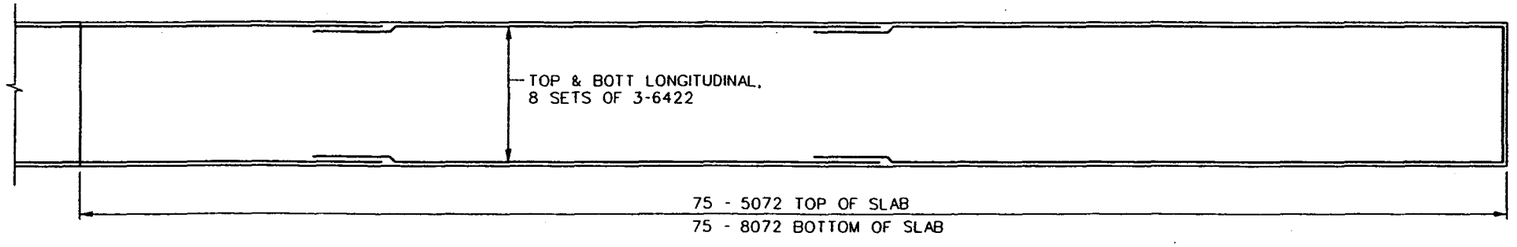
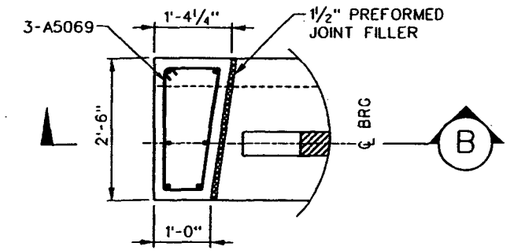
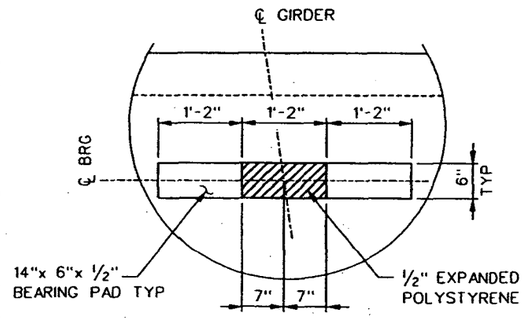


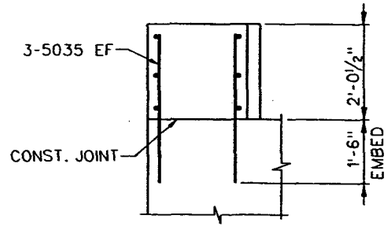
FOOTING PLAN



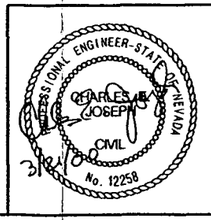
DETAIL 1



DETAIL 2



SECTION B



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

"ON" ABUTMENT PLAN AND ELEVATION

B-436

PARSONS TRANSPORTATION GROUP
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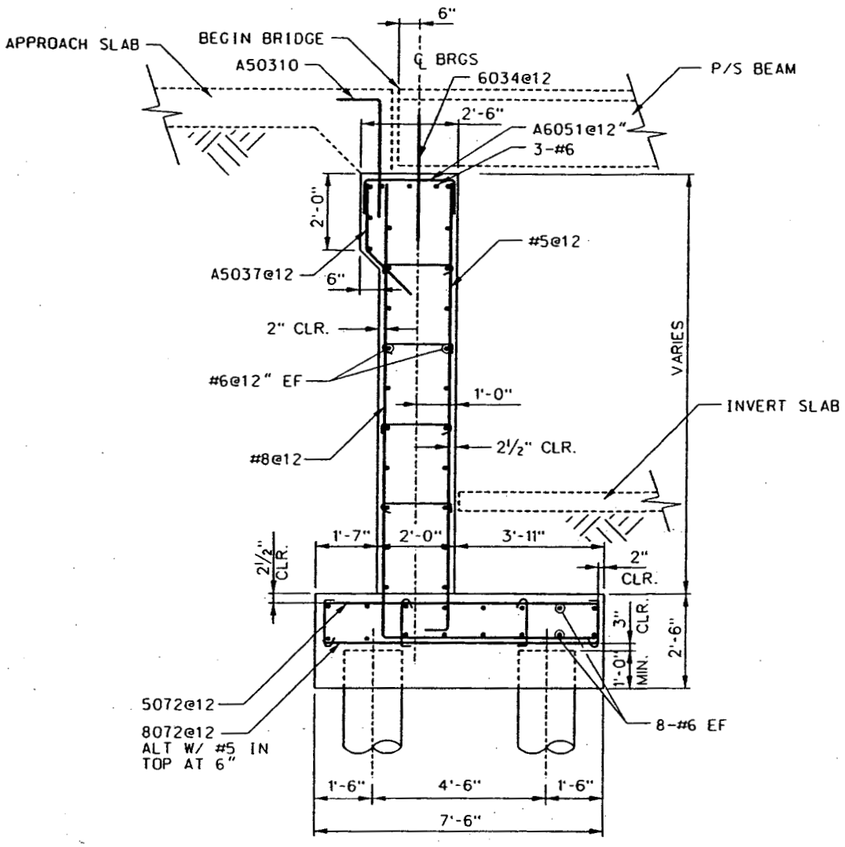
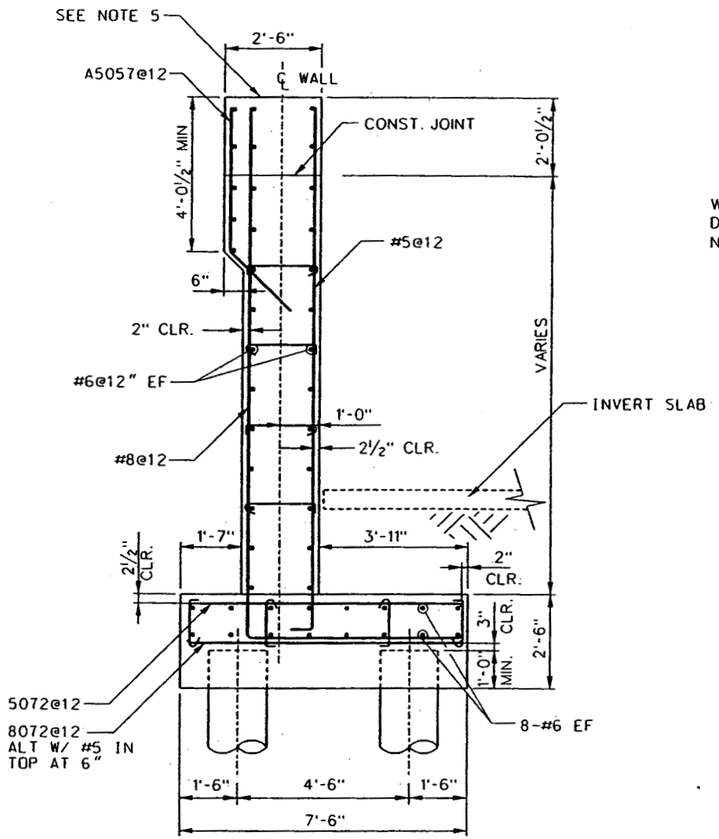
DESIGNED BY: MJS
CHECKED BY: ORD
APPROVED BY: CEJ

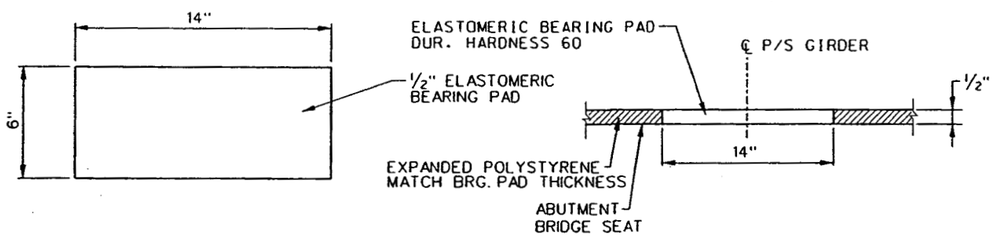
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-4



SECTION (A)
FOR PILE LAYOUT, SEE B-3



SECTION (B)
FOR PILE LAYOUT, SEE B-3

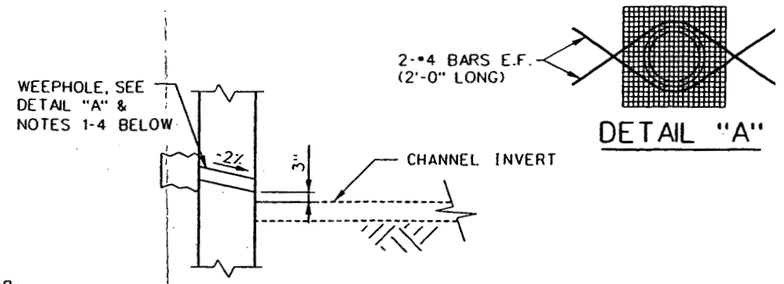


PLAN ELEVATION

BEARING PAD DETAILS

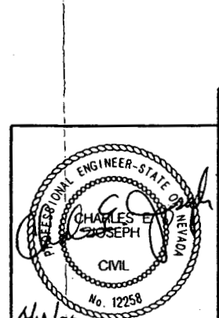
BEARING PAD NOTES

1. BEARING PADS SHALL BE ORIENTED AS SHOWN ON SHEETS B-4 & B-5.
2. ELASTOMERIC BEARING PADS SHALL BE GLUED TO THE ABUTMENT USING A SINGLE COMPONENT POLYURETHANE ADHESIVE MEETING ASTM D4070 STANDARDS.
3. SEE DRAWINGS B-4, B-5, B-9 AND B-10 FOR BEARING PAD LAYOUTS.



WEEP HOLE DRAINAGE DETAIL

1. 4" DIAMETER DRAINS WITH HORIZONTAL SPACING OF 15'± CENTER TO CENTER. THE DRAINS MUST BE LOCATED 3"± ABOVE CHANNEL INVERT.
2. 6" SQUARE ALUMINUM OR GALVANIZED STEEL WIRE MESH HARDWARE CLOTH WITH MINIMUM WIRE DIA. OF 0.03".
3. $2ft^3$ OF NDOT TYPE 2 DRAIN BACKFILL, ENCAPSULATED IN A GEOTEXTILE FABRIC SECURELY TIED. THE GEOTEXTILE FABIC MUST:
   a) MEET AT LEAST CLASS 2 STRENGTH REQUIREMENTS ACCORDING TO AASHTO M288 TEST METHOD.
   b) HAVE AN AOS NO GREATER THAN U.S. SIEVE NO. 40.
   c) HAVE A PERMITIVITY OF AT LEAST 0.5 $SEC.^{-1}$
   AMACO 2016, FILTERWEAVE 500 AND GEOTEX 601 MEET THE ABOVE REQUIREMENTS.
4. COST OF WEEP HOLES COMPLETE AND IN PLACE SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE THEREFORE.
5. SEE NDOT STANDARD DRAWING B-25.1.5 FOR RAIL ANCHORAGE DETAILS.



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

ABUTMENT DETAILS

B-194 & B-436

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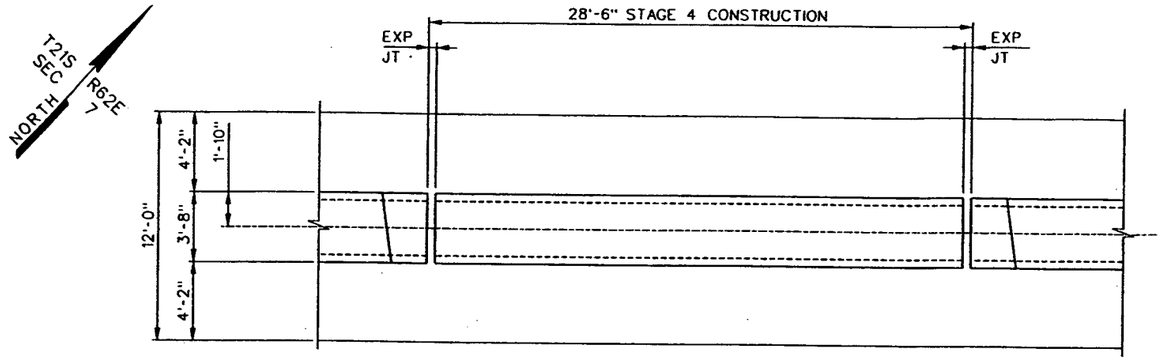
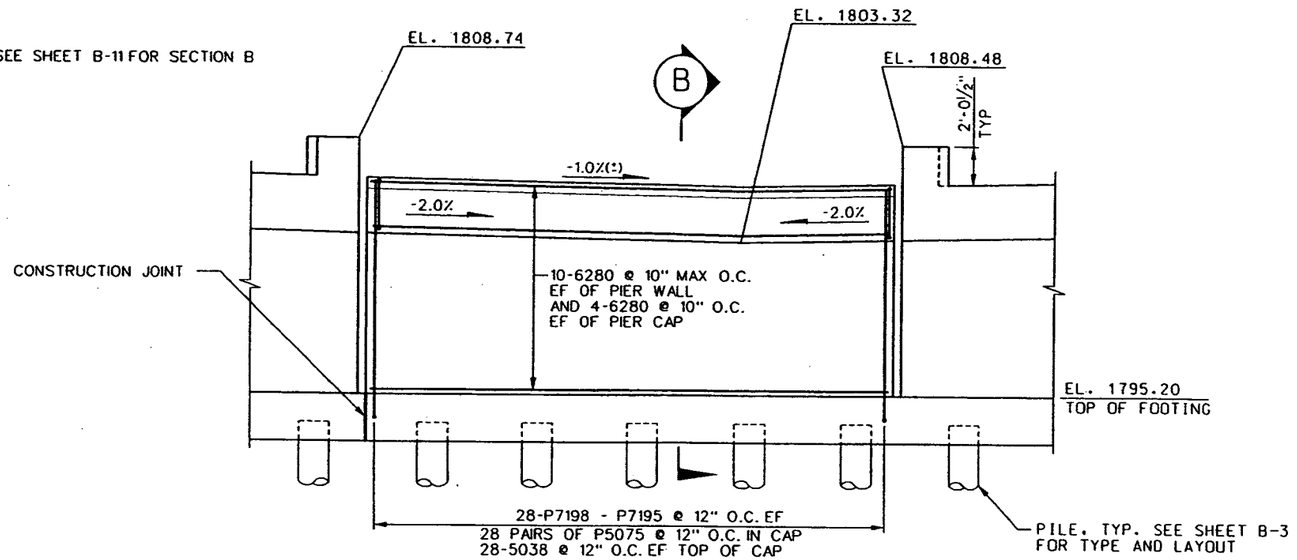
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-7

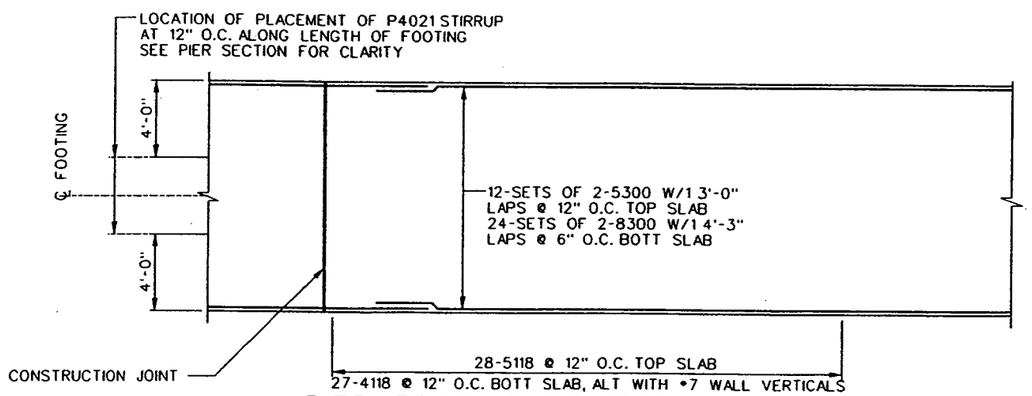


PLAN

NOTE: SEE SHEET B-11 FOR SECTION B

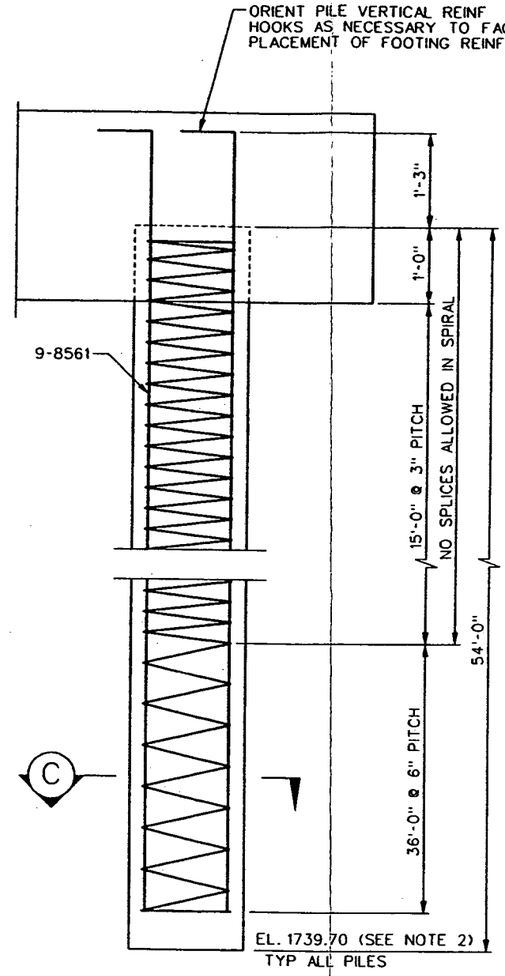


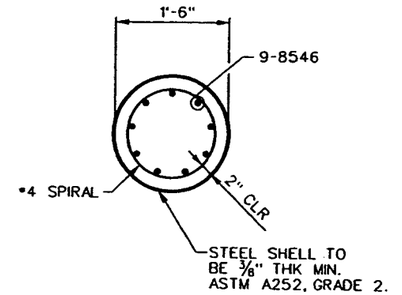
ELEVATION



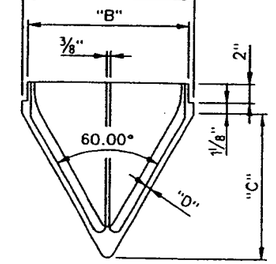
PIER FOOTING REINFORCEMENT PLAN

NTS





SECTION C

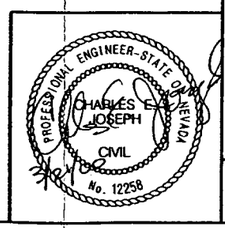


CONCRETE FILLED DRIVEN STEEL PIPE PILE

NOTES:
1. FOR ADDITIONAL NOTES AND DETAILS SEE NDOT STD. PLAN B-23.1.3
2. MINIMUM TIP ELEVATION = 1745.70 TO BE USED ONLY IF APPROVED BY THE GEOTECHNICAL ENGINEER, AND AFTER COMPLETION OF THE PILE DYNAMIC LOAD TESTS.

PIPE OUTER DIAMETER (INCHES)	"A" (INCHES)	"B" (INCHES)	"C" (INCHES)	"D" (INCHES)
18	18 1/8	17	15 1/4	5/8

CONICAL DRIVING TIP
(SECTION SHOWN)



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

PIER WALL DETAILS

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2115
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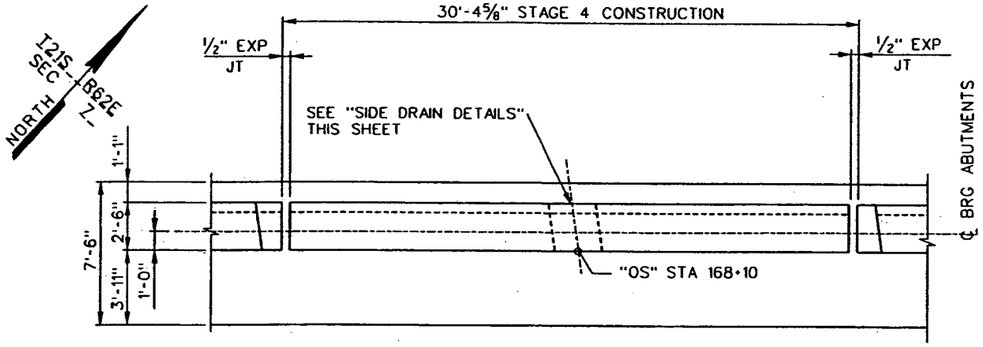
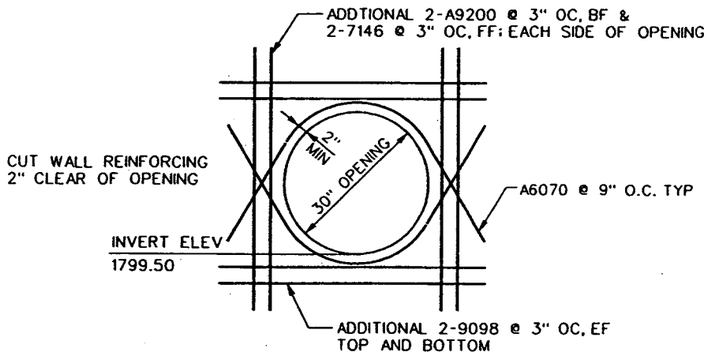
DESIGNED BY: MJS
CHECKED BY: DRD
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-8



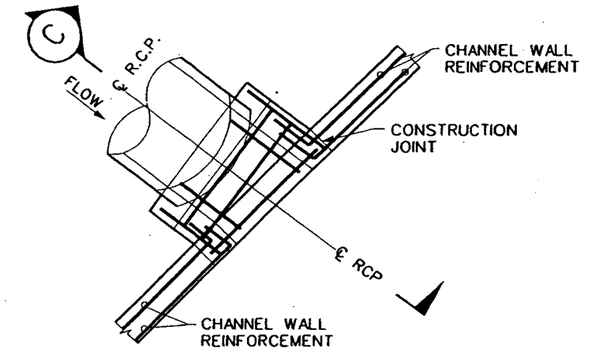
PLAN

ABUTMENT 2 SHOWN

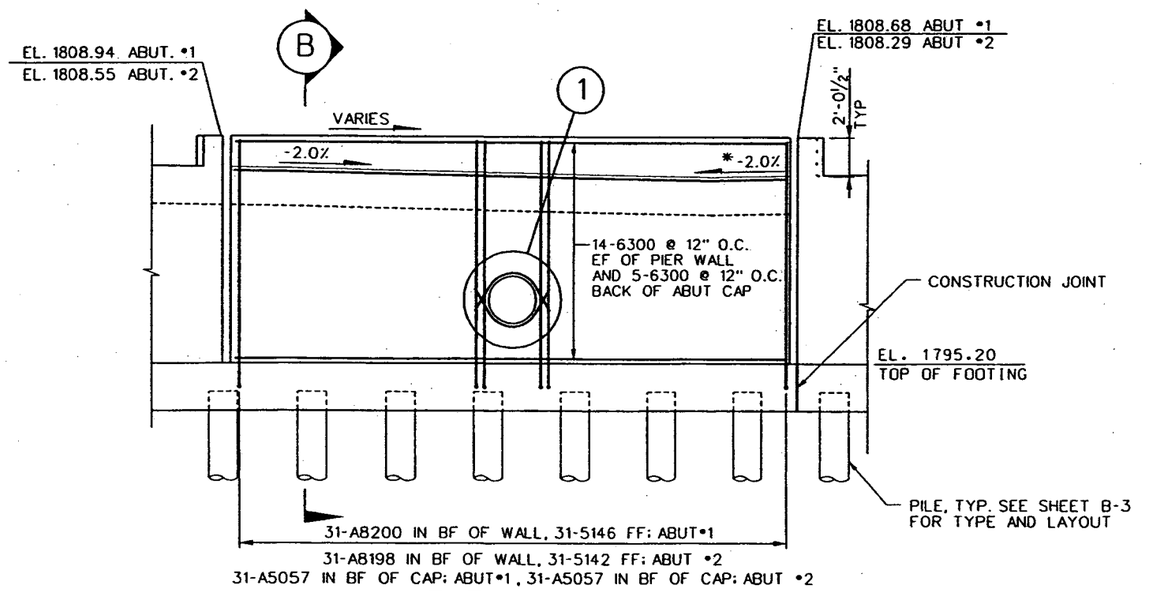


DETAIL (1)

ABUT •2 ONLY

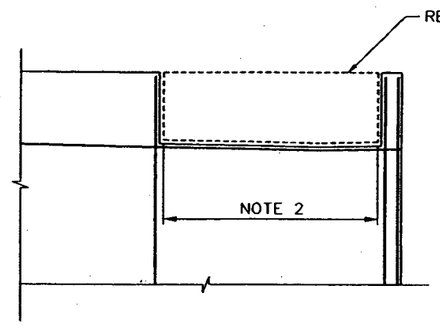


PLAN



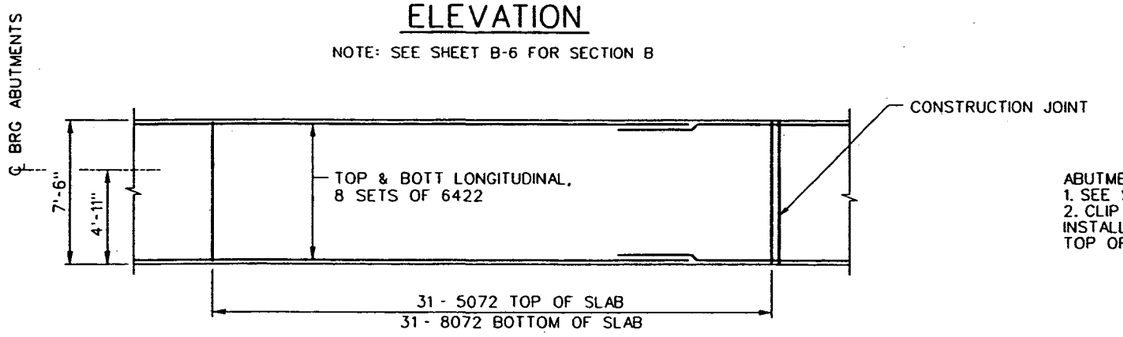
ELEVATION

NOTE: SEE SHEET B-6 FOR SECTION B



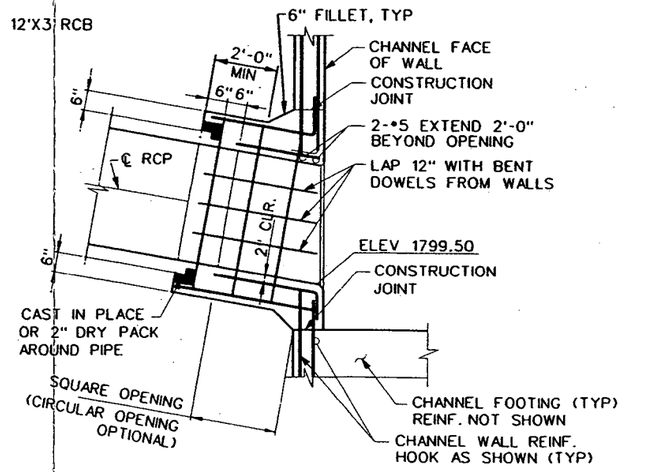
PARTIAL ELEVATION

ABUTMENT 1



FOOTING PLAN

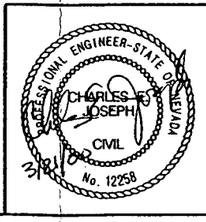
ABUTMENT NOTES:
1. SEE SHEET B-6 FOR SECTION B.
2. CLIP WALL REINFORCING @ OPENING. INSTALL MECHANICAL COUPLERS @ TOP OF REINFORCING FOR FUTURE SPLICES.



SECTION C-C

SIDE DRAIN DETAILS

NOTES:
1. OPENINGS IN CHANNEL WALL SHALL BE CHAMFERED ¾" UNLESS OTHERWISE NOTED.
2. CUT REINFORCEMENT 2" FROM OPENING IN CHANNEL WALL EXCEPT WHEN HOOK OR BEND IS REQUIRED.
3. "t" = WALL THICKNESS OF PIPE.
4. ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2" CLEARANCE UNLESS OTHERWISE NOTED.
5. BAR SPLICES SHALL BE IN ACCORDANCE WITH THE LAP SPLICE TABLE ON SHEET S-1 UNLESS OTHERWISE NOTED.
6. LOCATION OF ALL SPLICES SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
7. ALL REBARS •5 @ 12" UNLESS OTHERWISE NOTED.



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

ABUTMENT MEDIAN WALL DETAILS

PARSONS TRANSPORTATION GROUP
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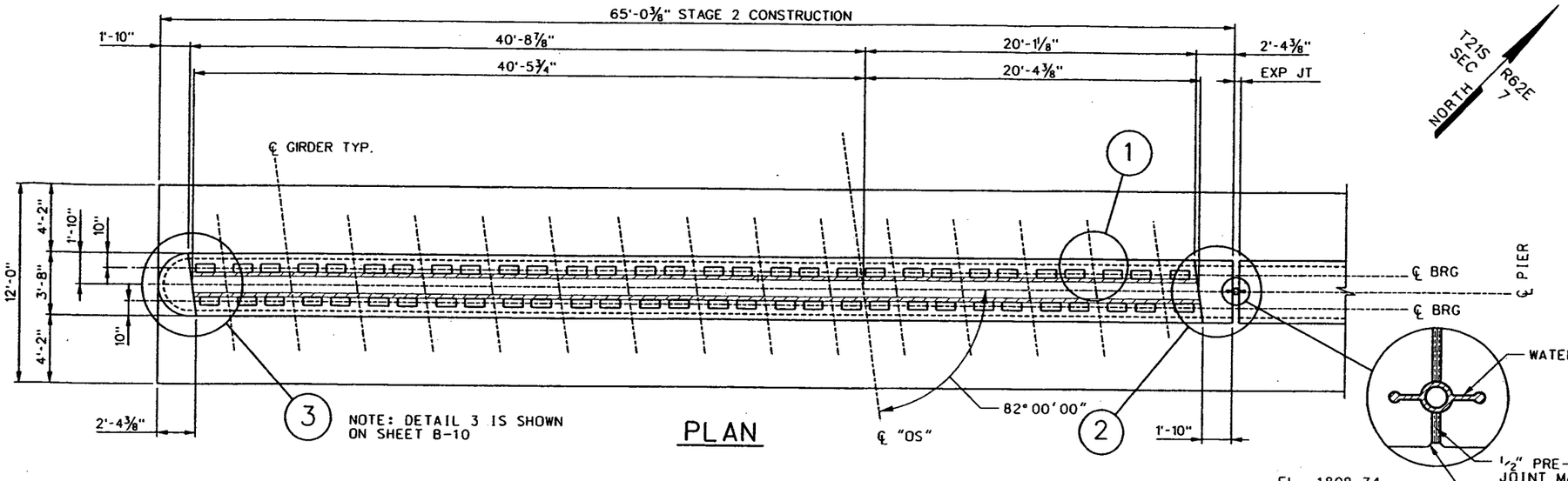
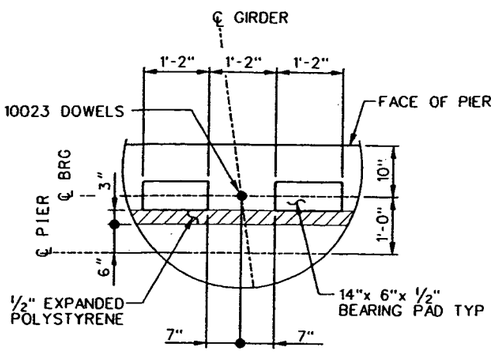
DESIGNED BY:	MJS
CHECKED BY:	DRD
APPROVED BY:	CEJ

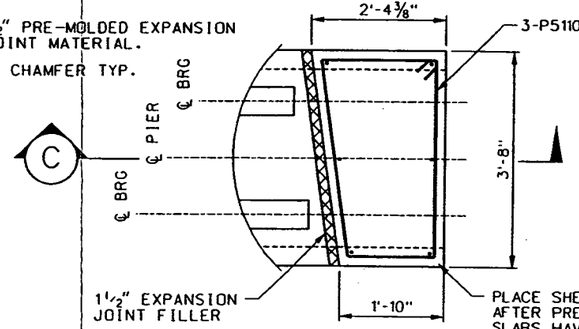
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-9



PLAN



DETAIL (1)



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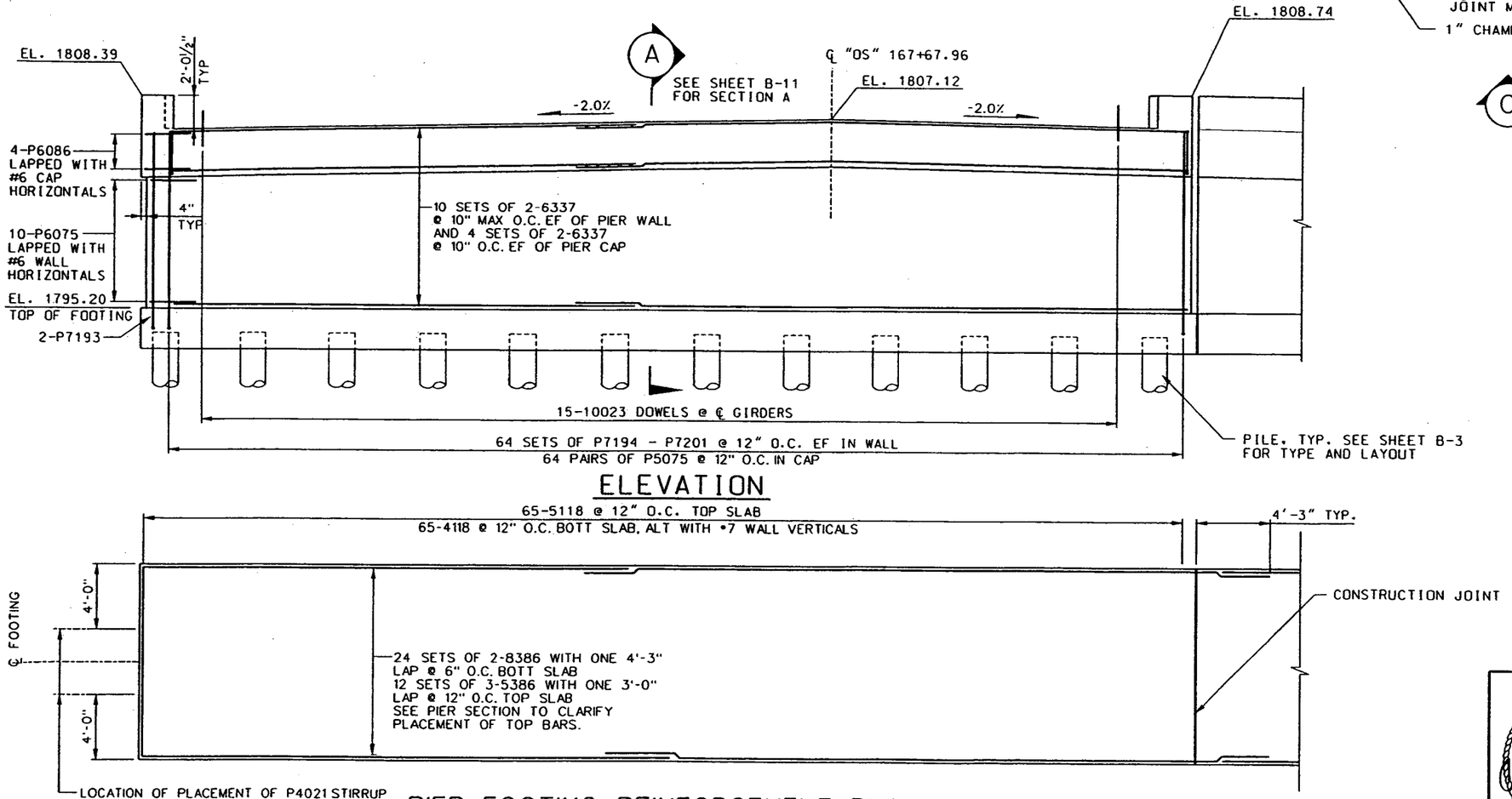
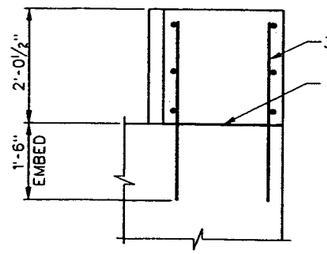


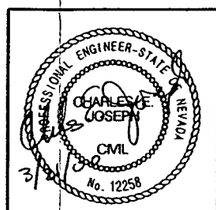
ELEVATION

PIER FOOTING REINFORCEMENT PLAN

NTS



SECTION (C)



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

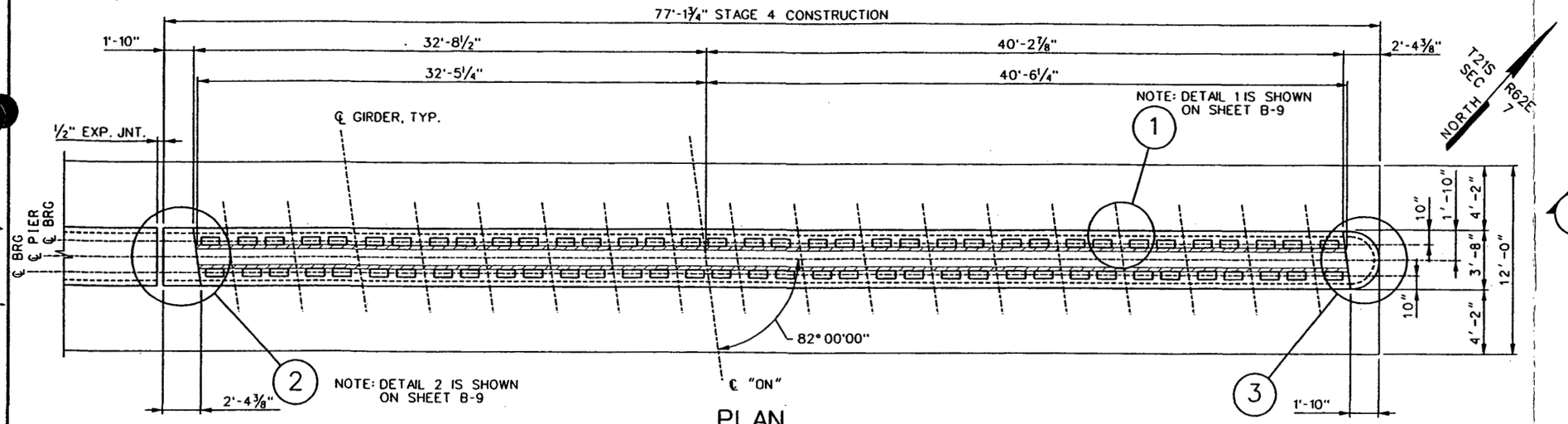
"OS" PIER DETAILS

B-194 & B-436

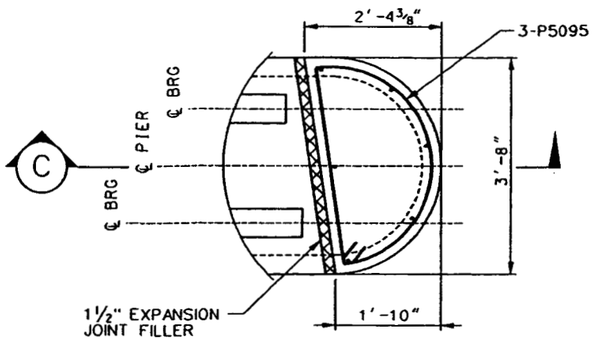
PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2115
FAX (702) 435-8412

DRAWN BY: BH
DESIGNED BY: MJS
CHECKED BY: DRD
APPROVED BY: CEJ

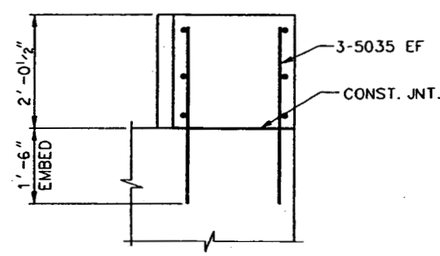
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-1



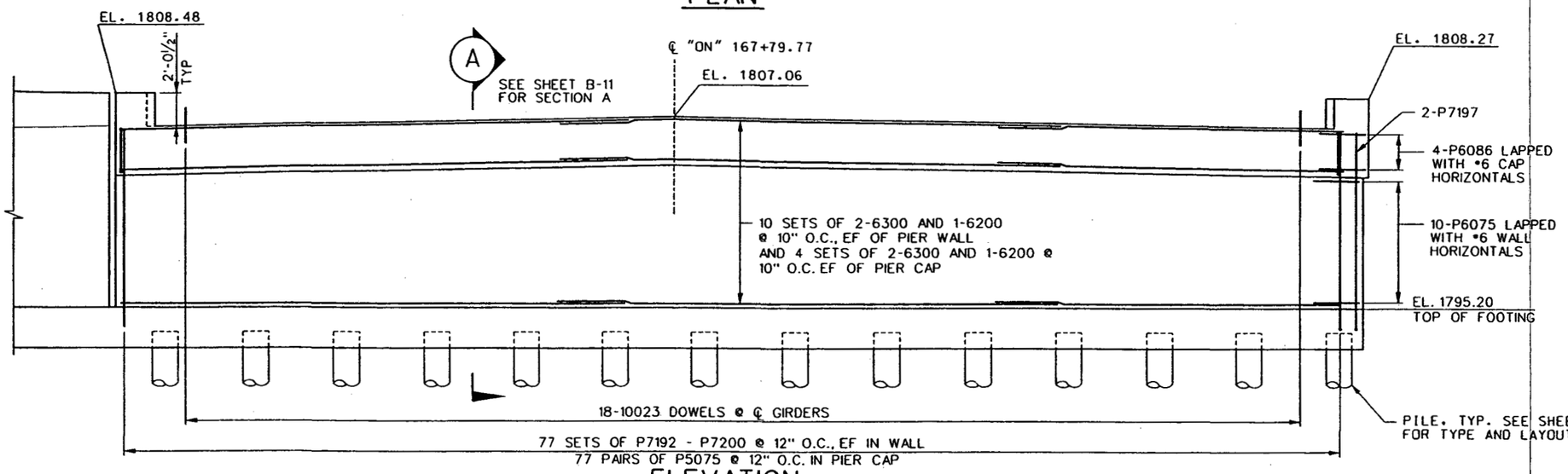
PLAN



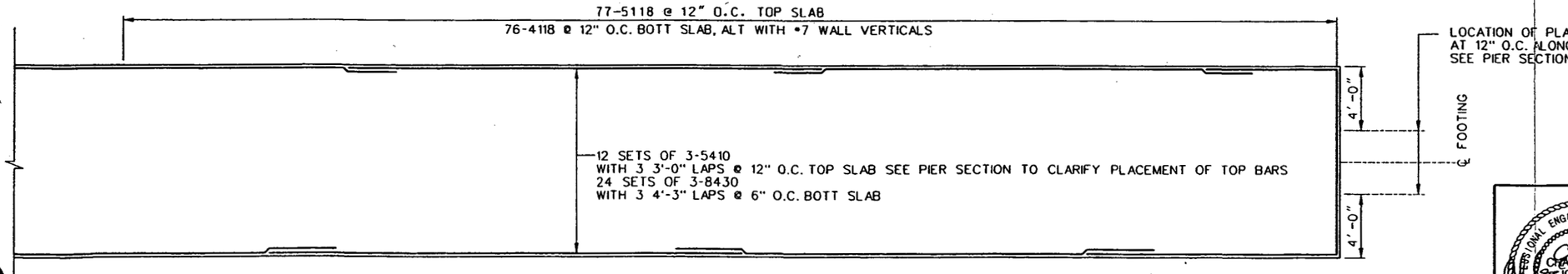
DETAIL 3



SECTION C



ELEVATION



PIER FOOTING REINFORCEMENT PLAN

NTS

PROFESSIONAL ENGINEER-STATE OF NEVADA
CHARLES E. JOSEPH
CIVIL
No. 12258
3/31/11

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

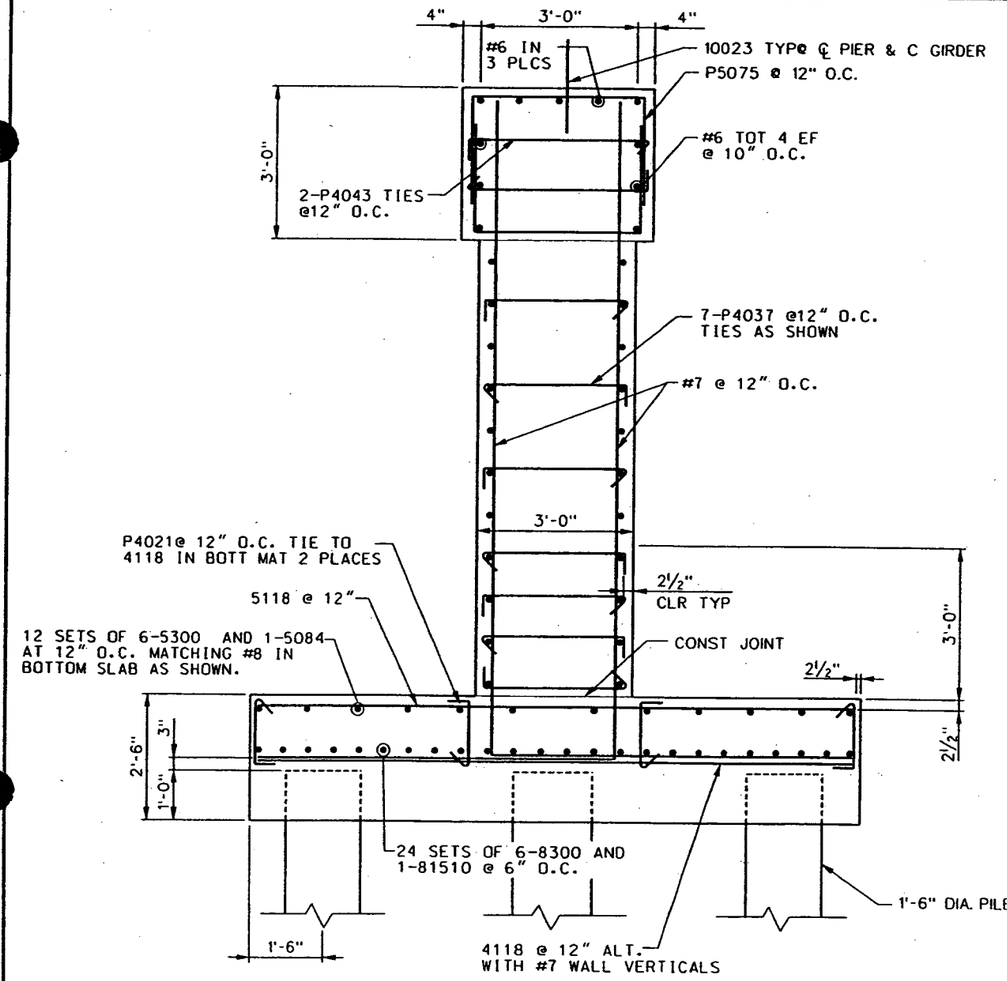
"ON" PIER DETAILS

B-194 & B-43(

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-6412

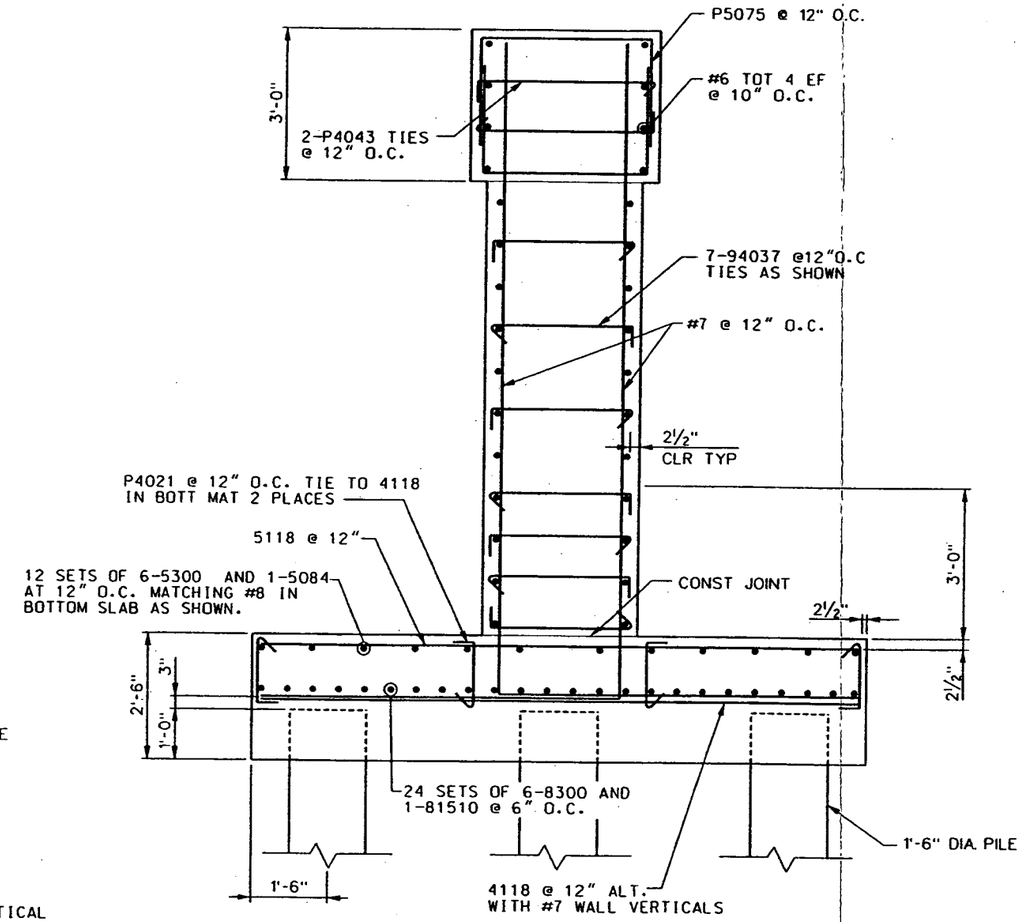
DRAWN BY: GH
DESIGNED BY: MJS
CHECKED BY: DRO
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	B-11



SECTION (A)

ROUNDED END DETAIL



SECTION (B)

SEE SHEET B-7

PROFESSIONAL ENGINEER-STATE OF NEVADA
CHARLES D. JOSEPH
CIVIL
No. 12258
3/20/10

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

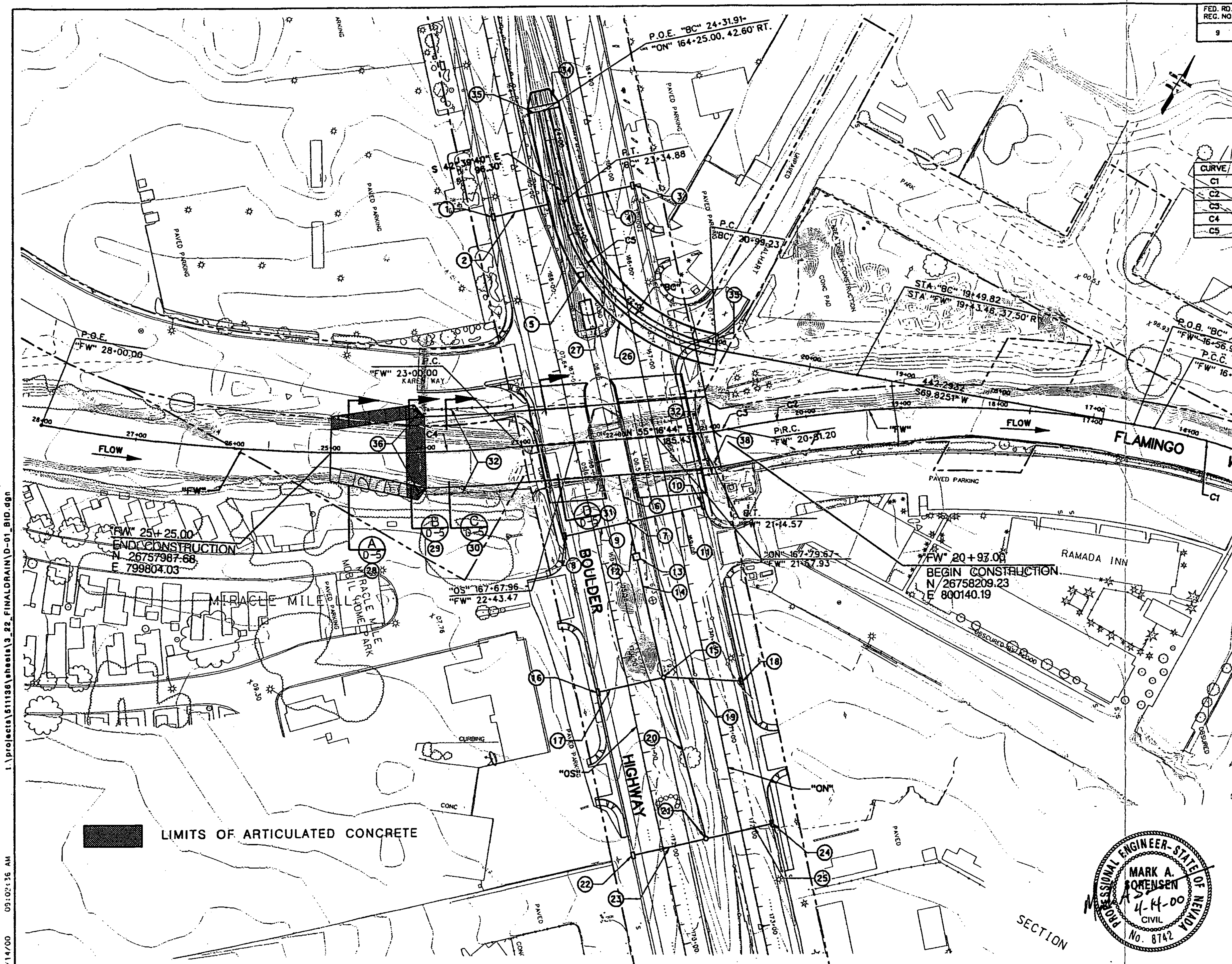
PIER DETAILS

PARSONS TRANSPORTATION GROUP
840 GREER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: BH
DESIGNED BY: MJS
CHECKED BY: DRD
APPROVED BY: CEJ

(SMALL)

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-



P.O.E. "BC" 24+31.91
"ON" 164+25.00, 42.60' RT.
P.T. "BC" 23+34.88
P.C. "BC" 20+99.23
S 42°39'40" E
96.30'
PAVED PARKING
UNPAVED
PARK
CONC PAD
STA. "BC" 19+49.82
STA. "FW" 19+43.48, 37.50' RT
P.O.B. "BC" 16+56.94
"FW" 16+56.94
P.C.C.
"FW" 16+35.54
P.O.B.
"FW" 14+98.78
P.O.E.
"FW" 28+00.00
P.C.
"FW" 23+00.00
KAREN WAY
N 55°16'44" E
185.43'
442.2932
S69.8251° W
P.R.C.
"FW" 20+81.20
FLOW
FLAMINGO WASH
C1
C2
C3
C4
C5
"FW" 25+25.00
END CONSTRUCTION
N 26757987.68
E 799804.03
P.T.
"FW" 21+14.57
"ON" 167+79.67
"FW" 21+67.93
"FW" 20+97.00
BEGIN CONSTRUCTION
N 26758209.23
E 800140.19
RAMADA INN
"OS" 167+67.96
"FW" 22+43.47
MIRACLE MILE
MIRACLE MILE MOBIL HOME PARK
BOULDER HIGHWAY
CURBING
CONC
"OS"
"ON"
PAVED
SECTION
LIMITS OF ARTICULATED CONCRETE

CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	580'	136.76'	68.70'	13° 30'36"
C2	1125'	445.66'	225.79'	22° 41'50"
C3	300'	33.37'	16.70'	6° 22'24"
C4	2000'	500'	251.31'	14° 19'26"
C5	200'	235.66'	133.66'	67° 30'38"

PROFESSIONAL ENGINEER - STATE OF NEVADA
MARK A. SORENSEN
4-14-00
CIVIL
No. 8742

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PLAN

PBSJ
601 N. Green Valley Pkwy
Suite 100
Henderson, Nevada 89014
Telephone 702/263-7275
Fax 702/263-7200

PARSONS TRANSPORTATION GROUP

DRAWN BY: EC/
DESIGNED BY: EM/
CHECKED BY: SP
APPROVED BY: SP

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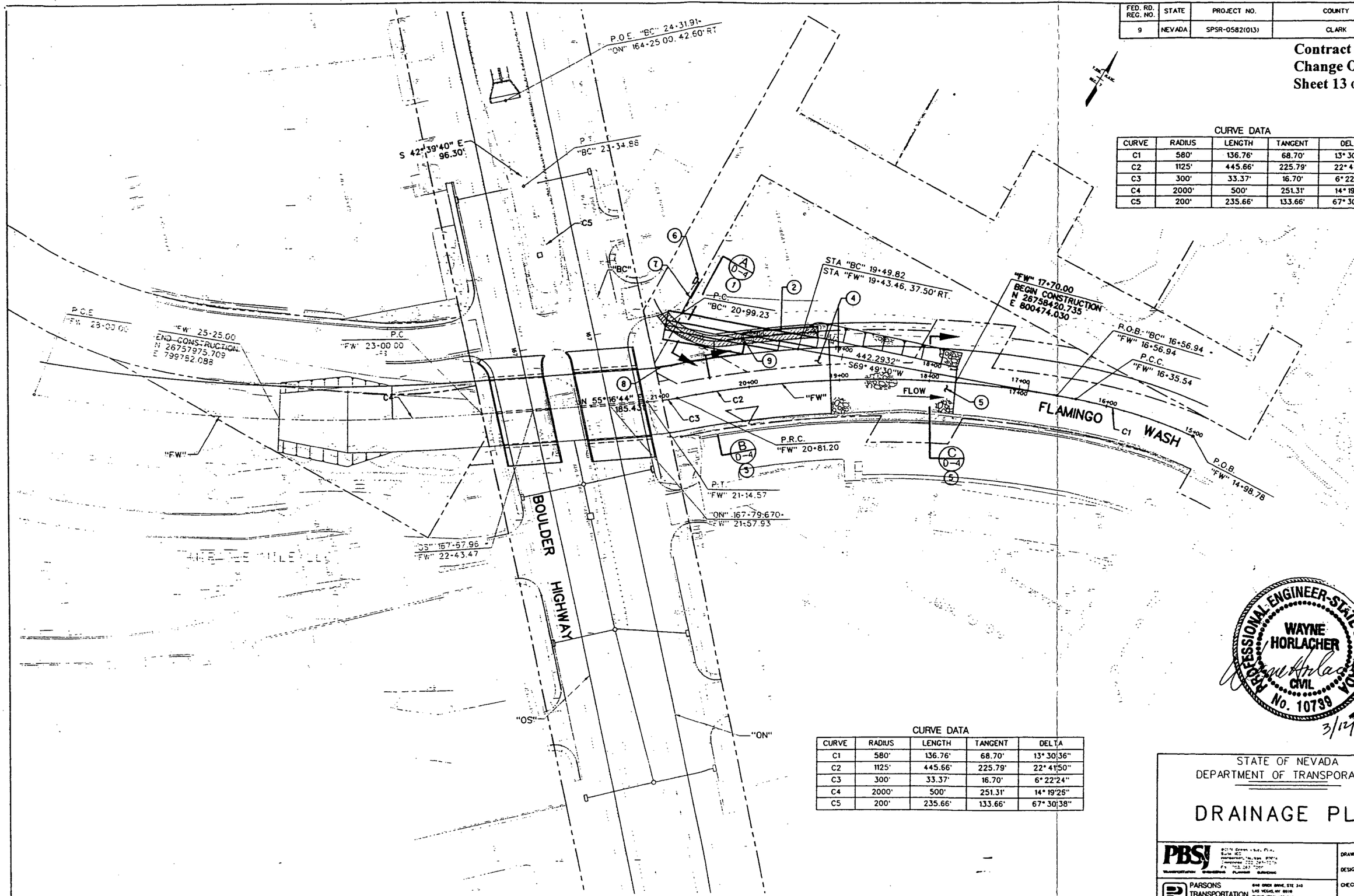
March – 2001 Revision

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-1 (CC)

Contract #3022
Change Order No.
Sheet 13 of 22

CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	580'	136.76'	68.70'	13° 30'36"
C2	1125'	445.66'	225.79'	22° 41'50"
C3	300'	33.37'	16.70'	6° 22'24"
C4	2000'	500'	251.31'	14° 19'26"
C5	200'	235.66'	133.66'	67° 30'38"



CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	580'	136.76'	68.70'	13° 30'36"
C2	1125'	445.66'	225.79'	22° 41'50"
C3	300'	33.37'	16.70'	6° 22'24"
C4	2000'	500'	251.31'	14° 19'26"
C5	200'	235.66'	133.66'	67° 30'38"

PROFESSIONAL ENGINEER-STATE OF NEVADA
WAYNE HORLACHER
CIVIL
No. 10739
3/12/01

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PLAN

PBSJ
PARSONS TRANSPORTATION GROUP
640 GREEN WAVE, STE 340
LAS VEGAS, NV 89119
PHONE (702) 433-2116
FAX (702) 433-8412

DRAWN BY: EC/D
DESIGNED BY: EM/M
CHECKED BY: SP
APPROVED BY: SP

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FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-1

DRAINAGE NOTES

(1) "OS" 165+20.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1807.73. GRATE EL = 1810.98). 32.5' RT. SEE SHEET D-4.

(2) "OS" 165+20.00 — INSTALL 18" X 56' RCP (U.I.E. = 1807.73. L.I.E. = 1802.08. S = 10%). 31' RT. TO 25' LT. CONNECT TO TRIPLE 10' X 6' RCB. SEE SHEET D-4.

(3) "ON" 165+20.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1808.07. GRATE EL = 1811.32). 32.5' LT. SEE SHEET D-4.

(4) "ON" 165+20.00 — INSTALL 18" X 60' RCP (U.I.E. = 1808.07. L.I.E. = 1802.08. S = 9.98%). 31' LT. TO 29' RT. CONNECT TO TRIPLE 10' X 6' RCB. SEE SHEET D-4.

(5) "OS" 166+00.00 — INSTALL PIPE RISER INLET WITH 24" RCP PER NDOT STANDARD PLANS (GRATE EL = 1807.50). 45' LT.

(6) "OS" 168+10.00 TO 168+67.00 — INSTALL 30" X 57' RCP (U.I.E. = 1800.02. L.I.E. = 1799.50. S = 0.91%). 38' LT. TO 38' LT. SEE SHEET D-3.

(7) "OS" 168+67.00 — INSTALL TYPE 2 CONCENTRIC M.H. (INVERT IN = 1800.22. INVERT OUT = 1800.02. RIM EL = 1806.88). 38' LT. SEE SHEET D-3.

(8) "OS" 168+67.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1804.74. GRATE EL = 1807.99). 32.5' RT. SEE SHEET D-4.

(9) "OS" 168+67.00 — INSTALL 18" X 66' RCP (U.I.E. = 1804.74. L.I.E. = 1803.68. S = 1.61%). 31' RT. TO 35' LT. SEE SHEET D-4.

(10) "ON" 168+67.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1804.74. GRATE EL = 1807.99). 32.5' LT. SEE SHEET D-4.

(11) "ON" 168+67.00 — INSTALL 18" X 75' RCP (U.I.E. = 1804.74. L.I.E. = 1803.48. S = 1.68%). 31' LT. TO 44' RT. SEE SHEET D-4.

(12) "OS" 168+67.00 TO 169+00.00 — INSTALL 30" X 33' RCP (U.I.E. = 1800.38. L.I.E. = 1800.22. S = 0.49%). 38' LT. TO 38' LT. SEE SHEET D-3.

(13) "OS" 169+00.00 — INSTALL TYPE 2A D.I. WITH CONCRETE APRON (INVERT IN = 1799.80. INVERT OUT = 1799.60. GRATE EL = 1804.15). 38' LT. SEE SHEET D-3.

(14) "OS" 169+00.00 TO 170+28.78 — INSTALL 24" X 129' RCP (U.I.E. = 1801.55. L.I.E. = 1800.58. S = 0.75%). 38' LT. TO 38' LT. SEE SHEET D-3.

(15) "OS" 170+28.78 — INSTALL TYPE 2 CONCENTRIC M.H. (INVERT IN = 1801.75 INVERT OUT= 1801.55. RIM EL = 1805.42). D = 6'-0" 38' LT. SEE SHEET D-3.

(16) "OS" 170+28.78 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1804.05. GRATE EL = 1807.30). 32.5' RT. SEE SHEET D-4.

(17) "OS" 170+28.78 — INSTALL 18" X 67' RCP (U.I.E. = 1804.05. L.I.E. = 1802.22 S = 2.73%). 31' RT. TO 36' LT. SEE SHEET D-4.

(18) "ON" 170+50.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1803.82. GRATE EL = 1807.07). 32.5' LT. SEE SHEET D-4.

(19) "ON" 170+28.78 TO 170+50.00 — INSTALL 18" X 79' RCP (U.I.E. = 1803.82. L.I.E. = 1802.02. S = 2.28%). 48' RT. TO 31' LT. SEE SHEET D-4.

(20) "OS" 170+28.78 TO 172+00.00 — INSTALL 24" X 171' RCP (U.I.E. = 1802.61. L.I.E. = 1801.75. S = 0.5%). 38' LT. TO 46' LT. SEE SHEET D-3.

(21) "OS" 172+00.00 — INSTALL TYPE 2 CONCENTRIC M.H. (INVERT OUT = 1802.61. RIM EL = 1806.25). D = 6'-0" 46' LT. SEE SHEET D-3.

(22) "OS" 172+00.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1805.53. GRATE EL = 1808.78). 32.5' RT. SEE SHEET D-4.

(23) "OS" 172+00.00 — INSTALL 18" X 75' RCP (U.I.E. = 1805.53. L.I.E. = 1803.05 S = 3.31%). 31' RT. TO 44' LT. SEE SHEET D-4.

(24) "ON" 172+00.00 — INSTALL TYPE 11 D.I., L = 15', H = 3.25' (INVERT OUT = 1804.10. GRATE EL = 1807.35). 32.5' LT. SEE SHEET D-4.

(25) "ON" 172+00.00 — INSTALL 18" X 68' RCP (U.I.E. = 1804.10. L.I.E. = 1802.85. S = 1.84%). 31' LT. TO 37' RT. SEE SHEET D-4.

(26) "BC" 20+39.23 TO 24+31.91 — CONSTRUCT TRIPLE 10' X 6' RCB WITH SPECIAL HEADWALL (U.I.E.= 1798.18. L.I.E.=1796.15). SEE SHEETS D-2 AND D-5 (DETAIL F).

(27) "ON" 166+25.00 TO 166+56.50 — CONSTRUCT 12'x3' RCB. (U.I.E. = 1802.42. L.I.E. = 1801.63. S = 2.51%). 42.60' RT.

NOTES 28-38 LT. AND RT. ARE FACING DOWNSTREAM (EAST).

(28) "FW" 24+20.00 TO 25+00.00 — GRADE TO MATCH EXISTING CHANNEL LINE LT. SIDE SLOPE WITH ARTICULATED CONCRETE. BOTTOM WIDTH VARIES FROM 69' TO 45'. DEPTH = 7'-0". SEE SHEETS D-2 AND D-5 (DETAIL A).

(29) "FW" 24+00.00 TO 24+20.00 — TRANSITION TO MATCH EXISTING CHANNEL. LINE CHANNEL AND SIDE SLOPES WITH ARTICULATED CONCRETE. BOTTOM WIDTH VARIES FROM 75' TO 69'. DEPTH = 7'-0". SEE SHEETS D-2 AND D-5 (DETAIL B).

(30) "FW" 20+97.00 TO 21+15.70
"FW" 22+85.90 TO 24+00.00 — CONSTRUCT RECTANGULAR CONCRETE LINED CHANNEL. BOTTOM WIDTH = 75'. WALL HEIGHT VARIES LT. AND RT. SEE SHEETS D-2 AND D-5 (DETAIL C).

(31) "FW" 21+15.70 TO 22+85.90 — CONSTRUCT CONCRETE LINED CHANNEL BOTTOM. BOTTOM WIDTH = 75'. SEE SHEETS D-2 AND D-5 (DETAILS A & E).

(32) "FW" 20+97.00 TO 21+15.70
"FW" 22+85.90 TO 24+00.00 — CONSTRUCT 72" CHAIN-LINK FENCE. 44.5' LT. AND RT.. RETURN FENCE "TO CHANNEL WALL AT ENDS OF CHANNEL.

(33) NOT USED

(34) "BC" 24+31.91 TO 24+51.91 — CONSTRUCT INLET STRUCTURE FOR TRIPLE 10'x6' RCBs.

(35) "BC" 24+31.91 — CONSTRUCT CONCRETE CLOSURE PANELS SEE DETAIL SHEET D-10.

(36) "FW" 24+00.00 — CONSTRUCT MODIFIED TYPE 1 HEADWALLS. (H=7.0'). 37.5' LT. AND RT.

(37) NOT USED

(38) "FW" 21+03.00 21+13.00 — REMOVE EXISTING GABION WALL. RT.

PROFESSIONAL ENGINEER - STATE OF NEVADA
MARK A. SORENSEN
4-14-00
CIVIL
No. 8742

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE NOTES

PBSJ TRANSPORTATION — 801 N. Green Valley Pkwy, Suite 100, Henderson, Nevada 89014, Telephone: 702/263-7275, Fax: 702/263-7290
PARSONS TRANSPORTATION GROUP — 840 GREER DRIVE, STE. 340, LAS VEGAS, NV 89119, PHONE (702) 433-2118, FAX (702) 435-6412

DRAWN BY: EC
DESIGNED BY: VF
CHECKED BY: SP
APPROVED BY: SP

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-1A (CCO)

Contract #3022
Change Order No. 9
Sheet 14 of 22

DRAINAGE NOTES

(1)	"BC"	19+29.90 TO 20+99.23	INSTALL TRIPLE 10' X 6' RCB WITH SPECIAL HEADWALL (U.I.E.= 1796.80, L.I.E.=1795.37). SEE SHEETS D-3 AND D-4 (DETAIL A).
(2)	"FW"	19+21.09 TO 20+84.64	CONSTRUCT 12' WIDE ACCESS ROAD. SEE SHEET 5 (DETAIL A).

NOTES 3-7 LT. AND RT. ARE FACING DOWNSTREAM (EAST).

(3)	"FW"	20+02.33 TO 20+97.00	CONSTRUCT RECTANGULAR CONCRETE LINED CHANNEL. BOTTOM WIDTH = 75'. SEE SHEETS D-2 AND D-4 (DETAIL B).
(4)	"FW"	19+10.00 TO 20+02.33	CONSTRUCT CONCRETE CHANNEL TRANSITION. BOTTOM WIDTH VARIES FROM 84'-6" TO 75'. SEE SHEETS D-2 AND D-4 (DETAIL B AND D).
(5)	"FW"	17+70.00 TO 19+10.00	GRADE TO MATCH EXISTING CHANNEL. LINE CHANNEL AND SIDE SLOPES WITH HEAVY RIPRAP (D50= 18"). BOTTOM WIDTH VARIES FROM 84'-6" TO 53'. DEPTH = 8'. SEE SHEETS D-2 AND D-4 (DETAIL C).
(6)	"DH"	10+90.00	INSTALL TYPE 3 D.I., L=3.5', H=3.25' (INVERT OUT 1803.75, GRATE EL. 1807.0), 20' RT. SEE DETAIL D-3.
(7)	"DH"	10+90.00 TO 10+48.00	INSTALL 18" X 43' RCP (U.I.E. 1803.75, L.I.E. 1800.73, S=7.19%) 28' RT TO 20' RT. SEE SHEET D-3.
(8)	"FW"	20+97.00 TO 19+20.00	INSTALL 72" CHAINLINK FENCE. SEE SHEET D-5.
(9)	"FW"	20+00.00	INSTALL 12' DOUBLE SWING GATE. SEE SHEET D-5.

PROFESSIONAL ENGINEER - STATE OF NEVADA
WAYNE HORLACHER
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No. 10739
3/12/01

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE NOTES

PBSJ

PARSONS TRANSPORTATION GROUP

DRAWN BY EC
DESIGNED BY: VF
CHECKED BY SP
APPROVED BY SP

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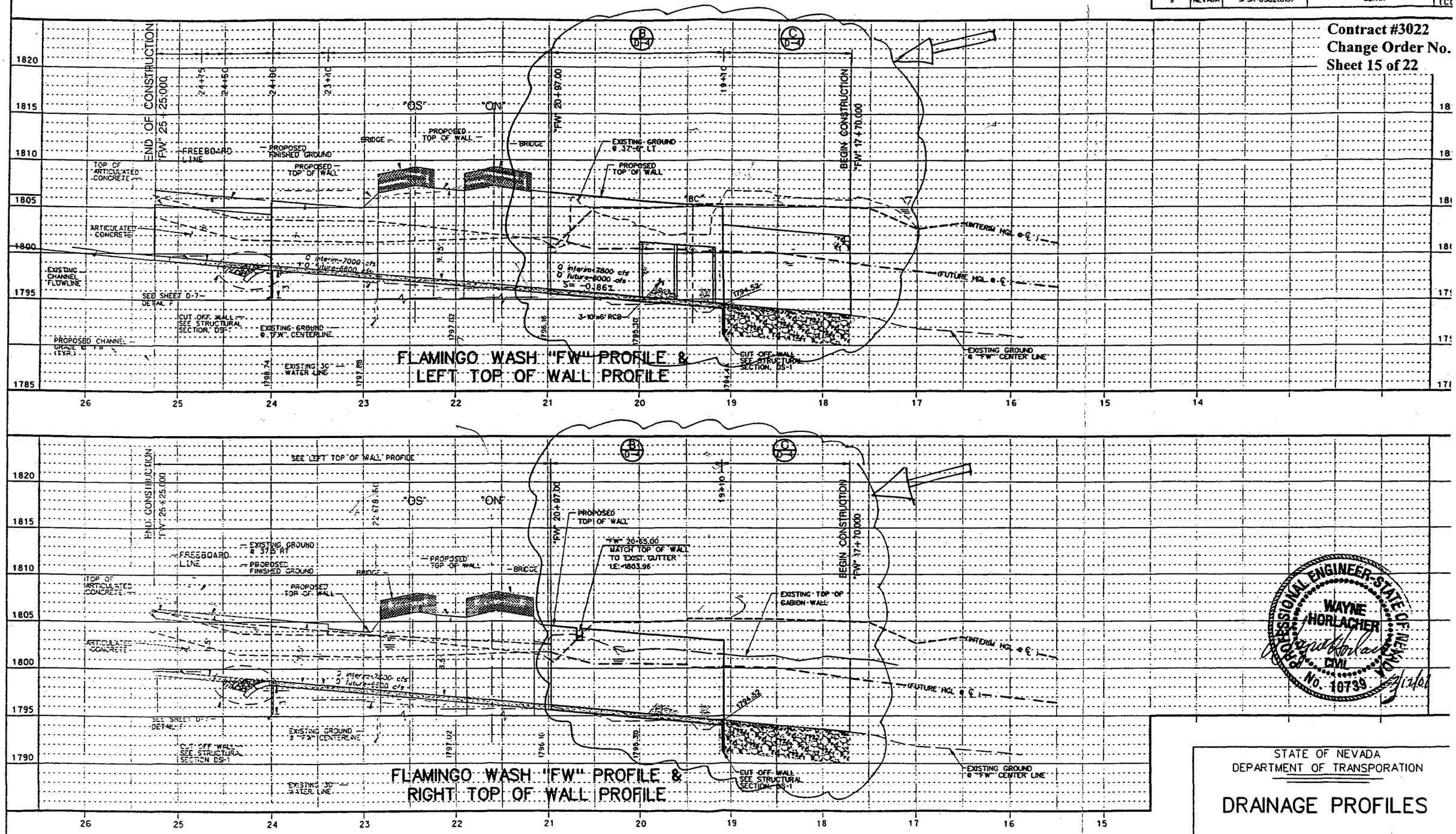
March - 2001 Revision

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SH N
9	NEVADA	SPSR-0582(013)	CLARK	D-7 (CC

Contract #3022
Change Order No.
Sheet 15 of 22



FLAMINGO WASH "FW" PROFILE & RIGHT TOP OF WALL PROFILE

NOTES:

1. DIRECTION OF STATIONING INCREASES FROM DOWNSTREAM TO UPSTREAM.
2. PROFILES ARE SHOWN FACING DOWNSTREAM.

PROFESSIONAL ENGINEER-STATE OF NEVADA
WAYNE HORLACHER
CIVIL
No. 10739

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PROFILES

PBS&J

PARSONS TRANSPORTATION GROUP

DRAWN BY: J
DESIGNED BY: EM/
CHECKED BY: S
APPROVED BY: S

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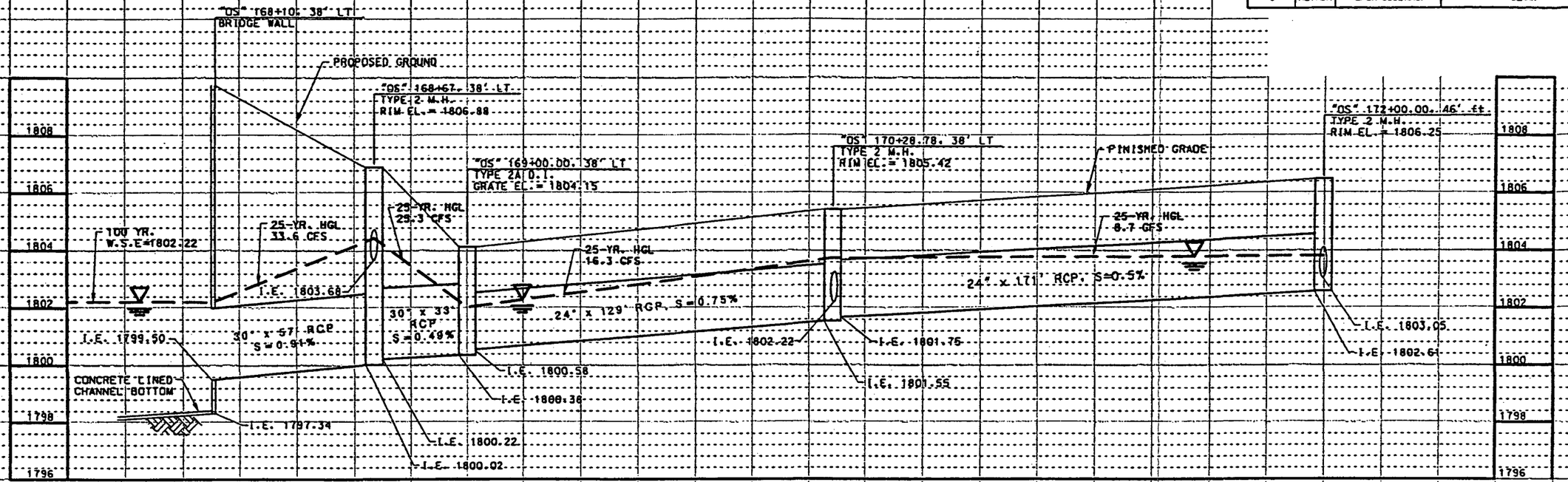
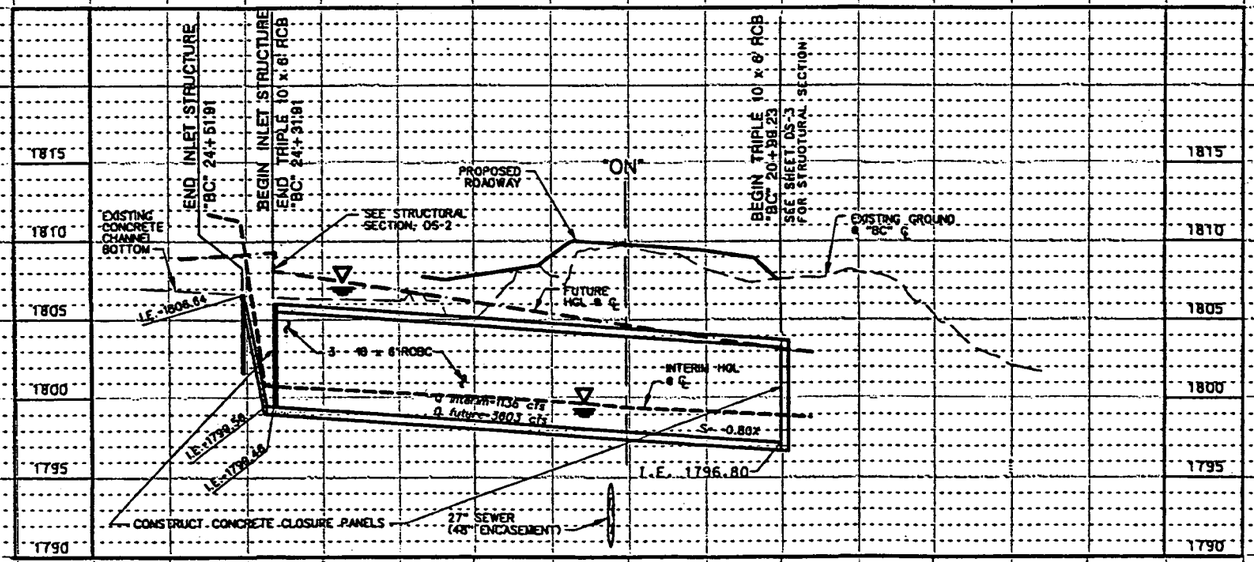
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY
9	NEVADA	SPSR-0582(013)	CLARK



"OS" 168+10 TO "OS" 172+00



TRIPLE BOX "BC" PROFILE

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PROFILES

PBSJ
PARSONS TRANSPORTATION GROUP

DRAWN BY: DC
DESIGNED BY: VI
CHECKED BY: EI
APPROVED BY: SI

PROFESSIONAL ENGINEER STATE OF NEVADA
MARK A. SORENSEN
No. 8742
CIVIL

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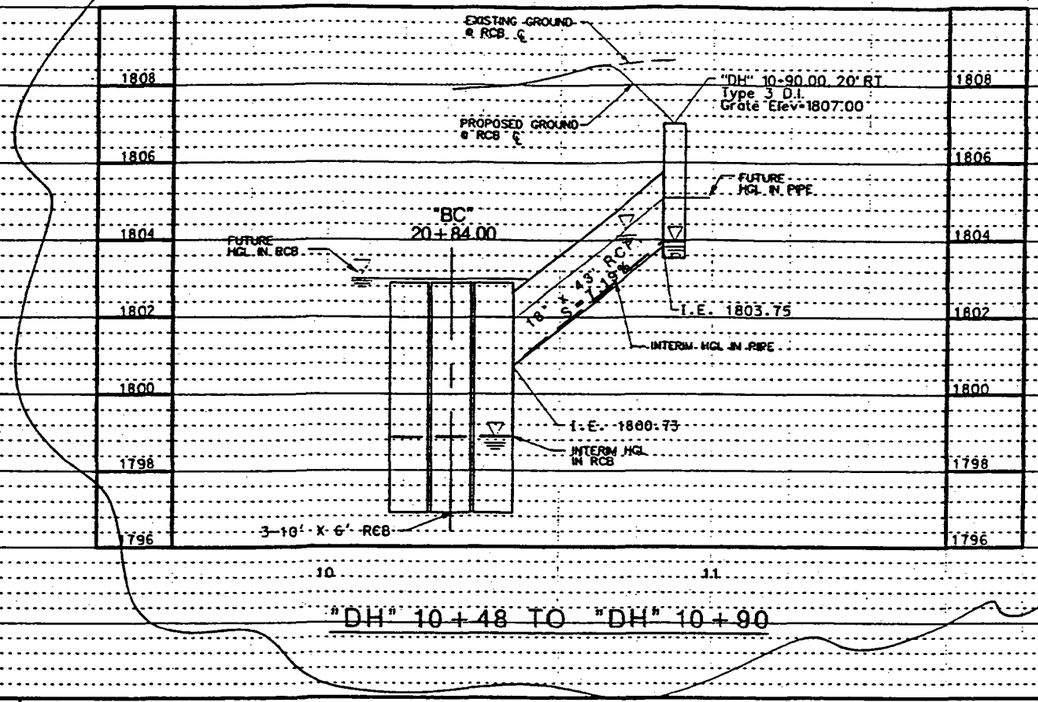
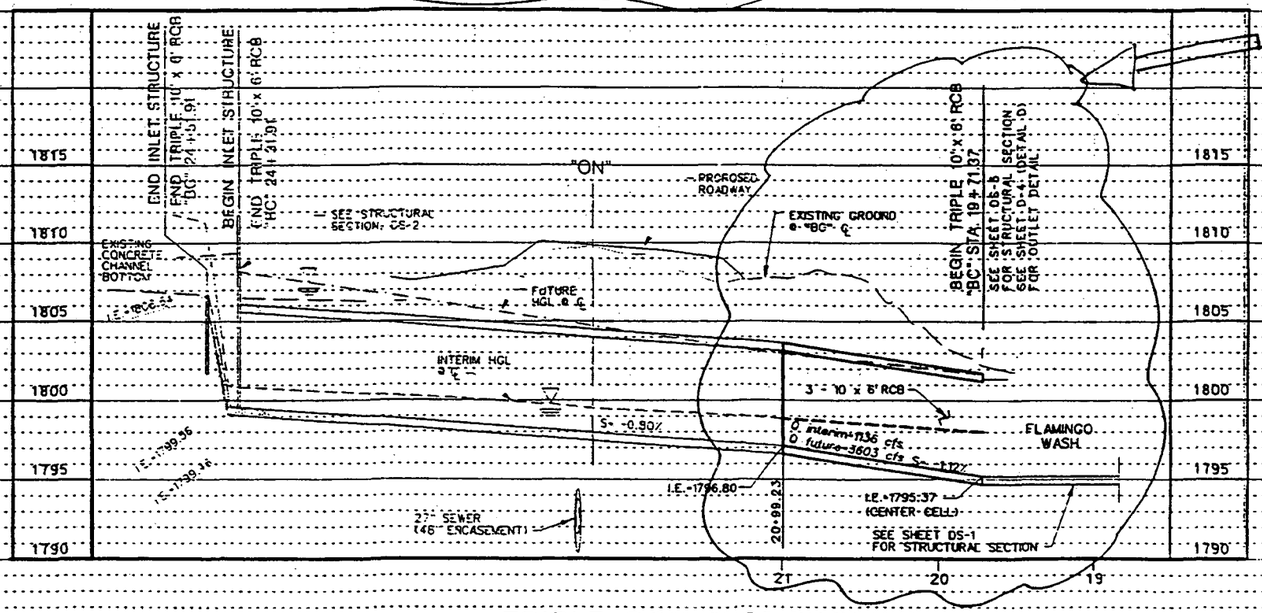
March – 2001 Revision

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	S- D CC
9	NEVADA	SPSR-0582(013)	CLARK	

Contract #3022
Change Order No.
Sheet 16 of 22



"DH" 10+48 TO "DH" 10+90



TRIPLE BOX "BC" PROFILE

PROFESSIONAL ENGINEER STATE OF NEVADA
WAYNE HORLACHER
CIVIL
No. 10739
3/12/01

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PROFILES

PBSJ
PARSONS TRANSPORTATION GROUP

DRAWN BY: DB/I
DESIGNED BY: VF
CHECKED BY: EM
APPROVED BY: SP

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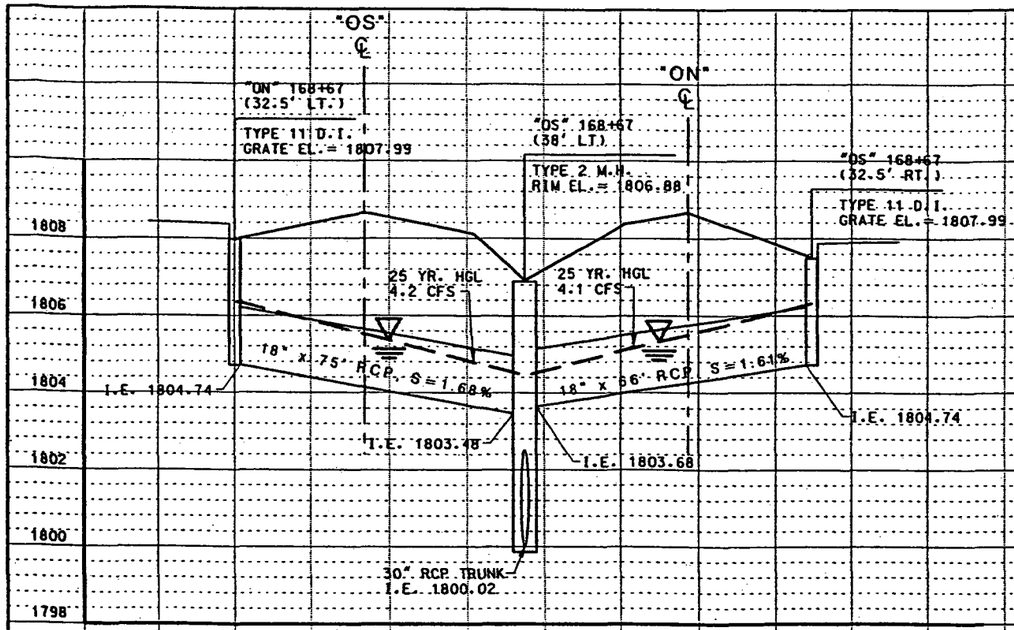
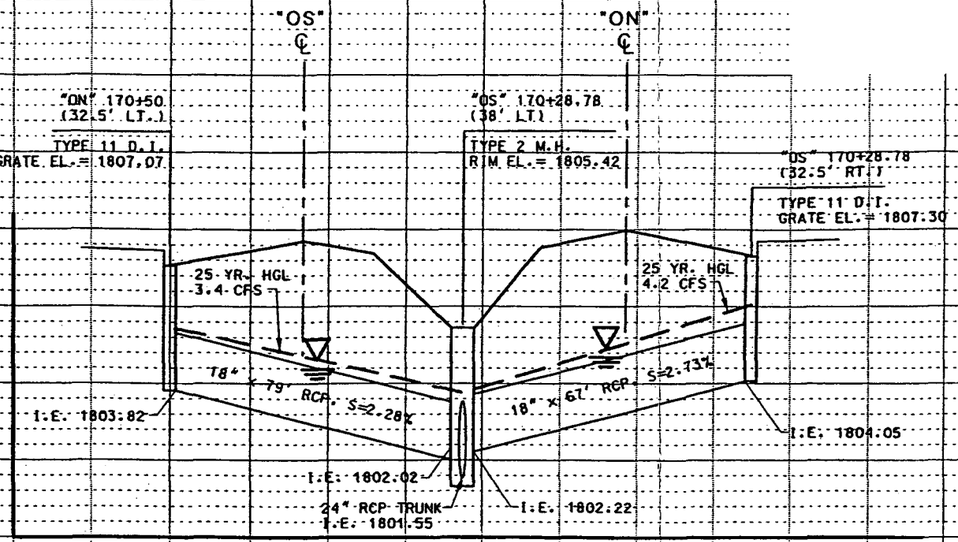
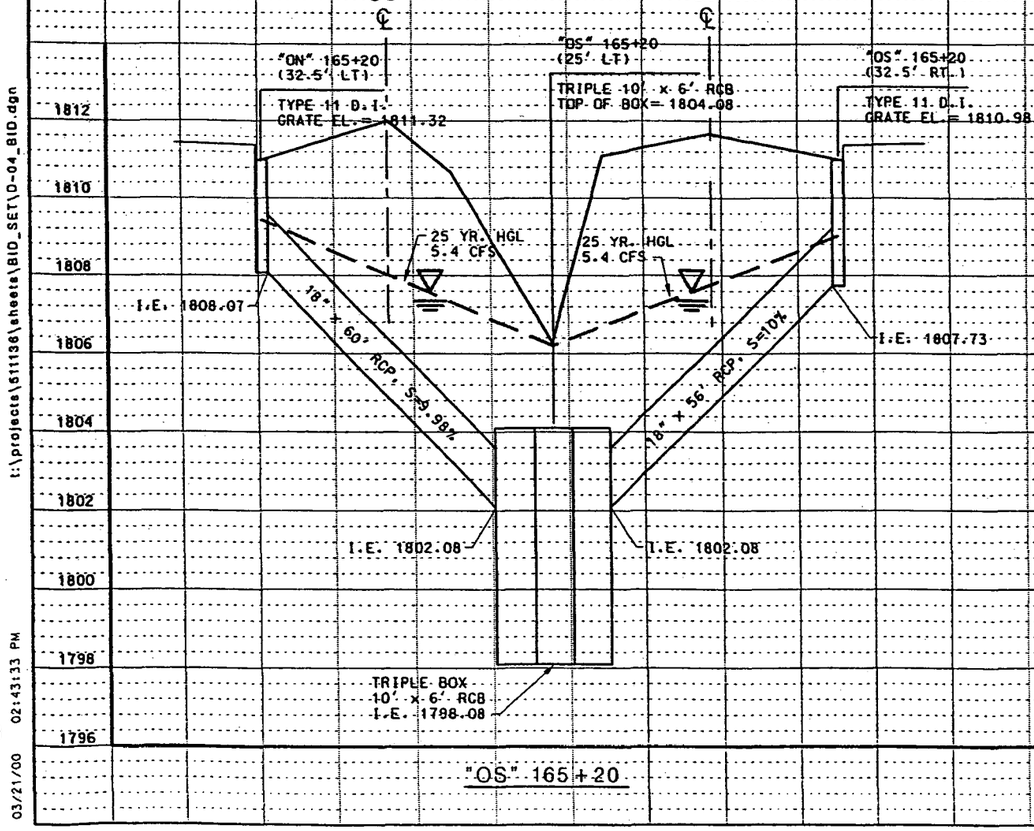
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHE NO
9	NEVADA	SPSR-0582(013)	CLARK	D-



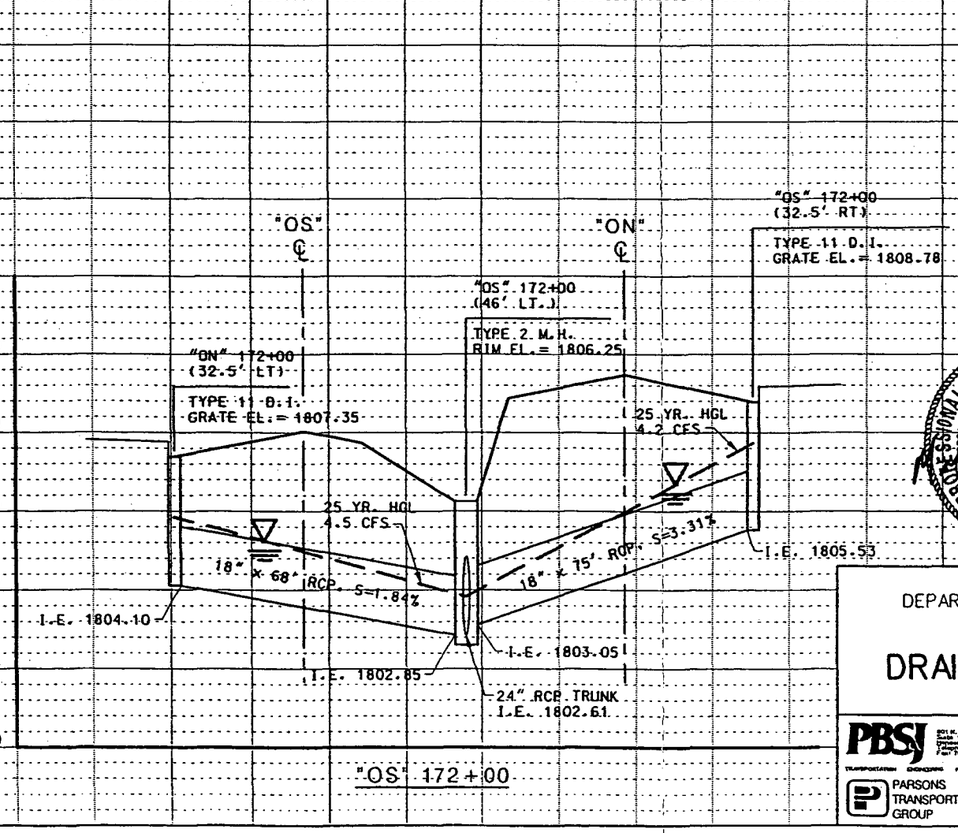
"OS" 168+67



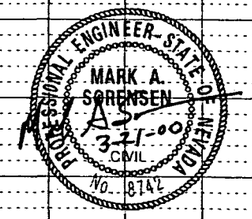
"OS" 170+28.78



"OS" 165+20



"OS" 172+00



STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DRAINAGE PROFILES

PBSJ
801 N. Green Valley Pkwy Suite 100 Henderson, Nevada 89014 Tel: (702) 263-7500
TRANSPORTATION ENGINEERING PLANNING SURVEYING

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640 CINDER DRIVE, STE. 340 LAS VEGAS, NV 89118 PHONE (702) 435-2298 FAX (702) 435-8412

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DESIGNED BY: EM
CHECKED BY: SP
APPROVED BY: SP

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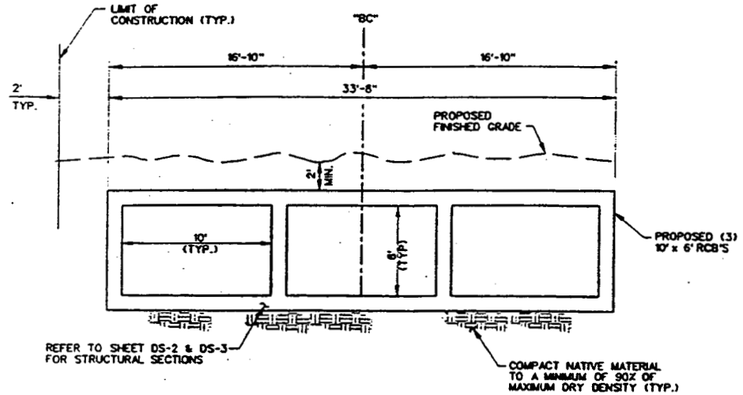
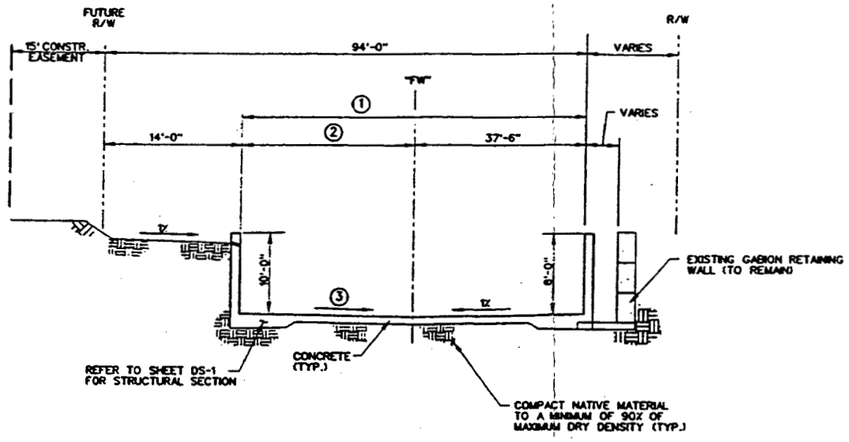
March - 2001 Revision

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-4 (CCO

Contract #3022
Change Order No. 9
Sheet 17 of 22

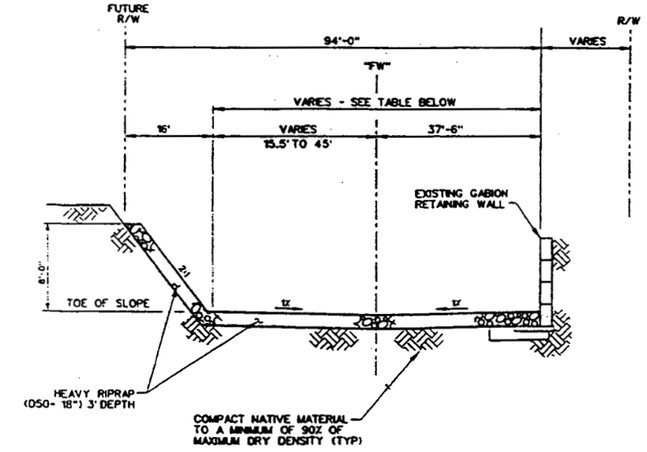


CULVERT DETAIL (CAST-IN-PLACE SHOWN) (A)
NOT TO SCALE



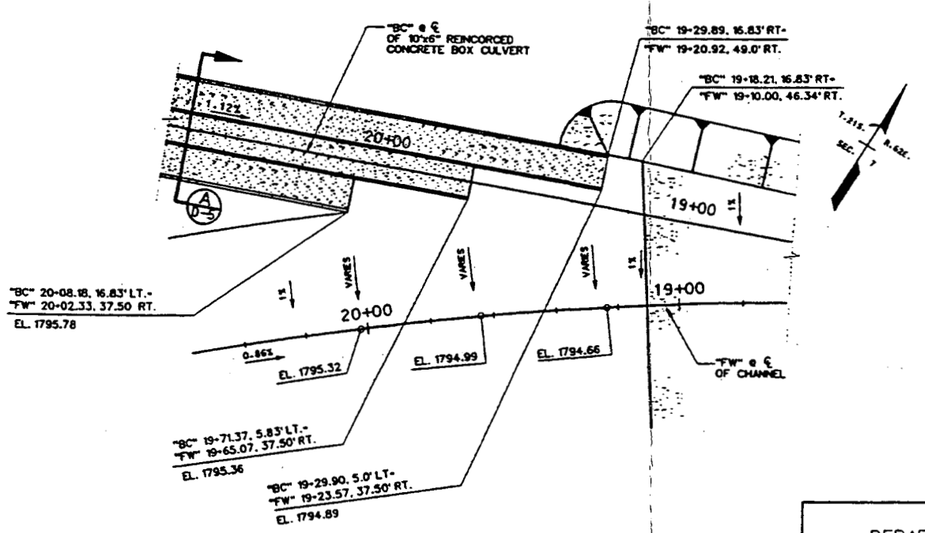
①	"FW" 19+10.00	TO	"FW" 20.02.33	VARIES 82'-6" TO 75'
	"FW" 20.02.33	TO	"FW" 20+97.00	75'
②	"FW" 19+10.00	TO	"FW" 20.02.33	VARIES 45' TO 37'-6"
	"FW" 20.02.33	TO	"FW" 20+97.00	37'-6"
③	"FW" 19+10.00	TO	"FW" 20.02.33	VARIES 1.2% TO 0.6% (SEE DETAIL D)

CHANNEL SECTION STA. "FW" 19+10.00 TO 20+97.00 (B)
NOT TO SCALE



STATION	WIDTH
17+70	53'
19+10	82'-6"

CHANNEL SECTION STA. "FW" 17+70.00 TO 19+10.00 (C)
NOT TO SCALE



CULVERT DETAIL (CAST-IN-PLACE SHOWN) (D)
NOT TO SCALE

REFER TO SHEET DS-5 FOR STRUCTURAL SECTION AND HEADWALL DETAILS

NOTES:

1. DIRECTION OF STATIONING INCREASES FROM DOWNSTREAM TO UPSTREAM.
2. CROSS SECTIONS ARE SHOWN FACING DOWNSTREAM.

PROFESSIONAL ENGINEER-STATE OF NEVADA
WAYNE HORLACHER
CIVIL
No. 10739
3/12/01

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DETAILS

PBSJ

PARSONS TRANSPORTATION GROUP

DRAWN BY: EC/DB
DESIGNED BY: EM
CHECKED BY: SP
APPROVED BY: SP

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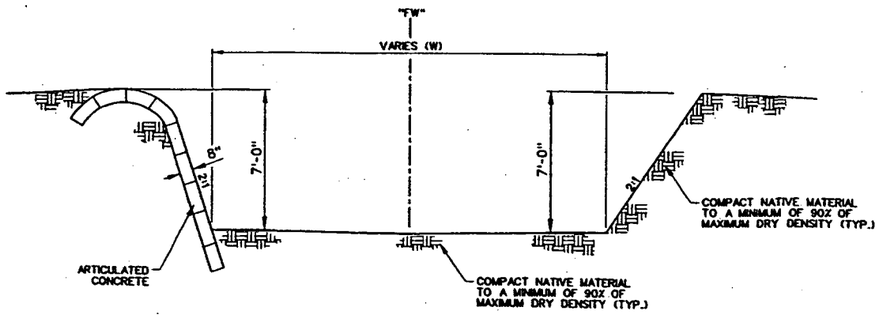
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-4

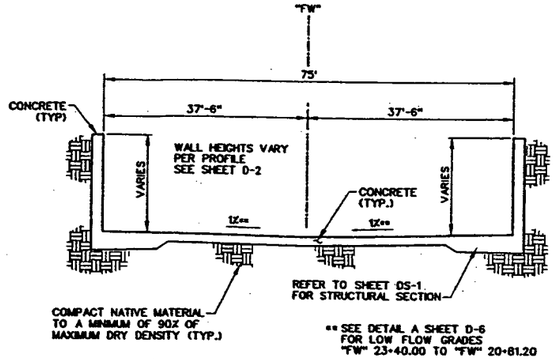
STATION	WIDTH (W)
24+20	69'
25+00	45'



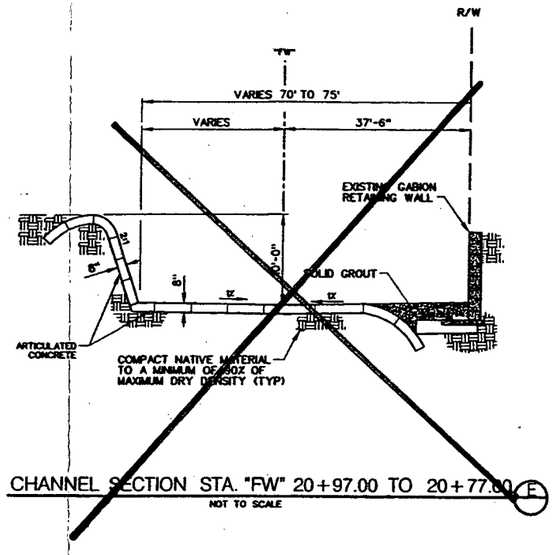
CHANNEL SECTION STA. "FW" 24+20 TO 25+00 (A)
NOT TO SCALE

NOTE:

REFER TO SHEET D7 FOR ARTICULATED CONCRETE CONNECTIONS AND TERMINATIONS.

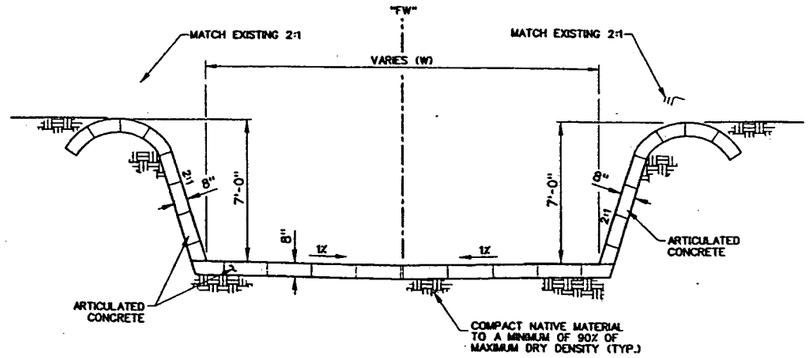


CHANNEL SECTION STA. "FW" 20+97.00 TO 21+15.70
CHANNEL SECTION STA. "FW" 22+85.90 TO 24+00.00 (C)
NOT TO SCALE



CHANNEL SECTION STA. "FW" 20+97.00 TO 20+77.00 (E)
NOT TO SCALE

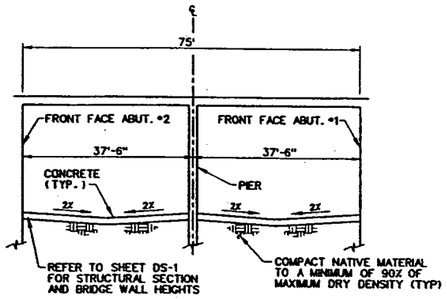
STATION	WIDTH (W)
24+00	75'
24+20	69'



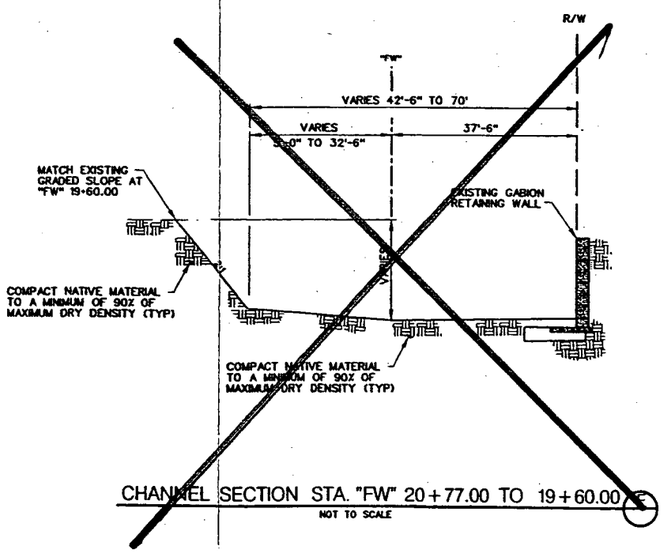
CHANNEL SECTION STA. "FW" 24+00 TO 24+20 (B)
NOT TO SCALE

NOTE:

REFER TO SHEET D7 FOR ARTICULATED CONCRETE CONNECTIONS AND TERMINATIONS.



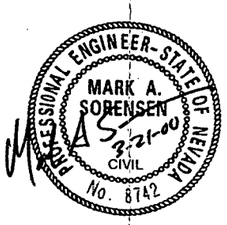
CHANNEL SECTION STA. "FW" 21+15.70 TO 22+85.90 (D)
NOT TO SCALE



CHANNEL SECTION STA. "FW" 20+77.00 TO 19+60.00 (F)
NOT TO SCALE

NOTES:

1. DIRECTION OF STATIONING INCREASES FROM DOWNSTREAM TO UPSTREAM.
2. CROSS SECTIONS ARE SHOWN FACING DOWNSTREAM.



STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DETAILS

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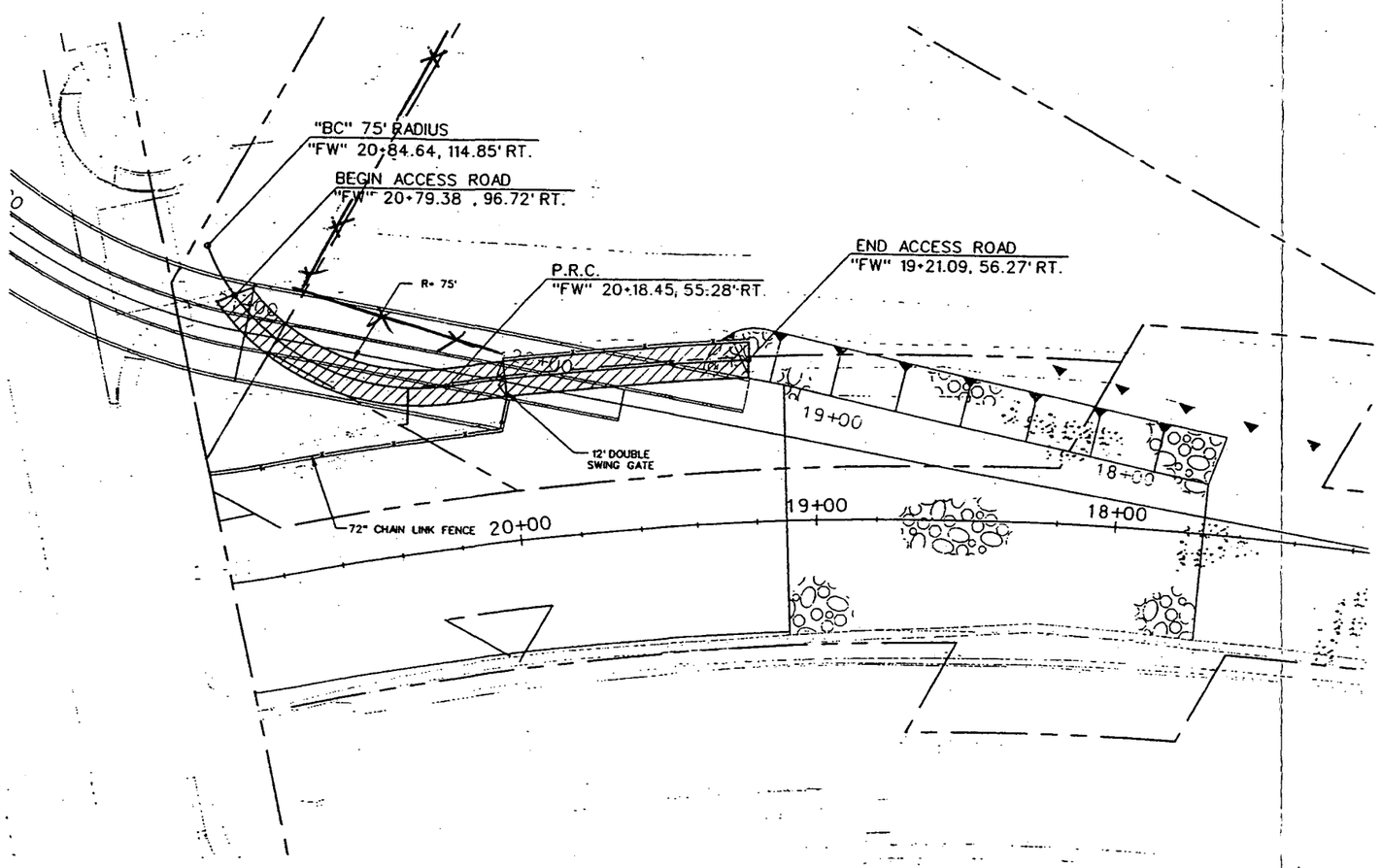
DESIGNED BY:	EM
CHECKED BY:	SP
APPROVED BY:	SP

March – 2001 Revision

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO
9	NEVADA	SPSR-0582(013)	CLARK	D-(CC

Contract #3022
Change Order No.
Sheet 18 of 22



LEGEND

——x—— 72" CHAIN LINK FENCE

12' WIDE ACCESS ROAD (2" PLANTMIX BITUMINOUS SURFACE OVER 4" TYPE IB BASE)

ACCESS ROAD AND FENCE DETAIL (A)

PROFESSIONAL ENGINEER-STATE OF NEVADA
WAYNE HORLACHER
CIVIL
3/12/01

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

ACCESS ROAD DETAIL

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FAX (702) 433-8472

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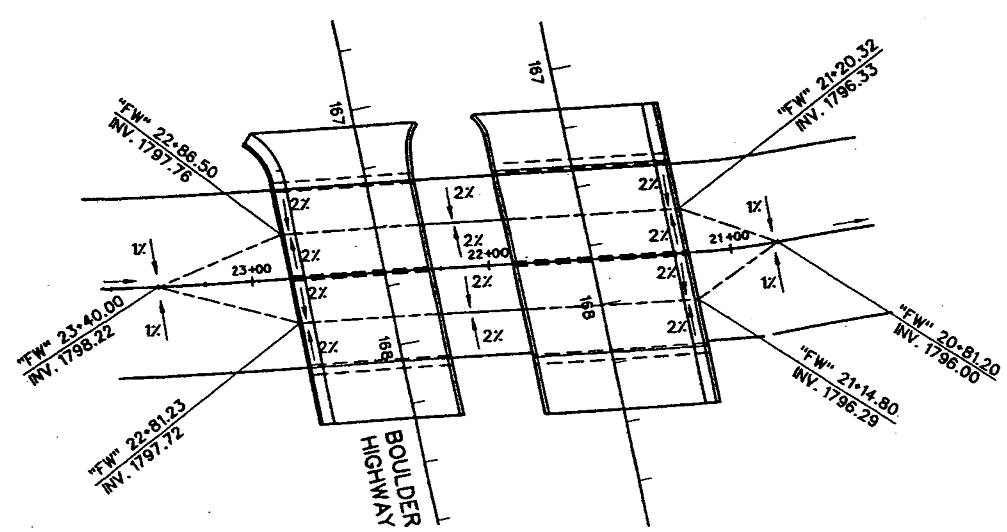
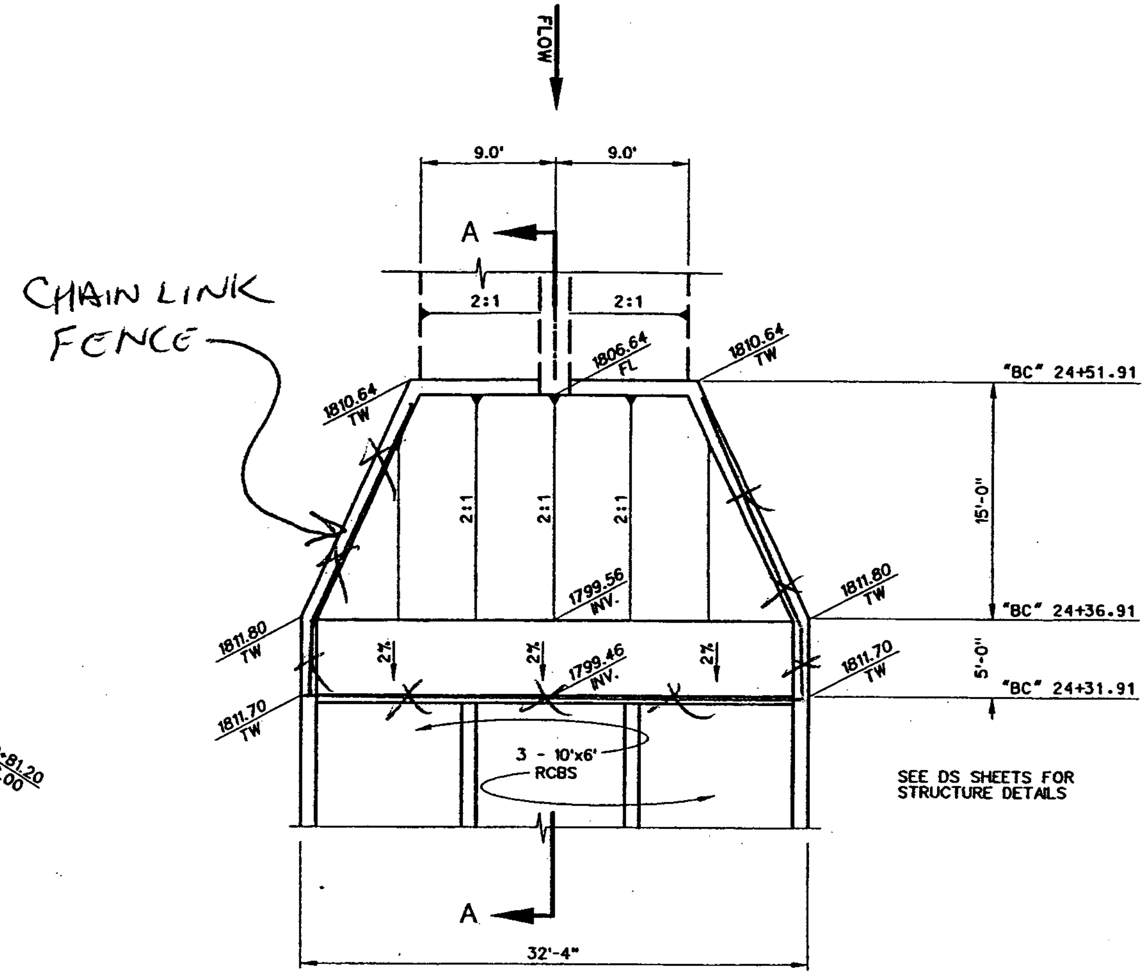
DESIGNED BY	WH
CHECKED BY	WH
APPROVED BY	WH

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-6

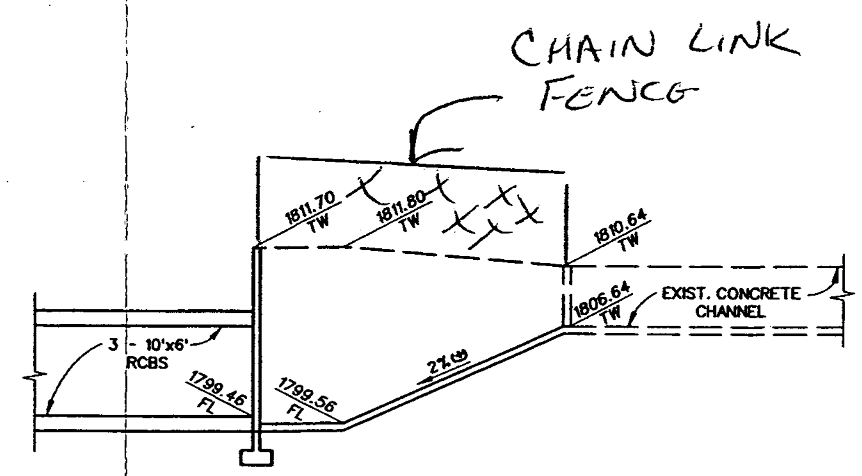


STA. "FW" 20+81.20 TO 23+40

BRIDGE LOW FLOW PLAN VIEW CONFIGURATION (A)
NOT TO SCALE



PLAN



SECTION AA

INLET STRUCTURE DETAILS (B)
NOT TO SCALE

NOTES:

1. DIRECTION OF STATIONING INCREASES FROM DOWNSTREAM TO UPSTREAM.
2. CROSS SECTIONS ARE SHOWN FACING DOWNSTREAM.

PROFESSIONAL ENGINEER - STATE OF NEVADA
MARK A. SORENSEN
CIVIL
No. 8742
3-21-00

STATE OF NEVADA
DEPARTMENT OF TRANSPORATION

DETAILS

PBSJ
PARSONS TRANSPORTATION GROUP

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APPROVED BY: SP

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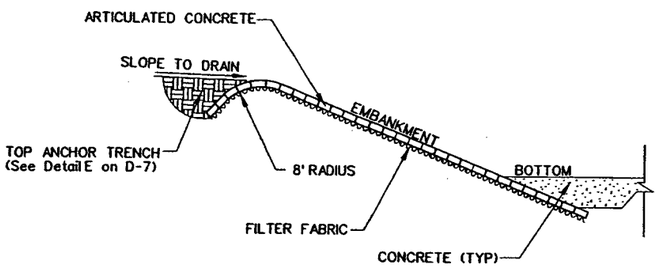
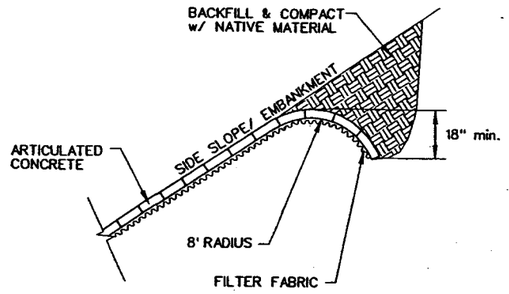
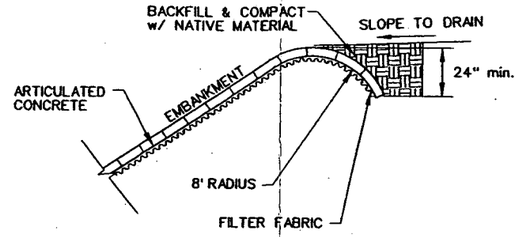
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	D-7



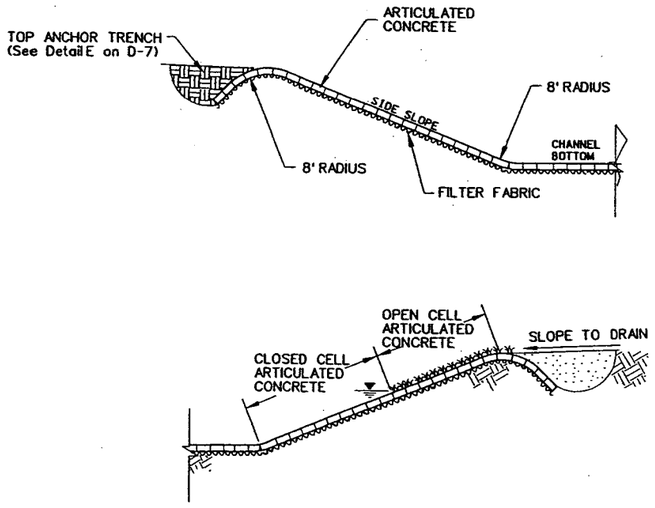
TYPICAL ARTICULATED CONCRETE EMBANKMENTAND BOTTOM CONCRETE CHANNEL CONNECTION AND CROSS-SECTION (A)
NOT TO SCALE



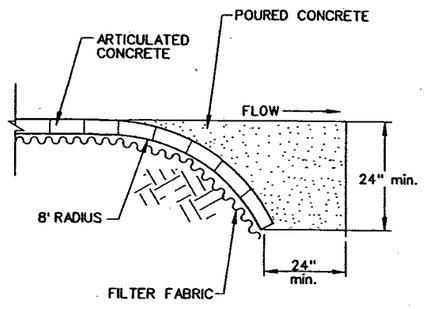
TYPICAL SIDE SLOPE EMBEDMENT (C)
NOT TO SCALE



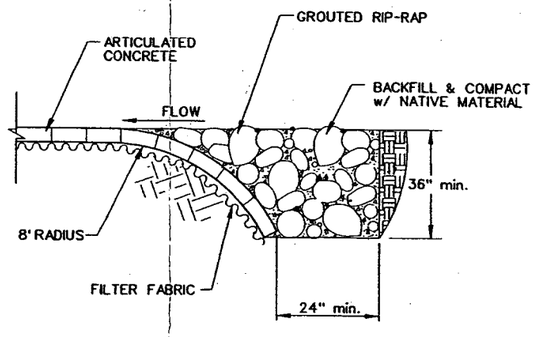
TYPICAL TOP ANCHOR TRENCH (E)
NOT TO SCALE



TYPICAL ARTICULATED TRAPEZOIDAL CHANNEL LINING (B)
NOT TO SCALE



DOWNSTREAM TREMINATION ANCHOR (D)
NOT TO SCALE



UPSTREAM TERMINATION ANCHOR TRENCH (F)
NOT TO SCALE

NOTES:

PRIOR TO CONSTRUCTION THE MANUFACTURER OF ARTICULATED CONCRETE SHALL SUBMIT TO THE ENGINEER FOR APPROVAL FINAL DESIGN, DETAILS, INSTALLATION PROCEDURES, AND SHOW SUBSTANTIAL EVIDENCE OF QUALIFICATIONS TO PRODUCE AND INSTALL THE PRODUCT.

PROFESSIONAL ENGINEER - STATE OF NEVADA
MARK A. SORENSEN
3-21-00
CIVIL
NO. 8742

STATE OF NEVADA
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DETAILS

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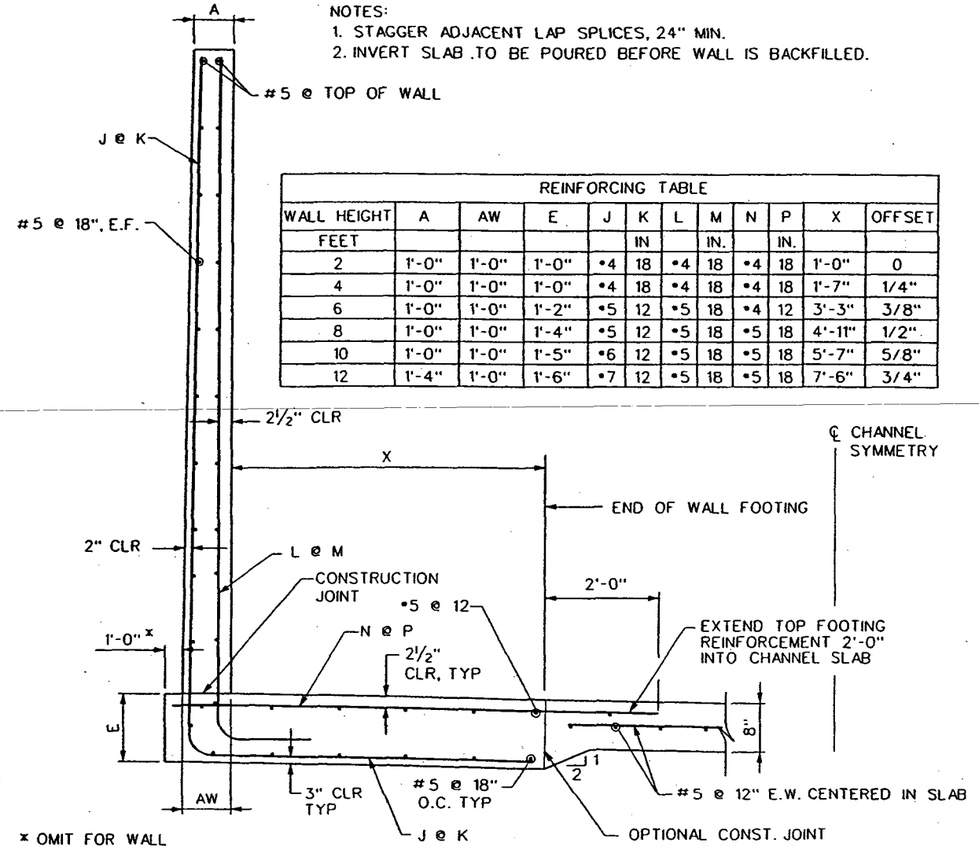
APPROVED BY:	SP

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO
9	NEVADA	SPSR-0582(013)	CLARK	DS-

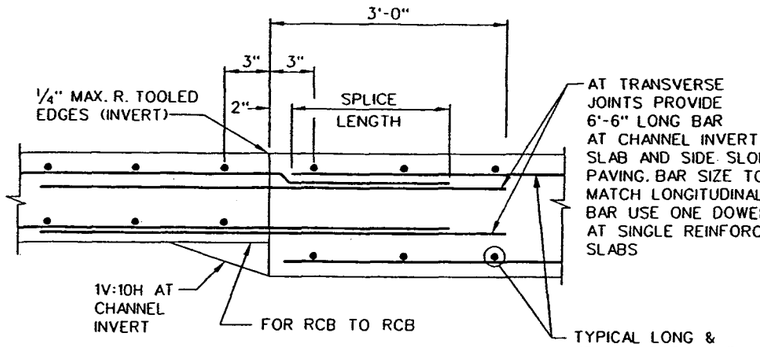
NOTES:
1. STAGGER ADJACENT LAP SPLICES, 24" MIN.
2. INVERT SLAB TO BE POURED BEFORE WALL IS BACKFILLED.



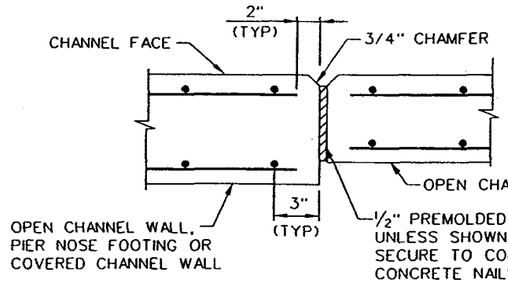
x OMIT FOR WALL HEIGHT < 4'-0"

REINFORCING TABLE											
WALL HEIGHT	A	AW	E	J	K	L	M	N	P	X	OFFSET
FEET					IN		IN.		IN.		
2	1'-0"	1'-0"	1'-0"	•4	18	•4	18	•4	18	1'-0"	0
4	1'-0"	1'-0"	1'-0"	•4	18	•4	18	•4	18	1'-7"	1/4"
6	1'-0"	1'-0"	1'-2"	•5	12	•5	18	•4	12	3'-3"	3/8"
8	1'-0"	1'-0"	1'-4"	•5	12	•5	18	•5	18	4'-11"	1/2"
10	1'-0"	1'-0"	1'-5"	•6	12	•5	18	•5	18	5'-7"	5/8"
12	1'-4"	1'-0"	1'-6"	•7	12	•5	18	•5	18	7'-6"	3/4"

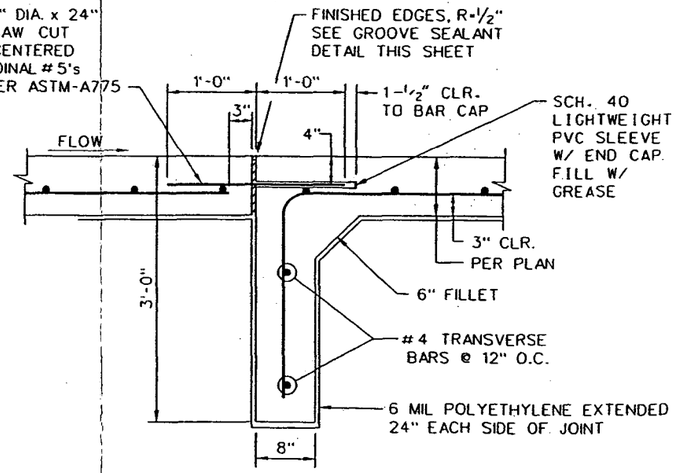
TYPICAL CHANNEL REINFORCEMENT



CONSTRUCTION JOINT TYPE "J" FOR CHANNEL INVERT SLAB AND SLOPE PAVING



EPOXY COATED ½" DIA. x 24" SMOOTH BAR w/ SAW CUT ENDS @ 12" O.C., CENTERED BETWEEN LONGITUDINAL #5's
EPOXY COATING PER ASTM-A775



EXPANSION JOINT TYPE "A" WITH CHANNEL CUT-OFF WALL

GENERAL NOTES:

DESIGN SPECIFICATIONS: ACI 318-95 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996 WITH INTERIMS THROUGH 1998

CONSTRUCTION SPECIFICATIONS: STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION 1986 EXCEPT AS NOTED BELOW AND IN THE SPECIAL PROVISIONS FOR THIS CONTRACT.

DESIGN METHOD: LOAD FACTOR DESIGN

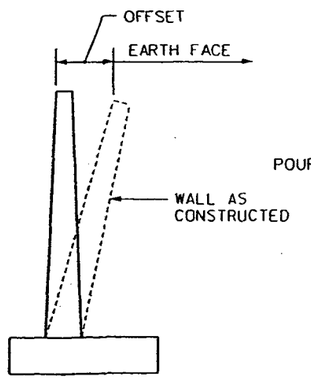
EARTH LOAD: BOX CULVERTS DESIGNED FOR COMPACTED FILL DEPTHS OF 2'.

SEISMIC LOAD: SEISMIC PERFORMANCE CATEGORY B GROUND ACCELERATION•0.15g

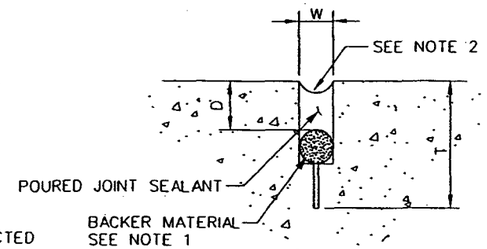
LIVE LOAD: AASHTO STANDARD HS20-44 AT BOX CULVERTS

CONCRETE: CLASS A MODIFIED, MAJOR f'c=4000 PSI CEMENT - ASTM C150 TYPE V

REINFORCING STEEL: ASTM A706 fy=60,000 PSI



WALL OFFSET DIAGRAM



W - WIDTH OF SEALANT RESERVOIR, ½" MIN. TO ¾" MAX. EXCEPT FOR EXPANSION JOINTS WHICH ARE ⅛" MAX.

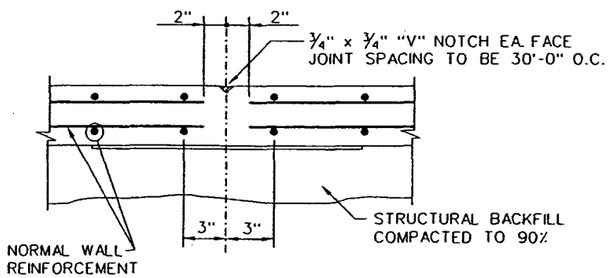
D - DEPTH OF SEALANT, 1.0 TO 1.5 TIMES "W"

T - DEPTH OF INITIAL SAWCUT, ¼ OF SLAB THICKNESS FOR PAVEMENT LESS THAN 1'-0" THICK, 3" FOR PAVEMENTS 1'-0" TOP, 1'-6" OR 1/6 OF THE SLAB THICKNESS FOR PAVEMENTS OVER 1'-6"

JOINT SEALING DETAIL

NOTE:
1. SEPARATING TAPE OR BACKER MATERIAL REQUIRED TO PREVENT JOINT SEALANT FROM FLOWING INTO SAWCUT, TO SEPARATE NON COMPATIBLE MATERIALS, AND TO PREVENT SEALANT FROM BONDING OF RESERVOIR.
2. TOP OF SEALANT WILL BE 3/16" TO ⅜" BELOW TOP OF PAVEMENT.

TYPICAL VERTICAL EXPANSION JOINT TYPE "D"



CONTRACTION JOINT TYPE "B" FOR CHANNEL WALL

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CHARLES E. JOSEPH
CIVIL
No. 12258
3/14

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

CHANNEL WALL DETAILS

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LAS VEGAS, NV 89119
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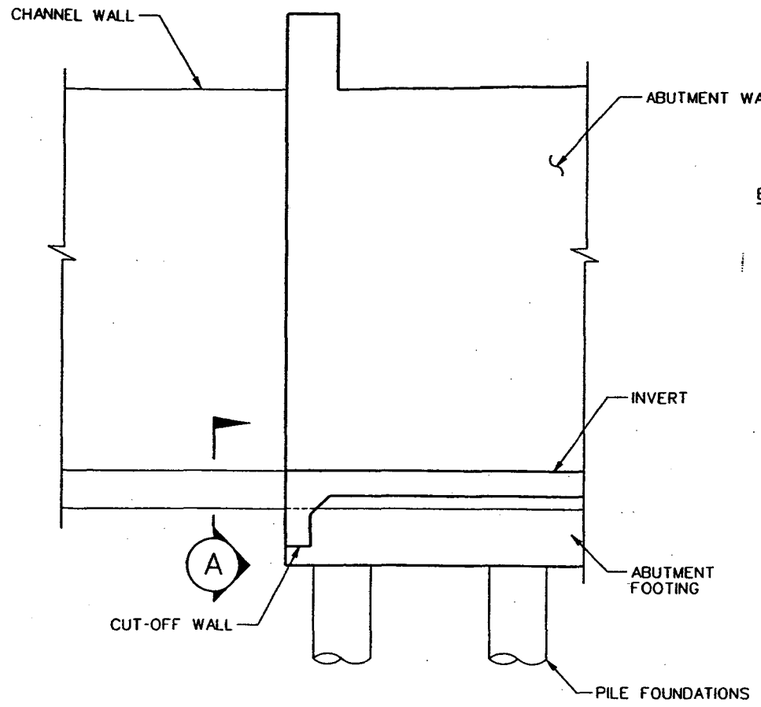
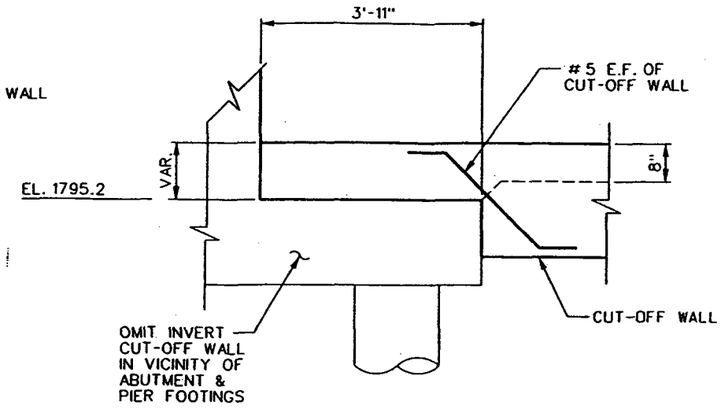
FAX (702) 435-8412

DRAWN BY: BH
DESIGNED BY: MJS
CHECKED BY: XX
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	DS-3



UPSTREAM SECTION AT BRIDGE
STA 22+83.66

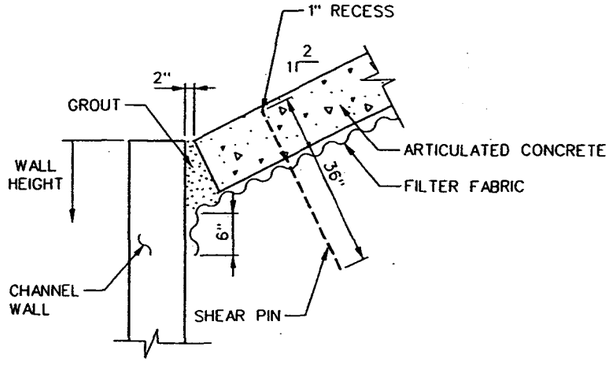


VIEW A

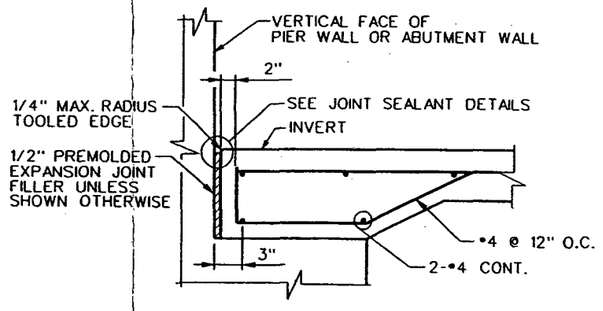
FIXED JOINT LOCATIONS		
STATION	JOINT TYPE	
	INVERT	WALL
20+97.00	A	*
22+83.86	A	D
24+00.00	A	*

NOTES FOR CHANNEL JOINTS

1. CONSTRUCTION JOINTS SHALL BE MADE ONLY AT THE LOCATIONS SHOWN OR AT LOCATIONS APPROVED BY THE ENGINEER.
2. TRANSVERSE AND LONGITUDINAL JOINTS IN INVERT SLAB AND SIDE SLOPE SLAB OF PAVED TRAPEZOIDAL CHANNELS WILL BE REQUIRED AT THE END OF EACH CONTINUOUS POURING OPERATION AND SHALL BE CONSTRUCTION JOINT TYPE "J".
3. TRANSVERSE AND LONGITUDINAL JOINTS IN OPEN RECTANGULAR CHANNEL SECTION INVERT SLAB WILL BE REQUIRED AT THE END OF EACH CONTINUOUS POURING OPERATION AND SHALL BE CONSTRUCTION JOINT "J". VERTICAL JOINTS IN CHANNEL WALLS WILL BE CONTRACTION JOINT TYPE "B" AND ARE REQUIRED AT INTERVALS OF 30' UNLESS SHOWN OTHERWISE OR AS APPROVED BY THE ENGINEER.
4. 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' OR BE LESS THAN 30' UNLESS SHOWN OTHERWISE, OR AS APPROVED BY THE ENGINEER.
5. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 3' OF A MANHOLE OR WITHIN 10' OF JUNCTION STRUCTURE OPENINGS UNLESS SHOWN OTHERWISE, OR AS APPROVED BY THE CONTRACTING OFFICER.
6. TRANSVERSE CONSTRUCTION AND CONTRACTION 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.
7. EXPANSION JOINTS OF THE TYPE INDICATED SHALL BE PROVIDED AT 90' O.C. AND IN THE TABLE "FIXED JOINT LOCATION" ON THIS SHEET.
8. THE CONTRACTOR SHALL PROVIDE A PROPOSED JOINT LOCATION SCHEDULE TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
9. TRANSVERSE CONTRACTION JOINTS SHALL BE PROVIDED AT 30' O.C. LONGITUDINAL CONTRACTION JOINTS SHALL BE PROVIDED AT 1/3 OF CHANNEL BOTTOM WIDTH.



PARTIAL SECTION THRU TRANSITION



EXPANSION JOINT TYPE "C"

PROFESSIONAL ENGINEER - STATE OF NEVADA
CHARLES E. JOSEPH
CIVIL
No. 12258
3/14/08

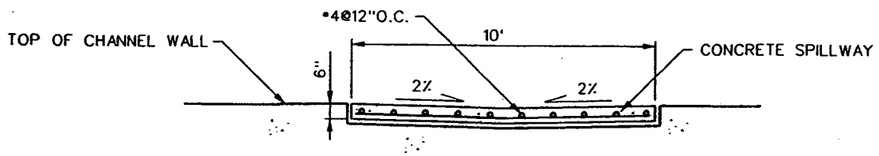
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

CHANNEL MISCELLANEOUS DETAILS

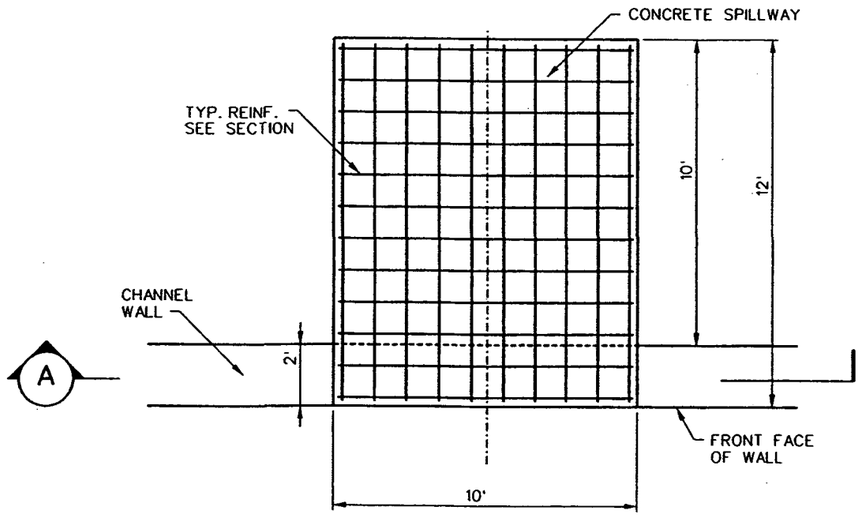
PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: CPR
DESIGNED BY: M.G.
CHECKED BY: DRD
APPROVED BY: C.E.J.

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	DS-3

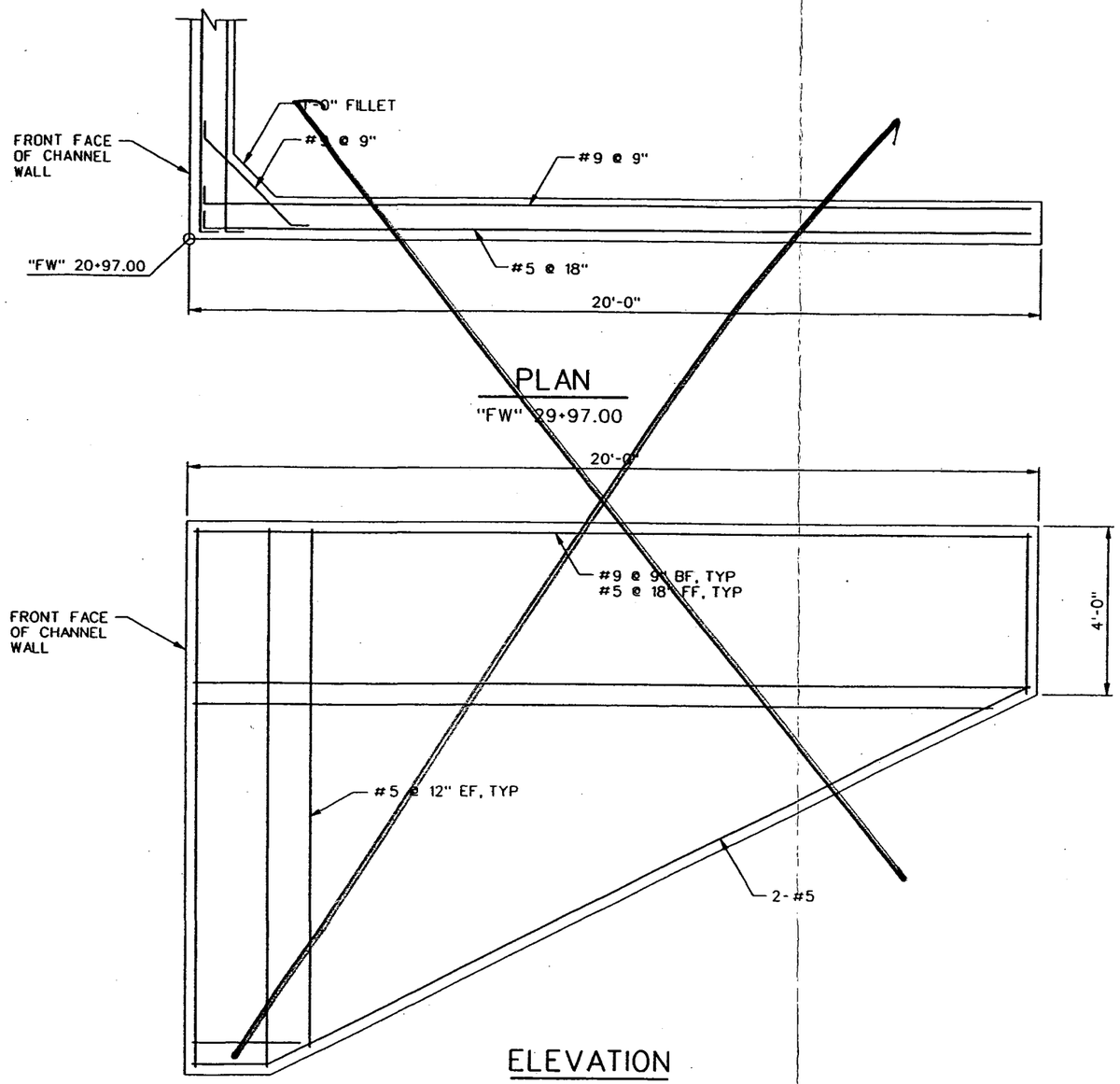


SECTION A

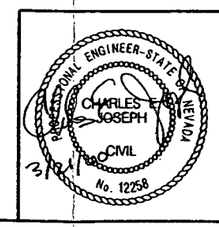


PLAN

SPILLWAY DETAIL



ELEVATION



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

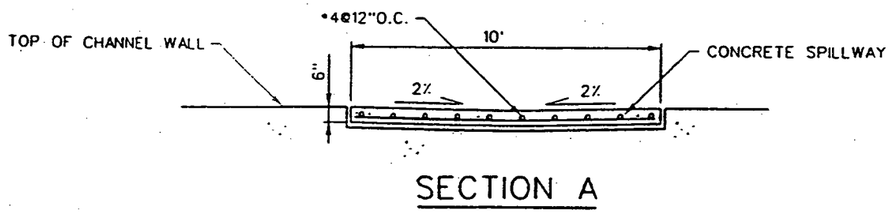
CHANNEL MISCELLANEOUS DETAILS

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2115
FAX (702) 435-8412

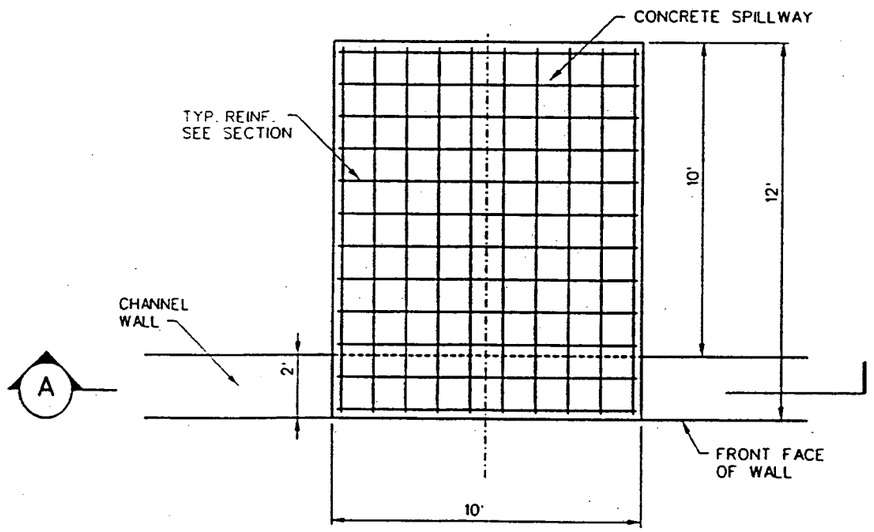
DRAWN BY: BH
DESIGNED BY: MJS
CHECKED BY: CEJ
APPROVED BY: CEJ

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	05-

Contract #3022
Change Order No.



SECTION A



PLAN

SPILLWAY DETAIL

Removed wingwall detail.

PROFESSIONAL ENGINEER-STATE OF NEVADA
CHARLES E. JOSEPH
3-12-01
CIVIL
No. 12258

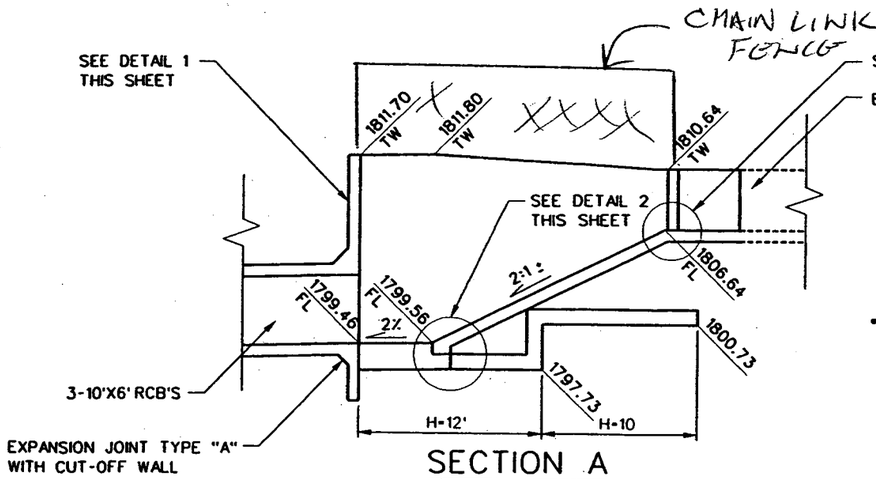
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

CHANNEL MISCELLANEOUS DETAILS

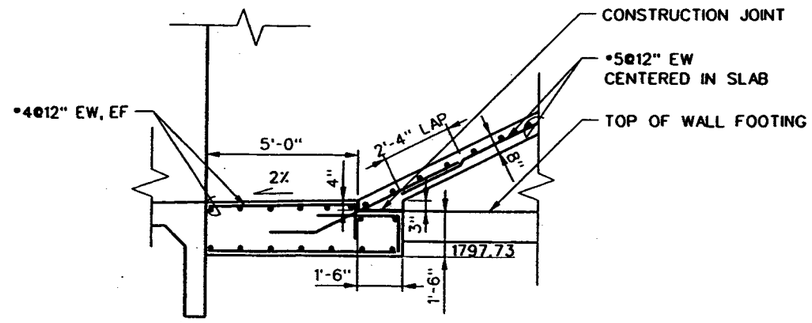
PARSONS TRANSPORTATION GROUP
840 GRER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
APPROVED BY: Plate

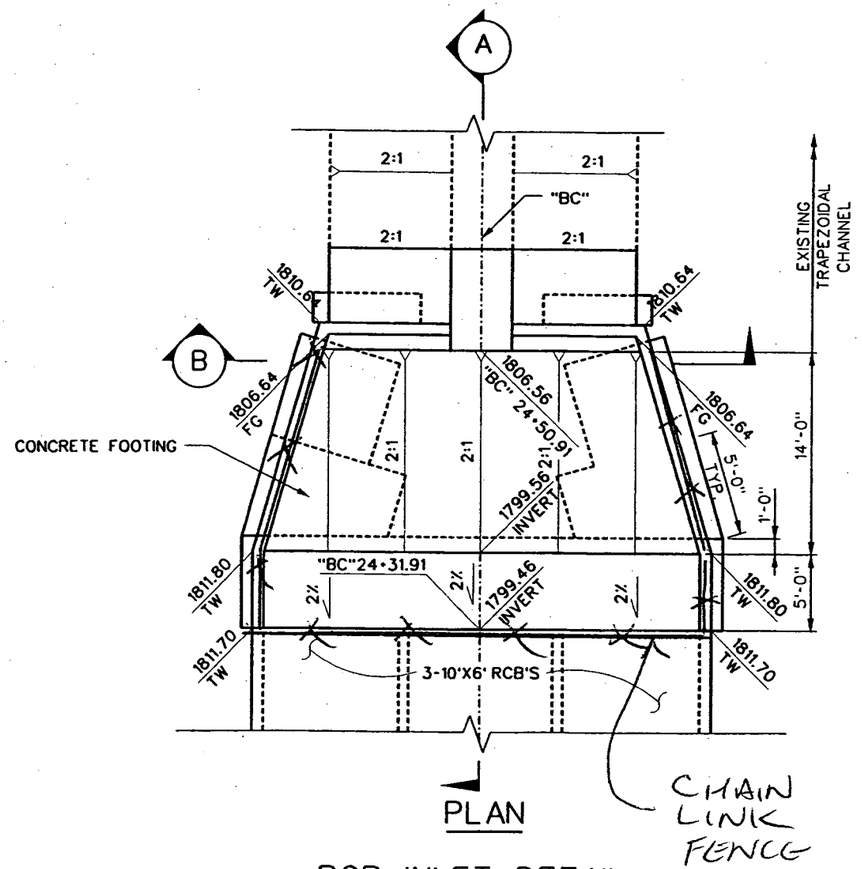
FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY	SHEET NO.
9	NEVADA	SPSR-0582(013)	CLARK	DS--



SECTION A

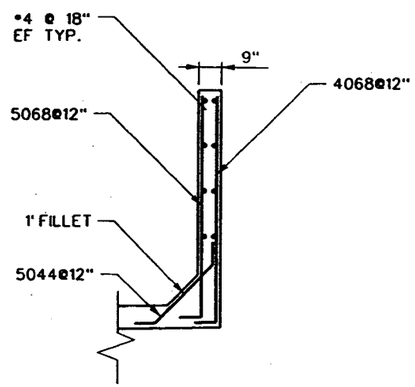


DETAIL 2

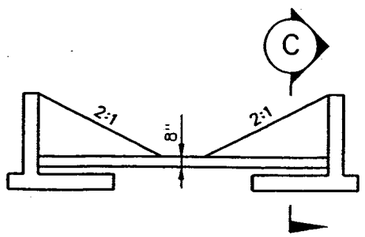


PLAN

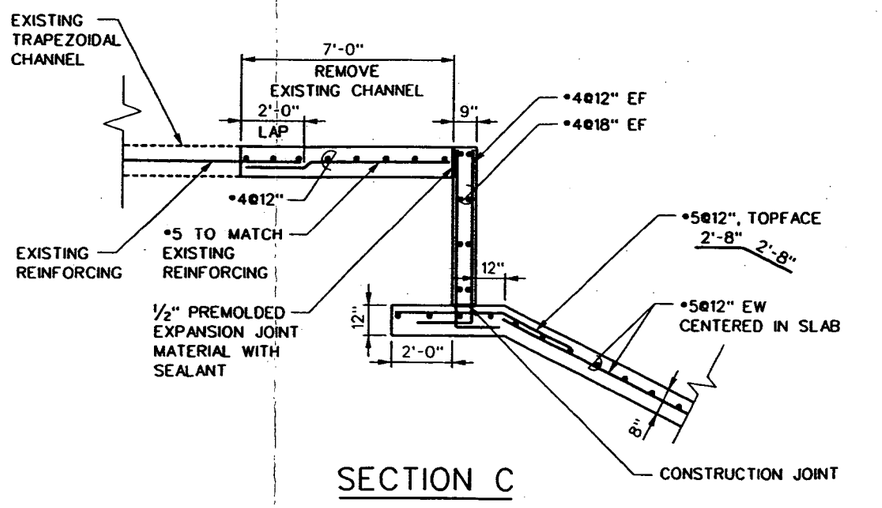
RCB INLET DETAIL



DETAIL 1



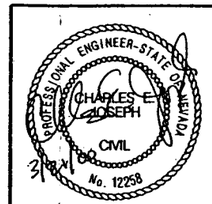
SECTION B



SECTION C

NOTES:
1. FOR RCB DETAILS SEE NDOT STANDARD PLANS B20.1.3 AND B20.1.3.1.

2. SEE SHEET DS-1 FOR WALL & JOINT DETAILS



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

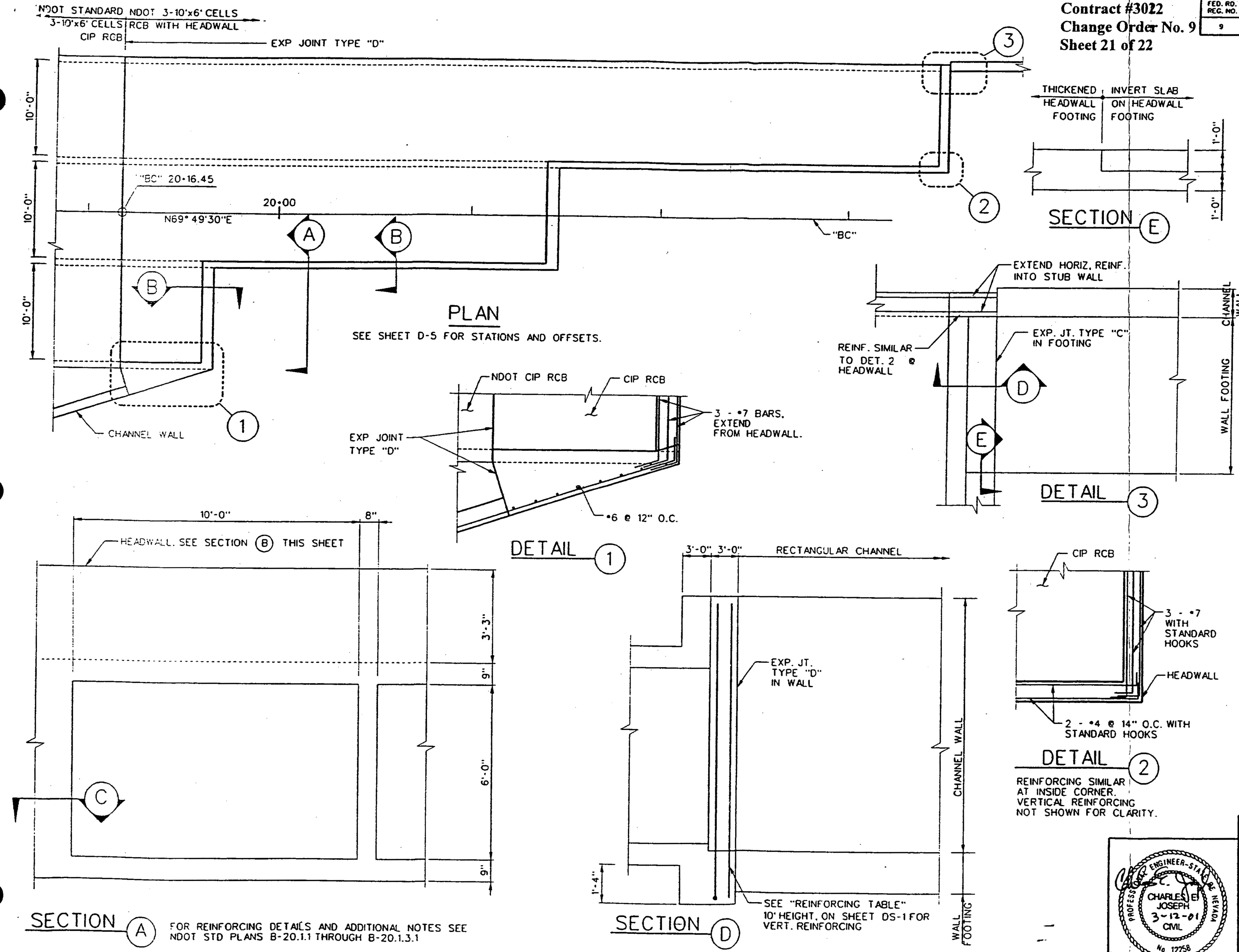
RCB INLET DETAILS

PARSONS TRANSPORTATION GROUP
840 GRIER DRIVE, STE. 340
LAS VEGAS, NV 89119
PHONE (702) 435-2116
FAX (702) 435-8412

DRAWN BY: CCW
DESIGNED BY: CEJ
CHECKED BY: MJS
APPROVED BY: CEJ

Contract #3022
Change Order No. 9
Sheet 21 of 22

FED. RD. REG. NO.	STATE	PROJECT NO.	COUNTY
9	NEVADA	SPSR-0582(013)	CLARK



NDOT STANDARD 3-10'x6' CELLS CIP RCB
NDOT 3-10'x6' CELLS RCB WITH HEADWALL
EXP JOINT TYPE "D"
"BC" 20+16.45
20+00
N69° 49'30"E
"BC"
CHANNEL WALL
PLAN
SEE SHEET D-5 FOR STATIONS AND OFFSETS.
THICKENED HEADWALL FOOTING
INVERT SLAB ON HEADWALL FOOTING
SECTION E
CONTINUE RCB REINFORCING THROUGH THIS AREA
2'-0" MIN
#4 @ 12" O.C.
TYPICAL CHANNEL WALL VERTICAL REINFORCING SEE SHEET DS-1
SECTION C
EXTEND HORIZ. REINF. INTO STUB WALL
REINF. SIMILAR TO DET. 2 @ HEADWALL
EXP. JT. TYPE "C" IN FOOTING
CHANNEL WALL
WALL FOOTING
DETAIL 3
NDOT CIP RCB
CIP RCB
3 - #7 BARS, EXTEND FROM HEADWALL.
EXP JOINT TYPE "D"
#6 @ 12" O.C.
DETAIL 1
#4 TOT 2
#4 HOOPS @ 12" O.C.
#4 TOT 2
#5 @ 12"
#7 TOT 3 @ 4" MAX ACROSS OPENING.
INVERT SLAB
4-#4 BARS
#4 @ 12" SPACING
SECTION B
HEADWALL, SEE SECTION B THIS SHEET
SECTION A
FOR REINFORCING DETAILS AND ADDITIONAL NOTES SEE NDOT STD PLANS B-20.1.1 THROUGH B-20.1.3.1
RECTANGULAR CHANNEL
EXP. JT. TYPE "D" IN WALL
SEE "REINFORCING TABLE" 10' HEIGHT, ON SHEET DS-1 FOR VERT. REINFORCING
SECTION D
CIP RCB
3 - #7 WITH STANDARD HOOKS
HEADWALL
2 - #4 @ 14" O.C. WITH STANDARD HOOKS
DETAIL 2
REINFORCING SIMILAR AT INSIDE CORNER. VERTICAL REINFORCING NOT SHOWN FOR CLARITY.

PROFESSIONAL ENGINEER - STATE OF NEVADA
CHARLES E. JOSEPH
3-12-01
CIVIL
No. 12258

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

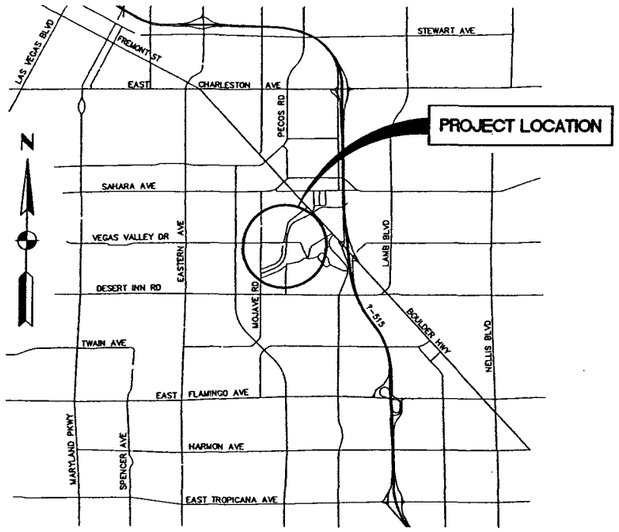
HEADWALL DETAILS

PARSONS TRANSPORTATION GROUP

L:\PROJECTS\643256\Design\Ustn\CCO_2_12_01\256ds-05.dgn
12 MAR '01

As-built plans of "Improvement Plans for Flamingo Wash from Mojave Road to Interstate 515, Phase II"

DEPARTMENT OF PUBLIC WORKS



Vicinity Map
NOT TO SCALE

"Progress as Promised"

2001

IMPROVEMENT PLANS FOR

FLAMINGO WASH

FROM MOJAVE ROAD TO INTERSTATE 515

PHASE II

Funded By:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

Index of Sheets

County Commissioners

Dario Herrera, Chairman
Myrna Williams, Vice Chair
Yvonne Atkinson Gates
Erin Kenny
Mary J. Kincaid–Chauncey
Chip Maxfield
Bruce L. Woodbury

County Manager

Dale W. Askew

Director of Public Works

Approved:

M.J. Manning, P.E.

Clark County Regional Flood Control District

Approved:

Gale Wm. Fraser, II P.E.
General Manager/Chief Engineer

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA — CYNDI J. FLIPPIN-DUDLEY — CIVIL — No. 11070

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

AGENCY	PLANS REVIEWED BY	DATE
SPRINT		
LAS VEGAS VALLEY WATER DISTRICT		
SOUTHWEST GAS CORPORATION		
NEVADA POWER COMPANY (DISTRIBUTION)		
NEVADA POWER COMPANY (TRANSMISSION)		
CLARK COUNTY SANITATION DISTRICT		
COX COMMUNICATIONS		
CLARK COUNTY FIRE DEPARTMENT		

DEPARTMENT OF PUBLIC WORKS	BY	DATE
DEPUTY DIRECTOR		
COMMUNITY DEVELOPMENT DIVISION		
CONSTRUCTION MANAGEMENT DIVISION		
DESIGN ENGINEERING DIVISION		
MAINTENANCE MANAGEMENT DIVISION		
TRAFFIC MANAGEMENT DIVISION		
COUNTY SURVEYOR'S OFFICE		

REVISIONS		
REVISION NO	DESCRIPTION	DATE

DESIGN ENGINEERING DIVISION

COVER SHEET

L–1645A

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

X:\840 FLAMINGO WASH\BASESHEETS\AS-BUILTS\840COVER.dwg 10 DEC 02 11:27:00 am PST RTH

CLARK COUNTY PUBLIC WORKS
GENERAL NOTES

1. ALL REFERENCES TO STANDARD DRAWINGS ARE TO CCASD AND CLARK COUNTY DEPARTMENT OF PUBLIC WORKS SUPPLEMENT TO UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
2. ALL WORK DONE WITHIN THE PUBLIC RIGHT OF WAY AND OUTSIDE OF THE PROJECT BOUNDARIES REQUIRES A SEPARATE ENCROACHMENT PERMIT ISSUED BY THE CLARK COUNTY DEPARTMENT OF PUBLIC WORKS. TRENCH AND PAVEMENT REPLACEMENT CONDITIONS SHALL BE AS PER THE PERMIT.
3. EXACT LOCATIONS OF ALL SAWCUT LINES SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
4. CURB AND GUTTER WITH A GRADE OF LESS THAN 4/10 OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
5. THE INSPECTION AND TESTING OF SOILS SHALL BE TO CLARK COUNTY STANDARDS AND IN ACCORDANCE WITH THE APPROVED QUALITY CONTROL PROGRAM.
6. PRIVATE STREETS AND/OR DRIVEWAYS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLARK COUNTY INSPECTOR.
7. POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO THE COUNTY OF CLARK.
8. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED PUBLIC ENTITIES, THE PROJECT ENGINEER, THE SOILS ENGINEER, AND THE COUNTY OF CLARK AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF WORK.
9. THE CONTRACTOR SHALL VERIFY IN THE FIELD ALL DIMENSIONS, EXISTING CONDITIONS, AND POINTS OF CONNECTION WITH ADJOINING PROPERTY (PUBLIC AND PRIVATE). ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE PROJECT ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE, INGRESS, AND EGRESS TO THE PROJECT.
11. FINAL ASPHALTIC CONCRETE PAVEMENT SURFACES SHALL BE ONE-HALF INCH ABOVE THE LIP OF THE GUTTER. PAVEMENT SURFACES SHALL BE FLUSH WITH EDGES OF CROSS GUTTERS EXCEPT AT WHEELCHAIR RAMPS WHERE A.C. PAVEMENT SHALL BE FLUSH WITH CONCRETE RAMP.
12. THE CONTRACTOR SHALL MAINTAIN AN ON GOING PROCESS OF REMOVAL OF ALL SPILLAGE OF EXCAVATION MATERIAL ON ALL PAVED STREETS.
13. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL TRAFFIC SIGNS, NOT SPECIFICALLY NOTED ON DRAWINGS, WHICH ARE TO BE RELOCATED OR REMOVED.
14. THE FOLLOWING UNDERGROUND UTILITIES MAY BE LOCATED IN YOUR PROJECT AREA: STREET LIGHTING, TRAFFIC SIGNALS, AND INTERCONNECT CABLE. THE CONTRACTOR MUST CONTACT CLARK COUNTY DEPARTMENT OF PUBLIC WORKS (CCPW) FOR LOCATIONS AT LEAST 48 HOURS PRIOR TO WORKING IN THE AREA. CCPW IS NOT A MEMBER OF CALL BEFORE YOU DIG (UNDERGROUND SERVICE ALERT) AND A CALL TO THAT ORGANIZATION DOES NOT RELIEVE THE CONTRACTOR OF LIABILITY FOR THESE FACILITIES.
15. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE AFFECTED PROPERTY OWNER(S) AGENTS IN ORDER TO MINIMIZE CONSTRUCTION CONFLICTS AND DELAYS.
16. THE LAYOUT LINE FOR ALL "L" TYPE CURB AND GUTTER IS AT THE BACK OF CURB. THE LAYOUT LINE FOR ALL "A" TYPE CURB IS AT THE FACE OF CURB UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", CLARK COUNTY AREA, NEVADA LATEST EDITION, AND THE "UNIFORM DRAWINGS FOR PUBLIC WORKS CONSTRUCTION", CLARK COUNTY AREA, NEVADA LATEST EDITION, UNLESS OTHERWISE SPECIFIED BY NOTE ON THE PLANS AND/OR SPECIAL PROVISIONS. THE IMPROVEMENT STANDARDS WILL HEREAFTER BE REFERRED TO AS "CLARK COUNTY AREA STANDARD DRAWINGS."
2. 48 HOURS PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT

NEVADA POWER COMPANY	PHONE 1 (800) 227-2600
SPRINT-CENTRAL TELEPHONE COMPANY	PHONE 1 (800) 227-2600
SOUTHWEST GAS CORPORATION	PHONE 1 (800) 227-2600
COX COMMUNICATIONS LAS VEGAS, INC.	PHONE 384-8084
LAS VEGAS VALLEY WATER DIST.	PHONE 870-4194
CLARK COUNTY TRAFFIC MGMT. DIV.	PHONE 455-7511
CLARK COUNTY SANITATION DISTRICT	PHONE 434-6000

3. LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM INFORMATION RECEIVED FROM THE APPLICABLE UTILITY COMPANIES. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN, OR FOR UTILITIES OR STRUCTURES NOT SHOWN AT ACTUAL LOCATIONS ON THE DRAWINGS. EXISTING SERVICE LATERALS ARE NOT SHOWN ON THESE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITY REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS.
4. THE CONTRACTOR SHALL NOT REMOVE TREES, SHRUBS, LAWNS, WALLS, FENCES, SIGNS, STRUCTURES, LIGHTS, OR ANY EXISTING IMPROVEMENTS OUTSIDE OF STREET OR CHANNEL RIGHT OF WAY, EXCEPT WHERE REQUIRED TO DO SO BY THE CONTRACT DRAWINGS OR BY THE ENGINEER.
5. REPLACEMENT, RELOCATION OR RECONSTRUCTION OF ALL EXISTING IMPROVEMENTS INCLUDING SPRINKLER SYSTEMS, LAWNS, FENCES, WALLS, SIGNS, STEPS, SIDEWALKS, DRIVEWAYS, LAWN LIGHTS, AND ALL OTHER ITEMS APPLICABLE TO THIS CONTRACT SHALL BE AS REQUIRED BY THE ENGINEER.
6. THE CONTRACTOR SHALL BACKFILL AND FINE GRADE ALL CUT OR FILL SLOPES TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF THE ENGINEER, WHERE EXISTING LAWNS ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS THE CONTRACTOR SHALL SOD THE AFFECTED AREA TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
7. ALL BARRICADING AND TEMPORARY TRAFFIC CONTROL DEVICES OR METHODS USED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NEVADA TRAFFIC CONTROL MANUAL," 1986 (OR LATEST REVISION), PUBLISHED BY THE STATE OF NEVADA DEPARTMENT OF TRANSPORTATION AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT SPECIFICATIONS OR AS REQUIRED BY THE ENGINEER.
8. REMOVAL OR RELOCATIONS OF POWER POLES, TELEPHONE POLES, JOINTLY-OWNED POLES, AND APPURTENANCES WHICH INTERFERE WITH IMPROVEMENTS REQUIRED TO BE CONSTRUCTED UNDER THIS CONTRACT, SHALL BE PERFORMED BY THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE UTILITY COMPANIES FAR ENOUGH IN ADVANCE AS TO NOT IMPACT THE SCHEDULE.
9. CONTRACTOR SHALL USE SHORING OR OTHER APPROVED METHODS TO PREVENT SOIL FROM CAVING AWAY FROM OR OTHER WISE ENDANGERING THE STABILITY OF POWER POLES OR OTHER UTILITY FACILITIES LOCATED ADJACENT TO CONTRACTOR'S ACTIVITIES. THIS MAY INCLUDE BUT IS NOT LIMITED TO THE USE OF TRENCH BOXES.

LAS VEGAS VALLEY WATER DISTRICT
STANDARD NOTES

LVVWD Project # 23806

1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN RELEASED FOR CONSTRUCTION BY THE LAS VEGAS VALLEY WATER DISTRICT (LVVWD). FOLLOWING WATER PLAN APPROVAL; 48 HOUR NOTICE SHALL BE GIVEN TO THE LVVWD CUSTOMER SERVICE DEPARTMENT (258-7171) PRIOR TO THE START OF CONSTRUCTION. NOTICE MUST BE GIVEN BY 2:00 PM THE BUSINESS DAY PRIOR TO A LVVWD INSPECTION.
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS AND THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (UDACS), LATEST EDITION.
3. ALL WORK; EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2, SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENTS, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE COPPER TUBING WITH LVVWD APROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. THE FOLLOWING REQUIREMENTS MUST BE MET IN THE EVENT A WATER LINE AND A SANITARY SEWER LINE OR STORM DRAIN LINE CROSS(ES):

   A MINIMUM EIGHTEEN (18) INCH VERTICAL SEPARATION (OUTSIDE TO OUTSIDE) MUST BE MAINTAINED WHEN THE WATER LINE IS INSTALLED OVER THE SANITARY SEWER LINE OR STORM DRAIN LINE. IF THE VERTICAL SEPARATION CANNOT BE MAINTAINED OR THE WATER LINE MUST BE PLACED UNDER THE SANITARY SEWER LINE OR STORM DRAIN LINE; THE SANITARY SEWER LINE OR STORM DRAIN LINE MUST BE CONSTRUCTED WITH ONE OF THE FOLLOWING OR, AS SHOWN ON THESE PLANS:

   A. POTABLE WATER SUPPLY QUALITY MATERIAL
   B. ENCASEMENT, WITH FOUR (4) INCH CONCRETE (MINIMUM)
   C. SLEEVING WITH POTABLE WATER SUPPLY QUALITY PIPE.

   EACH PROVISION MUST EXTEND ALONG THE SANITARY SEWER LINE OR STORM DRAIN LINE ON EITHER SIDE OF THE MAIN LINE. A MINIMUM TEN (10) FOOT DISTANCE PERPENDICULAR TO THE WATER MAIN EXTERIOR.
9. WARNING TAPE SHALL BE REQUIRED OVER ALL MAINS, ALL SIX (6) INCH DIAMETER AND LARGER SERVICE LATERALS, AND ANY SERVICE LATERAL NOT INSTALLED PERPENDICULAR TO THE MAIN IN ACCORDANCE WITH STANDARD PLATE NO 27.
10. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LAS VEGAS VALLEY WATER DISTRICTS DISTRIBUTION SYSTEM.
11. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES; TELEPHONE 258-3152, FORTY-EIGHT (48) HOURS PRIOR TO PICKUP.
12. CONSTRUCTION MAY INTERRUPT SERVICE. WITH LVVWD APPROVAL AND PROPER NOTIFICATION; BETWEEN THE HOURS OF 10 PM AND 6 AM, SUNDAY THROUGH THURSDAY. CIRCUMSTANCES MAY REQUIRE TEMPORARY SERVICE FEEDS BE INSTALLED WITHOUT LVVWD REIMBURSEMENT. ANY TEMPORARY SERVICE FEED MUST HAVE PRIOR LVVWD APPROVAL.
13. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LAS VEGAS VALLEY WATER DISTRICT'S PREAPPROVED MATERIALS AND MANUFACTURERS LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

"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."

CLARK COUNTY SANITATION DISTRICT DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT DATE

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II
GENERAL NOTES AND APPROVALS
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA SYNDI L. FLIPPIN-DUDLEY No. 11070 CIVIL

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO 2
2 OF 28
L-1645A

X:\840 FLAMINGO WASH\BASESHEETS\AS-BUITLS\840NOTES.dwg 10 DEC 02 11:36:00 am PST VIEW1 RTM

LEGEND

CX	CURVE DATA NOTATION
①	CONSTRUCTION ITEM
⊠	REMOVAL ITEM
◆	SURVEY MONUMENT
6	POINT OF GRADE LINE W/STATION
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	100 YR HYDRAULIC GRADE LINE
	PROPERTY LINE
	EXISTING GROUND AT CENTERLINE
	MATCH LINE
	EASEMENT LINE
	GALVANIZED GUARDRAIL
	BARRIER RAIL
	"A" TYPE CURB
	SAWCUT LINE
—o—	4 CABLE FENCE
—x—	CHAIN LINK FENCE
—o—	ORNAMENTAL FENCE
	SWING GATE
----UG----	UNDERGROUND UTILITY LINES
——OHP——	OVERHEAD UTILITY LINES
	ELECTRICAL CONDUIT
	STREET LIGHT ASSEMBLY
■	PULL BOX
○	MANHOLE
⊗	WATER OR GAS VALVE
●	TELEPHONE AND/OR POWER POLE
þ	SIGN MOUNTED ON METAL POST
2100	CONTOUR WITH ELEVATION
	INTERMEDIATE CONTOUR
(2000.00) 2000.00	ELEVATION
4:1	SCARP
	DIRECTION OF FLOW
FH	FIRE HYDRANT

SAFETY ALERT

Call Before You Overhead
1-702-593-6111

Avoid cutting underground utility lines. It's costly.
Call Before You Dig
1-800-227-2600

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO	DESCRIPTION	UNIT	QUANTITY
105.01	ONSITE MATERIAL TESTING FOR QUALITY CONTROL	LS	1
107.01	TRAFFIC CONTROL	LS	1
109.01	HISTORICAL OWNER CAUSED DELAY ALLOWANCE	DAY	10
109.02	ADDITIONAL AMOUNT OVER $500 A DAY	DAY	10
109.03	CONSTRUCTION CONFLICTS AND ADDITIONAL WORK	LS	1
200.01	MOBILIZATION	LS	1
201.01	CLEARING AND GRUBBING	LS	1
202.01	REMOVE STRUCTURES AND OBSTRUCTIONS	LS	1
203.01	GEOTEXTILE REINFORCING FABRIC	SY	31,360
206.01	STRUCTURE EXCAVATION	CY	64,975
207.01	STRUCTURAL BACKFILL	CY	24,450
209.01	DRAIN BACKFILL	CY	10,300
212.01	LANDSCAPE RESTORATION	LS	1
217.01	DEWATERING	LS	1
302.01	TYPE II AGGREGATE BASE	CY	14,000
402.01	PLANTMIX BITUMINOUS SURFACE	TON	325
502.01	60 FOOT WIDE TRAPEZOIDAL CONCRETE CHANNEL	LF	1,955
502.02	60 FOOT WIDE RECTANGULAR CONCRETE CHANNEL	LF	2,180
502.03	RCB TO 60 FOOT WIDE TRAPEZOIDAL CONCRETE CHANNEL TRANSITION	LS	1
502.04	60 FOOT WIDE TRAPEZOIDAL TO 60 FOOT WIDE RECTANGULAR CONCRETE CHANNEL TRANSITION	LS	1
502.05	BRIDGE ABUTMENTS	LS	1
502.06	11.3 FOOT WIDE BY 3 FOOT HIGH RCB	LS	1
502.07	GAGE STATION	LS	1
506.01	20 FOOT BY 60 FOOT SIMPLE SPAN BRIDGE STRUCTURE	LS	1
603.01	18" REINFORCED CONCRETE PIPE (CLASS III)	LF	33
603.02	54" REINFORCED CONCRETE PIPE (CLASS III)	LF	70
605.01	18" PVC PIPE (C905 DR25)	LF	67
609.01	MODIFIED TYPE III MANHOLE	EA	1
610.01	GRAVEL MULCH	CY	1,250
611.01	REINFORCED CONCRETE SLOPE PAVEMENT	LS	1
613.01	"L" TYPE CURB AND GUTTER	LF	245
613.02	12 FOOT WIDE COMMERCIAL DRIVEWAY (OPTION A)	SF	200
613.03	"A" TYPE CURB	LF	3,645
616.01	6 FOOT HIGH CHAIN LINK FENCE	LF	200
616.02	4 FOOT HIGH 4 CABLE FENCE	LF	4,606
616.03	16 FOOT WIDE, 6 FOOT HIGH DOUBLE SWING ORNAMENTAL GATE	EA	1
616.04	13 FOOT WIDE, 6 FOOT HIGH DOUBLE SWING ORNAMENTAL GATE	EA	2
616.05	6 FOOT WIDE, 6 FOOT HIGH SINGLE SWING ORNAMENTAL GATE	EA	2
616.06	13 FOOT WIDE, 6 FOOT HIGH DOUBLE SWING CHAIN LINK GATE	EA	2
616.07	6 FOOT HIGH ORNAMENTAL FENCE	LF	4,525
623.01	100W HPS STREET LIGHT ASSEMBLY AND FOUNDATION	EA	2
623.02	NO. 3 – 1/2 PULL BOX	EA	1
637.01	DUST CONTROL	LS	1
637.02	DUST PALLIATIVE	TON	7

ADDITIVE/DEDUCTIVE ITEMS

ITEM NO	DESCRIPTION	UNIT	QUANTITY
208.01	TRENCH OVER EXCAVATION AND COMPACTED IMPORT AGGREGATE BEDDING	CY	100
208.02	CHANGES IN EARTHWORK QUANTITIES BEFORE INITIAL TRENCHING	CY	100
208.03	INCREASE IN EARTHWORK QUANTITIES AFTER INITIAL TRENCHING	CY	100

BASIS OF BEARING

NORTH 89 DEGREES 48 MINUTES 30 SECONDS EAST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 21 SOUTH, RANGE 62 EAST, MDM, CLARK COUNTY, NEVADA BASED ON COORDINATES AND CONTROL PREPARED BY THE CLARK COUNTY SURVEYOR'S OFFICE FOR "THE FOUR MILE WASH PANEL POINTS" AND TIED TO THE LAS VEGAS VALLEY GEODETIC CONTROL NETWORK MONUMENTS 826 AND 828 (PER FILE 88, PAGE 53 OF SURVEYS) USING THREE GPS RECEIVERS OPERATING IN FAST STATIC MODE.

BENCHMARK

CLARK COUNTY BENCH MARK NO 1 STATION 6C11/12 SSE6.
BEING A 2" DOME HEAD BRASS CAP REFERENCE MONUMENT IN TOP OF CURB, NORTHEAST CORNER OF DESERT INN ROAD AND MOJAVE ROAD, NEAR THE PC OF DESERT INN ROAD.
ELEVATION = 569.292 METERS (1867.75 FEET) NAVD 88

GEOTECHNICAL REPORT

GEOTECHNICAL REPORT PREPARED BY KLEINFELDER, 21 MARCH, 2000.
PROJECT NUMBER 31–1836.32, ENTITLED
GEOTECHNICAL INVESTIGATION
PROPOSED FLAMINGO WASH IMPROVEMENTS
LAS VEGAS, NEVADA

PROJECT CONTROL POINTS

QUARTER CORNER OF SECTION 6 AND SECTION 7
T21S, R62E, MDM, CLARK COUNTY, NEVADA.
NORTHING 11851.3920
EASTING 10962.1340
ELEVATION 1790.93
EAST ONE SIXTEENTH CORNER OF SECTION 12 AND SECTION 13
T21S, R62E, MDM, CLARK COUNTY, NEVADA.
NORTHING 6491.7330
EASTING 7055.4940
ELEVATION 1867.14

ABBREVIATIONS

AC	ASPHALT CONCRETE PAVEMENT
ACP	ASBESTOS CEMENT PIPE
AGG	AGGREGATE
BC	BACK OF CURB
BLVD	BOULEVARD
BOT	BOTTOM
"FWI"	FLAMINGO WASH POINT OF GRADE LINE
CC	CLARK COUNTY
CCASD	CLARK COUNTY AREA STANDARD DRAWING
C&G	CURB AND GUTTER
CL	CENTERLINE
CMP	CORREGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCTION
DI	DROP INLET
ø	DIAMETER
DWG	DRAWING
DWY	DRIVEWAY
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
FG	FINISHED GRADE
FL	FLOW LINE
FOC	FIBER OPTIC CONDUIT
GB	GRADE BREAK
HGL	HYDRAULIC GRADE LINE
INV	INVERT
LF	LINEAR FEET
LT	LEFT
LVVWD	LAS VEGAS VALLEY WATER DISTRICT
MATL	MATERIAL
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NTS	NOT TO SCALE
OC	ON CENTER
PBS	PLANTMIX BITUMINOUS SURFACE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PPCBR	PORTABLE PRECASED CONCRETE BARRIER RAIL
PVMT	PAVEMENT
PVT	PRIVATE
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RT	RIGHT
R/W	RIGHT OF WAY
SD	STORM DRAIN
STD	STANDARD
SW	SIDEWALK
T&B	TOP AND BOTTOM
TC	TOP OF CURB
TRANS	TRANSITION
TW	TOP WALL
TOP	TOP OF PIPE
(TYP)	TYPICAL
USD	UNIFORM STANDARD DRAWING
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
YR	YEAR

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

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REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II
LEGEND, ABBREVIATIONS AND SUMMARY OF QUANTITIES
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

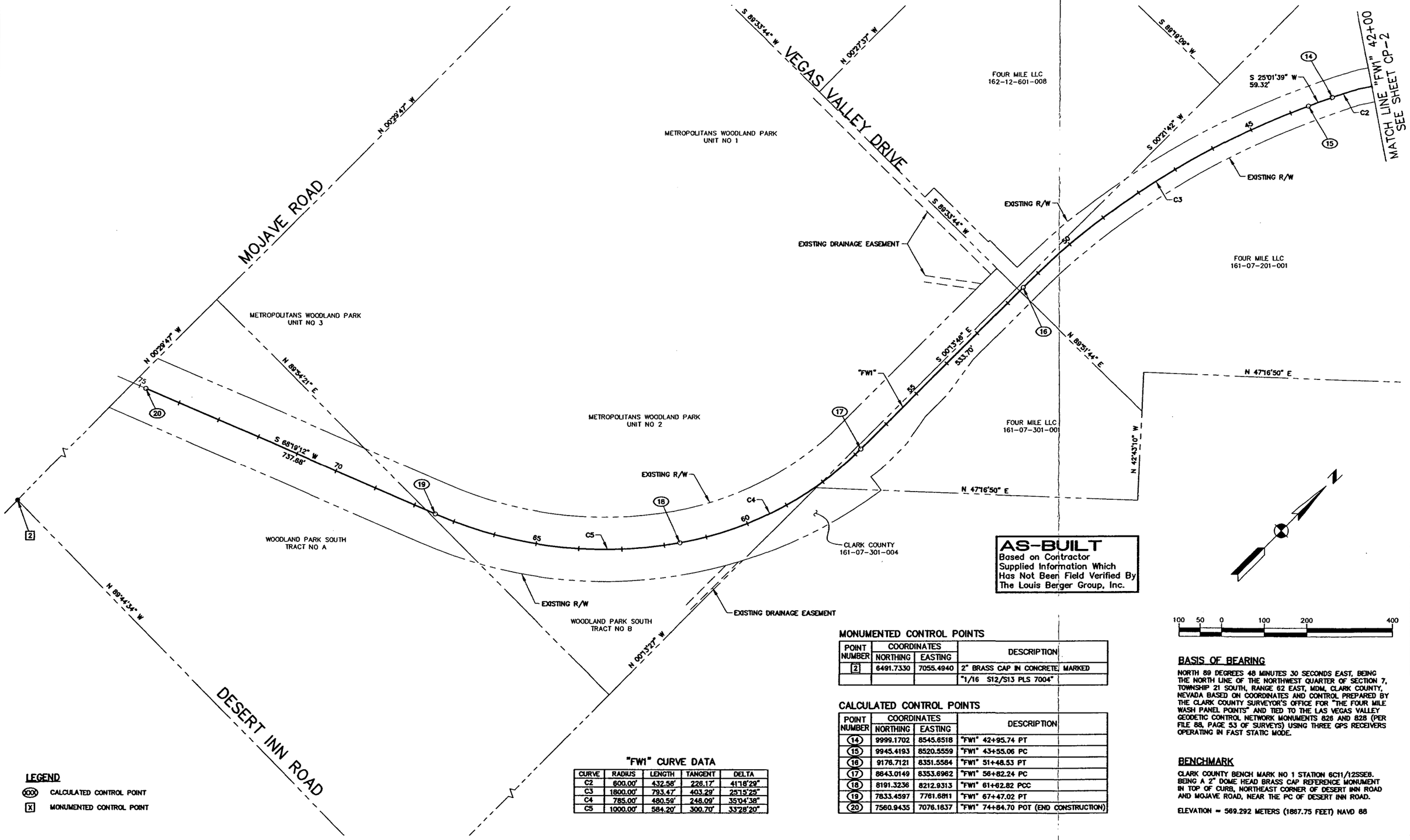
REGISTERED PROFESSIONAL ENGINEER – STATE OF NEVADA
SYNDI J. FLIPPIN-DUDLEY
CIVIL
No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO 3
3 OF 28
L–1645A



AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

100 50 0 100 200 400

LEGEND

(XXX) CALCULATED CONTROL POINT

[X] MONUMENTED CONTROL POINT

"FW1" CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
C2	600.00'	432.58'	226.17'	41°18'29"
C3	1800.00'	793.47'	403.29'	25°15'25"
C4	785.00'	480.59'	248.09'	35°04'38"
C5	1000.00'	584.20'	300.70'	33°28'20"

MONUMENTED CONTROL POINTS

POINT NUMBER	COORDINATES NORTHING	COORDINATES EASTING	DESCRIPTION
[2]	6491.7330	7055.4940	2" BRASS CAP IN CONCRETE MARKED
			"1/16 S12/S13 PLS 7004"

CALCULATED CONTROL POINTS

POINT NUMBER	COORDINATES NORTHING	COORDINATES EASTING	DESCRIPTION
(14)	9999.1702	8545.6518	"FW1" 42+95.74 PT
(15)	9945.4193	8520.5559	"FW1" 43+55.06 PC
(16)	9176.7121	8351.5584	"FW1" 51+48.53 PT
(17)	8643.0149	8353.6962	"FW1" 56+82.24 PC
(18)	8191.3236	8212.9313	"FW1" 61+62.82 PCC
(19)	7833.4597	7761.6811	"FW1" 67+47.02 PT
(20)	7560.9435	7076.1837	"FW1" 74+84.70 POT (END CONSTRUCTION)

BASIS OF BEARING

NORTH 89 DEGREES 48 MINUTES 30 SECONDS EAST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 21 SOUTH, RANGE 62 EAST, MDM, CLARK COUNTY, NEVADA BASED ON COORDINATES AND CONTROL PREPARED BY THE CLARK COUNTY SURVEYOR'S OFFICE FOR "THE FOUR MILE WASH PANEL POINTS" AND TIED TO THE LAS VEGAS VALLEY GEODETIC CONTROL NETWORK MONUMENTS 828 AND 828 (PER FILE 88, PAGE 53 OF SURVEYS) USING THREE GPS RECEIVERS OPERATING IN FAST STATIC MODE.

BENCHMARK

CLARK COUNTY BENCH MARK NO 1 STATION 6C11/12SSE8. BEING A 2" DOME HEAD BRASS CAP REFERENCE MONUMENT IN TOP OF CURB, NORTHEAST CORNER OF DESERT INN ROAD AND MOJAVE ROAD, NEAR THE PC OF DESERT INN ROAD.

ELEVATION = 569.292 METERS (1867.75 FEET) NAVD 88

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

HORIZONTAL CONTROL PLAN

"FW1" 42+00.00 TO "FW1" 74+84.70

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - SYNDI J. FLIPPIN-DUDLEY - CIVIL - No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: NONE
FIELD BOOK

DRAWING NO
CP-1
7 OF 28
L-1645A

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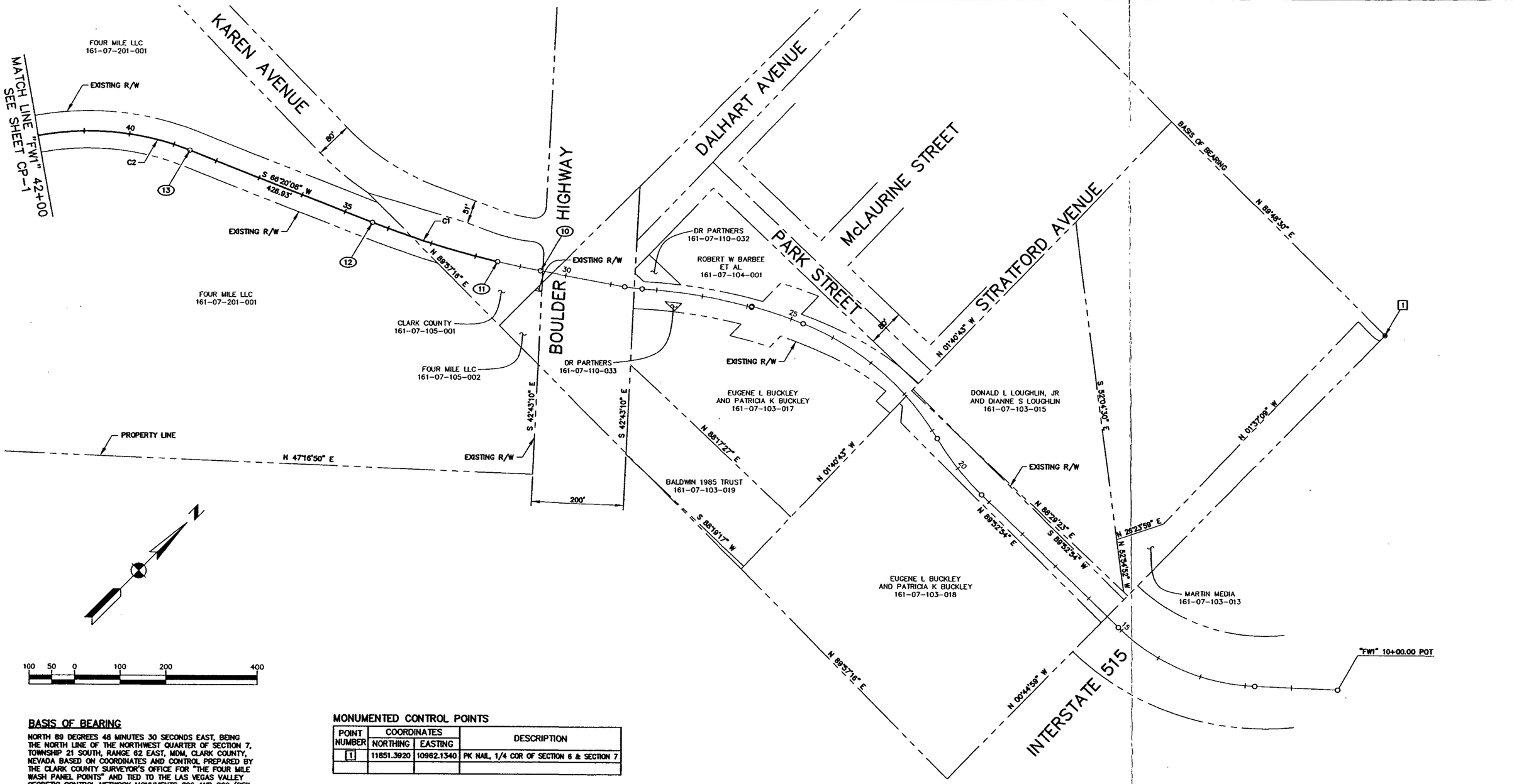


100 50 0 100 200 400

BASIS OF BEARING

NORTH 89 DEGREES 48 MINUTES 30 SECONDS EAST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 21 SOUTH, RANGE 62 EAST, MDM, CLARK COUNTY, NEVADA BASED ON COORDINATES AND CONTROL PREPARED BY THE CLARK COUNTY SURVEYOR'S OFFICE FOR "THE FOUR MILE WASH PANEL POINTS" AND TIED TO THE LAS VEGAS VALLEY GEODETIC CONTROL NETWORK MONUMENTS 826 AND 828 (PER FILE 88, PAGE 53 OF SURVEYS) USING THREE GPS RECEIVERS OPERATING IN FAST STATIC MODE.

BENCHMARK

CLARK COUNTY BENCH MARK NO 1 STATION 6C11/12SSE6. BEING A 2" DOME HEAD BRASS CAP REFERENCE MONUMENT IN TOP OF CURB, NORTHEAST CORNER OF DESERT INN ROAD AND MOJAVE ROAD, NEAR THE PC OF DESERT INN ROAD.

ELEVATION = 569.292 METERS (1867.75 FEET) NAVD 88

MONUMENTED CONTROL POINTS

POINT NUMBER	COORDINATES		DESCRIPTION
	NORTHING	EASTING	
[1]	11851.3920	10962.1340	PK NAIL, 1/4 COR OF SECTION 6 & SECTION 7

CALCULATED CONTROL POINTS

POINT NUMBER	COORDINATES		DESCRIPTION
	NORTHING	EASTING	
(10)	10651.5958	9572.1584	"FW1" 30+54.88 PC
(11)	10599.3223	9492.3445	"FW1" 31+50.28 POC (BEGIN CONSTRUCTION)
(12)	10466.2441	9239.5153	"FW1" 34+36.24 PT
(13)	10294.8855	8848.4881	"FW1" 38+63.16 PC

"FW1" CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	2000.00'	285.96'	143.22'	08°11'31"
C2	600.00'	432.56'	226.17'	41°18'29"

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

LEGEND
(XXX) CALCULATED CONTROL POINT
[X] MONUMENTED CONTROL POINT

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II
HORIZONTAL CONTROL PLAN
"FW1" 10+00.00 TO "FW1" 42+00.00
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
SYNDI J. FLIPPIN-DUDLEY
CIVIL
No. 11070

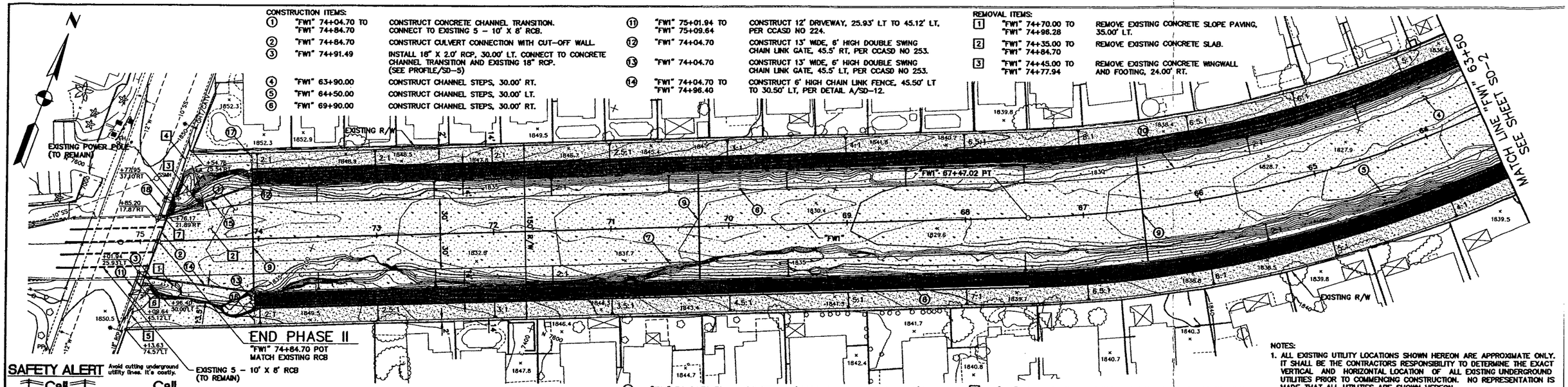
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: NONE
FIELD BOOK

DRAWING NO
CP-2
8 OF 28
L-1645A

X:\840 FLAMINGO WASH\CONSTRUCTION\AS-BUILT\840HORCTRL.dwg 10 DEC 02 11:46:00 am PST VIEW1 RTN



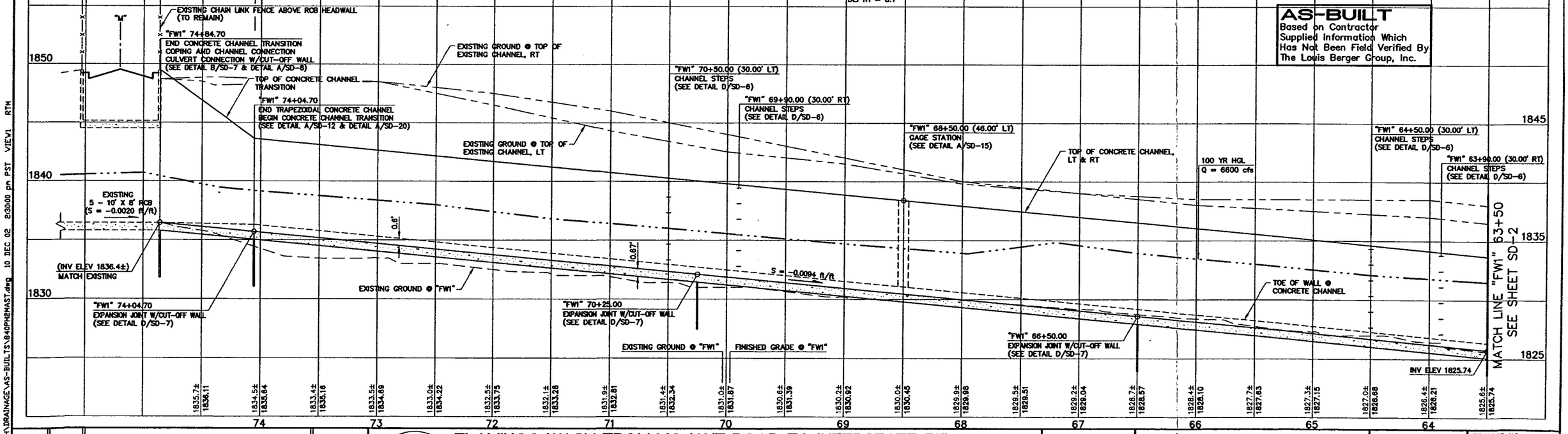
CONSTRUCTION ITEMS:

1	"FW1" 74+04.70 TO "FW1" 74+84.70	CONSTRUCT CONCRETE CHANNEL TRANSITION. CONNECT TO EXISTING 5 – 10' X 8' RCB.
2	"FW1" 74+84.70	CONSTRUCT CULVERT CONNECTION WITH CUT–OFF WALL.
3	"FW1" 74+91.49	INSTALL 18" X 2.0' RCP, 30.00' LT. CONNECT TO CONCRETE CHANNEL TRANSITION AND EXISTING 18" RCP. (SEE PROFILE/SD–5)
4	"FW1" 63+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.
5	"FW1" 64+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.
6	"FW1" 69+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.
7	"FW1" 70+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.
8	"FW1" 68+50.00	CONSTRUCT GAGE STATION, 46.00' LT.
9	"FW1" 66+50.00 "FW1" 70+25.00 "FW1" 74+04.70	CONSTRUCT EXPANSION JOINT WITH CUT–OFF WALL.
10	"FW1" 63+50.00 TO "FW1" 74+04.70	CONSTRUCT TRAPEZOIDAL CONCRETE CHANNEL. (SEE DETAIL A/SD–10)
11	"FW1" 75+01.94 TO "FW1" 75+09.64	CONSTRUCT 12' DRIVEWAY, 25.93' LT TO 45.12' LT, PER CCASD NO 224.
12	"FW1" 74+04.70	CONSTRUCT 13' WIDE, 6' HIGH DOUBLE SWING CHAIN LINK GATE, 45.5' RT, PER CCASD NO 253.
13	"FW1" 74+04.70	CONSTRUCT 13' WIDE, 6' HIGH DOUBLE SWING CHAIN LINK GATE, 45.5' LT, PER CCASD NO 253.
14	"FW1" 74+04.70 TO "FW1" 74+96.40	CONSTRUCT 6' HIGH CHAIN LINK FENCE, 45.50' LT TO 30.50' LT, PER DETAIL A/SD–12.
15	"FW1" 74+04.70 TO "FW1" 74+76.17	CONSTRUCT 6' HIGH CHAIN LINK FENCE, 45.50' RT TO 22.39' RT, PER DETAIL A/SD–12.
16	"FW1" 74+04.70	CONSTRUCT 6' HIGH CHAIN LINK FENCE, 58.50' LT TO 74.50' LT, PER CCASD NO 252.
17	"FW1" 74+04.70	CONSTRUCT 6' HIGH CHAIN LINK FENCE, 58.50' RT TO 74.50' RT, PER CCASD NO 252.
18	"FW1" 74+85.20 TO "FW1" 74+77.95	CONSTRUCT 12' DRIVEWAY, 17.87' RT TO 37.10' RT, PER CCASD NO 224.

REMOVAL ITEMS:

1	"FW1" 74+70.00 TO "FW1" 74+98.28	REMOVE EXISTING CONCRETE SLOPE PAVING, 35.00' LT.
2	"FW1" 74+35.00 TO "FW1" 74+84.70	REMOVE EXISTING CONCRETE SLAB.
3	"FW1" 74+45.00 TO "FW1" 74+77.94	REMOVE EXISTING CONCRETE WINGWALL AND FOOTING, 24.00' RT.
4	"FW1" 74+54.76 TO "FW1" 74+76.17	REMOVE EXISTING CHAIN LINK FENCE AND ACCESS GATE, 75.54' RT TO 21.89' RT.
5	"FW1" 74+98.40 TO "FW1" 75+13.63	REMOVE EXISTING CHAIN LINK FENCE AND ACCESS GATE, 30.00' LT TO 74.57' LT.
6	"FW1" 75+01.94 TO "FW1" 75+09.64	REMOVE 20' EXISTING CURB, GUTTER AND SIDEWALK, 25.93' LT TO 45.12' LT.
7	"FW1" 74+85.20 TO "FW1" 74+77.95	REMOVE 20' EXISTING CURB, GUTTER AND SIDEWALK, 17.87' RT TO 37.10' RT.

NOTES:
1. ALL EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL UTILITIES ARE SHOWN HEREON.
2. CONTRACTOR TO KEEP IN SERVICE AND PROTECT ALL UTILITIES.
3. SCARP AREAS AND EARTHWORK SHALL NOT PLACE SOIL AGAINST EXISTING BLOCK WALLS SUCH AS TO CREATE A RETAINING SITUATION.
4. HYDRAULIC GRADE LINE SHOWN REPRESENTS WATER SURFACE ELEVATION PLUS SUPER ELEVATION.
5. SEE DETAIL A/ SD–10 AND DETAIL A/SD–12 FOR LIMITS OF ACCESS ROAD, PERSONNEL ACCESS, "A" TYPE CURB AND GRAVEL MULCH.



AS–BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

X:\840 FLAMINGO WASH\DRAINAGE\AS-BUILTS\840PH2MAST.dwg 10 DEC 02 2:30:00 pm PST VIEW1 RTH

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II
CONSTRUCTION PLAN AND PROFILE
"FW1" 63+50.00 TO "FW1" 74+84.70
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER – STATE OF NEVADA – SYNDI J. FLIPPIN-DUDLEY – CIVIL – No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

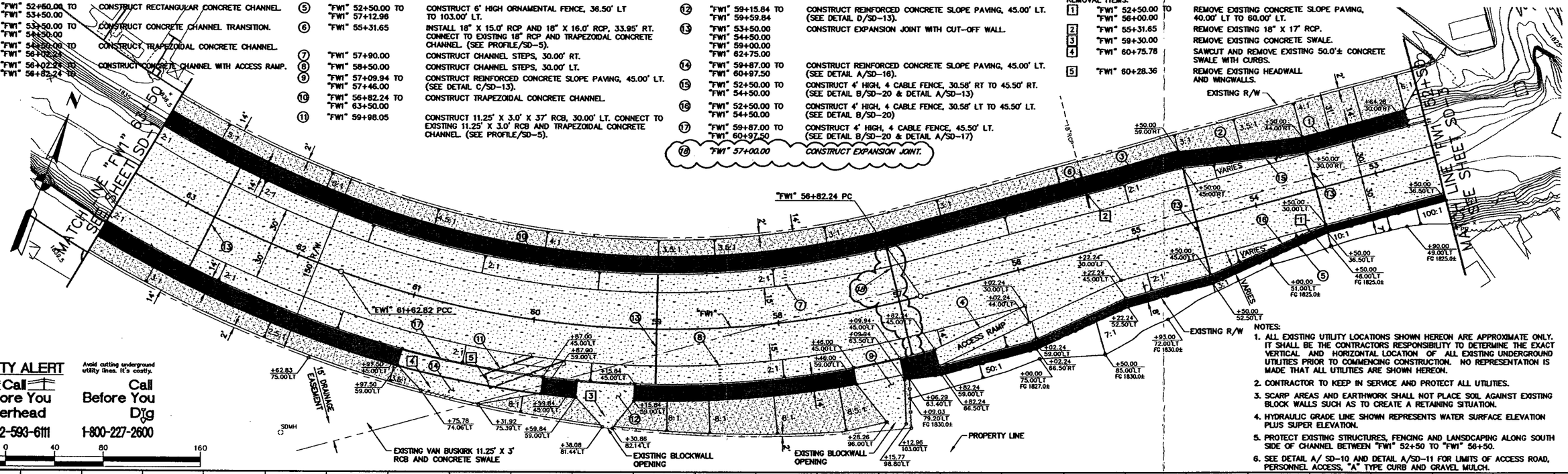
DRAWING NO
SD-1
9 OF 28
L–1645A

CONSTRUCTION ITEMS:

①	"FW1" 52+50.00 TO "FW1" 53+50.00	CONSTRUCT RECTANGULAR CONCRETE CHANNEL.
②	"FW1" 53+50.00 TO "FW1" 54+50.00	CONSTRUCT CONCRETE CHANNEL TRANSITION.
③	"FW1" 54+50.00 TO "FW1" 56+02.24	CONSTRUCT TRAPEZOIDAL CONCRETE CHANNEL.
④	"FW1" 56+02.24 TO "FW1" 56+82.24	CONSTRUCT CONCRETE CHANNEL WITH ACCESS RAMP.
⑤	"FW1" 52+50.00 TO "FW1" 57+12.96	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 36.50' LT TO 103.00' LT.
⑥	"FW1" 55+31.65	INSTALL 18" X 15.0' RCP AND 18" X 16.0' RCP, 33.95' RT. CONNECT TO EXISTING 18" RCP AND TRAPEZOIDAL CONCRETE CHANNEL. (SEE PROFILE/SD-5).
⑦	"FW1" 57+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.
⑧	"FW1" 58+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.
⑨	"FW1" 57+09.94 TO "FW1" 57+46.00	CONSTRUCT REINFORCED CONCRETE SLOPE PAVING, 45.00' LT. (SEE DETAIL C/SD-13).
⑩	"FW1" 56+82.24 TO "FW1" 63+50.00	CONSTRUCT TRAPEZOIDAL CONCRETE CHANNEL.
⑪	"FW1" 59+98.05	CONSTRUCT 11.25' X 3.0' X 37' RCB, 30.00' LT. CONNECT TO EXISTING 11.25' X 3.0' RCB AND TRAPEZOIDAL CONCRETE CHANNEL. (SEE PROFILE/SD-5).
⑫	"FW1" 59+15.84 TO "FW1" 59+59.84	CONSTRUCT REINFORCED CONCRETE SLOPE PAVING, 45.00' LT. (SEE DETAIL D/SD-13).
⑬	"FW1" 53+50.00 "FW1" 54+50.00 "FW1" 59+00.00 "FW1" 62+75.00	CONSTRUCT EXPANSION JOINT WITH CUT-OFF WALL.
⑭	"FW1" 59+87.00 TO "FW1" 60+97.50	CONSTRUCT REINFORCED CONCRETE SLOPE PAVING, 45.00' LT. (SEE DETAIL A/SD-16).
⑮	"FW1" 52+50.00 TO "FW1" 54+50.00	CONSTRUCT 4' HIGH, 4 CABLE FENCE, 30.58' RT TO 45.50' RT. (SEE DETAIL B/SD-20 & DETAIL A/SD-13)
⑯	"FW1" 52+50.00 TO "FW1" 54+50.00	CONSTRUCT 4' HIGH, 4 CABLE FENCE, 30.58' LT TO 45.50' LT. (SEE DETAIL B/SD-20)
⑰	"FW1" 59+87.00 TO "FW1" 60+97.50	CONSTRUCT 4' HIGH, 4 CABLE FENCE, 45.50' LT. (SEE DETAIL B/SD-20 & DETAIL A/SD-17)
⑱	"FW1" 57+00.00	CONSTRUCT EXPANSION JOINT.

REMOVAL ITEMS:

1	"FW1" 52+50.00 TO "FW1" 56+00.00	REMOVE EXISTING CONCRETE SLOPE PAVING, 40.00' LT TO 60.00' LT.
2	"FW1" 55+31.65	REMOVE EXISTING 18" X 17' RCP.
3	"FW1" 59+30.00	REMOVE EXISTING CONCRETE SWALE.
4	"FW1" 60+75.78	SAWCUT AND REMOVE EXISTING 50.0'± CONCRETE SWALE WITH CURBS.
5	"FW1" 60+28.36	REMOVE EXISTING HEADWALL AND WINGWALLS.



NOTES:

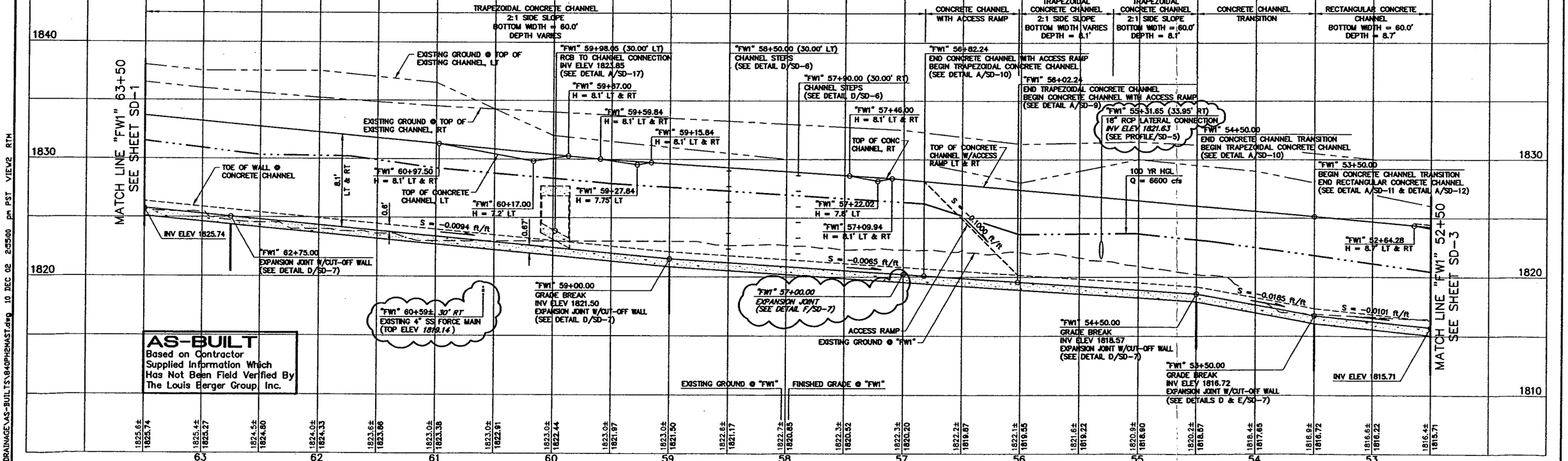
1. ALL EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL UTILITIES ARE SHOWN HEREON.
2. CONTRACTOR TO KEEP IN SERVICE AND PROTECT ALL UTILITIES.
3. SCARP AREAS AND EARTHWORK SHALL NOT PLACE SOIL AGAINST EXISTING BLOCK WALLS SUCH AS TO CREATE A RETAINING SITUATION.
4. HYDRAULIC GRADE LINE SHOWN REPRESENTS WATER SURFACE ELEVATION PLUS SUPER ELEVATION.
5. PROTECT EXISTING STRUCTURES, FENCING AND LANSDCAPING ALONG SOUTH SIDE OF CHANNEL BETWEEN "FW1" 52+50 TO "FW1" 56+50.
6. SEE DETAIL A/ SD-10 AND DETAIL A/SD-11 FOR LIMITS OF ACCESS ROAD, PERSONNEL ACCESS, "A" TYPE CURB AND GRAVEL MULCH.

SAFETY ALERT

Call Before You Overhead 1-702-593-6111

Avoid cutting underground utility lines. It's costly. Call Before You Dig 1-800-227-2600

40 20 0 40 80 160



AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

CONSTRUCTION PLAN AND PROFILE

"FW1" 52+50.00 TO "FW1" 63+50.00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA SYNDI J. FLIPPIN-DUDLEY No. 11070 CIVIL

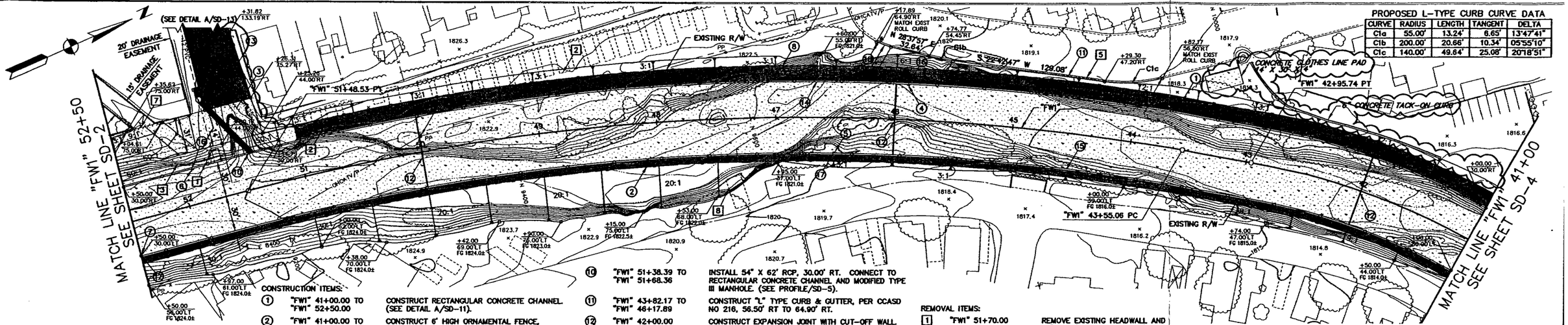
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-2
10 OF 28
L-1645A

X:\840 FLAMINGO WASH\DRAINAGE\AS-BUILTS\840PHEMAST.dwg 10 DEC 02 2:55:00 pm PST VIEW2 RTH



PROPOSED L-TYPE CURB CURVE DATA				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1a	55.00'	13.24'	6.65'	13°47'41"
C1b	200.00'	20.66'	10.34'	05°55'10"
C1c	140.00'	49.64'	25.08'	20°18'51"

SAFETY ALERT

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Call Before You Overhead	Call Before You Dig
1-702-593-6111	1-800-227-2600

40 20 0 40 80 160

CONSTRUCTION ITEMS:

①	"FW1" 41+00.00 TO "FW1" 52+50.00	CONSTRUCT RECTANGULAR CONCRETE CHANNEL. (SEE DETAIL A/SD-11).	
②	"FW1" 41+00.00 TO "FW1" 52+50.00	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 38.50' LT.	
③	"FW1" 51+14.79 TO "FW1" 52+84.28	CONSTRUCT REINFORCED CONCRETE SLOPE PAVING WITH CUT-OFF WALL. (SEE DETAIL A/SD-13).	
④	"FW1" 45+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.	
⑤	"FW1" 46+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.	
⑥	"FW1" 51+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.	
⑦	"FW1" 52+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.	
⑧	"FW1" 41+00.00 TO "FW1" 51+27.17	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 43.50' RT TO 133.28' RT.	
⑨	"FW1" 51+68.36	CONSTRUCT MODIFIED TYPE III MANHOLE, 85.00' RT. INSTALL 54" X 8' RCP STUB & PLUG. (SEE PROFILE/SD-5).	
⑩	"FW1" 51+38.39 TO "FW1" 51+68.36	INSTALL 54" X 62' RCP, 30.00' RT. CONNECT TO RECTANGULAR CONCRETE CHANNEL AND MODIFIED TYPE III MANHOLE. (SEE PROFILE/SD-5).	
⑪	"FW1" 43+82.17 TO "FW1" 46+17.89	CONSTRUCT "L" TYPE CURB & GUTTER, PER CCASD NO 216, 56.50' RT TO 64.90' RT.	
⑫	"FW1" 42+00.00 "FW1" 46+00.00 "FW1" 50+00.00	CONSTRUCT EXPANSION JOINT WITH CUT-OFF WALL.	
⑬	"FW1" 51+26.31 TO "FW1" 51+67.86	CONSTRUCT AC PAVEMENT, 75.27' RT TO 207.09' RT. (SEE DETAIL A/SD-13).	
⑭	"FW1" 41+00.00 TO "FW1" 52+50.00	CONSTRUCT 4' HIGH 4 CABLE FENCE, 30.58' RT. (SEE DETAIL B/SD-20 & DETAIL A/SD-13)	
⑮	"FW1" 41+00.00 TO "FW1" 52+50.00	CONSTRUCT 4' HIGH 4 CABLE FENCE, 30.58' LT. (SEE DETAIL B/SD-20)	
⑯	"FW1" 45+90.00 "FW1" 51+90.00	CONSTRUCT 3.5' WIDE WALK THRU GATE, 30.58' RT. (SEE DETAIL B/SD-20)	
⑰	"FW1" 46+50.00 "FW1" 52+50.00	CONSTRUCT 3.5' WIDE WALK THRU GATE, 30.58' LT. (SEE DETAIL B/SD-20)	
⑱	"FW1" 43+82.17 "FW1" 46+17.89	CONSTRUCT ROLL CURB TO "L" TYPE CURB TRANSITION, 56.50' RT AND 64.90' RT. (SEE DETAIL E/SD-8)	

REMOVAL ITEMS:

1	"FW1" 51+70.00	REMOVE EXISTING HEADWALL AND 12" X 45' PVC PIPE, 30.00' RT.
2	"FW1" 48+75.00 TO "FW1" 51+00.00	REMOVE EXISTING CONCRETE PADS.
3	"FW1" 51+65.00 TO "FW1" 52+30.00	REMOVE EXISTING GROUTED RIPRAP.
4	"FW1" 50+00.00	RELOCATE OVERHEAD POWER AND CABLE TV LINES, 13.00' RT. (BY NEVADA POWER AND COX COMMUNICATIONS)
5	"FW1" 43+82.17 TO "FW1" 46+17.89	REMOVE EXISTING ROLL TYPE CURB & GUTTER, 56.50' RT TO 64.90' RT.
6	"FW1" 51+26.31 TO "FW1" 51+67.86	REMOVE EXISTING AC PAVEMENT, 75.27' RT TO 207.09 RT.
7	"FW1" 52+00± TO "FW1" 52+35±	SAWCUT AND REMOVE EXISTING CONCRETE.
8	"FW1" 47+35±	REMOVE PORTION OF CONCRETE PAD FROM EXISTING WASH.

NOTES:

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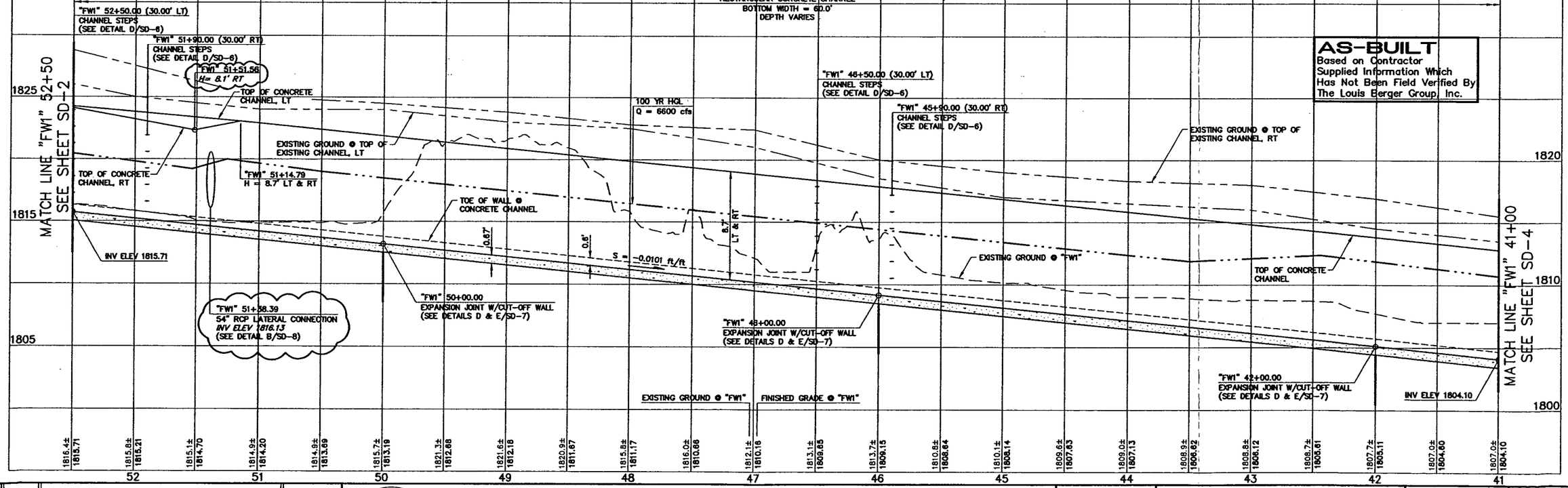
2. CONTRACTOR TO KEEP IN SERVICE AND PROTECT ALL UTILITIES.
3. SCARP AREAS AND EARTHWORK SHALL NOT PLACE SOIL AGAINST EXISTING BLOCK WALLS SUCH AS TO CREATE A RETAINING SITUATION.
4. HYDRAULIC GRADE LINE SHOWN REPRESENTS WATER SURFACE ELEVATION PLUS SUPER ELEVATION.
5. PROTECT EXISTING STRUCTURES, FENCING AND LANDSCAPING ALONG EAST SIDE OF CHANNEL BETWEEN "FW1" 47+00 TO "FW1" 52+50.



AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

CONSTRUCTION PLAN AND PROFILE

"FW1" 41+00.00 TO "FW1" 52+50.00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA — SYNDI J. TIPPIN-DUDLEY — CIVIL — No. 11070

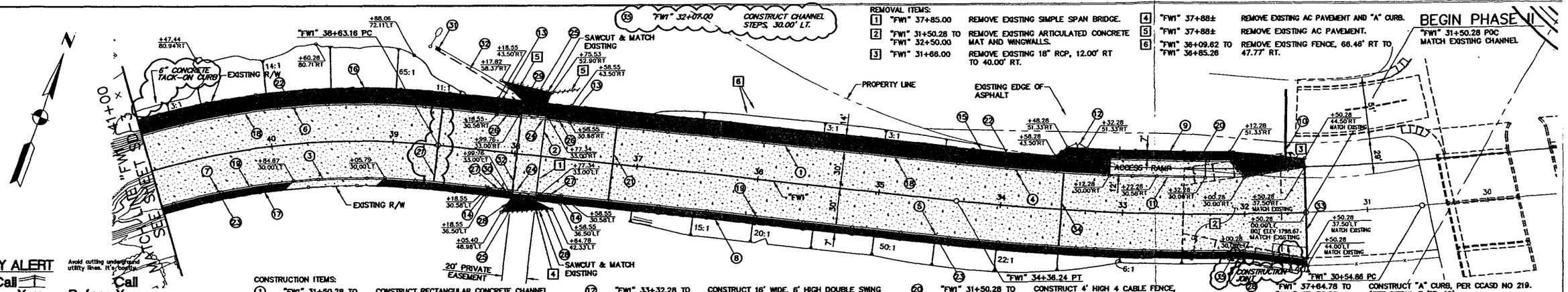
PROJECT NO:	840	DRAWN BY:	ARB
DESIGNED BY:	RRB	CHECKED BY:	SJD
APPROVED BY	TDL		

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-3
11 OF 28
L-1645A

X:\840 FLAMINGO WASH\DRAINAGE\AS-BUILTS\840PHIIASBUILT.dwg 10 DEC 02 4:18:00 pm PST VIEW3 RTM



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Call Before You Dig 1-800-227-2600

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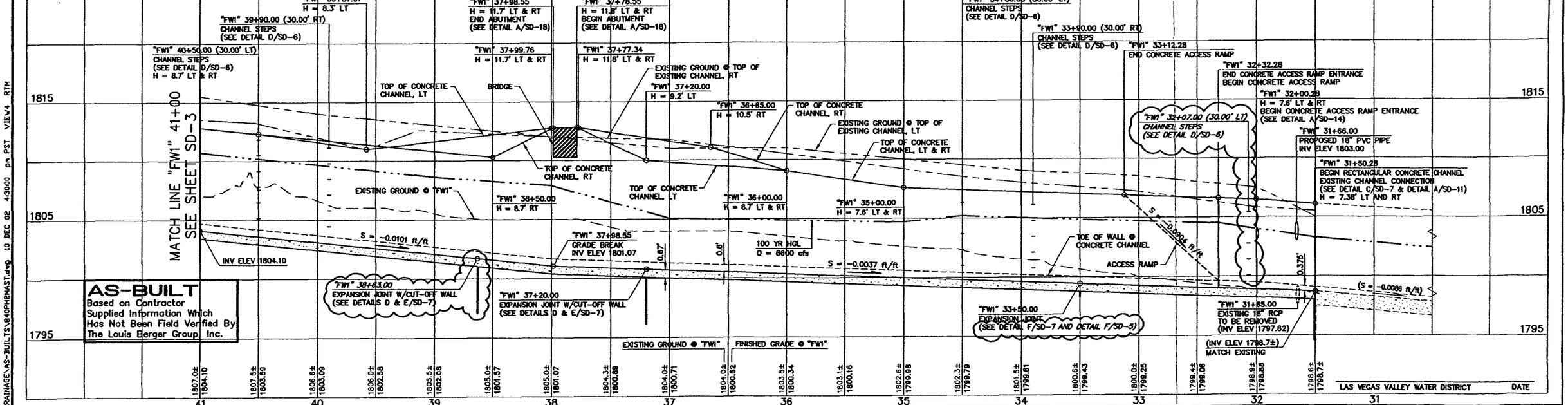
2. CONTRACTOR TO KEEP IN SERVICE AND PROTECT ALL UTILITIES.
3. SCARP AREAS AND EARTHWORK SHALL NOT PLACE SOIL AGAINST EXISTING BLOCK WALLS SUCH AS TO CREATE A RETAINING SITUATION.
4. HYDRAULIC GRADE LINE SHOWN REPRESENTS WATER SURFACE ELEVATION PLUS SUPER ELEVATION.
5. PROTECT EXISTING STRUCTURES, FENCING AND LANDSCAPING ALONG SOUTH SIDE OF CHANNEL BETWEEN "FW1" 32+00 TO "FW1" 37+00.
6. SEE DETAIL C/SD-16 FOR LIMITS OF TEMPORARY DETOUR ROAD.

CONSTRUCTION ITEMS:

1	"FW1" 31+50.28 TO "FW1" 41+00.00	CONSTRUCT RECTANGULAR CONCRETE CHANNEL.	12	"FW1" 33+32.28 TO "FW1" 33+48.28	CONSTRUCT 16' WIDE, 6' HIGH DOUBLE SWING ORNAMENTAL GATE, 51.33' RT.
2	"FW1" 37+78.55 TO "FW1" 37+98.55	INSTALL PREFABRICATED STEEL BRIDGE. (SEE BRIDGE PLAN/SD-19)	13	"FW1" 37+58.55 TO "FW1" 38+18.55	CONSTRUCT 13' WIDE, 6' HIGH DOUBLE SWING ORNAMENTAL GATE, 30.58' RT TO 43.50' RT.
3	"FW1" 39+05.79 TO "FW1" 39+84.87	CONSTRUCT CONCRETE SLOPE PAVING, 30.00' LT. (SEE DETAIL B/SD-13)	14	"FW1" 37+58.55 TO "FW1" 38+18.55	CONSTRUCT 6' WIDE, 6' HIGH SINGLE SWING ORNAMENTAL GATE, 30.58' LT TO 36.50' LT.
4	"FW1" 33+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.	15	"FW1" 33+48.28 TO "FW1" 37+58.55	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 51.33' RT TO 43.50' RT.
5	"FW1" 34+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.	16	"FW1" 38+18.55 TO "FW1" 41+00.00	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 43.50' RT.
6	"FW1" 39+90.00	CONSTRUCT CHANNEL STEPS, 30.00' RT.	17	"FW1" 38+18.55 TO "FW1" 41+00.00	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 36.50' LT.
7	"FW1" 40+50.00	CONSTRUCT CHANNEL STEPS, 30.00' LT.	18	"FW1" 32+72.28 TO "FW1" 37+58.55 "FW1" 38+18.55 TO "FW1" 41+00.00	CONSTRUCT 4' HIGH 4 CABLE FENCE, 30.58' RT. (SEE DETAIL B/SD-20)
8	"FW1" 31+50.28 TO "FW1" 37+58.55	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 44.00' LT TO 36.50' LT.	19	"FW1" 31+50.28 TO "FW1" 37+58.55 "FW1" 38+18.55 TO "FW1" 41+00.00	CONSTRUCT 4' HIGH 4 CABLE FENCE, 38.08' LT TO 30.58' LT. (SEE DETAIL B/SD-20)
9	"FW1" 31+50.28 TO "FW1" 33+32.28	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 44.50' RT TO 51.33' RT.	20	"FW1" 31+50.28 TO "FW1" 33+12.28	CONSTRUCT 4' HIGH 4 CABLE FENCE, 38.08' RT TO 43.75' RT. (SEE DETAIL B/SD-20)
10	"FW1" 31+66.00	INSTALL 18" X 67' PVC PIPE. CONNECT TO RECTANGULAR CONCRETE CHANNEL AND EXISTING DI. (SEE PROFILE/SD-5).	21	"FW1" 37+20.00 "FW1" 39+83.00	CONSTRUCT EXPANSION JOINT WITH CUT-OFF WALL.
11	"FW1" 32+00.28 TO "FW1" 33+12.28	CONSTRUCT ACCESS RAMP.	22	"FW1" 33+90.00 "FW1" 39+90.00	CONSTRUCT 3.5' WIDE WALK THRU GATE, 30.58' RT (SEE DETAIL B/SD-20)
			23	"FW1" 34+50.00 "FW1" 40+50.00	CONSTRUCT 3.5' WIDE WALK THRU GATE, 30.58' LT (SEE DETAIL B/SD-20)
			24	"FW1" 37+78.55 "FW1" 37+98.55	CONSTRUCT ABUTMENT. (SEE DETAIL A/SD-18)
			25	"FW1" 37+88±	CONSTRUCT AC PAVING. (SEE DETAIL B/SD-16)
			26	"FW1" 37+58.55 TO "FW1" 37+78.00 "FW1" 37+99.10 TO "FW1" 38+18.55	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 30.58' RT.
			27	"FW1" 37+58.55 TO "FW1" 37+78.00 "FW1" 37+99.10 TO "FW1" 38+18.55	CONSTRUCT 6' HIGH ORNAMENTAL FENCE, 30.58' LT.
			28	"FW1" 37+64.78 TO "FW1" 37+78.55 "FW1" 37+98.55 TO "FW1" 38+05.40	CONSTRUCT "A" CURB, PER CCASD NO 219. (SEE DETAIL B/SD-16)
			29	"FW1" 38+00.76	INSTALL STREET LIGHT ASSEMBLY WITH 100 W HPS LUMINAIRE, 15' MAST ARM AND POLE HEIGHT OF 24', 32.17' RT, PER CCASD NO 316.
			30	"FW1" 38+00.76	INSTALL STREET LIGHT ASSEMBLY WITH 100 W HPS LUMINAIRE, 15' MAST ARM AND POLE HEIGHT OF 24', 32.17' LT, PER CCASD NO 316.
			31	"FW1" 38+72.00	INSTALL NO 3 1/2 PULLBOX, 79.58' RT. (INTERCEPT EXISTING LIGHTING WIRING).
			32	"FW1" 38+72.00 TO "FW1" 38+00.76 "FW1" 38+00.76 TO "FW1" 38+00.76	INSTALL 1 1/4" CONDUIT WITH TWO #4 WIRE AND ONE #8 GROUND, 79.58' RT TO 32.17' RT AND 32.17' RT TO 32.17' LT.
			33	"FW1" 31+50.28	CONSTRUCT CHANNEL CONNECTION WITH CUT-OFF WALL.
			34	"FW1" 33+50.00	CONSTRUCT EXPANSION JOINT.

REMOVAL ITEMS:

1	"FW1" 37+85.00	REMOVE EXISTING SIMPLE SPAN BRIDGE.
2	"FW1" 31+50.28 TO "FW1" 32+50.00	REMOVE EXISTING ARTICULATED CONCRETE MAT AND WINGWALLS.
3	"FW1" 31+66.00	REMOVE EXISTING 18" RCP, 12.00' RT TO 40.00' RT.
4	"FW1" 37+88±	REMOVE EXISTING AC PAVEMENT AND "A" CURB.
5	"FW1" 37+88±	REMOVE EXISTING AC PAVEMENT.
6	"FW1" 36+09.62 TO "FW1" 36+85.26	REMOVE EXISTING FENCE, 66.46' RT TO 47.77' RT.



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Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

LAS VEGAS VALLEY WATER DISTRICT DATE

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

CONSTRUCTION PLAN AND PROFILE

"FW1" 31+50.28 TO "FW1" 41+00.00

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - CYNDI J. FLIPPIN-DUDLEY - CIVIL - No. 11070

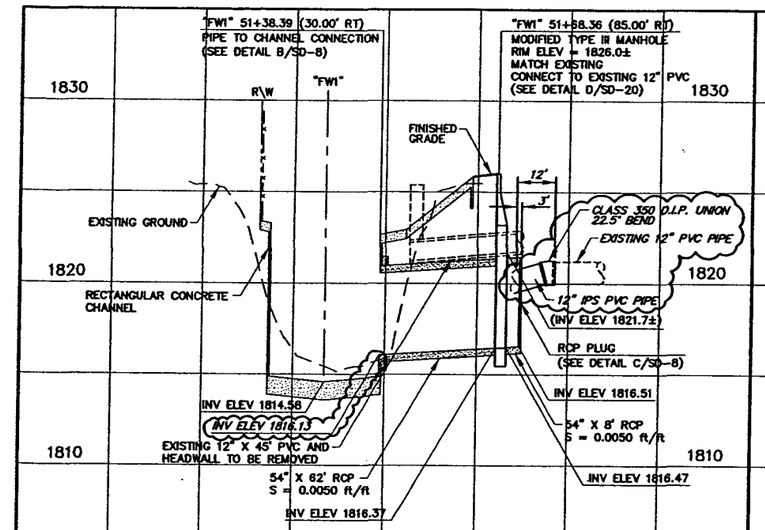
PROJECT NO:	840	DRAWN BY:	ARB
DESIGNED BY:	RRB	CHECKED BY:	SJD
APPROVED BY	TDL		

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

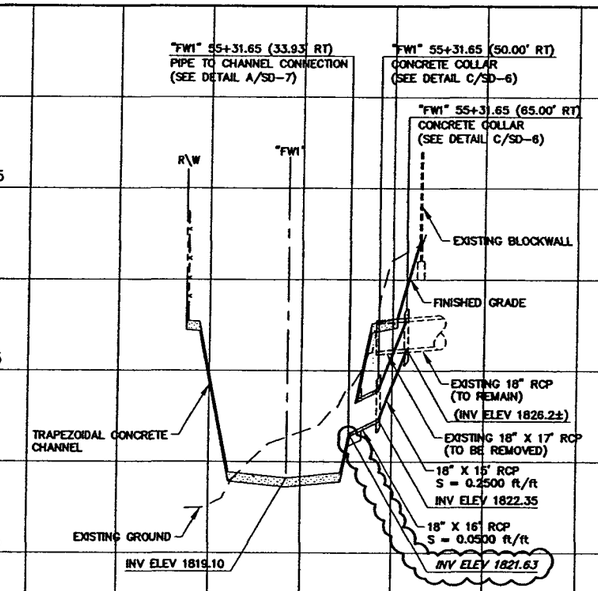
SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-4
12 OF 28
L-1645A

X:\840 FLAMINGO WASH\DRAINAGE\AS-BUILTS\840PHEMAST.dwg 10 DEC 02 4:30:00 pm PST VIEW4 RTM



"FW1" 51+68.36 TO "FW1" 51+38.39



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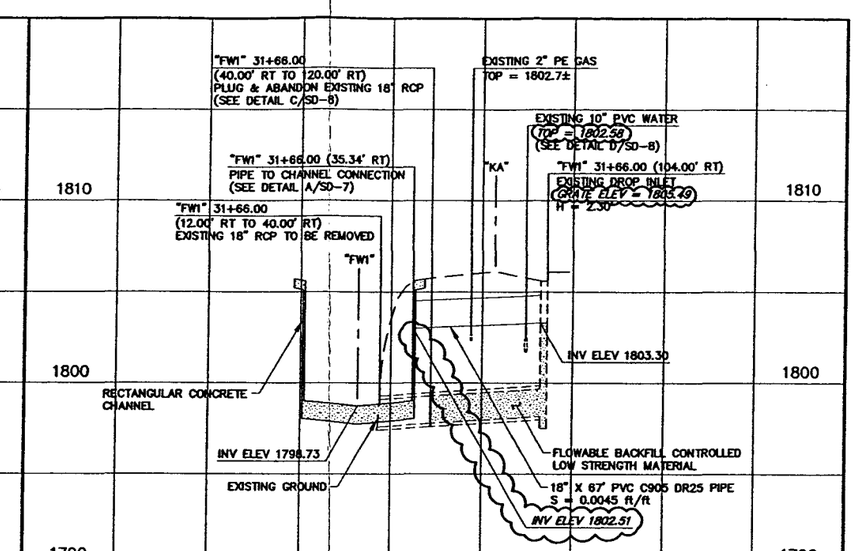

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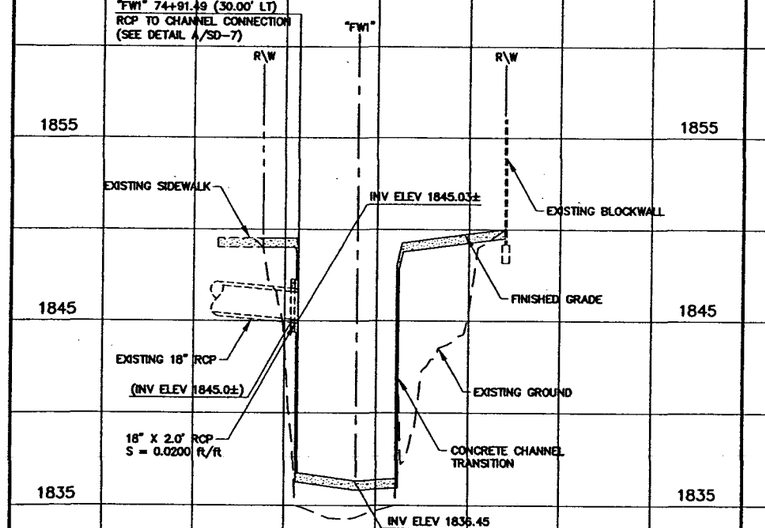
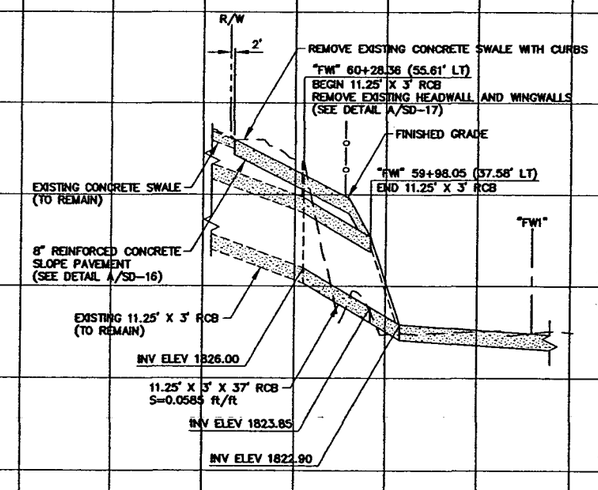


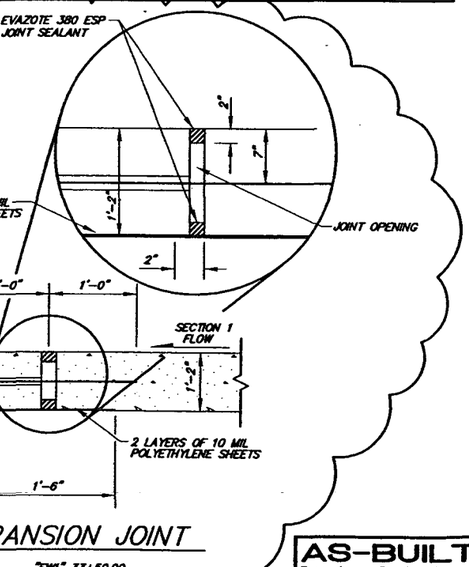
"FW1" 74+91.49



NOTE:
1. SEE DETAIL A/SD-17 FOR BEDDING REQUIREMENTS.

"FW1" 59+98.05

NOTES:
1. SEE CHANNEL SECTION DETAIL A/SD-11 FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. PROVIDE 1"ø PVC SLEEVE, 14" LONG, W/END CAP (PACKED W/GREASE) @ 12" OC.
3. EXPANSION JOINT TO BE CONTINUOUS THROUGH TOP OF CHANNEL SIDE WALLS.
4. JOINT SHALL BE SAND BLASTED CLEAN PRIOR TO POLYURETHANE SEALANT APPLICATION.
5. EVAZOTE 380 ESP TO BE INSTALLED ALONG TOP PORTION OF WALL & EPOXYED TO WALL STRIPS.



F EXPANSION JOINT
SD-5 NTS "FW1" 33+50.00

NOTES:
1. CONTRACTOR TO VERIFY ALL EXISTING UNDERGROUND UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
2. ALL BEDDING SHALL BE CLASS B BEDDING PER CCASD 505 UNLESS OTHERWISE NOTED.
3. ALL RCP SHALL BE CLASS III PIPE UNLESS OTHERWISE SPECIFIED.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

LAS VEGAS VALLEY WATER DISTRICT DATE

SAFETY ALERT
Call Before You Overhead
1-702-593-6111

Avoid cutting underground utility lines. It's costly.
Call Before You Dig
1-800-227-2600

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE PROFILES

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER, STATE OF NEVADA, CYNDI J. TUPPIN-DUDLEY, CIVIL, No. 11070

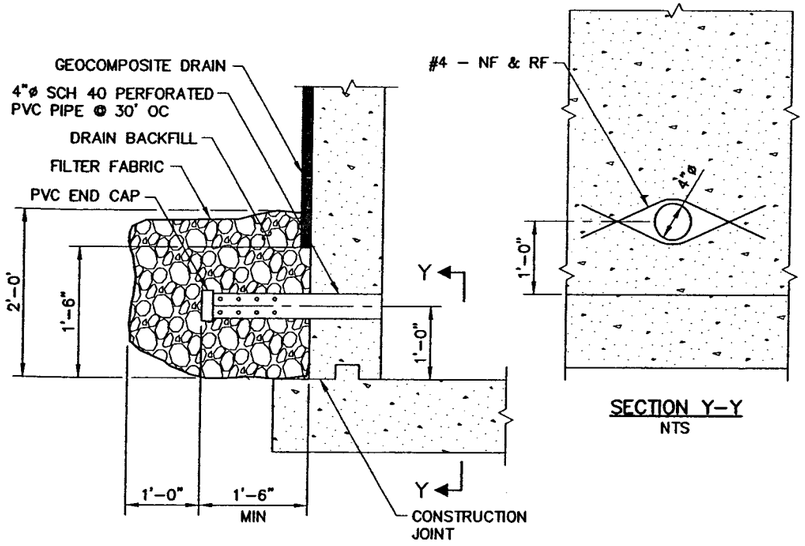
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: QGP CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

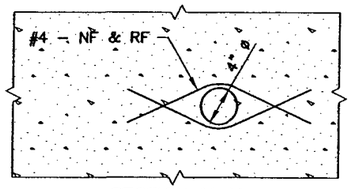
SCALE
HORIZ: 1" = 40'
VERT: 1" = 4'
FIELD BOOK

DRAWING NO
SD-5
13 OF 28
L-1645A

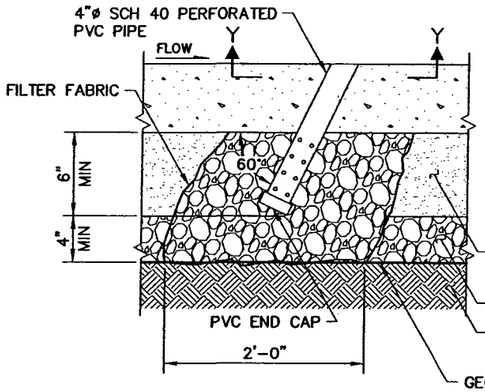
X:\840 FLAMINGO WASH\DRAINAGE\PROFILES\AS-BUILTS\840DRP01.dwg 11 DEC 02 4:32:00 pm PST RTM



SECTION Y-Y
NTS

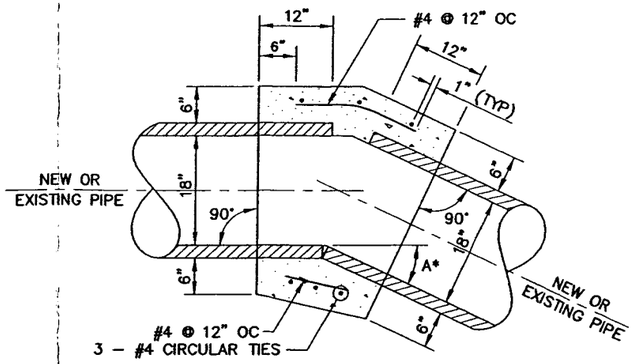


SECTION Y-Y
NTS



NOTES:

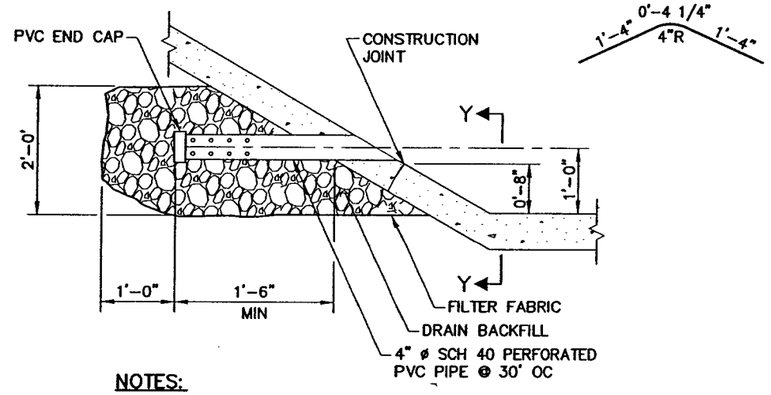
1. FILTER FABRIC SHALL COMPLETELY ENCLOSE DRAIN BACKFILL MATERIAL AND SEAMS WILL OVERLAP 6" AND BE TIED SECURELY.
2. BASE SLAB WEEPHOLES SHALL BE LOCATED 10' UPSTREAM OF TRANSVERSE EXPANSION JOINTS AND OFFSET 20' LEFT AND RIGHT OF "FW1".
3. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
4. DRAIN BACKFILL SHALL SURROUND PVC PIPE TO A MINIMUM THICKNESS OF 12".
5. PVC PIPE SHALL EXTEND 6" BELOW THE BOTTOM OF THE CHANNEL SLAB.



NOTES:

1. BACKFILL MATERIAL ALL AROUND COLLAR FOR A DISTANCE OF 12" MINIMUM TO 95% OF MAXIMUM DRY DENSITY.
2. TROWEL INVERT TO A SMOOTH FINISH BETWEEN PIPES.
3. A* = ANGLE OF DEFLECTION
4. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH A COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
5. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

C / SD-6 CONCRETE COLLAR
NTS
"FW1" 55+31.65

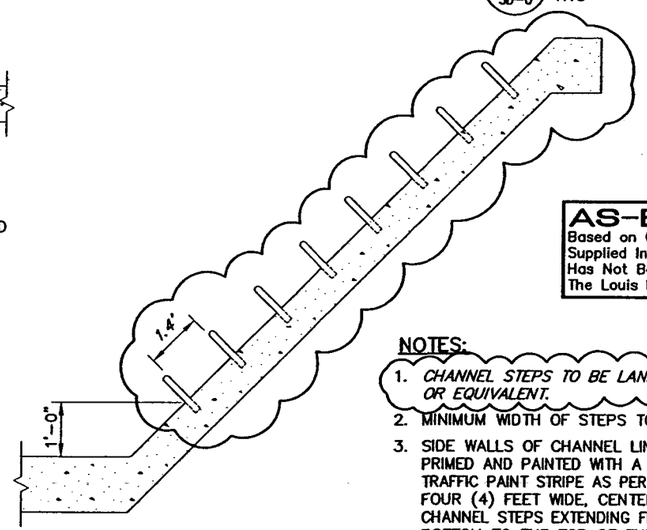


NOTES:

1. FILTER FABRIC SHALL COMPLETELY ENCLOSE DRAIN BACKFILL MATERIAL AND SEAMS WILL OVERLAP 6" AND BE TIED SECURELY.
2. DRAIN BACKFILL SHALL SURROUND PVC PIPE TO A MINIMUM THICKNESS OF 12".
3. WEEPHOLES SHALL BE LOCATED 10' UPSTREAM OF TRANSVERSE EXPANSION JOINT AND 30' OC MAX.
4. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
5. GEOCOMPOSITE DRAIN SHALL BE CONTECH C-DRAIN 11K OR EQUIVALENT AND INSTALLATION WILL BE CONTINUOUS ALONG THE LENGTH OF THE VERTICAL WALL AND WILL EXTEND FROM 12" TO 18" BELOW FINAL GRADE TO 1'-6" ABOVE THE TOP OF FOOTING.
6. GEOCOMPOSITE DRAIN SHALL BE CONSTRUCTED CONTINUOUSLY ALONG THE BACK OF THE VERTICAL WALL.

A / SD-6 WALL WEEPHOLE
NTS

B / SD-6 BASE SLAB WEEPHOLE
NTS



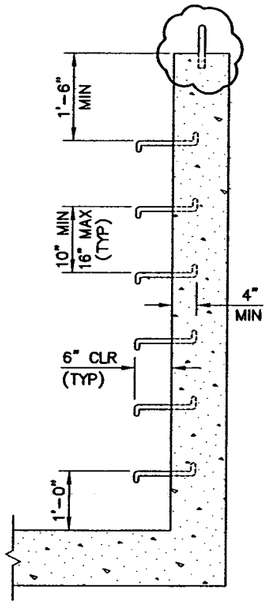
AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

NOTES:

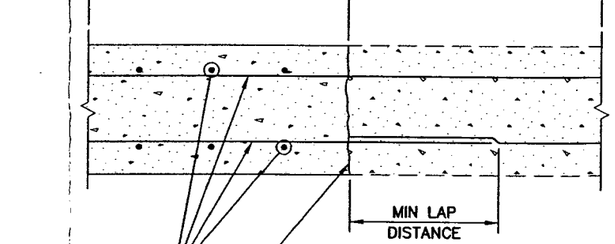
1. *CHANNEL STEPS TO BE LANE P14938 OR EQUIVALENT.*
2. MINIMUM WIDTH OF STEPS TO BE 12".
3. SIDE WALLS OF CHANNEL LINING SHALL BE PRIMED AND PAINTED WITH A FAST DRY YELLOW TRAFFIC PAINT STRIPE AS PER CCASD 714.03.05 FOUR (4) FEET WIDE, CENTERED ABOUT THE CHANNEL STEPS EXTENDING FROM THE CHANNEL BOTTOM TO THE TOP OF THE SIDE WALL.
4. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.

"FW1" 57+90.00, "FW1" 58+50.00, "FW1" 63+90.00
"FW1" 64+50.00, "FW1" 69+90.00, "FW1" 70+50.00

D / SD-6 CHANNEL STEPS
NTS



"FW1" 33+90.00, "FW1" 34+50.00, "FW1" 39+90.00,
"FW1" 40+50.00, "FW1" 45+90.00, "FW1" 46+50.00,
"FW1" 51+90.00, "FW1" 52+50.00, *AND "FW1" 32+07.00*



MIN LAP DISTANCE

#4 BARS	= 1'-10"
#5 BARS	= 2'-2"
#6 BARS	= 2'-7"
#7 BARS	= 3'-3"
#8 BARS	= 4'-3"
#9 BARS	= 5'-5"
#10 BARS	= 6'-2"

INVERT LOCATIONS:
"FW1" 35+60.00, "FW1" 36+90.00, "FW1" 40+00.00, "FW1" 44+00.00 AND "FW1" 48+00.00

WALL LOCATIONS:
"FW1" 31+90.00 LT & RT, "FW1" 32+32.00 RT, "FW1" 33+44.00 RT, "FW1" 33+50.00 LT & RT, "FW1" 34+96.00 LT, "FW1" 34+98.00 RT, "FW1" 35+00.00 LT, "FW1" 35+90.00 RT, "FW1" 36+00.00 LT, "FW1" 36+56.00 LT & RT, AND "FW1" 37+20.00 LT & RT

E / SD-6 CONSTRUCTION JOINT AT END OF DAY CONCRETE POUR
NTS

XA:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PHEDRDT.dwg 11 DEC 02 4:46:00 pm PST VIEW1 RTM

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

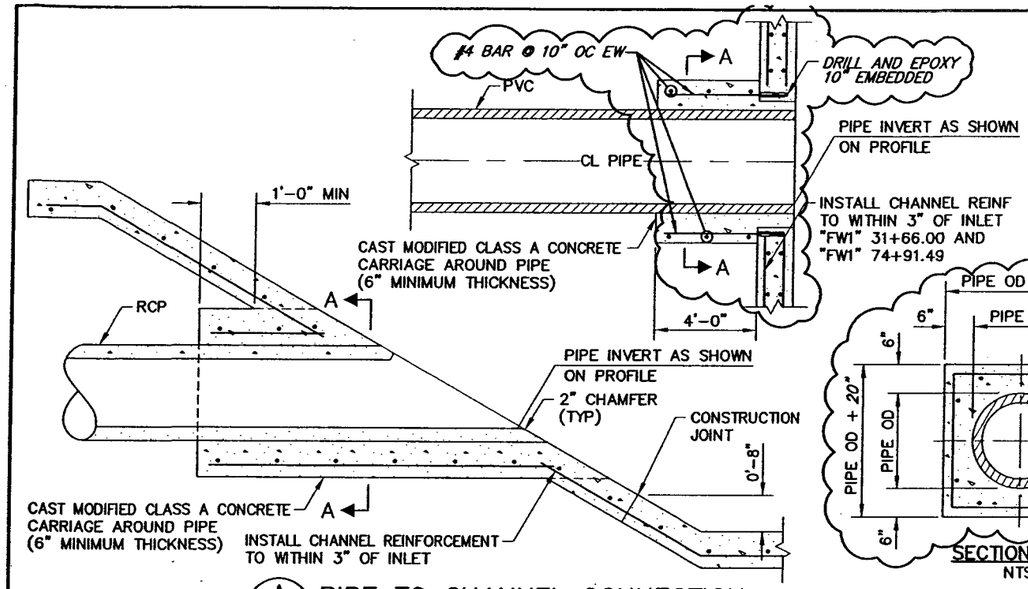
FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - SYNDI J. FLIPPIN-OUDLEY - CIVIL - No. 11070

PROJECT NO: 840	DRAWN BY: ARB	SCALE	DRAWING NO
DESIGNED BY: JHH/RRB	CHECKED BY: SJD	HORIZ: AS SHOWN	SD-6
APPROVED BY TDL		VERT: AS SHOWN	14 OF 28
THE LOUIS BERGER GROUP, INC LAS VEGAS, NEVADA		FIELD BOOK	L-1645A

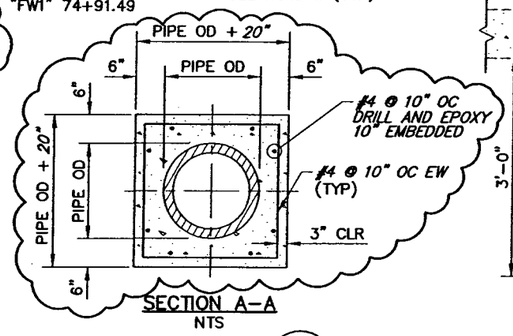


A SD-7 PIPE TO CHANNEL CONNECTION

NTS "FW1" 31+66.00, "FW1" 55+31.65 AND "FW1" 74+91.49

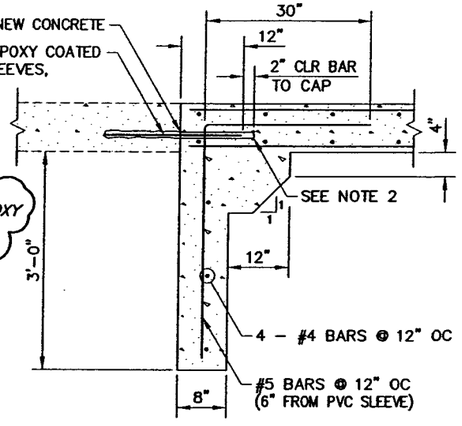
NOTES:

1. CUT-OFF WALL TO BE CONTINUOUS THROUGH TOP OF CHANNEL SIDE WALL FOR TRAPEZOIDAL SECTIONS ONLY.
2. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
3. SEE DETAIL E/SD-7 FOR EXPANSION JOINT AT VERTICAL WALL FOOTING AND VERTICAL WALL.
4. T1 THICKNESS FOR CHANNEL FLOOR SLAB IS 8" AND 6" FOR TRAPEZOIDAL CHANNEL SIDE WALLS.
5. JOINT SHALL BE SAND BLASTED CLEAN PRIOR TO SEALANT APPLICATION.



NOTES:

1. SEE CHANNEL SECTION DETAILS A/SD-12 AND A/SD-8 FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. PROVIDE 1"ø PVC SLEEVE, 14" LONG, W/END CAP (PACKED WITH GREASE) @ 12" OC
3. DRILL 1"ø HOLES IN EXISTING CONCRETE AND EPOXY GROUT 3/4"ø DOWEL AS SHOWN.

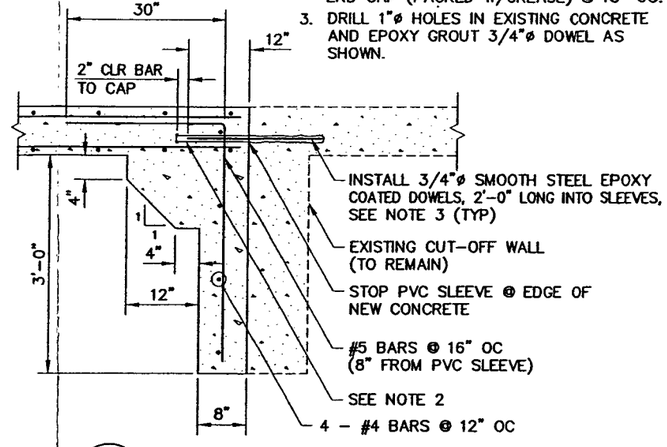


B SD-7 CULVERT CONNECTION W/ CUT-OFF WALL

NTS "FW1" 74+84.70

NOTES:

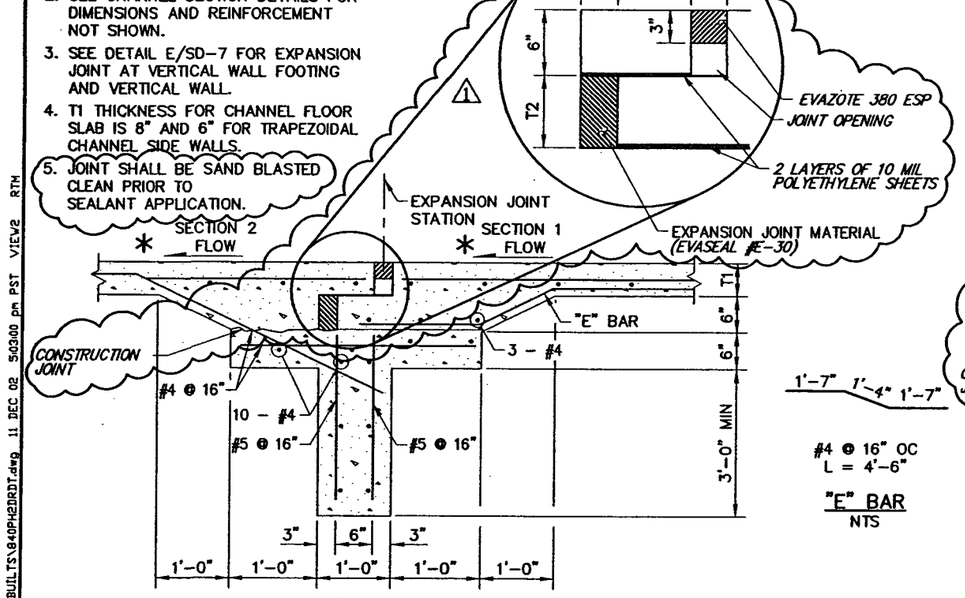
1. SEE CHANNEL SECTION DETAIL A/SD-11 FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. PROVIDE 1"ø PVC SLEEVE, 14" LONG, W/ END CAP (PACKED W/GREASE) @ 16" OC.
3. DRILL 1"ø HOLES IN EXISTING CONCRETE AND EPOXY GROUT 3/4"ø DOWEL AS SHOWN.



C SD-7 EXISTING CHANNEL CONNECTION

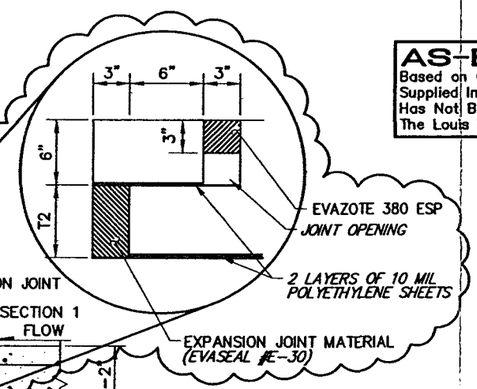
NTS "FW1" 31+50.28

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.



NOTES:

1. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. SEE DETAIL E/SD-7 FOR RECTANGULAR CHANNEL FLOOR SLAB EXPANSION JOINT WITH CUT-OFF.
3. DO NOT CONSTRUCT 3'-0" CUT-OFF WALL ON SIDE WALLS.
4. JOINT SHALL BE SAND BLASTED CLEAN PRIOR TO SEALANT APPLICATION.



#4 @ 16" OC
L = 4'-6"
"E" BAR
NTS

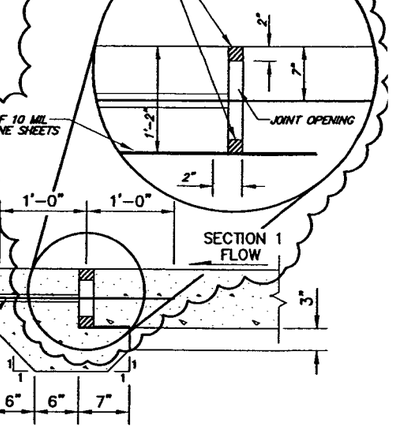
#4 @ 12" OC
L = 4'-2"
"E" BAR
NTS

D SD-7 EXPANSION JOINT W/CUT-OFF AT RECTANGULAR CHANNEL FLOOR SLAB AND TRAPEZOIDAL CHANNEL FLOOR SLAB AND SIDE WALL

NTS "FW1" 37+20.00, "FW1" 38+63.00, "FW1" 42+00.00, "FW1" 46+00.00, "FW1" 59+00.00, "FW1" 62+75.00, "FW1" 66+50.00, "FW1" 70+25.00 AND "FW1" 74+04.70 *SECTIONS 1 AND 2 FLOW DIRECTION ARROWS REVERSED FOR "FW1" 50+00.00, "FW1" 53+50.00, AND "FW1" 54+50.00

E SD-7 EXPANSION JOINT W/CUT-OFF AT RECTANGULAR CHANNEL WALL FOOTING AND SIDE WALL

NTS "FW1" 37+20.00, "FW1" 38+63.00, "FW1" 42+00.00, AND "FW1" 46+00.00 *SECTIONS 1 AND 2 FLOW DIRECTION ARROWS REVERSED FOR "FW1" 50+00.00, AND "FW1" 53+50.00



NOTES:

1. SEE CHANNEL SECTION DETAIL A/SD-11 FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. PROVIDE 1"ø PVC SLEEVE, 14" LONG, W/END CAP (PACKED W/GREASE) @ 12" OC.
3. EXPANSION JOINT TO BE CONTINUOUS THROUGH TOP OF CHANNEL SIDE WALLS.
4. JOINT SHALL BE SAND BLASTED CLEAN PRIOR TO SEALANT APPLICATION.

F SD-7 EXPANSION JOINT

NTS "FW1" 33+50.00 AND "FW1" 57+00.00

REV NO	DATE	DESCRIPTION	APPROVED
1	07/17/01	PLAN REVISION No. 1	SJD

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - SYNDI J. FLIPPIN-DUDLEY - CIVIL - No. 11070

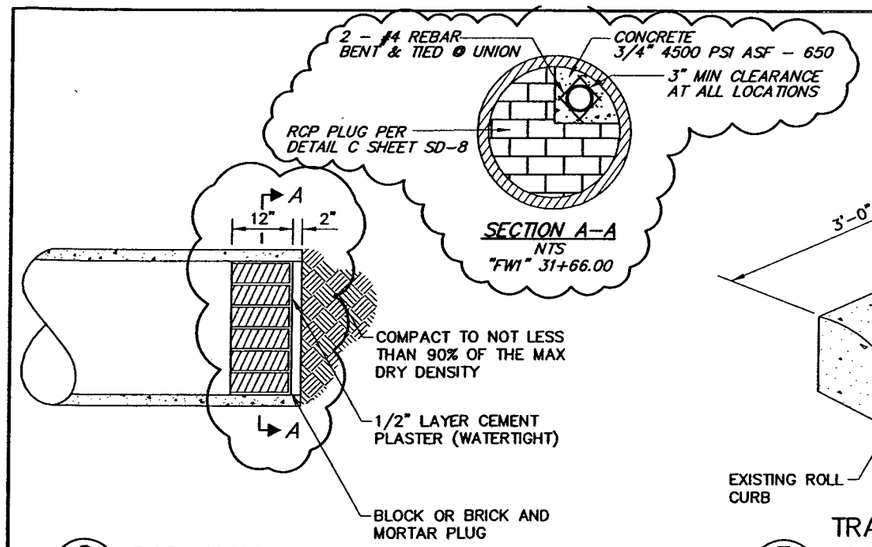
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: JHH CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

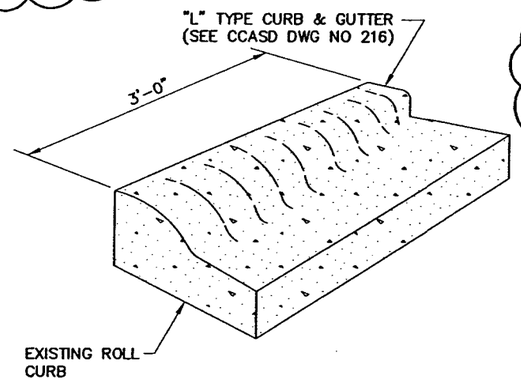
SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-7
15 OF 28
L-1645A

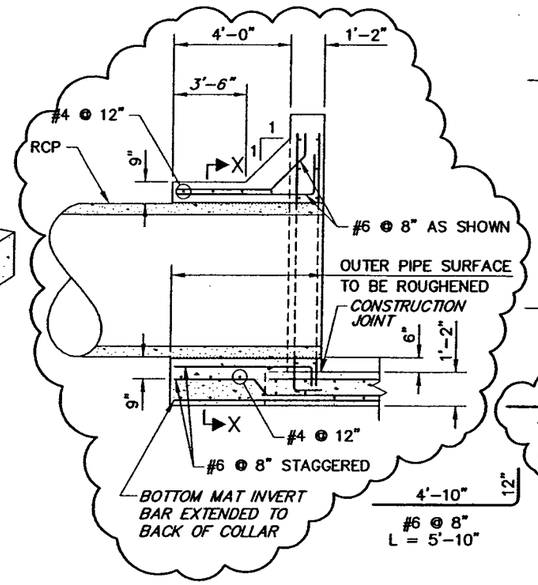
X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PH2RDT.dwg 11 DEC 02 5:03:00 pm PST VIEW2 RTN

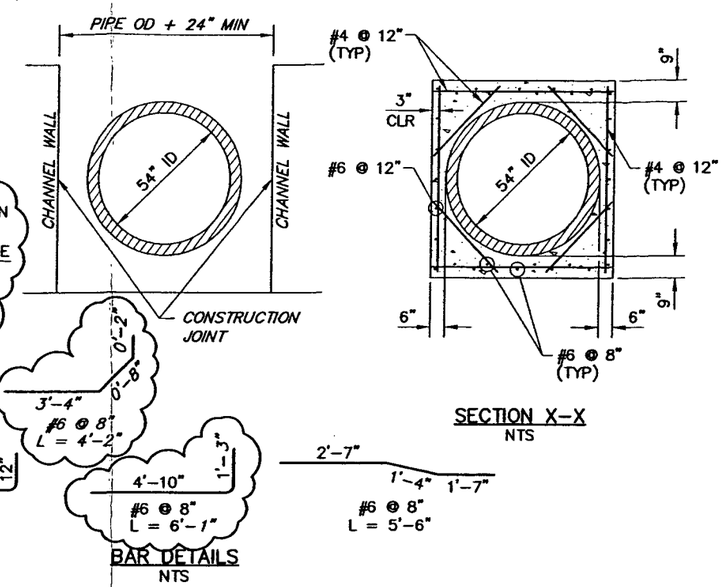


C SD-8 RCP PLUG
NTS
"FW1" 31+66.00, "FW1" 51+68.36



E SD-8 TRANSITION FROM ROLL CURB TO "L" CURB
NTS

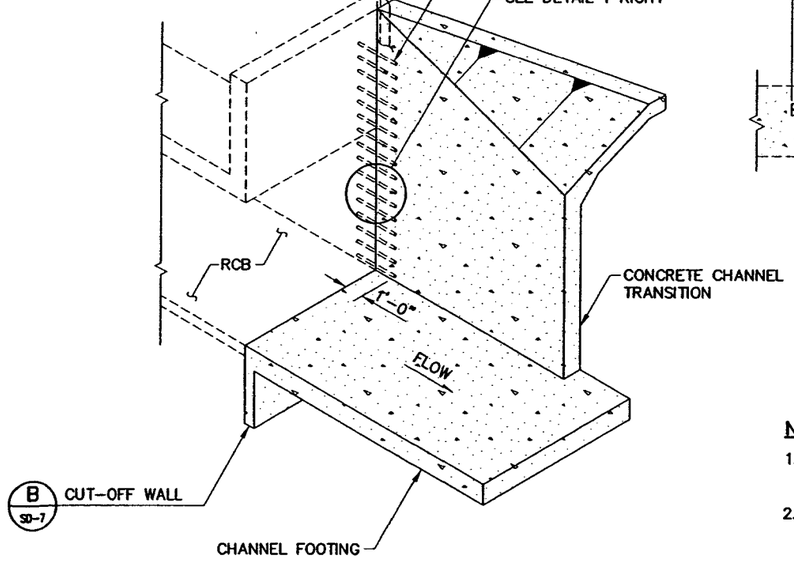


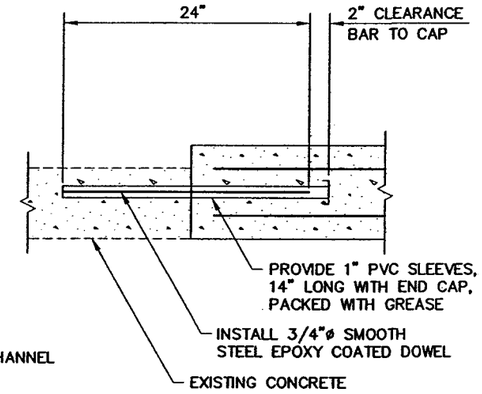


BAR DETAILS
NTS

SECTION X-X
NTS

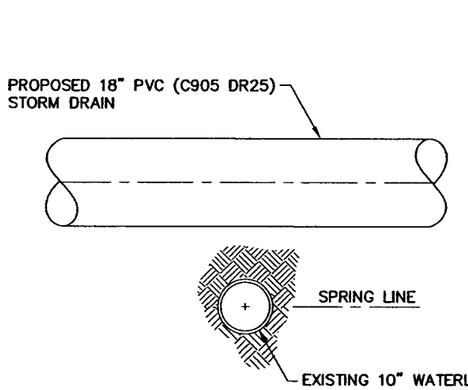
B SD-8 54" RCP TO CHANNEL CONNECTION
NTS
"FW1" 51+38.39





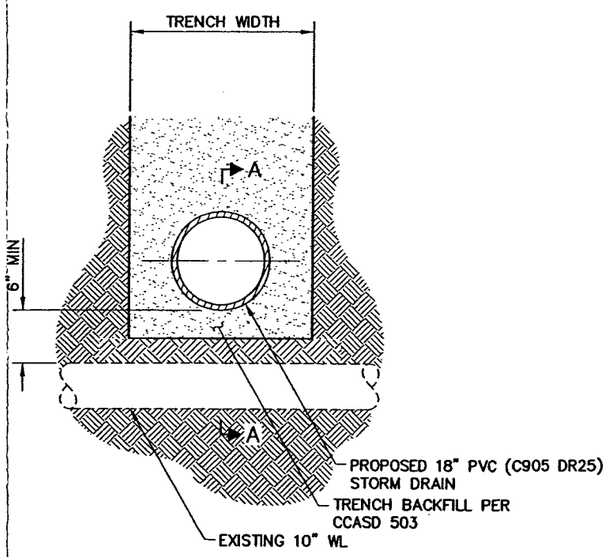
DETAIL 1
NTS

NOTES:
1. DRILL 1"ø HOLE IN EXISTING CONCRETE AND EPOXY GROUT 3/4"ø DOWEL AS SHOWN.
2. SEE DETAIL A/SD-12 AND B/SD-7 FOR DIMENSIONS AND REINFORCEMENTS NOT SHOWN.



SECTION A-A
NTS

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.



LAS VEGAS VALLEY WATER DISTRICT DATE

A SD-8 COPING AND CHANNEL CONNECTION
NTS
"FW1" 74+84.70

D SD-8 EXISTING WATERLINE UNDER PROPOSED PVC STORM DRAIN
NTS
"FW1" 31+66.00

X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PH2RDT.dwg 11 DEC 02 5:05:00 pm PST VIEW3 RTH

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

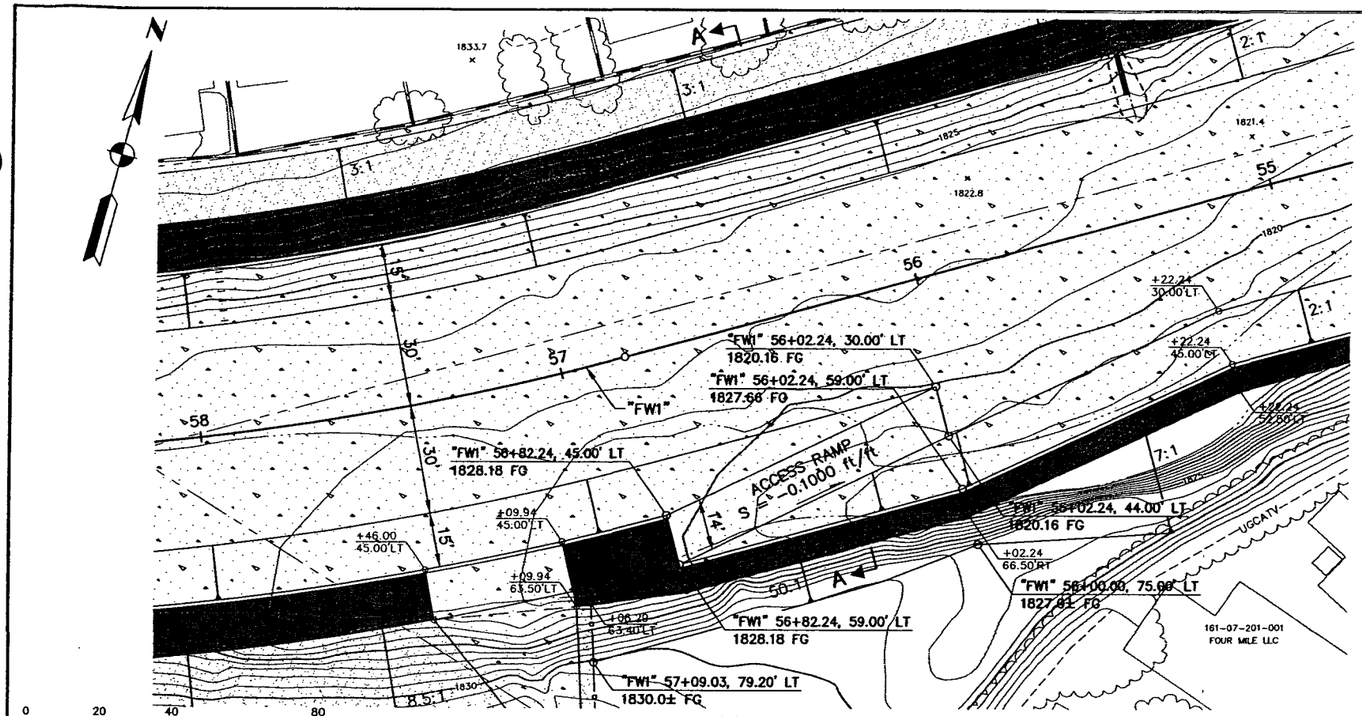
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - SYNDI J. FLIPPIN-DUDLEY - CIVIL - No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: THH/RRB CHECKED BY: SJD
APPROVED BY TDL

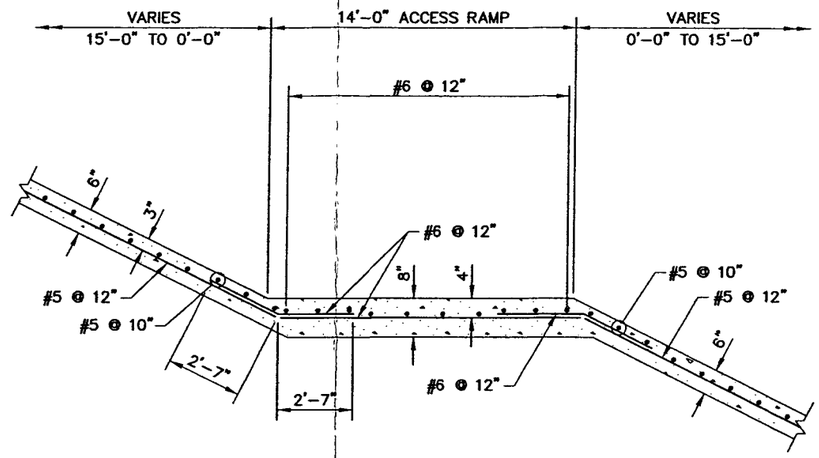
THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

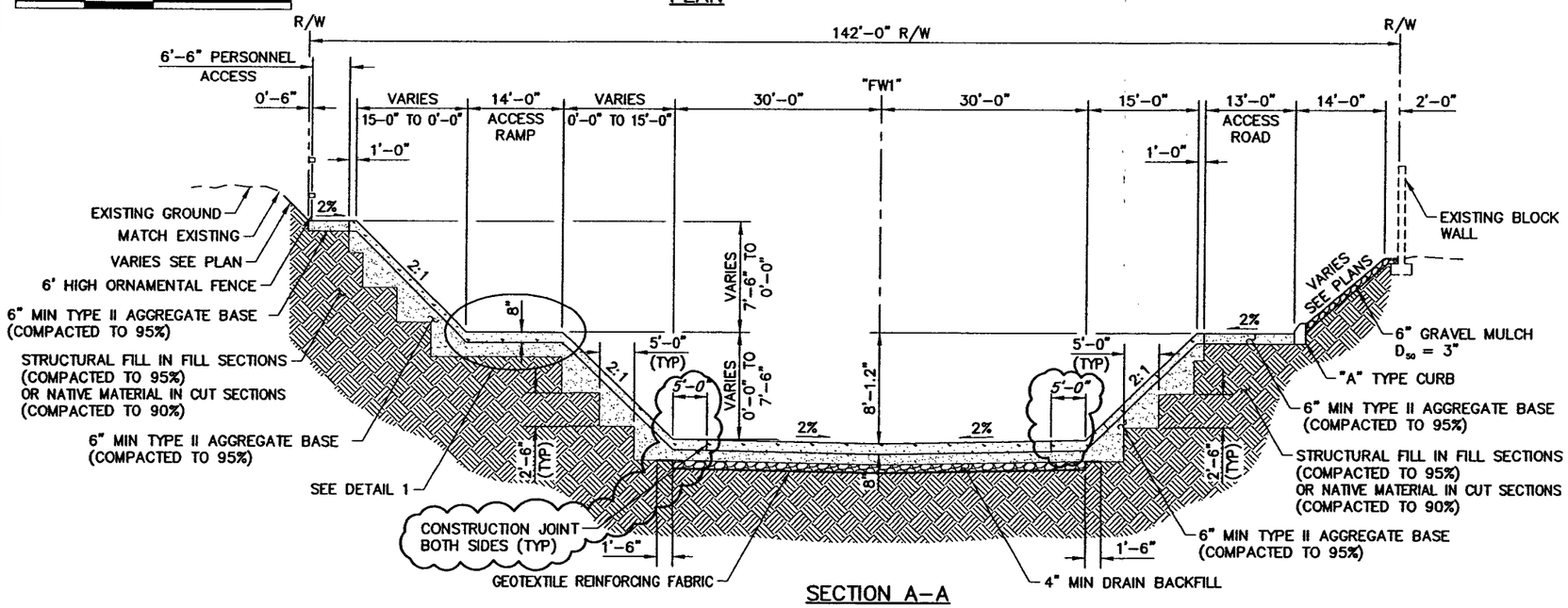
DRAWING NO
SD-8
16 OF 28
L-1645A



PLAN



DETAIL 1
NTS



SECTION A-A

A / SD-9 CONCRETE CHANNEL WITH ACCESS RAMP
NTS "FW1" 56+02.24 TO "FW1" 56+82.24

NOTES:

1. GEOTEXTILE REINFORCING FABRIC TO BE AASHTO M228-99, CLASS I OR EQUIVALENT.
2. SEE DETAIL A/SD-10 FOR TRAPEZOIDAL CONCRETE CHANNEL DIMENSIONS AND REINFORCEMENT NOT SHOWN.
3. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH A COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
4. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
5. DRAIN BACKFILL SHALL BE PLACED TO PROVIDE A STABLE BASE THAT IS FIRM AND UNYIELDING.
6. GEOTEXTILE REINFORCING FABRIC SEAMS SHALL OVERLAP 12" AND SHALL BE TIED SECURELY.
7. ALL FILL AREAS OUTSIDE THE CHANNEL RIGHT-OF-WAY SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL COMPACTED TO 95% TO THE FINISHED GRADES DEPICTED ON THE PLANS.
8. ORNAMENTAL FENCE SHALL BE AMERISTAR AEGIS II - CLASSIC 2 RAIL OR APPROVED EQUIVALENT.
9. SEE DETAILS A AND B/SD-6 FOR WEEPHOLE LOCATIONS.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA SYNDI J. FLIPPIN-DUDLEY CIVIL No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: JHH/RRB CHECKED BY: SJD
APPROVED BY: TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-9
17 OF 28
L-1645A

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

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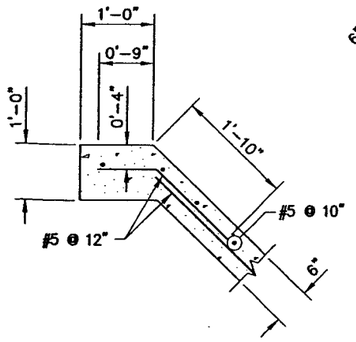
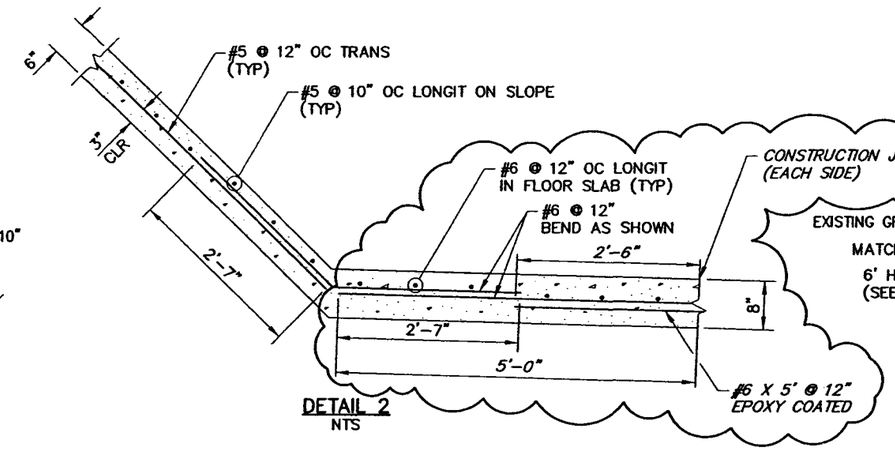


DETAIL 1
NTS



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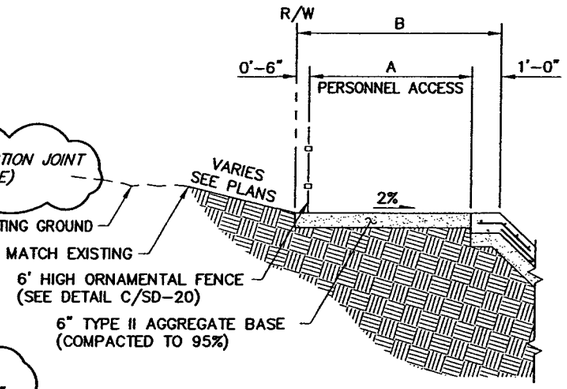
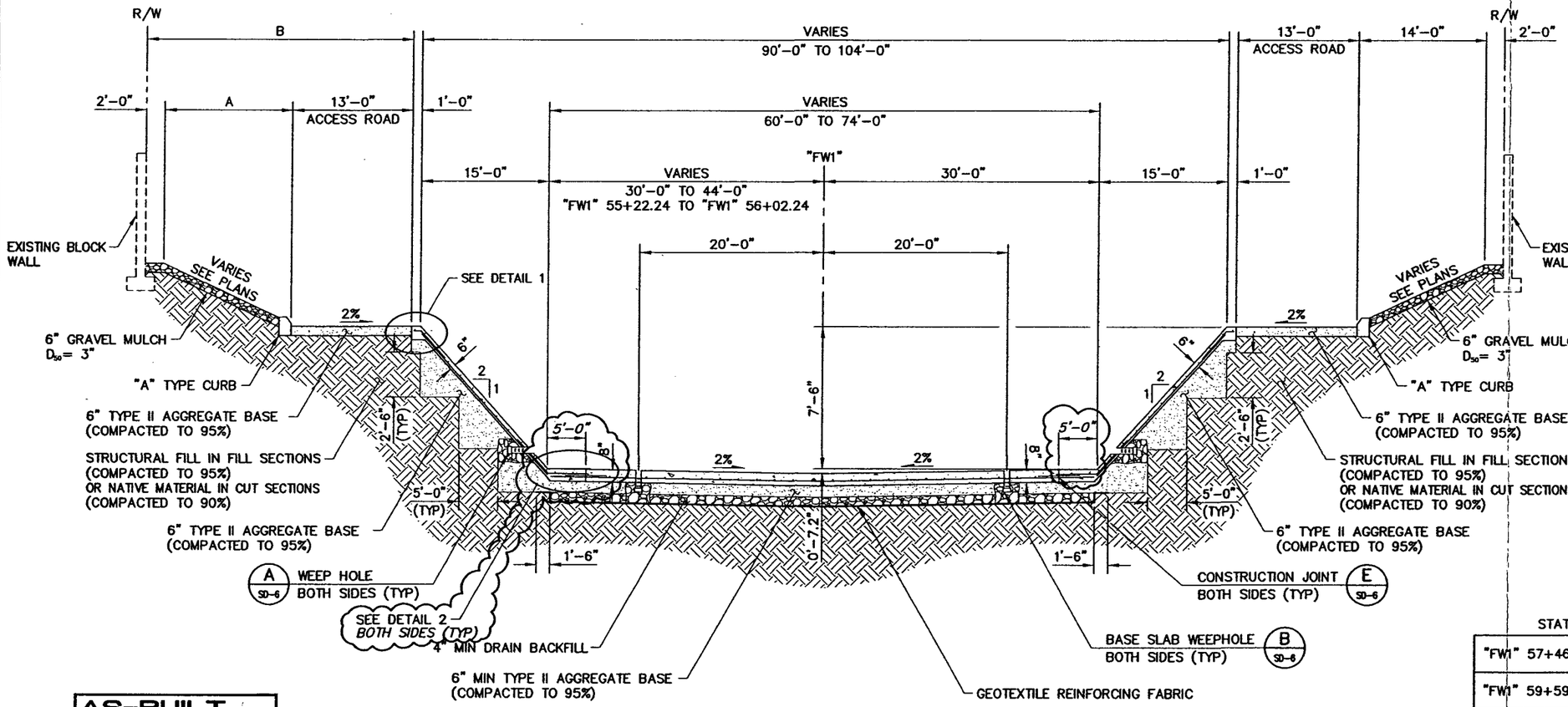


DETAIL 3
NTS

STATION TO STATION	A	B
"FW1" 54+50.00 TO "FW1" 56+02.24	6'-6"	8'-0"
"FW1" 56+82.24 TO "FW1" 57+09.94	VARIES 20'-6" - 17'-0"	VARIES 22'-0" - 18'-6"



AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

A SD-10 TRAPEZOIDAL CHANNEL
NTS
"FW1" 54+50.00 TO "FW1" 56+02.24
"FW1" 56+82.24 TO "FW1" 74+04.70

STATION TO STATION	A	B
"FW1" 57+46.00 TO "FW1" 59+15.84	VARIES 35'-6" - 22'-6"	VARIES 50'-6" - 37'-6"
"FW1" 59+59.84 TO "FW1" 59+87.00	VARIES 19'-9" - 18'-3"	VARIES 34'-9" - 33'-3"
"FW1" 60+97.50 TO "FW1" 74+04.70	VARIES 14'-7" - 14'-0"	VARIES 29'-7" - 29'-0"

NOTES:

1. CONSTRUCT ACCESS RAMP PER DETAIL A/SD-9.
2. GEOTEXTILE REINFORCING FABRIC TO BE AASHTO M228-99, CLASS I OR EQUIVALENT.
3. MIN STEEL LAP DISTANCE:
   #4 BARS = 1'-10"
   #5 BARS = 2'-2"
   #6 BARS = 2'-7"
   #7 BARS = 3'-3"
   #8 BARS = 4'-3"
   #9 BARS = 5'-5"
   #10 BARS = 6'-2"
4. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH A COMPRESSIVE STRENGTH OF 4,500 psi AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
5. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
6. DRAIN BACKFILL SHALL BE PLACED TO PROVIDE A STABLE BASE THAT IS FIRM AND UNYIELDING.
7. GEOTEXTILE REINFORCING FABRIC SEAMS SHALL OVERLAP 12" AND SHALL BE SECURELY TIED.
8. CROSS SECTION IS SHOWN FACING UPSTREAM.
9. ALL FILL AREAS OUTSIDE THE CHANNEL RIGHT-OF-WAY SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL COMPACTED TO 95% TO THE FINISHED GRADES DEPICTED ON THE PLANS.
10. ORNAMENTAL FENCE SHALL BE AMERISTAR AEGIS II-CLASSIC 2 RAIL OR APPROVED EQUIVALENT.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA — SINDI J. FLIPPIN-DUDLEY — CIVIL — No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: THH/RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-10
18 OF 28
L-1645A

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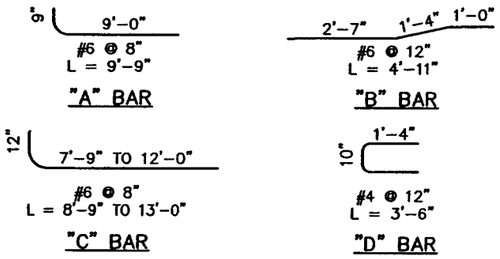
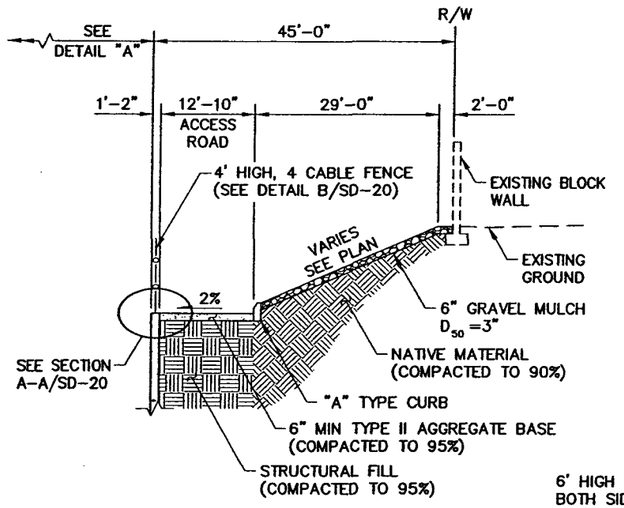
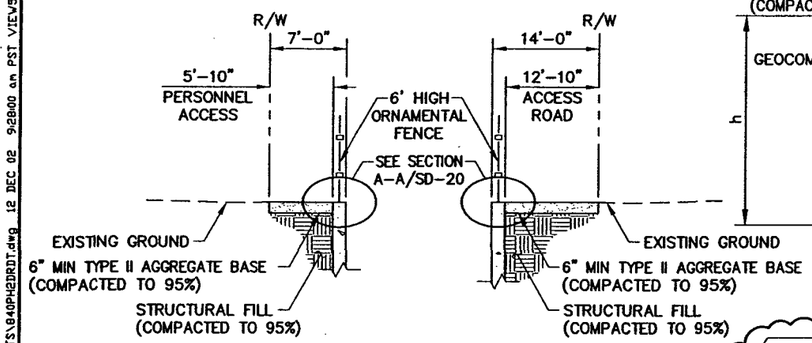


REBAR DETAILS
NTS



DETAIL 1
NTS

"FW1" 52+64.28 TO "FW1" 53+50.00



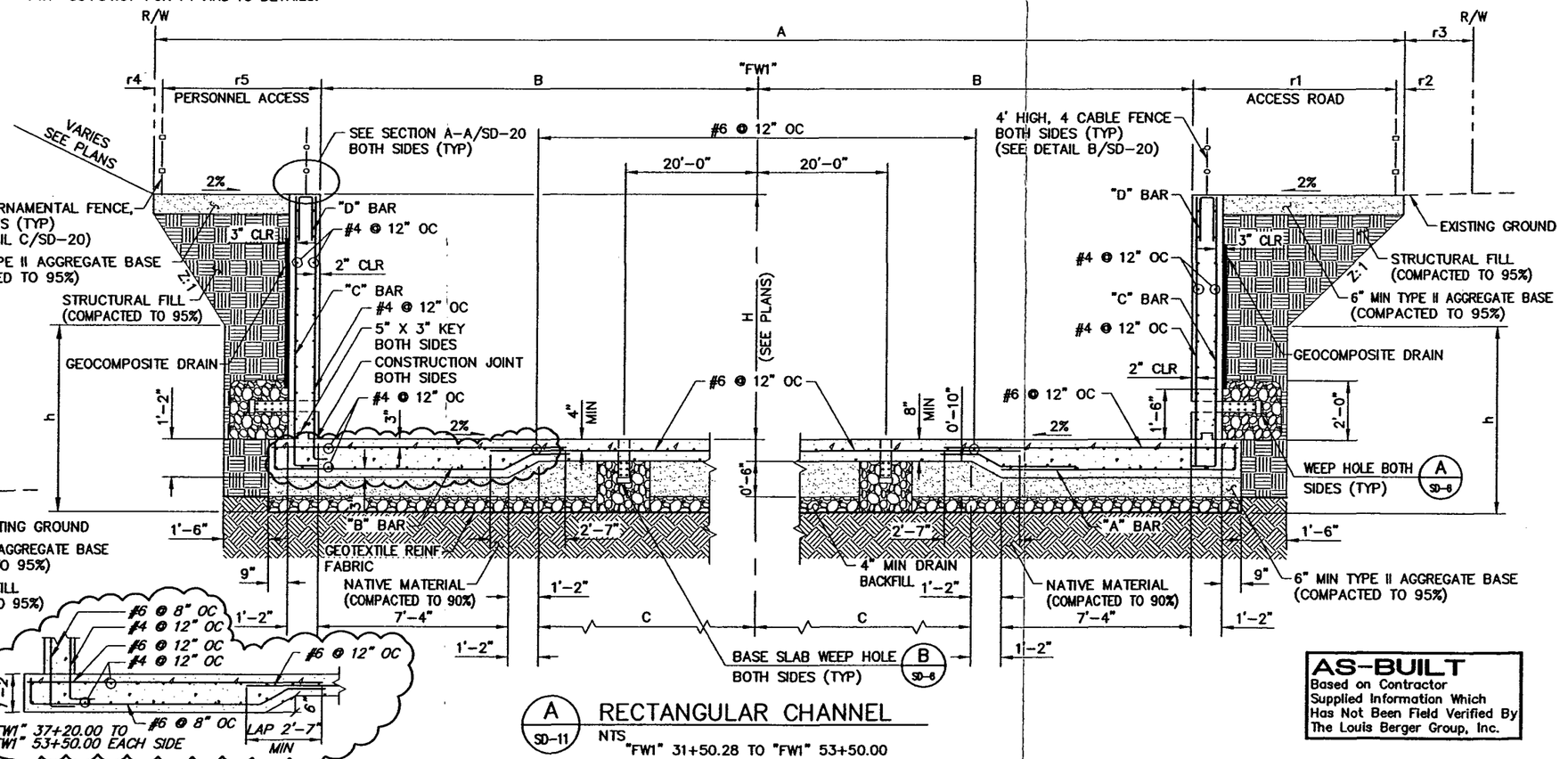
DETAIL 2
NTS

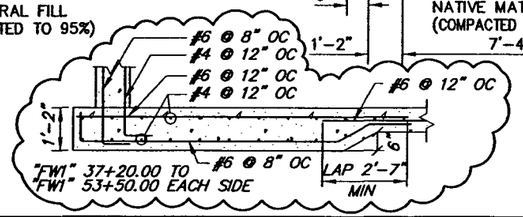
"FW1" 37+58.55 TO "FW1" 37+78.00
"FW1" 37+99.10 TO "FW1" 38+18.55

NOTES:

1. DIMENSIONS "h" AND "Z" PER OSHA GUIDELINES PART 1926 SUBPART P FOR EXCAVATIONS.
2. MIN STEEL LAP DISTANCE:
   #4 BARS = 1'-10" #7 BARS = 3'-3" #10 BARS = 6'-2"
   #5 BARS = 2'-2" #8 BARS = 4'-3"
   #6 BARS = 2'-7" #9 BARS = 5'-5"
3. GEOTEXTILE REINFORCING FABRIC TO BE AASHTO M228-99, CLASS I OR EQUIVALENT.
4. GEOCOMPOSITE DRAIN SHALL BE CONTECH C-DRAIN 11K OR EQUIVALENT AND INSTALLATION WILL BE ALONG THE LENGTH OF THE VERTICAL WALL AND WILL EXTEND FROM THE TOP OF THE FOOTING TO 12" – 18" BELOW FINAL GRADE EXCEPT AT WEEPHOLES.
5. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH ACOMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
6. REINFORCED STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
7. DRAIN BACKFILL SHALL BE PLACED TO PROVIDE A STABLE BASE THAT IS FIRM AND UNYEILDING.
8. GEOTEXTILE REINFORCING FABRIC SEAMS SHALL OVERLAP 12" AND SHALL BE SECURITY TIED.
9. ALL FILL AREAS OUTSIDE THE CHANNEL RIGHT-OF-WAY SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL COMPACTED TO 95% TO THE FINISHED GRADES DEPICTED ON THE PLANS.
10. SEE DETAIL B/SD-13 BETWEEN "FW1" 39+05.79 TO "FW1" 39+84.87 FOR r4 AND r5 DETAILS.

STATION	A	B	C	H	r1	r2	r3	r4	r5
"FW1" 31+50.28 TO "FW1" 32+00.28	VARIES SEE PLAN	VARIES 37'-6" TO 30'-0"	VARIES 29'-0" TO 21'-6"	VARIES 7'-4½" TO 7'-7"	VARIES SEE PLAN	0'-0"	VARIES SEE PLAN	0'-6"	6'-6"
"FW1" 32+00.28 TO "FW1" 33+12.28	VARIES SEE PLAN	30'-0"	21'-6"	7'-7"	SEE DETAIL A/SD-14			0'-6"	6'-6"
"FW1" 33+12.28 TO "FW1" 33+48.28	VARIES SEE PLAN	30'-0"	21'-6"	7'-7"	21'-4"	0'-0"	VARIES SEE PLAN	0'-6"	6'-6"
"FW1" 33+48.28 TO "FW1" 33+58.28	VARIES SEE PLAN	30'-0"	21'-6"	7'-7"	VARIES 21'-4" TO 13'-6"	VARIES SEE PLAN	VARIES SEE PLAN	0'-6"	6'-6"
"FW1" 33+58.28 TO "FW1" 37+58.55	VARIES SEE PLAN	30'-0"	21'-6"	VARIES SEE PLAN	13'-6"	0'-6"	0'-0"	0'-6"	6'-6"
"FW1" 37+58.55 TO "FW1" 37+78.00	81'-0"	30'-0"	21'-6"	VARIES SEE PLAN	SEE DETAIL 2/SD-11				
"FW1" 37+78.00 TO "FW1" 37+99.10	81'-0"	30'-0"	21'-6"	VARIES 11'-9½" TO 11'-8½"	SEE DETAIL B/SD-16				
"FW1" 37+99.10 TO "FW1" 38+18.55	81'-0"	30'-0"	21'-6"	VARIES SEE PLAN	SEE DETAIL 2/SD-11				
"FW1" 38+18.55 TO "FW1" 51+14.79	81'-0"	30'-0"	21'-6"	VARIES SEE PLAN	13'-6"	0'-6"	0'-0"	0'-6"	6'-6"
"FW1" 51+14.79 TO "FW1" 52+64.28	VARIES 81'-0" TO 112'-0"	30'-0"	21'-6"	VARIES SEE PLAN	SEE DETAIL A/SD-13			0'-6"	6'-6"
"FW1" 52+64.28 TO "FW1" 53+50.00	112'-0"	30'-0"	21'-6"	8'-8"	SEE DETAIL 1/SD-11			0'-6"	6'-6"





A SD-11 RECTANGULAR CHANNEL
NTS "FW1" 31+50.28 TO "FW1" 53+50.00

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER – STATE OF NEVADA – SYNDI J. FLIPPIN-DUDLEY – CIVIL – No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: JHH/RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-11
19 OF 28
L-1645A

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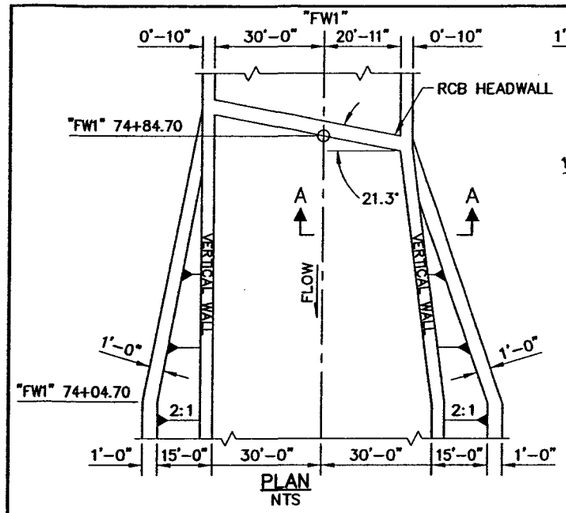
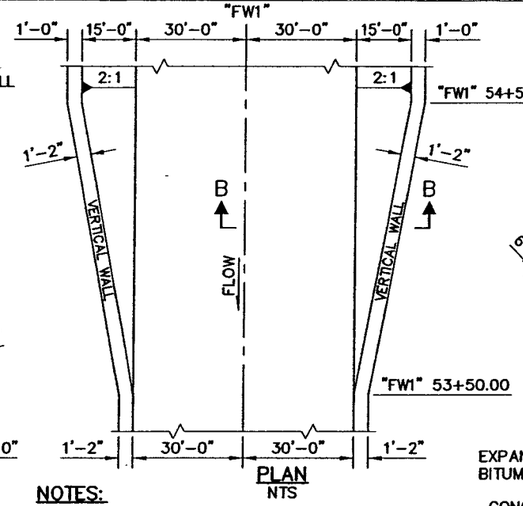


PLAN
NTS



PLAN
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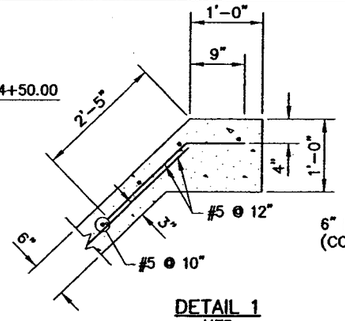
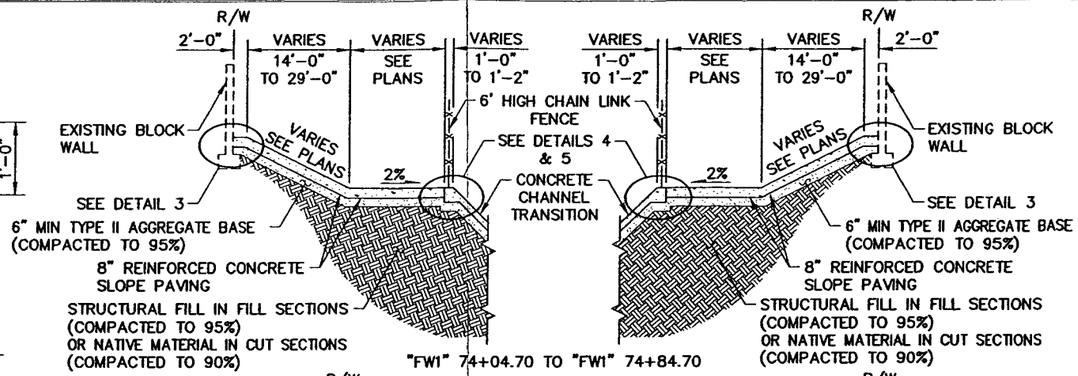
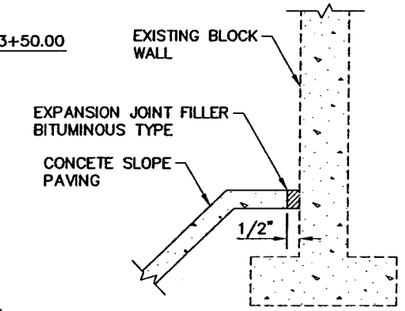


DETAIL 1
NTS





DETAIL 3
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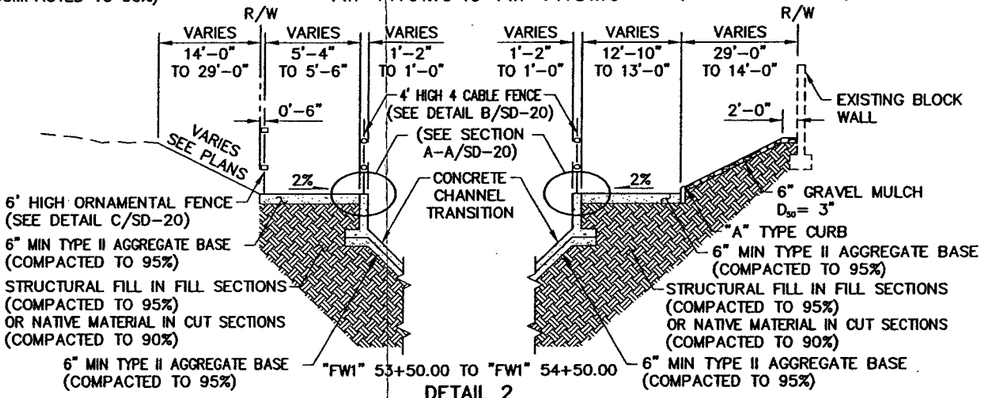

DETAIL 2
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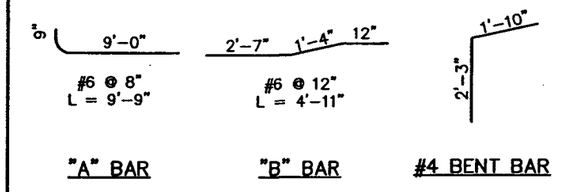
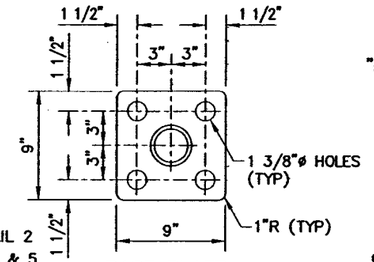


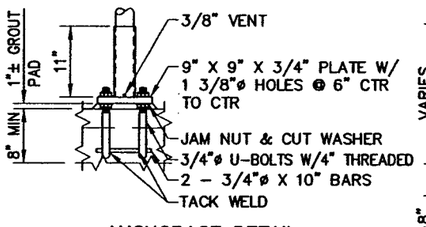
"A" BAR "B" BAR #4 BENT BAR

NOTES:

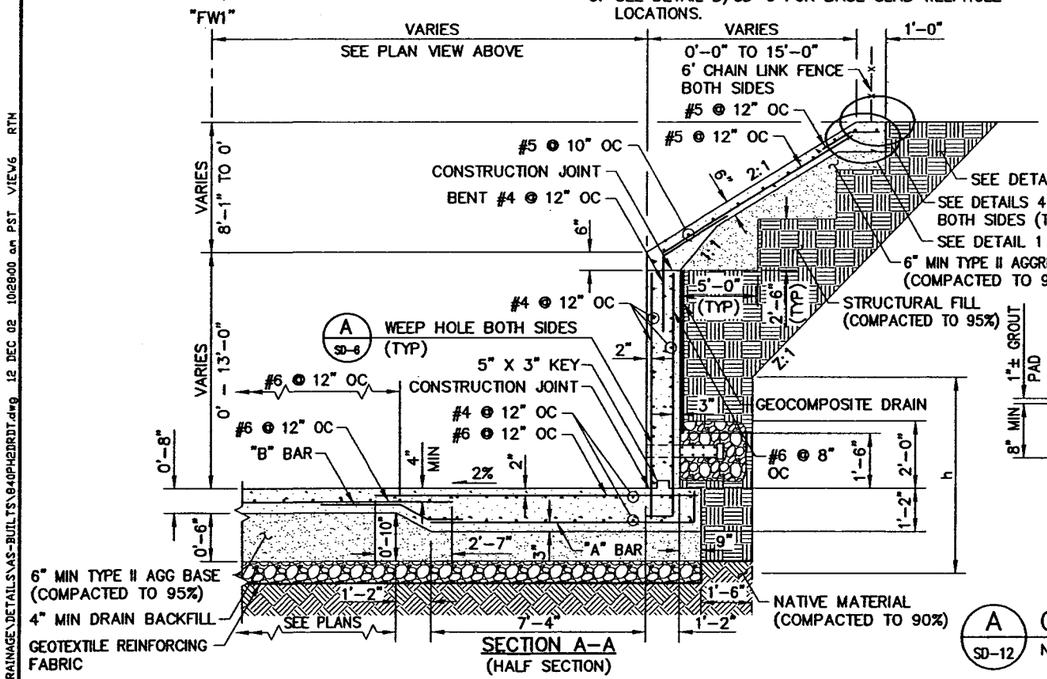
1. SLOPE PAVING IS TO BE DIVIDED IN EQUALLY SPACED PANELS. THE WIDTH OF EACH PANEL IS TO BE NEARLY 10' AS SITE CONDITIONS WILL PERMIT.
2. SEE DETAIL 1/SD-9 FOR 8" CONCRETE SLOPE PAVING REINFORCEMENT.
3. SEE SHEETS SD-10 AND SD-11 FOR ADDITIONAL NOTES.
4. SEE CCASD NO 252 FOR 6' CHAIN LINK FENCE DETAILS NOT SHOWN.
5. ALL FILL AREAS OUTSIDE THE CHANNEL RIGHT-OF-WAY SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL COMPACTED TO 95% TO THE FINISHED GRADES DEPICTED ON THE PLANS.
6. SEE DETAIL B/SD-6 FOR BASE SLAB WEEPHOLE LOCATIONS.



BASE PLATE
DETAIL 4
NTS

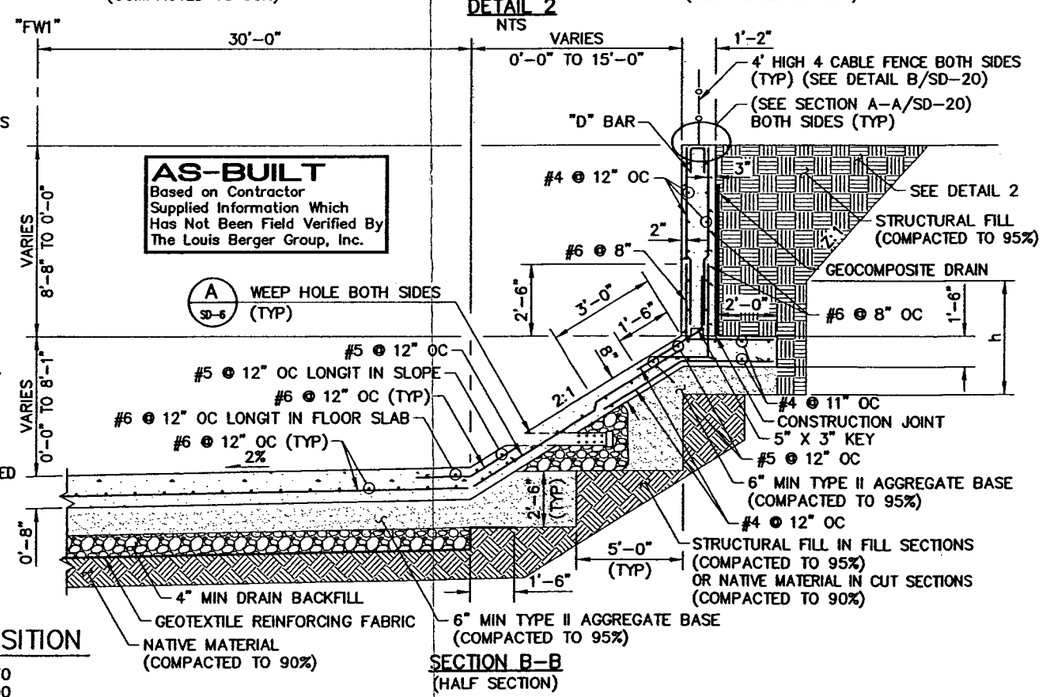


ANCHORAGE DETAIL
DETAIL 5
NTS



SECTION A-A
(HALF SECTION)

A SD-12 CONCRETE CHANNEL TRANSITION
NTS
"FW1" 74+04.70 TO "FW1" 74+84.70
"FW1" 53+50.00 TO "FW1" 54+50.00



SECTION B-B
(HALF SECTION)

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
SYNDI J. FLIPPIN-DUDLEY
CIVIL
No. 11070

PROJECT NO: 840 DRAWN BY: RDR
DESIGNED BY: JHH/RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-12
20 OF 28
L-1645A

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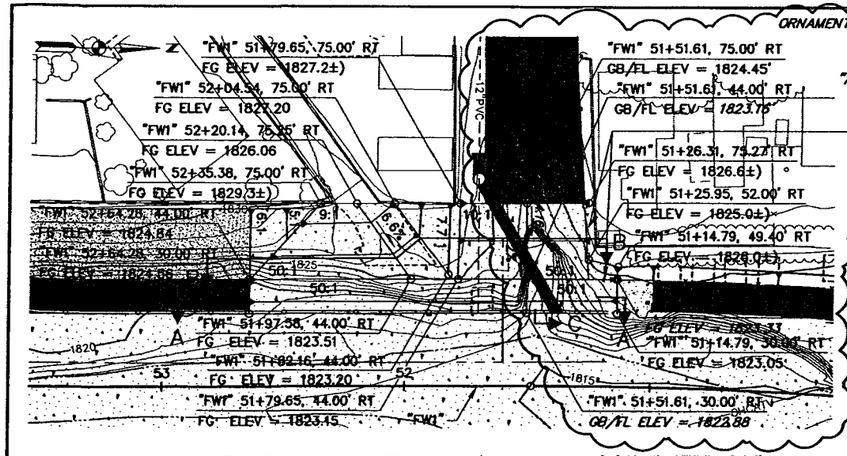
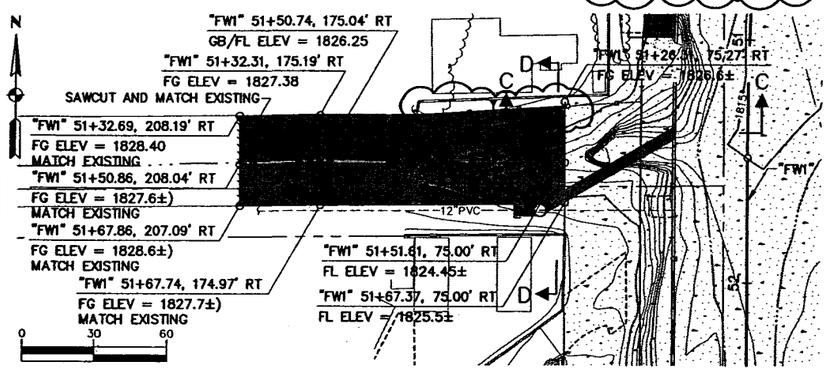
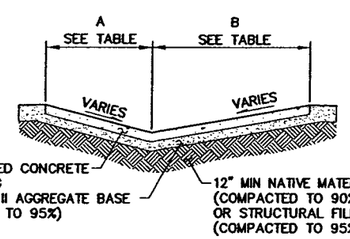




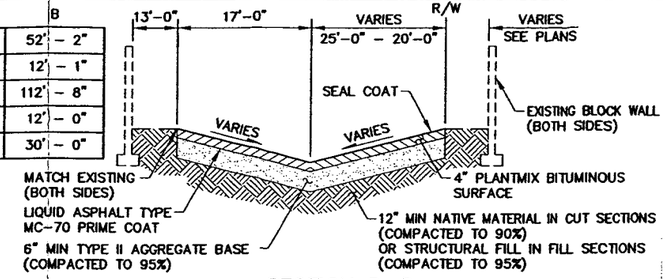
A SD-13 REINFORCED CONCRETE AND AC SWALE

NTS

"FW1" 51+14.79 TO "FW1" 52+64.28

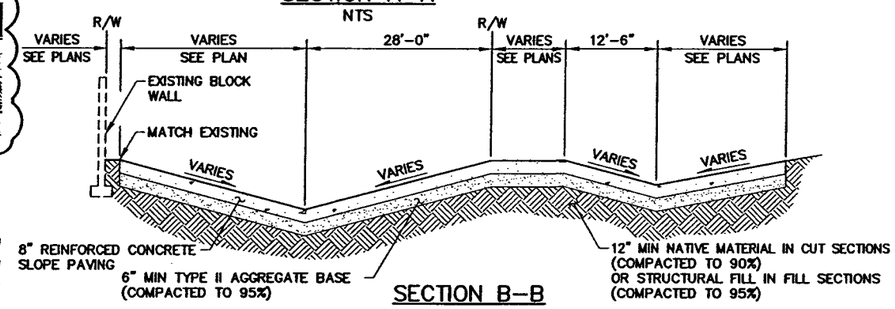


STATIONS	A	B
"FW1" 39+05.79 TO "FW1" 39+84.87	26 – 11"	52' – 2"
"FW1" 57+09.94 TO "FW1" 57+46.00	24' – 0"	12' – 1"
"FW1" 51+14.79 TO "FW1" 52+64.28	36' – 10"	112' – 8"
"FW1" 59+15.84 TO "FW1" 59+59.84	32' – 0"	12' – 0"
"FW1" 59+87.00 TO "FW1" 60+97.50	80' – 6"	30' – 0"



SECTION A–A

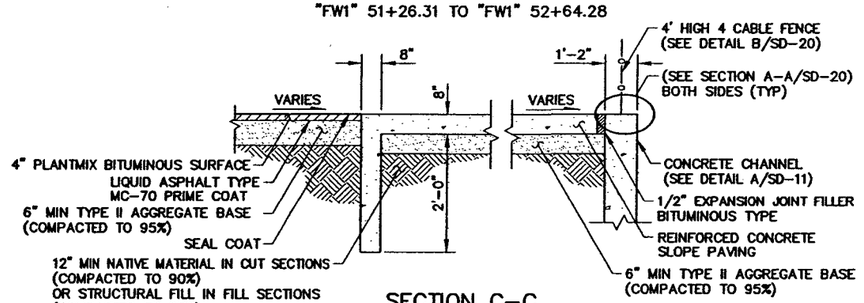
NTS



SECTION B–B

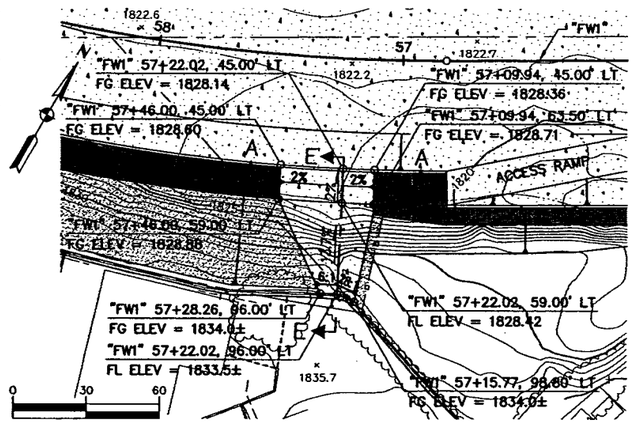
NTS

"FW1" 51+26.31 TO "FW1" 52+64.28



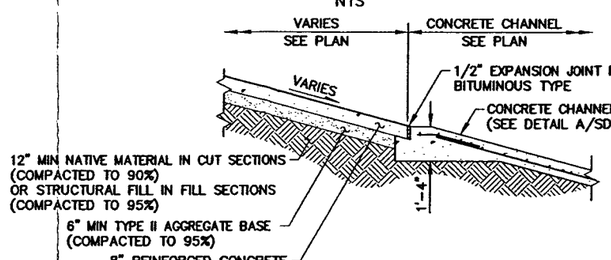
SECTION C–C

NTS



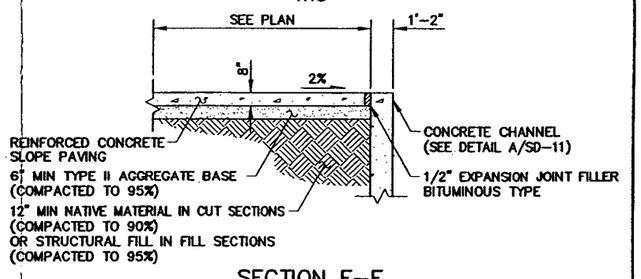
SECTION D–D

NTS



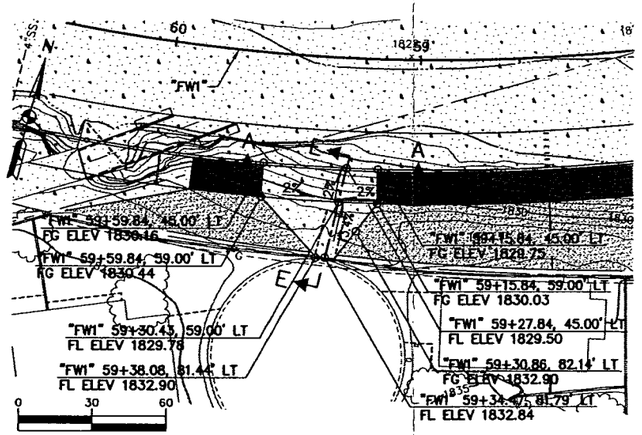
SECTION E–E

NTS



SECTION F–F

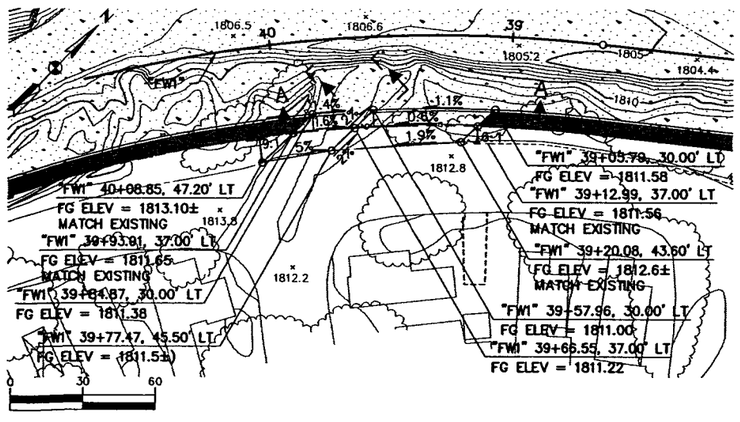
NTS



NOTES:

1. SEE DETAIL 1/SD–9 FOR CONCRETE SLOPE PAVING REINFORCEMENT.
2. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH A COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
3. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
4. FENCE POSTS SHALL BE SPACED A MAXIMUM DISTANCE OF 5'–0" OC BETWEEN "FW1" 51+14.79 TO "FW1" 52+64.28.
5. FENCE POSTS SHALL BE A MINIMUM OF 3" TUBE STEEL BETWEEN "FW1" 51+14.79 TO "FW1" 52+64.28, 30.58 RT.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.



B SD-13 REINFORCED CONCRETE SWALE

NTS

"FW1" 39+05.79 TO "FW1" 39+84.87

C SD-13 REINFORCED CONCRETE SWALE

NTS

"FW1" 57+09.94 TO "FW1" 57+46.00

D SD-13 REINFORCED CONCRETE SWALE

NTS

"FW1" 59+15.84 TO "FW1" 59+59.84

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA — SYNDI J. FLIPPIN-DUDLEY — CIVIL — No. 11070

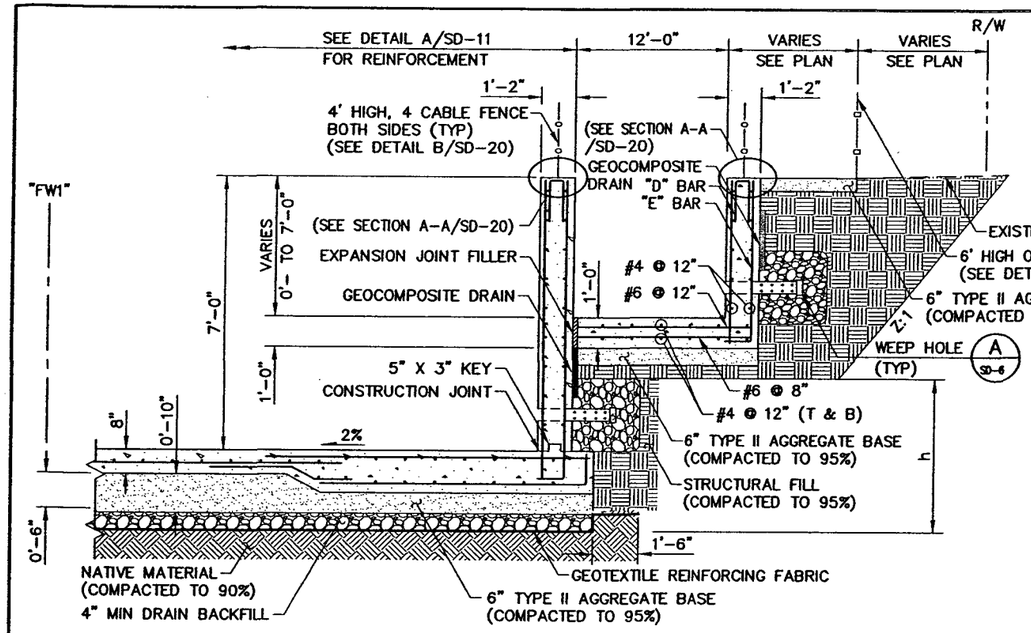
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

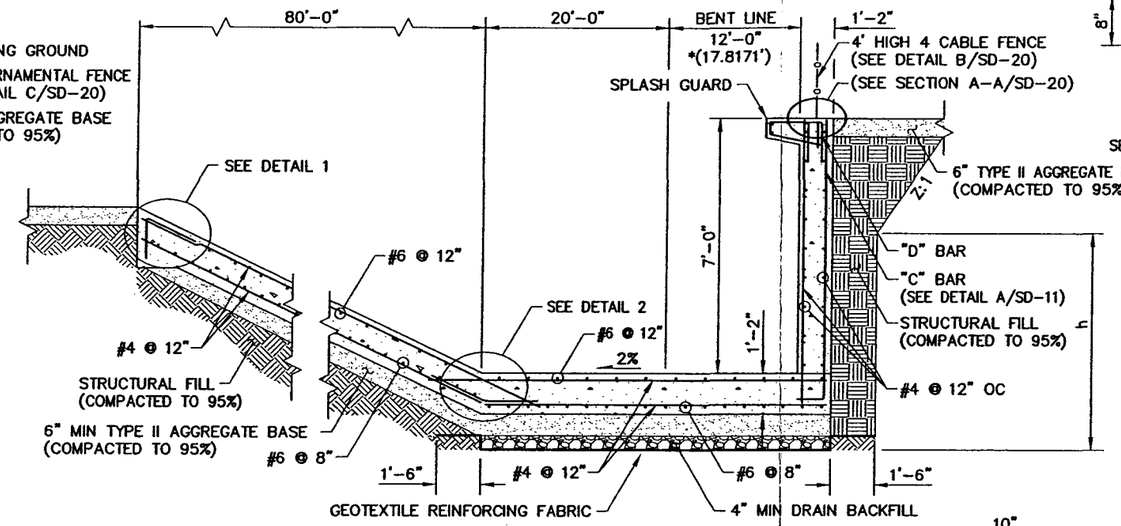
SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-13
21 OF 28
L-1645A

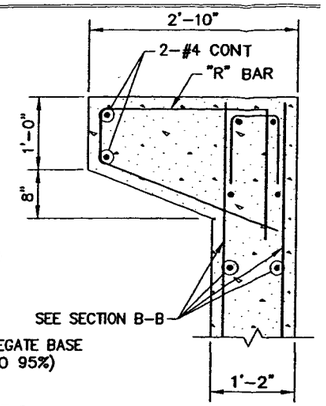
X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PH2DRDT3.dwg 13 DEC 02 2:27:00 pm PST RTM



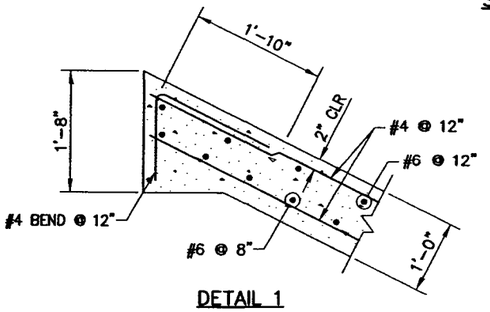
SECTION A-A
NTS



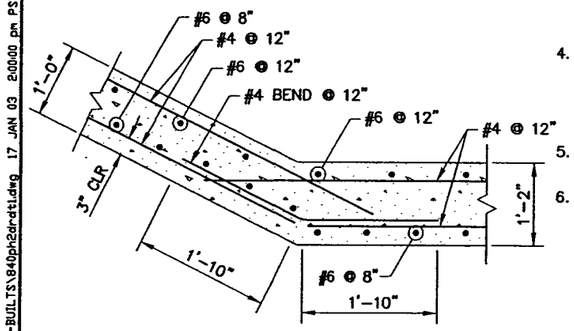
SECTION B-B
NTS



SECTION C-C
NTS



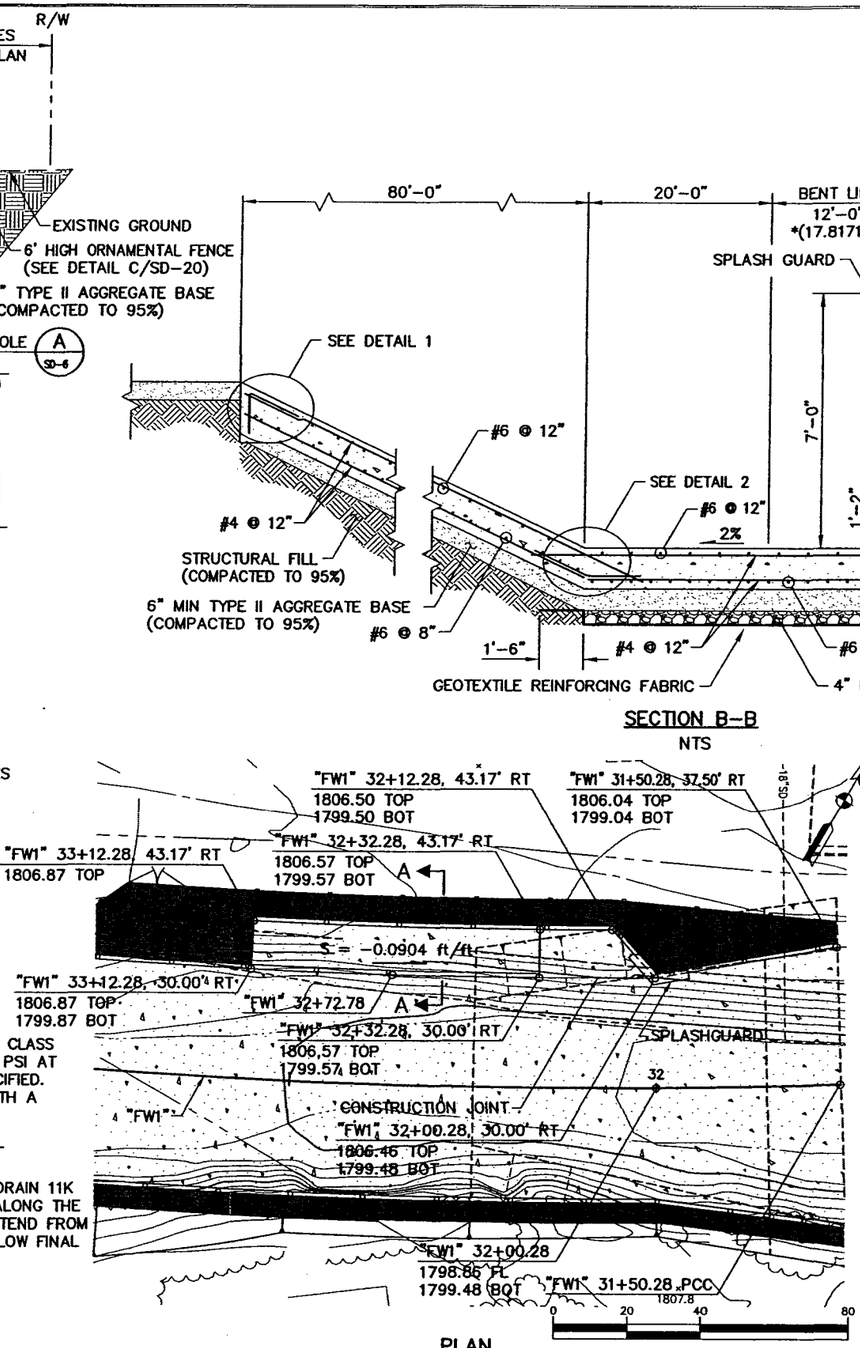
DETAIL 1
NTS



DETAIL 2
NTS

NOTES:

1. DIMENSION "h" AND "Z" PER OSHA GUIDELINES PART 1926, SUBPART P FOR EXCAVATIONS.
2. GEOTEXTILE REINFORCING FABRIC TO BE AASHTO M228-99, CLASS I OR EQUIVALENT.
3. MIN BAR LAPS:
   #4 BARS = 1'-10"
   #5 BARS = 2'-2"
   #6 BARS = 2'-7"
   #7 BARS = 3'-3"
   #8 BARS = 4'-3"
   #9 BARS = 5'-5"
   #10 BARS = 6'-2"
4. CONCRETE: ALL CONCRETE SHALL BE MODIFIED CLASS A WITH A COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS UNLESS OTHERWISE NOTED OR SPECIFIED. ALL CONCRETE SHALL BE TYPE V CEMENT WITH A WATER CEMENT RATIO OF 0.45.
5. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
6. GEOCOMPOSITE DRAIN SHALL BE CONTECH C-DRAIN 11K OR EQUIVALENT AND INSTALLATION WILL BE ALONG THE LENGTH OF THE VERTICAL WALL AND WILL EXTEND FROM THE TOP OF THE FOOTING TO 12" TO 18" BELOW FINAL GRADE EXCEPT AT WEEPHOLES.

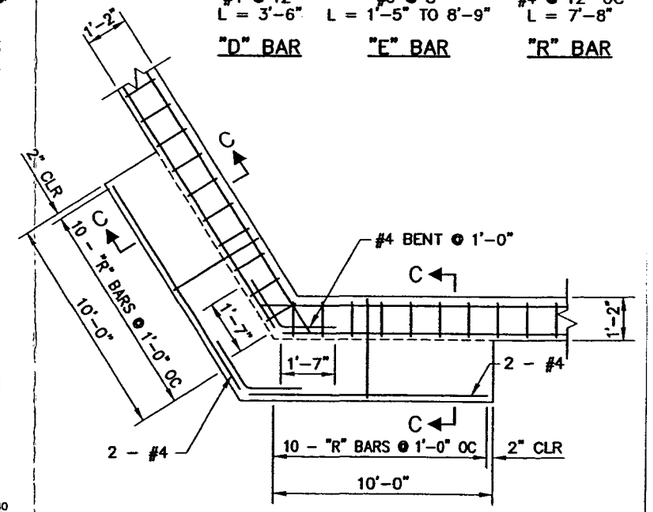


PLAN

#4 @ 12"
L = 3'-6"
"D" BAR

#6 @ 8"
L = 1'-5" TO 8'-9"
"E" BAR

#4 @ 12" OC
L = 7'-8"
"R" BAR



SPLASH GUARD
NTS

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

A SD-14 RECTANGULAR CONCRETE CHANNEL ACCESS RAMP
NTS
"FW1" 32+00.28 TO "FW1" 33+12.28

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

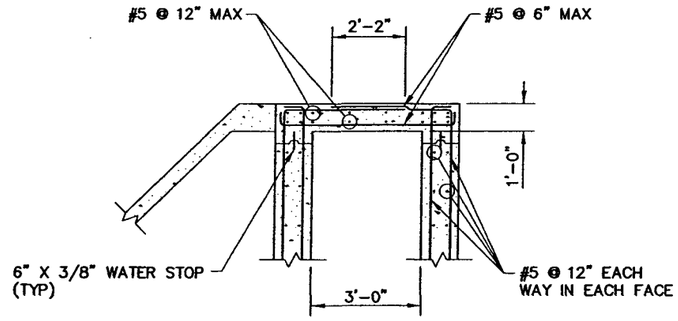
PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: JHH/RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

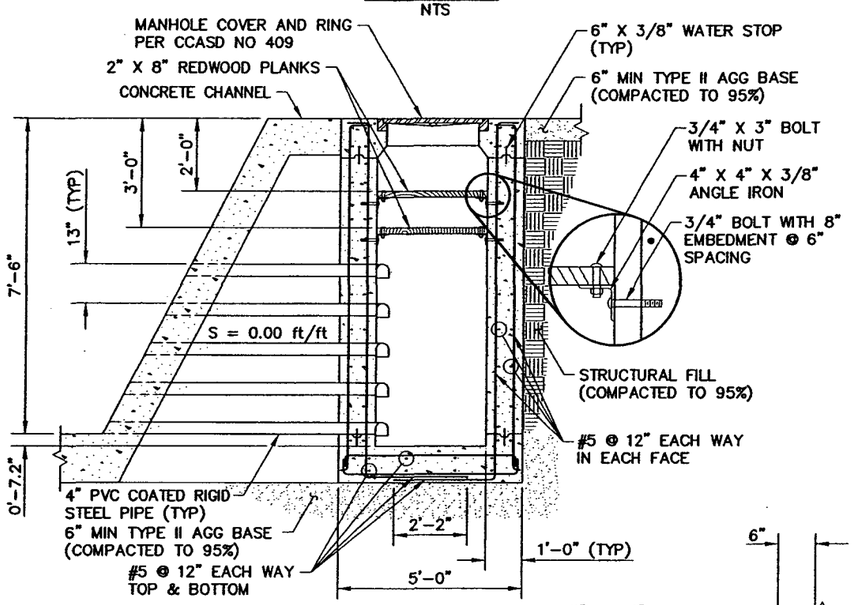
SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-14
22 OF 28
L-1645A

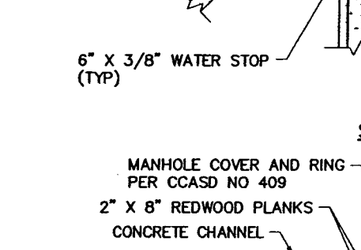
X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840ph2ardet1.dwg 17 JAN 03 2:00:00 pm PST RTN



SECTION C-C
NTS

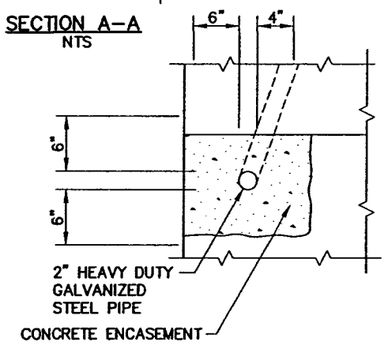


SECTION A-A
NTS



NOTE:
1 - #5 HOOP ø OF OPENING +8" IN EACH LAYER OF REINFORCEMENT OF OPENINGS.

DETAIL 1
NTS



DETAIL 2
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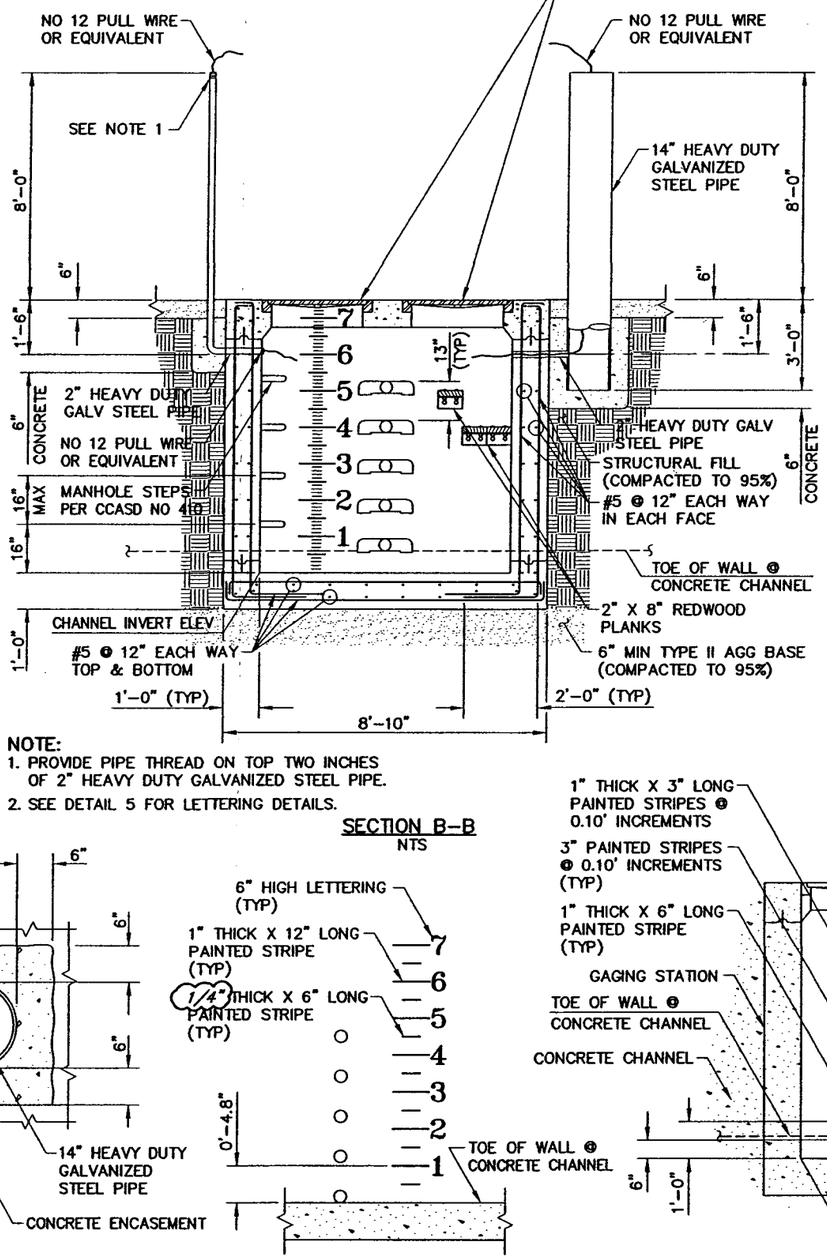
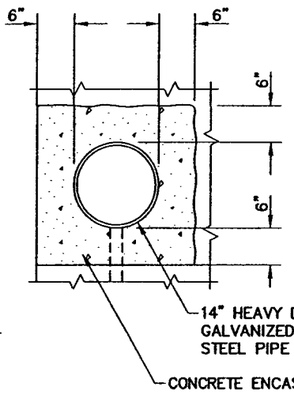


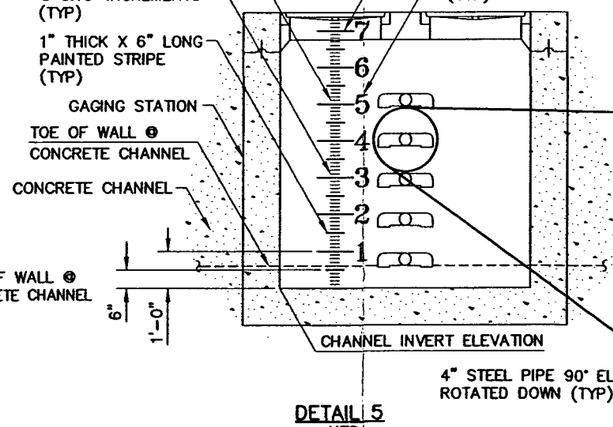
NOTE:
1. PROVIDE PIPE THREAD ON TOP TWO INCHES OF 2" HEAVY DUTY GALVANIZED STEEL PIPE.
2. SEE DETAIL 5 FOR LETTERING DETAILS.

DETAIL 3
NTS



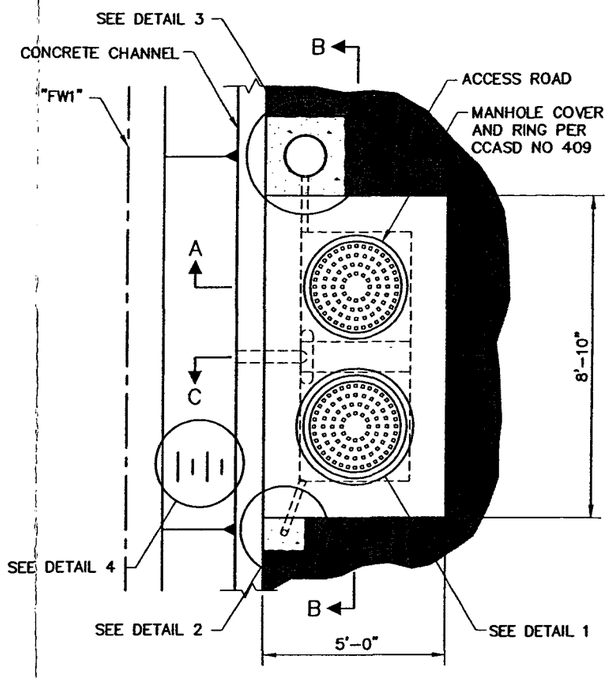
SECTION B-B
NTS

DETAIL 4
NTS



DETAIL 5
NTS

NOTE:
1. LETTERING IS AS VIEWED FROM INSIDE GAGING STATION.



PLAN VIEW
NTS

A SD-15 GAGE STATION
NTS "FW1" 68+50.00

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
SYNDI J. FLIPPIN-DUDLEY
CIVIL
No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-15
23 OF 28
L-1645A

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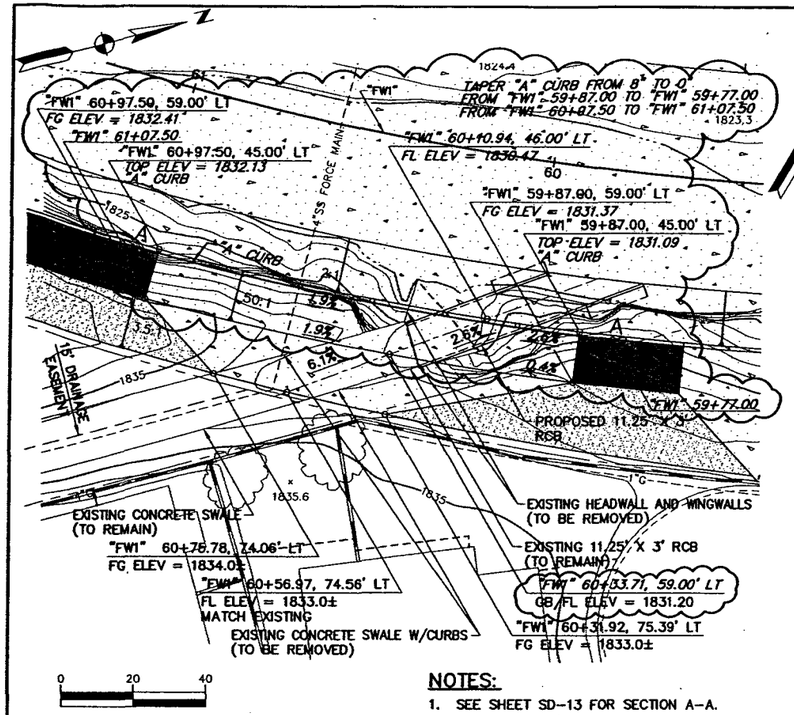


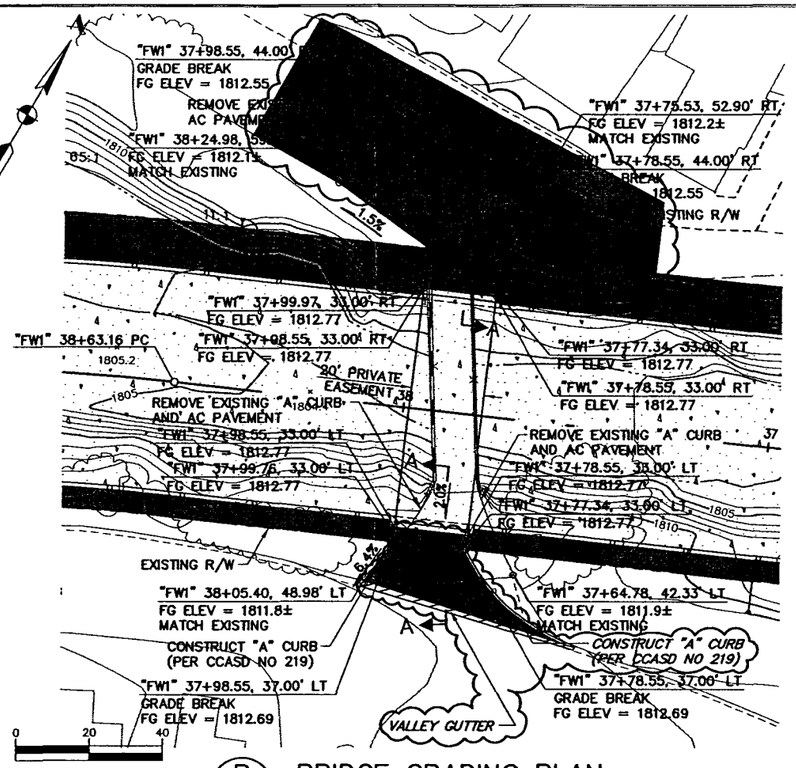
NOTES:

1. SEE SHEET SD-13 FOR SECTION A-A.
2. SEE DETAIL 1/SD-9 FOR CONCRETE SLOPE PAVING REINFORCEMENT.

A SD-16 REINFORCED CONCRETE SWALE

NTS

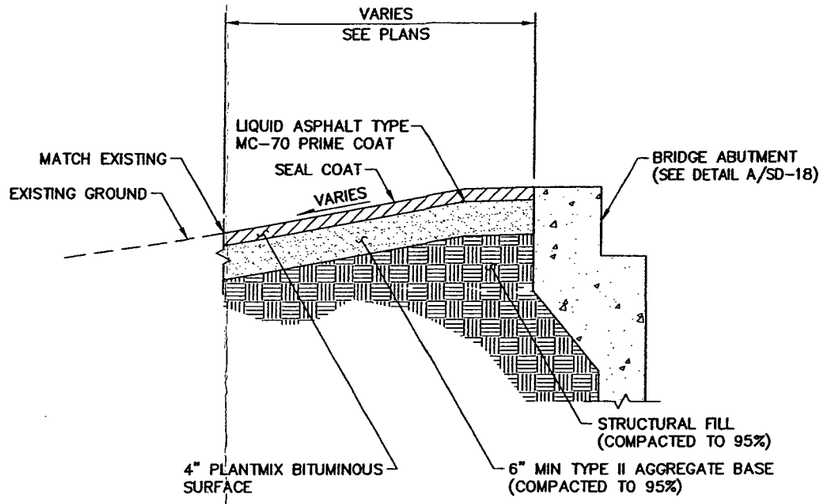
"FW1" 59+87.00 TO "FW1" 60+97.50



B SD-16 BRIDGE GRADING PLAN

NTS

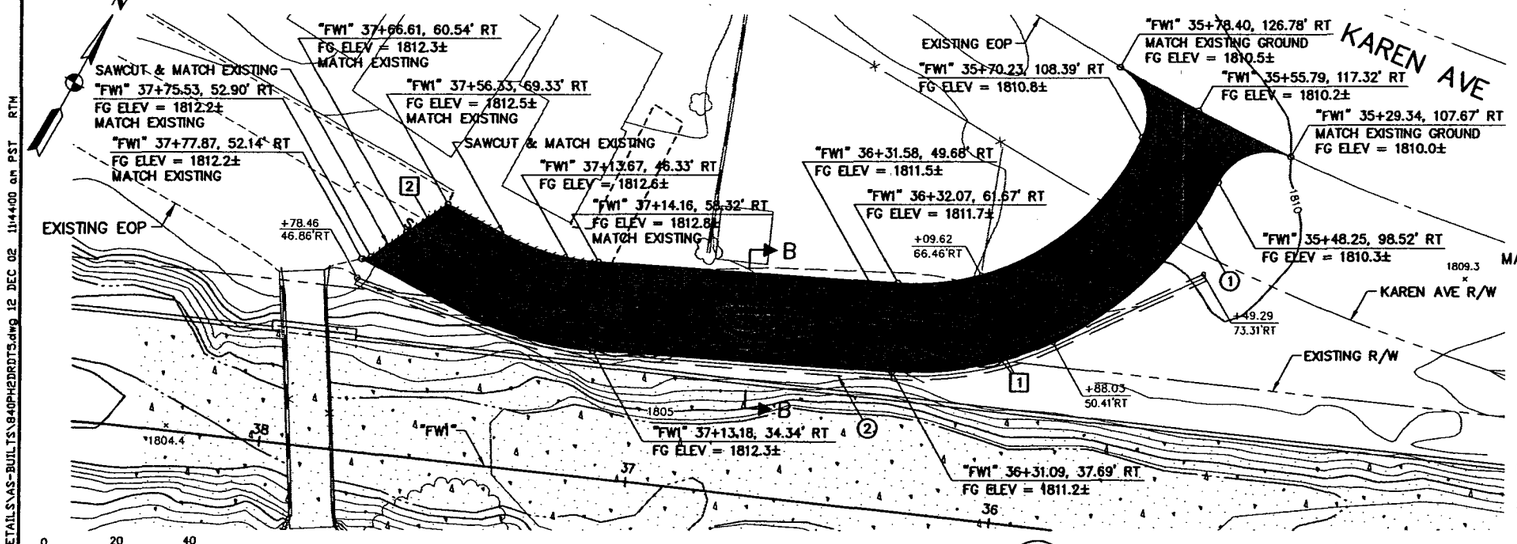
"FW1" 37+64.78 TO "FW1" 38+24.98



SECTION A-A

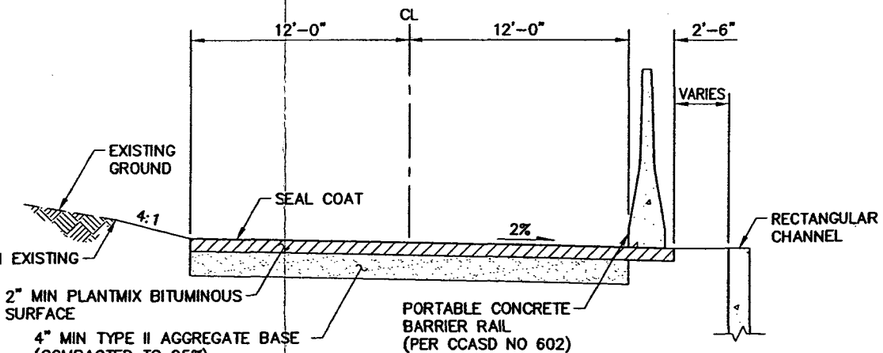
NTS

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.



C SD-16 TEMPORARY DETOUR ROAD

NTS



SECTION B-B

NTS

CONSTRUCTION ITEMS:

①	"FW1" 35+55.79 TO "FW1" 37+66.61	CONSTRUCT TEMPORARY 24' DETOUR ROAD, 117.32' RT TO 60.54' RT.
②	"FW1" 35+49.29 TO "FW1" 37+78.46	INSTALL PORTABLE CONCRETE BARRIER RAIL, 73.31' RT TO 46.86' RT. (PER CCASD NO 602)

REMOVAL ITEMS:

1	"FW1" 36+09.62 TO "FW1" 36+85.26	REMOVE EXISTING FENCE, 66.46' RT TO 47.77' RT.
2	"FW1" 37+40.32 TO "FW1" 37+75.53	REMOVE EXISTING AC PAVEMENT

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA SYNDI J. FLIPPIN-DUDLEY CIVIL No. 11070

PROJECT NO:	840	DRAWN BY:	ARB
DESIGNED BY:	RRB	CHECKED BY:	SJD
APPROVED BY	TDL		

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-16
24 OF 28
L-1645A

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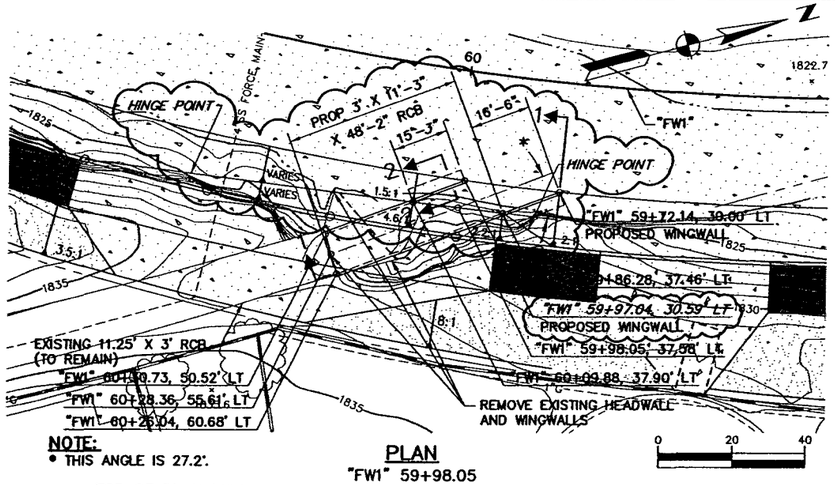
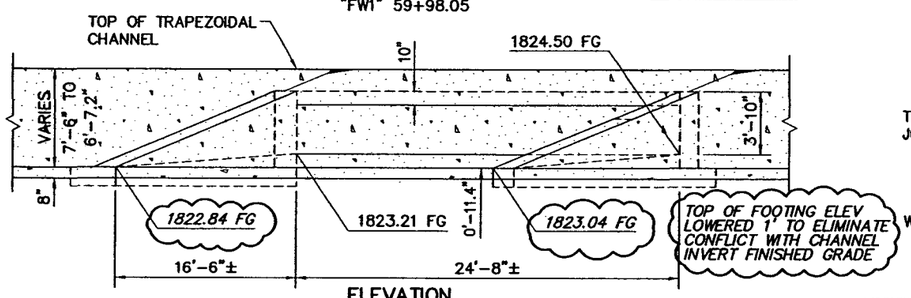
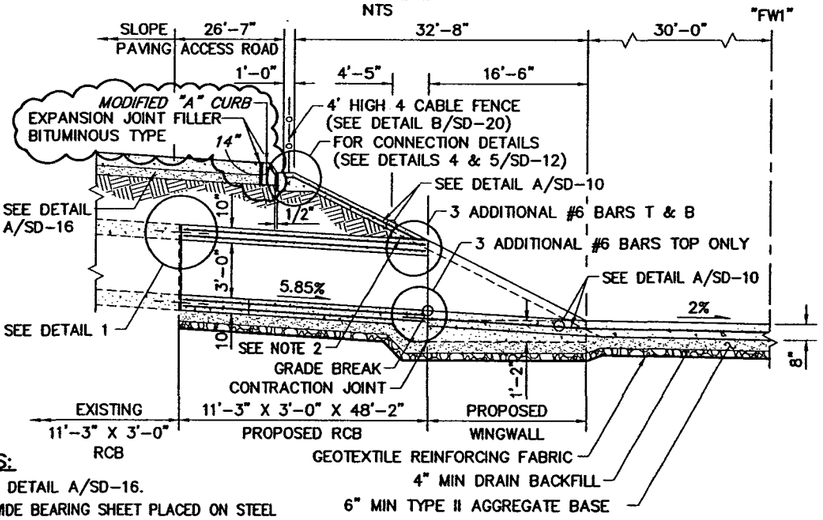


NOTE:
- THIS ANGLE IS 27.2'.

PLAN
"FW1" 59+98.05

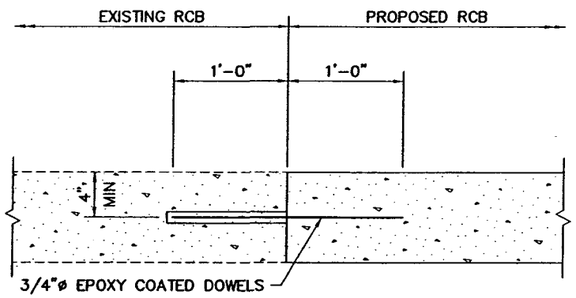


ELEVATION
NTS



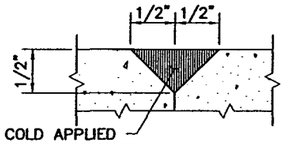
NOTES:
1. SEE DETAIL A/SD-16.
2. 2' WIDE BEARING SHEET PLACED ON STEEL TROWEL FINISH.
3. FENCE POSTS SHALL BE SPACED A MAXIMUM DISTANCE OF 5'-0" OC BETWEEN "FW1" 59+87.00 AND "FW1" 60+97.50.
4. FENCE POSTS SHALL BE 3"ø TUBE STEEL BETWEEN "FW1" 59+87.00 AND "FW1" 60+97.50.

SECTION 1-1
NTS



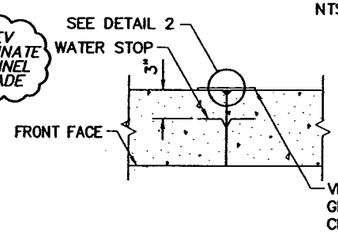
NOTE:
DRILL 1"ø HOLES @ 18" IN EXISTING RCB AROUND PERIMETER, FILL WITH EPOXY & INSERT 2'-0" DOWELS

DETAIL 1
NTS



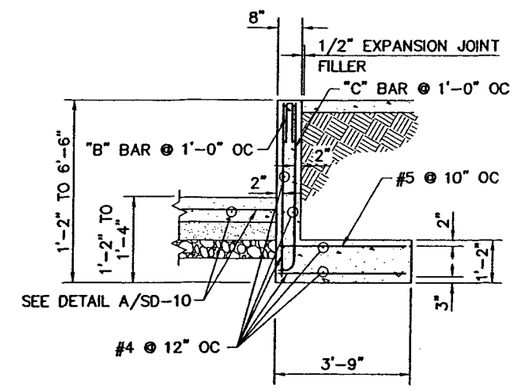
TWO-COMPONENT, RUBBER TYPE, COLD APPLIED JOINT SEALING COMPOUND, OR AN APPROVED EQUAL

DETAIL 2
NTS

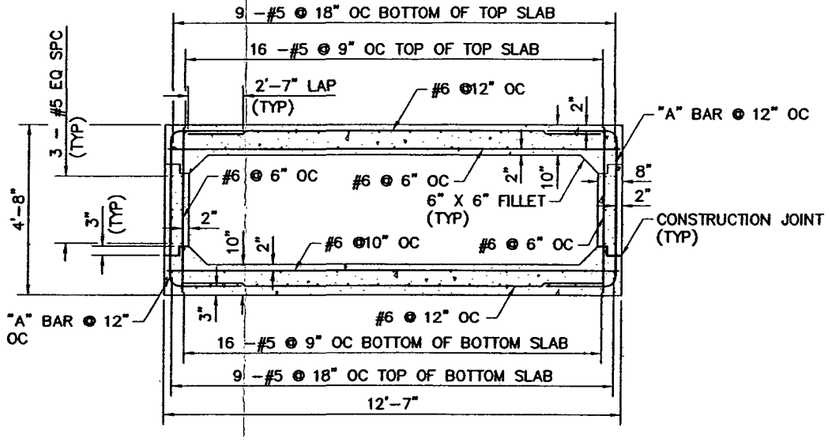


NOTE:
CONTRACTION JOINT SHALL BE TIGHT AND SHALL BE PARAFIN COATED.

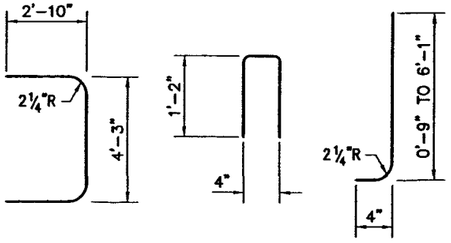
CONTRACTION JOINT
NTS



SECTION 2-2
NTS

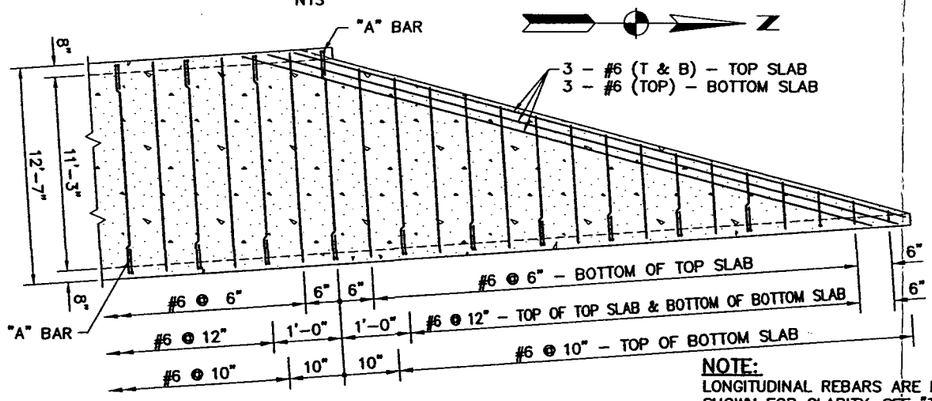


TYPICAL SECTION
NTS



"A" BAR-#6	"B" BAR-#4	"C" BAR-#5
L = 9'-11"	L = 2'-8"	L = 1'-1" TO 6'-8"

BAR DETAILS
NTS



NOTE:
LONGITUDINAL REBARS ARE NOT SHOWN FOR CLARITY. SEE "TYPICAL SECTION."

TOP & BOTTOM SLAB REINFORCEMENT
NTS

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

A / SD-17 — RCB TO CHANNEL CONNECTION
NTS
"FW1" 59+98.05±

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA - JULIUS R. HAAS - CIVIL - No. 09805

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: JHH/RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-17
25 OF 28
L-1645A

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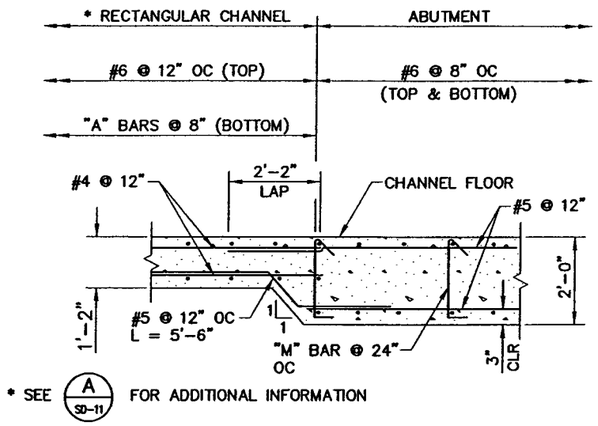
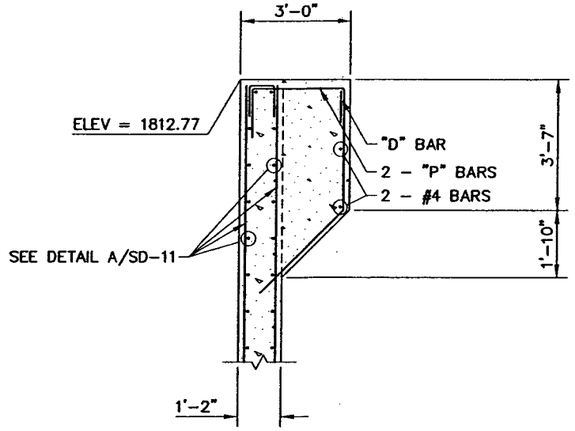
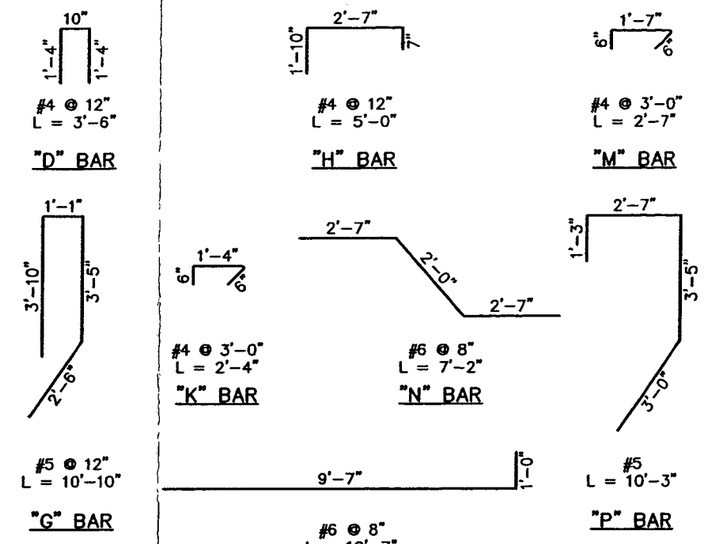


DETAIL 2
NTS

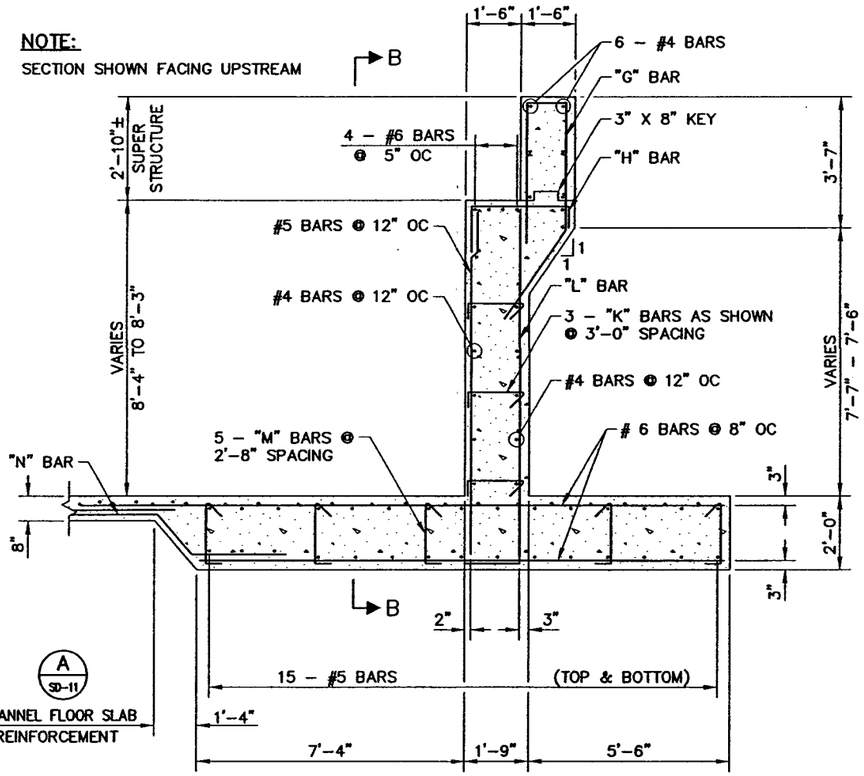


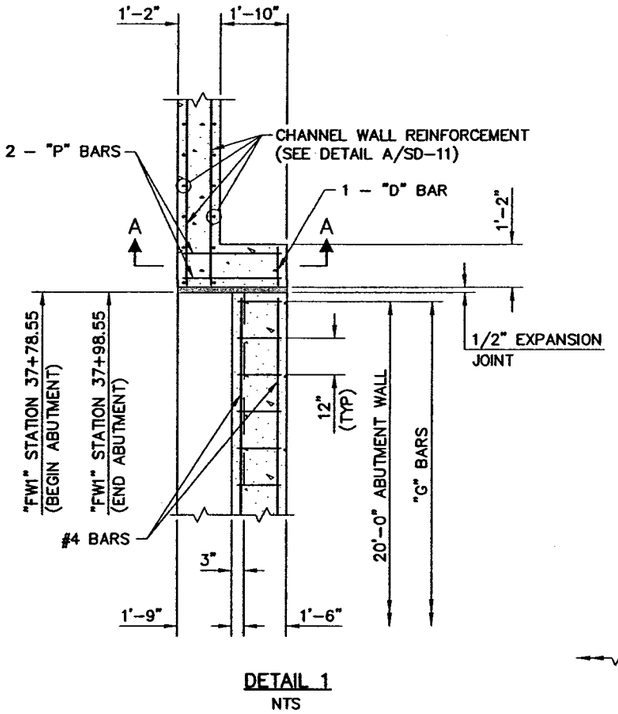
SECTION A-A
NTS



REBAR DETAILS
NTS

NOTE:
SECTION SHOWN FACING UPSTREAM





DETAIL 1
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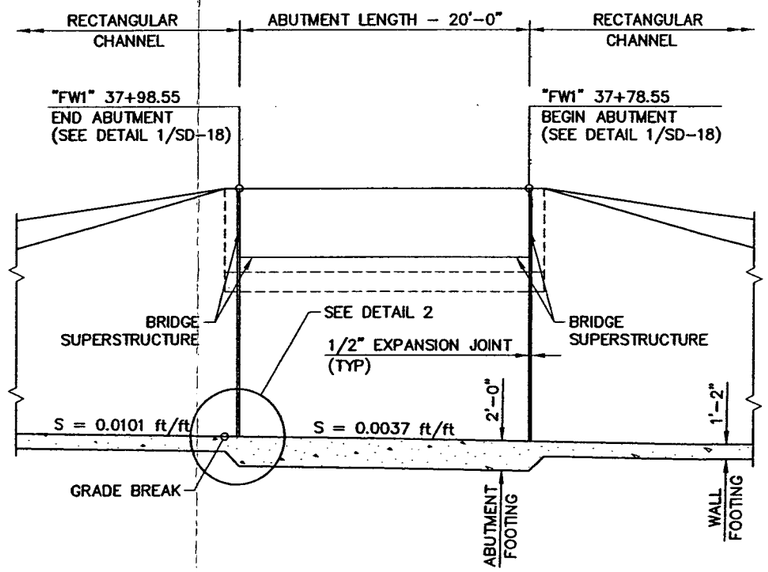


SECTION B-B
NTS

A SD-18 TYPICAL ABUTMENT SECTION
NTS
"FW1" 37+78.55 TO "FW1" 37+98.55

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

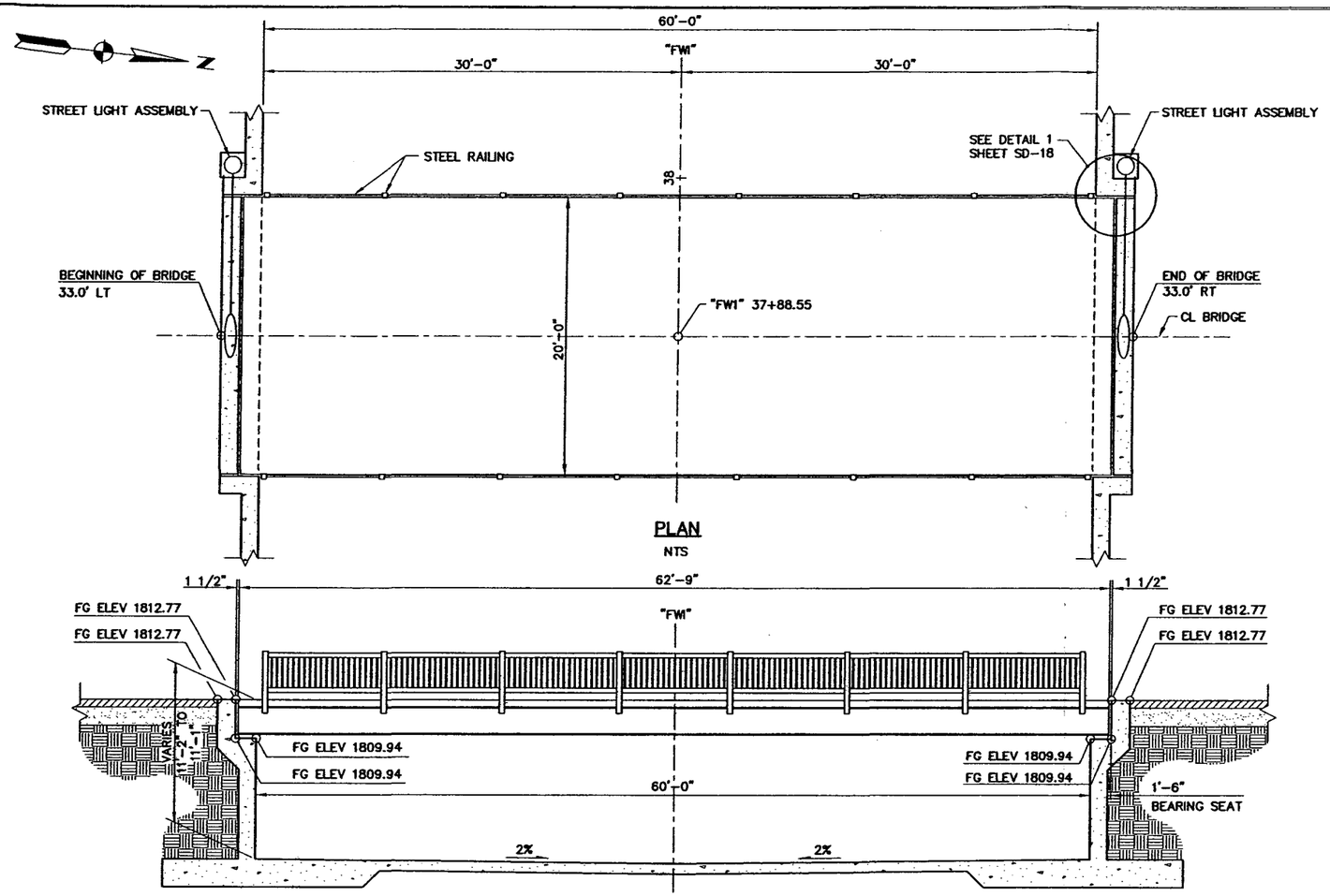
DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA JULIE R. HAAS No. 09805 CIVIL

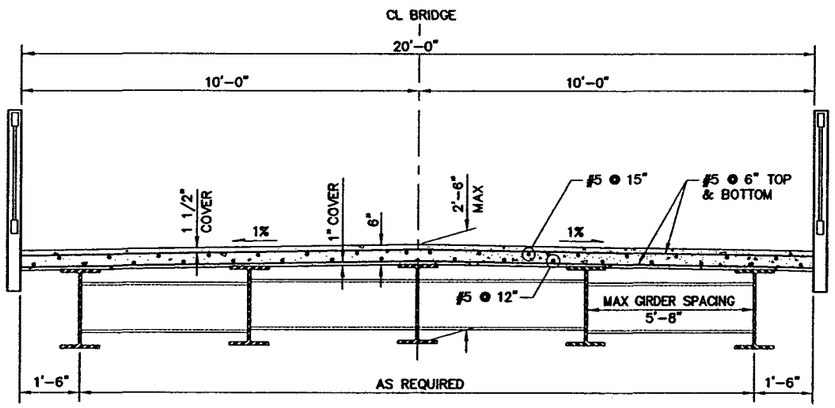
PROJECT NO: 840	DRAWN BY: RDR	SCALE	DRAWING NO
DESIGNED BY: JHH/RRB	CHECKED BY: SJD	HORIZ: AS SHOWN	SD-18
APPROVED BY TDL		VERT: AS SHOWN	26 OF 28
THE LOUIS BERGER GROUP, INC LAS VEGAS, NEVADA		FIELD BOOK	L-1645A

X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PH2RDTT.dwg 12 DEC 02 10:50:00 pm PST VIEV8 RTM



PLAN
NTS

ELEVATION
NTS



TYPICAL SECTION
NTS

NOTES:

THE FOLLOWING SPECIFICATIONS SHALL BE FOR A FULLY ENGINEERED CLEAR SPAN BRIDGE OF STEEL CONSTRUCTION AND SHALL BE REGARDED AS MINIMUM STANDARDS FOR DESIGN AND CONSTRUCTION. A NEWSPAN BRIDGE DESIGNED, MANUFACTURED AND INSTALLED BY SKIP GIBBS COMPANY, INC., SCHOOL WAY @ RAILROAD VALLEY, CA. 95470-0260, OR APPROVED EQUIVALENT SHALL BE PROVIDED.

1. DESIGN SPECIFICATIONS: AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996", INTERIMS THROUGH 1999.
2. CONSTRUCTION SPECIFICATIONS: "CLARK COUNTY UNIFORM STANDARD SPECIFICATIONS" EXCEPT AS NOTED BELOW AND IN THE SPECIAL PROVISIONS FOR THIS CONTRACT.
3. LIVE LOAD: HS20 OR ALTERNATE FHWA MILITARY LOADING. LOAD FACTOR DESIGN METHOD USED.
4. DECK CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. ALL REINFORCEMENT SHALL BE ASTM 615, GRADE 60.
5. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A709 GRADE 50W. THE FABRICATOR SHALL HAVE A CATEGORY 3 CERTIFICATION BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION QUALITY CERTIFICATION PROGRAM.
6. VEHICULAR RAILING HEIGHT ABOVE THE DECK SHALL BE A MINIMUM OF 42 INCHES AND SHALL BE DESIGNED AS PER THE REQUIREMENTS OF AASHTO SECTION 2-7. VEHICULAR RAILING SHALL BE SKIP GIBBS COMPANY, INC. "MADRAS TYPE".
7. GIRDER SHALL BE CAMBERED TO COMPENSATE FOR DEAD LOAD DEFLECTIONS.
8. ALL EXPOSED SURFACES OF SELF-WEATHERING STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 6. COMMERCIAL BLAST CLEANING SSPC-SP6.
9. DELIVERY OF THE BRIDGE SHALL BE MADE BY THE MANUFACTURER TO THE LOCATION OF THE BRIDGE SITE.
10. CHANNEL CONTRACTOR SHALL INSTALL THE BRIDGE SUPERSTRUCTURE AS PER MANUFACTURER'S REQUIREMENTS.
11. CONSTRUCTION OF THE CONCRETE DECK SHALL BE THE RESPONSIBILITY OF THE CHANNEL CONTRACTOR. GALVANIZED FORM DECK, SHOP ATTACHED, FOR CHANNEL CONTRACTOR'S USE IN POURING THE DECK SHALL BE THE RESPONSIBILITY OF BRIDGE MANUFACTURER.
12. THE BRIDGE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN AND SUPPLYING OF ELASTOMERIC BEARING PADS. DETAILS OF BEARINGS AND ANCHOR BOLTS JOINTS SHALL BE PROVIDED TO THE COUNTY PRIOR TO CONSTRUCTION OF THE ABUTMENTS FOR COORDINATION.
13. THE MANUFACTURER SHALL SUBMIT FOR THE COUNTY'S REVIEW DESIGN CALCULATIONS AND COMPLETE PLANS OF THE SUPERSTRUCTURE.
14. CALCULATIONS AND PLANS SHALL BE SIGNED AND SEALED BY AN ENGINEER LICENSED TO PRACTICE CIVIL ENGINEERING IN THE STATE OF NEVADA.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.

REV NO	DATE	DESCRIPTION	APPROVED

CLARK COUNTY NEVADA

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II

DRAINAGE DETAILS

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA — JULES R. HAAS — CIVIL — No. 09805

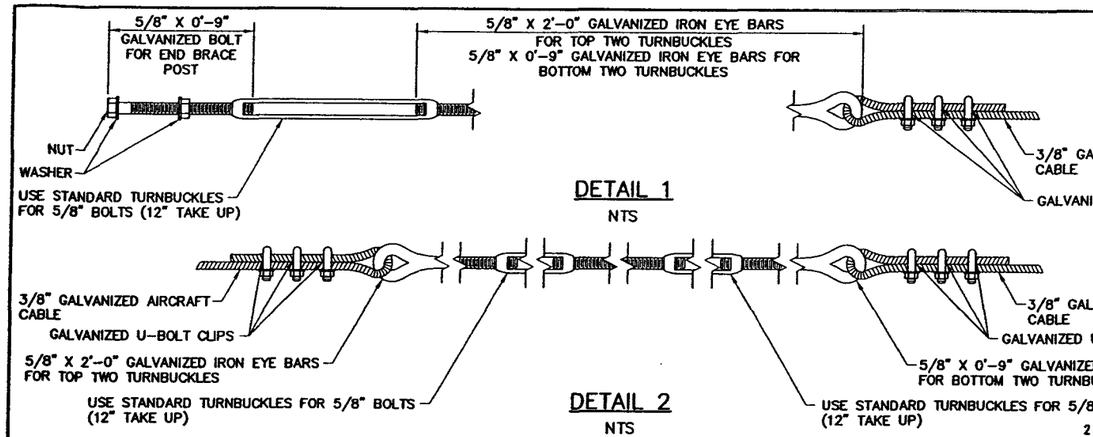
PROJECT NO:	840	DRAWN BY:	RDR
DESIGNED BY:	MG	CHECKED BY:	RG
APPROVED BY	TDL		

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

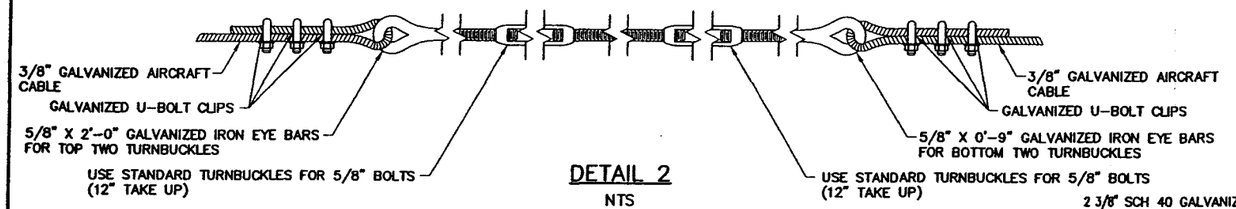
SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-19
27 OF 28
L-1645A

X:\840 FLAMINGO WASH\BRIDGE\AS-BUILTS\840BRGDT1.dwg 12 DEC 02 1:09:00 pm PST RTM



DETAIL 1
NTS



DETAIL 2
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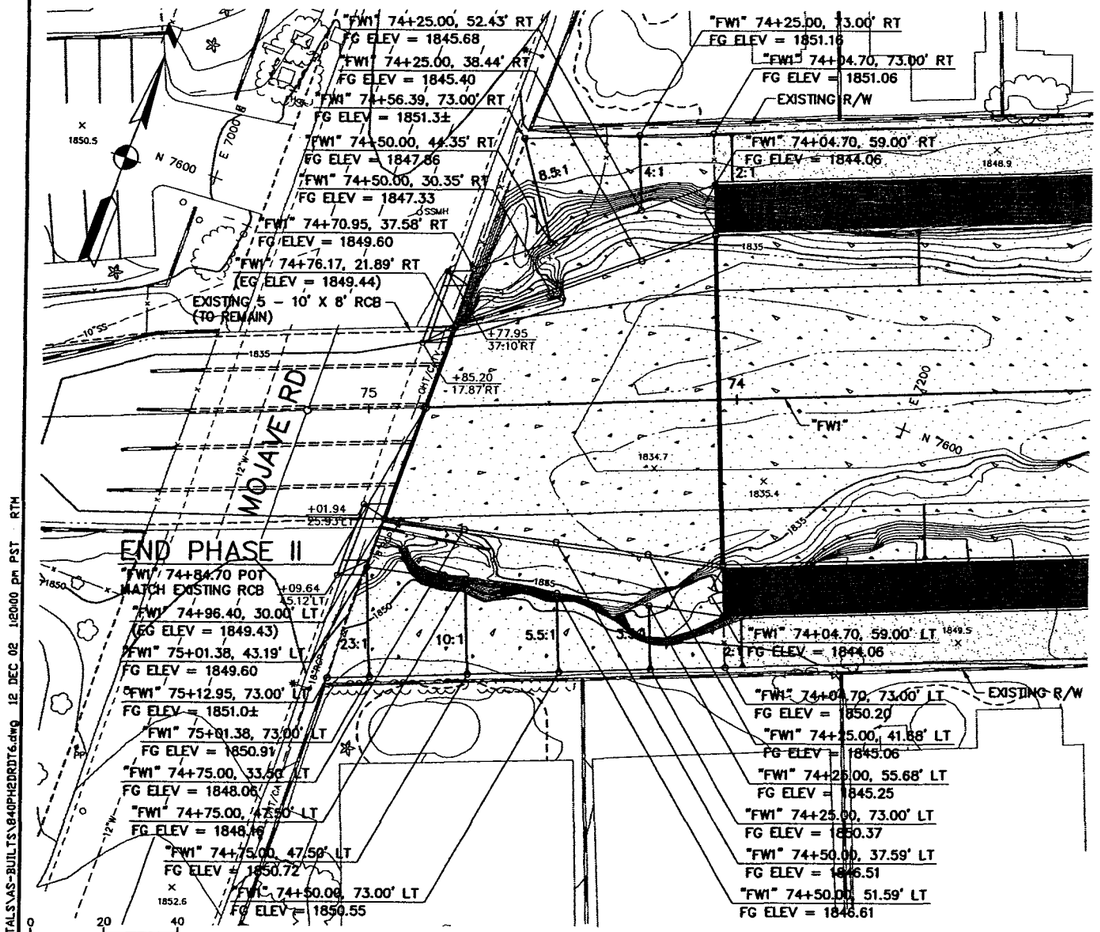
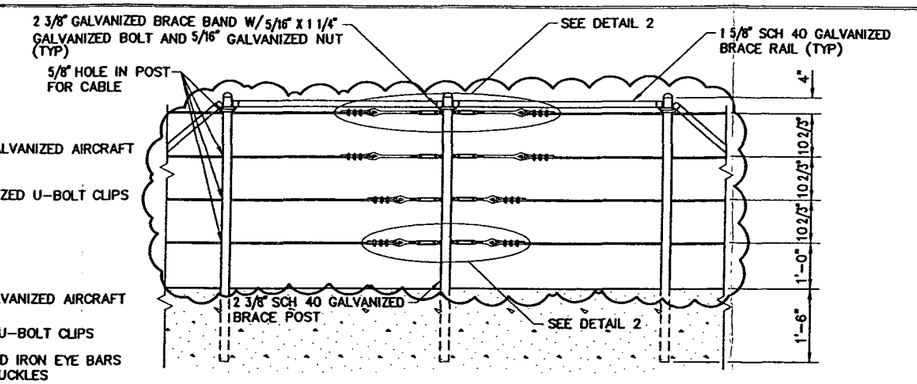
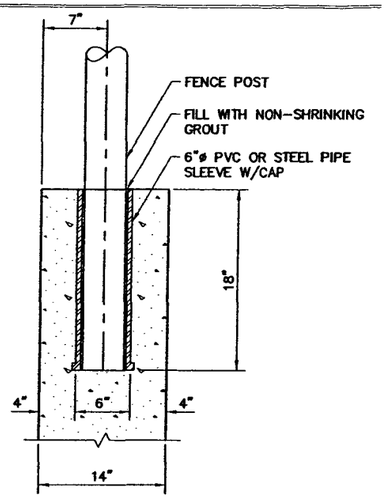
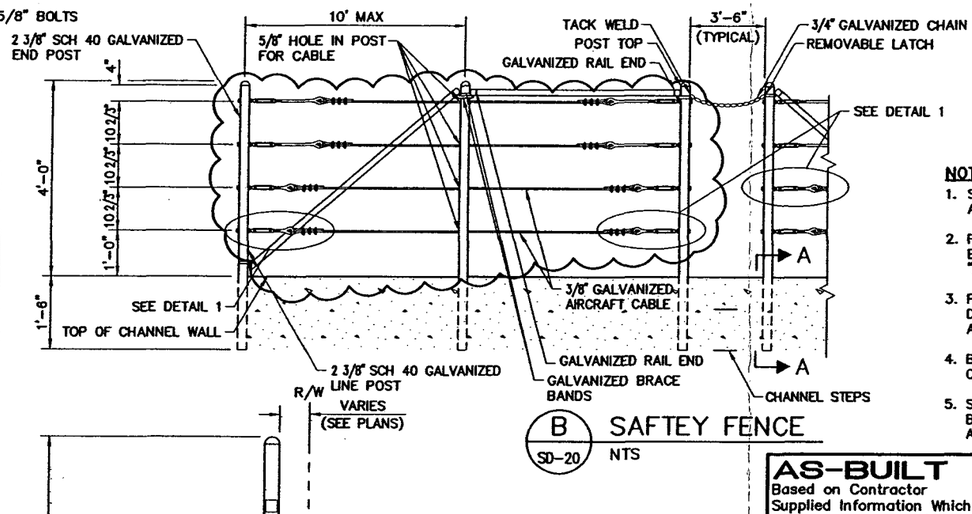


A SD-20 SLOPE PAVING GRADING PLAN
NTS

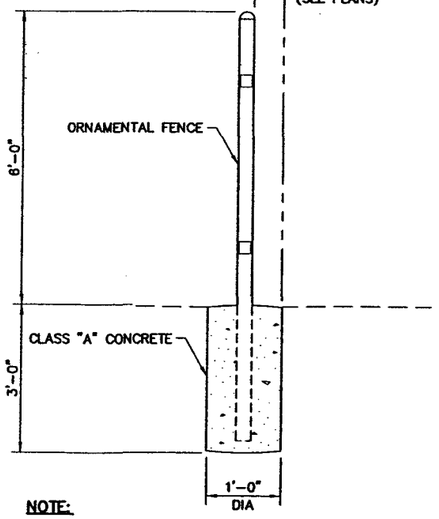




SECTION A-A
NTS



B SD-20 SAFTEY FENCE
NTS

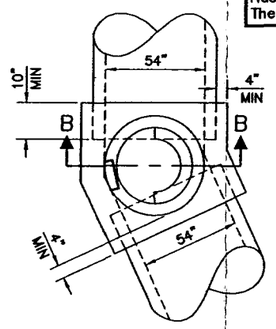


NOTE:
1. ORNAMENTAL FENCE SHALL BE AMERISTAR AEGIS II – CLASSIC 2 RAIL OR APPROVED EQUIVALENT.

C SD-20 TYPICAL FENCE POST FOOTING
NTS

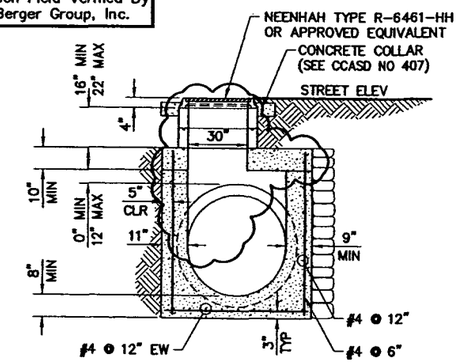
NOTES:
1. SEE CHANNEL SECTION DETAILS FOR DIMENSIONS AND REINFORCEMENT NOT SHOWN.
2. FENCE POSTS SHALL BE 3"ø TUBE STEEL BETWEEN "FW1" 51+14.79 AND "FW1" 52+64.28, 30.58' RT.
3. FENCE POSTS SHALL BE SPACED A MAXIMUM DISTANCE OF 5'-0" OC BETWEEN "FW1" 51+14.79 AND "FW1" 52+64.28, 30.58' RT.
4. BRACE POSTS SHALL BE PLACED A MAXIMUM OF 250' AND AT END POSTS.
5. SECTION A-A APPLIES TO ORNAMENTAL FENCE BETWEEN "FW1" 37+58.55 AND "FW1" 37+78.00 AND "FW1" 37+99.10 AND "FW1" 38+18.55.

AS-BUILT
Based on Contractor Supplied Information Which Has Not Been Field Verified By The Louis Berger Group, Inc.



NOTE:
1. FOR ADDITIONAL DETAILS NOT SHOWN SEE CCASD NO 406.

PLAN
NTS



SECTION B-B
NTS

D SD-20 MODIFIED TYPE III MANHOLE
NTS

REV NO	DATE	DESCRIPTION	APPROVED

FLAMINGO WASH FROM MOJAVE ROAD TO INTERSTATE 515 - PHASE II
DRAINAGE DETAILS
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER – STATE OF NEVADA – SYNDI J FLIPPIN-DUDLEY – CIVIL – No. 11070

PROJECT NO: 840 DRAWN BY: ARB
DESIGNED BY: RRB CHECKED BY: SJD
APPROVED BY TDL

THE LOUIS BERGER GROUP, INC
LAS VEGAS, NEVADA

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

DRAWING NO
SD-20
28 OF 28
L-1645A

X:\840 FLAMINGO WASH\DRAINAGE\DETAILS\AS-BUILTS\840PH2RDT6.dwg 12 DEC 02 12:00:00 pm PST RTH