

LETTER OF MAP REVISION

For

PITTMAN MacDONALD RANCH CHANNEL

Henderson, Nevada

Prepared by:
Jacobs
7160 Bermuda Rd., Ste. 200
Las Vegas, NV 89119

Submitted to:

Michael Baker Jr., Inc.
3601 Eisenhower Avenue
Alexandria, Virginia 22304-6425

May 2010

May 30, 2010

**Mr. Sacha Tohme, CFM
Federal Emergency Management Agency
Washington, DC
c/o Michael Baker Jr., Inc
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304**

**Re: Application for a Letter of Map Revision for the Pittman MacDonald Ranch
Channel - Henderson, Nevada**

Dear Mr. Tohme:

Attached is an application for a Letter of Map Revision (LOMR) for the Pittman MacDonald Ranch Channel, to be submitted to the Federal Emergency Management Agency (FEMA) for review. Originally, a Conditional Letter of Map Revision (CLOMR) submittal dated October 17, 2007 (Case No.: 07-09-1958R) was issued to FEMA for review and approval.

The Special Flood Hazard Area (SFHA) is located within the Pittman Wash in Henderson, Nevada. The FEMA Flood Insurance Rate Map (FIRM) No. 320003C 2595E, effective September 27, 2002, shows the proposed channel located within a Zone "A" floodplain. The exact location of the LOMR is shown on the attached Location & Vicinity Maps.

The following has been included in this application:

- Location & Vicinity Map
- MT-2 - Form 1 – Revision Requestor and Community Official Form
- MT-2 - Form 2 – Riverine Hydraulic Analysis Form
- MT-2 - Form 3 – Riverine Structures Form
- Effective FIRM Exhibit (pocket)
- Annotative FIRM Exhibit (pocket)
- Pittman Proposed Effective Cross Section Map (pocket)
- Proposed Conditions WSPG input/output for revised upstream area from station 25+10 to station 43+90 (File: pittman.wsw) With Hydraulic Summary Table
- Input/Output Files from Original CLOMR Submittal (File: LPITR99.wsw, UPITR99.WSW (original upstream submittal), PITPIPE6.wsw) With Hydraulic Summary Tables
- One disc containing the proposed WSPG hydraulic models.
- Pittman MacDonald Ranch Drainage Study Approval Letter, December 22, 2006

Pittman MacDonald Ranch LOMR

- Clark County Regional Flood Control District Concurrence for the Pittman MacDonald Ranch Channel – HEN21A05 Armargosa Power Easement to Concordia Homes dated July 13, 2009
- CLOMR Approval Letter for Case No.: 07-09-1958R dated January 31, 2008
- Pittman Ranch Channel Certified As-Built Plans
- Pittman Ranch Channel Structural Plans As-Built Plans(within above plan set)
- Pitman MacDonald Ranch Channel from Armargosa Power Easement to Concordia Homes Certified As-Built Plans
- Pitman MacDonald Ranch Channel from Armargosa Power Easement to Concordia Homes Structural Plans As-Built Plans(within above plan set)

SITE DESCRIPTION

The Pittman MacDonald Ranch Channel (Pittman) is located in the Southeast Quarter (SE 1/4) of Section 16 and the Northeast Quarter (NE 1/4) of Section 21, Township 22 South, Range 62 East, M. D. M., in The City of Henderson, Clark County, Nevada.

The Pittman project area is bounded by Stephanie Street on the east and Valley Verde Drive on the west. It is bounded by Interstate 215 (I-215) to the north and Horizon Ridge Parkway to the south. Refer to the attached Location and Vicinity Maps.

The portion of the Pittman project that was submitted with the original CLOMR generally consists of the design of approximately 1,500 feet of channel and box conveyance improvements from the existing culverts at the south end of I-215 to the confluence with the south side of the Armargosa Power Easement. The Pittman project crosses Paseo Verde Parkway where it will tie into an existing 24-ft by 8-ft RCB.

This LOMR submittal will incorporate approximately 1,850 LF of additional open channel improvements to a previously undisturbed earthen channel upstream of the stopping point analyzed in the original CLOMR submittal. The additional 1,850 LF of channel improvements will occur from the south side Armargosa Power Easement to the existing Concordia Homes residential subdivision. The Concordia Homes project was previously analyzed within LOMR Case Number 05-09-0399P. This portion of the Pittman project crosses Arroyo Grande Boulevard where it will tie into four (4) out of six (6) existing 11.5' by 5' RCB culverts. Four of the RCB culverts under Arroyo Grande Blvd. will be extended west for approximately 50', the remaining two outer existing culverts will be backfilled and abandoned. The additional channel improvements are built by the City of Henderson who is also the Community Official; therefore, no drainage study approval was necessary on this portion. An approval letter by the City of Henderson for the Pittman Macdonald Ranch Channel Dated December 22, 2006 (area analyzed in original CLOMR) is included in the appendix of this submittal.

PROJECT DESCRIPTION

The proposed Pittman project is a Clark County Regional Flood Control Facility to control 100-year flows and remove the designated Special Flood Hazard Areas (SFHA) Zone "A" to allow development. The proposed improvements start downstream at Interstate 215 and end approximately 3,340 LF upstream at the existing Concordia Homes residential development. A short description of the overall project submitted for this LOMR is as follows:

- Start downstream, tie into five (5) existing 12' x 6' RCB at south side of I-215 (LOMR Case No. 04-09-1656P, effective September 08, 2005)
- ±100 LF transition structure to 14' X 10' RCB
- ±520 LF 14' X 10' RCB
- ±35 LF transition structure to existing 24' X 8' RCB Culvert (Paseo Verde Pkwy.)
- ±80 LF 24' X 8' RCB culvert
- ±770 LF 24' X 10' rectangular channel (This is where analysis for original CLOMR ends)
- ±190 LF varies between 24' X 10' to 24' X 11.5' rectangular channel
- ±14 LF 25' X 8' RCB
- ±755 LF varies between 24' X 10' to 24' X 11.5' rectangular channel
- ±230 LF transition structure to existing six (6) 11.5' X 5' RCB culverts
- ±65 LF EX. (6) 11.5' X 5' RCB culverts (Arroyo Grande Blvd.) each outer cell is backfilled and abandoned, the four (4) center culverts are utilized- Final 50' is a channel section, 48' X 8' with vane wall
- ±50 LF (4) 11.5' X 5' RCB
- ±90 LF transition structure to 24' X 11.5' rectangular channel with vane wall
- ±150 LF varies between 24' X 10' to 24' X 11.5' rectangular channel with vane wall
- ±180 LF varies between 24' X 10' to 24' X 11.5' rectangular channel
- ±130 LF varies between 24' X 10' to 24' X 16' rectangular channel to tie in at Concordia Homes

HYDROLOGY

A new hydrology analysis has not been performed for this LOMR. The upstream discharge for this channel was studied as part of the Concordia Home residential subdivision development in a LOMR (05-09-0399P) which was accepted by the Federal Emergency Management Agency (FEMA) April 11, 2005. The adopted FEMA discharge of 3,755 cfs is used for the design flow upstream of Arroyo Grande at the headworks of the system.

HYDRAULICS

The hydraulic analysis for the design of the proposed channel facilities was performed in accordance with the Clark County Hydrological Criteria and Drainage Design Manual (Drainage Manual). The calculations are included in the Appendix.

The Water Surface and Pressure Gradient for Windows (WSPGW) hydraulic modeling software was used to analyze the hydraulics of the proposed channel facilities. Model input included the following:

- Stations and invert elevations at each point of change in geometry or slope
- Channel, Box, and Pipe dimensions
- Manning's n roughness coefficient
- Loss coefficients for bends, entrances, exits and junctions
- Discharges
- Boundary conditions

The original CLOMR was created with the assumption that the upstream channel was in place, and the upstream flow was at normal depth. This LOMR will analyze the additional portions of the channel that are built per this submission up to the tie-in to the Concordia Homes subdivision.

The super elevation and freeboard requirements were calculated in accordance with the Criteria Manual. In order to keep superelevation below 2 feet per the Drainage Manual, a vane wall is used in the curved portions of the channel.

The channel was checked for slug flow potential in accordance with the Criteria Manual. Since the Vedernikov Number (Nv) was less than 1, slug flow will not occur.

A summary table of the hydraulic calculations from the WSPGW analysis and supplemental calculations for superelevation, freeboard, and Vedernikov Number is included in the appendix within a Hydraulic Summary Table.

If we can be of further assistance, or if you have any questions, please do not hesitate to contact us.

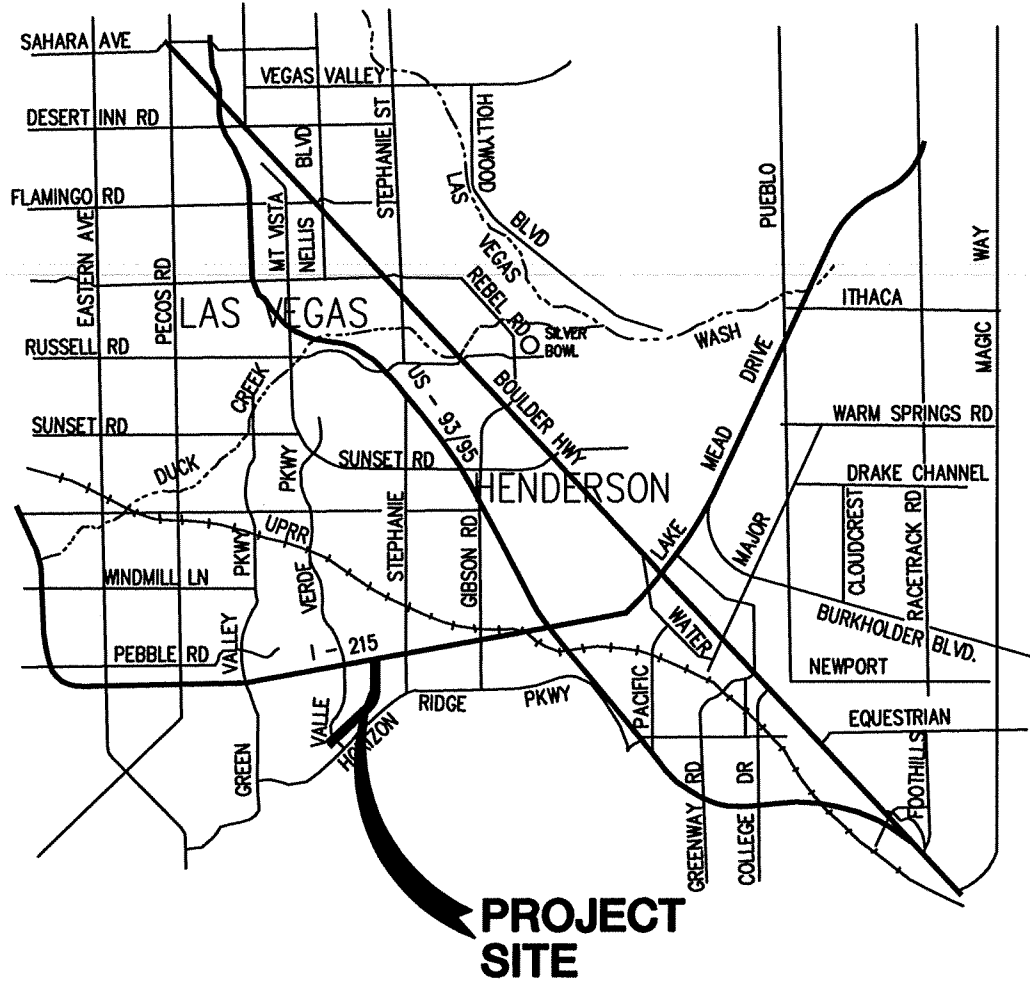
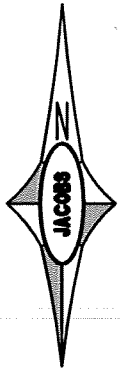
Sincerely,

Tara Alexander, P. E.
Project Engineer



LOCATION MAP

NTS



VICINITY MAP

NTS

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK BURDEN DISCLOSURE NOTICE

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

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

- ☐ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- ☒ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

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

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
32005	City of Henderson	NV	32003C	2595E	09/27/2002

2. a. Flooding Source: PITTMAN WASH

- b. Types of Flooding: ☐ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier:

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 ☐ Base Map Changes
☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
☐ New Topographic Data ☐ 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 structures (check all that apply)

- 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: \$ 5,300

☐ No, Attach ExplanationPlease see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Tara Alexander, P.E.

Company: Jacobs

Mailing Address: 7160 Bermuda Rd., Ste. 200
Las Vegas, NV 89119

Daytime Telephone No.: 702-938-5459

Fax No.: 702-938-5454

E-Mail Address: tara.alexander@jacobs.com

Signature of Requester (required):

Date: 05/27/2010

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:

Albert J. Jankowski
Project Engineer II

Community Name: City of Henderson, NV

Mailing Address:

240 Water Street, MSC 112
Henderson, NV 89014

Daytime Telephone No.:

702
267-3024

Fax No.:

702
267-3051

E-Mail Address:

albert.jankowski@
cityofhenderson.com

Community Official's Signature (required):

Date:

5-27-2010

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Tara T. Alexander

License No.: 017926

Expiration Date: 12/31/2010

Company Name: Jacobs

Telephone No.: 702-938-5400

Fax No.: 702-938-5454

Signature:

Date:

05/27/2010

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

Form Name and (Number)**Required if ...**☒ Riverine Hydrology and Hydraulics Form (Form 2)

New or revised discharges or water-surface elevations

☒ Riverine Structures Form (Form 3)Channel is modified, addition/revision of bridge/culverts,
addition/revision of levee/floodwall, addition/revision of dam☐ Coastal Analysis Form (Form 4)

New or revised coastal elevations

☐ Coastal Structures Form (Form 5)

Addition/revision of coastal structure

☐ Alluvial Fan Flooding Form (Form 6)

Flood control measures on alluvial fans

Seal (Optional)

Print Form

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

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

Flooding Source: Pittman 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 B) ☐ 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.)	Effective/FIS (cfs)	Revised (cfs)
----------	-------------------------	---------------------	---------------

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

- ☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model
☐ 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.

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	Interstate 215	9+53.00		
Upstream Limit	Ex. Channel @ Aspen Bay Ln.	46+04.10		

2. Hydraulic Method/Model Used

WSPGW

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs may help 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/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. Review of your submittal and resolution of valid modeling discrepancies may result in reduced review time.

4. Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Existing or Pre-Project Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	_____
Revised or Post-Project Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	_____
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	_____

* For details, refer to the corresponding section of the instructions. Reference cover letter for list of models submitted.
☒ Digital Models Submitted? (Required)

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.).

☒ Digital Mapping (GIS/CADD) Data Submitted

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

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No
 - a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
 - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
 - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.
 - b. 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.
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/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No
If Yes, please submit documentation to the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

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

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

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

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Pittman 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/Basin complete Section D
Levee/Floodwall complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. **Name of Structure:** Pittman MacDonald Ranch Channel

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

Location of Structure: Between 1-15 and East of Arroyo Grande

Downstream Limit/Cross Section: 9+53.00

Upstream Limit/Cross Section: 36+97.87

2. **Name of Structure:** Pittman MacDonald Ranch Channel

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

Location of Structure: Under Arroyo Grande

Downstream Limit/Cross Section: 36+97.87

Upstream Limit/Cross Section: 38+09.69

3. **Name of Structure:** Pittman MacDonald Ranch Channel

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

Location of Structure: West of Arroyo Grande to Ex. Channel @ Aspen Bay Ln.

Downstream Limit/Cross Section: 38+09.69

Upstream Limit/Cross Section: 46+04.10

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

B. CHANNELIZATION

Flooding Source: Pittman Wash

Name of Structure: Pittman MacDonald Ranch Channel

1. Accessory Structures

The channelization includes (check one):

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

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 3755(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: Pittman Wash

Name of Structure: Pittman MacDonald Ranch Channel

1. This revision reflects (check one):

- ☒ Bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ Revised 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): WSPGW

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

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.

0

T3 MAY 2010 JOHN P FYIE

[illegible]

Invert Station	Depth Elev	Water (FT)	Q Elev	Vel (CFS)	Vel (FPS)	Energy Head	Super Grd.El	Critical Elev	Flow Top Depth	Height Width	Base Wt Dia.-FT	No Wth or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
2510.000	2020.260	4.906	2025.166	3755.00	32.69	16.59	2041.76	.00	9.25	24.00	10.000	24.000	.00	0 .0
25.000	.0240				.0208	.52	4.91	2.63	4.69	.015	-2.88	.00	RECTANG	
2535.000	2020.860	4.919	2025.779	3755.00	32.60	16.50	2042.28	.00	9.25	24.00	10.000	24.000	.00	0 .0
23.000	.0239				.0207	.48	4.92	2.62	4.69	.015	-2.88	.00	RECTANG	
2558.000	2021.410	4.932	2026.342	3755.00	32.51	16.42	2042.76	1.31	9.25	24.00	10.000	24.000	.00	0 .0
84.000	.0240				.0202	1.70	6.25	2.61	4.69	.015	-2.88	.00	RECTANG	
2642.000	2023.430	4.988	2028.418	3755.00	32.14	16.04	2044.46	.00	9.25	24.00	10.000	24.000	.00	0 .0
58.000	.0240				.0196	1.14	4.99	2.57	4.69	.015	-2.88	.00	RECTANG	
2700.000	2024.820	5.033	2029.853	3755.00	31.84	15.75	2045.60	.00	9.25	24.00	10.000	24.000	.00	0 .0
TRANS STR	.0243				.0146	.20	5.03	2.53		.013	.00	.00	RECTANG	
2714.000	2025.160	4.915	2030.075	3755.00	31.83	15.73	2045.81	.00	8.00	24.00	8.000	24.000	.00	0 .0
TRANS STR	.0240				.0191	.95	4.92	2.53		.015	-2.88	.00	BOX	
2764.000	2026.360	5.097	2031.457	3755.00	31.44	15.35	2046.80	1.85	9.25	24.00	10.000	24.000	.00	0 .0
136.000	.0240				.0178	2.41	6.94	2.48	4.69	.015	-2.88	.00	RECTANG	
2900.000	2029.620	5.271	2034.891	3755.00	30.38	14.33	2049.22	1.72	9.25	24.00	10.000	24.000	.00	0 .0
199.000	.0152				.0173	3.44	6.99	2.36	5.46	.015	-2.88	.00	RECTANG	
3099.000	2032.640	5.180	2037.820	3755.00	30.92	14.84	2052.66	.00	9.25	24.00	10.000	24.000	.00	0 .0
43.000	.0153				.0179	.77	5.18	2.42	5.44	.015	-2.88	.00	RECTANG	

Invert Station	Depth Elev	Water (FT)	Q Elev	Vel (CFS)	Vel (FPS)	Energy Head	Super Grd.El	Critical Elev	Flow Top Depth	Height Width	Base Wt Dia.-FT	No Wth or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
3142.000	2033.300	5.158	2038.458	3755.00	31.05	14.97	2053.43	1.80	9.25	24.00	10.000	24.000	.00	0 .0
145.000	.0152				.0185	2.68	6.96	2.44	5.46	.015	-2.88	.00	RECTANG	
3287.000	2035.500	5.064	2040.563	3755.00	31.65	15.55	2056.12	1.87	9.25	24.00	10.000	24.000	.00	0 .0
63.100	.0353				.0179	1.13	6.93	2.51	4.13	.015	-2.88	.00	RECTANG	
3350.100	2037.730	5.289	2043.019	3755.00	30.27	14.22	2057.24	.00	9.25	24.00	10.000	24.000	.00	0 .0

pittman.OUT

Station	Elev	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No With
-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0354			.0144	1.71	5.29	2.35			.015	-2.88	.00	RECTANG
3468.600	2041.930	5.891	2047.821	3755.00	27.11	11.41	2059.23	.00	9.25	24.00	9.500	24.000	.00 0 .0
TRANS STR	.0407			.0135	2.42	5.89	1.99			.015	-5.76	.00	RECTANG
3648.600	2049.250	3.459	2052.709	3755.00	24.30	9.17	2061.88	2.93	5.99	48.00	8.000	48.000	.00 0 .0
TRANS STR	.0219			.0159	.48	6.39	2.39			.015	.00	.00	RECTANG
3678.670	2049.910	3.289	2053.198	3755.00	24.29	9.16	2062.36	.00	5.83	48.00	8.000	48.000	.00 1 1.0
19.200	.0219			.0169	.32	3.29	2.39	3.03		.015	.00	.00	RECTANG
3697.870	2050.330	3.309	2053.640	3755.00	24.14	9.05	2062.69	.00	5.83	48.00	8.000	48.000	.00 1 1.0
TRANS STR	.0036			.0157	1.00	3.31	2.36			.013	.00	.00	RECTANG
3761.400	2050.560	3.280	2053.841	3755.00	25.44	10.05	2063.89	.00	5.00	48.00	5.000	48.000	.00 3 1.0
5.119	.0004			.0189	.10	3.28	2.56	5.00		.013	.00	.00	BOX
3766.519	2050.562	3.262	2053.824	3755.00	25.58	10.16	2063.99	.00	5.00	48.00	5.000	48.000	.00 3 1.0
43.171	.0004			.0204	.88	3.26	2.58	5.00		.013	.00	.00	BOX

□ FILE: pittman.WSW

W S P G W - CIVILDESIGN Version 14.06

PAGE 3

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 5-25-2010 Time: 4:30:57

FILE: pittman.WSW

PITTMAN MACDONALD RANCH CHANNEL JACOBS PROJECT NO. W4X49700

MAY 2010 JOHN P FYIE

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No With
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3809.690	2050.580	3.110	2053.690	3755.00	26.83	11.18	2064.87	.00	5.00	48.00	5.000	48.000
TRANS STR	.0107			.0297	.33	3.11	2.77		.015	.00	.00	BOX
3820.940	2050.700	3.066	2053.766	3755.00	27.22	11.50	2065.27	.00	6.00	48.00	8.000	48.000
3.502	.0106			.0304	.11	3.07	2.83	4.46		.015	.00	RECTANG
3824.442	2050.737	3.055	2053.792	3755.00	27.31	11.58	2065.37	.00	6.00	48.00	8.000	48.000
45.688	.0106			.0328	1.50	3.06	2.84	4.46		.015	.00	RECTANG
3870.130	2051.220	2.913	2054.133	3755.00	28.64	12.74	2066.87	.00	6.00	48.00	8.000	48.000
TRANS STR	.0110			.0228	.69	2.91	3.05		.015	-2.88	.00	RECTANG
3900.260	2051.550	6.154	2057.704	3755.00	25.93	10.44	2068.14	2.95	9.25	24.00	11.400	24.000
TRANS STR	.0181			.0119	1.82	9.10	1.86		.015	-1.44	.00	RECTANG
4052.660	2054.310	6.869	2061.179	3755.00	23.99	8.93	2070.11	.00	9.45	24.00	11.200	24.000
TRANS STR	.0148			.0109	.61	6.87	1.66		.015	-2.88	.00	RECTANG
4108.640	2055.140	6.638	2061.778	3755.00	24.00	8.95	2070.72	1.59	9.25	24.00	10.900	24.000
TRANS STR	.0148			.0077	.95	8.23	1.66		.015	-2.88	.00	RECTANG
4232.000	2056.970	7.159	2064.129	3755.00	22.23	7.67	2071.80	1.36	9.25	24.00	10.500	24.000
TRANS STR	.0147			.0061	.51	8.52	1.48		.015	-2.88	.00	RECTANG

pittman.OUT

4314.920	2058.190	7.807	2065.997	3755.00	20.35	6.43	2072.43	.00	9.25	24.00	15.200	24.000	.00	0	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TRANS STR .0149 .0050 .14 7.81 1.29 .015 -2.88 .00 RECTANG

FILE: pittman.WSW W S P G W - CIVILDESIGN Version 14.06 PAGE 4

Program Package Serial Number: 1267
 WATER SURFACE PROFILE LISTING Date: 5-25-2010 Time: 4:30:57
 FILE: pittman.WSW
 PITTMAN MACDONALD RANCH CHANNEL JACOBS PROJECT NO. W4X49700
 MAY 2010 JOHN P FYIE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top	Height	Base Wt	No Wth	Prs/Pip
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
4342.370	2058.600	8.190	2066.790	3755.00	19.39	5.84	2072.63	.00	9.25	24.00	16.800	24.000	.00	0 .0
TRANS STR	.0148			.0044	.07	8.19	1.20	.015	-2.88	.00	RECTANG			
4359.260	2058.850	8.548	2067.398	3755.00	18.56	5.35	2072.75	.00	9.25	24.00	16.500	24.000	.00	0 .0
1.769	.0366			.0040	.01	8.55	1.13	4.09	.015	-2.88	.00	RECTANG		
4361.028	2058.915	8.821	2067.736	3755.00	17.98	5.02	2072.76	.00	9.25	24.00	16.500	24.000	.00	0 .0
.962	.0366			.0035	.00	8.82	1.07	4.09	.015	-2.88	.00	RECTANG		
4361.990	2058.950	9.247	2068.197	3755.00	17.14	4.56	2072.76	.00	9.25	24.00	16.500	24.000	.00	0 .0
WALL ENTRANCE														
4361.990	2058.950	15.417	2074.366	3755.00	4.09	.26	2074.63	.00	4.98	59.50	16.400	59.500	.00	0 .0
18.485	.0375			.0001	.00	15.42	.18	2.10	.015	.00	.00	RECTANG		
4380.475	2059.643	14.699	2074.342	3755.00	4.29	.29	2074.63	.00	4.98	59.50	16.400	59.500	.00	0 .0
9.525	.0375			.0001	.00	14.70	.20	2.10	.015	.00	.00	RECTANG		
4390.000	2060.000	14.328	2074.328	3755.00	4.40	.30	2074.63	.00	4.98	59.50	16.400	59.500	.00	0 .0

Henderson Pittman McDonald Ranch Channel																
Hydraulic Calculations Summary pittman.WSW																
Station	Invert	Depth (ft)	HGL (ft)	Flow (cfs)	Vel (fps)	Vel Head (ft)	EGL (ft)	Radius (ft)	Width (ft)	Super Elev (ft)	FB req. (ft)	depth+FB (ft)	Height (ft)	y/B	Fr	Nv
2510.00	2020.26	1.91	2025.17	3755	32.66	16.56	2041.73		24.0	0.00	2.01	3.92	10.2	0.079	4.17	0.286
2535.00	2020.86	4.92	2025.79	3755	32.56	16.47	2042.25		24.0	0.00	2.38	7.30	9.8	0.205	2.59	0.165
2558.00	2021.41	4.93	2026.35	3755	32.48	16.38	2042.72		24.0	0.00	2.38	7.31	9.8	0.206	2.58	0.166
2642.00	2023.43	4.99	2028.43	3755	32.10	16.00	2044.42	600	24.0	1.28	3.65	8.64	9.8	0.208	2.53	0.171
2700.00	2024.82	5.03	2029.86	3755	31.79	15.69	2045.56		24.0	0.00	2.36	n/a	9.8	0.210	2.50	0.175
2714.00	2025.16	4.92	2030.08	3755	31.78	15.68	2045.77		24.0	0.00	2.35	n/a	8.0	0.205	2.53	0.177
2764.00	2026.36	5.10	2031.47	3755	31.38	15.29	2046.76		24.0	0.00	2.35	7.45	9.7	0.212	2.45	0.180
2900.00	2029.62	5.27	2034.90	3755	30.30	14.26	2049.16	400	24.0	1.71	4.03	9.30	9.7	0.220	2.33	0.193
3099.00	2032.64	5.18	2037.84	3755	30.81	14.74	2052.58	400	24.0	1.77	4.10	9.28	9.7	0.216	2.39	0.187
3142.00	2033.30	5.16	2038.48	3755	30.93	14.86	2053.34		24.0	0.00	2.34	7.49	9.7	0.215	2.40	0.186
3287.00	2035.50	5.06	2040.59	3755	31.49	15.40	2055.99	400	24.0	1.85	4.20	9.26	9.7	0.211	2.47	0.179
3350.10	2037.73	5.29	2043.05	3755	30.07	14.04	2057.09	400	24.0	1.68	3.99	9.28	9.7	0.220	2.30	0.197
3468.60	2041.93	5.89	2047.89	3755	26.81	11.16	2059.05		24.0	0.00	2.21	8.10	9.8	0.245	1.95	0.239
3648.60	2049.25	3.46	2052.42	3755	24.37	9.22	2061.64		48.0	0.00	1.92	5.38	7.7	0.072	2.31	0.473
3678.67	2049.91	3.29	2052.87	3755	24.43	9.27	2062.14	300	24.0	1.48	3.39	6.68	7.7	0.137	2.37	0.326
3697.87	2050.33	3.31	2053.30	3755	24.30	9.17	2062.47		24.0	0.00	1.91	5.21	7.7	0.138	2.35	0.327
3761.40	2050.56	3.28	2053.28	3755	26.01	10.50	2063.78		48.0	0.00	1.97	n/a	5.0	0.068	2.53	0.464
3809.69	2050.58	3.11	2053.70	3755	26.72	11.08	2064.79		48.0	0.00	1.98	n/a	5.0	0.065	2.67	0.462
3820.94	2050.70	3.07	2053.78	3755	27.11	11.41	2065.19		48.0	0.00	1.98	5.05	8.1	0.064	2.73	0.461
3824.44	2050.73	3.06	2053.80	3755	27.19	11.48	2065.28		48.0	0.00	1.99	5.04	8.1	0.064	2.74	0.460
3870.13	2051.22	2.91	2054.15	3755	28.52	12.63	2066.77		48.0	0.00	2.02	4.93	8.5	0.061	2.94	0.454
3900.26	2051.55	6.15	2057.74	3755	25.75	10.30	2068.03		24.0	0.00	2.18	8.33	12.0	0.256	1.83	0.253
4052.66	2054.31	6.87	2060.71	3755	24.45	9.28	2069.99	170	12.0	1.31	3.47	10.34	11.5	0.572	1.64	0.082
4108.64	2055.14	6.64	2061.39	3755	24.40	9.24	2070.64		24.0	0.00	2.15	8.78	11.2	0.277	1.67	0.270
4232.00	2056.97	7.16	2063.89	3755	22.51	7.87	2071.76	270	24.0	1.40	3.48	10.64	10.5	0.298	1.48	0.297
4314.92	2058.19	7.81	2065.89	3755	20.50	6.52	2072.42	270	24.0	1.16	3.18	10.98	15.8	0.325	1.29	0.327
4342.37	2058.60	8.19	2066.74	3755	19.46	5.88	2072.62		24.0	0.00	1.98	10.17	16.7	0.341	1.20	0.343
4359.26	2058.85	8.55	2067.40	3755	18.56	5.35	2072.75		24.0	0.00	1.95	10.50	16.5	0.356	1.12	0.356
4361.03	2058.92	8.82	2067.74	3755	17.98	5.02	2072.76		24.0	0.00	1.93	10.75	16.5	0.368	1.07	0.365
4361.99	2058.95	9.25	2068.20	3755	17.14	4.56	2072.76		24.0	0.00	1.90	11.15	16.5	0.385	0.99	0.378
4361.99	2058.95	15.42	2074.37	3755	4.09	0.26	2074.63		59.5	0.00	1.25	16.67	16.4	0.259	0.18	0.625
4380.48	2059.64	14.70	2074.34	3755	4.29	0.29	2074.63		59.5	0.00	1.26	15.96	16.4	0.247	0.20	0.623
4390.00	2060.00	14.33	2074.33	3755	4.40	0.30	2074.63		59.5	0.00	1.27	15.60	16.4	0.241	0.20	0.622

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:11:

2:28

FILE: LPITR99.WSW

PITTMAN MCDONALD RANCH CHANNEL UPSTREAM OF I-215

SINGLE SPAN 14' X 10' RCB & 24'X 10' RECT CHANNEL, CARTER & BURGESS

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL
Prs/Pip													
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR
Ch													Type

953.000	1970.190	1.499	1971.689	3951.00	43.92	29.96	2001.65	.00	5.13	64.00	6.000	64.000	
.00	4 1.0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
5.559	.2502				.1136	.63	1.50	6.53	1.17	.013	.00	.00	BOX
958.559	1971.581	1.519	1973.099	3951.00	43.36	29.19	2002.29	.00	5.13	64.00	6.000	64.000	
.00	4 1.0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
17.622	.2502				.1038	1.83	1.52	6.40	1.17	.013	.00	.00	BOX
976.181	1975.989	1.593	1977.582	3951.00	41.34	26.53	2004.12	.00	5.13	64.00	6.000	64.000	
.00	4 1.0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
14.552	.2502				.0897	1.31	1.59	5.96	1.17	.013	.00	.00	BOX
990.733	1979.629	1.671	1981.299	3951.00	39.41	24.12	2005.42	.00	5.13	64.00	6.000	64.000	
.00	4 1.0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
12.237	.2502				.0776	.95	1.67	5.55	1.17	.013	.00	.00	BOX
1002.970	1982.690	1.752	1984.442	3951.00	37.58	21.93	2006.37	.00	5.13	64.00	6.000	64.000	
.00	4 1.0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
TRANS STR	.0300				.0862	.86	1.75	5.17		.015	.00	.00	BOX
1012.970	1982.990	1.769	1984.759	3951.00	38.52	23.04	2007.79	.00	5.24	58.00	10.000	58.000	
.00	0 .0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
TRANS STR	.0300				.0493	4.52	1.77	5.10		.015	.00	.00	RECTANG
1104.540	1985.740	7.958	1993.698	3951.00	35.46	19.53	2013.23	1.43	13.53	14.00	10.000		
14.000	.00 0 .0												
-	-	-	-	-	-	-	-	-	-	-	-	-	
WALL EXIT													
1104.540	1985.740	7.957	1993.697	3951.00	35.47	19.53	2013.23	1.43	10.00	14.00	10.000		
14.000	.00 0 .0												

LPITR99.OUT

49.460	.0226	-	-	-	-	-	-	.0165	.81	9.39	2.22	7.09	.013	.00	.00	BOX
1154.000	1986.857	8.035	1994.892	3951.00	35.12	19.16	2014.05	1.40	10.00	14.00	10.000					
14.000	.00	0	.0													

81.600	.0226	-	-	-	-	-	-	.0159	1.30	9.44	2.18	7.09	.013	.00	.00	BOX
--------	-------	---	---	---	---	---	---	-------	------	------	------	------	------	-----	-----	-----

FILE: LPITR99.WSW

W S P G W - CIVILDESIGN Version 14.06

PAGE 2

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:11:

2:28

FILE: LPITR99.WSW

PITTMAN MCDONALD RANCH CHANNEL UPSTREAM OF I-215

SINGLE SPAN 14' X 10' RCB & 24'X 10' RECT CHANNEL, CARTER & BURGESS

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No		
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	
Prs/Pip														
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type
Ch														

1235.600	1988.702	8.186	1996.888	3951.00	34.48	18.46	2015.34	.00	10.00	14.00	10.000	14.000
.00	0	.0										

27.400	.0262	-	-	-	-	.0153	.42	8.19	2.12	6.71	.013	.00	.00	BOX
--------	-------	---	---	---	---	-------	-----	------	------	------	------	-----	-----	-----

1263.000	1989.420	8.273	1997.693	3951.00	34.11	18.07	2015.76	.00	10.00	14.00	10.000	14.000
.00	0	.0										

20.489	.0225	-	-	-	-	.0150	.31	8.27	2.09	7.10	.013	.00	.00	BOX
--------	-------	---	---	---	---	-------	-----	------	------	------	------	-----	-----	-----

1283.489	1989.881	8.319	1998.200	3951.00	33.92	17.87	2016.07	.00	10.00	14.00	10.000	14.000
.00	0	.0										

143.032	.0225	-	-	-	-	.0140	2.00	8.32	2.07	7.10	.013	.00	.00	BOX
---------	-------	---	---	---	---	-------	------	------	------	------	------	-----	-----	-----

1426.521	1993.099	8.725	2001.824	3951.00	32.35	16.25	2018.07	.00	10.00	14.00	10.000	14.000
.00	0	.0										

103.599	.0225	-	-	-	-	.0124	1.28	8.73	1.93	7.10	.013	.00	.00	BOX
---------	-------	---	---	---	---	-------	------	------	------	------	------	-----	-----	-----

1530.120	1995.430	9.151	2004.581	3951.00	30.84	14.77	2019.35	.83	10.00	14.00	10.000	14.000
.00	0	.0										

25.466	.0228	-	-	-	-	.0114	.29	9.98	1.80	7.07	.013	.00	.00	BOX
--------	-------	---	---	---	---	-------	-----	------	------	------	------	-----	-----	-----

----- WARNING - Flow depth near top of box conduit -----

1555.586	1996.011	9.286	2005.297	3951.00	30.39	14.34	2019.64	10.00	10.00	14.00	10.000
14.000	.00	0	.0								

69.204	.0228	-	-	-	-	.0105	.73	10.00	1.76	7.07	.013	.00	.00	BOX
--------	-------	---	---	---	---	-------	-----	-------	------	------	------	-----	-----	-----

LPITR99.OUT

----- WARNING - Flow depth near top of box conduit -----

1624.790	1997.590	9.739	2007.329	3951.00	28.98	13.04	2020.37	.00	10.00	14.00	10.000	14.000
.00	0.0											

TRANS STR	.0814			.0124	.43	9.74	1.64	.013	.00	.00	BOX
-----------	-------	--	--	-------	-----	------	------	------	-----	-----	-----

----- WARNING - Flow depth near top of box conduit -----

□ FILE: LPITR99.WSW
PAGE 3

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:11:

2:28

FILE: LPITR99.WSW

PITTMAN MCDONALD RANCH CHANNEL UPSTREAM OF I-215

SINGLE SPAN 14' X 10' RCB & 24'X 10' RECT CHANNEL, CARTER & BURGESS

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL
Prs/Pip													
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR
Ch													Type
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1659.430	2000.410	5.056	2005.466	3951.00	32.56	16.46	2021.93	.00	8.00	24.00	8.000	24.000	
.00	0.0												
JUNCT STR	.0287			.0150	.14	5.06	2.55	.013	.00	.00	BOX		
1668.500	2000.670	5.015	2005.685	3929.00	32.64	16.55	2022.23	.00	8.00	24.00	8.000	24.000	
.00	0.0												
70.930	.0259			.0145	1.03	5.01	2.57	4.18	.013	.00	.00	BOX	
1739.430	2002.510	5.167	2007.677	3929.00	31.69	15.59	2023.27	.00	8.00	24.00	8.000	24.000	
.00	0.0												
TRANS STR	.0261			.0183	.29	5.17	2.46	.015	-.24	.00	BOX		
1755.430	2002.928	5.200	2008.128	3929.00	31.54	15.45	2023.58	.00	9.42	24.00	10.000	24.000	
.00	0.0												
44.570	.0261			.0178	.79	5.20	2.44	4.60	.015	-.24	.00	RECTANG	
1800.000	2004.090	5.276	2009.366	3929.00	31.09	15.01	2024.37	.00	9.42	24.00	10.000	24.000	
.00	0.0												
16.483	.0240			.0173	.29	5.28	2.39	4.73	.015	-.24	.00	RECTANG	
1816.483	2004.486	5.299	2009.785	3929.00	30.95	14.87	2024.66	.00	9.42	24.00	10.000	24.000	
.00	0.0												
138.519	.0240			.0161	2.23	5.30	2.37	4.73	.015	-.24	.00	RECTANG	

LPITR99.OUT

1955.001 2007.810 5.558 2013.368 3929.00 29.51 13.52 2026.89 .00 9.42 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 95.999 .0240 .0140 1.35 5.56 2.21 4.73 .015 -.24 .00 RECTANG
 2051.000 2010.114 5.828 2015.943 3929.00 28.14 12.29 2028.23 .00 9.42 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 JUNCT STR .0240 .0140 .21 5.83 2.06 .015 -.24 .00 RECTANG
 FILE: LPITR99.WSW W S P G W - CIVILDESIGN Version 14.06
 PAGE 4

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:11:

2:28

FILE: LPITR99.WSW

PITTMAN MCDONALD RANCH CHANNEL UPSTREAM OF I-215

SINGLE SPAN 14' X 10' RCB & 24'X 10' RECT CHANNEL, CARTER & BURGESS

 | Invert | Depth | Water | Q | Vel Vel | Energy | Super |Critical|Flow Top|Height|Base Wt| |No
 Wth
 Station | Elev | (FT) | Elev | (CFS) | (FPS) Head | Grd.El| Elev | Depth | Width |Dia.-FT|or I.D.| ZL
 |Prs/Pip
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 L/Elem |Ch Slope| | | | SF Ave| HF |SE Dpth|Froude N|Norm Dp| "N" | X-Fall| ZR |Type
 Ch

 2066.000 2010.474 5.457 2015.931 3809.00 29.14 13.18 2029.11 .00 9.22 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 1.000 .0240 .0148 .01 5.46 2.20 4.63 .015 -.24 .00 RECTANG
 2067.000 2010.498 5.459 2015.957 3809.00 29.13 13.18 2029.13 3.16 9.22 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 WALL EXIT
 2067.000 2010.498 5.861 2016.359 3809.00 28.91 12.98 2029.34 2.92 9.62 24.00 10.000 24.000
 .00 1 1.5
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 196.000 .0240 .0209 4.10 8.78 2.17 5.66 .015 -.12 .00 RECTANG
 2263.000 2015.200 6.046 2021.246 3809.00 28.02 12.19 2033.44 .00 9.62 24.00 10.000 24.000
 .00 1 1.5
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 WALL ENTRANCE
 2263.000 2015.200 5.149 2020.349 3809.00 30.88 14.81 2035.16 .00 9.22 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
 72.000 .0314 .0165 1.19 5.15 2.40 4.24 .015 -.24 .00 RECTANG
 2335.000 2017.460 5.395 2022.855 3809.00 29.47 13.49 2036.34 .00 9.22 24.00 10.000 24.000
 .00 0 .0
 -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

LPITR99.OUT

105.000	.0160			.0153	1.61	5.39	2.24	5.32	.015	-.24	.00	RECTANG
2440.000	2019.140	5.413	2024.553	3809.00	29.37	13.40	2037.95	.00	9.22	24.00	10.000	24.000
.00	0	.0										
JUNCT STR	.0160			.0166	.25	5.41	2.23		.015	-.24	.00	RECTANG
2455.000	2019.380	4.993	2024.373	3674.00	30.72	14.65	2039.03	.00	9.01	24.00	10.000	24.000
.00	0	.0										
55.000	.0160			.0181	.99	4.99	2.43	5.19	.015	-.24	.00	RECTANG
2510.000	2020.260	4.970	2025.230	3674.00	30.86	14.79	2040.02	.00	9.01	24.00	10.000	24.000
.00	0	.0										
48.000	.0240			.0179	.86	4.97	2.44	4.53	.015	-.24	.00	RECTANG

☐ FILE: LPITR99.WSW
 W S P G W - CIVILDESIGN Version 14.06
 PAGE 5

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:11:

2:28

FILE: LPITR99.WSW

PITTMAN MCDONALD RANCH CHANNEL UPSTREAM OF I-215

SINGLE SPAN 14' X 10' RCB & 24'X 10' RECT CHANNEL, CARTER & BURGESS

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL
Prs/Pip													
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR Type
Ch													
2558.000	2021.410	5.030	2026.440	3674.00	30.50	14.44	2040.88	.00	9.01	24.00	10.000	24.000	
.00	0	.0											

☐

[illegible]

WSPGW OUTPUT										Additional Calculations						
Station	Invert	Depth	HGL	Flow	Velocity	Vel Head	EGL	Radius	Width	Super Elev	Freeboard	depth+FB	Height	y/B	Froude#	Verdenikov #
		y (ft)	(ft)	Q (cfs)	V (fps)	Vh (ft)	(ft)	r (ft)	Tw (ft)	Se (ft)	FB (ft)	(ft)	(ft)	Y	Fr	Nv
9+53.00	1970.19	1.50	1971.69	3951	43.92	29.96	2001.65		64		2.26	3.76	6	0.023	6.32	0.478
9+58.56	1971.58	1.52	1973.10	3951	43.36	29.19	2002.29		64		2.25	3.77	6	0.024	6.20	0.479
9+76.18	1975.99	1.59	1977.58	3951	41.34	26.53	2004.12		64		2.21	3.80	6	0.025	5.77	0.484
9+90.73	1979.63	1.67	1981.30	3951	39.41	24.12	2005.42		64		2.17	3.84	6	0.026	5.37	0.489
10+02.97	1982.69	1.75	1984.44	3951	37.58	21.93	2006.37		64		2.13	3.88	6	0.027	5.00	0.494
10+12.97	1982.99	1.77	1984.76	3951	38.52	23.04	2007.79		58		2.16	3.93	10	0.031	5.10	0.471
11+04.54	1985.74	7.96	1993.70	3951	35.46	19.53	2013.23	382.5	14	1.43	n/a	n/a	10	0.568	2.22	-0.119
11+04.54	1985.74	7.96	1993.70	3951	35.47	19.53	2013.23	382.5	14	1.43	n/a	n/a	10	0.568	2.22	-0.119
11+54.00	1986.86	8.04	1994.89	3951	35.12	19.16	2014.05	382.5	14	1.40	n/a	n/a	10	0.574	2.18	-0.111
12+35.60	1988.70	8.19	1996.89	3951	34.48	18.46	2015.34	382.5	14	1.35	n/a	n/a	10	0.585	2.12	-0.097
12+63.00	1989.42	8.27	1997.69	3951	34.11	18.07	2015.76		14		n/a	n/a	10	0.591	2.09	-0.088
12+83.49	1989.88	8.32	1998.20	3951	33.92	17.87	2016.07		14		n/a	n/a	10	0.594	2.07	-0.084
14+26.52	1993.10	8.73	2001.82	3951	32.35	16.25	2018.07		14		n/a	n/a	10	0.623	1.93	-0.047
15+30.12	1995.43	9.15	2004.58	3951	30.84	14.77	2019.35	500	14	0.83	n/a	n/a	10	0.654	1.80	-0.012
15+55.59	1996.01	9.29	2005.30	3951	30.39	14.34	2019.64	500	14	0.80	n/a	n/a	10	0.663	1.76	-0.001
16+24.79	1997.59	9.74	2007.33	3951	28.98	13.04	2020.37	500	14	0.73	n/a	n/a	10	0.696	1.64	0.032
16+59.43	2000.41	5.06	2005.47	3951	32.56	16.46	2021.93		24		n/a	n/a	8	0.211	2.55	0.162
16+68.50	2000.67	5.02	2005.69	3929	32.64	16.55	2022.23		24		n/a	n/a	8	0.209	2.57	0.162
17+39.43	2002.51	5.17	2007.68	3929	31.69	15.59	2023.27		24		n/a	n/a	8	0.215	2.46	0.174
17+55.43	2002.93	5.20	2008.13	3929	31.54	15.45	2023.58		24		2.37	7.57	10	0.217	2.44	0.175
18+00.00	2004.09	5.28	2009.37	3929	31.09	15.01	2024.37		24		2.35	7.63	10	0.220	2.39	0.181
18+16.48	2004.49	5.30	2009.79	3929	30.95	14.87	2024.66		24		2.35	7.65	10	0.221	2.37	0.183
19+55.00	2007.81	5.56	2013.37	3929	29.51	13.52	2026.89		24		2.31	7.86	10	0.232	2.21	0.201
20+51.00	2010.11	5.83	2015.94	3929	28.14	12.29	2028.23		24		2.27	8.09	10	0.243	2.05	0.219
20+66.00	2010.47	5.46	2015.93	3809	29.14	13.18	2029.11		24		2.28	7.74	10	0.227	2.20	0.209
20+67.00	2010.50	5.46	2015.96	3809	29.13	13.18	2029.13	200	11.25	1.48	3.76	9.22	10	0.485	2.20	-0.055
20+67.00	2010.50	5.86	2016.36	3809	28.91	12.98	2029.34	200	11.25	1.46	3.76	9.62	10	0.521	2.10	-0.049
22+63.00	2015.20	6.05	2021.25	3809	28.02	12.19	2033.44	200	11.25	1.37	3.65	9.69	10	0.537	2.01	-0.027
22+63.00	2015.20	5.15	2020.35	3809	30.88	14.81	2035.16		24		2.33	7.48	10	0.215	2.40	0.187
23+35.00	2017.46	5.40	2022.86	3809	29.47	13.49	2036.34		24		2.29	7.69	10	0.225	2.24	0.204
24+40.00	2019.14	5.41	2024.55	3809	29.37	13.40	2037.95		24		2.29	7.70	10	0.226	2.22	0.206
24+55.00	2019.38	4.99	2024.37	3674	30.72	14.65	2039.03		24		2.31	7.31	10	0.208	2.42	0.192
25+10.00	2020.26	4.97	2025.23	3674	30.86	14.79	2040.02		24		2.32	7.29	10	0.207	2.44	0.190
25+58.00	2021.41	5.03	2026.44	3674	30.5	14.44	2040.88		24		2.31	7.34	10	0.210	2.40	0.195

Pittman MacDonald Ranch Channel																
Hydraulic Calculations Summary																
Each Side of Vane Wall																
WSPGW OUTPUT										Additional Calculations						
Station	Invert	Depth	HGL	Flow	Velocity	Vel Head	EGL	Radius	Width	Super Elev	Freeboard	depth+FB	Height	y/B	Froude#	Verdenikov #
		y	(ft)	Q	V	Vh	(ft)	r	Tw	Se	FB	(ft)	(ft)	Y	Fr	Nv
		(ft)	(ft)	(cfs)	(fps)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
Left Side of Vane Wall (Outer Curve)																
20+67.00	2010.50	5.46	2015.96	3809	29.13	13.18	2029.13	206.4	11.25	1.44	3.72	9.18	10	0.485	2.20	-0.055
20+67.00	2010.50	5.86	2016.36	3809	28.91	12.98	2029.34	206.4	11.25	1.41	3.72	9.58	10	0.521	2.10	-0.049
22+63.00	2015.20	6.05	2021.25	3809	28.02	12.19	2033.44	206.4	11.25	1.33	3.61	9.65	10	0.537	2.01	-0.027
Right Side of Vane Wall (Inner Curve)																
20+67.00	2010.50	5.46	2015.96	3809	29.13	13.18	2029.13	193.6	11.25	1.53	3.81	9.27	10	0.485	2.20	-0.055
20+67.00	2010.50	5.86	2016.36	3809	28.91	12.98	2029.34	193.6	11.25	1.51	3.81	9.67	10	0.521	2.10	-0.049
22+63.00	2015.20	6.05	2021.25	3809	28.02	12.19	2033.44	193.6	11.25	1.42	3.69	9.74	10	0.537	2.01	-0.027
Se = C V ² Tw / g r																
FB = 1 + .025 V y ^{1/3} + Se																
Fr = V / (g y) ^{1/2}																
Nv = 2/3 (1 - 2Y/(2Y+1)) Fr																

0

T3 WITH STAGED TRANSITION TO 24' WIDE CHANNEL.

WITH STAGES TRANSITION TO 24 WIDE CHANNEL												
SO	2510.000	2020.260	1						2020.260			
R	2558.000	2021.410	1	.015						.000		
R	2642.000	2023.430	1	.015						8.021		
R	2764.000	2026.360	1	.015						.000		
R	2900.000	2029.620	1	.015						-19.480		
R	3099.000	2032.650	1	.015						-28.505		
R	3142.000	2033.300	1	.015						.000		
R	3287.000	2035.500	1	.015						20.77		
R	3346.000	2037.960	1	.015						8.45		
R	3388.000	2039.700	1	.015						.000		
TS	3433.000	2041.570	2	.015								
TS	3478.000	2043.450	3	.015								
TS	3568.000	2047.190	4	.015								
TS	3623.000	2048.510	5	.015								
TS	3642.000	2048.970	6	.015						.000		
TS	3678.000	2049.870	7	.015						.000		
WX	3678.000	2049.870	8									
TS	3696.000	2050.130	9	.015						.000		
R	3697.000	2050.140	9	.015						5.154		
TS	3697.810	2050.150	10	.015						.000		
WX	3697.810	2050.150	11									
R	3758.000	2050.750	11	.013						.000	.000	0
WE	3758.000	2050.750	12	.300								
TS	3776.000	2051.360	13	.035						.000		
TS	3797.000	2052.072	14	.035						.000		
TS	3812.000	2052.100	15	.035						.000		
TS	3862.000	2054.000	16	.035						.000		
SH	3862.000	2054.000	16						2054.000			
CD	1	2	0	.000	10.000	24.000	.000	.000	-2.88			
CD	2	2	0	.000	10.000	30.000	.000	.000	-3.60			
CD	3	2	0	.000	10.000	36.000	.000	.000	-4.32			
CD	4	2	0	.000	10.000	48.000	.000	.000	-5.76			
CD	5	2	0	.000	10.000	59.000	.000	.000	-7.08			
CD	6	2	0	.000	10.000	62.800	.000	.000	-7.54			
CD	7	2	0	.000	10.000	70.000	.000	.000	.00			
CD	8	2	1	.670	8.000	70.000	.000	.000	.00			
CD	9	2	1	.670	8.000	72.150	.000	.000	.00			
CD	10	2	0	.000	8.000	71.350	.000	.000	.00			
CD	11	3	5	.670	5.000	72.350	.000	.000	.00			
CD	12	2	0	.000	9.000	72.500	.000	.000	.00			
CD	13	1	0	.000	9.000	75.000	2.000	2.000	.00			
CD	14	1	0	.000	9.000	90.000	2.000	2.000	.00			
CD	15	5	0	.000		.00	.00	.00	.00	.00	.00	.00
.00												
CD	16	5	0	.000		.00	.00	.00	.00	.00	.00	.00
.00												
PTS	1515	.000	9.000	22.000	8.000	30						

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9-7-2007 Time:10:2:55

FILE: UPITR99

CHANNEL WITH EXISTING CULVERTS AT ARROYO GRANDE
WITH STAGED TRANSITION TO 24' WIDE CHANNEL

Invert Station	Depth Elev	Water (FT)	Q Elev	Vel (CFS)	Vel (FPS)	Energy Head	Super Grd.El.	Critical Elev	Flow Top Depth	Height Width	Base Wt Dia.-FT	No Wt or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
2510.000	2020.260	4.989	2025.249	3755.00	32.13	16.03	2041.28	.00	9.25	24.00	10.000	24.000	.00	0 .0
48.000	.0240			.0197	.94	4.99	2.57	4.69	.015	-2.88	.00	RECTANG		
2558.000	2021.410	5.026	2026.436	3755.00	31.89	15.79	2042.23	1.26	9.25	24.00	10.000	24.000	.00	0 .0
84.000	.0240			.0190	1.60	6.29	2.54	4.69	.015	-2.88	.00	RECTANG		
2642.000	2023.430	5.107	2028.537	3755.00	31.38	15.29	2043.82	.00	9.25	24.00	10.000	24.000	.00	0 .0
122.000	.0240			.0177	2.16	5.11	2.48	4.69	.015	-2.88	.00	RECTANG		
2764.000	2026.360	5.265	2031.625	3755.00	30.41	14.36	2045.99	1.72	9.25	24.00	10.000	24.000	.00	0 .0
9.821	.0240			.0168	.17	6.99	2.36	4.69	.015	-2.88	.00	RECTANG		
2773.821	2026.595	5.280	2031.875	3755.00	30.32	14.28	2046.15	1.71	9.25	24.00	10.000	24.000	.00	0 .0
126.179	.0240			.0157	1.98	6.99	2.35	4.69	.015	-2.88	.00	RECTANG		
2900.000	2029.620	5.532	2035.152	3755.00	28.91	12.98	2048.13	1.56	9.25	24.00	10.000	24.000	.00	0 .0
199.000	.0152			.0144	2.87	7.09	2.19	5.45	.015	-2.88	.00	RECTANG		
3099.000	2032.650	5.574	2038.224	3755.00	28.69	12.78	2051.00	.00	9.25	24.00	10.000	24.000	.00	0 .0
43.000	.0151			.0142	.61	5.57	2.16	5.47	.015	-2.88	.00	RECTANG		
3142.000	2033.300	5.585	2038.885	3755.00	28.63	12.73	2051.61	1.53	9.25	24.00	10.000	24.000	.00	0 .0
145.000	.0152			.0140	2.03	7.11	2.16	5.46	.015	-2.88	.00	RECTANG		
3287.000	2035.500	5.631	2041.131	3755.00	28.39	12.51	2053.65	1.50	9.25	24.00	10.000	24.000	.00	0 .0
6.071	.0417			.0137	.08	7.13	2.13	3.92	.015	-2.88	.00	RECTANG		

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9-7-2007 Time:10:2:55

FILE: UPITR99

CHANNEL WITH EXISTING CULVERTS AT ARROYO GRANDE
WITH STAGED TRANSITION TO 24' WIDE CHANNEL

Invert Station	Depth Elev	Water (FT)	Q Elev	Vel (CFS)	Vel (FPS)	Energy Head	Super Grd.El.	Critical Elev	Flow Top Depth	Height Width	Base Wt Dia.-FT	No Wt or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
3293.071	2035.753	5.680	2041.433	3755.00	28.14	12.30	2053.73	1.48	9.25	24.00	10.000	24.000	.00	0 .0
29.105	.0417			.0126	.37	7.16	2.10	3.92	.015	-2.88	.00	RECTANG		
3322.176	2036.967	5.952	2042.918	3755.00	26.83	11.18	2054.10	1.34	9.25	24.00	10.000	24.000	.00	0 .0
23.824	.0417			.0110	.26	7.29	1.96	3.92	.015	-2.88	.00	RECTANG		
3346.000	2037.960	6.236	2044.196	3755.00	25.58	10.16	2054.36	.00	9.25	24.00	10.000	24.000	.00	0 .0

UPITR99.OUT

9.855	.0414				.0099	.10	6.24	1.82	3.93	.015	-2.88	.00	RECTANG
3355.855	2038.368	6.377	2044.745	3755.00	25.01	9.71	2054.46	.00	9.25	24.00	10.000	24.000	.00 0 .0
17.791	.0414				.0090	.16	6.38	1.76	3.93	.015	-2.88	.00	RECTANG
3373.647	2039.105	6.682	2045.787	3755.00	23.84	8.83	2054.61	.00	9.25	24.00	10.000	24.000	.00 0 .0
14.353	.0414				.0078	.11	6.68	1.64	3.93	.015	-2.88	.00	RECTANG
3388.000	2039.700	7.002	2046.702	3755.00	22.73	8.03	2054.73	.00	9.25	24.00	10.000	24.000	.00 0 .0
TRANS STR	.0416				.0075	.34	7.00	1.53		.015	-3.60	.00	RECTANG
3433.000	2041.570	5.742	2047.312	3755.00	22.38	7.78	2055.09	.00	8.01	30.00	10.000	30.000	.00 0 .0
TRANS STR	.0418				.0076	.34	5.74	1.67		.015	-4.32	.00	RECTANG
3478.000	2043.450	5.107	2048.556	3755.00	21.17	6.96	2055.52	.00	7.15	36.00	10.000	36.000	.00 0 .0
TRANS STR	.0416				.0058	.52	5.11	1.68		.015	-5.76	.00	RECTANG
3568.000	2047.190	5.078	2052.268	3755.00	16.17	4.06	2056.33	.00	5.99	48.00	10.000	48.000	.00 0 .0
TRANS STR	.0240				.0042	.23	5.08	1.30		.015	-7.08	.00	RECTANG

□ FILE: UPITR99.WSW

W S P G W - CIVILDESIGN Version 14.06

PAGE 3

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9-7-2007 Time:10:2:55

FILE: UPITR99

CHANNEL WITH EXISTING CULVERTS AT ARROYO GRANDE
WITH STAGED TRANSITION TO 24' WIDE CHANNEL

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Elev	Flow Top	Height	Base Wt	No Wth
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
3623.000	2048.510	4.455	2052.965	3755.00	15.30	3.63	2056.60	.00	5.31	59.00	10.000	59.000	.00 0 .0
TRANS STR	.0242			.0041	.08	4.46	1.32		.015	-7.54	.00	RECTANG	
3642.000	2048.970	4.384	2053.354	3755.00	14.69	3.35	2056.71	.00	5.12	62.80	10.000	62.800	.00 0 .0
TRANS STR	.0250			.0042	.15	4.38	1.28		.015	.00	.00	RECTANG	
3678.000	2049.870	3.668	2053.538	3755.00	14.62	3.32	2056.86	.00	4.47	70.00	10.000	70.000	.00 0 .0
WALL EXIT													
3678.000	2049.870	3.717	2053.587	3755.00	14.57	3.30	2056.88	.00	4.50	70.00	8.000	70.000	.00 1 .7
TRANS STR	.0144			.0048	.09	3.72	1.34		.015	.00	.00	RECTANG	
3696.000	2050.130	3.669	2053.799	3755.00	14.32	3.18	2056.98	40.94	4.41	72.15	8.000	72.150	.00 1 .7
1.000	.0100			.0047	.00	44.61	1.32	2.89	.015	.00	.00	RECTANG	
3697.000	2050.140	3.676	2053.816	3755.00	14.29	3.17	2056.99	.00	4.41	72.15	8.000	72.150	.00 1 .7
TRANS STR	.0124			.0048	.00	3.68	1.32		.015	.00	.00	RECTANG	
3697.810	2050.150	3.513	2053.663	3755.00	14.98	3.48	2057.15	.00	4.41	71.35	8.000	71.350	.00 0 .0
WALL EXIT													
3697.810	2050.150	3.675	2053.825	3755.00	14.81	3.40	2057.23	.00	4.51	72.35	5.000	72.350	.00 5 .7
10.190	.0100			.0056	.06	3.68	1.39	3.02	.013	.00	.00	BOX	

UPITR99.OUT

3708.000	2050.252	3.730	2053.981	3755.00	14.59	3.31	2057.29	.00	4.51	72.35	5.000	72.350	.00	5	.7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.547	.0100			.0051	.13	3.73	1.36	3.02	.013	.00	.00	BOX			

FILE: UPITR99.WSW W S P G W - CIVILDESIGN Version 14.06 PAGE 4

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:10: 2:55

FILE: UPITR99

CHANNEL WITH EXISTING CULVERTS AT ARROYO GRANDE
WITH STAGED TRANSITION TO 24' WIDE CHANNEL

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No Wth		
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	Prs/Pip
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		

3732.548	2050.496	3.912	2054.408	3755.00	13.91	3.01	2057.41	.00	4.51	72.35	5.000	72.350	.00	5	.7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.047	.0100			.0045	.07	3.91	1.27	3.02	.013	.00	.00	BOX			
3747.594	2050.646	4.103	2054.749	3755.00	13.26	2.73	2057.48	.00	4.51	72.35	5.000	72.350	.00	5	.7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.985	.0100			.0039	.03	4.10	1.18	3.02	.013	.00	.00	BOX			
3755.579	2050.726	4.303	2055.029	3755.00	12.65	2.48	2057.51	.00	4.51	72.35	5.000	72.350	.00	5	.7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.421	.0100			.0035	.01	4.30	1.10	3.02	.013	.00	.00	BOX			
3758.000	2050.750	4.514	2055.264	3755.00	12.06	2.26	2057.52	.00	4.51	72.35	5.000	72.350	.00	5	.7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WALL ENTRANCE

----- WARNING - Flow depth near top of box conduit -----

3758.000	2050.750	6.824	2057.574	3755.00	7.59	.89	2058.47	.00	4.37	72.50	9.000	72.500	.00	0	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0339			.0028	.05	6.82	.51	.035	.00	.00	RECTANG				
3776.000	2051.360	6.516	2057.876	3755.00	6.55	.67	2058.54	.00	4.11	101.06	9.000	75.000	2.00	0	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0339			.0024	.05	6.52	.48	.035	.00	2.00	TRAP				
3797.000	2052.072	5.939	2058.011	3755.00	6.21	.60	2058.61	.00	3.68	113.76	9.000	90.000	2.00	0	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0019			.0022	.03	5.94	.47	.035	.00	2.00	TRAP				
3812.000	2052.100	6.161	2058.261	3755.00	5.23	.43	2058.69	.00	3.92	157.12	15	0	.0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0380			.0049	.25	6.16	.43	.035			IR-OPEN				

FILE: UPITR99.WSW W S P G W - CIVILDESIGN Version 14.06

PAGE 5

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 9- 7-2007 Time:10: 2:55

FILE: UPITR99

CHANNEL WITH EXISTING CULVERTS AT ARROYO GRANDE
WITH STAGED TRANSITION TO 24' WIDE CHANNEL

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No Wth		
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	Prs/Pip
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L/Elem	Ch Slope			SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		

3862.000	2054.000	4.213	2058.213	3755.00	7.15	.79	2059.01	.00	3.59	198.55	16	0	.0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Henderson Pittman McDonald Ranch Channel																
Hydraulic Calculations Summary UPITR99.WSW																
Station	Invert	Depth (ft)	HGL (ft)	Flow (cfs)	Vel (fps)	Vel Head (ft)	EGL (ft)	Radius (ft)	Width (ft)	Super Elev (ft)	FB req. (ft)	depth+FB (ft)	Height (ft)	y/B	Fr	Nv
2510.00	2020.26	4.99	2025.25	3755	32.13	16.03	2041.28		24		2.37	7.36	10	0.208	2.53	0.170
2558.00	2021.41	5.03	2026.44	3755	31.89	15.79	2042.23	600	24	1.26	3.63	8.65	9.5	0.209	2.51	0.173
2642.00	2023.43	5.11	2028.54	3755	31.38	15.29	2043.82	600	24	1.22	3.57	8.68	9.5	0.213	2.45	0.180
2764.00	2026.36	5.27	2031.63	3755	30.41	14.36	2045.99	400	24	1.72	4.05	9.31	9.5	0.219	2.34	0.192
2773.82	2026.60	5.28	2031.88	3755	30.32	14.28	2046.15	400	24	1.71	4.03	9.31	9.5	0.220	2.33	0.193
2900.00	2029.62	5.53	2035.15	3755	28.91	12.98	2048.13	400	24	1.56	3.84	9.37	9.5	0.231	2.17	0.211
3099.00	2032.65	5.57	2038.22	3755	28.69	12.78	2051.00	400	24	1.53	3.81	9.38	9.5	0.232	2.14	0.214
3142.00	2033.30	5.59	2038.89	3755	28.63	12.73	2051.61	400	24	1.53	3.80	9.38	9.5	0.233	2.13	0.215
3287.00	2035.50	5.63	2041.13	3755	28.39	12.51	2053.65	400	24	1.50	3.76	9.40	9.5	0.235	2.11	0.218
3293.07	2035.75	5.68	2041.43	3755	28.14	12.30	2053.73	400	24	1.48	3.73	9.41	9.5	0.237	2.08	0.221
3322.18	2036.97	5.95	2042.92	3755	26.83	11.18	2054.10	400	24	1.34	3.56	9.51	9.5	0.248	1.94	0.238
3346.00	2037.96	6.24	2044.20	3755	25.58	10.16	2054.36	400	24	1.22	3.40	9.63	9.5	0.260	1.81	0.255
3355.86	2038.37	6.38	2044.75	3755	25.01	9.71	2054.46		24		2.16	8.54	9.5	0.266	1.75	0.263
3373.65	2039.11	6.68	2045.79	3755	23.84	8.83	2054.61		24		2.12	8.80	9.5	0.278	1.63	0.279
3388.00	2039.70	7.00	2046.70	3755	22.73	8.03	2054.73		24		2.09	9.09	9.5	0.292	1.51	0.295
3433.00	2041.57	5.74	2047.31	3755	22.38	7.78	2055.09		30		2.00	7.74	10	0.191	1.65	0.363
3478.00	2043.45	5.11	2048.56	3755	21.17	6.96	2055.52		36		1.91	7.02	10	0.142	1.65	0.423
3568.00	2047.19	5.08	2052.27	3755	16.17	4.06	2056.33		48		1.69	6.77	6.5	0.106	1.26	0.519
3623.00	2048.51	4.46	2052.97	3755	15.30	3.63	2056.60		59		1.63	6.08	6.5	0.076	1.28	0.555
3642.00	2048.97	4.38	2053.35	3755	14.69	3.35	2056.71		62.8		1.60	5.99	6.5	0.070	1.24	0.566
3678.00	2049.87	3.67	2053.54	3755	14.62	3.32	2056.86		70		1.56	5.23	6.5	0.052	1.35	0.582
3678.00	2049.87	3.72	2053.59	3755	14.57	3.30	2056.88		70		1.56	5.28	6.5	0.053	1.33	0.581
3696.00	2050.13	3.67	2053.80	3755	14.32	3.18	2056.98	275.00	36	0.83	2.39	6.05	6.5	0.102	1.32	0.518
3697.00	2050.14	3.68	2053.82	3755	14.29	3.17	2056.99		72.15		1.55	5.23	6.5	0.051	1.31	0.586
3697.81	2050.15	3.51	2053.66	3755	14.98	3.48	2057.15		71.35		1.57	5.08	6.5	0.049	1.41	0.582
3697.81	2050.15	3.68	2053.83	3755	14.81	3.40	2057.23		72.35		1.57	n/a	5	0.051	1.36	0.583
3708.00	2050.25	3.73	2053.98	3755	14.59	3.31	2057.29		72.35		1.57	n/a	5	0.052	1.33	0.584
3732.55	2050.50	3.91	2054.41	3755	13.91	3.01	2057.41		72.35		1.55	n/a	5	0.054	1.24	0.586
3747.59	2050.65	4.10	2054.75	3755	13.26	2.73	2057.48		72.35		1.53	n/a	5	0.057	1.15	0.588
3755.58	2050.73	4.30	2055.03	3755	12.65	2.48	2057.51		72.35		1.51	n/a	5	0.059	1.07	0.591
3758.00	2050.75	4.51	2055.26	3755	12.06	2.26	2057.52		72.35		1.50	n/a	5	0.062	1.00	0.593
3758.00	2050.75	6.82	2057.57	3755	7.59	0.89	2058.47		72.5		1.36	8.18	9	0.094	0.51	0.613
3776.00	2051.36	6.52	2057.88	3755	6.55	0.67	2058.54		101.06		1.31	7.82	9	0.064	0.45	0.632
3797.00	2052.07	5.94	2058.01	3755	6.21	0.60	2058.61		113.76		1.28	7.22	9	0.052	0.45	0.638
3812.00	2052.10	6.16	2058.26	3755	5.23	0.43	2058.69		157.12		1.24	7.40	9	0.039	0.37	0.649
3862.00	2054.00	4.21	2058.21	3755	7.15	0.79	2059.01		198.55		1.29	5.50	9	0.021	0.61	0.650

T1 FILE: PITPIPE6

0

T2 60" RCP LATERAL TO THE PITTMAN MCDONALD RANCH CHANNEL

T3 CARTER & BURGESS, DWD, 12/20/06

SO 1017.0002011.710 1 2015.180

WX 1017.0002011.710 2

R 1095.9702013.260 2 .013 .000

38.000 1

R 1312.9702017.500 2 .013 .000

-34.000 1

R 1334.9702017.940 2 .013 .000

-34.000 0

R 1338.3002018.000 2 .013 .000

.000 0

WE 1338.3002018.000 3 .300

SH 1338.3002018.000 3 2018.000

CD 1 2 0 .000 6.000 15.000 .000 .000 .00

CD 2 4 1 .000 5.000 .000 .000 .000 .00

CD 3 2 0 .000 15.000 30.000 .000 .000 .00

Q 270.000 .0

PITPIPE6.OUT

□ FILE: PITPIPE6.WSW
PAGE 1

W S P G W - CIVILDESIGN Version 14.01

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 8- 7-2007 Time:

3:40:55

FILE: PITPIPE6

60" RCP LATERAL TO THE PITTMAN MCDONALD RANCH CHANNEL

CARTER & BURGESS, DWD, 12/20/06

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No		
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	
Prs/Pip														
L/Elem	Ch	Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type
Ch														

1017.000	2011.710	.838	2012.548	270.00	21.48	7.16	2019.71	.00	2.16	15.00	6.000	15.000		
.00	0 .0													
WALL EXIT														
1017.000	2011.710	3.314	2015.024	270.00	19.54	5.93	2020.96	.00	4.54	4.73	5.000	.000		
.00	1 .0													
78.970	.0196			.0173	1.37	3.31	2.01	3.20	.013	.00	.00	PIPE		
1095.970	2013.260	3.376	2016.636	270.00	19.14	5.69	2022.32	.00	4.54	4.68	5.000	.000		
.00	1 .0													
76.873	.0195			.0163	1.25	3.38	1.94	3.21	.013	.00	.00	PIPE		
1172.843	2014.762	3.474	2018.236	270.00	18.54	5.34	2023.57	.00	4.54	4.60	5.000	.000		
.00	1 .0													
69.434	.0195			.0148	1.03	3.47	1.84	3.21	.013	.00	.00	PIPE		
1242.277	2016.119	3.630	2019.749	270.00	17.68	4.85	2024.60	.00	4.54	4.46	5.000	.000		
.00	1 .0													
42.906	.0195			.0132	.57	3.63	1.68	3.21	.013	.00	.00	PIPE		
1285.183	2016.957	3.801	2020.758	270.00	16.86	4.41	2025.17	.00	4.54	4.27	5.000	.000		
.00	1 .0													
27.787	.0195			.0119	.33	3.80	1.53	3.21	.013	.00	.00	PIPE		
1312.970	2017.500	3.990	2021.490	270.00	16.07	4.01	2025.50	.00	4.54	4.01	5.000	.000		
.00	1 .0													
10.473	.0200			.0110	.12	3.99	1.38	3.18	.013	.00	.00	PIPE		
1323.443	2017.709	4.108	2021.818	270.00	15.64	3.80	2025.62	.00	4.54	3.83	5.000	.000		
.00	1 .0													

PITPIPE6.OUT

11.527	.0200	-	-	-	-	-	-	.0103	.12	4.11	1.30	3.18	.013	.00	.00	PIPE
1334.970	2017.940	4.341	2022.281	270.00	14.91	3.45	2025.73	.00	4.54	3.38	5.000	.000				

3.330	.0180	-	-	-	-	-	-	.0096	.03	4.34	1.14	3.30	.013	.00	.00	PIPE
-------	-------	---	---	---	---	---	---	-------	-----	------	------	------	------	-----	-----	------

FILE: PITPIPE6.WSW

W S P G W - CIVILDESIGN Version 14.01

PAGE 2

Program Package Serial Number: 1267

WATER SURFACE PROFILE LISTING

Date: 8- 7-2007 Time:

3:40:55

FILE: PITPIPE6

60" RCP LATERAL TO THE PITTMAN MCDONALD RANCH CHANNEL

CARTER & BURGESS, DWD, 12/20/06

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height	Base Wt	No		
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	
Prs/Pip														
L/Elem	Ch	Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type
Ch														

1338.300	2018.000	4.537	2022.537	270.00	14.42	3.23	2025.77	.00	4.54	2.90	5.000	.000
.00	1	.0										

WALL ENTRANCE	-	-	-	-	-	-	-	-	-	-	-	-
---------------	---	---	---	---	---	---	---	---	---	---	---	---

1338.300	2018.000	10.683	2028.683	270.00	.84	.01	2028.69	.00	1.36	30.00	15.000	30.000
.00	0	.0										

-	-	-	-	-	-	-	-	-	-	-	-	-
---	---	---	---	---	---	---	---	---	---	---	---	---

□



RECEIVED
DEC 26 2006
CARTER & BURGESS

CITY OF HENDERSON
240 Water Street
P. O. Box 95050
Henderson, NV 89009

December 22, 2006

Donald Davis, P.E.
Carter & Burgess, Inc
6655 Bermuda Road
Las Vegas, NV 89119

Re: Pittman McDonald Ranch Channel
Permit Number: 2006780223

Dear Mr. Davis,

This letter provides comments on the above referenced drainage study dated November 27, 2006. The City of Henderson reviewed this study and based on the documents submitted, the subject study is approved. The following items are part of the approved study:

1. Clark County Regional Flood Control District concurrence is required.
2. Structural calculations and plans for the proposed flood facilities must be submitted to the City of Henderson for review and approval. The City of Henderson considers the structural plans and calculations a separate drainage study submittal. Therefore, the applicable drainage study fee based on acreage being disturbed plus \$2,100 must be submitted with the structural plans and calculations. Please obtain approval of the structural plans and calculations prior to submittal to Clark County Regional Flood Control District.

Projects that disturb over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection: (1) a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site, (2) a request for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until paving, building construction or planting has covered all stripped or disturbed surface areas. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, the information submitted by the above named engineering firm may be superseded. Compliance with the regulatory elements and design standards specified in the Uniform Regulations for the Control of Drainage does not imply a guarantee that properties will be free from flooding or flood damage.

Please let me know if you have any questions concerning these comments.

Sincerely,


Stephen E. Casmus, P.E.
Project Engineer II

cc: CCRFCD

REGIONAL FLOOD CONTROL DISTRICT



Gale Wm. Fraser, II, P.E.
General Manager/Chief
Engineer

July 13, 2009

BOARD OF DIRECTORS

Larry Brown
Chairman
Clark County

Robert L. Ellason
Vice-Chairman
City of North Las Vegas

David Bennett
City of Mesquite

Chris Giunchigliani
Clark County

Mayor Oscar Goodman
City of Las Vegas

Andy Hafen
City of Henderson

Steven D. Ross
City of Las Vegas

Mayor Roger Tobler
City of Boulder City

Mr. Lance Olson, P.E.
City of Henderson Department of Public Works
240 Water Street
P.O. Box 95050
Henderson, NV 89009-5050

**RE: PITTMAN MACDONALD RANCH CHANNEL – HEN21A05
AMARGOSA POWER EASEMENT TO CONCORDIA HOMES**

Dear Mr. Olson:

Clark County Regional Flood Control District (District) has reviewed *Improvement Plans for Pittman MacDonald Ranch Channel – Amargosa Power Easement to Arroyo Grande Boulevard* dated June 25, 2009 and *Response to District and City of Henderson Comments* dated June 24, 2009, prepared by Jacobs for City of Henderson. Improvements include approximately 1,850 linear feet (LF) of concrete rectangular channel, a channel access ramp and other associated facilities. These structures are labeled PTMR0093 and PTMR0111 on District's 2008 Master Plan Update (MPU).

District has reviewed and approved contract documents. We recommend City of Henderson solicit proposals from contractors for construction of project.

If you have any questions, please give me a call.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: 
Steve Parrish, P.E.
Engineering Director

AM:SP:sa

c: John P. Meng, P.E., JACOBS
Jill Reilly, P.E., CCRFCD
Abigail Mayrena, P.E., CCRFCD

P:\Letters and Memos\Capital Improvement Projects\HEN21\HEN21A05-Amargosa Power Easement to Concordia Homes-Approval.doc

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 685-0000 • FAX: (702) 685-0001
Website: <http://www.regionalflood.org>



Federal Emergency Management Agency

Washington, D.C. 20472

JAN 31 2008

FCD
4 PM
JAN 31 2008
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 07-09-1958R

The Honorable James B. Gibson
Mayor, City of Henderson
240 South Water Street
Henderson, NV 89015

Community: City of Henderson, NV
Community No.: 320005

104

Dear Mayor Gibson:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas (the effective FIRM for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 3, 2007, Mr. Lance Olson, P.E., Department of Public Works, City of Henderson, requested that FEMA evaluate the effects along Unnamed Tributary 1 to Pittman Wash (Tributary 1) that updated topographic information, existing six-barrel 11.5-foot by 5-foot RCB culvert under Arroyo Grande Parkway, a proposed concrete channel located from just upstream of Paseo Verde Parkway to just downstream of Arroyo Grande Boulevard, an existing 24-foot by 5-foot reinforced concrete box (RCB) culvert under Paseo Verde Parkway, a proposed 14-foot by 10-foot RCB culvert located from just downstream of Interstate Highway 215 (I-215) to just downstream of Paseo Verde Parkway, and along Unnamed Tributary 2 to Pittman Wash (Tributary 2) that updated topographic information and a proposed 60-inch reinforced concrete pipe storm drain located from just upstream of the confluence with Tributary 1 to approximately 1,400 feet downstream of Horizon Ridge Parkway would have on the flood hazard information shown on the effective FIRM.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Don W. Davis, P.E., Carter & Burgess, and Mr. Olson.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. We believe that, if the proposed project is constructed as shown on the plans entitled "Pittman McDonald Ranch Channel," prepared by Carter & Burgess, dated August 2007, and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the updated topographic information, existing culverts and proposed project, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base (1-percent-annual-chance) flood, will decrease compared to the effective SFHA width along Tributary 1 from just downstream of I-215 to just upstream of Arroyo Grande Parkway and will be removed. The maximum decrease in SFHA width, approximately 400 feet, will occur approximately 1,000 feet upstream of I-215. The existing culverts, proposed channel, and proposed culvert will contain the base flood from just downstream of I-215 to just upstream of Arroyo Grande Parkway.

As a result of the updated topographic information and proposed project, the width of the SFHA will decrease compared to the effective SFHA width along Tributary 2 from just upstream of the confluence

with Tributary 1 to approximately 1,400 feet upstream of Horizon Ridge Parkway and will be removed. The maximum decrease in SFHA width, approximately 500 feet, will occur just upstream of the confluence with Tributary 1. The proposed storm drain will contain the base flood from just upstream of the confluence with Tributary 1 to approximately 1,400 feet upstream of Horizon Ridge Parkway. 59

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM.

- Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)
- The detailed application and certification forms listed below may be required if as-built conditions differ from the conceptual plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology & Hydraulics Form"

Form 3, entitled "Riverine Structures Form"

Hydraulic analyses, for as-built conditions, of the base flood, together with a topographic work map showing the revised floodplain boundaries, must be submitted with Form 2.

- Effective October 1, 2007, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is \$4,800 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

FEMA National Service Provider
3601 Eisenhower Avenue
Alexandria, VA 22304-6425

- As-built plans, certified by a registered professional engineer, of all proposed project elements
- Community acknowledgment of the map revision request

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM.

The basis of this CLOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your

community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the [Special Flood Hazard Area/SFHA]. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in Oakland, California, at (510) 627-7175. If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,

MLH

Max H. Yuan, P.E., Program Specialist
Engineering Management Branch
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Enclosures

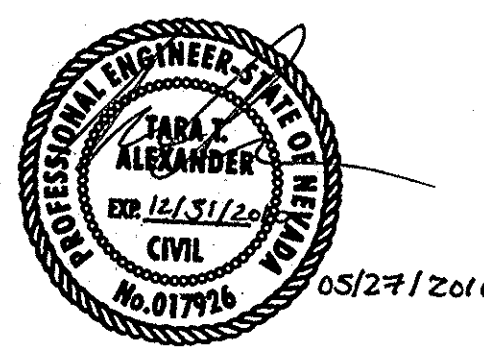
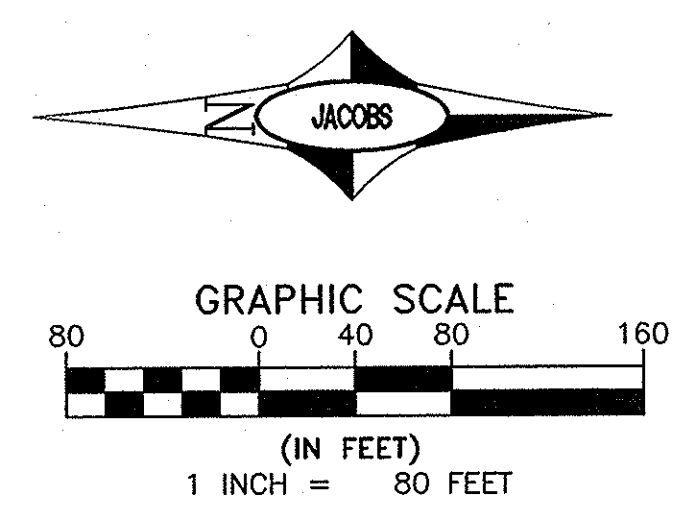
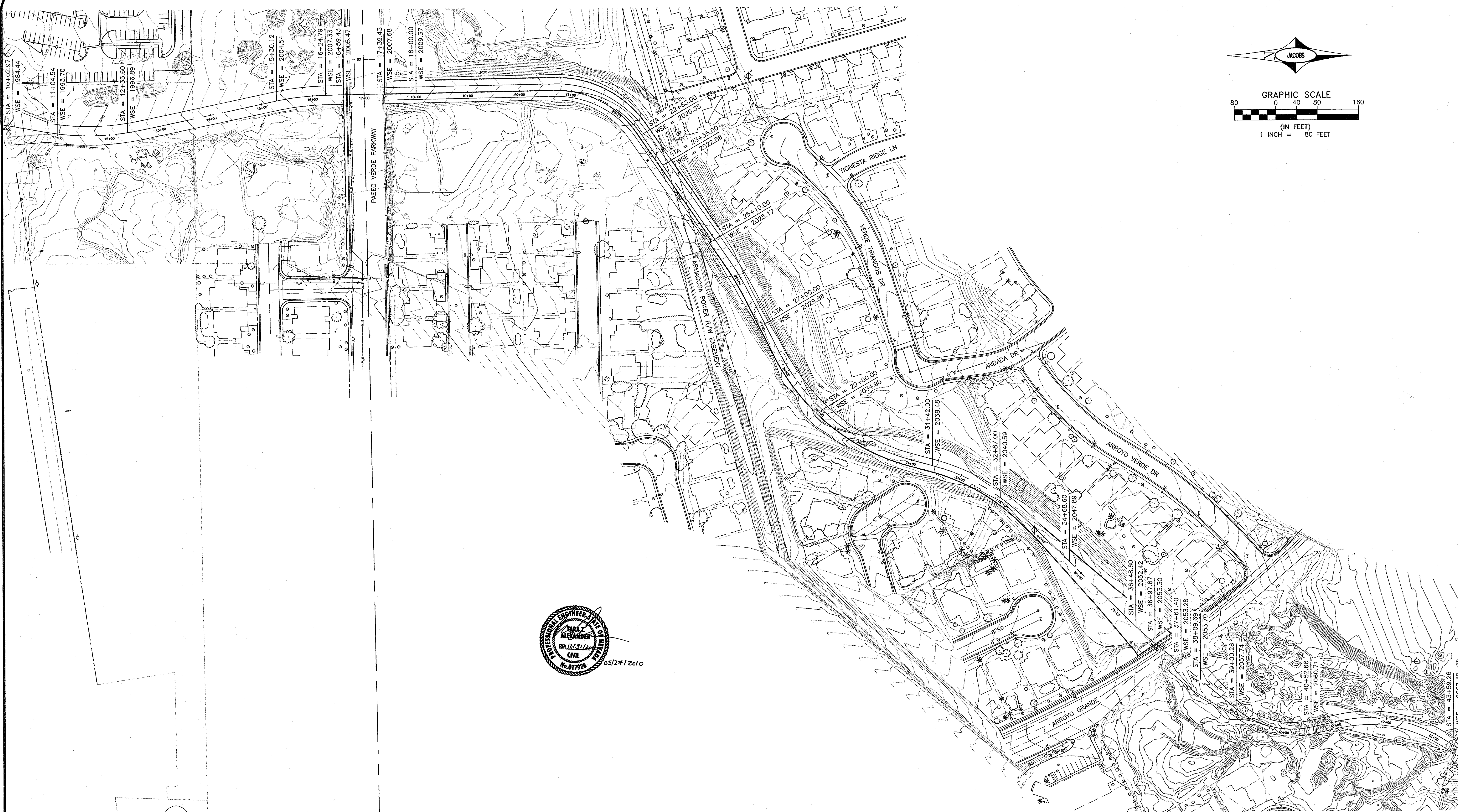
cc: Mr. Curt Chandler, P.E., CFM
Land Development Manager
Department of Public Works
City of Henderson

Mr. Lance Olson, P.E.
Department of Public Works
City of Henderson

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District

Mr. Don W. Davis, P.E.
Carter & Burgess

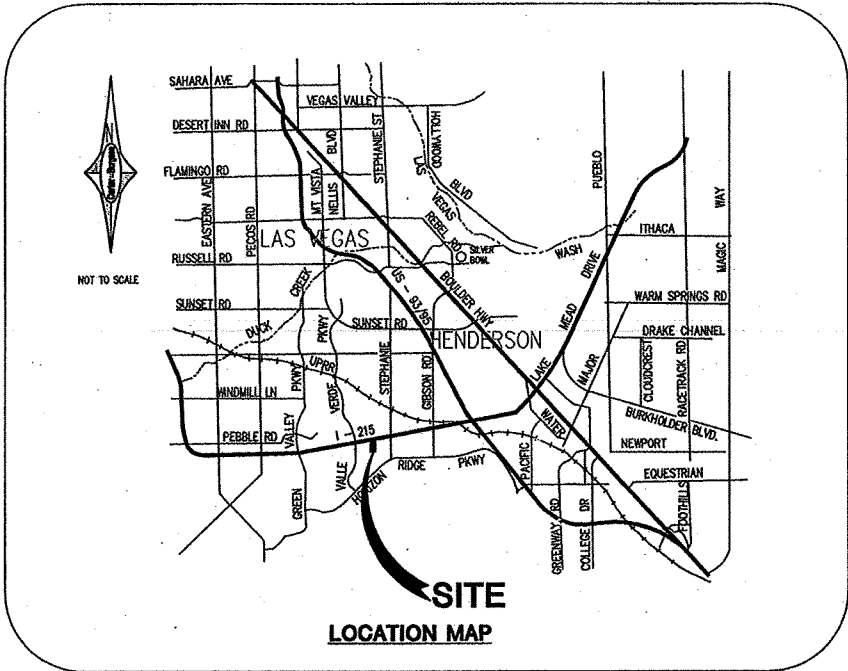
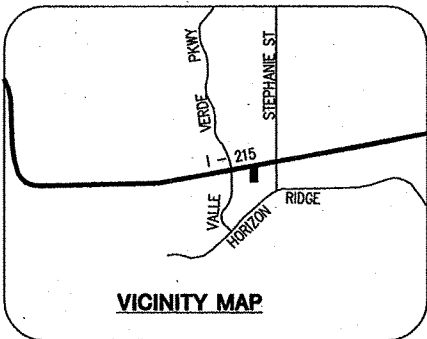
2008 FEB -4 RFCD
PIT 1:59



PITTMAN MCDONALD RANCH CHANNEL
PROPOSED EFFECTIVE CROSS SECTION MAP

JACOBS
7160 Bermuda Road, Suite 200
Las Vegas, Nevada 89119
(702) 938-5400
(702) 938-5454 (Fax)

IMPROVEMENT PLANS FOR
PITTMAN MACDONALD RANCH CHANNEL



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

THIS SET OF IMPROVEMENTS PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF TRAFFIC IMPACT ANALYSIS APPROVAL LETTER ON FILE WITH THE CITY OF HENDERSON.

TRAFFIC IMPACT ANALYSIS KVA NUMBER	N/A
PRINTED NAME	DONALD W. DAVIS
DATE	AUGUST 16, 2007
SIGNATURE	<i>[Signature]</i>
P.E. NUMBER	8087

APPROVALS

[Signature] 10-10-07
EMBARO
THE AFFIDAVIT EMBARO APPROVAL DOES NOT ASSURE OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTIONS OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

[Signature] 10-10-17
NEVADA POWER COMPANY
NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

[Signature] 12/05/07
SOUTHWEST GAS COMPANY
VALLEY ELECTRIC ASSOCIATION, INC.

[Signature] 10-17-07
JAMES MADDEN FIRE MARSHAL - CITY OF HENDERSON

[Signature] 10/17/07
MICHAEL BOUSE, DIRECTOR OF BUILDING AND FIRE SAFETY - CITY OF HENDERSON

[Signature] 12/27/07
DENNIS PORTER, P.E., DIRECTOR OF UTILITY SERVICES - CITY OF HENDERSON

[Signature] 10/17/07
CURT CHANDLER, P.E., FLOOD CONTROL COORDINATOR - CITY OF HENDERSON

[Signature] 5/7/08
NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

[Signature] 10/22/07
JOHN R. FENIELAS JR., P.E., P.T.O.E., TRAFFIC ENGINEER - CITY OF HENDERSON

APPROVAL OF THESE PLANS BY THE CITY OF HENDERSON IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY IDENTIFIED AS "DEVIATIONS FROM STANDARDS." THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARDS DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA, (CURRENT EDITIONS).

THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP AT (775) 687-9422.

LEGAL DESCRIPTION
A PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 18 AND OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 21, TOWNSHIP 22 SOUTH, RANGE 62 EAST, M.D.M., CITY OF HENDERSON, CLARK COUNTY, NEVADA.
APN #178-16-002-004
APN #178-21-001-015
APN #178-21-002-012

BASIS OF BEARING
NORTH 88°00'55" EAST, BEING THE BEARING OF THE CENTERLINE OF PASO VERDE PARKWAY AS SHOWN ON THAT CERTAIN PLAT OF Foothills Ranch - Phase 2nd ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 73, PAGE 24 OF PLATS, SITUATE IN THE NORTHEAST QUARTER (NE 1/4) OF SECTION 21, TOWNSHIP 22 SOUTH, RANGE 62 EAST, M.D.M., CITY OF HENDERSON, CLARK COUNTY, NEVADA.

BENCHMARK
CITY OF HENDERSON BENCHMARK #333, 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF PASO VERDE PARKWAY AND ARROYO GRANDE BOULEVARD.
ELEVATION = 615.833 METERS (NAVD83 PUBLISHED)
ELEVATION = 2020.45 U.S. SURVEY FEET (NAVD83 CALCULATED)

DEVELOPER:
PITTMAN CHANNEL L.L.C.
3225-B RAINBOW BLVD., SUITE 204
LAS VEGAS, NV 89146
702-870-7068
CONTACT NAME: RYAN ARNOLD

SHEET INDEX	
G-1	COVER SHEET
G-2	GENERAL NOTES, ABBREVIATIONS, LEGEND
G-3	KEYMAP, HORIZONTAL CONTROL TABLES & SURVEY CONTROL POINT TABLE
SD-1	CHANNEL PLAN & PROFILE, STA 10+00 THRU 20+00
SD-2	CHANNEL PLAN & PROFILE, STA 20+00 THRU 26+65
SD-3	LATERAL PLAN & PROFILE-60" RCP
SD-4	CHANNEL CROSS SECTIONS
SS-1	8" SANITARY SEWER RELOCATION, PLAN & PROFILE
F-1	FENCING PLAN
S-1	STRUCTURE NOTES AND QUANTITIES
S-2	TRANSITION STRUCTURE NO. 1 - PLAN & ELEVATION
S-3	TRANSITION STRUCTURE NO. 1 - SECTION & DETAILS
S-4	14 FT X 10 FT RCB, SECTION & DETAILS
S-5	TRANSITION STRUCTURE NO. 2 - PLAN, ELEVATION & SECTION
S-6	VANE WALL CHANNEL - PLAN & ELEVATION
S-7	CHANNEL SECTIONS AND DETAILS
S-8	COLLECTION STRUCTURE NO. 1 - PLAN & SECTIONS
S-9	INFLOW APRON - SECTION & DETAILS
S-10	COLLECTION STRUCTURE NO. 2 - PLAN, ELEVATION & SECTION
S-11	TYPICAL SECTIONS AND DETAILS
S-12	TYPICAL CHANNEL AND RCB SECTION
S-13	SAFETY CABLE RAILING DETAILS

Call before you Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES RETAILMENT



ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.19 OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDCSS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES. ESN.004

REVISIONS

No.	Date	By	App'd

DESIGNED:	EC
DRAWN:	EC
CHECKED:	DD
JOB No:	24172E
DATE:	8/16/07
BY:	DD
DATE:	8/16/07

Carter Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
5555 S. Durango Road
Las Vegas, Nevada 89119
(702) 838-5400 Fax (702) 838-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: COVER SHEET

CITY OF HENDERSON STANDARD GENERAL NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1988, AND THE UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1988 (REVISED 10/14/04).
- APPLICATION FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICES WILL BE REQUIRED, 287-3144.
- WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SUBSEQUENT CONSTRUCTION.
- PRIOR TO FINAL ACCEPTANCE, BOND RELEASES, AND A CERTIFICATE OF OCCUPANCY, A CERTIFIED LEGIBLE AS-BUILT DRAWING MUST BE SUBMITTED TO THE CITY OF HENDERSON. AS-BUILT MUST SHOW ALL CHANGES AND ACTUAL FIELD LOCATIONS. IN THE ABSENCE OF CHANGES, A COPY OF APPROVED DRAWINGS WILL BE REQUIRED. DRAWINGS MUST BE INSTALLED AS PER DRAWINGS AND CERTIFIED AS SUCH BY THE DEVELOPER'S ENGINEER.
- APPROVAL OF THESE PLANS IS FOR THE CONSTRUCTION OF OFFSITE IMPROVEMENTS ONLY. ALL ONSITE IMPROVEMENTS, INCLUDING BLOCK WALLS, MUST BE APPROVED BY THE CITY OF HENDERSON BUILDING DEPARTMENT AND COMMUNITY DEVELOPMENT DEPARTMENT.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. THE EXTENT OF TRANSITIONS IS TO BE DETERMINED BY THE CITY ENGINEER.
- EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
- 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 CITY OF HENDERSON.
- WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING NO. 235. EXACT LOCATION OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CITY INSPECTOR, OR AS SHOWN ON PLAN.
- CURB AND GUTTER WITH A GRADE OF LESS THAN FIVE-TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
- ALL GRADING SHALL CONFORM TO THE SOILS REPORT:
ENGINEER: WESTERN TECHNOLOGIES, INC.
DATE: DECEMBER 18, 2003
JOB NUMBER: 41232116
- EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT.
- ALL STREET STRUCTURAL SECTIONS SHALL BE PER THE RECOMMENDATIONS OF THE SOILS ENGINEER. BASED ON COR OR R-VALUES. NO PAVING OR BASE WORK SHALL COMMENCE UNTIL A STREET STRUCTURAL SECTION IS APPROVED BY THE CITY ENGINEER, CITY OF HENDERSON.
- BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING PUBLIC STREETS IMMEDIATELY AFTER THE FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED. ALL CONSTRUCTION SIGNING, BARRICADEING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" - CURRENT EDITION AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" - CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.
- WHERE EXISTING PAVEMENT IS OUT TO INSTALL UTILITY SERVICE LINES, BACKFILL AND PAVEMENT REPLACEMENT SHALL BE DONE PER CLARK COUNTY AREA STANDARD DRAWINGS 502, 503, 504 AND SECTIONS 200, 207, AND 208 OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, THIRD EDITION.
- ALL STATIONING IS REFERENCED TO CENTERLINE.
- EXACT LOCATION OF ALL SANITARY LINES SHALL BE DETERMINED IN THE FIELD BY A CITY OF HENDERSON PUBLIC WORKS INSPECTOR.
- PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE CITY OF HENDERSON SURVEY DIVISION'S SATISFACTION.
- AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CALL BEFORE YOU DIG, 1-800-227-2800.
- MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S UTILITY STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
- CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY 20.
- ALL OFFSITE AND ONSITE WATER AND SEWER FACILITIES UP TO WITHIN 5 FEET OF BUILDINGS SHALL BE CONSTRUCTED TO PUBLIC WORKS STANDARDS.
- IF SEWER OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS REQUIRE REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH THE CITY OF HENDERSON'S UTILITY DEPARTMENT STANDARDS. CURBS AND GUTTERS AND SPECIAL PAVING REPAIRS SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER'S ASSOCIATION.
- IF SIGNS ARE PRESENT ON THIS CONSTRUCTION SITE, PLEASE CONTACT THE SIGN COMPANY LISTED ON THE SIGN 24 HOURS PRIOR TO COMMENCING CONSTRUCTION IN THE SIGN'S LOCATION. CITY OWNED AND CITY SPONSORED SIGNS (HIGHS) SHALL BE REMOVED AND REPLACED FOLLOWING CONSTRUCTION IN THEIR ORIGINAL LOCATION IN LIKE-NEW CONDITION AT CONSTRUCTION CONTRACTOR'S EXPENSE. ANY CONTRACTOR HAVING TO REMOVE A SIGN, WHICH WAS DAMAGED PRIOR TO THE CONTRACTOR OCCUPYING THE SITE, SHALL ARRANGE FOR VERIFICATION OF THE SIGN'S CONDITION BY A CITY INSPECTOR PRIOR TO REMOVAL. ALL SIGNS NOT PREVIOUSLY VERIFIED BY A CITY INSPECTOR SHALL BE ASSUMED TO BE IN LIKE-NEW CONDITION PRIOR TO REMOVAL.
- THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH THE NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP (775) 687-9428.

CITY OF HENDERSON SEWER NOTES

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IN ALL CASES, THESE STANDARDS SHALL SUPERSEDE THE UNIFORM STANDARD SPECIFICATIONS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATION BOOKS.
- THESE STANDARDS SHALL APPLY TO ALL CONSTRUCTION.
- SEWER MAINS ONLY TO BE Laid IN SEWER TRENCHES.
- ALL LATERALS TO BE Laid AT NOT LESS THAN MINIMUM SLOPES AS SHOWN IN THESE STANDARDS.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLAN. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET THE APPROVAL OF THE CONTROLLING AGENCY.
- SOIL TESTING SHALL BE IN ACCORDANCE WITH SECTION 3.11 OF THESE STANDARDS.
- ALL EXFILTRATION, INFILTRATION, AIR TESTING AND TELEVISION OF LINES SHALL BE IN ACCORDANCE WITH THESE STANDARDS.
- CUT SHEETS MUST BE SUBMITTED TO THE AGENCY BEFORE CONSTRUCTION WILL BE PERMITTED TO START.
- ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CONTROLLING AGENCY MUST BE CLASS "A" CONTRACTORS.
- ALL HOUSE LATERALS TO BE Laid AT A MINIMUM OF 2 PERCENT SLOPE AND SHALL CONFORM TO STANDARDS FOR CONSTRUCTION OF OFF-SITE IMPROVEMENTS IN THE CLARK COUNTY AREA.

CITY OF HENDERSON WATER NOTES

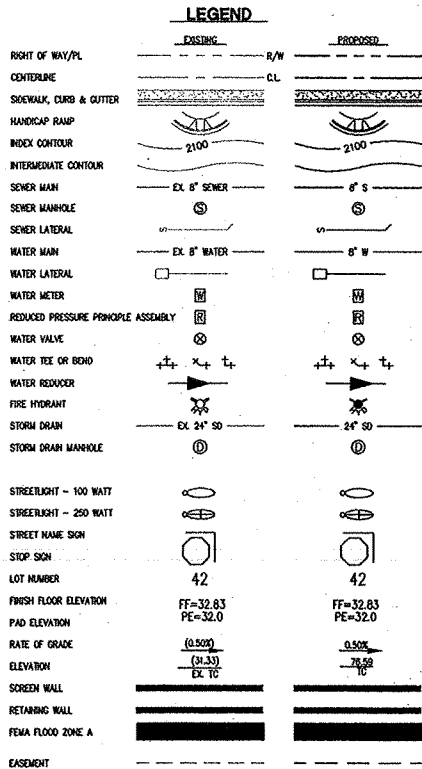
- NO WORK SHALL BEGUN UNTIL THE PLANS HAVE BEEN RELEASED FOR CONSTRUCTION BY THE CITY. FOLLOWING WATER PLAN APPROVAL, A MINIMUM 48-HOUR NOTICE SHALL BE GIVEN TO THE CITY'S QUALITY CONTROL SECTION PRIOR TO THE START OF CONSTRUCTION. NOTICE MUST BE GIVEN TO THE CITY NO LATER THAN 2:00 P.M. OF THE BUSINESS DAY PRIOR TO ANY REQUESTED INSPECTION, SUBSEQUENT TO THE START OF CONSTRUCTION.
- ALL WORK SHALL CONFORM TO THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS, 2nd EDITION (2003), INCLUDING THE CITY OF HENDERSON ADDENDUM.
- A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE CITY.
- ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K SOFT COPPER OR TUBE SIZE POLYETHYLENE PIPE (200 PSI, PE 3408, SDR-9, ASTM D-2737). PIPE MATERIAL AND SERVICE SADDLES SHALL BE SELECTED FROM THE CITY'S APPROVED MATERIALS LIST FOR WATER DISTRIBUTION SYSTEMS. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN A COMPLETE AND UPDATED COPY OF THIS APPROVED MATERIALS DOCUMENT.
- ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
- ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB CUTTERS.
- 14 GAUGE SOLID COPPER WIRE FOR LINE LOCATION SHALL BE REQUIRED UNDER ALL MAINS, ALL SIX (6) INCH DIAMETER AND LARGER SERVICE LATERALS, AND ANY SERVICE LATERAL NOT INSTALLED PERPENDICULAR TO THE MAIN (SEE CITY OF HENDERSON ADDENDUM FOR SECTION 3.11). ADDITIONALLY, LOCATOR BALLS MAY BE REQUIRED PER CITY REQUIREMENTS.
- ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO ALLOWING CONNECTION TO THE CITY'S DISTRIBUTION SYSTEM.
- ALL METERS SHALL BE PAID FOR BY OWNER/BUILDER AND PROVIDED BY THE CITY. THE ONLY EXCEPTION IS CONSTRUCTION FIRE & DOMESTIC SERVICES 6" AND LARGER. ALL METERS SHALL BE SELECTED FROM THE CITY'S APPROVED MATERIALS LIST FOR WATER DISTRIBUTION SYSTEMS. METERS 2" AND LARGER THAT ARE PROVIDED BY THE CITY WILL BE DELIVERED TO SITE BY THE CITY AND INSTALLED BY THE CONTRACTOR.
- ALL FLANGED DUCTILE IRON FITTINGS TO BE COATED WITH EC-244 AND WRAPPED WITH 120 MIL THICK POLYETHYLENE.
- ALL VALVE BOXES SHALL HAVE CONCRETE COLLARS AT THE SURFACE OF THE PAVED AREAS, PER CLARK COUNTY AREA UNIFORM STANDARD DRAWING NUMBER 517.
- WATER METER BOXES THAT ARE INSTALLED WITHIN LANDSCAPED AREAS SHALL BE INSTALLED WITH REINFORCED CONCRETE COLLARS PER CLARK COUNTY AREA UNIFORM STANDARD DRAWING NO. 326.
- NO OTHER UTILITY LINES MAY BE PLACED IN THE SAME TRENCH WITH WATER LINES.
- BLUE REFLECTORS ARE REQUIRED AND MUST BE INSTALLED AT THE CENTERLINE OF THE NEAREST DRIVING LANE TO ALL FIRE HYDRANTS, AND MUST BE PERPENDICULAR TO THE HYDRANT.
- ALL WATER LINES INSTALLED ON ANY PROJECT SHALL BE A MINIMUM CLASS 150.
- ANY CONFLICT WITH EXISTING UTILITIES SHALL BE IMMEDIATELY CALLED TO THE ATTENTION OF THE ENGINEER.
- UNLESS OTHERWISE APPROVED BY THE CITY, ALL PIPING 4 INCHES IN DIAMETER AND LARGER SHALL BE EITHER PVC D-300 OR DUCTILE IRON PIPE. ALL PIPING 2 INCHES IN DIAMETER AND LESS SHALL BE EITHER TUBE SIZE POLYETHYLENE PIPE OR TYPE K SOFT COPPER TUBING.
- LANDSCAPING AND IRRIGATION ADJACENT TO VAULTS SHALL BE INSTALLED IN SUCH A MANNER WHEREBY IRRIGATION WATER DRAINS AWAY FROM THE VAULTS. ALL VAULTS LOCATED BEHIND CURB OR SIDEWALK MUST BE BUILT WITH THE OPENING DESIGNED TO PROVIDE UNOBSTRUCTED ACCESS FROM THE CURB / STREET SIDE OF THE VAULT.
- CONTRACTOR SHALL PROVIDE APPURTENANCES TO PERFORM PRESSURE TEST AND DISINFECTION AS REQUIRED BY THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS.
- THE CONTRACTOR SHALL BE ADVISED THAT WATER SERVICE TO EXISTING CUSTOMERS SHALL REMAIN IN SERVICE AT ALL TIMES DURING CONSTRUCTION. LINE STOPS MAY BE REQUIRED IN ORDER TO MAINTAIN EXISTING CUSTOMERS IN SERVICE. GIVEN THIS, HE SHALL PLAN HIS WORK ACCORDINGLY. HOWEVER, IF THE CITY HAS DETERMINED THAT SERVICE MUST BE DISRUPTED IN ORDER TO ACCOMPLISH THE PROPOSED WORK, THE CONTRACTOR SHALL FOLLOW THE CITY'S ESTABLISHED PROCEDURE FOR WATER MAIN SHUTDOWNS. CIRCUMSTANCES MAY ALSO REQUIRE TEMPORARY SERVICE FEEDS TO BE INSTALLED. IF SO, THE COST FOR SUCH TEMPORARY SERVICE FEEDS SHALL BE 100% BORNE BY THE CONTRACTOR. ANY TEMPORARY SERVICE FEED MUST RECEIVE SPECIFIC APPROVAL FROM THE CITY.
- ALL CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE CITY'S APPROVED MATERIALS LIST FOR WATER DISTRIBUTION SYSTEMS, OR AS SPECIFICALLY APPROVED ON THESE PLANS.
- THE CITY OF HENDERSON REQUIRES THAT ALL SERVICE INSTALLATIONS INCLUDE A PERFORATED SPACER (IN LIEU OF AN ELBOW) TO BE INCLUDED ON ALL METER SETTINGS UNTIL SUCH TIME THAT A METER IS INSTALLED ON THAT SERVICE. AT NO TIME SHALL THE CONTRACTOR BE ALLOWED TO INSTALL OR UTILIZE A SOLID-PIECE SPACER OR ANY OTHER TYPE OF FITTING THAT WILL ENABLE WATER TO FLOW THROUGH THE SERVICE.
- ALL VALVE BOXES, LIDS, MANHOLES AND APPURTENANCES SHALL BE BROUGHT TO WITHIN 1/8" TO 1/4" BELOW FINAL STREET GRADE.

CITY OF HENDERSON TRAFFIC NOTES

- ANY EXISTING TRAFFIC CONTROL DEVICES AND/OR SIGNS SHALL BE MAINTAINED DURING THE PERIOD OF CONSTRUCTION AND SHALL BE REPOSITIONED, AS REQUIRED, PER M.U.T.C.D. AND CITY STANDARDS, UPON COMPLETION OF THE PROJECT.
- DEVELOPERS/CONTRACTORS ARE RESPONSIBLE FOR SUBMITTING TRAFFIC CONTROL BARRICADEING PLANS NOT LESS THAN THREE (3) WORKING DAYS BEFORE OBSTRUCTING AND BEGINNING OF CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING SIDEWALKS. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR WILL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR WILL INSTALL TEMPORARY GROUND MOUNTED STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND WILL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
- LOCATION AND DESCRIPTION OF NEW AND EXISTING TRAFFIC CONTROL DEVICES, STREET STOPPING, MEDIAN ISLANDS, DRIVEWAYS AND TRAFFIC SIGNALS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY FOR APPROVAL. ALL NEW TRAFFIC SIGNS WILL BE FABRICATED WITH DIAMOND GRADE WP (CLASS 8) REFLECTIVE SHEETING. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME SIGNS, WILL HAVE "Y-CAL" OR 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE FILM.
- LOCATION AND DESCRIPTION OF NEW AND EXISTING STREET NAME SIGNS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY FOR APPROVAL. STREET NAME SIGNS WILL COMPLY WITH CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS NO. 240, 250 AND 251. ALL STREET NAME SIGNS WILL BE FABRICATED WITH DIAMOND GRADE WP (CLASS 8) REFLECTIVE SHEETING. ALL INTERSECTIONS WITH 100 FOOT OR GREATER RIGHT-OF-WAY ROADWAYS WILL HAVE THE CITY OF HENDERSON LOGO ON BOTH STREET NAME PANELS. CONTACT CITY OF HENDERSON TRAFFIC SERVICES MAINTENANCE THREE (3) WORKING DAYS IN ADVANCE, MONDAY THROUGH THURSDAY, AT 267-3200 TO RECEIVE LOGO TO BE APPLIED BY THE CONTRACTOR TO THE STREET NAME PANELS PER CITY OF HENDERSON STANDARD DETAIL. PRIVATE STREETS SHALL HAVE BROWN BACKGROUND.
- BLUE REFLECTORIZED PAVEMENT MARKINGS MUST BE INSTALLED AND CURB MUST BE PAINTED AT EVERY FIRE HYDRANT LOCATION PER CITY OF HENDERSON FIRE DEPARTMENT STANDARDS.
- ALL CONSTRUCTION SIGNING, BARRICADEING, AND PAVEMENT MARKINGS WILL CONFORM TO THE NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK - 1988 AND TO THE CURRENT EDITION OF THE MUTCD WITH ANY ADDENDAS AND REVISIONS.
- WHERE STREETS END AT THE PROJECT BOUNDARY, THREE (3) 18-INCH DIAMOND (MINIMUM), REFLECTORIZED, RED PANELS SHALL BE INSTALLED AT THE END OF THE ROADWAY AND MAINTAINED UNTIL ADJOINING PROJECT IS BUILT.
- IF THE IMPROVEMENTS NECESSITATE THE OBSTRUCTION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKINGS, SUCH PAVEMENT MARKINGS MUST BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
- THE FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.) MAY HAVE UNDERGROUND FACILITIES IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL FAST INFRASTRUCTURE ON ROADWAYS WITH RIGHT-OF-WAYS OF 60' AND GREATER. CONTACT F.A.S.T. AT (702) 432-5300, 72 HOURS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES IN THE AREA OF THEIR FACILITIES. FAST INTERCONNECT POLICY IS IN EFFECT. INTERCONNECT CABLE MUST BE MAINTAINED AT ALL TIMES. DAMAGES WILL BE ASSESSED AFTER 24 HOURS HAS ELAPSED FROM TIME OF BREAK OR DAMAGE PER FAST AND ITC REQUIREMENTS.

QUANTITIES ESTIMATE

PITTMAN MACDONALD RANCH CHANNEL (PUBLIC)			
ITEM	DESCRIPTION	QUANTITY	UNIT
1	EXCAVATION & EMBANKMENT	14,000	CY
2	GRAVEL RIPPAP	158	CY
3	2" AC PAVEMENT	420	SY
4	3" AC PAVEMENT	1,470	SY
5	TYPE II AGG BASE	110	CY
6	TYPE II AGG BASE BEDDING	708	CY
7	18" RCP	60	LF
8	30" RCP	30	LF
9	60" RCP	382	LF
10	BOX ACCESS MANHOLE	1	EA
11	TEE MANHOLE REINFORCED CONCRETE	2	EA
12	TRANSITION STRUCTURE NO. 1	191	CY
13	14" X 10" RCB	608	CY
14	TRANSITION STRUCTURE NO. 2	100	CY
15	24" X 10" CHANNEL	1,447	CY
16	COLLECTION STRUCTURE 1	58	CY
17	COLLECTION STRUCTURE 2	51	CY
18	CONCRETE INFLOW APRON	20	CY
19	POST & CABLE RAILING	1,875	LF
20	CHAIN LINK FENCE	1,290	LF
21	12" CHAIN LINK DOUBLE SWING GATE	2	EA
22	5" CHAIN LINK GATE	1	EA
23	ABANDON SEWER	208	LF
24	8" PVC SEWER	640	LF
25	SANITARY SEWER MANHOLE	5	EA
26	12" COMMERCIAL DRIVEWAY	100	SF
27	RECONSTRUCT SANITARY MANHOLE	1	EA
28	REMOVE EXISTING SEWER MANHOLE	1	EA



ABBREVIATIONS

AC	ASPHALTIC CONCRETE	JT	JOINT
AB	AGGREGATE BASE	LAT	LATERAL
BC	BACK OF CURB	LF	LINEAL FEET
BOR	BEHIND CURB RETURN	LT	LEFT
BORY	BOUNDARY	MAX	MAXIMUM
BEG	BEHIND	MH	MANHOLE
BF	BACK FACE	MIR	MIRANDA
BM	BENCHMARK	NN	NORTH
BOB	BASES OF BEARING	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
BW	BACK OF SIDEWALK	OP	OVERHEAD POWER
BVC	BEGIN VERTICAL CURVE	PC	POINT OF CURVATURE
CD	CENTER LINE	PCC	POINT OF COMPOUND CURVE
CLR	CLEARANCE	PIC	POINT OF INTERSECTION
CLO	CLEAR OUT	POC	POINT ON CURVE
CONC	CONCRETE	PP	POWER POLE
CONST	CONSTRUCT	PRC	POINT OF REVERSE CURVE
CSHWS	DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS	PROP	PROPOSED
		PT	POINT OF TANGENCY
		PVC	POLYVINYL CHLORIDE
		PVAT	PAVEMENT
DI	DROP INLET	R33	REINFORCED CONCRETE BOX
DIA	DIAMETER	RCP	REINFORCED CONCRETE PIPE
DWG	DRAWING	ROW	RIGHT-OF-WAY
E	ELECTRIC/EAST	RT	RIGHT
EL	EACH FACE	SH	SLOPE/SOUTH
ED	EXISTING GROUND/GRADE	SS	SANITARY SEWER
EP	EDGE OF PAVEMENT	SSMH	SANITARY SEWER MANHOLE
EQ	EQUAL	ST	STATION
ESMT	EASEMENT	STMH	STORM DRAIN MANHOLE
EV	END VERTICAL CURVE	SPAC	SPACING
EX EXIST	EXISTING	STA	STATION
FC	FACE OF CURB	STLT	STREET LIGHT
FF	FINISH FLOOR/FRONT FACE	SW	SIDEWALK
FO	FINISH GRADE	TC	TOP OF CURB
FR	FIRE HYDRANT	TEL	TELEPHONE
FL	FLOW LINE	TMH	TOP OF MANHOLE
G	GRASS	TRANS	TRANSITION
GALV	GALVANIZED	TRD	TYPICAL
GO	GRADE BREAK	USD	UNIFORM STANDARDS DRAWING
HP	HIGH POINT	VC	VALLEY CUTTER
HOL	HYDRAULIC GRADE LINE	W	WATER/REST
INV	INVERT		

FLOOD ZONE DATA

ZONE "A", THIS PROJECT LIES WITHIN ZONE "A", A SPECIAL FLOOD HAZARD AREA INUNDATED BY THE 1% ANNUAL (100-YEAR) CHANCE FLOOD EVENT, OF WHICH NO BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED, AND AS SHOWN ON FIRM MAP NO. 32003C2529 E, MAP REVISED: SEPTEMBER 27, 2002.

NOTE:

ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

Steven V. Bahamini P.E.
FOR NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY 7/1/09.

Carter :: Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6855 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

GENERAL NOTES, ABBREVIATIONS, & LEGEND

G-2

KIVA # PCVL 2007870029

07309

2 OF 22

Call before you Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

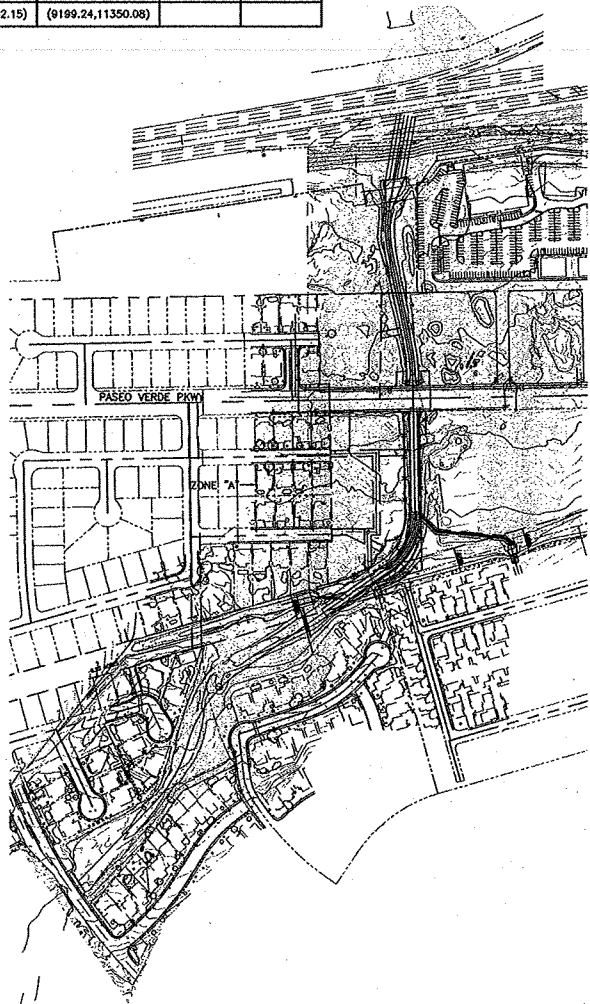


CHANNEL LINE TABLE					
L#	LENGTH	BEARING	ST (N.E)	END (N.E)	START STA
L1	73.00'	S11°04'19.99"W	(10379.63,11352.41)	(10307.99,11338.39)	10+02.97
L2	294.52'	S11°50'00.10"E	(10149.47,11338.30)	(9881.20,11398.69)	12+35.60
L3	34.64'	S0°59'04.80"E	(9767.26,11409.24)	(9732.63,11409.84)	16+24.79
L4	80.06'	S0°59'18.99"E	(9732.63,11409.84)	(9652.56,11411.22)	16+59.43
L5	327.48'	S0°59'05.00"E	(9652.56,11411.22)	(9325.12,11416.85)	17+39.52
L6	247.00'	S55°12'23.87"W	(9157.53,11331.12)	(9016.58,11128.28)	22+63.00
LATERAL 1 LINE TABLE					
L#	LENGTH	BEARING	ST (N.E)	END (N.E)	START STA
L7	78.97'	S45°53'49.38"E	(9328.49,11428.79)	(9273.53,11485.50)	10+17.00
L8	217.00'	S84°29'08.82"E	(9273.53,11485.50)	(9252.67,11701.50)	10+95.97
L9	22.00'	S50°28'20.08"E	(9252.67,11701.50)	(9238.67,11718.47)	13+12.97
L10	3.33'	S15°56'13.76"E	(9238.67,11718.47)	(9235.47,11719.38)	13+34.97
LATERAL 2 LINE TABLE					
L#	LENGTH	BEARING	ST (N.E)	END (N.E)	START STA
L11	61.14'	N85°39'31.41"W	(9080.98,11171.14)	(9065.60,11110.18)	10+19.01
SEWER LINE TABLE					
L#	LENGTH	BEARING	ST (N.E)	END (N.E)	START STA
L100	102.01'	N80°00'00.00"E	(9520.84,11394.48)	(9520.84,11394.48)	13+47.03
L101	223.27'	S0°27'27.57"E	(9520.84,11394.48)	(9297.58,11396.27)	14+49.04
L102	108.64'	S25°09'32.48"W	(9297.58,11396.27)	(9199.24,11350.08)	16+72.31
L103	117.85'	S53°02'49.82"W	(9199.24,11350.08)	(9128.40,11255.90)	17+80.95
L104	72.22'	S38°27'19.52"E	(9128.40,11255.90)	(9071.84,11300.82)	18+98.80
L105	20.00'	S83°41'46.94"E	(9028.11,11332.15)	(9199.24,11350.08)	19+71.02

CHANNEL CURVE TABLE					
C#	RADIUS	LENGTH	DELTA ANG	ST (N.E)	END (N.E)
C100	500.00'	28.57'	3°16'25.99"	(10307.99,11338.39)	(10279.81,11333.70)
C101	382.50'	131.06'	19°37'53.92"	(10279.81,11333.70)	(10149.47,11338.30)
C102	500.00'	94.67'	10°50'55.31"	(9767.26,11409.24)	(9732.63,11409.84)
C103	200.00'	166.00'	56°08'59.51"	(9325.12,11416.85)	(9157.53,11331.12)
SURVEY CONTROL POINTS					
POINT	(NORTHING,EASTING)	DESCRIPTION			
△	(9668.12,9988.86)	MONUMENT AT THE INTERSECTION OF ARROYO GRANDE BLVD & PASEO VERDE PKWY			
△	(9713.73,12821.17)	MONUMENT AT THE INTERSECTION OF STEPHANIE ST & PASEO VERDE PKWY			

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

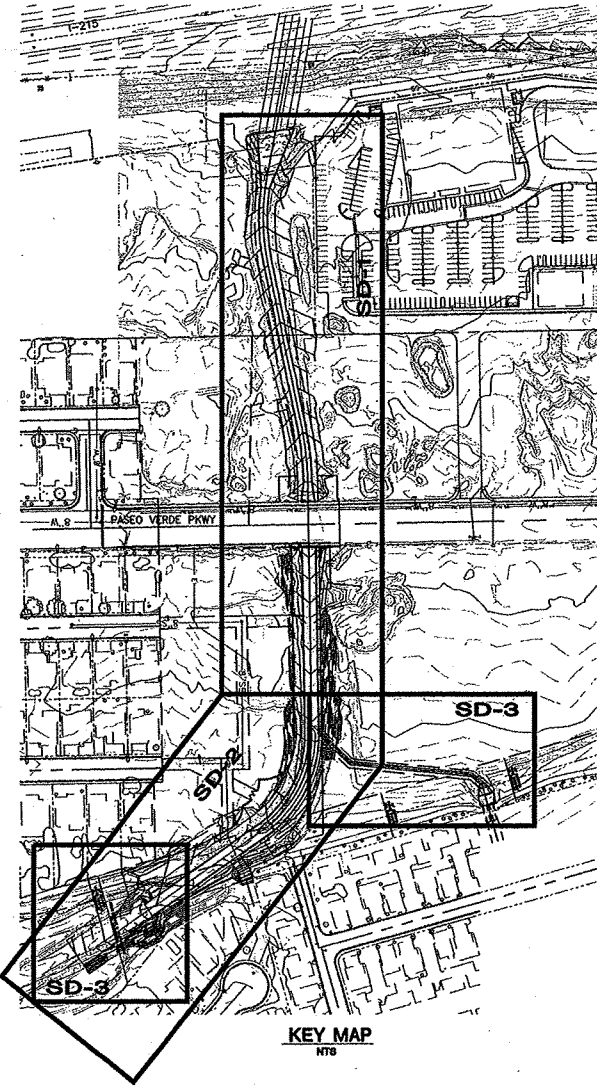
RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.



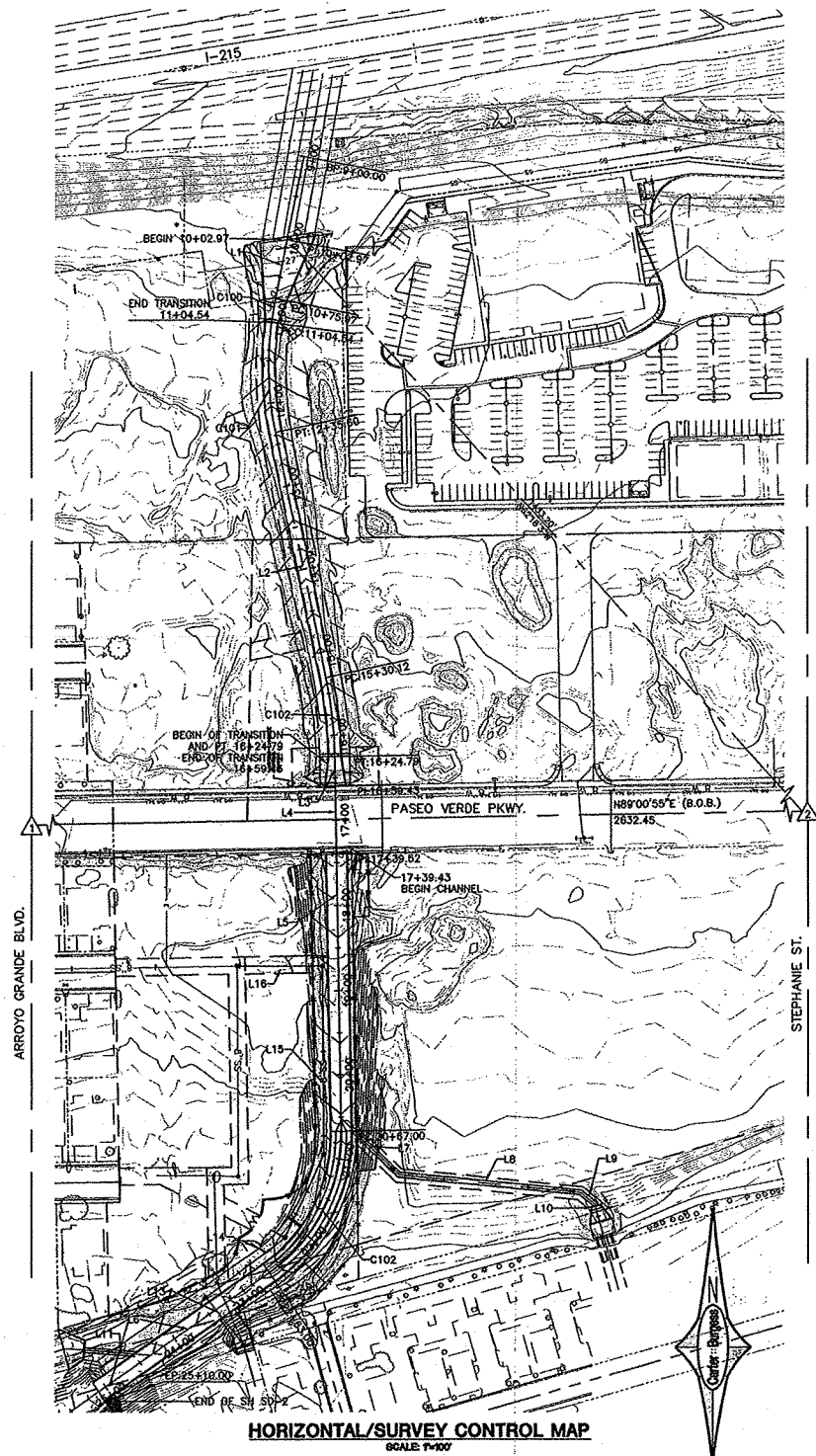
FLOOD ZONE MAP
NTS

FLOOD ZONE DATA

ZONE "A", THIS PROJECT LIES WITHIN ZONE "A", A SPECIAL FLOOD HAZARD AREA INUNDATED BY THE 1% ANNUAL (100-YEAR) CHANCE FLOOD EVENT, OF WHICH NO BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED, AND AS SHOWN ON FIRM MAP NO. 32003C2529 E, MAP REVISED: SEPTEMBER 27, 2002.

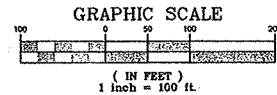


KEY MAP
NTS



HORIZONTAL/SURVEY CONTROL MAP
SCALE: 1"=100'

GENERAL NOTES:
1. CONTRACTOR RESPONSIBLE TO PROVIDE THE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGE, DISTURBED, DESTROYED, OR OBSOURED DURING CONSTRUCTION.



Call before you Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT



BASIS OF BEARING

NORTH 89°00'55" EAST, BEING THE BEARING OF THE CENTERLINE OF PASEO VERDE PARKWAY AS SHOWN ON THAT CERTAIN PLAT OF FOOTHILLS RANCH - PHASE 2 ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 73, PAGE 24 OF PLATS, SITUATE IN THE NORTHEAST QUARTER (NE 1/4) OF SECTION 21, TOWNSHIP 22 SOUTH, RANGE 62 EAST, M.D.M., CITY OF HENDERSON, CLARK COUNTY, NEVADA.

BENCHMARK

CITY OF HENDERSON BENCHMARK #333 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF PASEO VERDE PARKWAY AND ARROYO GRANDE BOULEVARD.
ELEVATION = 615.833 METERS (NAVD'88 PUBLISHED)
ELEVATION = 2020.45 U.S. SURVEY FEET (NAVD'88 CALCULATED)

ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 218 OF THE UTILITY DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES. ESR-004

07309

KIVA # PCVL 2007870029

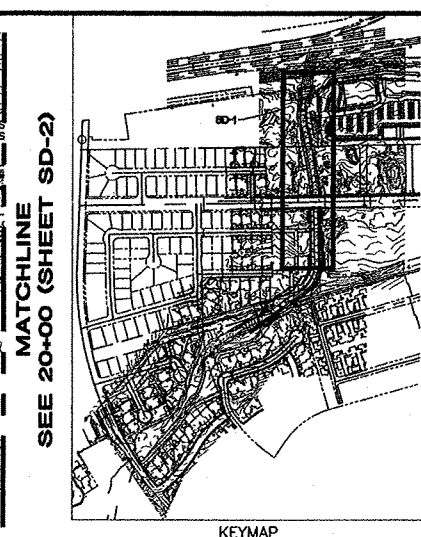
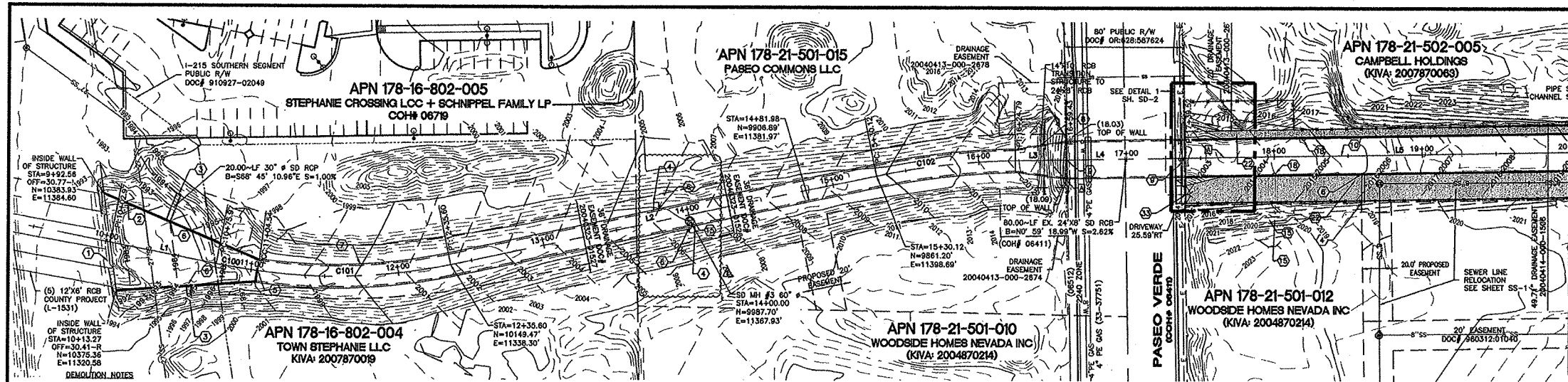
DESIGNED: **AC**
DRAWN: **AC**
CHECKED: **JD**
JOB NO.: 241728
FOUR: 1"=40'
VERT: 1"=4'
DATE: December, 2002

Carter Burgess
Consultants in Planning, Engineering,
Construction Management and Related Services
6855 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

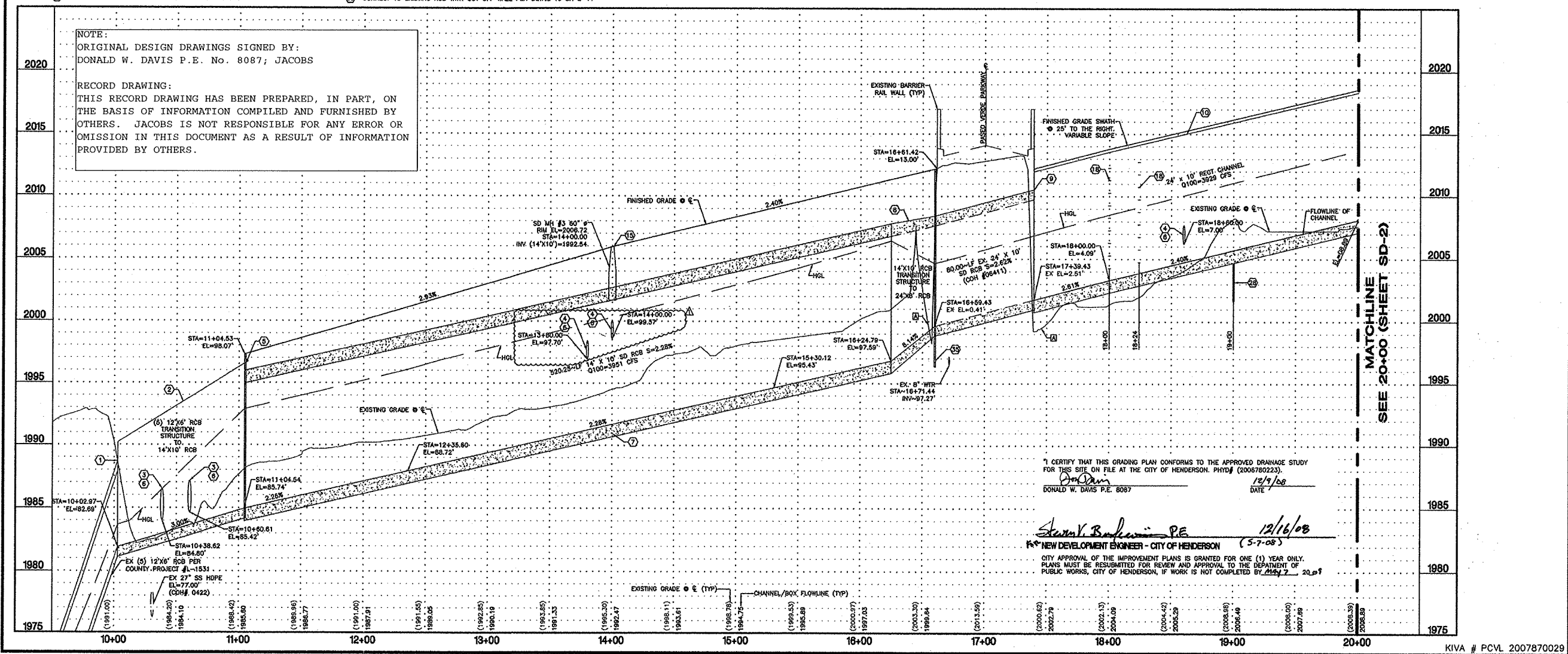
PROJECT: **PITTMAN MACDONALD RANCH CHANNEL**
DESCRIPTION: **KEYMAP, HORIZONTAL CONTROL TABLE, & SURVEY CONTROL POINT TABLE**

07309
3 OF 22

REVISIONS
No. Date
CDED
APPD



- PLAN**
STA 10+00 THRU 20+00
- CONSTRUCTION NOTES**
1. REMOVE EXISTING GROUTED RIPRAP
 2. CONNECT TO EXISTING (5) 12"x8" RCB PER DETAIL 6 ON SH S-11
 3. CONSTRUCT CHANNEL TRANSITION STRUCTURE NO.1 SEE SH S-2 & S-3
 4. CONSTRUCT 20 LF 30" RCP STUB OUT AT S=1.0% W/ END CAP PER USD NO. 504
 5. CONSTRUCT (5) LF 18" RCP STUB OUT AT S=1.0% W/ END CAP PER USD NO. 504
 6. CONSTRUCT HEADWALL PER DETAIL 8 ON SH S-11
 7. CONSTRUCT PIPE CONNECTION PER DETAIL 1 ON SH S-3
 8. CONSTRUCT 14"x10" RCB PER SECTION B ON SH S-12
 9. CONSTRUCT TRANSITION STRUCTURE NO.2 SEE SH S-5
 10. CONNECT TO EXISTING 24"x8" RCB PER DETAIL 6 SH S-11
 11. CONSTRUCT CHANNEL PER SECTION A ON SH S-12
 12. CONSTRUCT BOX ACCESS MANHOLE PER DETAIL 2 ON SH S-4
 13. CONSTRUCT ACCESS LADDERS PER DETAIL 1 ON SH S-13
 14. CONSTRUCT AC PAVEMENT SEE SECTION A ON SH S-12
 15. CONSTRUCT EXPANSION JOINT W/ CUTOFF WALL PER DETAIL 4 ON SH S-11
 16. REMOVE EXISTING CURB, CUTTER AND SIDEWALK AND CONSTRUCT 12" COMMERCIAL DRIVEWAY PER USD DWG NO. 228.2
 17. CONNECT TO EXISTING RCB WITH CUT OFF WALL PER DETAIL 10 SH S-11
- GENERAL NOTES:**
1. CONTRACTOR RESPONSIBLE TO PROVIDE THE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBLISCURED DURING CONSTRUCTION.
- NOTE: LINE AND CURVE DATA (EXAMPLE: L2, C3)**
SEE SHEET G-3



2020
2015
2010
2005
2000
1995
1990
1985
1980
1975

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF HENDERSON. PHD# (2006780223).

Donald W. Davis
DONALD W. DAVIS P.E. 8087

Stuart K. Buchanan
STUART K. BUCHANAN P.E.
NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

12/16/08
(5-7-08)

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY MAY 7, 2009.

PROJECT: PITTMAN MACDONALD RANCH CHANNEL

DESCRIPTION: CHANNEL PLAN AND PROFILE
STA 10+00 THRU 20+00

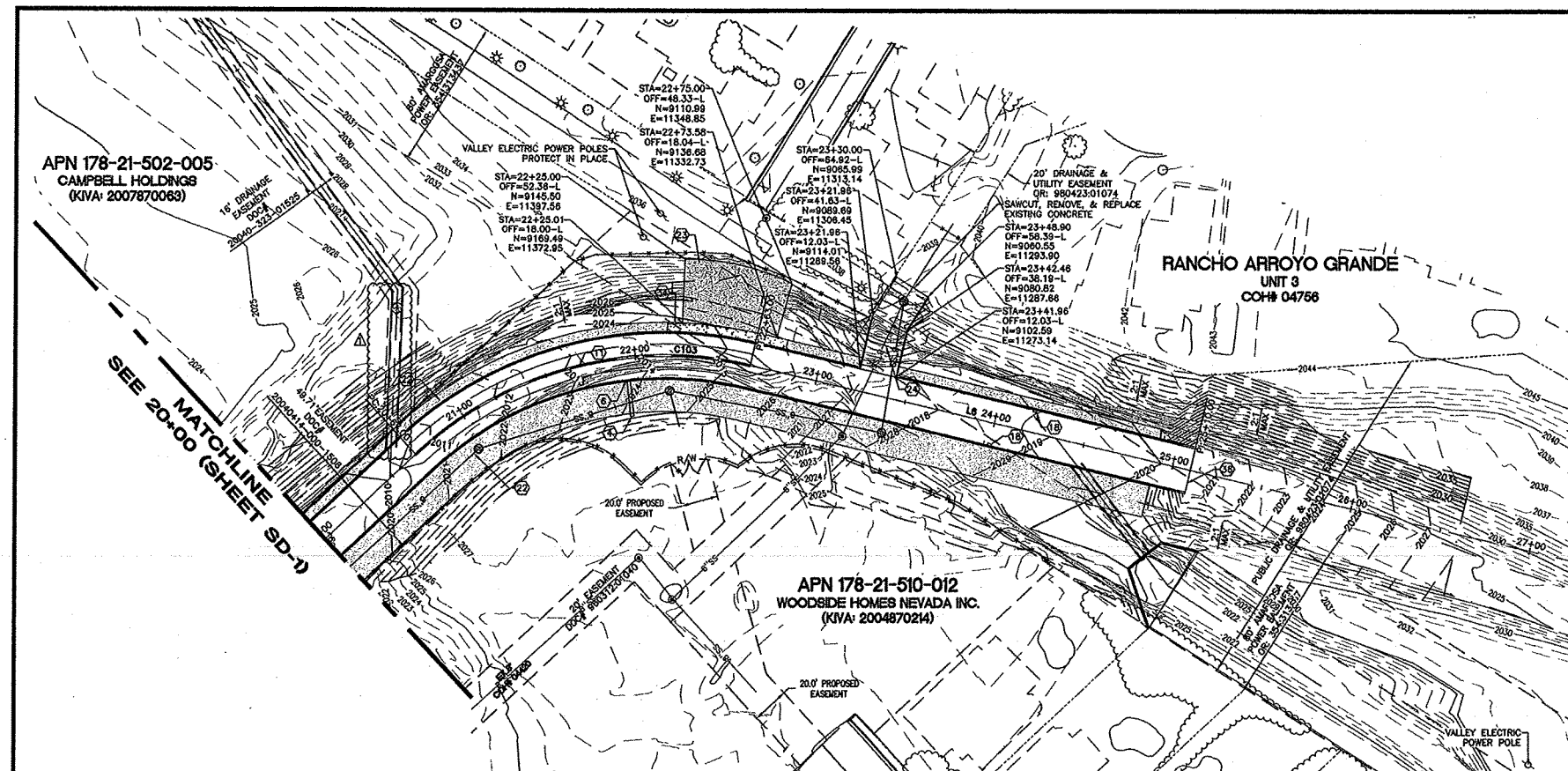
REVISIONS

No.	Date	Revised RCP Stubout Length and Location Added New Stubouts	APPD
1	12/9/08		12/9/08

DESIGNED BY: AC
DRAWN BY: AC
CHECKED BY: DP
DATE: 12/16/08
JOB NO.: 041728
FOOTING: 1"=40'
SCALE: 1"=40'
DATE: December 2008

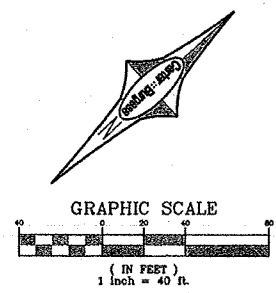
Carler :: Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 838-5400 Fax (702) 838-5454

SD-1
4 OF 22

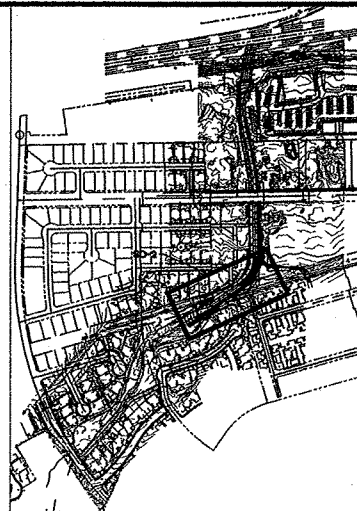


PLAN
STA 20+00 THRU 26+65.28

- CONSTRUCTION NOTES**
- CONSTRUCT 20 LF 18" RCP STUB OUT AT S=1.0% W/ END CAP PER USD NO. 504
 - CONSTRUCT PIPE CONNECTION PER DETAIL 1 ON SH S-3
 - CONSTRUCT CHANNEL WITH CENTER VANE WALL PER SH S-6 & SECTION A-A SH S-7
 - CONSTRUCT 60" RCP PER USD NO.504
 - CONSTRUCT ACCESS LADDERS PER DETAIL 1 ON SH S-13
 - CONSTRUCT AC PAVEMENT SEE SECTION A ON SH S-12
 - CONSTRUCT GROUTED RIPRAP APRON PER DETAIL 2 ON SH S-9
 - CONSTRUCT CONCRETE INFLOW APRON PER DETAIL 1 ON SH S-9
 - CONSTRUCT EXPANSION JOINT W/ CUTOFF WALL PER DETAIL 4 ON SH S-11
 - CONSTRUCT 60" PIPE CONNECTION PER DETAIL 2 ON SH S-7
 - REMOVE EXISTING CURB, GUTTER AND SIDEWALK AND CONSTRUCT 12' COMMERCIAL DRIVEWAY PER USD DWG NO. 226.2
 - CONSTRUCT 5' WIDE 6" THICK CONCRETE ACCESS PATH WITH #4 @ 12" EW STA 22+18 TO 22+78
 - CONSTRUCT CUT OFF WALL AT END OF CHANNEL PER DETAIL 11 ON SH S-11



GENERAL NOTES:
1. CONTRACTOR RESPONSIBLE TO PROVIDE THE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGE, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.



Call before you Overhead
1-702-227-2929
NEVADA POWER OVERHEAD AND SAFETY SERVICES DEPARTMENT



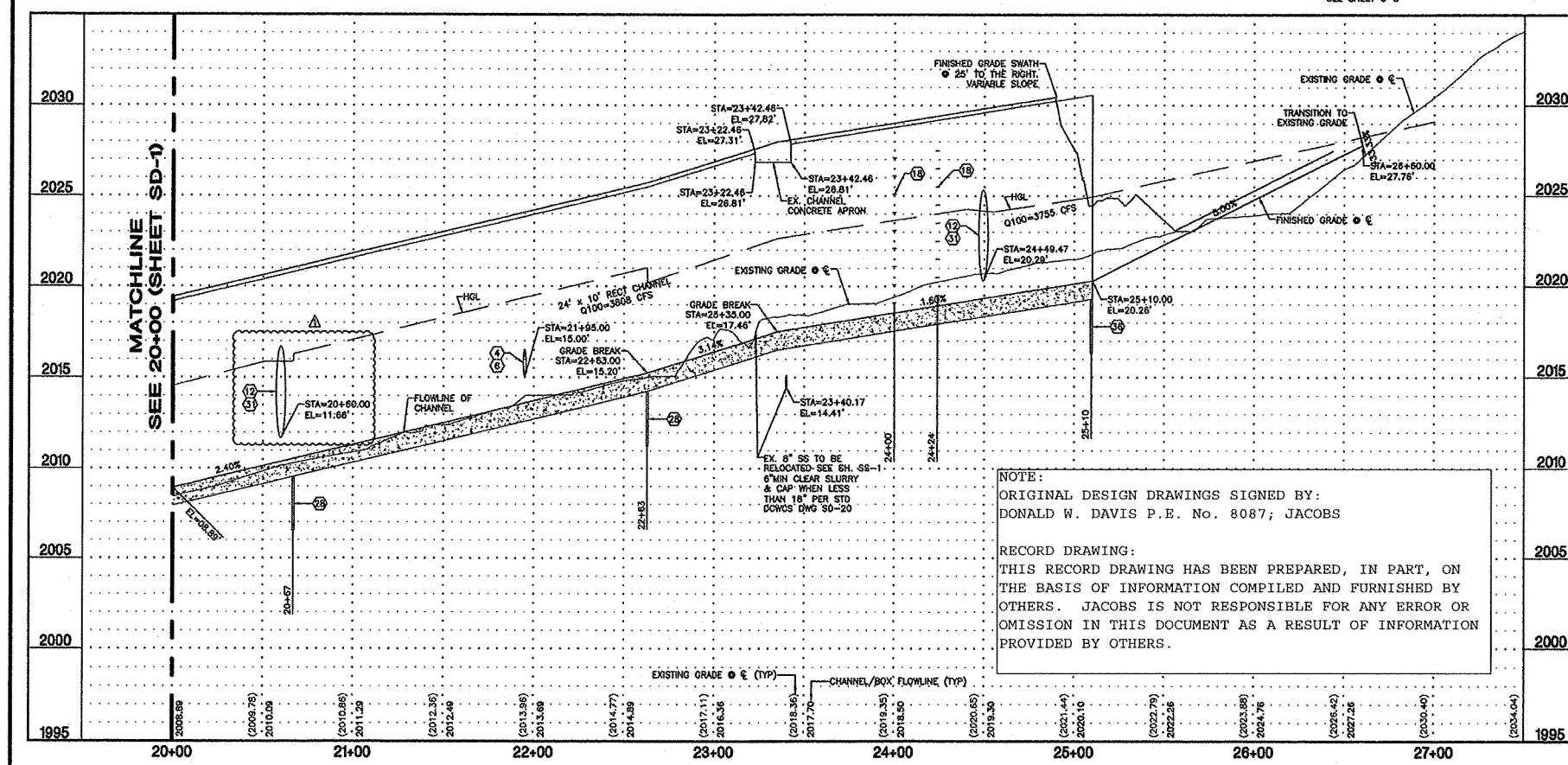
REVISIONS			
No.	Date	Revised in Field	As Shown
1	12/9/08		

DESIGNED BY	DATE	APPROVED BY	DATE
DM	12/16/08	DM	12/16/08
DM	12/16/08	DM	12/16/08
DM	12/16/08	DM	12/16/08
DM	12/16/08	DM	12/16/08

Carter :: Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 698-5400 Fax (702) 698-5454

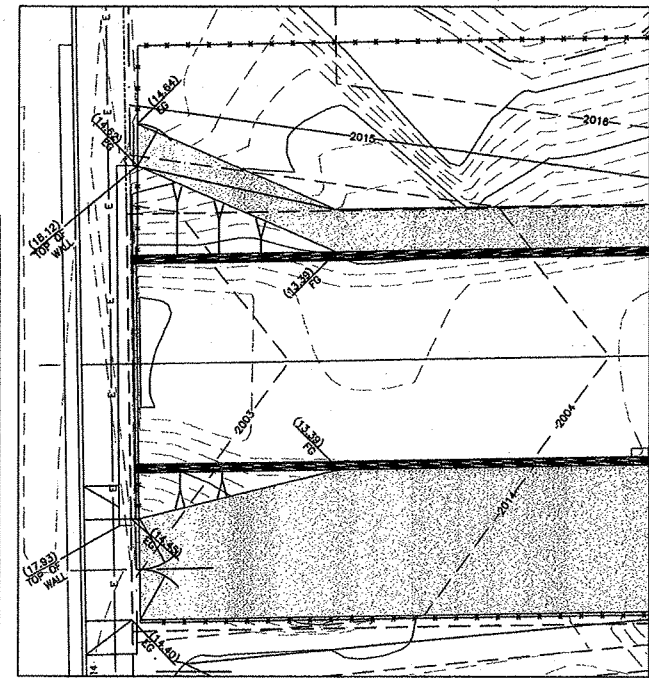
PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: CHANNEL PLAN AND PROFILE STA 20+00 THRU 26+65.00

SD-2
5 OF 22

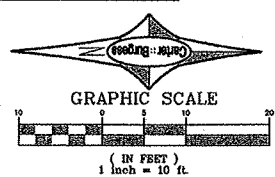


NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

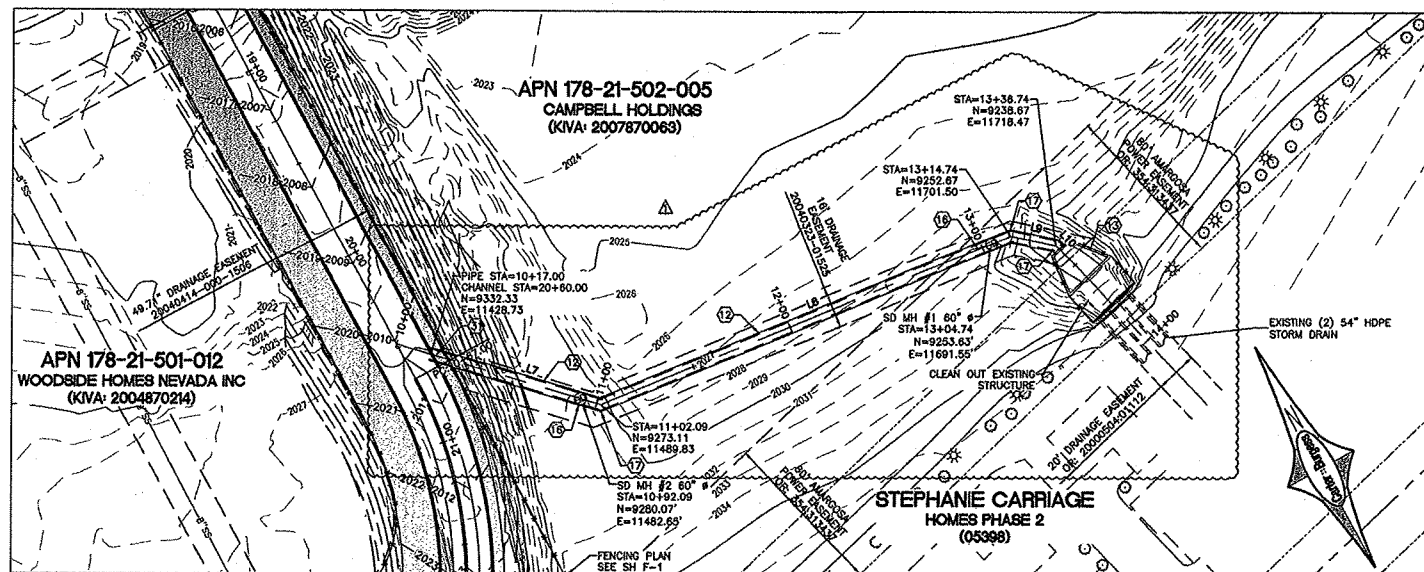


DETAIL 1



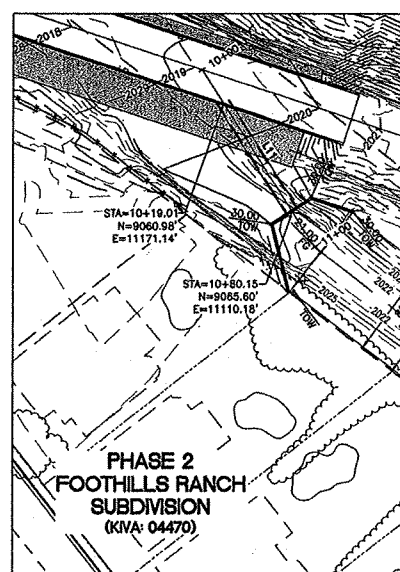
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF HENDERSON. PHOTO# (2008780223).
DONALD W. DAVIS P.E. 8087
DATE 12/16/08

Starn V. Bushaw P.E.
NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON
CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY MAY 7, 2009.



PLAN
60" RCP

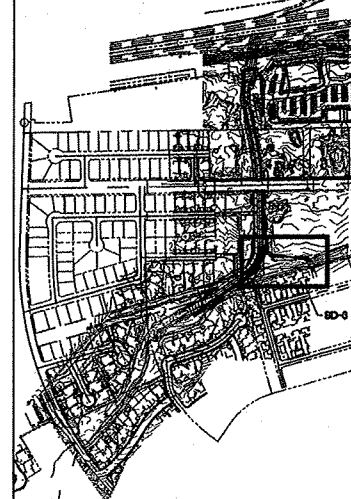
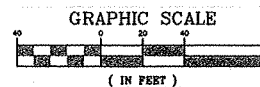
GENERAL NOTES:
1. CONTRACTOR RESPONSIBLE TO PROVIDE THE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGE, DISTURBED, DESTROYED, OR OBSOLETE DURING CONSTRUCTION.



PLAN
60" RCP

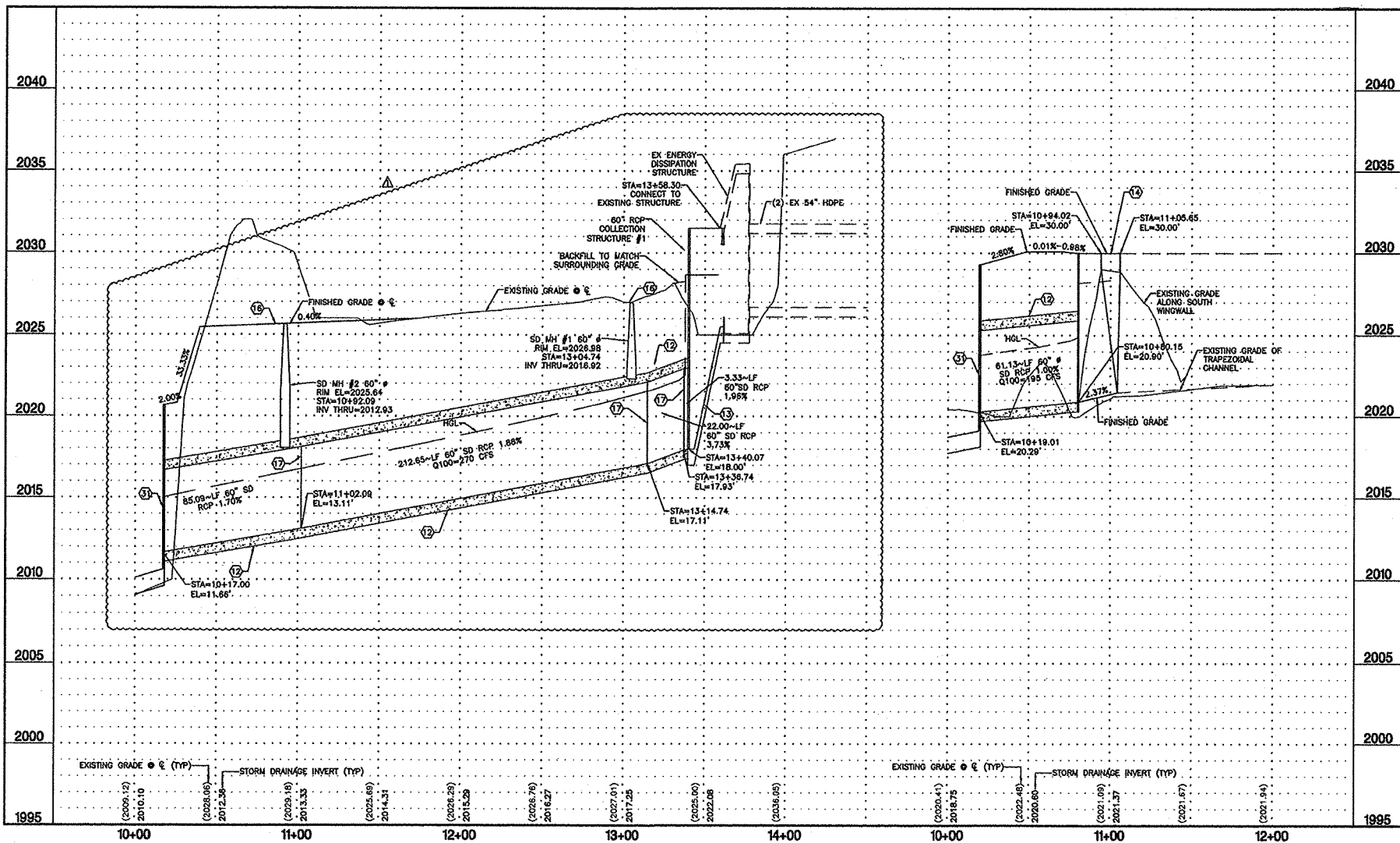
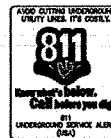
NOTE: LINE AND CURVE DATA (EXAMPLE: L2, C3)
SEE SHEET 6-3

- CONSTRUCTION NOTES
- CONSTRUCT 60" RCP PER USD NO. 504
 - CONSTRUCT 60" RCP COLLECTION STRUCTURE 1 PER SH S-8
 - CONSTRUCT 60" RCP COLLECTION STRUCTURE 2 PER SH S-10
 - CONSTRUCT MANHOLE TEES W/ 30" RING AND COVER PER USD NO. 407A
 - CONSTRUCT 60" 3/8" RCP PREFABRICATED BEND
 - CONSTRUCT ACCESS LADDERS PER DETAIL 1 ON SH S-13
 - CONSTRUCT AC PAVEMENT SEE SECTION A ON SH S-12
 - CONSTRUCT 60" PIPE CONNECTION PER DETAIL 2 ON SH S-7



KEYMAP
SCALE: 1"=500'

Call
before you
Overhead
1-702-227-2020
Nevada Power Corporation
SAFETY SERVICES DEPARTMENT



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF HENDERSON. PHD# (2006780223).
DONALD W. DAVIS P.E. 8087
DATE 12/19/08

Signature of Steven V. Boudreau P.E.
STEVEN V. BOUDREAU P.E.
12/16/08
PRO-NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON (5-7-08)

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY 12/31/09.

REVISIONS			
No.	Date	By	App'd
1	12/9/08	ALIGNMENT REVISED IN FIELD	

DESIGNED BY:	AC
DRAWN BY:	AC
CHECKED BY:	DD
DATE:	8/4/08
REVISION:	1"=40'
DATE:	December 2007

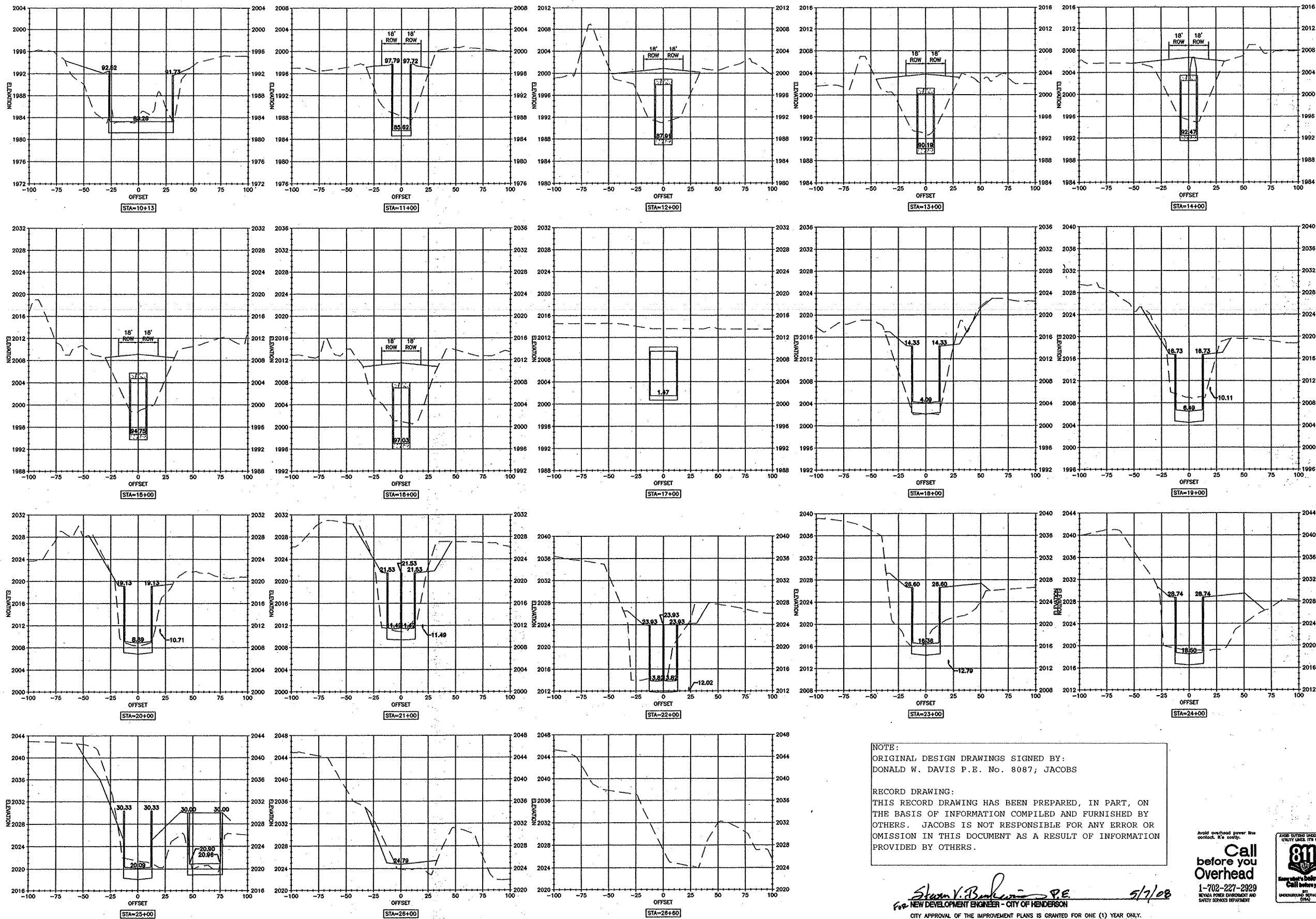
Carter Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
8655 Barnuda Road
Las Vegas, Nevada 89119
(702) 898-5400 Fax (702) 898-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: LATERAL PLAN AND PROFILE
60" RCP

SHEET	SD-3
6 OF 22	

KIVA # PCVL 2007870029

07309



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

Shawn V. Burdette P.E. 5/7/08
NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

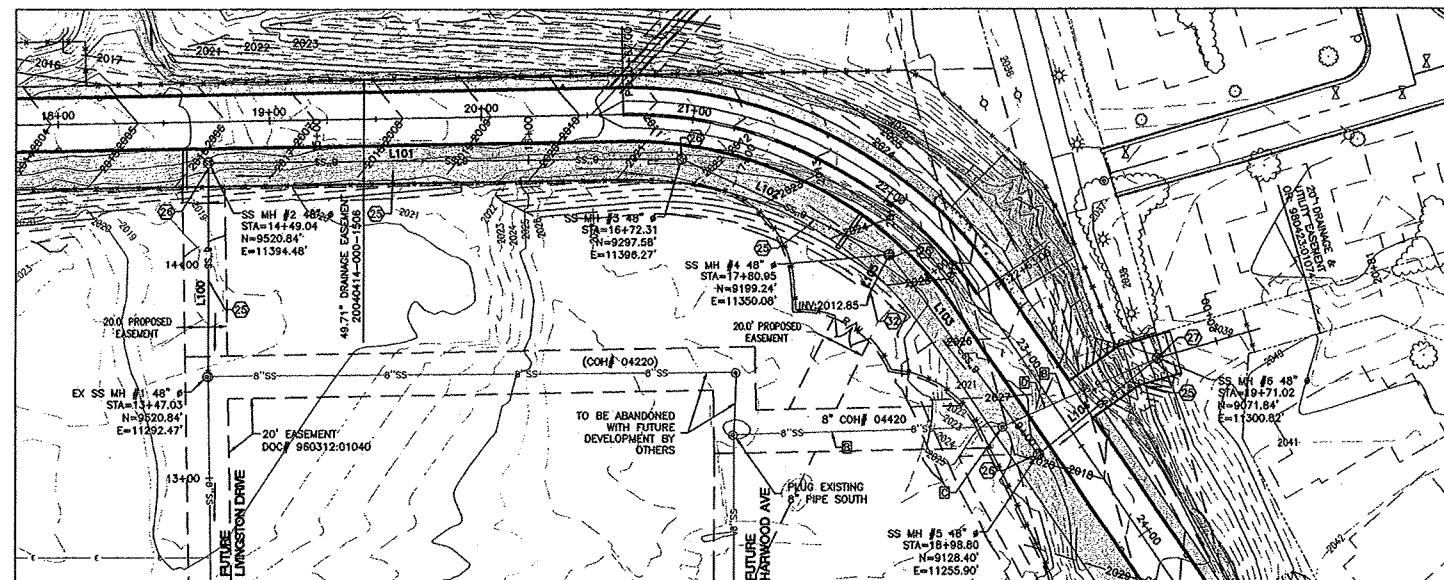
CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY.
PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF
PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY *May 7, 2009*

Call
before you
Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND
SAFETY SERVICES DEPARTMENT



DESIGNER: AC DRAWN: AC CHECKED: DD DATE: 5/7/08																	
PROJECT: PITTMAN MACDONALD RANCH CHANNEL																	
DESCRIPTION: CHANNEL CROSS SECTIONS																	
REVISIONS: <table border="1"> <tr> <th>No.</th> <th>Date</th> <th>By</th> <th>Appd.</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		No.	Date	By	Appd.												
No.	Date	By	Appd.														
SD-4 7 OF 22																	

Carter :: Burgess
 Consultants in Planning, Engineering,
 Construction Management and Related Services
 6655 Bermuda Road
 Las Vegas, Nevada 89119
 (702) 938-5400 Fax (702) 938-5454

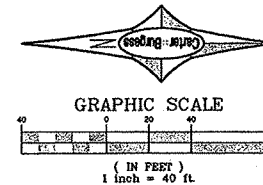


- DEMOLITION NOTES

- ☒ REMOVE EXISTING 8" PVC SS
- ☒ REMOVE EXISTING SS MANHOLE
- ☒ REMOVE EXISTING CONCRETE SLURRY OVER EXISTING 8" SEWER

- CONSTRUCTION NOTES

- 25 CONSTRUCT 8" PVC SEWER
26 CONSTRUCT SS MANHOLE PER STD DWG SD-1 OF DCSWCS
27 RECONSTRUCT SS MANHOLE PER STD DWG SD-1 OF DCSWCS
28 CONSTRUCT 20' 8" PVC SEWER STUB OUT N 63°41'47" W SLOPE=2.50%

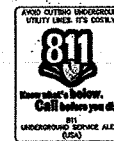


GENERAL NOTES:
1. CONTRACTOR RESPONSIBLE TO PROVIDE THE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGE, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

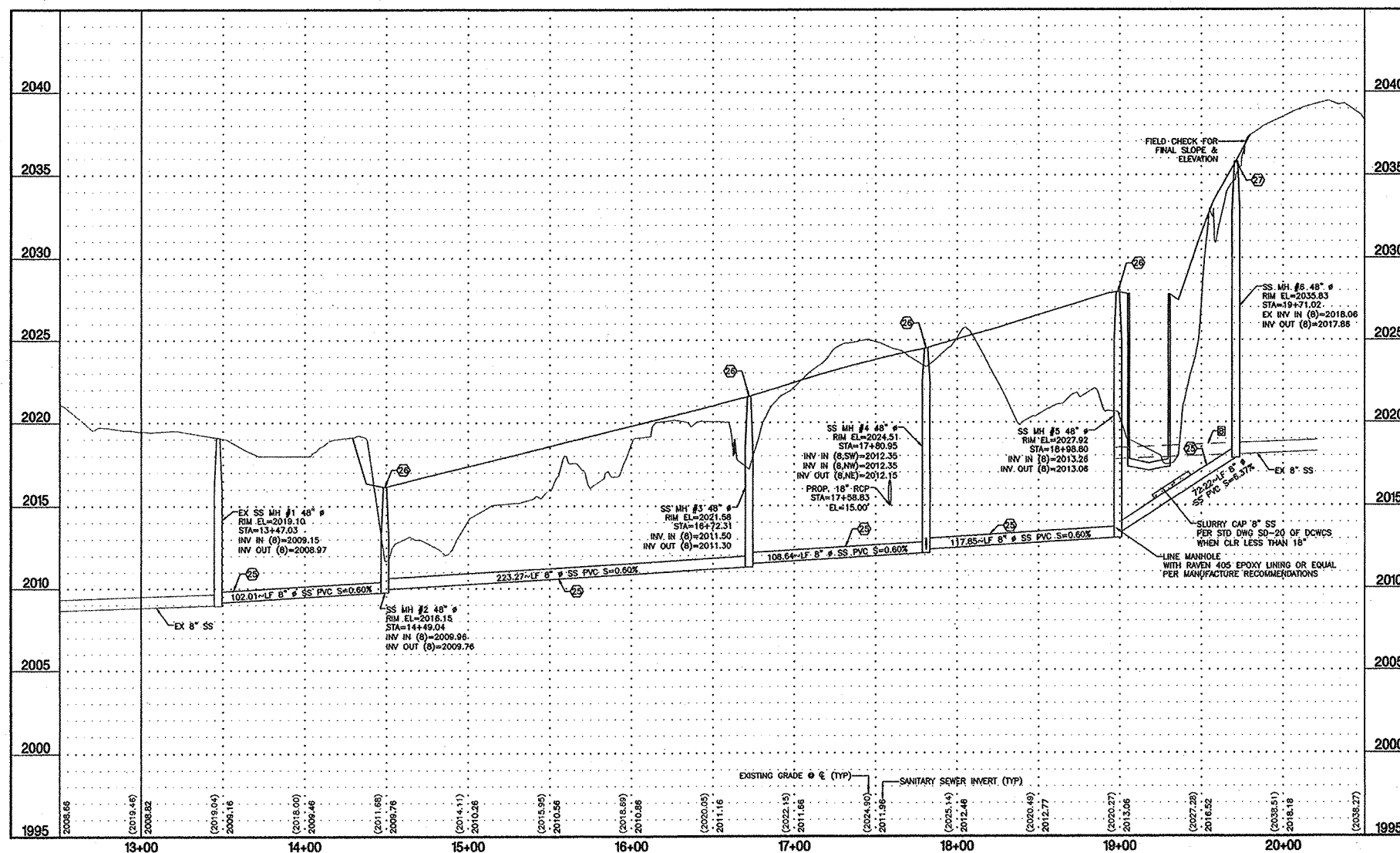
Avoid overhead power line contact. It's costly.

**Call
before you
Overhead**

1-702-227-2929
NEVADA POWER OVERSIGHT AND
SAFETY SERVICES DEPARTMENT



NOTE: LINE AND CURVE DATA (EXAMPLE: L2, G3)
SEE SHEET G-3



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF HENDERSON, PHD# (2006780223).

Donald W. Davis 12/20/07
DONALD W. DAVIS P.E. 8087 DATE

For Steven V. Buckner, P.E. 5/7/08
NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY May 7, 2009

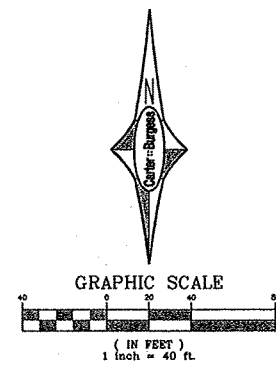
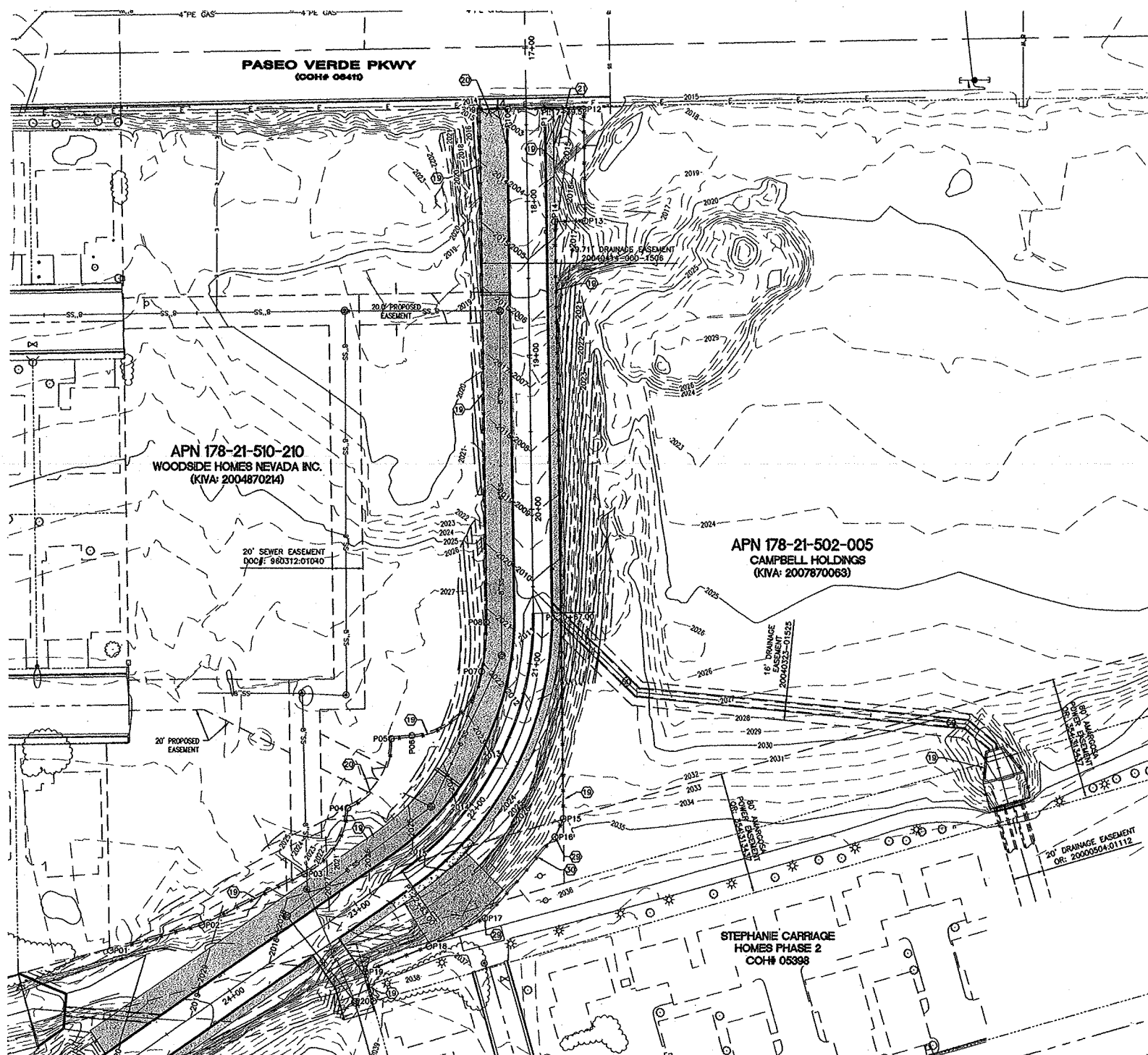
07309 KIVA # PCVL 2007870029

Carter Burgess
CONSULTANTS IN PLANNING, ENGINEERING,
CONSTRUCTION MANAGEMENT, AND RELATED SERVICES

9855 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

IN MACDONALD RANCH CHANNEL

PROJECT:	DESCRIPTION:
SHEET	
SS-1	
8	OF 22



CONSTRUCTION NOTES

- 10 CONSTRUCT 6' HIGH CHAIN LINK FENCE PER NDOT STD R-6.3.2.1
- 20 CONSTRUCT 6' HIGH 12' WIDE DOUBLE SWING GATE PER NDOT STD R-6.3.3
- 21 CONSTRUCT 6' HIGH 5' WIDE SINGLE SWING GATE PER NDOT STD R-6.3.3
- 22 CONNECT TO EXISTING 6' HIGH CHAIN LINK FENCING
- 23 PROTECT IN PLACE OR REPLACE EXISTING 6' HIGH CHAIN LINK FENCING

FENCING POINT TABLE		
DWG P#	NORTHING, EASTING	DESCRIPTION
P01	(9105.53, 11140.37)	END
P02	(9122.45, 11200.17)	PI
P03	(9155.66, 11287.49)	PT
P04	(9198.18, 11295.57)	CORNER
P05	(9243.43, 11323.87)	CORNER
P06	(9245.39, 11337.36)	PT
P07	(9287.21, 11382.85)	PT
P08	(9319.35, 11385.91)	PT
P09	(9351.61, 11380.42)	CORNER
P10	(9351.93, 11399.23)	END
P11	(9352.06, 11423.22)	END
P12	(9352.11, 11449.13)	CORNER
P13	(9379.26, 11450.38)	CORNER
P14	(9378.83, 11430.38)	CORNER
P15	(9191.30, 11437.04)	PI
P16	(9179.55, 11431.66)	PI
P17	(9126.95, 11385.55)	PI
P18	(9108.70, 11349.01)	PI
P19	(9091.85, 11307.40)	PI
P20	(9072.61, 11312.74)	END

PLAN
FENCING PLAN

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DONALD W. DAVIS P.E. No. 8087; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

Stewart B. Behar P.E. 5/7/08
for NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY.
PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF
PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY 5/7/2009

Avoid overhead power line
contact. It's costly.

**Call
before you
Overhead**
1-702-227-2929
NEVADA POWER GRIDWORKS AND
SAFETY SERVICES DEPARTMENT



REVISIONS

No.	Date	By	Check	App'd

DESIGNED: AC

DRAWN: AC

CHECKED: DJ

JOB NO: 241792

DATE: December 2007

VERT: 1"=40'

DATE: December 2007

Carter Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
8655 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

PITTMAN MACDONALD RANCH CHANNEL

FENCING PLAN

PROJECT:

DESCRIPTION:

SHEET

F-1

9 OF 22

DESIGN SPECIFICATIONS:

AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD
SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION, 2002 WITH INTERIMS.

REGIONAL TRANSPORTATION COMMISSION "UNIFORM STANDARD DRAWINGS" 2006 RELEASE.

CONSTRUCTION SPECIFICATIONS:

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD
AND BRIDGE CONSTRUCTION, 2001 EDITION.

THE SPECIAL PROVISIONS OF THIS CONTRACT AND AS NOTED BELOW.

DESIGN LOADS:

LIVE LOAD: HS20

IMPACT:

$\text{COVER} < 1'$	$\rightarrow$	$I = 1.3$
$1' \leq \text{COVER} < 2'$	$\rightarrow$	$I = 1.2$
$2' \leq \text{COVER} < 3'$	$\rightarrow$	$I = 1.1$
$3' \leq \text{COVER}$	$\rightarrow$	$I = 1.0$

RETAINING WALL EARTH PRESSURE: VERTICAL = 120 LBS / CU. FT.
HORIZONTAL = 35 LBS. / CU. FT.

RCB EARTH PRESSURE:

1) VERTICAL = 120 LBS / CU. FT.
HORIZONTAL = 60 LBS. / CU. FT.

12 VERTICAL = 120 LBS / CU. FT.
HORIZONTAL = 30 LBS. / CU. FT.

LIVE LOAD SURCHARGE: WHEN TRAFFIC CAN COME WITHIN A HORIZONTAL DISTANCE FROM THE TOP OF THE STRUCTURE EQUAL TO ONE-HALF OF ITS HEIGHT, THE PRESSURE SHALL HAVE ADDED TO IT A PRESSURE EQUAL TO 2 FEET OF EARTH

LOAD FACTORS: $1.3D + 1.3E + 2.17(L + I)$

MATERIALS OF CONSTRUCTION:

CONCRETE:
CLASS A CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI.
AGGREGATE SHALL CONFORM TO THE "SPECIFICATION FOR CONCRETE AGGREGATES" (ASTM
C33). GRADATION FOR 1½" AGGREGATE SHALL BE USED FOR CONCRETE FOR CHANNEL
INVERT AND ¾" AGGREGATE SHALL BE USED FOR CONCRETE FOR CHANNEL WALLS AS
SHOWN ON THE TABLE ON PAGE 501-3 OF UNIFORM STANDARD SPECIFICATIONS.

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706, GRADE 60. DIMENSIONS RELATING TO SPACING ARE CENTER-TO-CENTER. BENDING DIMENSIONS ARE OUT-TO-OUT OF THE BARS. THE LENGTH OF #4 AND #5 BARS, WHEN CONSIDERED AS TEMPERATURE, SHRINKAGE OR DISTRIBUTION REINFORCEMENT BY THE ENGINEER, MAY BE ADJUSTED BY THE CONTRACTOR UPON THE ENGINEER'S APPROVAL. HOOKS MAY BE ROTATED OR TILTED, AS NECESSARY, FOR CLEARANCE. REINFORCEMENT SHALL HAVE A 3 INCH CLEARANCE ON BOTTOM OF BOTTOM SLAB AND 2 INCH CLEARANCE ON REMAINDER OF STRUCTURE AND ITS APPURTENANCES UNLESS OTHERWISE NOTED ON THE PLANS.

DIMENSIONS:

DIMENSIONS SHALL NOT BE SCALED FROM THE PLANS. VERTICAL DIMENSIONS ARE MEASURED PLUMB, UNLESS OTHERWISE NOTED. HORIZONTAL DIMENSIONS ARE MEASURED LEVEL. ALL DIMENSIONS ARE MEASURED AT (70°F), UNLESS OTHERWISE NOTED. LENGTHS OF FABRICATED MEMBERS SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE TEMPERATURE, GRADE AND CAMBER.

THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STRUCTURAL SUBMITTALS:

THE CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS (WORKING DRAWINGS) AND OTHER STRUCTURAL SUBMITTALS IN ACCORDANCE WITH THE PROJECT PLANS, THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS. THE SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY WORK INVOLVING SUCH DRAWINGS IS PERFORMED.

CONSTRUCTION JOINTS:

ALL CONSTRUCTION JOINTS SHALL BE INTENTIONALLY ROUGHENED TO 1/4" AMPLITUDE UNLESS OTHERWISE NOTED.

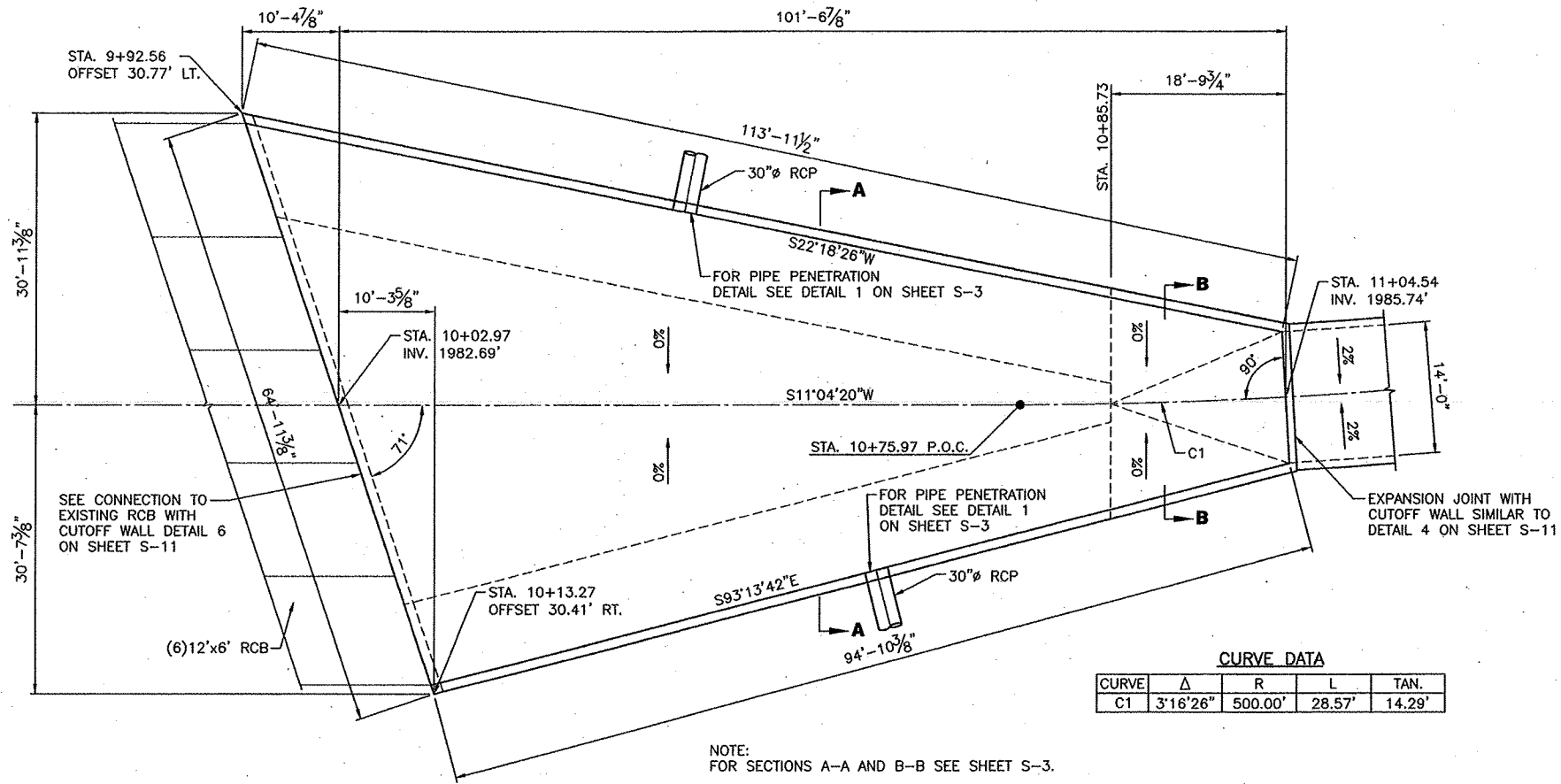
NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

07309

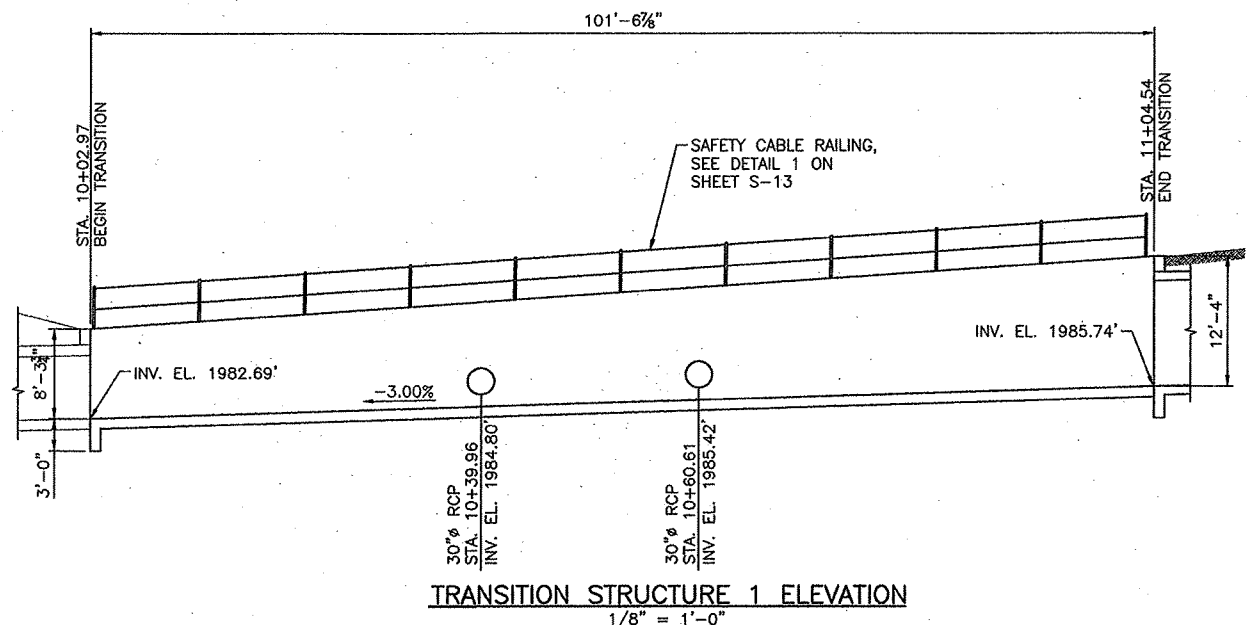
COH KIVA #PCVL 2007870029

PROJECT: PITTMAN MACDONALD RANCH CHANNEL ARMAGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.	10 OF 22	SHEET 250220277002 STRUCTURAL NOTES AND QUANTITIES	Carter & Burgess Consultants in Planning, Engineering, Construction Management, and Related Services 6665 Bermuda Road Las Vegas, Nevada 89119 (702) 939-5400 Fax (702) 939-5454	DESIGNED: AP	REVISIONS
				DATE: ALL	
				CHECKED: APPP	
				DATE: 10/28	
				JOB No: 2511728	
				ROUTE: AS 5207TH	
				VERT: AS 5207TH	
				DATE: October 01	



CURVE DATA				
CURVE	Δ	R	L	TAN.
C1	3°16'26"	500.00'	28.57'	14.29'

TRANSITION STRUCTURE 1 PLAN
1/8" = 1'-0"



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

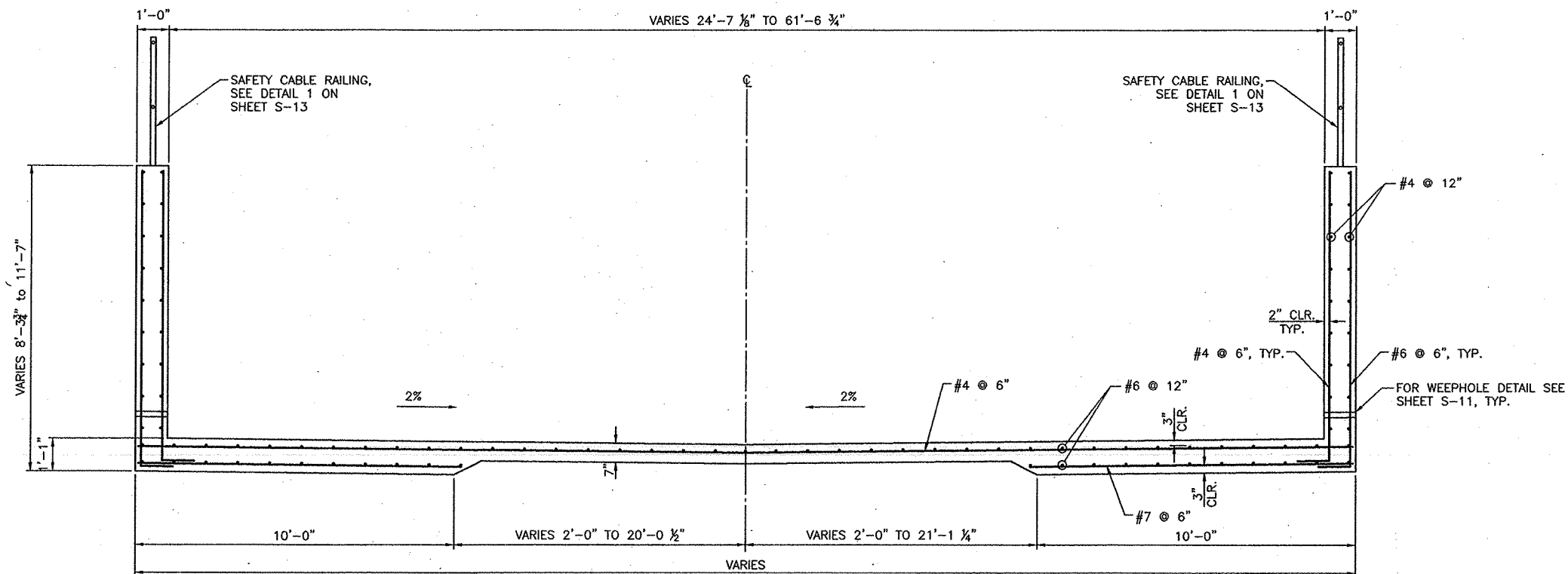
RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

REVISIONS		
No.	Date	By
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

DESIGNED BY	APPROVED BY
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE

Carter Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6855 Bermuda Road
Las Vegas, Nevada 89119
(702) 898-5400 Fax (702) 938-5454

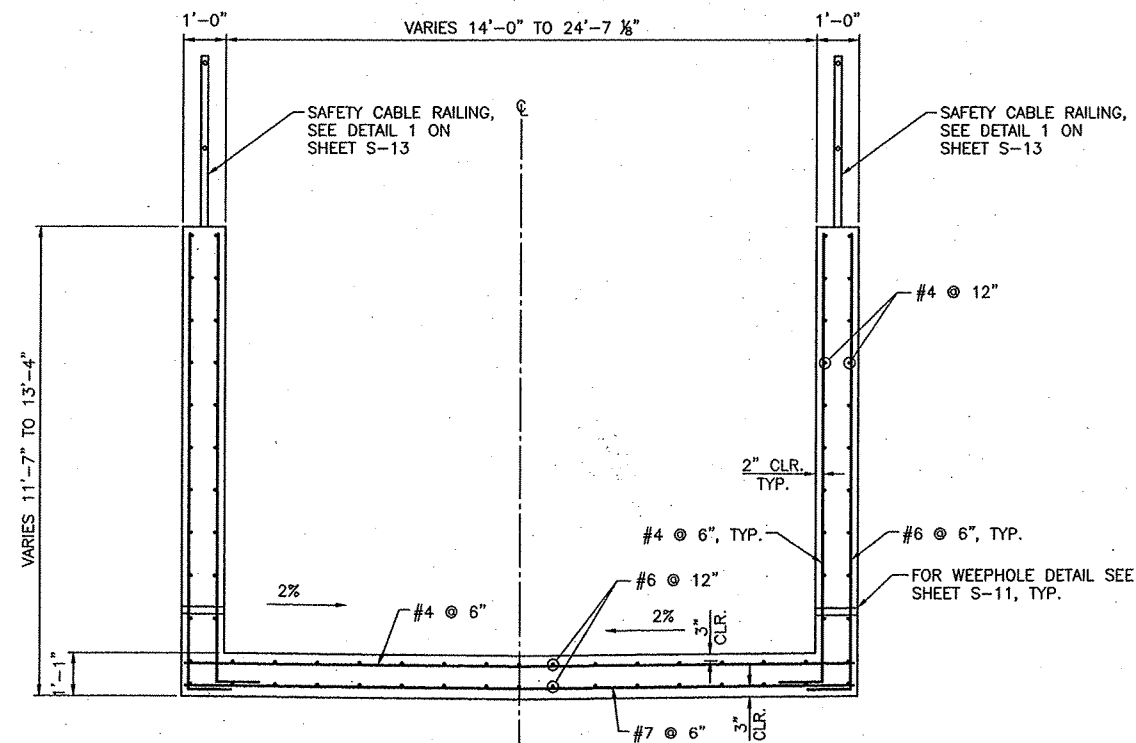
PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: TRANSITION STRUCTURE NO. 1
PLAN AND ELEVATION
SHEET: 3-2



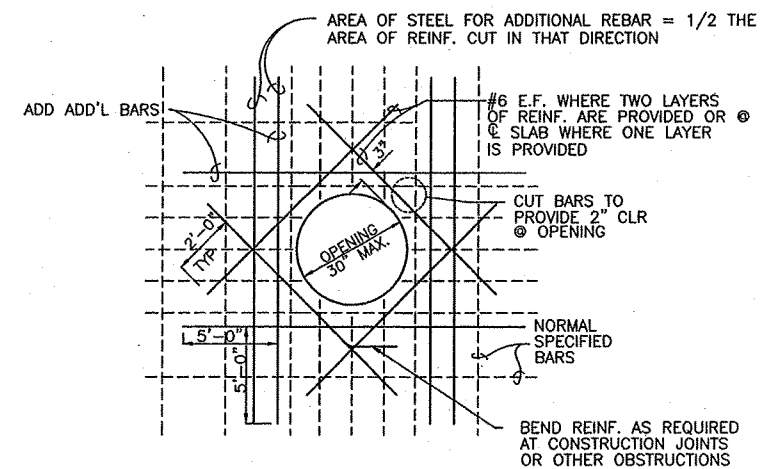
SECTION A-A
1/2" = 1'-0"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



SECTION B-B
1/2" = 1'-0"



DETAIL 1
30" MAX WALL PENETRATION DETAIL
1/2" = 1'-0"

REVISIONS

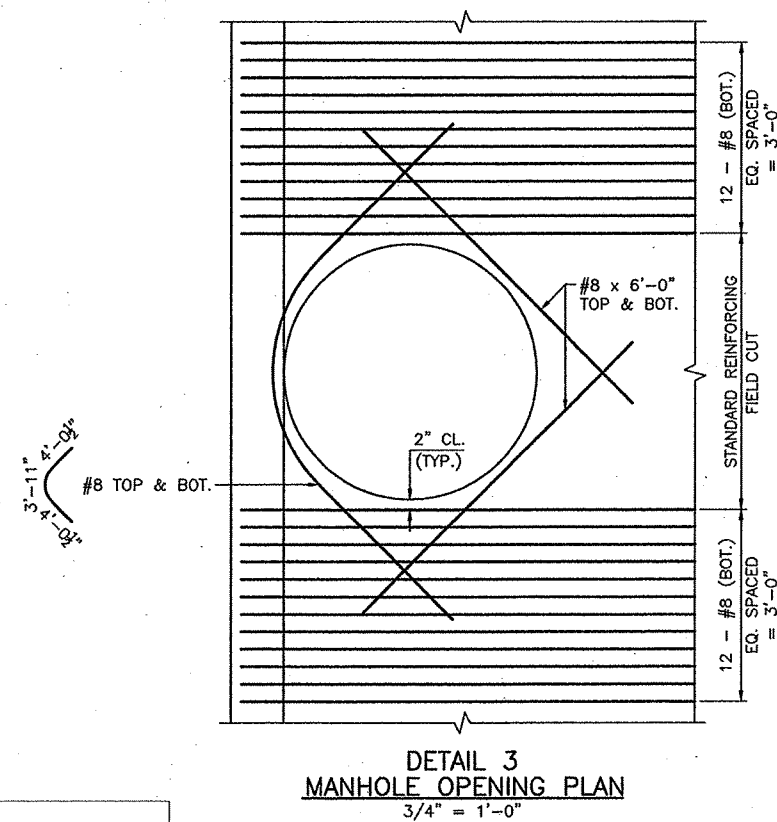
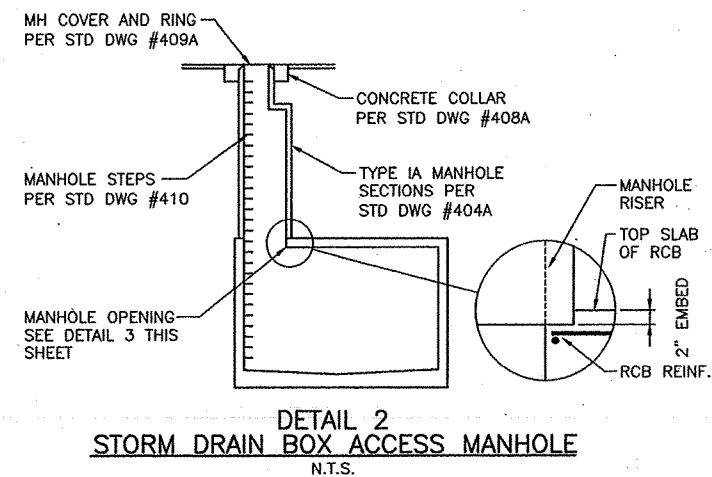
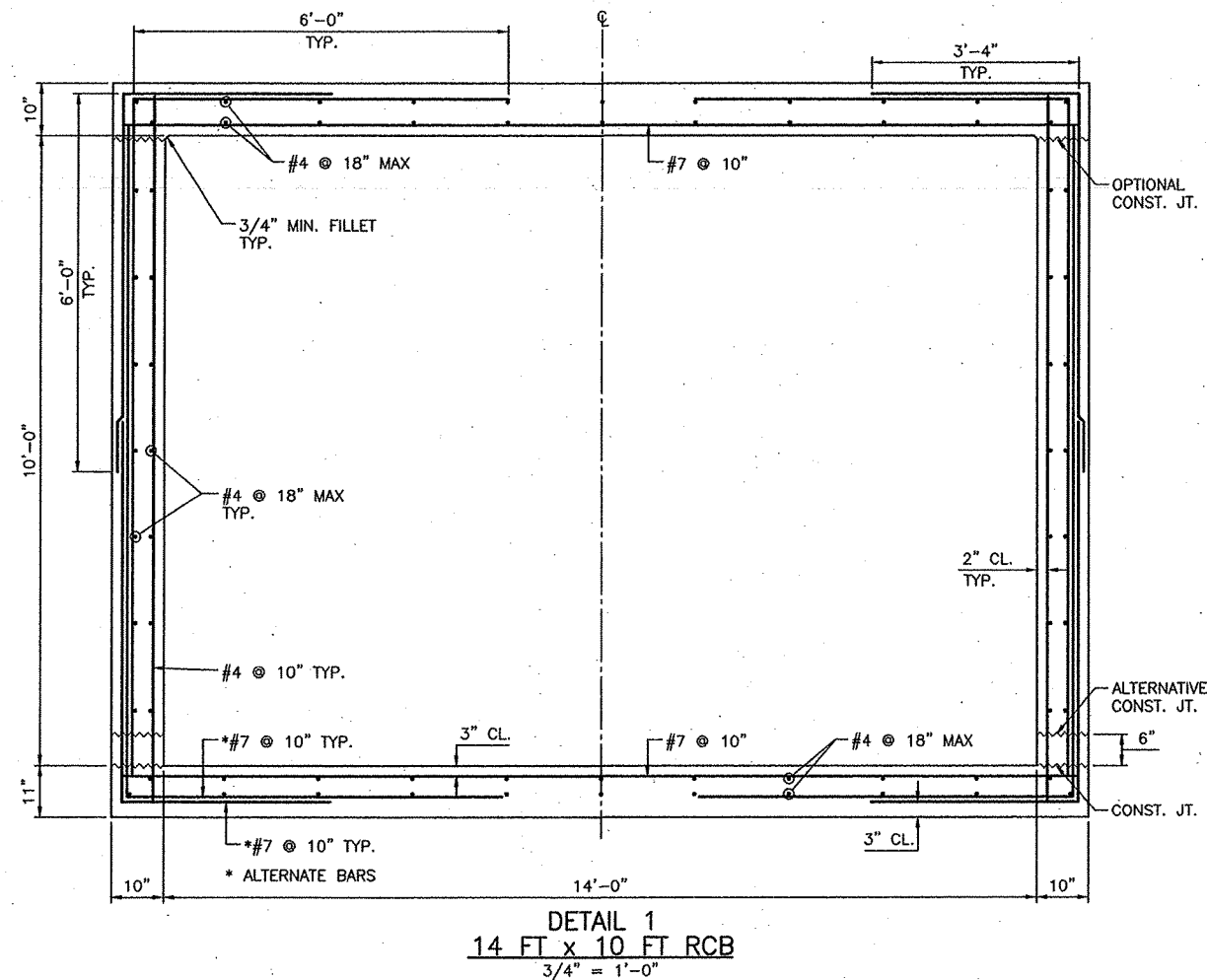
No.	Date	APPD
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

DESIGNED BY:	AP
DRAWN BY:	ALA
CHECKED BY:	JSP
JOB NO.:	241782
ROUTE:	AS SHOWN
DATE:	AS SHOWN
DATE:	August 02

Carter :: Burgess
Consultants in Planning, Engineering,
Construction Management and Related Services
9865 Bermuda Road
Las Vegas, Nevada 89119
(702) 898-6400 Fax (702) 898-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: TRANSITION STRUCTURE NO. 1
SECTIONS AND DETAILS

SHEET



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

[illegible]

DESIGNED:	AP
DRAWN:	ALA
CHECKED:	DSP
JOB No:	241782
HORIZ:	AS SHOWN
VERT:	AS SHOWN
DATE:	August 07

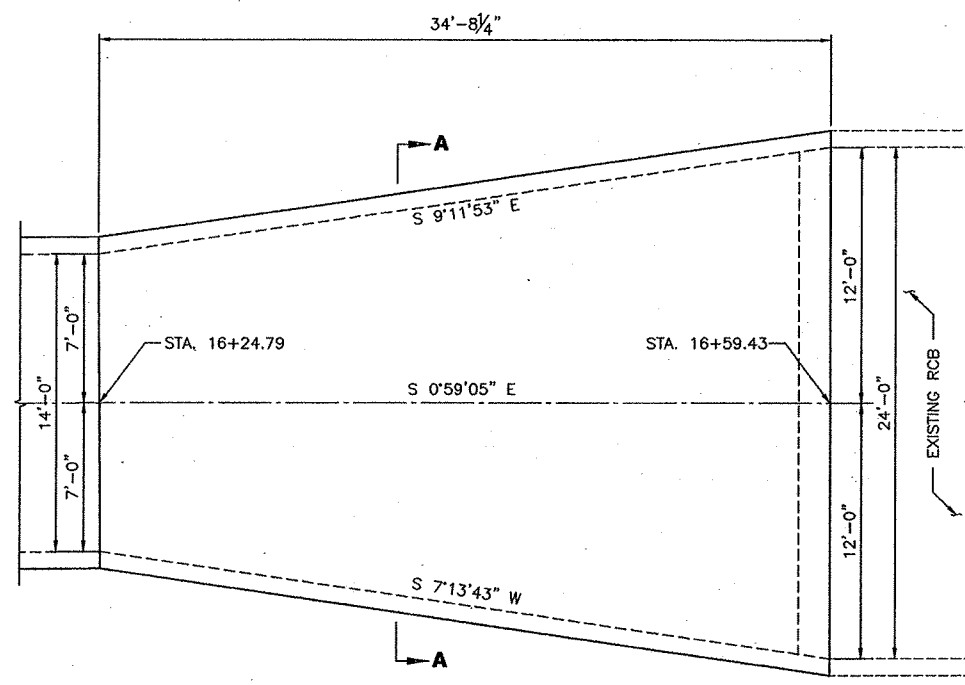
Carter :: Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 838-5400 Fax (702) 838-5454

PITTMAN MACDONALD RANCH CHANNEL

14 FT X 10 FT RCB
SECTION AND DETAILS

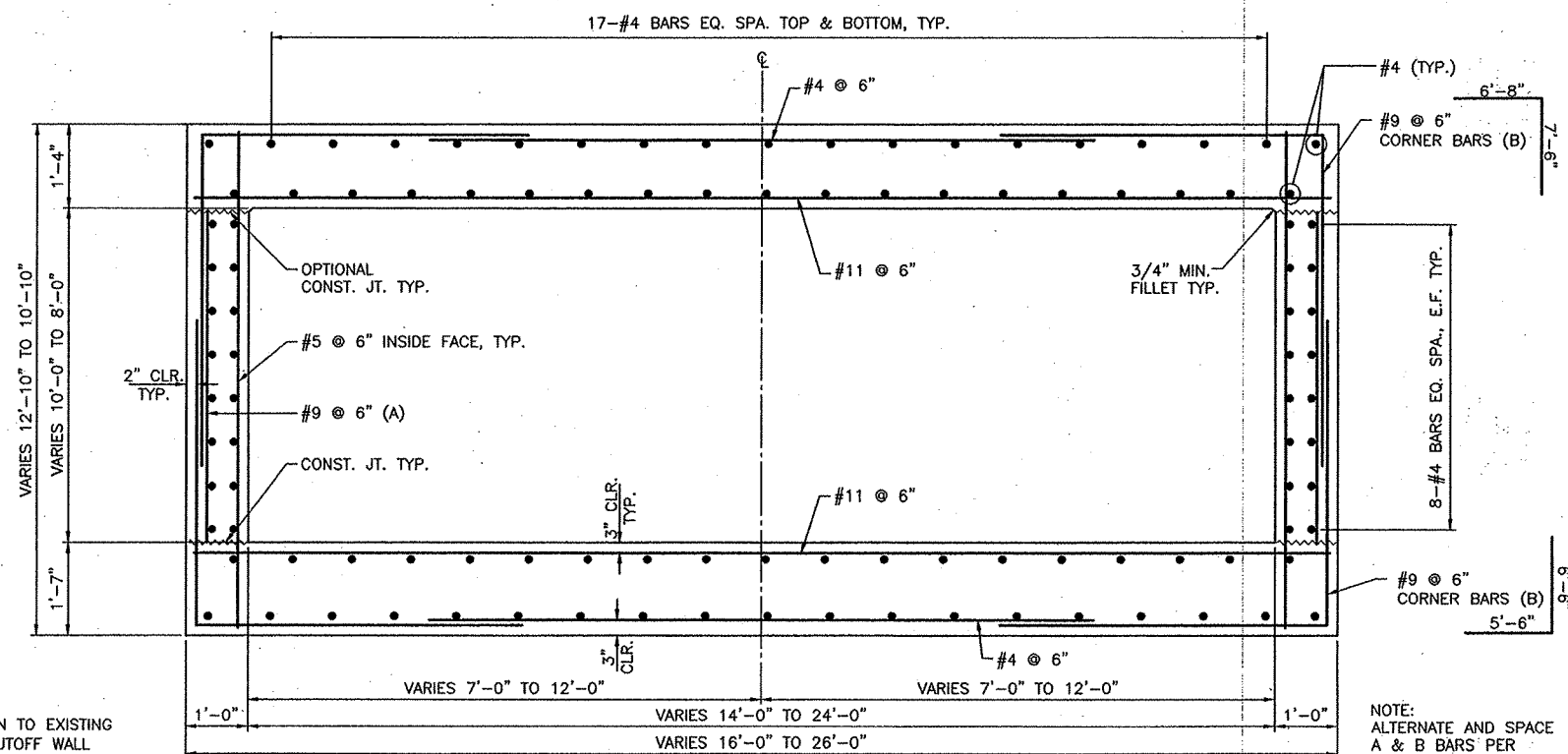
SHEET
S-4
13 OF 22

07309
COH KIVA #PCVL 2007870029

[illegible]

CURVE DATA				
CURVE	Δ	R	L	TAN.
C3	10°50'55"	500.00'	94.67'	47.48'

DETAIL 1
TYPICAL WALL PLAN
N.T.S.

[illegible]

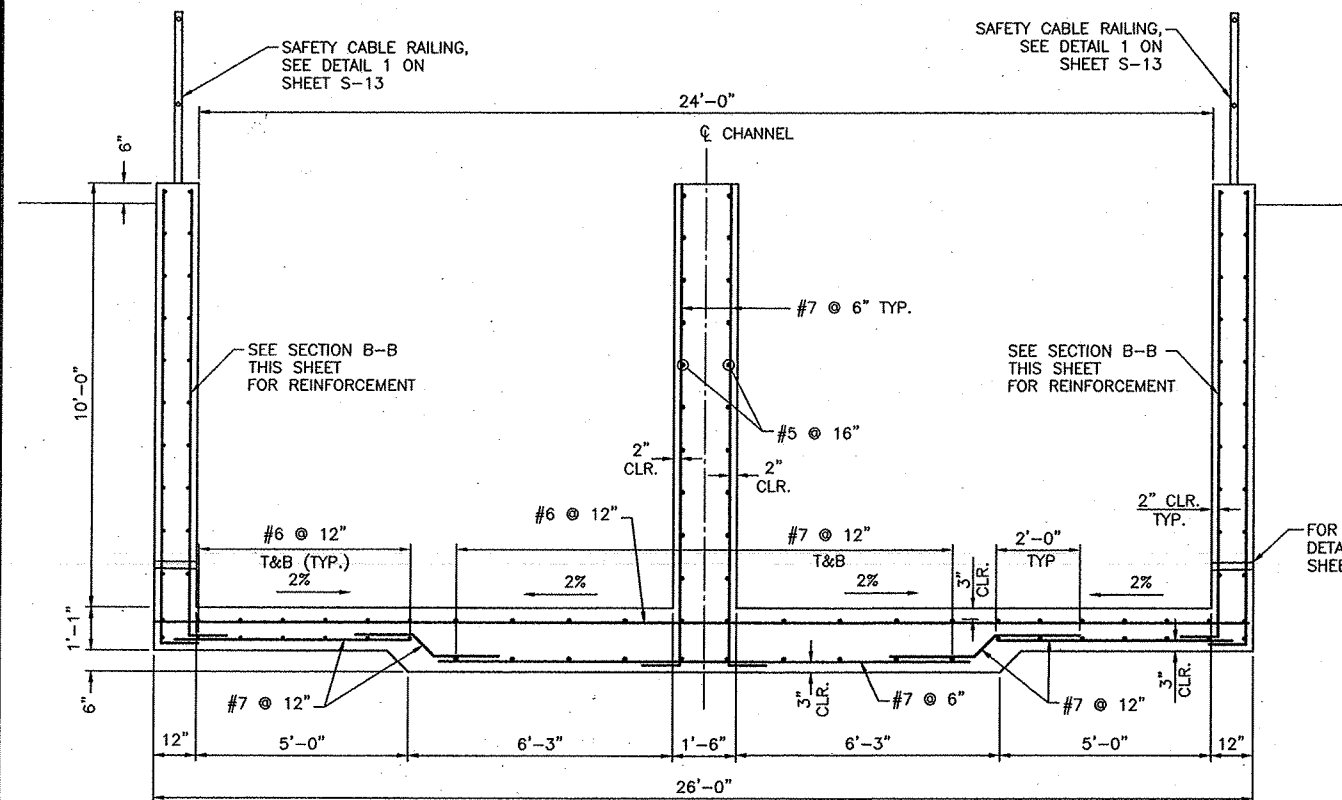
Carter :: Burgess
 Consultants in Planning, Engineering,
 Construction Management, and Related Services
 6955 Bermuda Road
 Las Vegas, Nevada 89119
 (702) 838-5400 Fax (702) 838-5454

IN MACDONALD RANCH CHANNEL

SITION STRUCTURE NO. 2

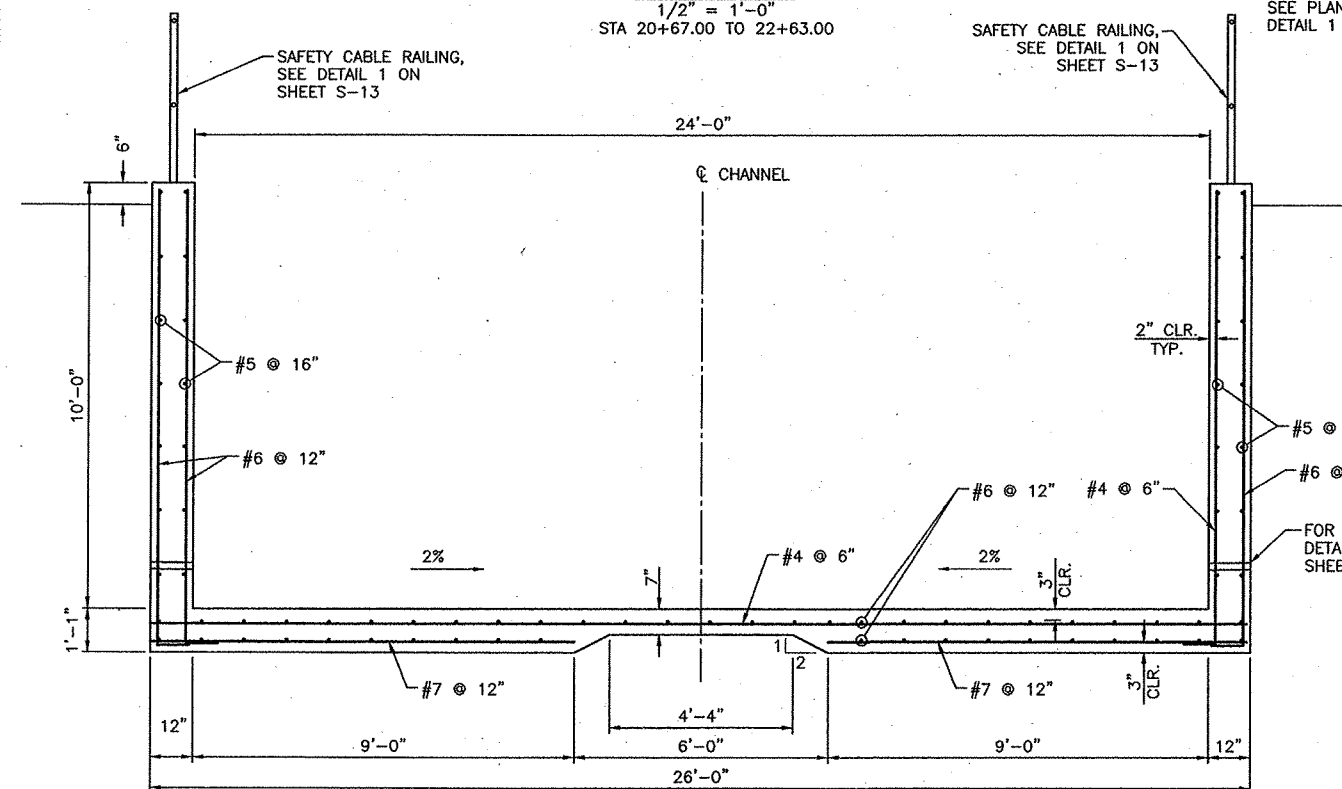
PLAN, ELEVATION, & SECTION

COH KIVA #PCVL 2007870029



SECTION A-A
1/2" = 1'-0"
STA 20+67.00 TO 22+63.00

NOTE:
FOR JOINT LOCATIONS
SEE PLAN VIEW FOR JOINTS
DETAIL 1 ON SHEET S-11

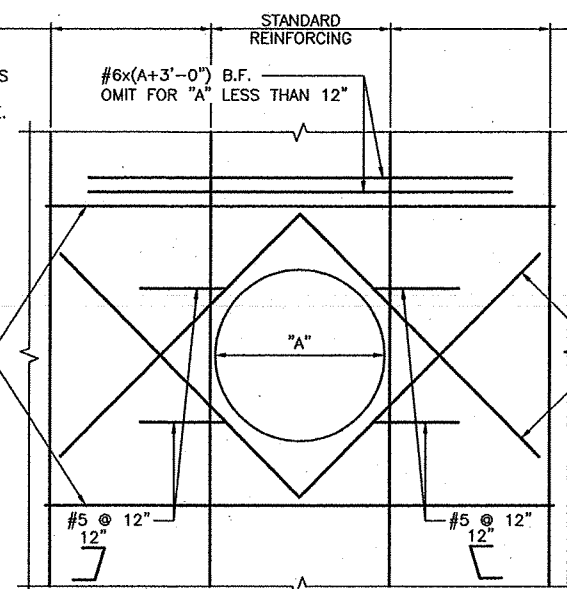
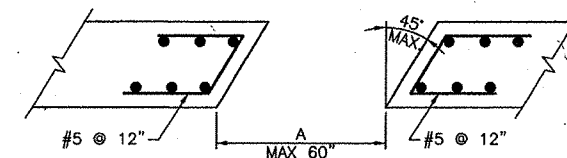


SECTION B-B
1/2" = 1'-0"
STA 17+34.44 TO 20+67.00
STA 22+63.00 TO 25+10.00

NOTE:
FOR JOINT LOCATIONS
SEE PLAN VIEW FOR JOINTS
DETAIL 1 ON SHEET S-11

STANDARD VERTICAL REINF.
PLUS ADDITIONAL VERTICAL
BARS CORRESPONDING IN
SIZE AND NUMBER TO BARS
CUT BY THE OPENING.
PLACE HALF ON EACH SIDE.
EXTEND THE ADD'L BARS
INTO THE FOOTING THE SAME
AS OTHER VERTICAL
WALL REINFORCEMENT AND
TO A MINIMUM OF 60 BAR
DIAMETERS ABOVE THE TOP
OF UTILITY OPENING IF
WALL HEIGHT PERMITS.
BUNDLE BARS AS
REQUIRED.

2-#8x(A+4'-0") E.F.
OMIT FOR "A" LESS
THAN 12"



STANDARD VERTICAL REINF.
PLUS ADDITIONAL VERTICAL
BARS CORRESPONDING IN
SIZE AND NUMBER TO BARS
CUT BY THE OPENING.
PLACE HALF ON EACH SIDE.
EXTEND THE ADD'L BARS
INTO THE FOOTING THE SAME
AS OTHER VERTICAL WALL
REINFORCEMENT AND TO A
MINIMUM OF 60 BAR
DIAMETERS ABOVE THE TOP
OF UTILITY OPENING IF
WALL HEIGHT PERMITS.
BUNDLE BARS AS
REQUIRED.

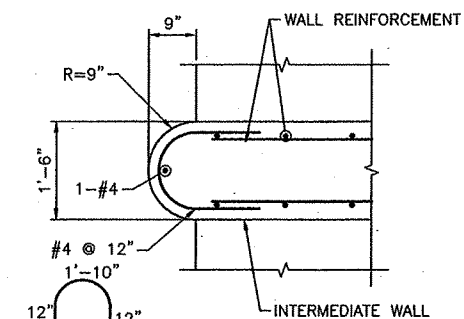
#8 (E.F.)

NOTE:
ALL REINFORCING TO HAVE
2" CLR. MIN. AROUND OPENING.

DETAIL 2
LARGE DIAMETER PIPE PENETRATION DETAIL
NOT TO SCALE

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



DETAIL 1
END OF FINN WALL
3/4" = 1'-0"

REVISIONS

NO.	DATE	BY	CHKD	APPD
1				

Carter :: Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6855 Bermuda Road
Las Vegas, Nevada 89119
(702) 838-5400 Fax (702) 838-5454

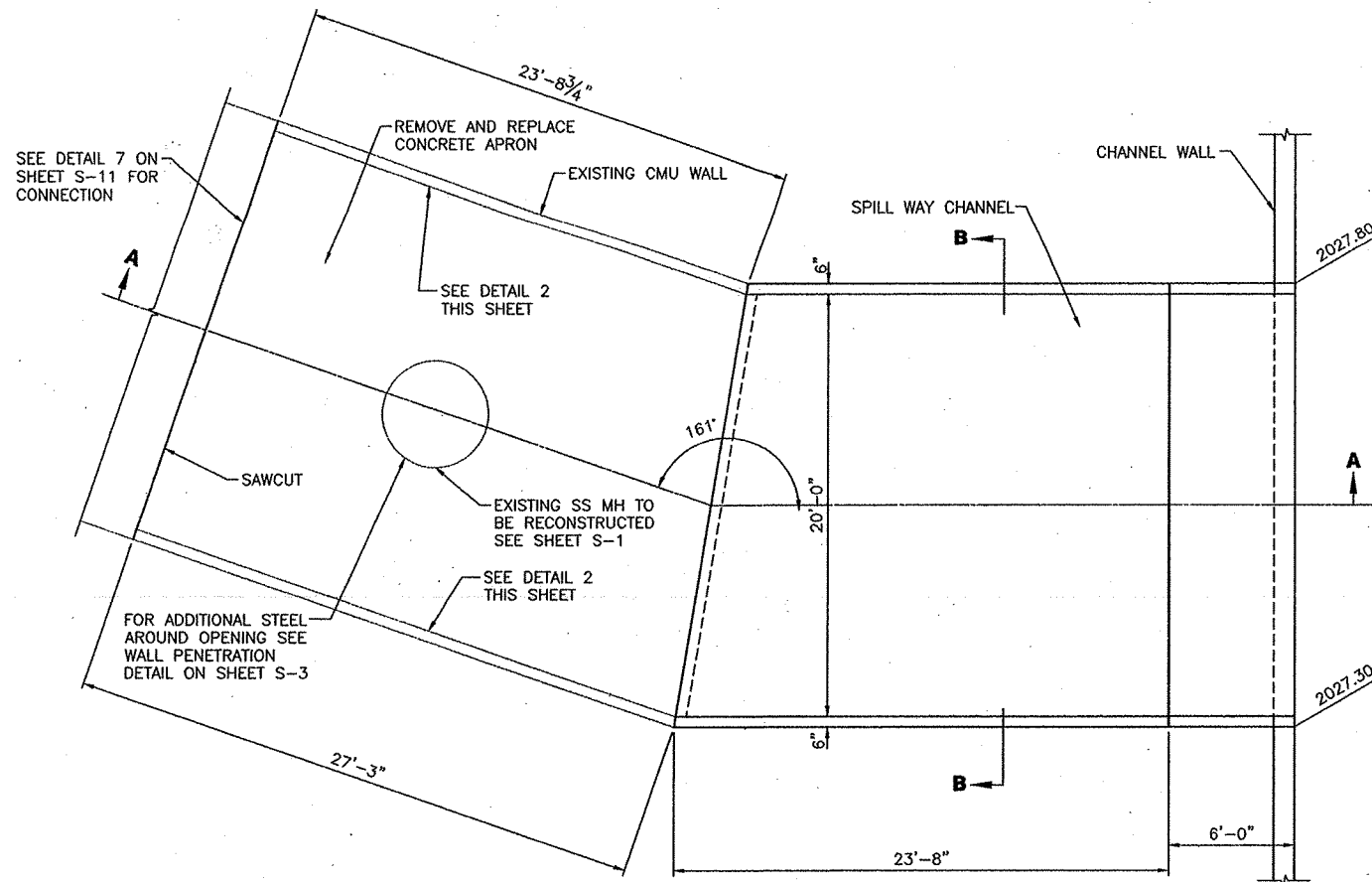
PROJECT: PITTMAN MACDONALD RANCH CHANNEL

DESCRIPTION: CHANNEL SECTIONS AND DETAILS

07309

COH KIVA #PCVL 2007870029

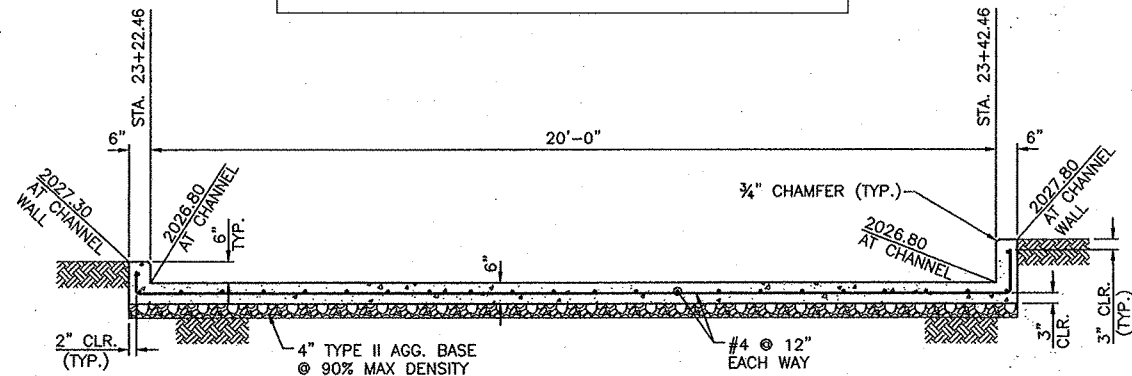
S-7
16 OF 22



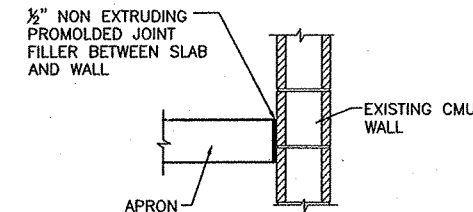
DETAIL 1
INFLOW APRON PLAN
SCALE: 1/4" = 1'-0"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

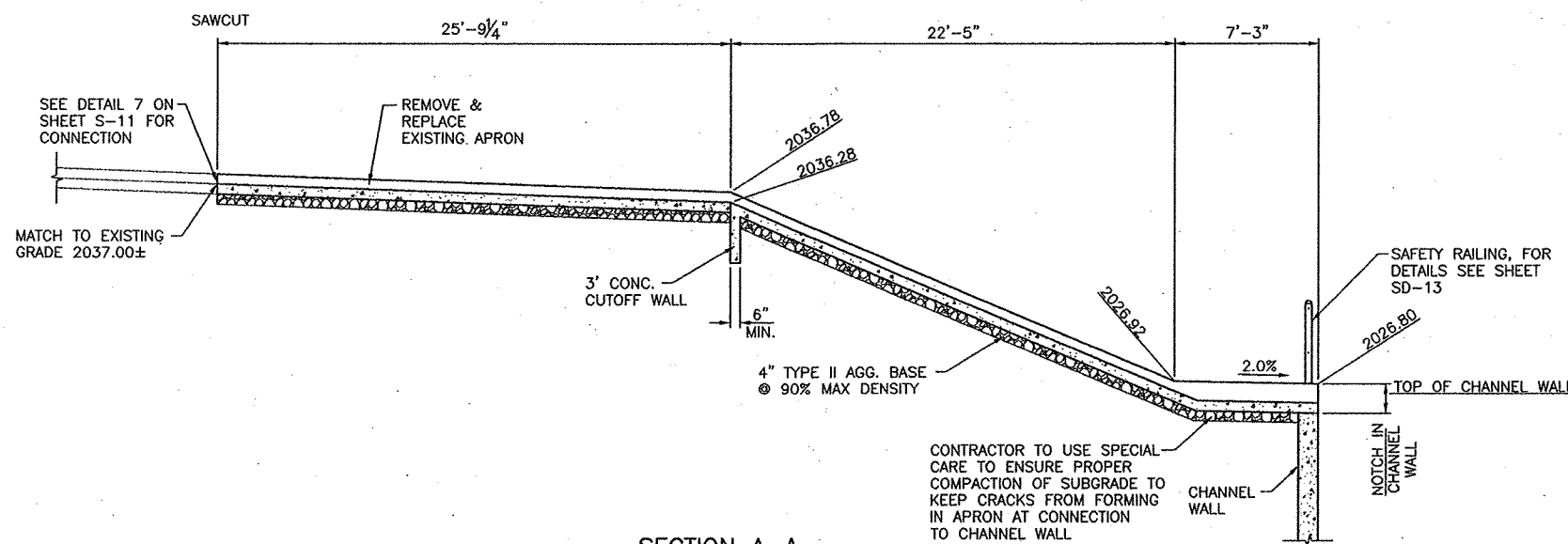
RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



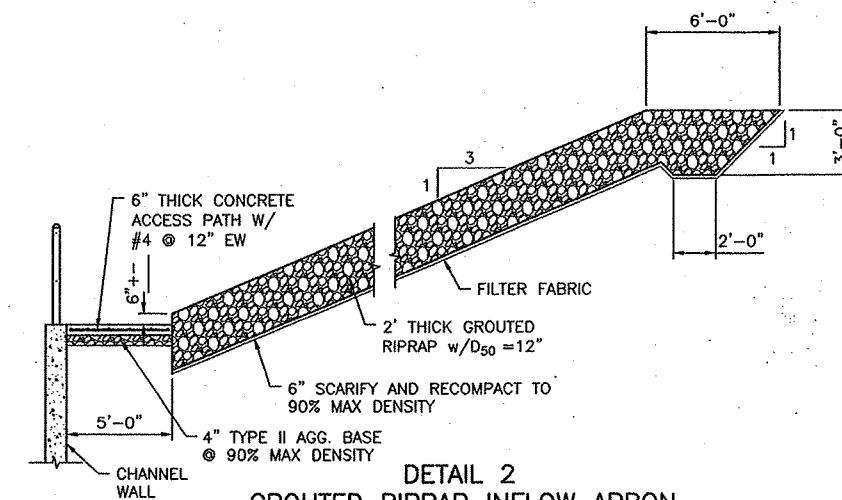
SECTION B-B
SCALE: 1/2" = 1'-0"



DETAIL 2
CONCRETE APRON AT EXISTING CMU WALL
SCALE: 1" = 1'-0"



SECTION A-A
SCALE: 1/4" = 1'-0"



DETAIL 2
GROUTED RIPRAP INFLOW APRON
SCALE: 1/4" = 1'-0"

REVISIONS			
No.	Date	By	App'd

DESIGNED BY:	ALA
DRAWN BY:	ALA
CHECKED BY:	ALA
DATE:	September 07
JOB NO.:	2-1782
PROJECT:	AS SHOWN
DATE:	September 07

Carter Burgess
Consultants in Planning, Engineering,
Construction Management and Related Services
6655 Bermuda Road, Suite 200
Las Vegas, Nevada 89119
(702) 938-6400 Fax (702) 938-6464

PROJECT:	PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION:	INFLOW APRON SECTIONS AND DETAILS

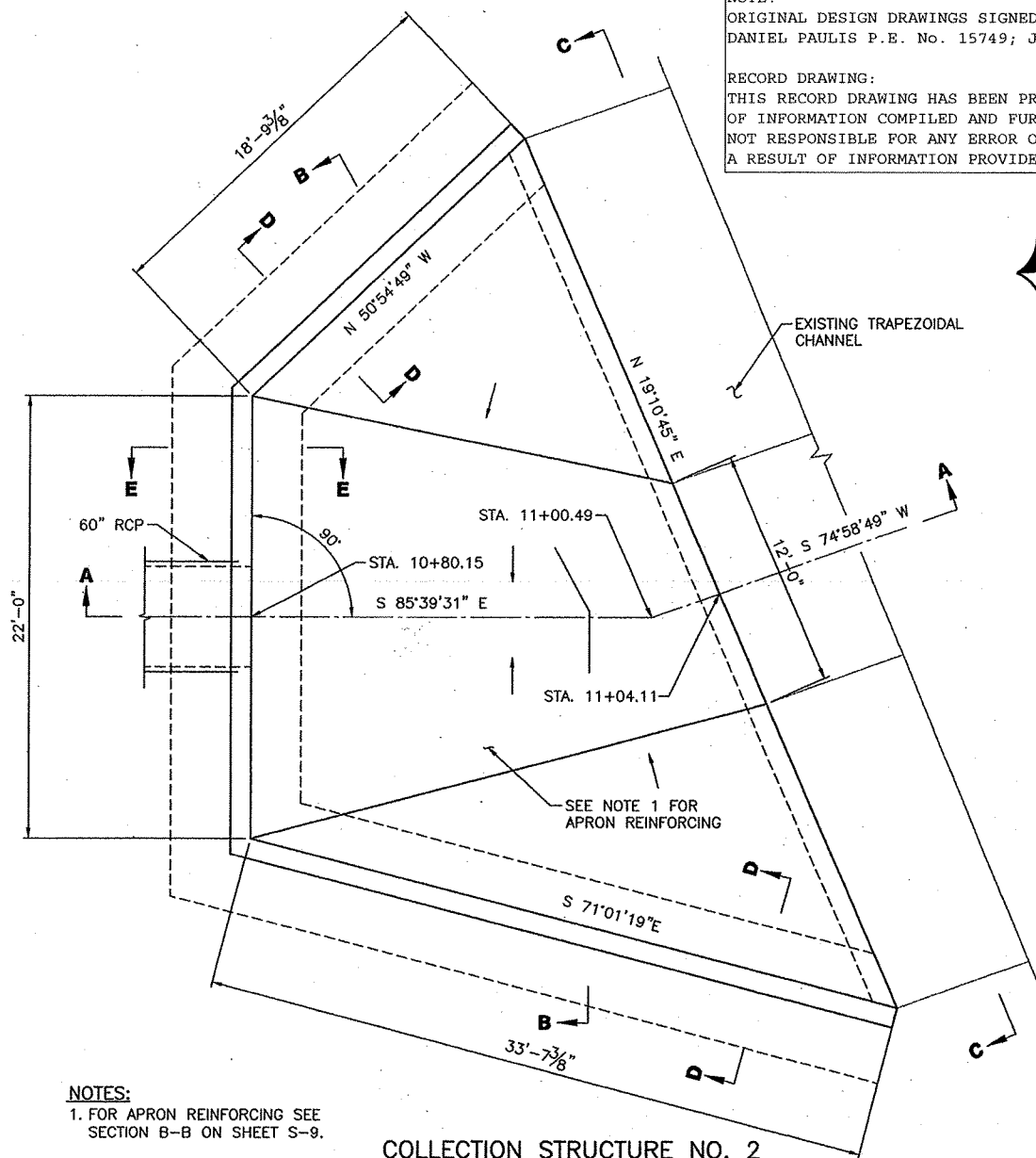
07309

COH KIVA #PCVL 2007870029

S-9
18 OF 22

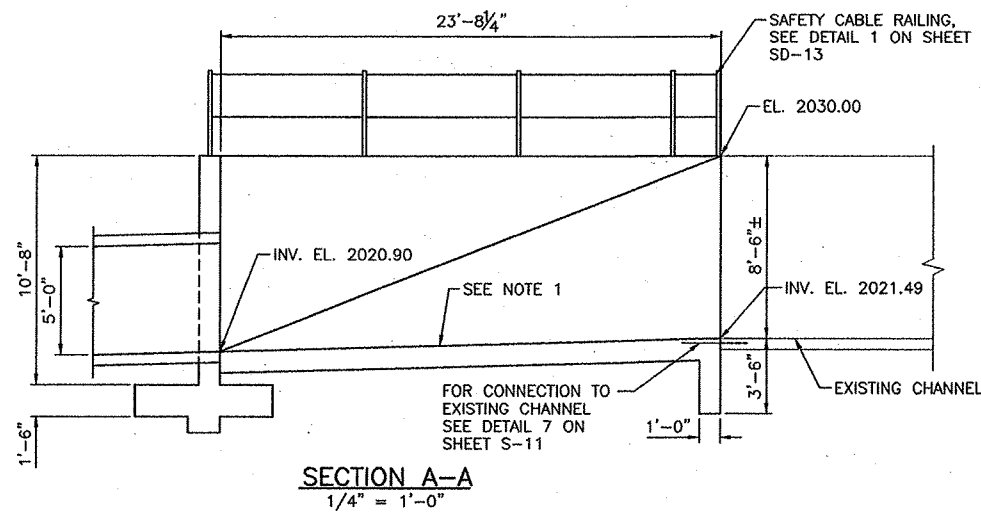
NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS
OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS
NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS
A RESULT OF INFORMATION PROVIDED BY OTHERS.

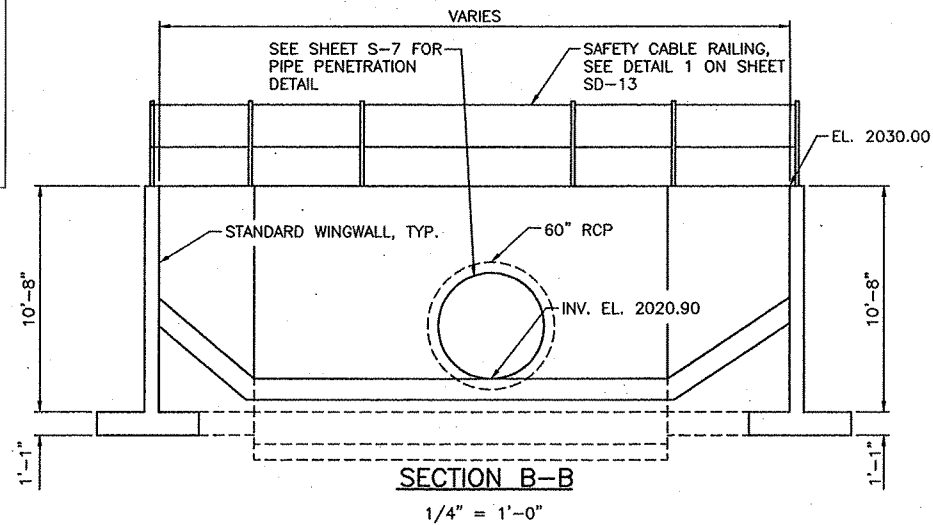


NOTES:
1. FOR APRON REINFORCING SEE
SECTION B-B ON SHEET S-9.

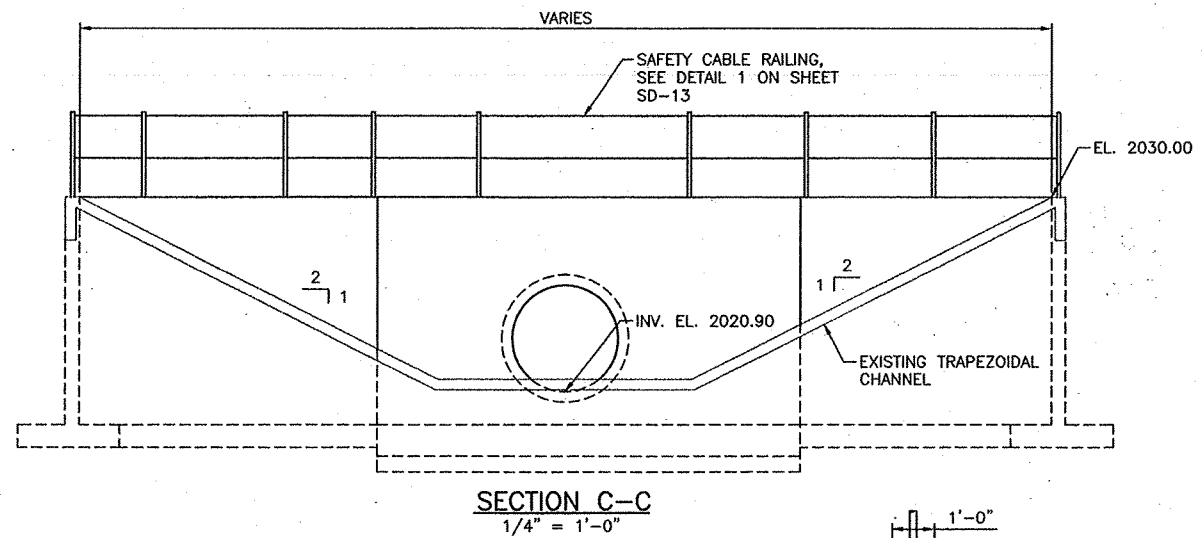
COLLECTION STRUCTURE NO. 2
1/4" = 1'-0"



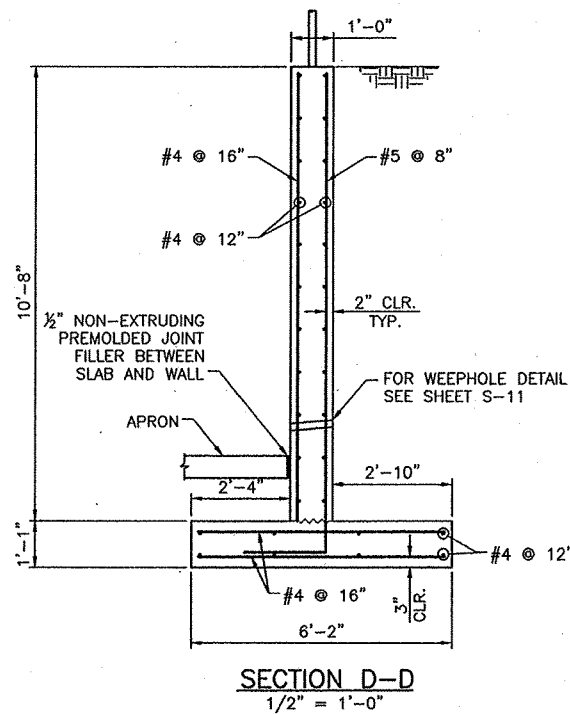
SECTION A-A
1/4" = 1'-0"



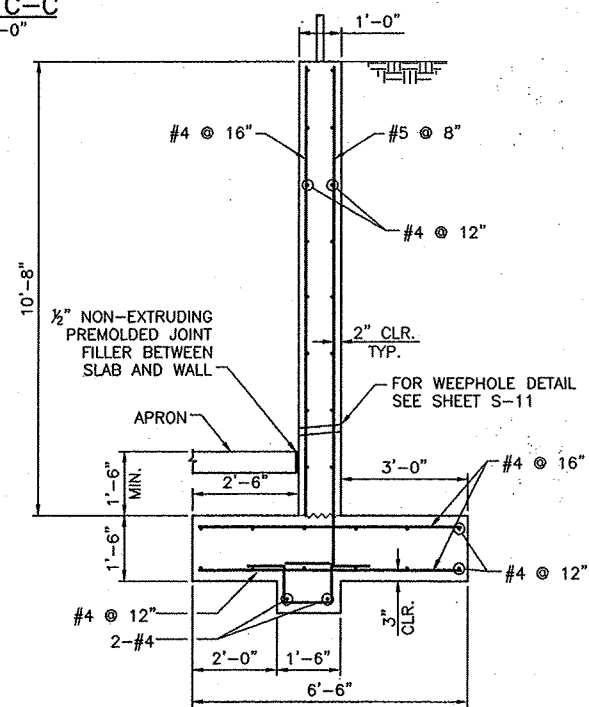
SECTION B-B
1/4" = 1'-0"



SECTION C-C
1/4" = 1'-0"



SECTION D-D
1/2" = 1'-0"



SECTION E-E
1/2" = 1'-0"

COH KIVA #PCVL 2007870029

07309

REVISIONS			
No.	Date	By	Appr.

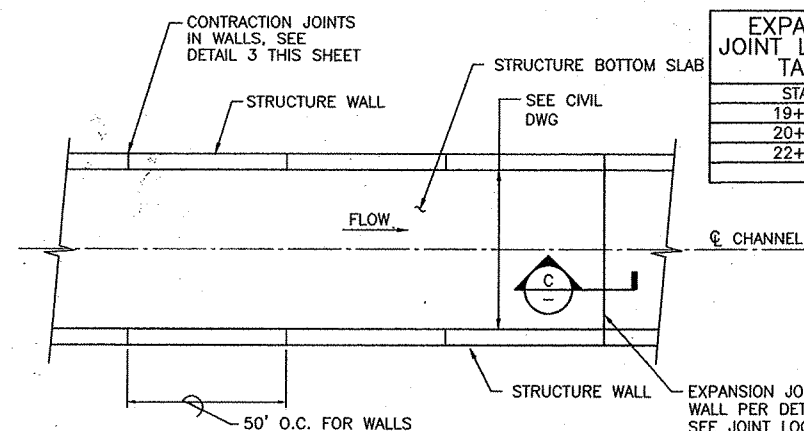
DESIGNED BY	DATE	BY	APP

Carter Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
9855 Bermuda Road
Las Vegas, Nevada 89118
(702) 938-5400 Fax (702) 938-5454

PITTMAN MACDONALD RANCH CHANNEL
COLLECTION STRUCTURE NO. 2
PLAN, ELEVATION, AND SECTIONS

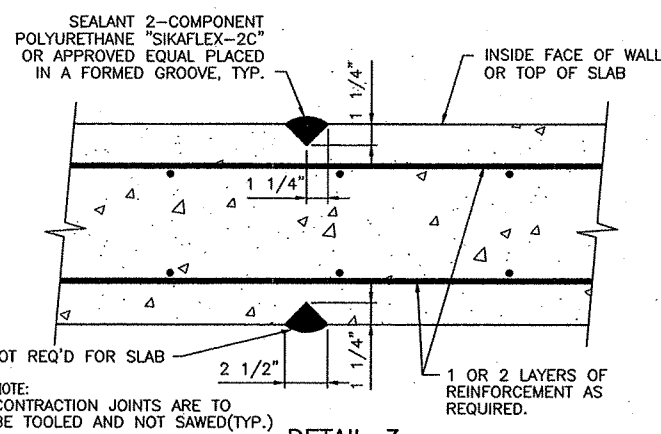
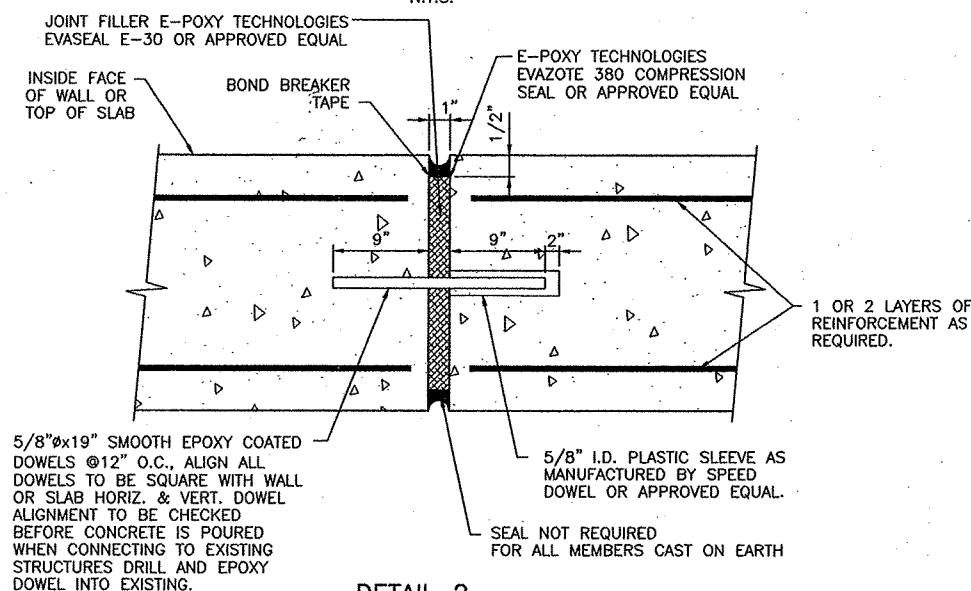
PROJECT	DESCRIPTION	SHEET

3-10
19 OF 22

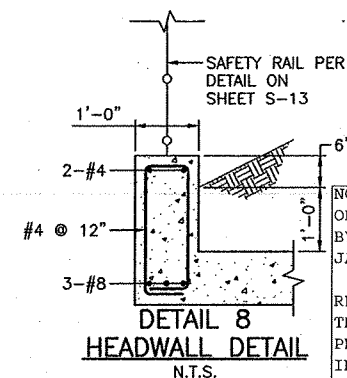
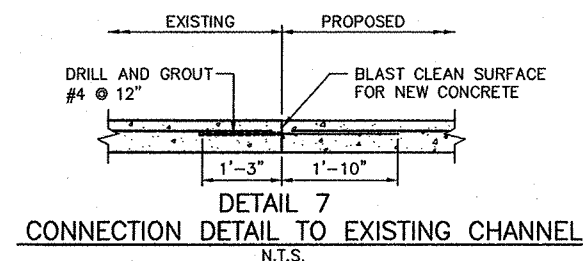
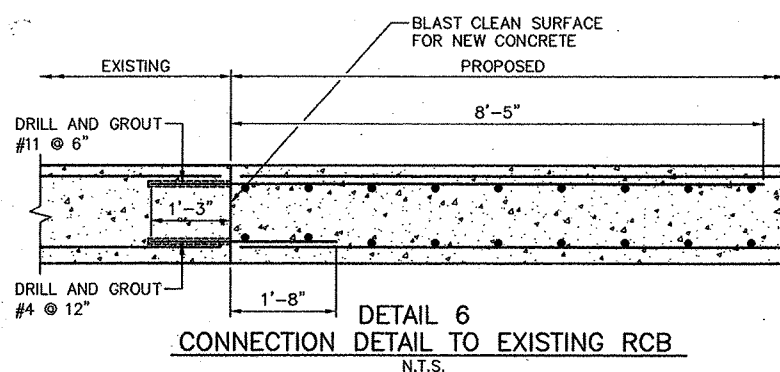
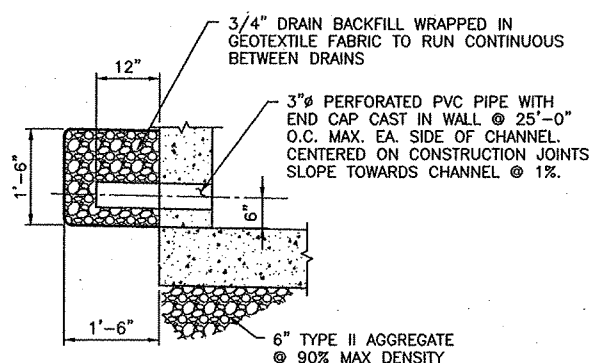
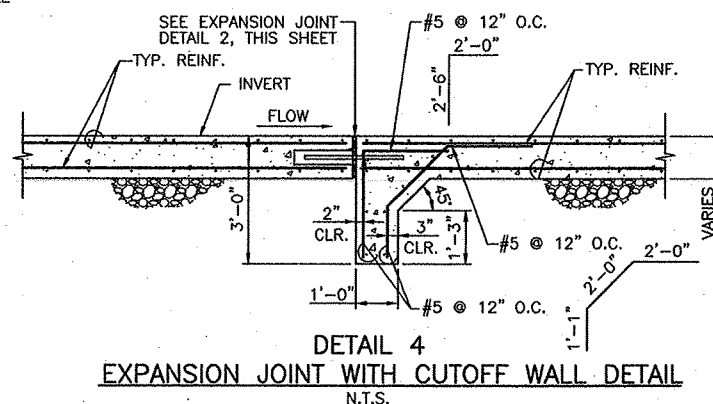
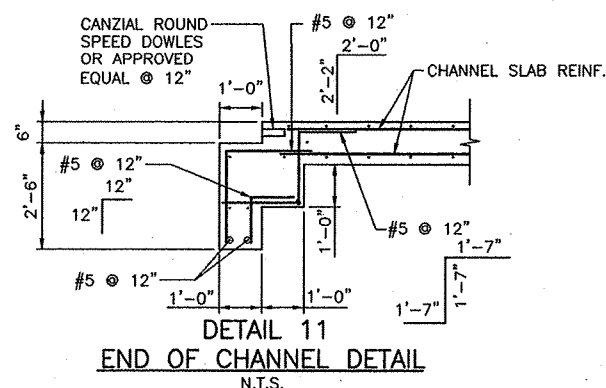


NOTES:

TRANSVERSE JOINTS AROUND CURVES SHALL
BE ON RADIAL LINES AT 15' O.C.
SPACED ALONG STRUCTURE CENTERLINE.
DETAIL SHALL BE USED FOR CHANNEL
SECTION, AND TRANSITION CHANNEL SECTIONS
CONSTRUCTION JOINTS PER DETAIL 9 THIS SHEET



EXPANSION JOINT LOCATION TABLE	
STATION	
19+00.00	
20+67.00	
22+63.00	

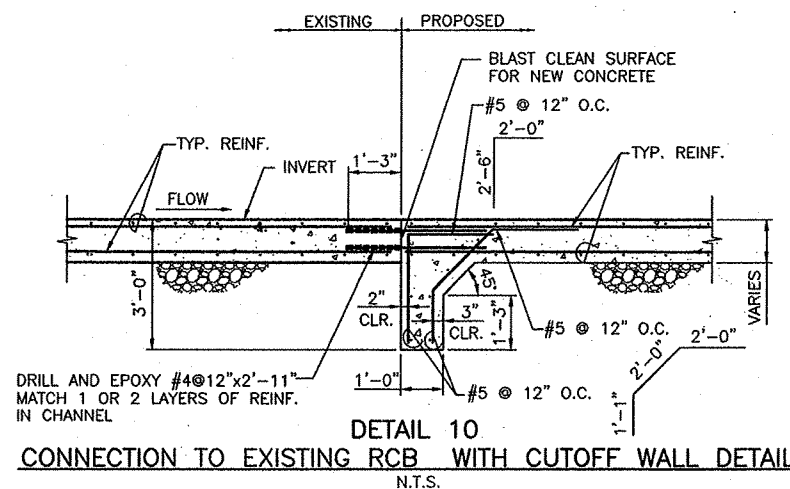
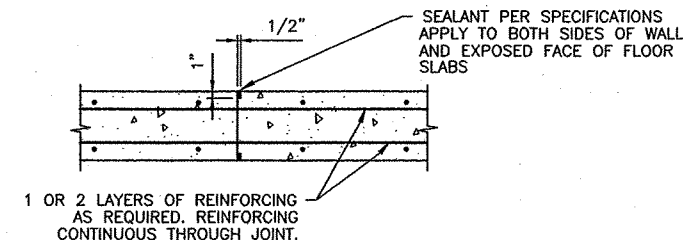


† NOTE •

ORIGINAL DESIGN DRAWINGS SIGNED
BY: DANIEL PAULIS P.E. No. 15749;
JACOBS

RECORD DRAWING:

THIS RECORD DRAWING HAS BEEN
PREPARED, IN PART, ON THE BASIS OF
INFORMATION COMPILED AND FURNISHED
BY OTHERS. JACOBS IS NOT
RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A
RESULT OF INFORMATION PROVIDED BY
OTHERS.

[illegible]

DESIGNED:	AP
DRAWN:	ALA
CHECKED:	DSP
JOB No:	241782
HORIZ:	AS SHOWN
VERT:	AS SHOWN
DATE:	September 07

Carter Burgess

**Consultants in Planning, Engineering,
Construction Management, and Related Services**

3665 Bermuda Road
Las Vegas, Nevada 89118
(702) 838-5400 Fax (702) 838-5454

PITTMAN MACDONALD RANCH CHANNEL

TYPICAL SECTIONS AND DETAILS

PROJECT:

11

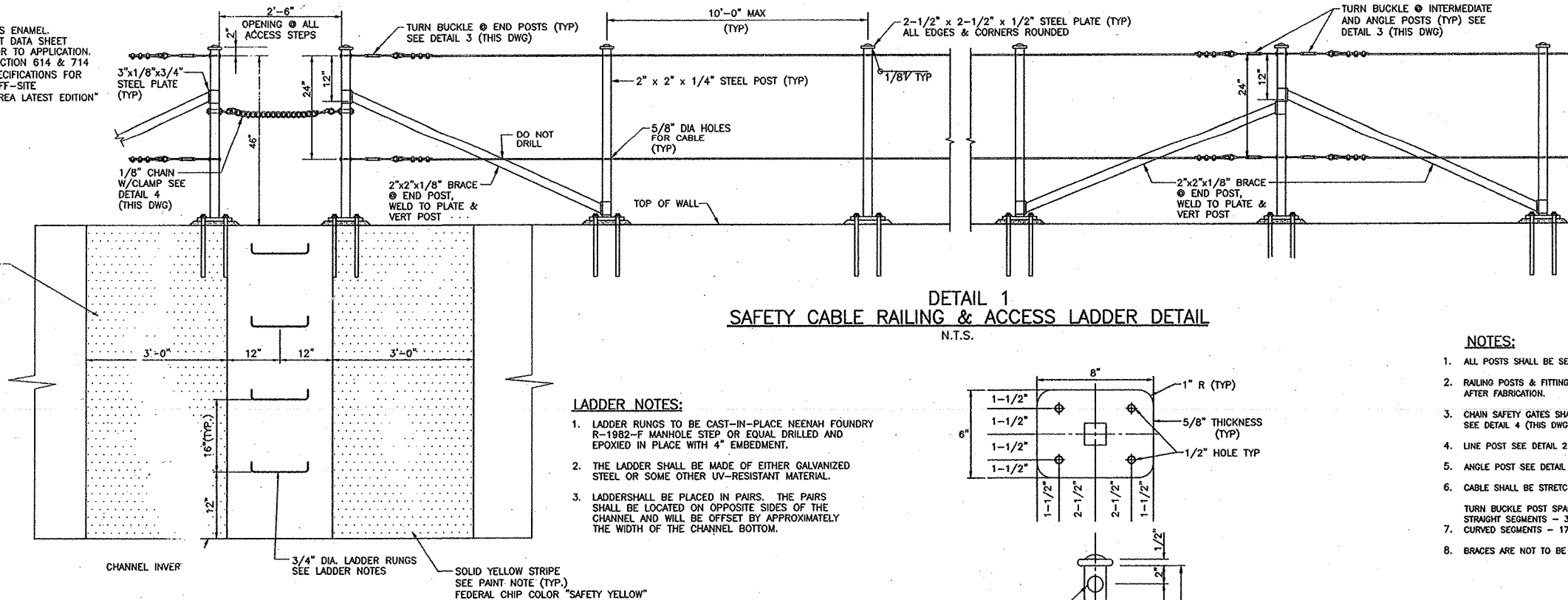
20 OF 22

07309 COH KIVA #PCVL 2007870029

PAINT NOTE:

ALL PAINT SHALL BE HIGH-GLOSS ENAMEL. CONTRACTOR SHALL SUBMIT PAINT DATA SHEET FOR REVIEW AND APPROVAL PRIOR TO APPLICATION. PAINTING SHALL CONFORM TO SECTION 614 & 714 OF THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA LATEST EDITION"

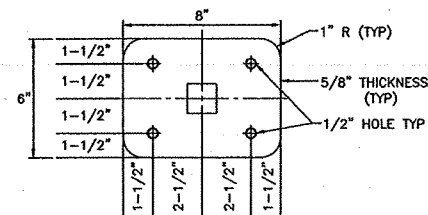
SOLID YELLOW STRIPE
SEE PAINT NOTE (TYP)



**DETAIL 1
SAFETY CABLE RAILING & ACCESS LADDER DETAIL**
N.T.S.

LADDER NOTES:

- LADDER RUNGS TO BE CAST-IN-PLACE NEENAH FOUNDRY R-1982-F MANHOLE STEP OR EQUAL DRILLED AND EPOXYED IN PLACE WITH 4" EMBEDMENT.
- THE LADDER SHALL BE MADE OF EITHER GALVANIZED STEEL OR SOME OTHER UV-RESISTANT MATERIAL.
- LADDERS SHALL BE PLACED IN PAIRS. THE PAIRS SHALL BE LOCATED ON OPPOSITE SIDES OF THE CHANNEL AND WILL BE OFFSET BY APPROXIMATELY THE WIDTH OF THE CHANNEL BOTTOM.

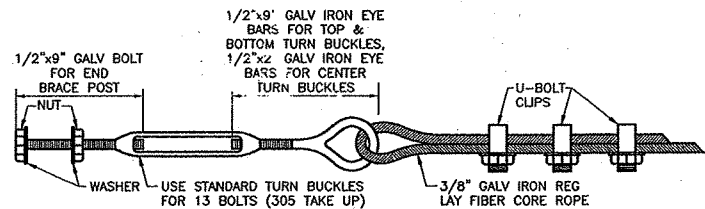


NOTES:

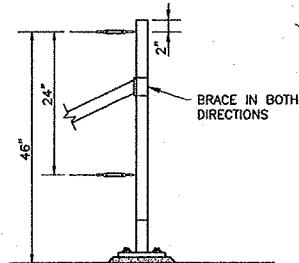
- ALL POSTS SHALL BE SET PLUMB.
- RAILING POSTS & FITTINGS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
- CHAIN SAFETY GATES SHALL BE PROVIDED AT LADDER LOCATIONS SEE DETAIL 4 (THIS DWG).
- LINE POST SEE DETAIL 2 (THIS DWG).
- ANGLE POST SEE DETAIL 5 (THIS DWG).
- CABLE SHALL BE STRETCHED TAUT.
- TURN BUCKLE POST SPACING:
STRAIGHT SEGMENTS - 350' O.C. MAX
CURVED SEGMENTS - 175' O.C. MAX
- BRACES ARE NOT TO BE INSTALLED ACROSS EXPANSION JOINTS

CHANNEL LADDER LOCATION SCHEDULE

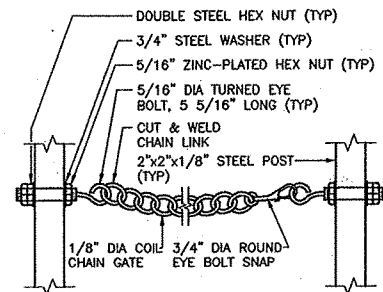
STATION	OFFSET
18+00	12' LT
18+24	12' RT
24+00	12' LT
24+24	12' RT



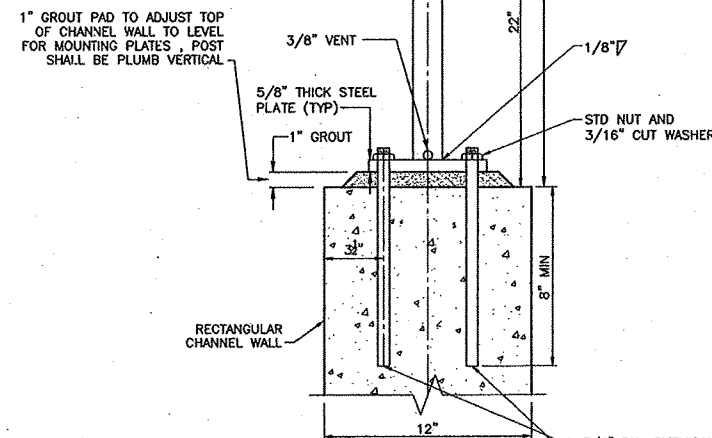
**DETAIL 3
TURN BUCKLE DETAIL**
N.T.S.



**DETAIL 5
ANGLE POST DETAIL**
N.T.S.



**DETAIL 4
CHAIN SAFETY GATE DETAIL**
N.T.S.



**DETAIL 2
POST DETAIL**
N.T.S.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
DANIEL PAULIS P.E. No. 15749; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

NEW DEVELOPMENT ENGINEER - CITY OF HENDERSON
CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY: 20.

REVISIONS

No.	Date	By	Appr.
1			

DESIGNED BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Carter Burgess
Consultants in Planning, Engineering,
Construction Management, and Related Services
6655 Barnhart Road
Las Vegas, Nevada 89119
Tel: 702-540-5400 Fax: 702-838-5454

PITTMAN MACDONALD RANCH CHANNEL

SAFETY CABLE RAILING DETAILS

07309

COH KVA #PCVL 2007870029

S-13
22 OF 22

PITTMAN MACDONALD RANCH CHANNEL

AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD

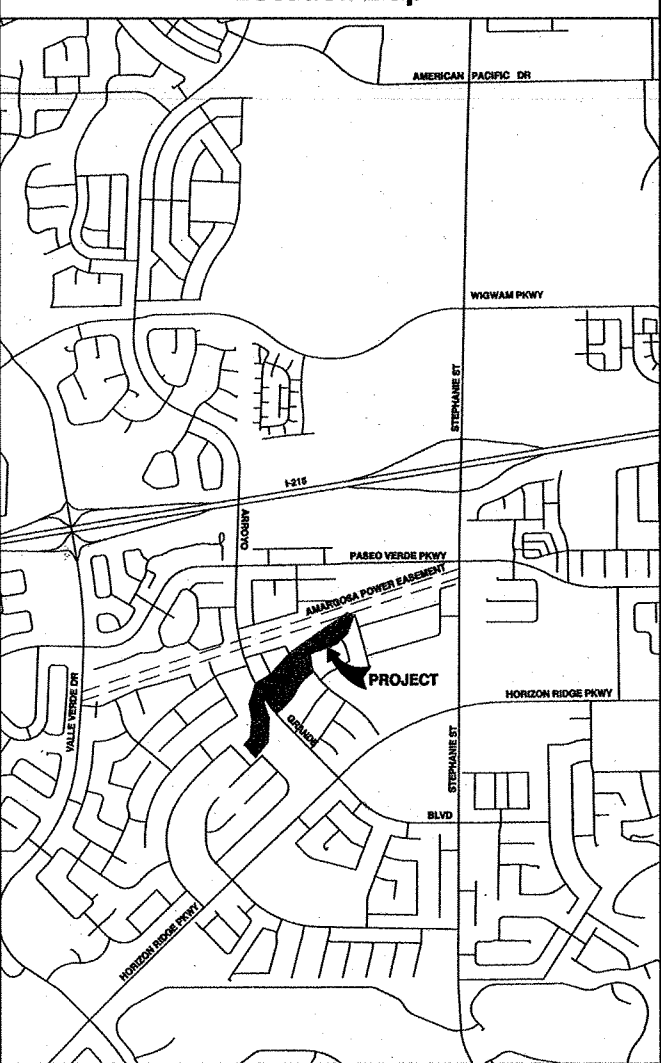
CONTRACT No. 131-08-FC-042-005

PWP-CL-2009-63

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

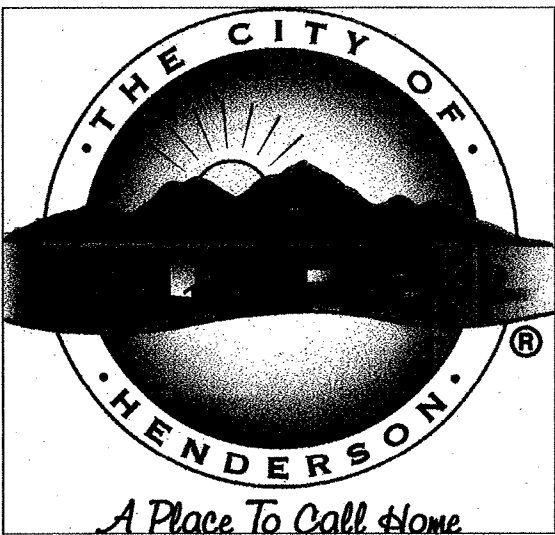
Location Map



Revisions

No.	DESCRIPTION	BY	DATE	APPROVAL

City Of Henderson Clark County, Nevada Department Of Public Works



Mayor
Andy A. Hafen

City Council
Kathleen Boutin
Steven D. Kirk
Gerri Schroder

City Manager
Mark T. Calhoun

Director Of Public Works
Robert A. Murnane, P.E.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED
BY: JOHN P. MENG P.E. No.
7540; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN
PREPARED, IN PART, ON THE BASIS
OF INFORMATION COMPILED AND
FURNISHED BY OTHERS. JACOBS IS
NOT RESPONSIBLE FOR ANY ERROR
OR OMISSION IN THIS DOCUMENT AS
A RESULT OF INFORMATION
PROVIDED BY OTHERS.

Index Of Sheets

No.	DESCRIPTION
1.	COVER SHEET
2.	GENERAL NOTES, ABBREVIATIONS, LEGEND, & SURVEY CONTROL
3.	CHANNEL PLAN & PROFILE, STA 24+00 THRU 33+00
4.	CHANNEL PLAN & PROFILE, STA 33+00 THRU 40+00
5.	CHANNEL PLAN & PROFILE, STA 40+00 THRU 43+71.25
6.	STRUCTURAL GENERAL NOTES
7.	TYPICAL DETAILS
8.	CHANNEL, ACCESS RAMP AND TRANSITION
9.	VANE WALL SECTION AND DETAILS
10.	RCB PLAN AND ELEVATION
11.	VANE WALL CHANNEL PLAN
12.	CONNECTION TO EXIST. DRAINAGE STRUCT.
13.	CHANNEL SECTION AND 24' RCB CROSSING
14.	CHANNEL ACCESS RAMP
15.	RAMP AND PIPE PENETRATION DETAILS
16.	VANE WALL AND RCB
17.	CHANNEL AND RETAINING WALLS
18.	SAFETY CABLE RAILING DETAILS
19.	TYPICAL EXCAVATION AND BACKFILL DETAILS
20.	RCB EXCAVATION AND BACKFILL DETAIL

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

GENERAL MANAGER/CHIEF ENGINEER

APPROVED:

GALE WM. FRASER, II, P.E. 7/13/09

GALE WM. FRASER, II, P.E.

Approval

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS	<i>Robert A. Murnane</i>	7/13/09
DIRECTOR OF UTILITY SERVICES	<i>Sharon Hanson</i>	7/13/09
CITY ENGINEER	<i>Sharon Hanson</i>	7/13/09
SURVEY/RIGHT OF WAY	<i>Sharon Hanson</i>	7/13/09
NEW DEVELOPMENT	<i>Sharon Hanson</i>	7/13/09
CITY TRAFFIC ENGINEER	<i>Sharon Hanson</i>	7/13/09

Agency Approval

AGENCY	APPROVED	DATE
NEVADA POWER COMPANY (DISTRIBUTION)	<i>Armando Romo Jr.</i>	06/25/09
NEVADA POWER COMPANY (TRANSMISSION)	<i>Sharon Hanson</i>	06/25/09
VALLEY ELECTRIC	<i>Phil Jackson</i>	07/13/09
EMBARQ	<i>Franklin</i>	06/25/09
COX COMMUNICATIONS LAS VEGAS, INC.	<i>Sharon Hanson</i>	06/25/09
SOUTHWEST GAS CORPORATION	<i>Roger Rappaport</i>	6/25/09

THE AFFIXED EMBARQ NEVADA APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTIONS OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

APPROVAL OF THESE PLANS BY THE CITY OF HENDERSON IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY IDENTIFIED AS "DEVIATIONS FROM STANDARDS". THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARDS DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP AT (775) 687-8429.

Kiva# 2009860021 07498

PITTMAN MACDONALD RANCH CHANNEL

AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD

CONTRACT No. 131-08-FC-042-005

PWP-CL-2009-63

DATE : 01/2009

DRAWING No.

G-1

SHEET No. 1

1. ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OPTISITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1988, AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OPTISITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1988.
2. APPLICATION FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICES WILL BE REQUIRED, 267-3144.
3. WORK IN PUBLIC STREETS, OTHER DEED, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMAL INTERFERENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
4. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH CONSTRUCTION.
5. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND ADJACENT PROPERTIES AND SHALL BEAR FULL RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
6. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE-WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENDS ENCOUNTERED WITH EXISTING PUBLIC PROJECTS AND LOCATE THE FIRST GRADING WORK TO BE ACCOMPLISHED AND SHALL MAINTAIN STOP SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED. ALL CONSTRUCTION SLOWING, BARRICADE, AND TRAFFIC DEFLECTION SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL," CURRENT EDITION AND TO THE "NATIONAL TRAFFIC CONTROL MANUAL," CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.
7. ALL SIGNAGING IS REFERENCED TO CENTERLINE.
8. PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELETED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE CITY OF HENDERSON SURVEY DIVISION'S SATISFACTION.
9. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
10. CALL BEFORE YOU DIG: 1-800-227-2600.
11. MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S UTILITY STANDARDS AND SPECIFICATIONS.
12. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
13. CITY APPROVAL OF THE REPAIR PLAN IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REPAIR APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY MAY, 2010.
14. ALL OFFSITE AND ONSITE WATER AND SEWER FACILITIES UP TO WITHIN 5 FEET OF BUILDINGS SHALL BE CONSTRUCTED TO PUBLIC WORKS STANDARDS.
15. IF SENIOR OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS require REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH THE CITY OF HENDERSON'S UTILITY STANDARDS.
16. THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ARE ADOPTED OR LARGELY MUST APPLY FOR THE NPDES PERMIT UNDER THE ADOPTED NPDES PERMIT REQUIREMENTS. THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP (775) 687-4420.

1. ANY EXISTING TRAFFIC CONTROL DEVICES AND/OR SIGNS SHALL BE MAINTAINED DURING THE PERIOD OF CONSTRUCTION AND SHALL BE REPOSITIONED AS REQUIRED, PER MUTCD AND CITY STANDARDS, UPON COMPLETION OF THE PROJECT.
2. DEVELOPERS/CONTRACTORS ARE RESPONSIBLE FOR SUBMITTING TRAFFIC CONTROL/BARRICADE PLANS TO THE TULSA POLICE DEPARTMENT PRIOR TO BEGINNING CONSTRUCTING AND BEGINNING OF CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING SIDEWALKS. BEFORE ANY WORK IS STARTED IN THE RIGHT OF AVENUE, THE CONSTRUCTION WILL INSTALL ALL ADVANCE WARNING SIGNS AND/OR BARRICADES FOR CONSTRUCTION. IT WILL INSTALL TEMPORARY GUIDE RAIL MOUNTED STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND WILL MAINTAIN SAID SIGNS UNTIL SUCH TIME THAT SIGNS ARE NO LONGER NEEDED.
3. LOCATION AND DESCRIPTION OF NEW AND EXISTING TRAFFIC CONTROL DEVICES, STREET STOPPING, MEDIAN SIGNAL, DRIVEWAYS AND TRAFFIC SIGNALS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY APPROVED. ALL NEW TRAFFIC SIGNS WILL BE FABRICATED WITH STANDARD COLOR GRAY (CLASS 1) OR CLASS 2 SIGNAGE. ALL NEW TRAFFIC SIGNS MUST HAVE WHITE BACKGROUND. ALL NEW TRAFFIC SIGNS WILL BE "GALV." OR 3M SERIES 11800 OR APPROVED EQUIVALENT UNL-QUARTZ PROTECTIVE FILM.
4. LOCATION AND DESCRIPTION OF NEW AND EXISTING STREET NAME SIGNS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY APPROVED. STREET NAME SIGNS COULD VARY WITH CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS NO. 249, 250, AND 251. ALL STREET NAME SIGNS WILL BE FABRICATED WITH DIMENSION GRADE NE (CLASS 2) REFLECTIVE SHEETING. ALL STREET NAME SIGNS WITH RED BACKGROUND WILL BE SET BY THE CONTRACTOR TO THE CENTER OF HERODSON ROAD ON BOTH STREET NAME PANELS. CONTACT CITY OF HERODSON THROUGH TRAFFIC SIGNS MAINTENANCE THREE (3) WORKING DAYS IN ADVANCE, MONDAY THROUGH THURSDAY, 7:00 AM TO 5:00 PM TO RECEIVE A LIST OF THE STREET NAMES TO BE LOCATED ON THE STREET NAME PANELS PER CITY OF HERODSON STANDARD DETAIL. PRIVATE STREET SIGNS SHALL HAVE BROWN BACKGROUND.
5. BLUE REFLECTORIZED PAVEMENT MARKINGS MUST BE INSTALLED AND OURS MUST BE PAINTED AT EVERY FIFTEEN FOOT INTERVAL ALONG CITY OF HERODSON FIRE DEPARTMENT STATIONARIES.
6. ALL CONSTRUCTION STOPPING, BARRICADEING, AND PAVEMENT MARKINGS WILL CONFORM TO THE KENTADA BOULEVARD DRIVE TRAFFIC CONTROL HANDBOOK - 1998 AND TO THE CURRENT EDITION OF THE MUTCD WITH ANY ADDENDAS AND REVISIONS.
7. WHERE STRIPS END AT THE PROJECT BOUNDARY, THERE (3) 18-INCH DIAMOND (BARNAUM), YELLOW CORNERED AND PAVED SURF SHALL BE INSTALLED AT THE END OF THE ROADWAY AND MAINTAINED UNTIL ADJOINING PROJECT IS BUILT.
8. IF THE IMPROVEMENTS NECESSITATE THE EVACUATION, TRAFFICOUSTION, TEMPORARY REMOVAL, OR REGULATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING WILL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY ENGINEER.
9. THE FREIGHT AND AIRPORT SYSTEM OF TRANSPORTATION (FAA'S) MAY HAVE UNDERGROUND FACILITIES IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL FAST INFRASTRUCTURE ON ROWADAYS WITH RIGHT OF WAYS OF 80' AND MORE. CONTRACTOR SHALL ASK AT LEAST TWO WEEKS IN ADVANCE OF ANY COMMENCEMENT OF CONSTRUCTION ACTIVITIES THE AREA OF THEIR OWNERSHIP. FAST INTERCEPT POINTS IS IN EFFECT. INTERCEPTOR CABLE MUST BE MAINTAINED AT ALL TIMES. DAMAGES WILL BE PAID TO THE OWNER. 24 HOURS HAS ELAPSED FROM THE BREAK OR DAMAGE PER FAST AND ITS REQUIREMENTS.

1. THE NEVADA REESED STATUTES, NRS 455.200 THROUGH 455.250, PROHIBIT ACTIVITY WITHIN 100 FEET OF A HIGH VOLTAGE POWER LINE WITHOUT NOTIFICATION TO AND THE CONSENT OF THE UTILITY THAT OWNS THE LINE.
2. THE CONTRACTOR WILL NOTIFY VALLEY ELECTRIC ASSOCIATION ENGINEERING DEPARTMENT AT (775) 727-5312 A MINIMUM OF 2 WEEKS PRIOR TO CONSTRUCTION TO COORDINATE WORK WITHIN THE AMARGOSA POWER EASEMENT.
3. THE CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH VALLEY ELECTRIC ASSOCIATION FOR SAFETY TRAINING OF ALL LABORERS WORKING WITHIN THE AMARGOSA POWER EASEMENT PRIOR TO CONSTRUCTION.

Item	Description	Quantity	Unit
200.01	Mobilization	1	LS
201.01	Clearing and Grubbing	1	LS
202.01	Removal of Structures to Reconstruct Stilling Basin Drainage Structure	1	LS
202.02	Removal of Headwalls	1	LS
202.03	Removal of 18" RCP	413	LF
203.01	Excavation and embankment	18,900	CY
203.01	Type II Agg Base	1,660	CY
602.01	Rectangular Concrete Channel Transition Station 25+35 to Station 22+35	1	LS
602.02	24' x 9.6' Rectangular Concrete Channel Station 25+35 to Station 27+00	165	LF
602.03	24' x 8' Reinforced Concrete Box Station 27+00 to Station 27+14	1	LS
602.04	24' x 9.6' Rectangular Concrete Channel Station 27+14 to Station 34+39	725	LF
602.06	Channel Access Ramp & Transition Station 34+39 to Station 36+49	1	LS
602.06	48' x 7' Channel W/ Vane Wall Station 36+49 to Station 37+00	60	LF
602.07	4 Cell 11.6' x 6' Reinforced Concrete Box Station 37+60 to Station 39+10	60	LF
602.08	Rectangular Concrete Channel Transition Station 39+10 to Station 39+40	1	LS
602.09	24' x 10.5' Channel W/ Vane Wall Station 39+00 to Station 40+53	153	LF
602.10	24' x 10.5' Rectangular Concrete Channel Station 40+53 to Station 42+75	224	LF
602.11	Transition and Drainage Structure Reconstruction Station 42+76 to Station 43+81	1	LS
603.01	18-Inch RCP (Class III)	20	LF
603.02	30-Inch RCP (Class III)	200	LF
609.01	Type I Manhole 30" Ring and Cover	1	EA
609.02	Type II Manhole 30" Ring and Cover	1	EA
609.03	Type III Manhole 30" Ring and Cover	1	EA
613.01	Commercial Driveway	188	SF
616.01	Chain Link Fence	1,760	LF
616.02	14-Foot Double Swing Gate	1	EA
616.03	5-Foot Single Swing Gate	4	EA
616.04	Post & Cable Railing	3,690	LF
616.05	Pedestrian Rail Type R	62	LF
637.01	Dust Control	1	LS

RIGHT OF WAY/PA	R/W	RIGHT OF WAY/PA
CENTERLINE	CL	CENTERLINE
SIDEWALK, CURB & GUTTER		SIDEWALK, CURB & GUTTER
HANDICAP RAMP		HANDICAP RAMP
INDEX CONTOUR	2100	INDEX CONTOUR
INTERMEDIATE CONTOUR		INTERMEDIATE CONTOUR
SEWER MAIN	EX. 8" SEWER	SEWER MAIN
SEWER MANHOLE	Ⓢ	SEWER MANHOLE
SEWER LATERAL	—	SEWER LATERAL
WATER MAIN	EX. 8" WATER	WATER MAIN
WATER LATERAL	—	WATER LATERAL
WATER METER	Ⓜ	WATER METER
REDUCED PRESSURE PRINCIPLE ASSEMBLY	Ⓜ	REDUCED PRESSURE PRINCIPLE ASSEMBLY
WATER VALVE	Ⓢ	WATER VALVE
WATER TIE OR BOND	+T ₁ X ₁ T ₂	WATER TIE OR BOND
WATER REFINER	▶	WATER REFINER
FIRE HYDRANT	Ⓕ	FIRE HYDRANT
STORM DRAIN	EX. 24" SD	STORM DRAIN
STORM DRAIN MANHOLE	Ⓢ	STORM DRAIN MANHOLE
ELECTRO OVERHEAD	E(OH)	ELECTRO OVERHEAD
STREETLIGHT - 100 WATT		STREETLIGHT - 100 WATT
STREETLIGHT - 250 WATT		STREETLIGHT - 250 WATT
STREET NAME SIGN		STREET NAME SIGN
STOP SIGN		STOP SIGN
LOT NUMBER	42	LOT NUMBER
FINISH FLOOR ELEVATION	FF=32.83	FINISH FLOOR ELEVATION
PAV ELEVATION	PE=32.0	PAV ELEVATION
RATE OF GRADE	$\frac{0.50\%}{(31.33)}$	RATE OF GRADE
ELEVATION	EX. TC	ELEVATION
EASMENT		EASMENT

AC	ASPHALTIC CONCRETE	LT	LATERAL
AD	ADGREGATE BASE	LF	LINEAR FEET
BC	BACK OF CURB	LI	LEFT
BCR	BOUND CURS RETURN	LM	MAXIMUM
BDRY	BOUNDARY	MM	MANHOLE
BEG	BEIGN	MM	MANHOLE
BF	BACK FACE	N	NORTH
BM	BENCHMARK	NDOT	NVADA DEPARTMENT OF TRANSPORTATION
BW	BACK OF SIDEWALK	OP	OVERHEAD POWER
BVC	BOUND VERTICAL CURVE	PC	POINT OF CURVATURE
C	CENTER LINE	PCC	POINT OF INTERSECTED CURVE
CLR	CLEARANCE	PI	POINT OF INTERSECTION
CL	CLEAN OUT	POC	POINT ON CURVE
CONC	CONCRETE	POWER	POWER POLE
CONST	CONSTRUCT	PRC	POINT OF REVERSE CURVE
DCSWMS	DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS	PRO	PROPOSED
DI	DIAMETER	PT	POINT OF TANGENCY
DIA	DRAINAGE	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	PWT	PAVEMENT
E	EAST	RC	REINFORCED CONCRETE BOX
EF	EACH FACE	REF	REINFORCED CONCRETE PIPE
EG	EXISTING GRADE	RT	RIGHT
EL	ELEVATION	S	SLOPE-%/100
EP	EDGE OF PAVEMENT	SH	SHEET
EQ	EQUAL	SSM	SANITARY SEWER
EW	EASTWEST	SSM	SANITARY SEWER MANHOLE
ENC	END VERTICAL CURVE	SDM	STORM DRAIN
EX, EXIST	EXISTING	SP	SPACING
FC	FACE OF CURB	STA	STATION
FF	FINISH FLOOR/FRONT FACE	STL	STREET LIGHT
FG	FINISH GRADE	SW	SIDEWALK
FI	FIRE HYDRANT	T	TOP OF CURB
FL	FLOW LINE	TEL	TELEPHONE
FL	FLOW LINE	TM	TOP OF MANHOLE
G	GALE	TRANS	TRANSITION
GALV	GALVANIZED	TRN	TRUCK
GB	GRADE BREAK	UD	UNIFORM STANDARDS DRAINAGE
HP	HIGH POINT	V	VALLEY
HOL	HYDRAULIC GRADE LINE	VO	VALLEY OUTLET
HY	INVERT	W	WATER/WEIR

NORTH 89°00'55" EAST, BEING THE BEARING OF THE CENTERLINE OF PASO VERDE PARKWAY AS SHOWN ON THAT CERTAIN PLAT OF FOOTHILLS RANCH - PHASE 2" ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 73, PAGE 24 OF PLATS, SITUATE IN THE NORTHEAST QUARTER (NE 1/4) OF SECTION 21, TOWNSHIP 22 SOUTH, RANGE 62 EAST, M.D.M., CITY OF HENDERSON, CLARK COUNTY, NEVADA.

CITY OF HENDERSON BENCHMARK #333, 2" BRASS CAP IN THE TO
OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF
PASEO VERDE PARKWAY AND ARROYO GRANDE BOULEVARD.

ELEVATION = 615.633 METERS (NAVD'88 PUBLISHED)
ELEVATION = 2020.45 U.S. SURVEY FEET (NAVD'88 CALCULATED)

ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.19 OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEM (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES. ESM.084

SURVEY CONTROL POINTS		
POINT	(NORTHING, EASTING)	DESCRIPTION
	(8868.30', 9999.06')	MONUMENT AT THE INTERSECTION OF ARROYO GRANDE BLVD & PASEO VERDE PKWY
	(8715.49', 12621.12')	MONUMENT AT THE INTERSECTION OF STEPHANIE ST & PASEO VERDE PKWY

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
JOHN P. MENG P.E. No. 7540; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

JACOBS™

**SUBJECT: PITTMAN MACDONALD RANCH CHANNEL
MARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD**

**DESCRIPTION: GENERAL NOTES, ABBREVIATIONS, LEGEND
& SURVEY CONTROL**

G-2
2 OF 15

07498

2 OF 15

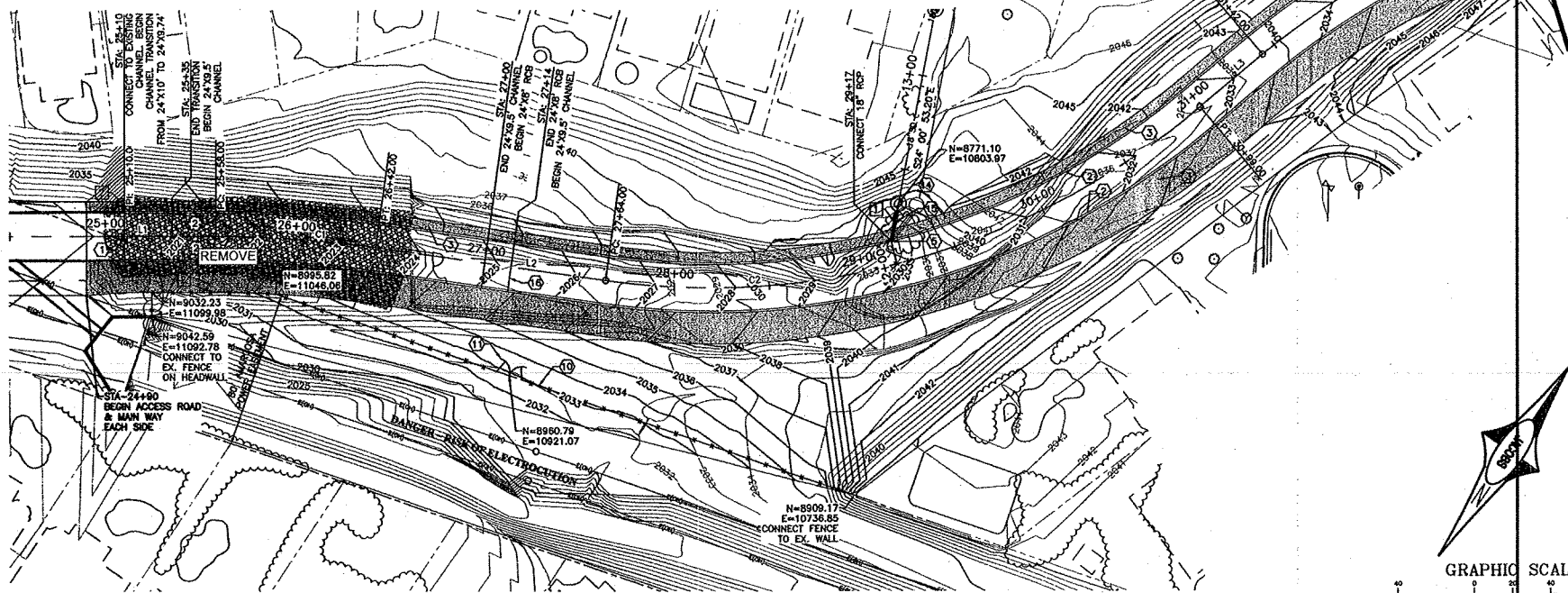
\\JOB\241628-restored\design\828_0-2.DWG

VALLEY ELECTRIC ASSOCIATE NOTE
A VALLEY ELECTRIC ASSOCIATION (VEA) SPOTTER WILL BE REQUIRED TO BE PRESENT ON SITE WHENEVER THERE IS CONSTRUCTION INSIDE THE ELECTRICAL EASEMENT. THE ELECTRICAL EASEMENT BOUNDARY WILL BE MARKED THROUGHOUT THIS CONSTRUCTION PERIOD. THE SPOTTER WILL HAVE THE AUTHORITY TO STOP ANY CONSTRUCTION ACTIVITIES WITHIN THE ELECTRICAL EASEMENT THAT IS UNSAFE OR MAY CAUSE DAMAGE TO THE ELECTRICAL FACILITIES. THE CONSTRUCTION CREW WILL START EACH MORNING WITH A SAFETY MEETING WITH A DISCUSSION OF THE DANGERS OF WORKING UNDER ENERGIZED LINES. THE CONSTRUCTION COMPANY WILL HAVE A SIGN IN SHEET FOR THE ELECTRICAL SAFETY BRIEFING AND GIVE IT TO THE SPOTTER EACH DAY. THE COST OF THE SPOTTER WILL BE PAID BY THE CONTRACTOR TO VEA. VEA WILL INVOICE AT THE END OF THIS CONSTRUCTION PERIOD. THE CONTRACTOR WILL CONTACT VEA AND SCHEDULE THE SPOTTER 30 DAYS BEFORE CONSTRUCTION STARTS.

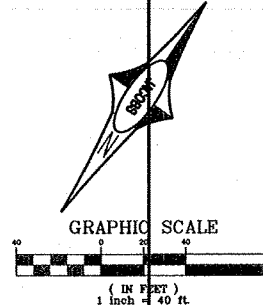
UNDER NO CONDITIONS WILL ANY PART OF ANY EQUIPMENT APPROACH CLOSER THAN 15 FEET FROM ANY VEA WIRE OR CONDUCTOR.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
JOHN P. MENG P.E. No. 7540; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.



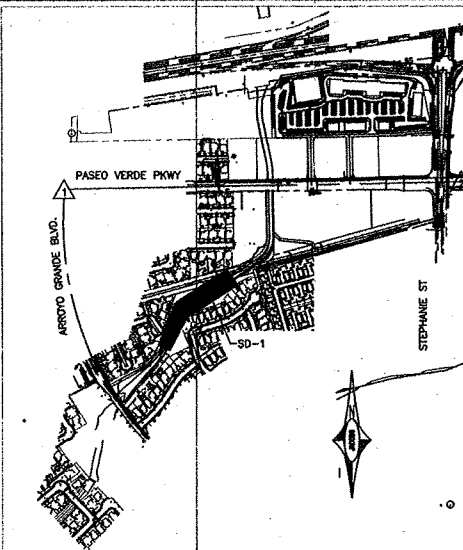
PLAN
STA 24+00 THRU 33+00



- DEMOLITION NOTES
- 1 REMOVE 20' OF 18" RCP
 - 2 REMOVE EXISTING GROUTED RIPRAP WALL TRANSITIONS
- CONSTRUCTION NOTES
- 1 CONNECT TO EXISTING 24"X10' CONCRETE RECTANGULAR CHANNEL SEE DETAIL 9 SHEET S-2.
 - 2 CONSTRUCT CONCRETE RECTANGULAR CHANNEL PER SECTION A ON SHEET S-14.
 - 3 CONSTRUCT AGGREGATE BASE ACCESS ROAD AND ACCESS PATH SEE SECTION A ON SHEET S-14.
 - 4 CONSTRUCT EXPANSION JOINT WITH CUTOFF WALL PER DETAIL 6 ON SHEET S-2.
 - 5 CONNECT 18" RCP PER DETAIL 3 ON SHEET S-10.
 - 6 CONSTRUCT ACCESS LADDERS PER DETAIL 1 ON SHEET S-13.
 - 10 CONSTRUCT 6' HIGH CHAIN LINK FENCE PER NDOT STD R-6.3.2.1
 - 11 CONSTRUCT 6' HIGH 14" WIDE DOUBLE SWING GATE PER NDOT STD R-6.3.3
 - 12 CONSTRUCT 48" TYPE I MANHOLE W/ 30" RING AND COVER PER USD 403A
 - 15 CONSTRUCT 18" RCP PER USD 504 AND PROFILE THIS SHEET.
 - 16 CONSTRUCT 24"X8' RCP PER SHEET S-8.

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	48.00	S55°12'23.87"W	(9016.58,11128.28)	(8989.19,11088.86)
L2	122.00	S65°13'40.94"W	(8946.23,11018.76)	(8891.28,10907.84)
L3	43.00	S15°09'06.18"W	(8839.18,10702.28)	(8597.66,10691.02)

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C1	600.00	84.00	S59°12'47.31"W	(8989.19,11088.86)	(8946.23,11018.76)
C2	400.00	335.00	S39°11'46.13"W	(8891.28,10907.84)	(8639.18,10702.28)
C3	400.00	208.10	S30°09'24.43"W	(8597.66,10691.02)	(8419.67,10587.81)



KEYMAP
SCALE: 1"=800'

Call
before you
Overhead
1-702-593-6111
NEVADA POWER ENVIRONMENT AND
SAFETY SERVICES DEPARTMENT



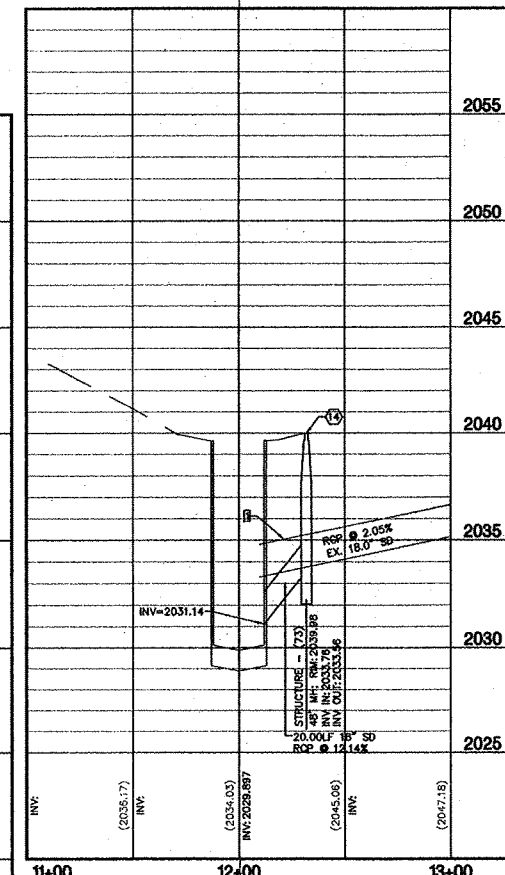
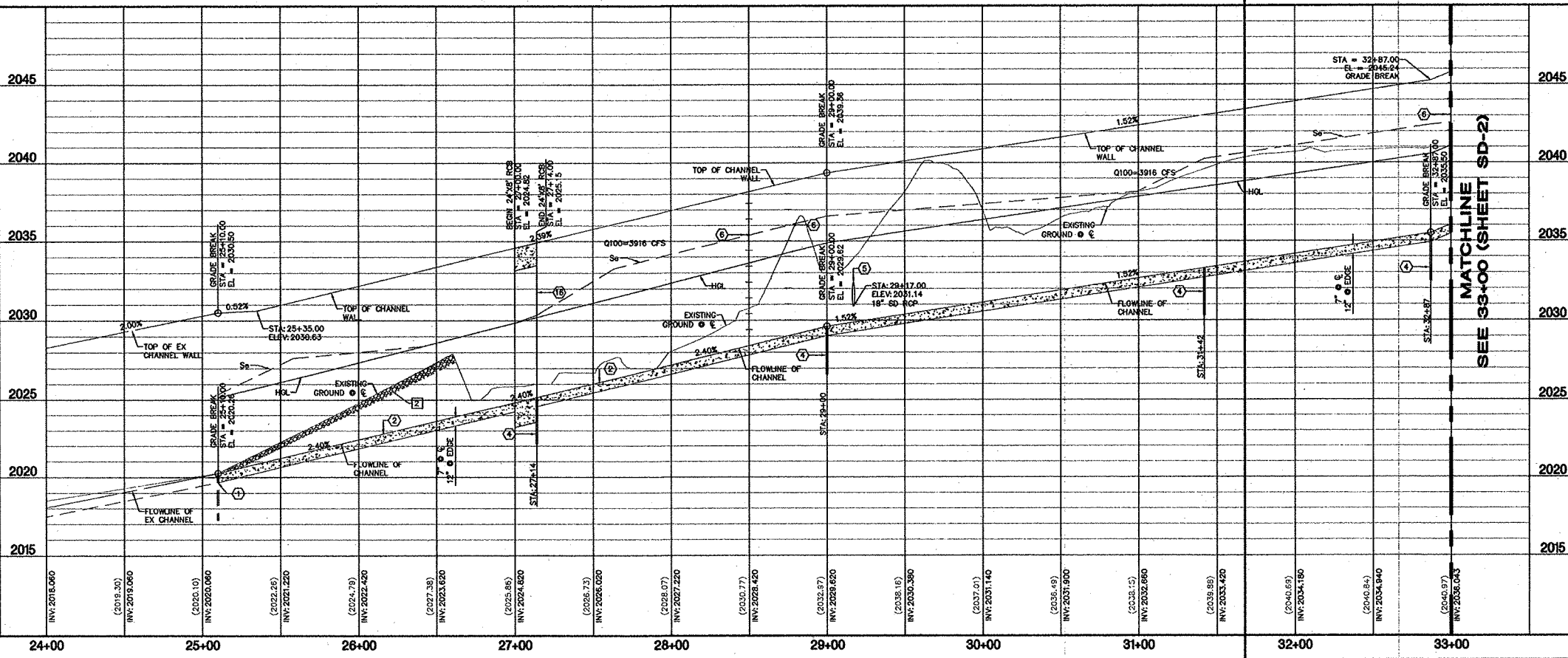
REVISIONS

NO.	DATE	BY	CHKD	APPD
1	JANUARY 2008	DESIGNED: JAC	CHKD: JAC	APPD: JAC
2		DRAWN: JAC	CHKD: JAC	APPD: JAC
3		CHECKED: JAC	CHKD: JAC	APPD: JAC
4		JOB NO: 241782	CHKD: JAC	APPD: JAC
5		DATE: 1-24-08	CHKD: JAC	APPD: JAC
6		DATE: 1-24-08	CHKD: JAC	APPD: JAC

JACOBS
7800 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 888-5400 Fax (702) 888-5464

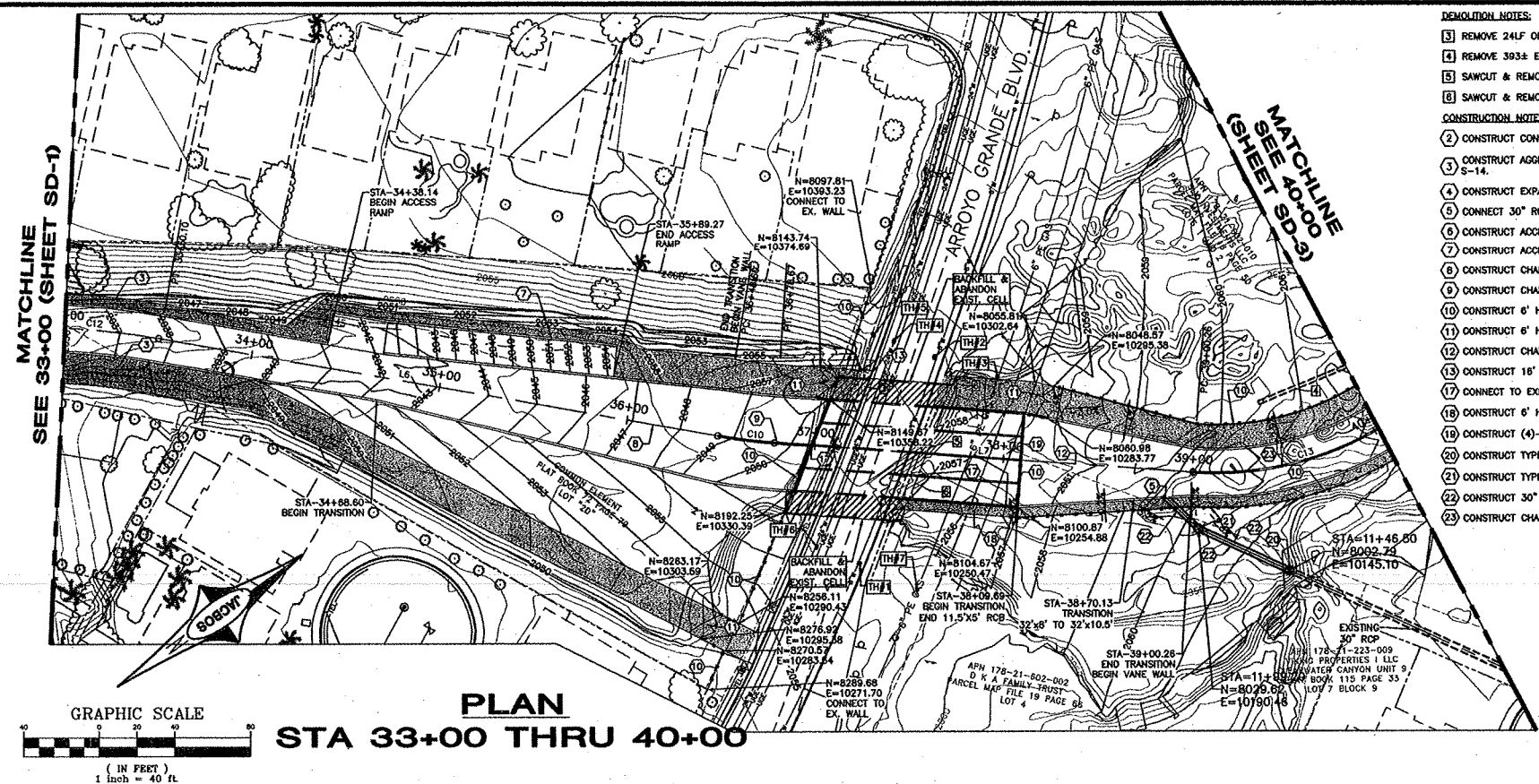
PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD
DESCRIPTION: CHANNEL PLAN AND PROFILE
STA 24+00 THRU 33+00

SD-1
3 OF 15



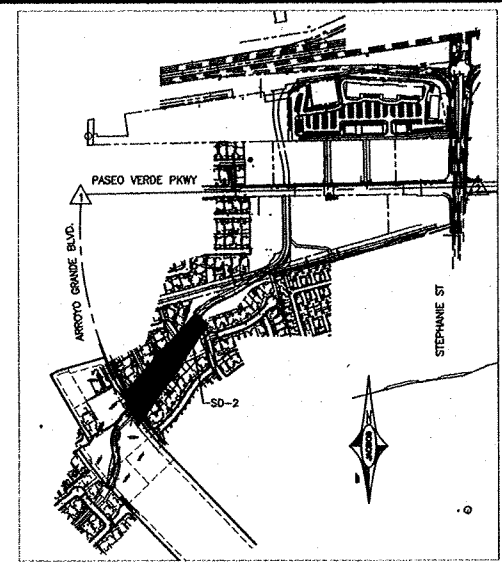
18" RCP PROFILE
STA 11+00 THRU 13+00

07498

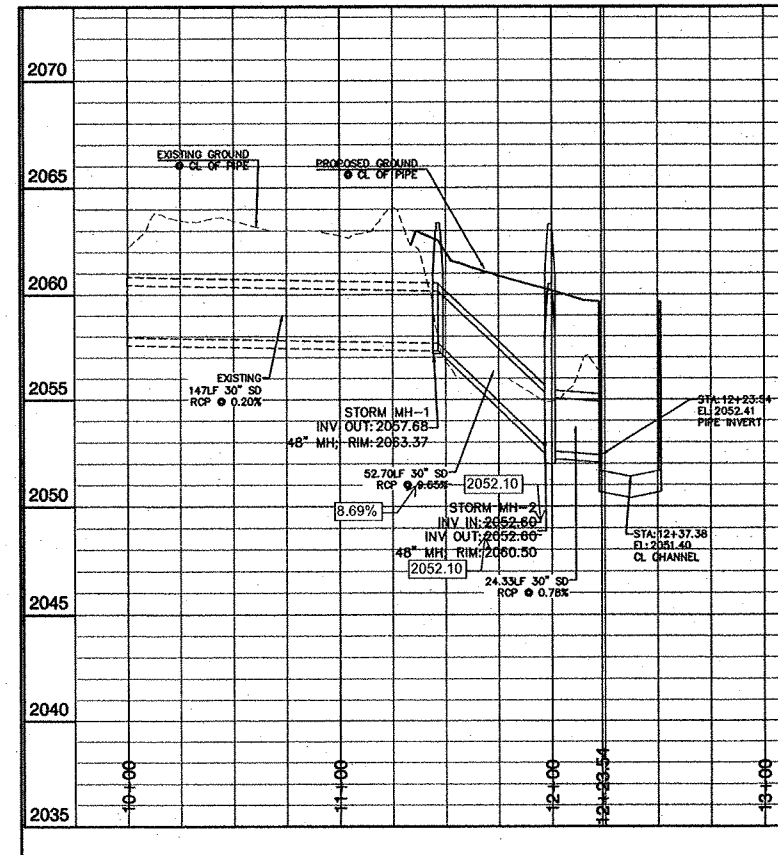
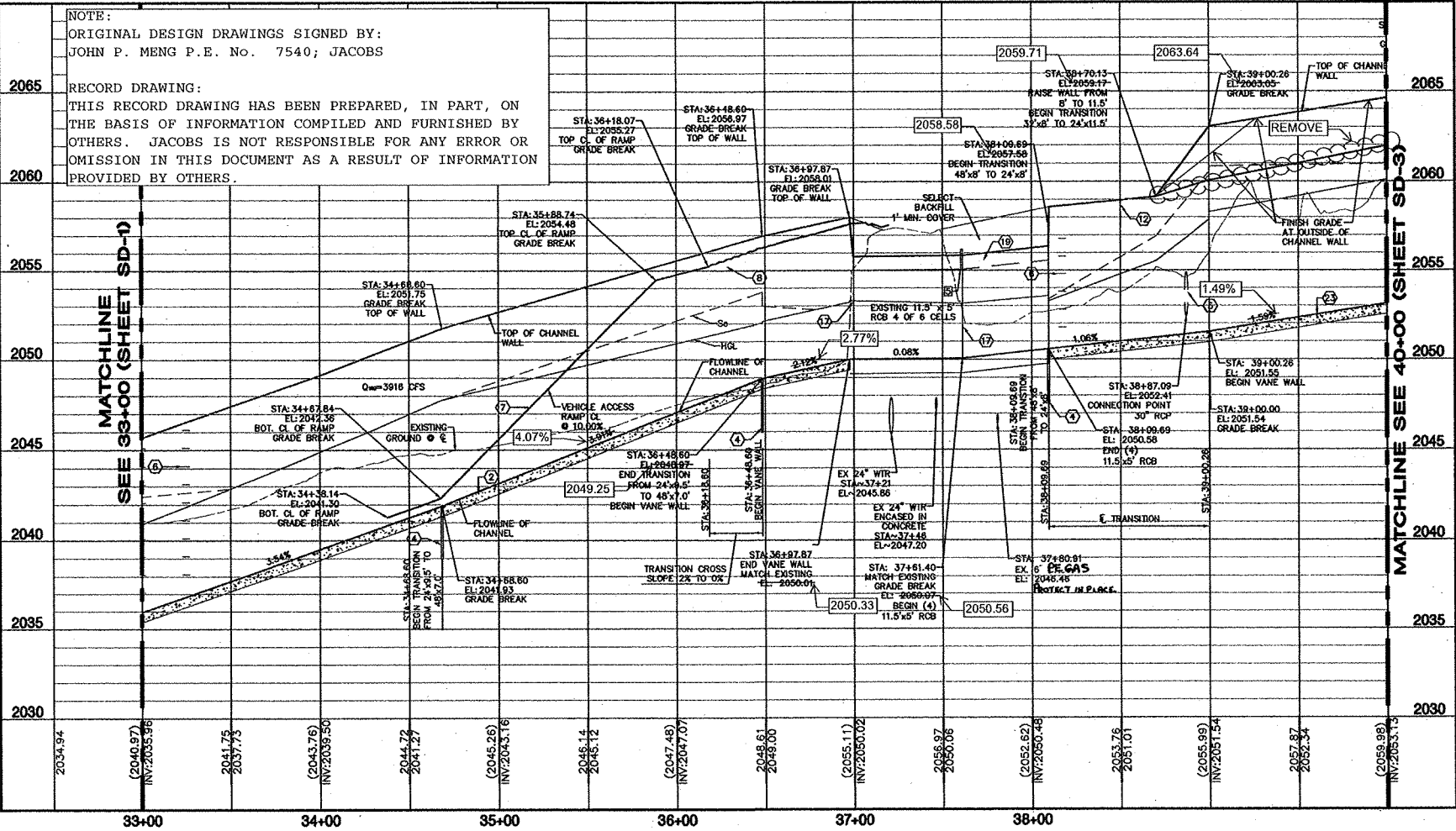


- DEMOLITION NOTES:
- 3) REMOVE 24" OF SIDEWALK, CURB, AND GUTTER FOR DRIVEWAY.
 - 4) REMOVE 36" EXISTING 18" RCP
 - 5) SAWCUT & REMOVE 1' HIGH HEADWALL ON EXISTING ROB'S
 - 6) SAWCUT & REMOVE TOP OF WING WALL WITHIN 2' OF FINISH GRADE
- CONSTRUCTION NOTES:
- 2) CONSTRUCT CONCRETE RECTANGULAR CHANNEL PER SECTION A ON SHEET S-14.
 - 3) CONSTRUCT AGGREGATE BASE ACCESS ROAD AND ACCESS PATH SEE SECTION A ON SHEET S-14.
 - 4) CONSTRUCT EXPANSION JOINT WITH CUTOFF WALL PER DETAIL 6 ON SHEET S-2.
 - 5) CONNECT 30" RCP PER DETAIL 3 ON SHEET S-10
 - 6) CONSTRUCT ACCESS LADDERS PER DETAIL 1 ON SHEET S-13.
 - 7) CONSTRUCT ACCESS RAMP SEE SHEET S-3.
 - 8) CONSTRUCT CHANNEL TRANSITION SEE SHEET S-3
 - 9) CONSTRUCT CHANNEL WITH VANE WALL PER SHEET S-4.
 - 10) CONSTRUCT 6' HIGH CHAIN LINK FENCE PER NDOT STD R-6.3.2.1.
 - 11) CONSTRUCT 6' HIGH 14" WIDE DOUBLE SWING GATE PER NDOT STD R-6.3.3.
 - 12) CONSTRUCT CHANNEL TRANSITION PER SHEET S-5.
 - 13) CONSTRUCT 18" COMMERCIAL DRIVEWAY PER STD DWG 224.
 - 17) CONNECT TO EXISTING CULVERTS PER DETAIL 4 ON SHEET S-2.
 - 18) CONSTRUCT 6' HIGH 5' WIDE SWING GATE PER NDOT STD R-6.3.3.
 - 19) CONSTRUCT (4)-11.5'x5' ROB SEE DETAIL SHEET S-5.
 - 20) CONSTRUCT TYPE II 48" MANHOLE W/ 30" RING & COVER PER USD405A
 - 21) CONSTRUCT TYPE III 60" MANHOLE W/ 30" RING & COVER PER USD406A
 - 22) CONSTRUCT 30" RCP PER USD405A & PROFILE THIS SHEET
 - 23) CONSTRUCT CHANNEL WITH VANE WALL PER SHEET S-6

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L6	298.49	S45°00'40.03"W	(8419.67,10587.81)	(8208.65,10376.70)
L7	221.59	S30°15'59.77"W	(8186.35,10356.53)	(8014.80,10216.28)
L8	122.00	S63°13'40.94"W	(8946.23,11016.78)	(8891.28,10907.84)
L9	43.00	S15°09'06.18"W	(8839.18,10702.26)	(8597.68,10691.02)
L10	55.88	S12°06'37.83"E	(7871.57,10181.70)	(7816.83,10193.45)
L11	147.07	S31°39'52.24"W	(7618.45,10159.28)	(7493.27,10062.06)
L12	295.00	S55°12'23.87"W	(9157.53,11331.12)	(8989.19,11088.86)

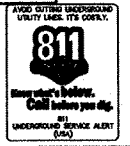


CURVE TABLE				
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	END POINT
C9	600.00	84.00	S59°12'47.31"W	(8989.19,11088.86)
C10	300.00	30.08	S42°08'19.80"W	(8208.65,10376.70)
C11	400.00	335.00	S39°11'46.13"W	(8891.28,10907.84)
C12	400.00	208.10	S30°06'24.43"W	(8597.68,10691.02)
C13	170.00	162.39	S13°34'13.15"W	(8014.80,10216.28)
C14	270.00	208.28	S8°46'37.20"W	(7816.83,10193.45)



30" RCP PROFILE
STA 1+00 THRU 2+24

Call before you Overhead
1-702-593-6111
800-368-5888
SAFETY SERVICES DEPARTMENT



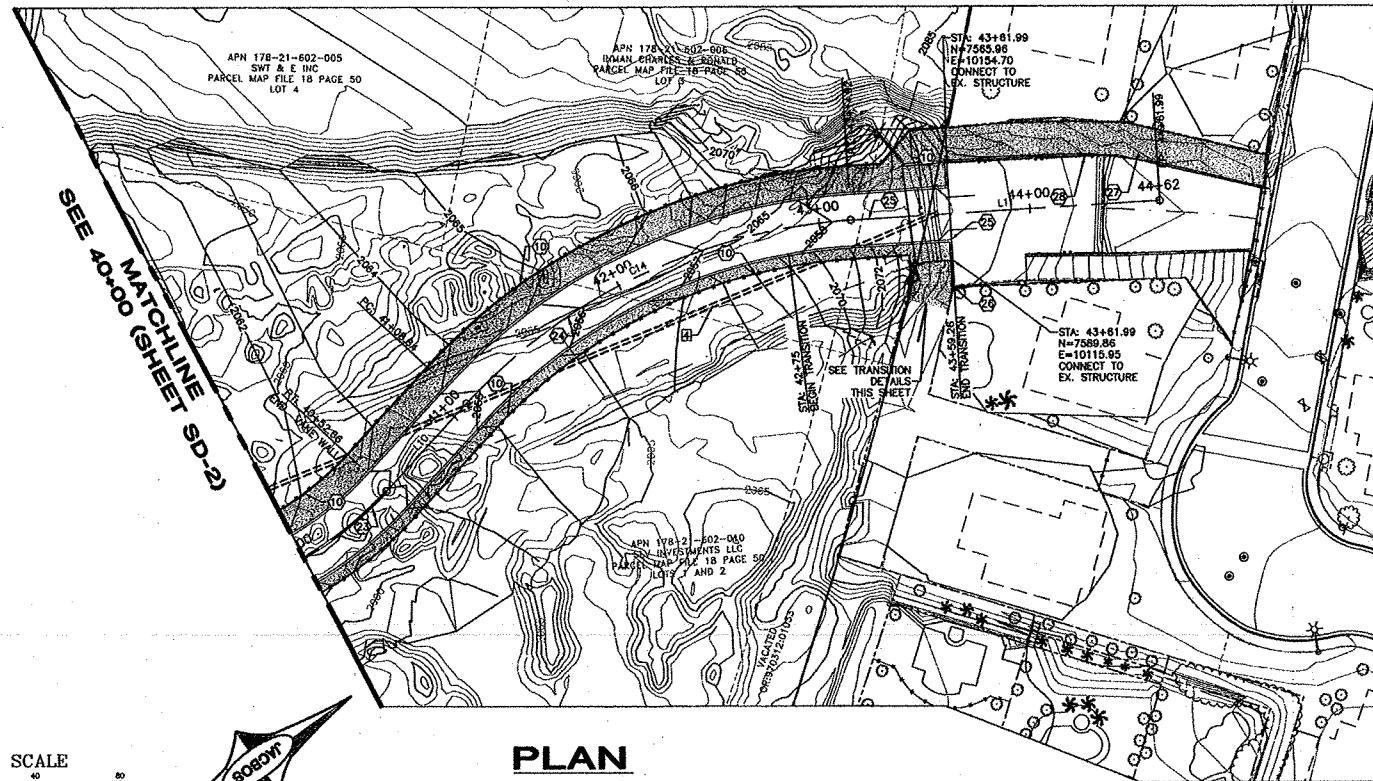
REVISIONS

No.	Date	By	App'd

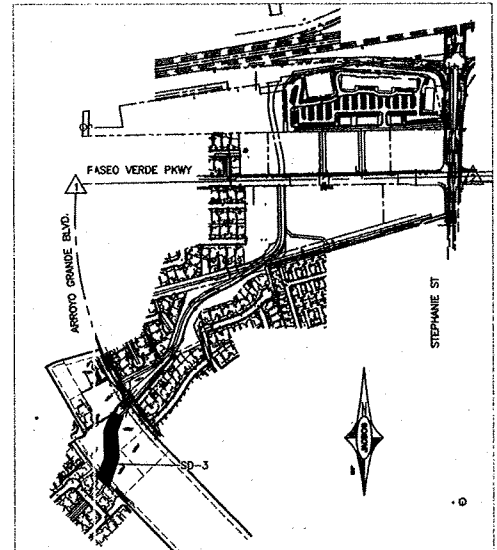
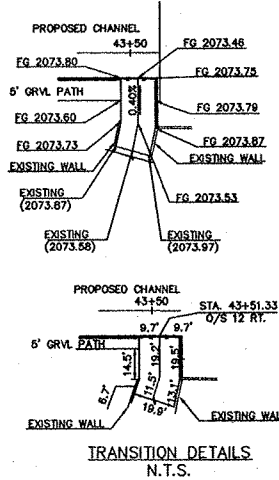
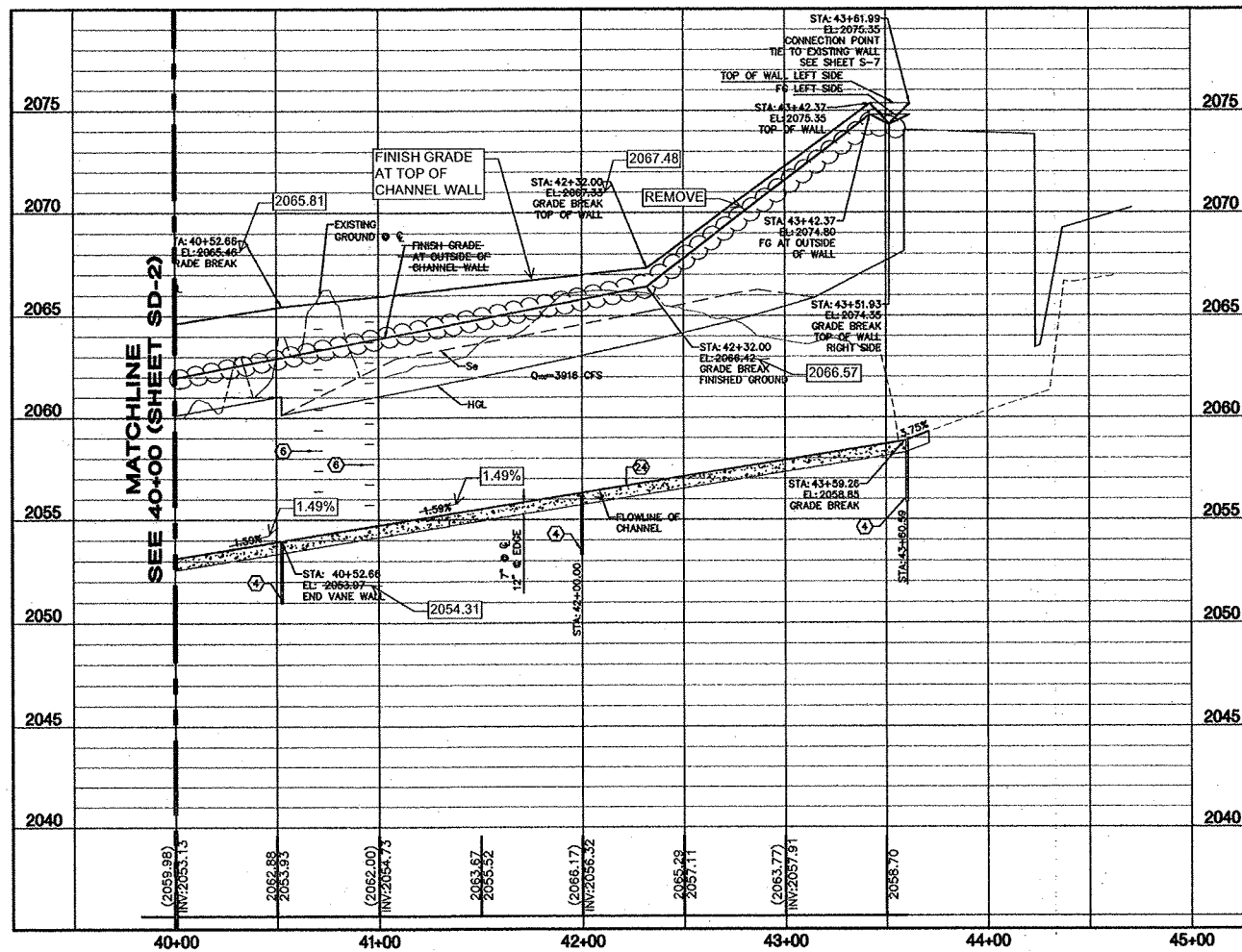
DESIGNED: JC
DRAWN: JC
CHECKED: JC
JOB NO: 241702
SHEET: 4 OF 15
DATE: JANUARY 2008

JACOBS
780 Bermuda Road
Suite 200
Las Vegas, Nevada 89169
(702) 938-5400 Fax (702) 938-5464

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD
SHEET: SD-2



PLAN
STA 40+00 THRU 43+71.25



LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L6	298.48	S45°07'40.03"W	(8419.67,10587.81)	(8208.65,10376.70)
L7	221.59	S39°17'59.77"W	(8188.35,10356.53)	(8014.80,10216.28)
L8	122.00	S63°17'40.94"W	(8946.23,11016.76)	(8891.28,10907.84)
L9	43.00	S15°07'08.18"W	(8839.16,10702.26)	(8597.86,10691.02)
L10	55.98	S12°08'37.83"E	(7871.57,10181.70)	(7816.83,10193.45)
L11	147.07	S31°37'52.24"W	(7816.45,10159.26)	(7493.27,10082.06)
L12	295.00	S55°12'23.87"W	(9157.53,11331.12)	(8891.19,11088.86)

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C9	600.00	84.00	S59°12'47.31"W	(8989.19,11088.86)	(8946.23,11016.76)
C10	300.00	30.00	S42°08'19.90"W	(8208.65,10376.70)	(8188.35,10356.53)
C11	400.00	335.00	S39°17'46.13"W	(8891.28,10907.84)	(8639.16,10702.26)
C12	400.00	206.10	S30°08'24.43"W	(8597.86,10691.02)	(8419.67,10587.81)
C13	170.00	152.39	S13°34'13.15"W	(8014.80,10216.28)	(7871.57,10181.70)
C14	270.00	206.28	S9°46'37.20"W	(7816.83,10193.45)	(7616.45,10159.26)

DEMOLITION NOTES:

- REMOVE 393± EXISTING 18" RCP

CONSTRUCTION NOTES:

- CONSTRUCT CONCRETE RECTANGULAR CHANNEL PER SECTION A ON SHEET S-14.
- CONSTRUCT AGGREGATE BASE ACCESS ROAD AND ACCESS PATH SEE SECTION B ON SHEET S-14.
- CONSTRUCT EXPANSION JOINT WITH CUTOFF WALL PER DETAIL 6 ON SHEET S-2.
- CONSTRUCT ACCESS ADAPTERS PER DETAIL 1 ON SHEET S-13.
- CONSTRUCT 6' HIGH CHAIN LINK FENCE PER NDOT STD R-8.3.2.1.
- CONSTRUCT CHANNEL WITH VANE WALL PER SHEET S-6.
- CONSTRUCT CONCRETE RECTANGULAR PER SECTION B ON SHEET S-14 & SECTION E-E ON SHEET S-8.
- CONSTRUCT CHANNEL TRANSITION & CONNECTION TO EXISTING DRAINAGE STRUCTURE SEE SHEET S-7.
- GRADE AND CONSTRUCT AGGREGATE BASE ACCESS ROAD PER SECTION C ON SHEET S-15.
- CONSTRUCT 153' OF POST & CABLE RAILING ON TOP OF EXISTING STRUCTURE WALLS SEE DETAIL 1 SHEETS S13.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
JOHN P. MENG P.E. No. 7540; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

Call
before you
Overhead
1-702-593-6111
NEVADA POWER ENVIRONMENT AND
SAFETY SERVICES DEPARTMENT

811
NEVADA POWER ENVIRONMENT AND
SAFETY SERVICES DEPARTMENT

DESIGNED: MS

DRAWN: MS

CHECKED: MS

DATE: JANUARY 2008

NO.

DATE

REVISIONS

PROJECT:

AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD

DESCRIPTION:

CHANNEL PLAN AND PROFILE
STA 40+00 THRU 43+71.25

SHEET

SD-3

5 OF 15

JACOBS

760 Bermuda Road
SUITE 200
LAS VEGAS, NEVADA 89119
(702) 888-5400 FAX (702) 888-5454

PITTMAN MACDONALD RANCH CHANNEL

AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD

GENERAL NOTES:

DESIGN SPECIFICATIONS:

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION, 2002. LOAD FACTOR DESIGN METHOD USED

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA "UNIFORM STANDARD DRAWINGS" LATEST EDITION.

CONSTRUCTION SPECIFICATIONS:

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2001 EDITION.

THE SPECIAL PROVISIONS OF THIS CONTRACT AND AS NOTED BELOW.

DESIGN LOADS:

LIVE LOAD: HS20

IMPACT: COVER ≤ 1' → I = 1.3
1' < COVER ≤ 2' → I = 1.2
2' < COVER < 3' → I = 1.1
3' ≤ COVER → I = 1.0

RETAINING WALL EARTH PRESSURE: VERTICAL = 125 LBS / CU. FT.
HORIZONTAL = 39 LBS. / CU. FT.
PASSIVE = 400 LBS. / CU. FT.
EARTHQUAKE = 6 LBS. / CU. FT.

LIVE LOAD SURCHARGE: WHEN TRAFFIC CAN COME WITHIN A HORIZONTAL DISTANCE FROM THE TOP OF THE STRUCTURE EQUAL TO ONE-HALF OF ITS HEIGHT, THE PRESSURE SHALL HAVE ADDED TO IT A PRESSURE EQUAL TO 2 FEET OF EARTH

LOAD FACTORS: 1.3D + 1.69E + 2.17 (L + I)

MATERIALS OF CONSTRUCTION:

CONCRETE:
CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI. AGGREGATE SHALL CONFORM TO THE "SPECIFICATION FOR CONCRETE AGGREGATES" (ASTM C33). CLASS AA CONCRETE WITH AIR ENTRAINMENT AND 1 1/2" AGGREGATE SHALL BE USED FOR CHANNEL INVERT. CLASS DA CONCRETE WITH 3/4" AGGREGATE SHALL BE USED FOR CHANNEL WALLS AND REINFORCED CONCRETE BOX CULVERTS. CONCRETE IN CONTACT WITH ON-SITE SOILS SHALL CONTAIN TYPE V CEMENT AS SPECIFIED IN THE GEOTECHNICAL REPORT. USE 3/4" CHAMFER ON ALL EXPOSED CORNERS.

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 615, GRADE 60. DIMENSIONS RELATING TO SPACING ARE CENTER-TO-CENTER. BENDING DIMENSIONS ARE OUT-TO-OUT OF THE BARS. THE LENGTH OF #4 AND #5 BARS, WHEN CONSIDERED AS TEMPERATURE, SHRINKAGE OR DISTRIBUTION REINFORCEMENT BY THE ENGINEER, MAY BE ADJUSTED BY THE CONTRACTOR UPON THE ENGINEER'S APPROVAL. HOOKS MAY BE ROTATED OR TILTED, AS NECESSARY, FOR CLEARANCE. REINFORCEMENT SHALL HAVE A 3 INCH CLEARANCE ON BOTTOM OF BOTTOM SLAB AND 2 INCH CLEARANCE ON REMAINDER OF STRUCTURE AND ITS APPURTENANCES UNLESS OTHERWISE NOTED ON THE PLANS.

DIMENSIONS:

DIMENSIONS SHALL NOT BE SCALED FROM THE PLANS. VERTICAL DIMENSIONS ARE MEASURED PLUMB, UNLESS OTHERWISE NOTED. HORIZONTAL DIMENSIONS ARE MEASURED LEVEL. ALL DIMENSIONS ARE MEASURED AT (70°F), UNLESS OTHERWISE NOTED. LENGTHS OF FABRICATED MEMBERS SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE TEMPERATURE, GRADE AND CAMBER.

THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STRUCTURAL SUBMITTALS:

THE CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS (WORKING DRAWINGS) AND OTHER STRUCTURAL SUBMITTALS IN ACCORDANCE WITH THE PROJECT PLANS, THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS. THE SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY WORK INVOLVING SUCH DRAWINGS IS PERFORMED.

CONSTRUCTION JOINTS:

ALL CONSTRUCTION JOINTS SHALL BE INTENTIONALLY ROUGHENED TO 1/4" AMPLITUDE UNLESS OTHERWISE NOTED.

GEOTECHNICAL REPORT:

PROVIDED BY NINYO & MOORE TITLED "GEOTECHNICAL EVALUATION, PITTMAN/MACDONALD CHANNEL IMPROVEMENTS, ARROYO GRANDE BOULEVARD AND ARROYO VERDE DRIVE" PROJECT NO. 302259001 DATED MARCH 1, 2007. UPDATED PER LETTER DATED JUNE 24, 2009.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

REVISIONS			
No.	Date	By	App

DESIGNED:	MSD
DRAWN:	ALA
CHECKED:	ALT
JOB NO:	PA248700
SHEET:	AS SUBMIT
DATE:	AS SUBMIT
DATE:	JANUARY 2009

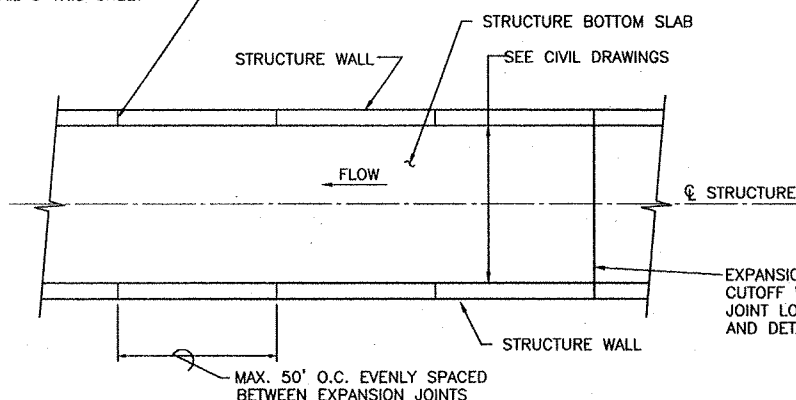
JACOBS
780 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 888-5600 Fax (702) 888-5654

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: STRUCTURAL GENERAL NOTES

SHEET
S-1
6 OF 20

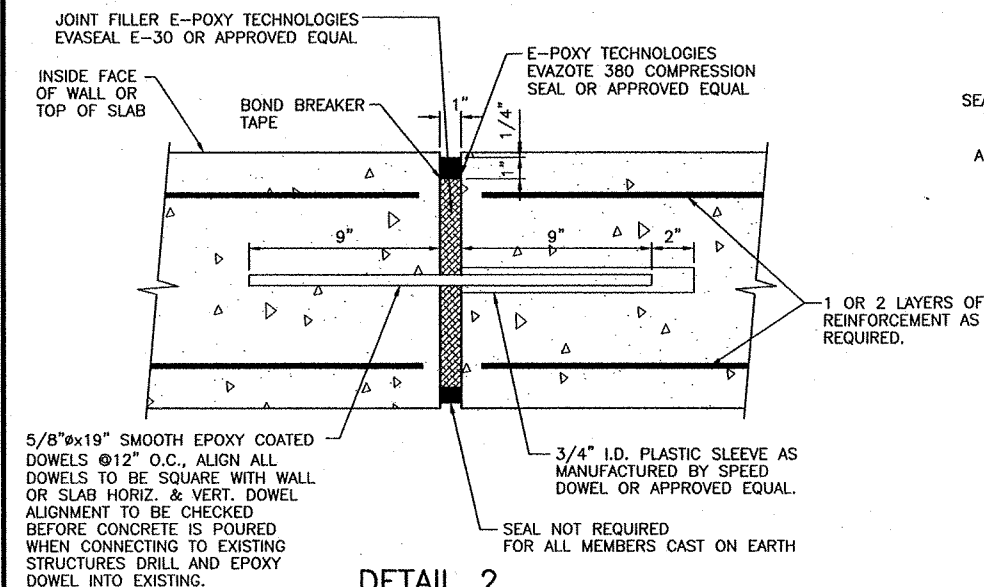
07498

CONTRACTION JOINTS IN WALLS,
SEE DETAIL 3 THIS SHEET

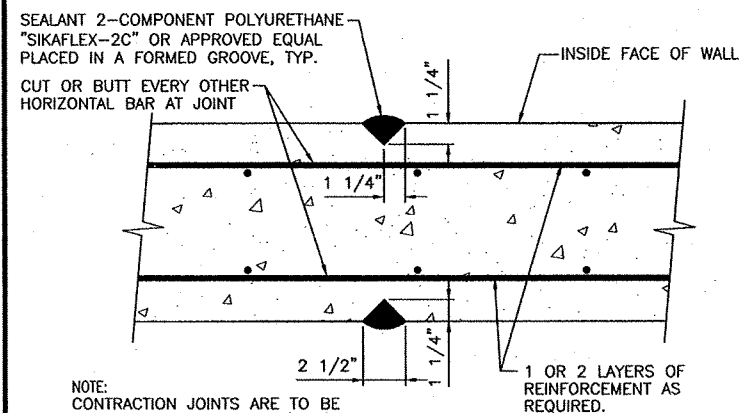


NOTE:
DETAIL SHALL BE USED FOR CHANNEL
SECTION AND TRANSITION CHANNEL SECTIONS.

DETAIL 1
TYPICAL PLAN VIEW FOR JOINTS IN CHANNEL
N.T.S.



DETAIL 2
EXPANSION JOINT DETAIL
N.T.S.

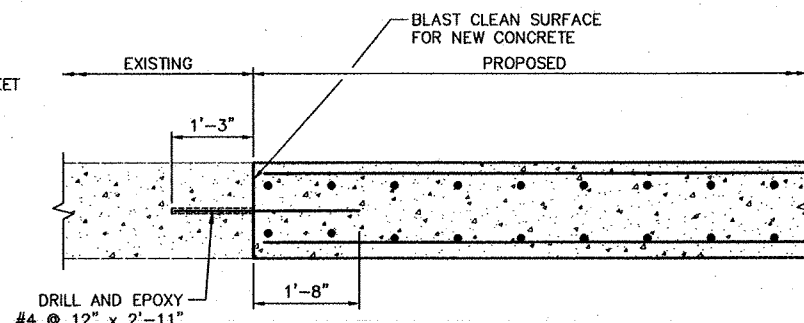


DETAIL 3
CONTRACTION JOINT DETAIL
N.T.S.

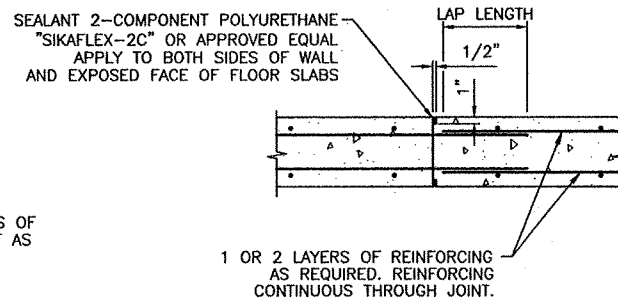
JOINT LOCATION TABLE	
STATION	
27+00.00	
29+00.00	
31+42.00	
32+87.00	
34+68.60	
36+48.60	
38+09.69	
40+52.66	
42+00.00	

MINIMUM BAR LAPS

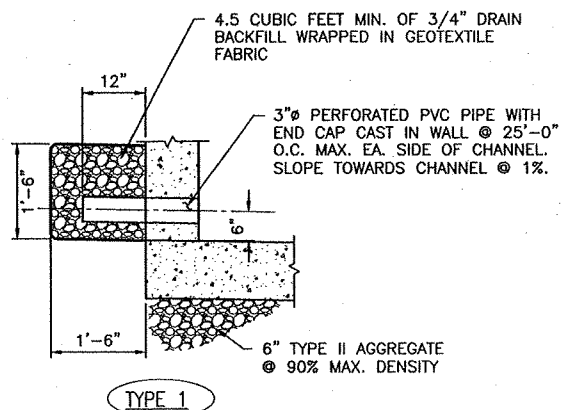
#4 1'-8"
#5 2'-2"
#6 2'-7"



DETAIL 4
CONNECTION TO EXISTING RCB OR CHANNEL DETAIL
N.T.S.



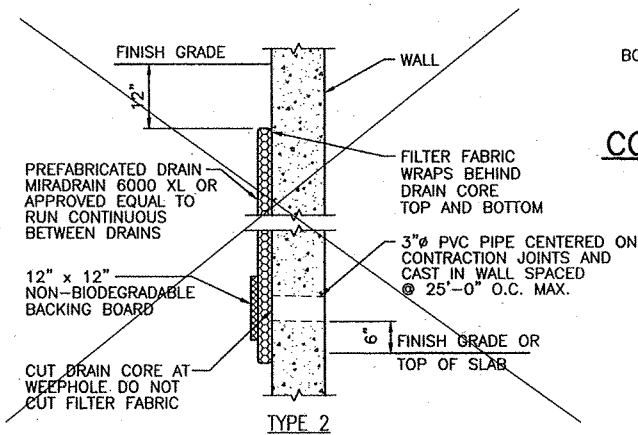
DETAIL 5
WALL AND SLAB CONSTRUCTION JOINT DETAIL
N.T.S.



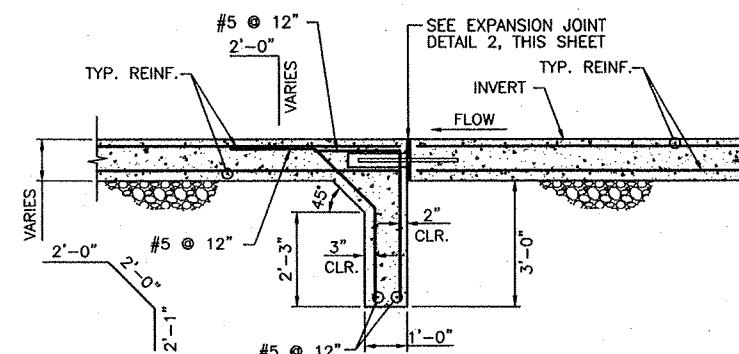
TYPE 1

NOTE:
CONTRACTOR SHALL CHOOSE EITHER TYPE 1 OR TYPE 2 WALL DRAIN FOR
INSTALLATION AT LOCATIONS SHOWN ON PLANS AND IN WALL SECTIONS.

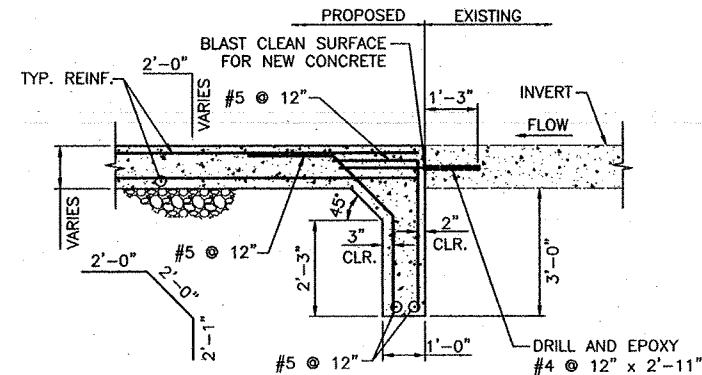
DETAIL 8
WALL DRAIN TYPICAL DETAIL
N.T.S.



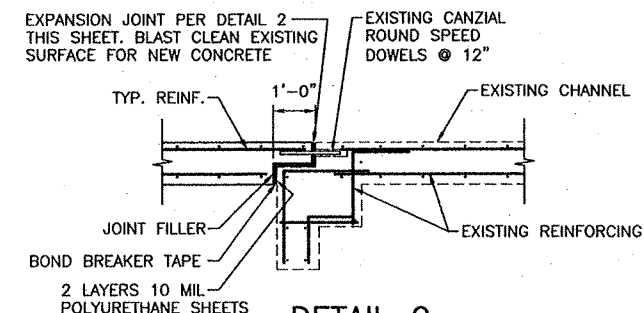
TYPE 2



DETAIL 6
EXPANSION JOINT WITH CUTOFF WALL DETAIL
N.T.S.



DETAIL 7
**CONNECTION TO EXISTING CHANNEL
WITH CUTOFF WALL DETAIL**
N.T.S.



DETAIL 9
CONNECTION TO EXISTING CHANNEL DETAIL
N.T.S.

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

REVISIONS	
No.	Date

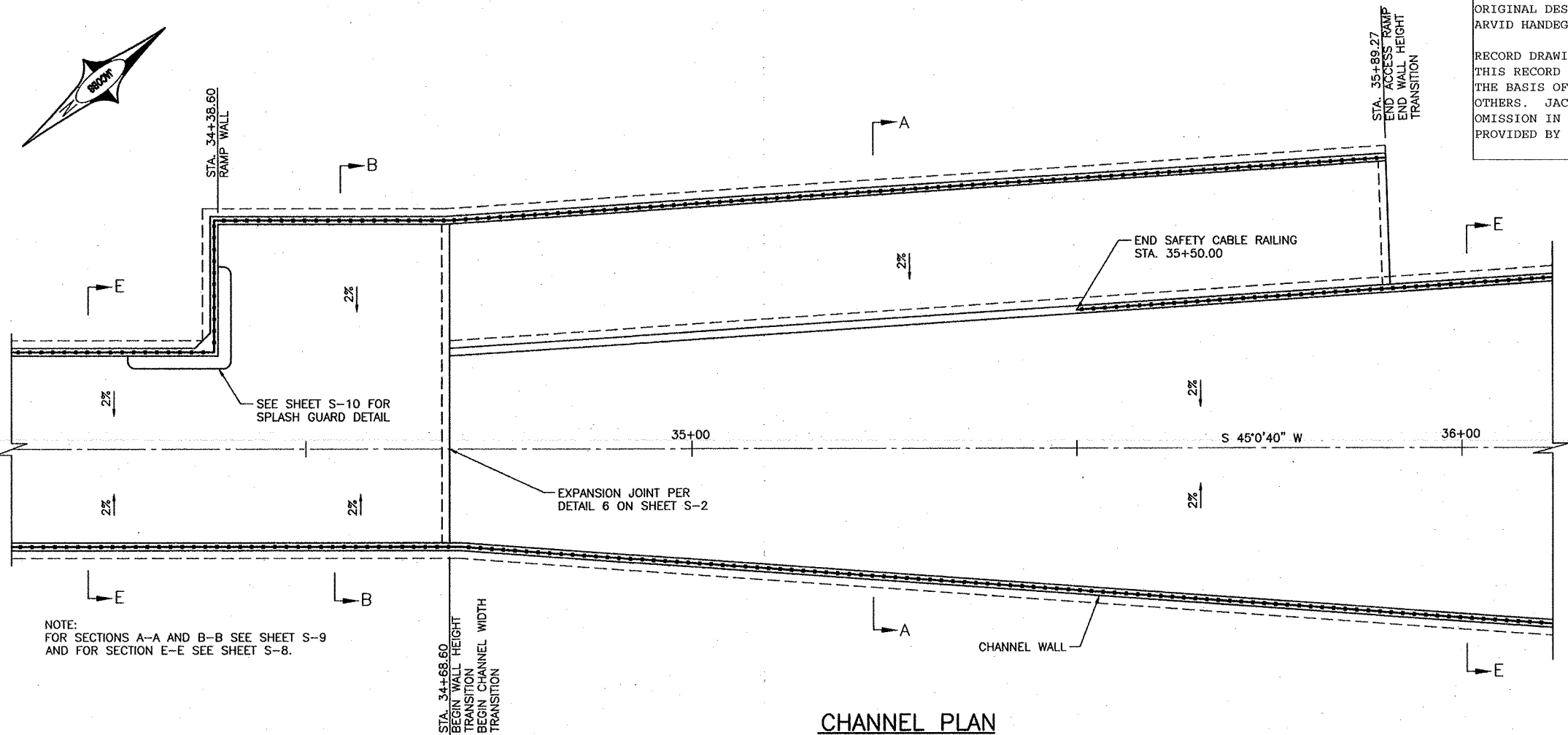
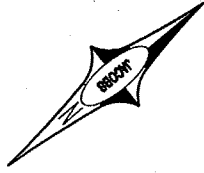
DESIGNED BY:	ALL
DRAWN BY:	ALL
CHECKED BY:	ALL
JOB NO.:	WALSH000
FOR:	AS SHOWN
DATE:	JANUARY 2008

JACOBS
7800 Bermuda Road
SUITE 200
LAS VEGAS, NEVADA 89119
(702) 886-5400 Fax (702) 886-5454

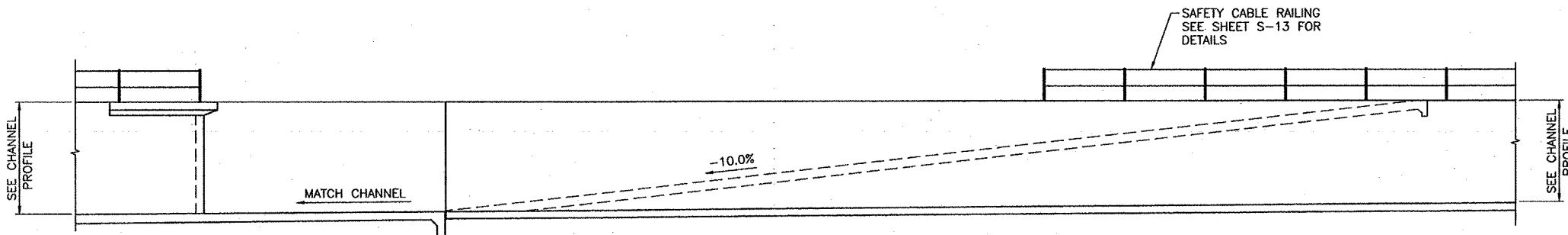
PROJECT: **PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.**

DESCRIPTION:

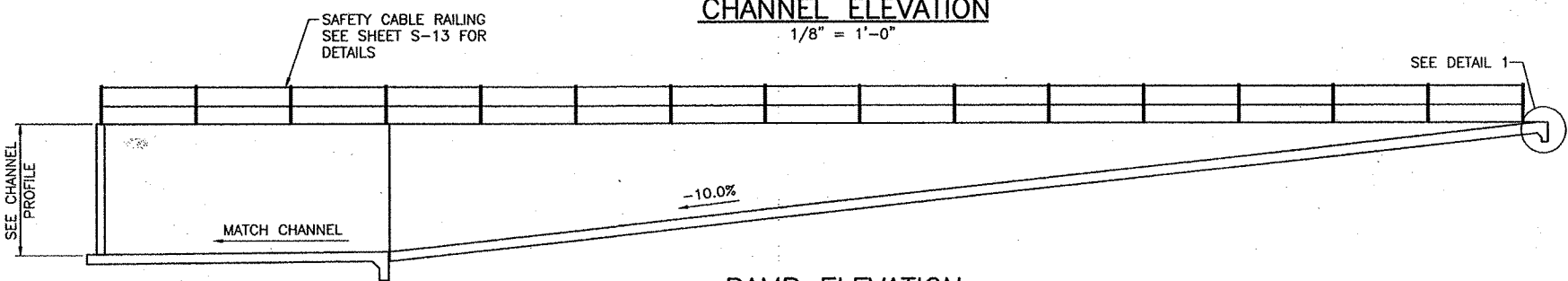
TYPICAL DETAILS



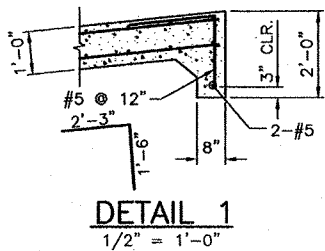
CHANNEL PLAN
1/8" = 1'-0"



CHANNEL ELEVATION
1/8" = 1'-0"



RAMP ELEVATION
1/8" = 1'-0"



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

REVISIONS	
No.	Date

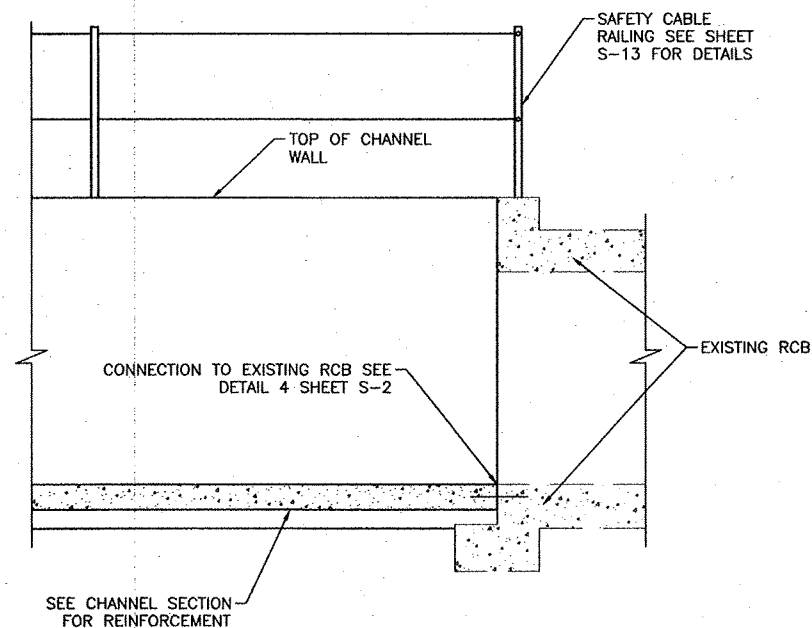
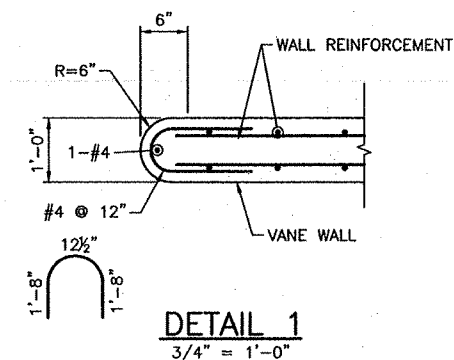
DESIGNED BY:	MAE
DRAWN BY:	ALA
CHECKED BY:	AK
JOB NO.:	KACR0700
PROJECT:	AS SUBMIT
DATE:	JANUARY 2008

JACOBS
7800 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 888-5400 Fax (702) 888-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: CHANNEL, ACCESS RAMP AND TRANSITION
PLAN AND ELEVATION

SHEET
S-3
8 OF 20

07498



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

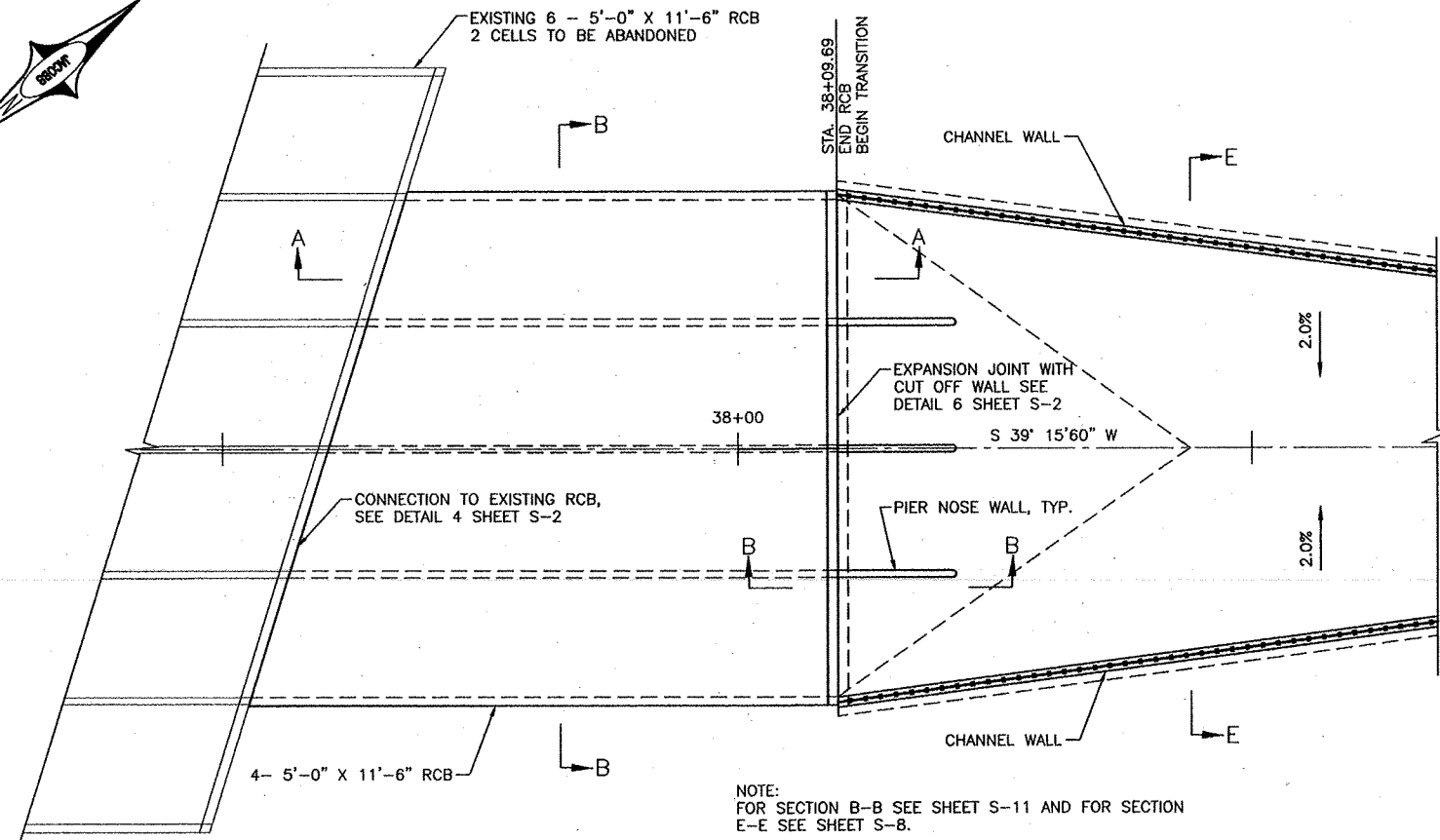
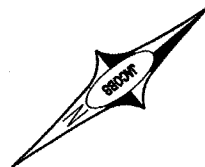
[illegible]

DESIGNED: MSH
DRAWN: AL
CHECKED: AL
JOB NO: F4K49780
HORIZ: AS SHOWN
VERT: AS SHOWN
DATE: JANUARY 2006

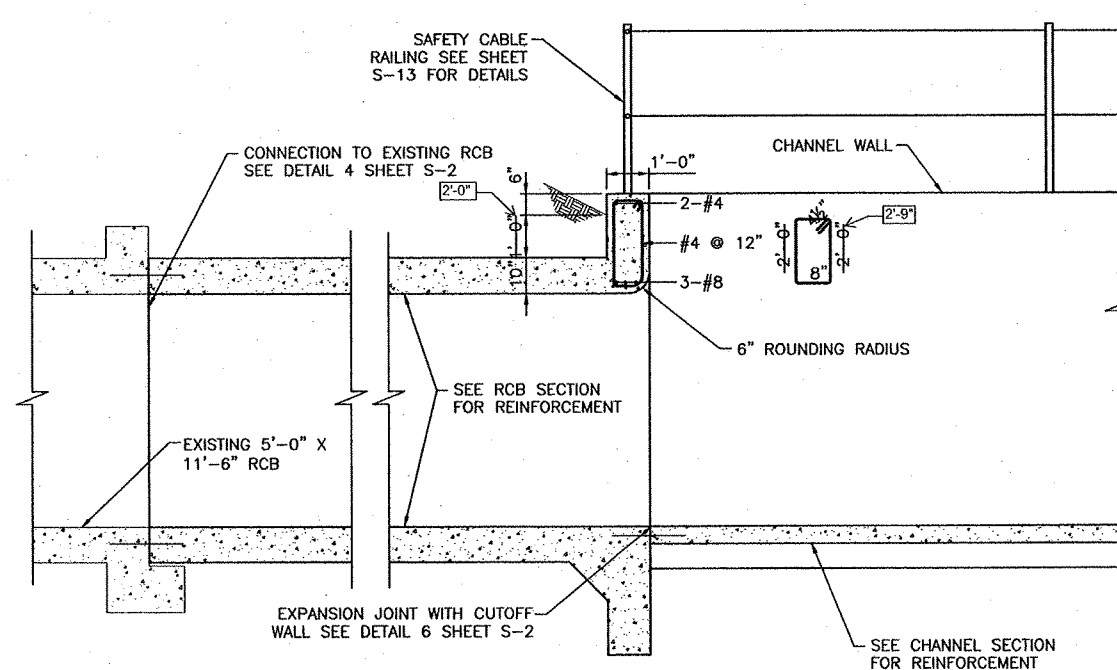
JACOBS
780 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 938-5400 Fax (702) 938-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
DESCRIPTION: AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
VANE WALL SECTION AND DETAILS

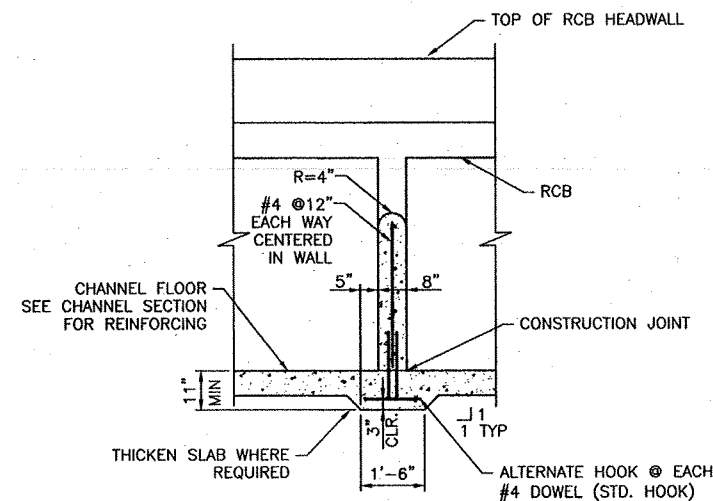
SHEET
S-4
9 OF 20



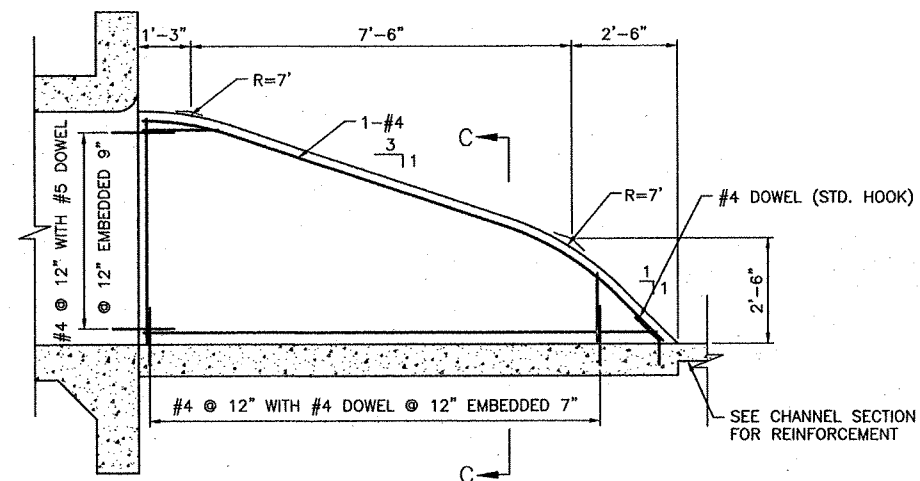
PLAN
1/8" = 1'-0"



SECTION A-A
1/2" = 1'-0"



SECTION C-C
1/2" = 1'-0"



SECTION B-B
1/2" = 1'-0"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

REVISIONS

No.	Date	By	App'd

DESIGNED:	MSZ
DRAWN:	MSZ
CHECKED:	AS
JOB No:	PA168700
ROUTE:	AS SURVY
DATE:	AS SURVY
DATE:	JANUARY 2000

JACOBS

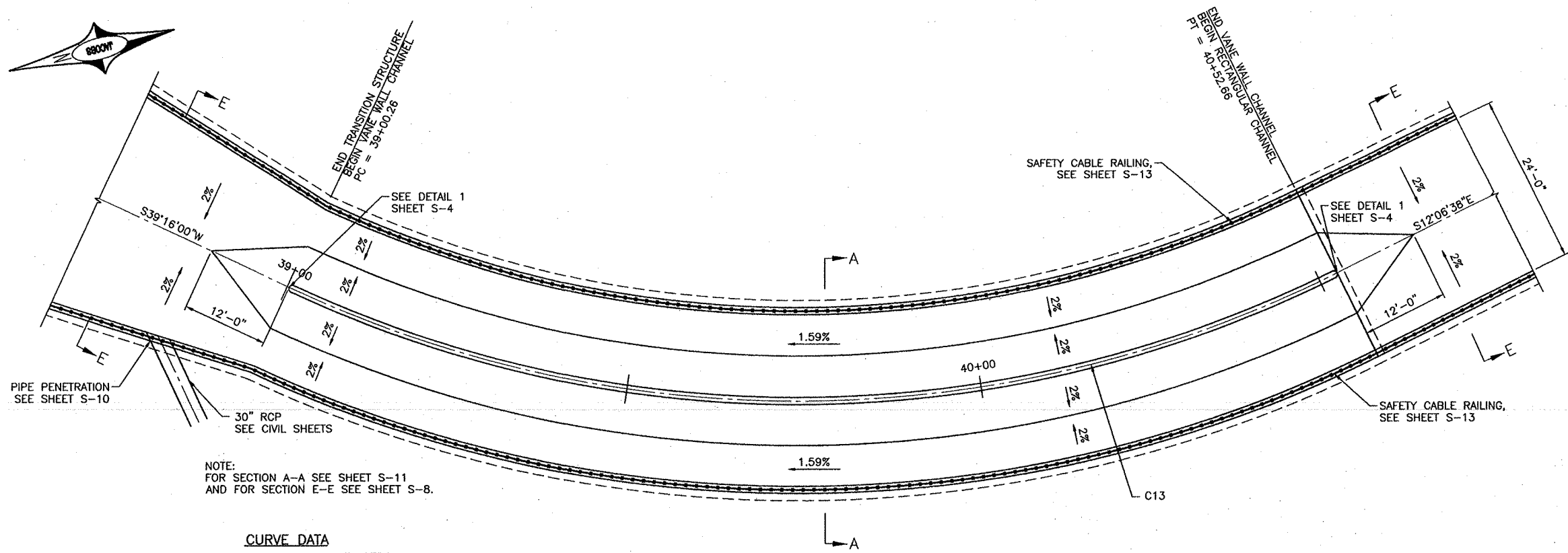
700 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 398-5400 Fax (702) 398-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: RCB PLAN AND ELEVATION

SHEET

07498

6-5
10 OF 20



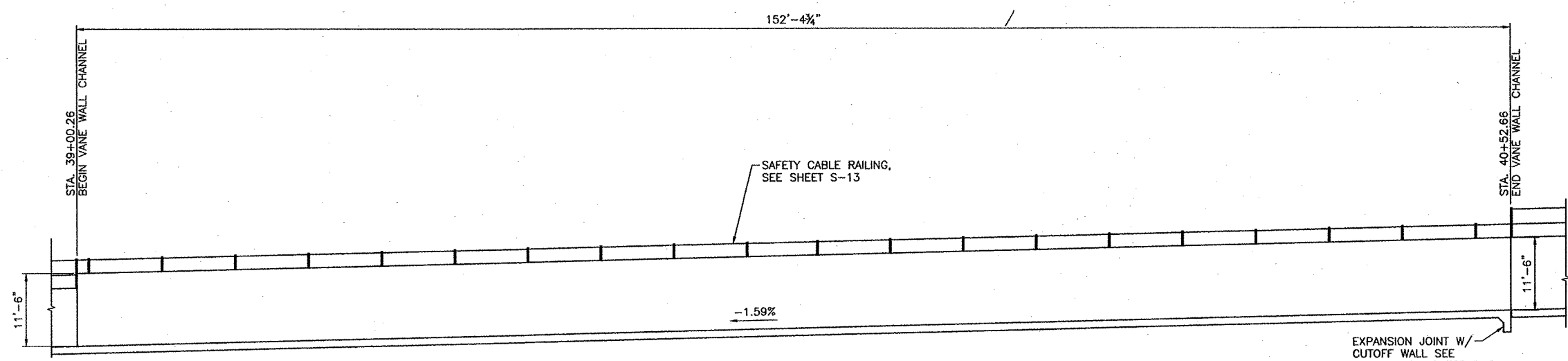
NOTE:
FOR SECTION A-A SEE SHEET S-11
AND FOR SECTION E-E SEE SHEET S-8.

CURVE DATA			
CURVE	Δ	R	L
C13	51°21'41.96"	170.00'	152.39'

VANE WALL CHANNEL PLAN
1/8" = 1'-0"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



VANE WALL CHANNEL ELEVATION
1/8" = 1'-0"

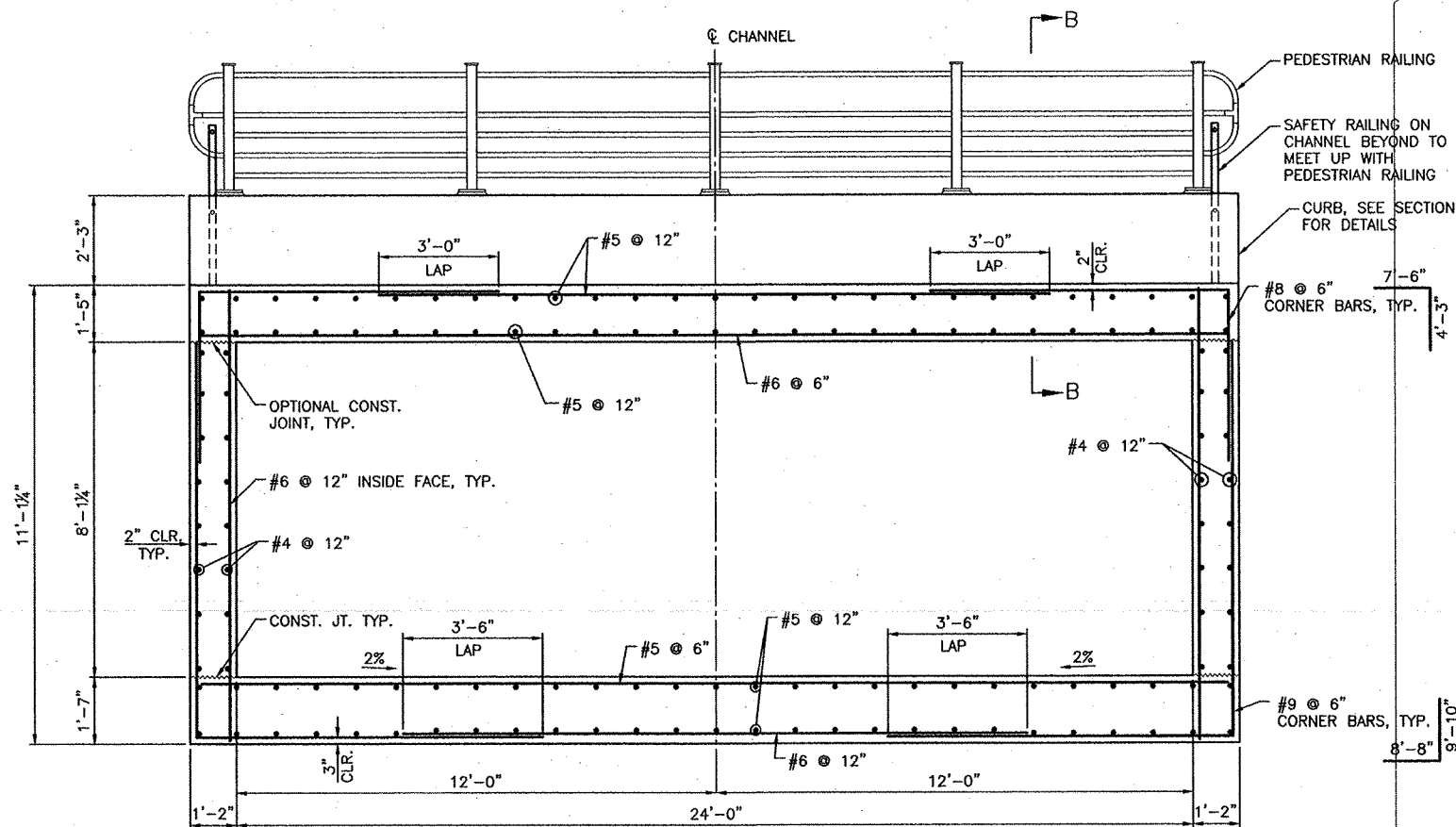
REVISIONS		
No.	Date	APPD

DESIGNED BY:	AK
DRAWN BY:	AK
CHECKED BY:	AK
JOB NO.:	W1470200
FORCE:	AS STATION
TRK:	AK STATION
DATE:	JANUARY 2008

JACOBS
780 Bermuda Road
SUITE 200
LAS VEGAS, NEVADA 89119
(702) 938-5400 Fax (702) 938-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.

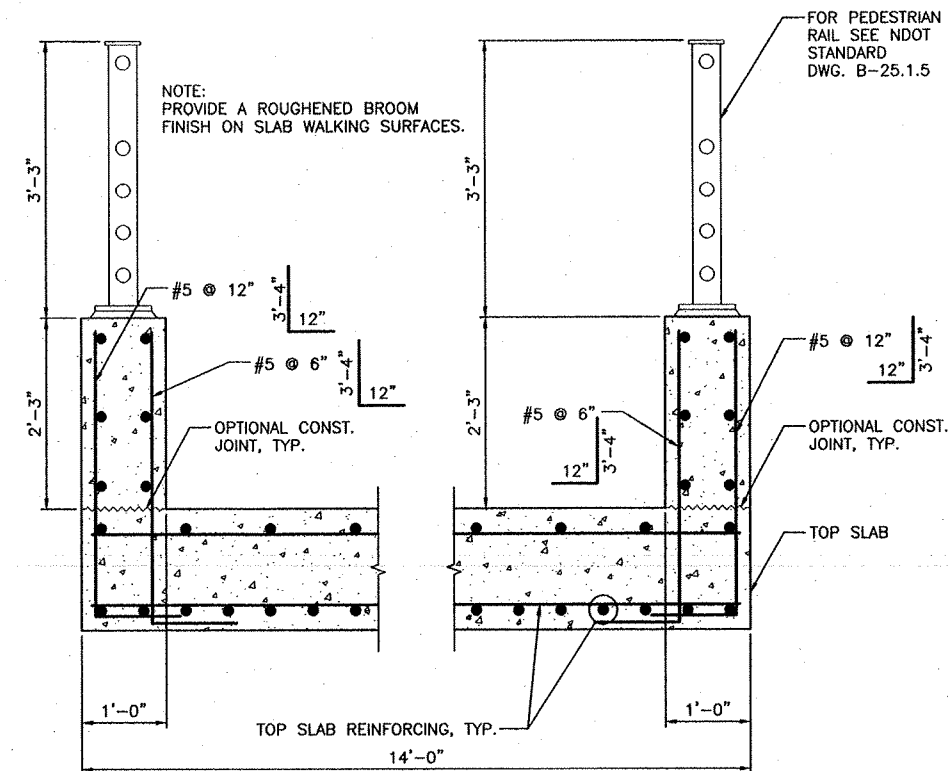
DESCRIPTION: VANE WALL CHANNEL PLAN
PLAN AND ELEVATION



24' RCB (PEDESTRIAN CROSSING)

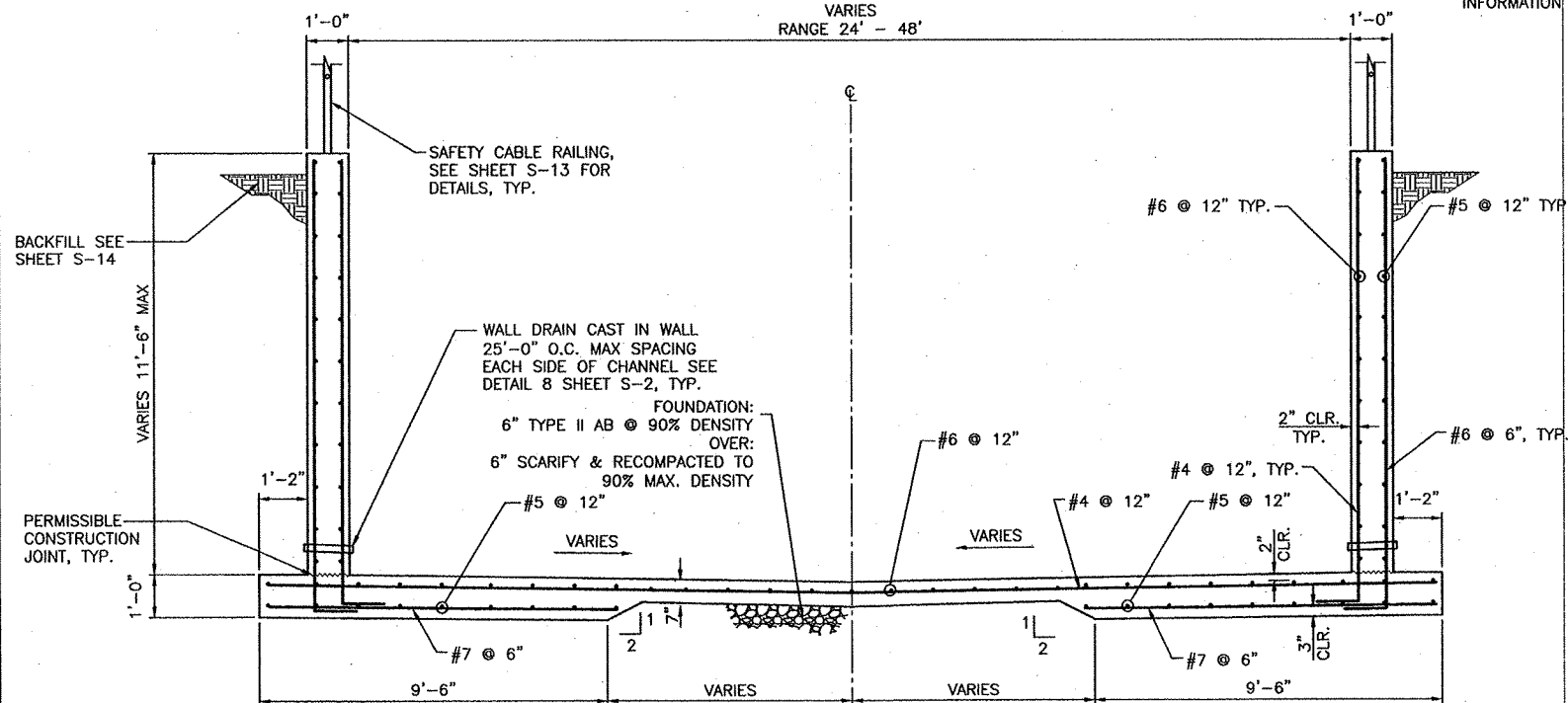
1/2" = 1'-0"
STA. 27+00.00 TO STA. 27+14.00

- NOTES:
1. SEE SHEET SD-1 FOR LOCATION AND VERTICAL PROFILE OF THE 24' RCB (PEDESTRIAN CROSSING)
2. SEE SHEET S-15 FOR BACKFILL AND FOUNDATION INFORMATION



SECTION B-B

1" = 1'-0"



**SECTION E-E
TYPICAL CHANNEL SECTION**

1/2" = 1'-0"
STA. 25+10.00 TO STA. 27+00.00, STA. 27+14.00 TO STA. 34+38.14,
STA. 35+89.27 TO STA. 36+48.60, STA. 38+09.69 TO STA. 39+00.26,
STA. 40+52.66 TO STA. 42+75.00

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

NO.	DATE	BY	CHKD	APPD

DESIGNED BY:	CHKD BY:	APPD BY:
DATE:	DATE:	DATE:

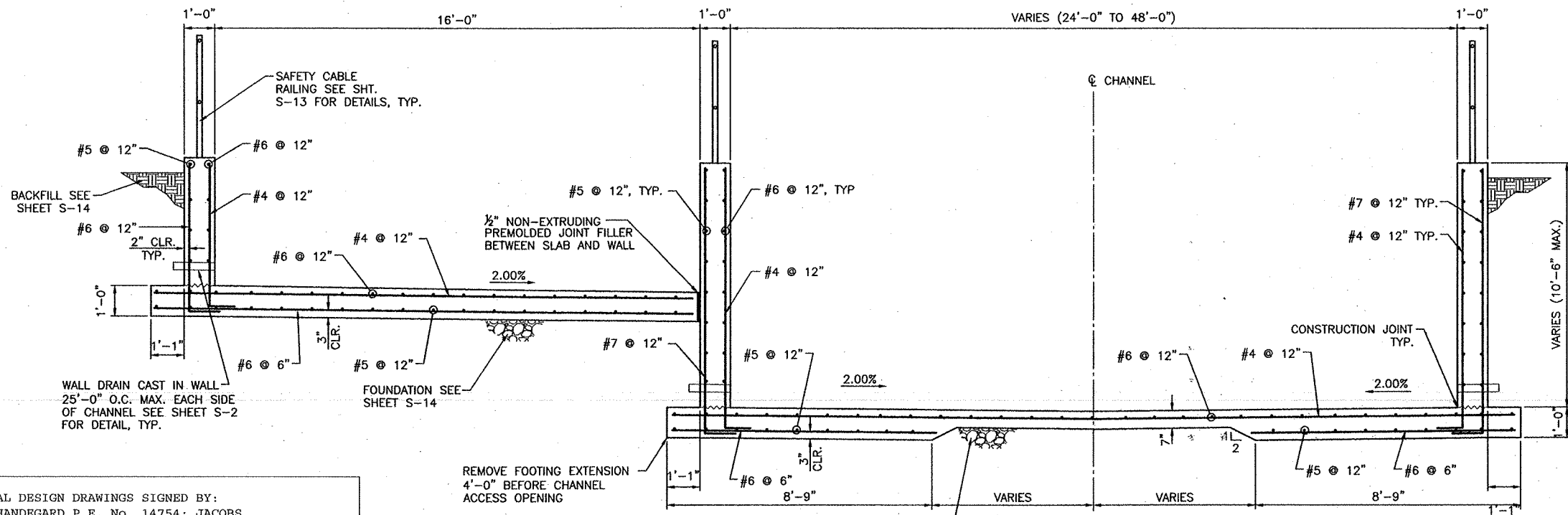
JACOBS
7700 Barranca Road
SUITE 200
LOS ANGELES, CA 90045
(714) 352-5400 FAX (714) 352-5464

PROJECT: **PITTMAN MACDONALD RANCH CHANNEL**
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
RESOLUTION: **CHANNEL SECTION AND 24' RCB CROSSING**

SHEET

07498

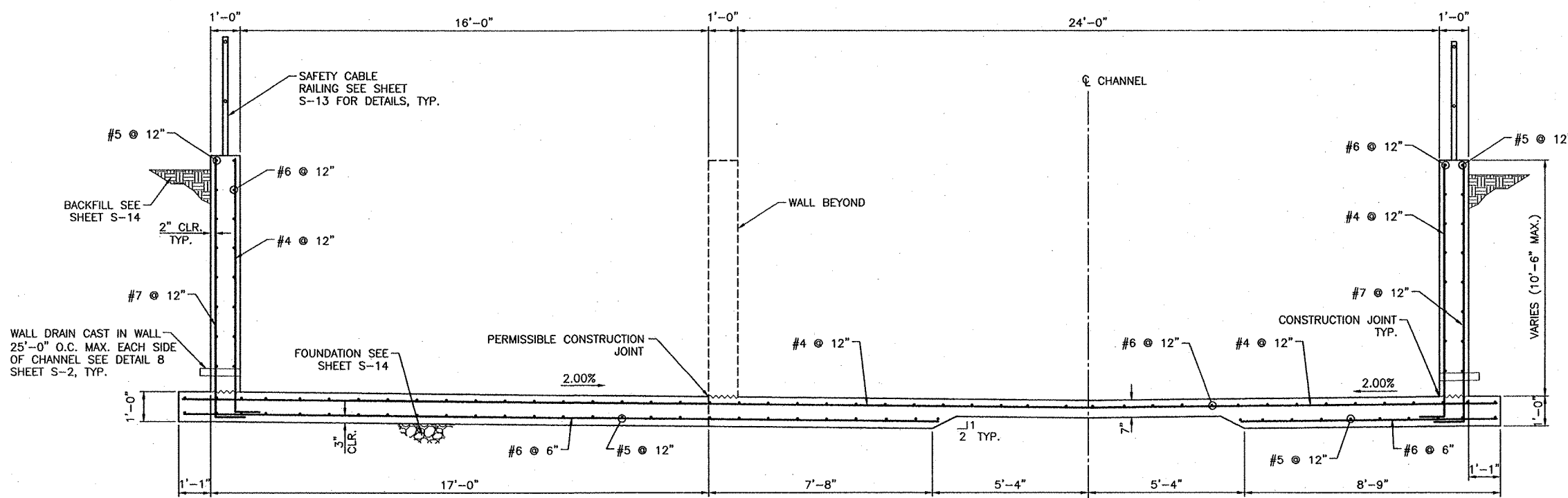
13 of 20



SECTION A-A
1/2" = 1'-0"
STA 34+68.60 TO STA 35+89.27

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



SECTION B-B
1/2" = 1'-0"
STA 34+38.60 TO STA 34+68.60

REVISIONS		
No.	Date	By

DESIGNED BY	DATE	BY
CHECKED BY	DATE	BY
FOR NO.	DATE	BY
FOR NO.	DATE	BY
DATE	DATE	BY

JACOBS
7000 Bermuda Road
Suite 200
Las Vegas, Nevada 89129
(702) 888-5400 Fax (702) 888-5454

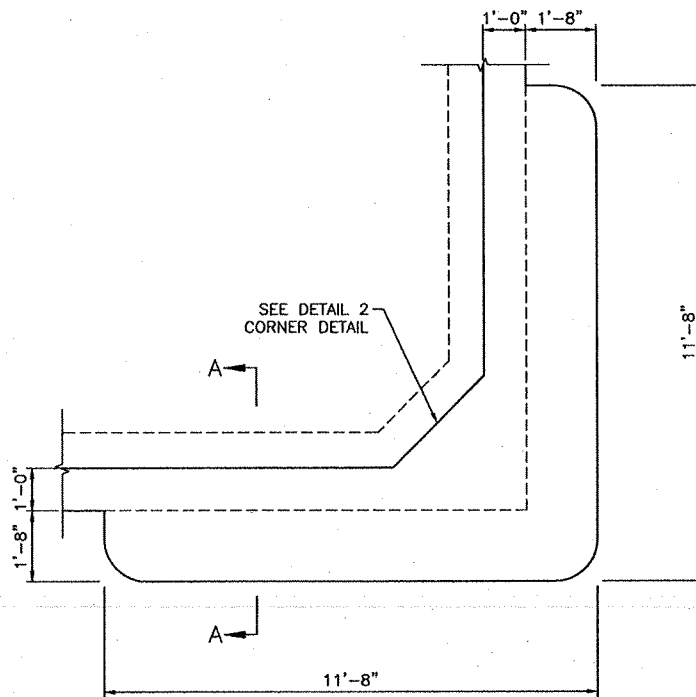
PROJECT: **PITTMAN MACDONALD RANCH CHANNEL**
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.

DESCRIPTION: **CHANNEL ACCESS RAMP**

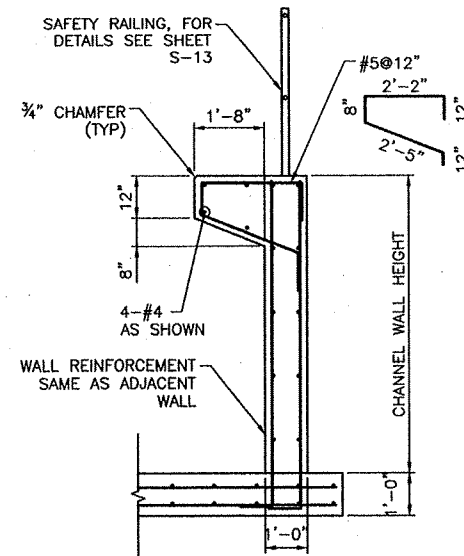
SECTIONS

SHEET
8-9
14 OF 20

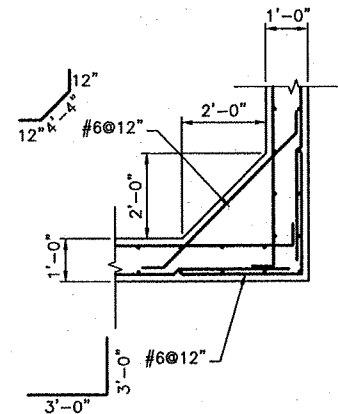
07498



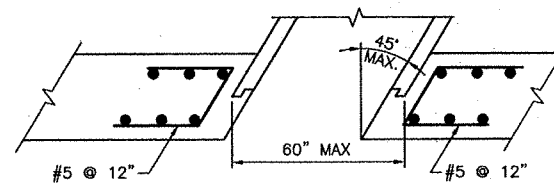
DETAIL 1
SPLASH GUARD DETAIL
1/2" = 1'-0"



SECTION A-A
1/2" = 1'-0"

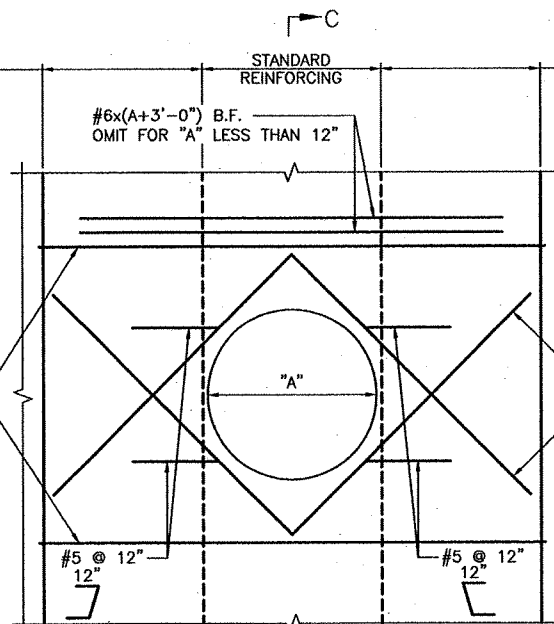


DETAIL 2
CORNER DETAIL
1/2" = 1'-0"



STANDARD VERTICAL REINF.
PLUS ADDITIONAL VERTICAL
BARS CORRESPONDING IN
SIZE AND NUMBER TO BARS
CUT BY THE OPENING.
PLACE HALF ON EACH SIDE.
EXTEND THE ADD'L BARS
INTO THE FOOTING THE
SAME AS OTHER VERTICAL
WALL REINFORCEMENT AND
TO A MINIMUM OF 60 BAR
DIAMETERS ABOVE THE TOP
OF UTILITY OPENING IF
WALL HEIGHT PERMITS.
BUNDLE BARS AS
REQUIRED.

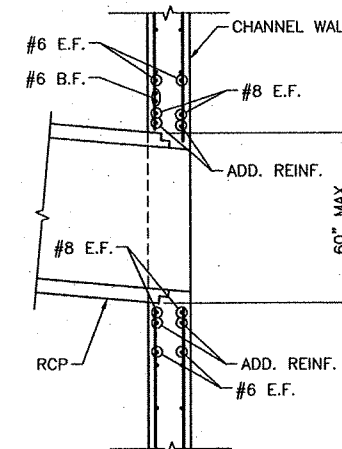
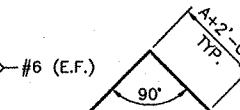
2-#8x(A+4'-0") E.F.
OMIT FOR "A" LESS
THAN 12"



NOTE:
ALL REINFORCING TO HAVE 2" CLR.
MIN. AROUND OPENING.

PIPE PENETRATION DETAIL 3
NOT TO SCALE

STANDARD VERTICAL REINF.
PLUS ADDITIONAL VERTICAL
BARS CORRESPONDING IN
SIZE AND NUMBER TO BARS
CUT BY THE OPENING.
PLACE HALF ON EACH SIDE.
EXTEND THE ADD'L BARS
INTO THE FOOTING THE SAME
AS OTHER VERTICAL WALL
REINFORCEMENT AND TO A
MINIMUM OF 60 BAR
DIAMETERS ABOVE THE TOP
OF UTILITY OPENING IF WALL
HEIGHT PERMITS. BUNDLE
BARS AS REQUIRED.



NOTE:
TWO LAYERS OF REINFORCEMENT SHOWN,
ONE LAYER SIMILAR.

SECTION C-C
1/2" = 1'-0"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

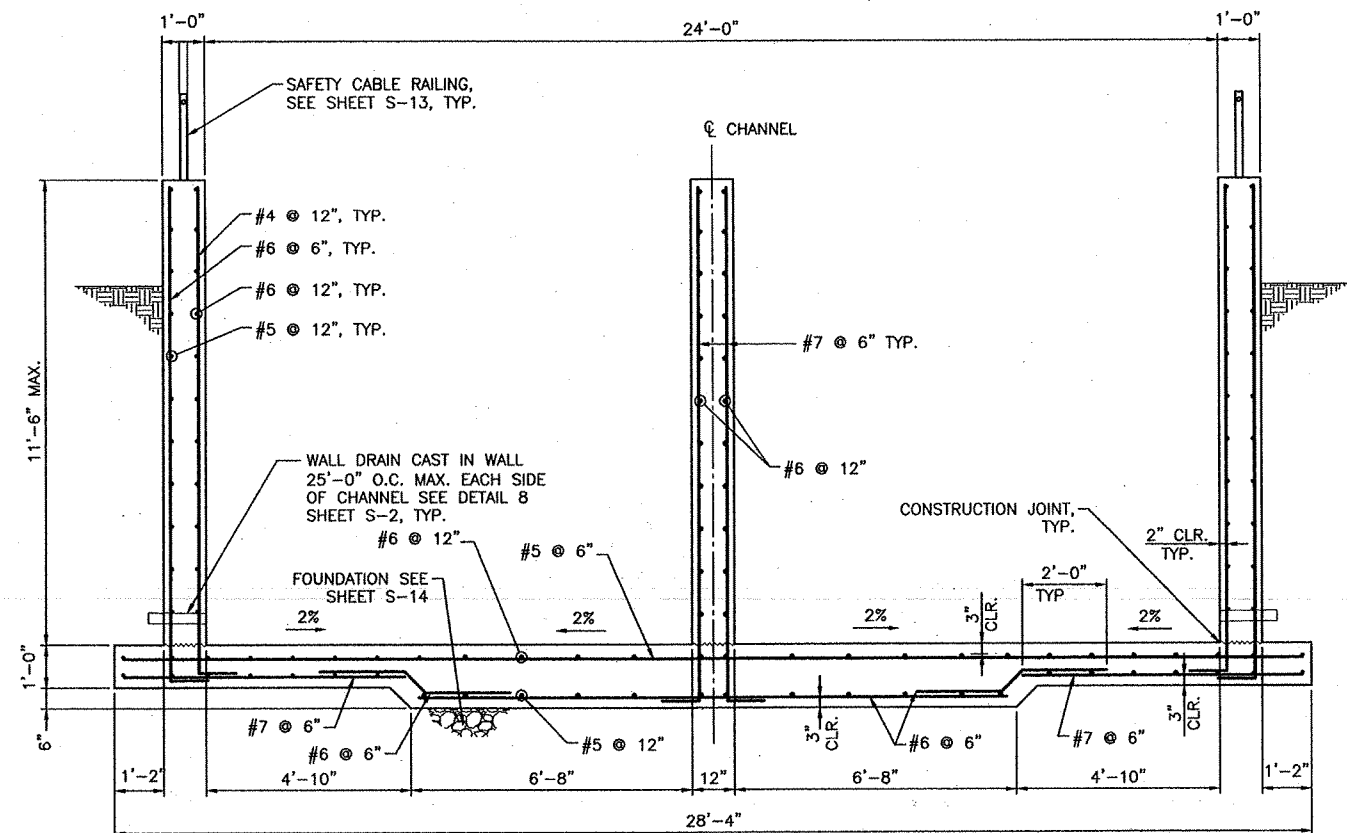
RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

JACOBS
7800 Macdonald Ranch Blvd.
Suite 200
Las Vegas, Nevada 89118
(702) 888-5400 Fax (702) 888-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: RAMP AND PIPE PENETRATION DETAILS

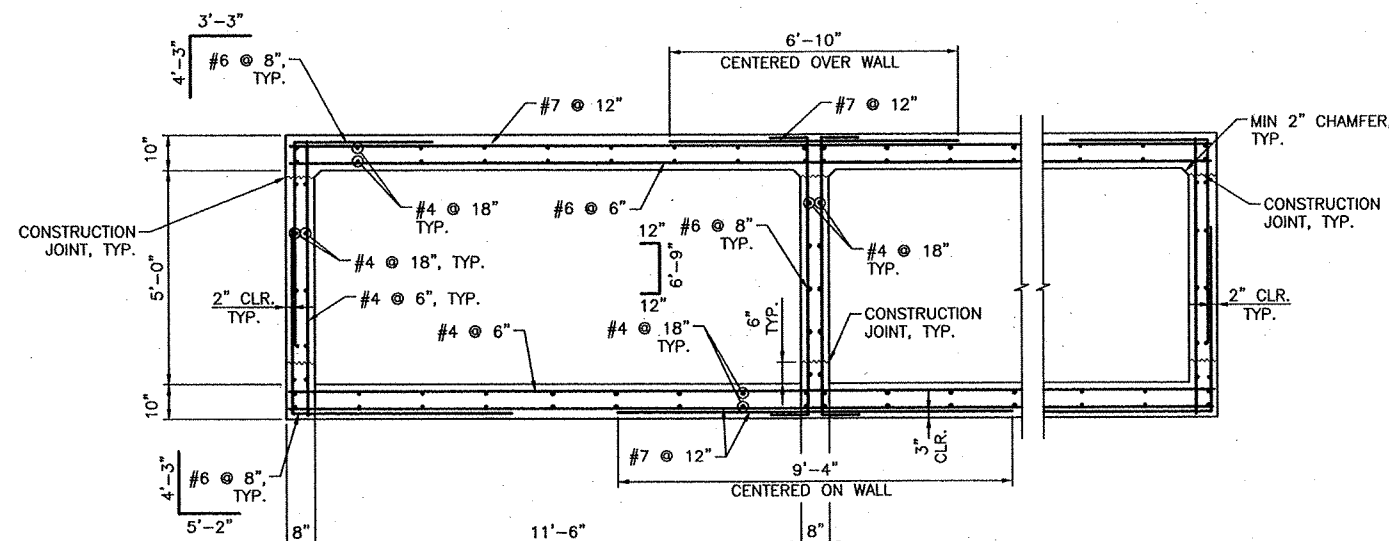
REVISIONS			
No.	Date	By	Appr.

DESIGNED BY:	ARVID HANDEGARD
DRAWN BY:	ARVID HANDEGARD
CHECKED BY:	ARVID HANDEGARD
DATE:	JANUARY 1999



SECTION A-A

1/2" = 1'-0"
STA 39+00.26 TO STA. 40+52.66



SECTION B-B

1/2" = 1'-0"
STA 37+60.00 TO STA. 38+09.69

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. NO. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

JACOBS

7700 Burrhead Road
SUITE 200
Las Vegas, NEVADA 89109
(702) 886-5400 Fax (702) 886-5464

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.

VANE WALL AND RCB

SECTIONS

SHEET

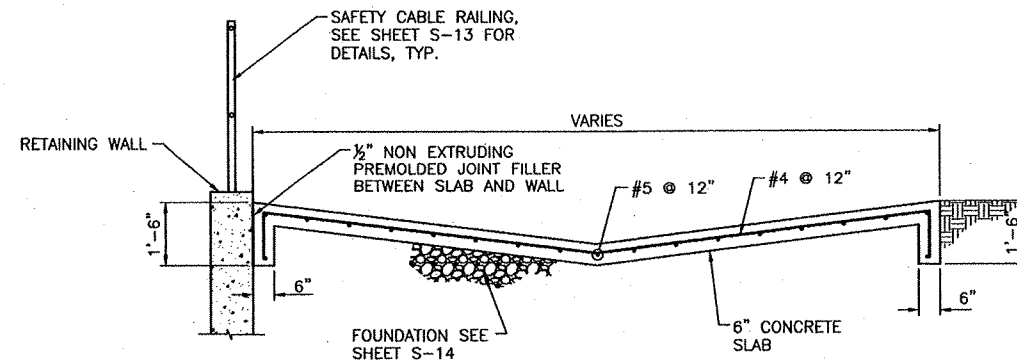
9-11

07498

16 OF 20

REVISIONS

DESIGNED: JSE
CHECKED: JSE
JOB NO: 14442702
ROUTE: AS SHOWN
DATE: JANUARY 2002

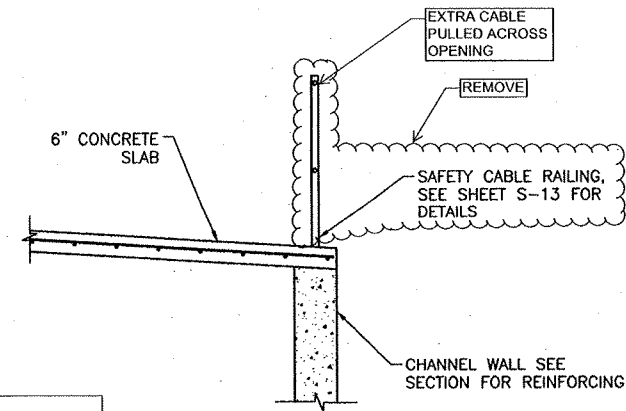


SECTION C-C

1/2" = 1'-0"

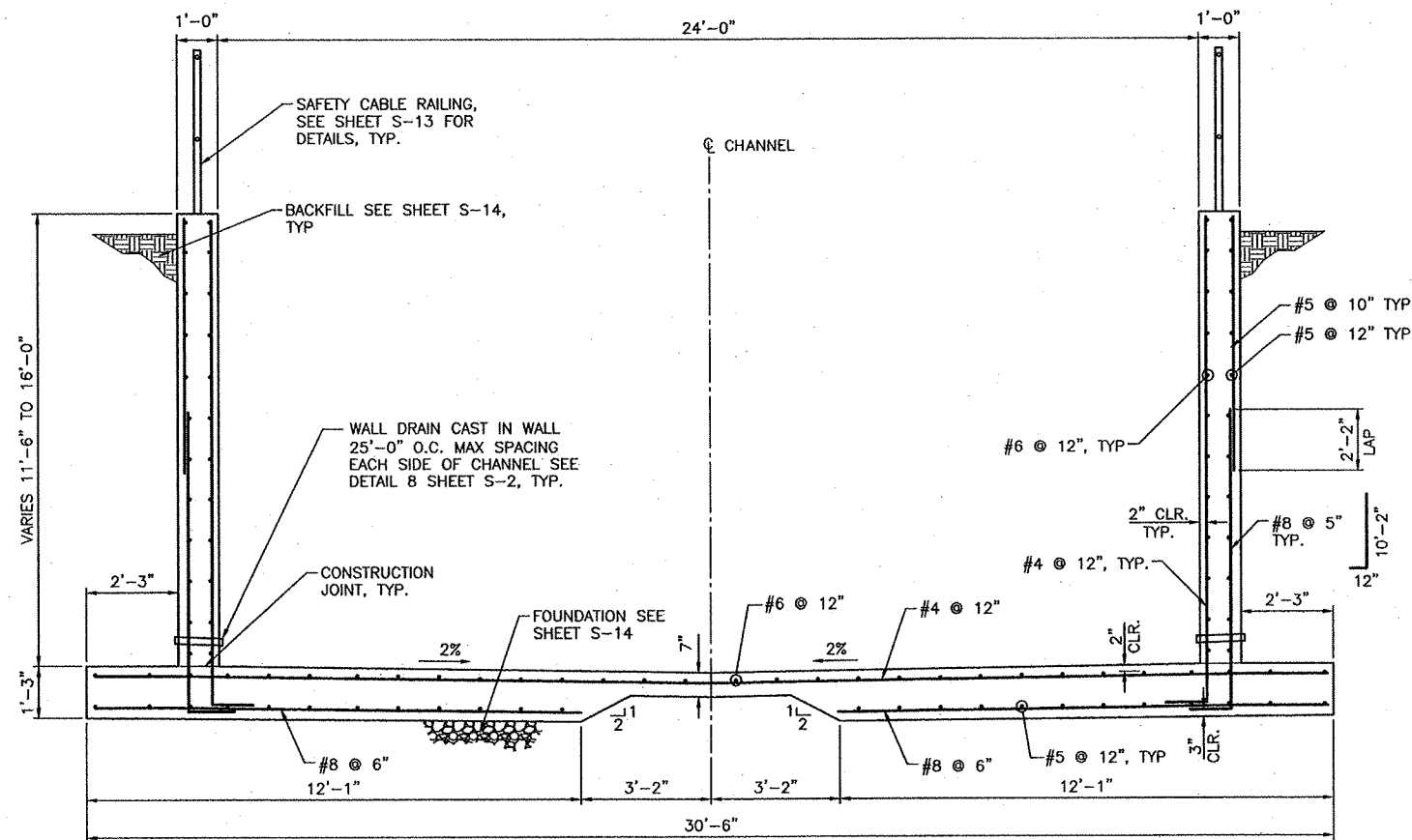
NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.



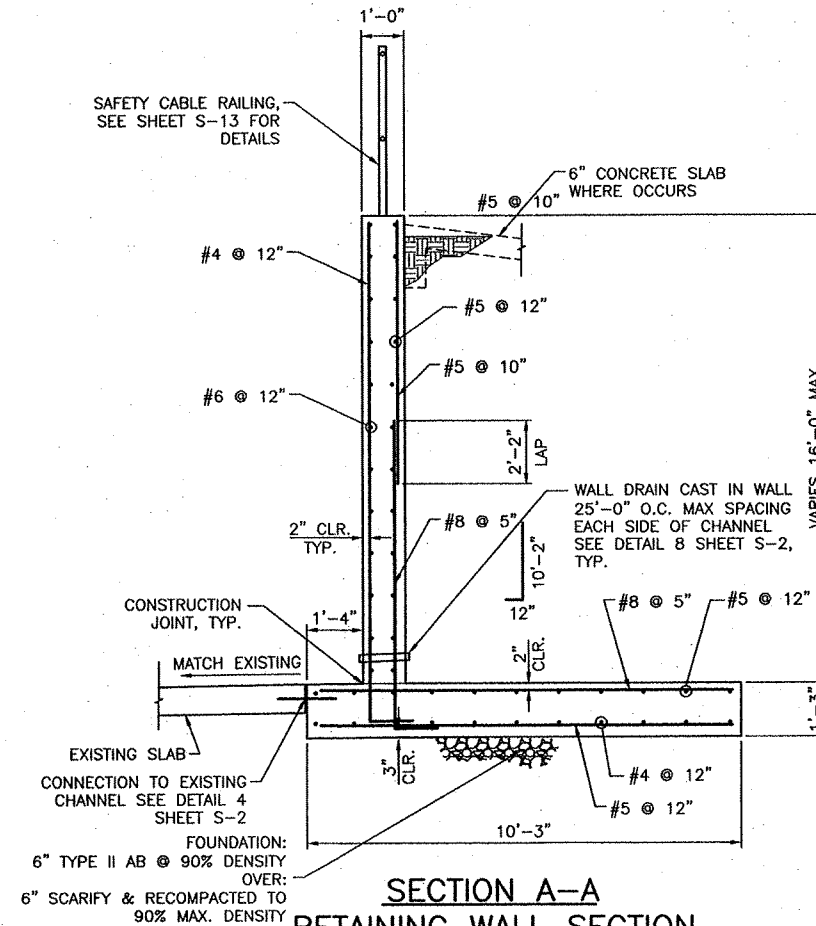
SECTION D-D

1/2" = 1'-0"



SECTION B-B
24' WIDE CHANNEL SECTION

1/2" = 1'-0"
STA. 42+77.71 TO STA. 43+62.00



SECTION A-A
RETAINING WALL SECTION

1/2" = 1'-0"
STA. 43+62.00

REVISIONS			
No.	Date	By	App.

DESIGNED:	MSK
DRAWN:	MSK
CHECKED:	AL
JOB NO.:	14754
PROJECT:	AS SHOWN
DATE:	JANUARY, 2000

JACOBS
7800 Macdonald Ranch Blvd.
Suite 200
Las Vegas, Nevada 89119
(702) 888-5400 Fax (702) 888-5464

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: CHANNEL AND RETAINING WALLS
SECTIONS

SHEET
3-12
17 OF 20

07498

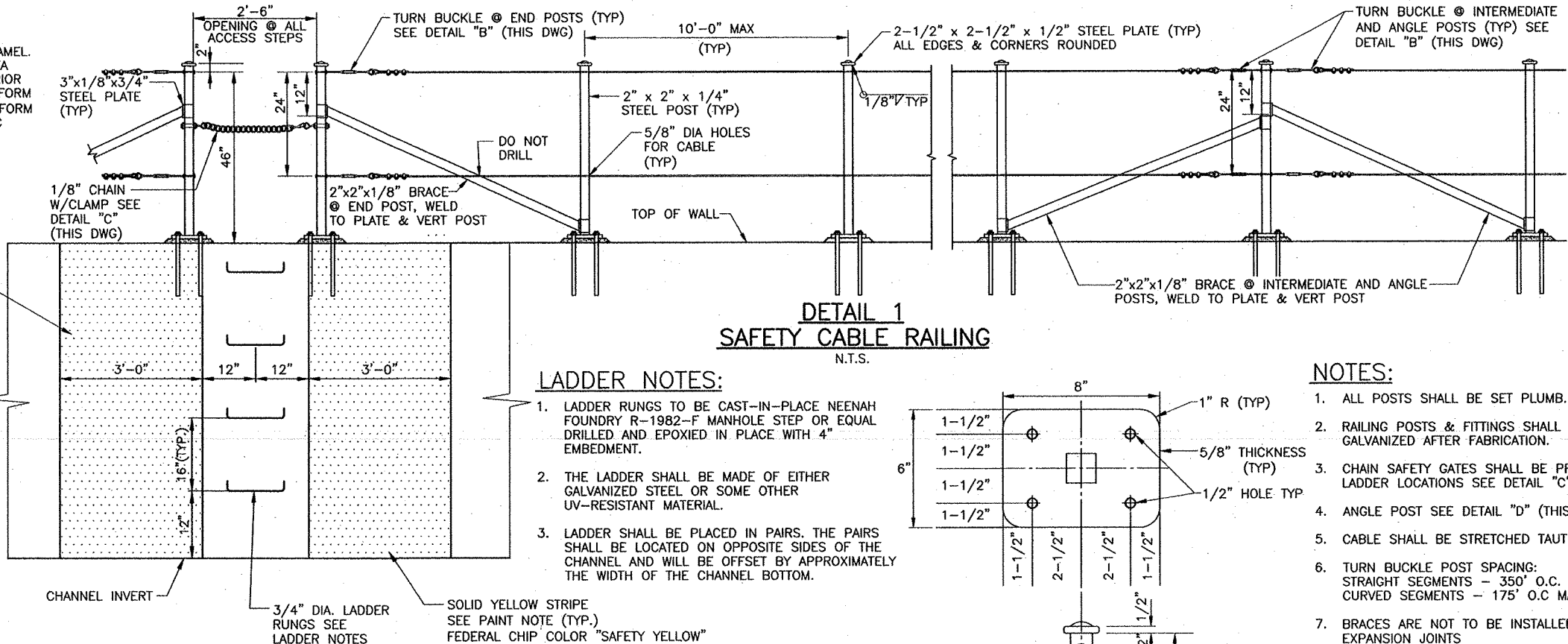
PAINT NOTE:

ALL PAINT SHALL BE HIGH-GLOSS ENAMEL. CONTRACTOR SHALL SUBMIT PAINT DATA SHEET FOR REVIEW AND APPROVAL PRIOR TO APPLICATION. PAINTING SHALL CONFORM TO SECTION 614 & 714 OF THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA LATEST EDITION"

NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY: ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION PROVIDED BY OTHERS.

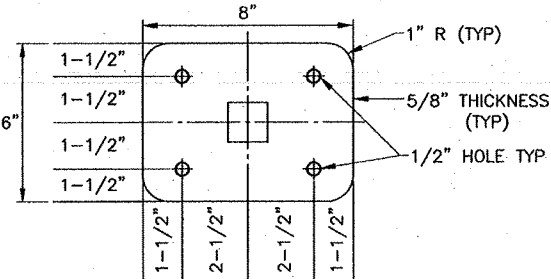
SOLID YELLOW STRIPE
SEE PAINT NOTE (TYP)



DETAIL 1
SAFETY CABLE RAILING
N.T.S.

LADDER NOTES:

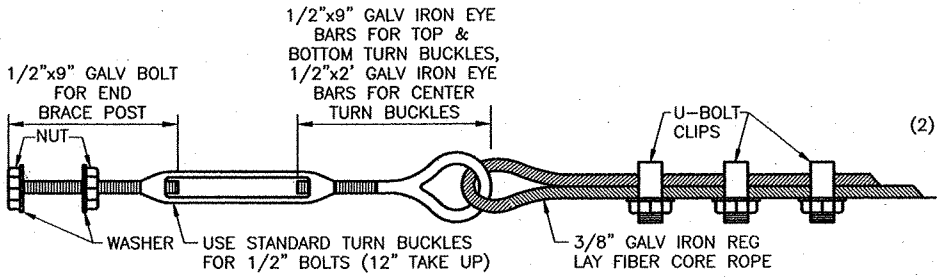
1. LADDER RUNGS TO BE CAST-IN-PLACE NEENAH FOUNDRY R-1982-F MANHOLE STEP OR EQUAL DRILLED AND EPOXIED IN PLACE WITH 4" EMBEDMENT.
2. THE LADDER SHALL BE MADE OF EITHER GALVANIZED STEEL OR SOME OTHER UV-RESISTANT MATERIAL.
3. LADDER SHALL BE PLACED IN PAIRS. THE PAIRS SHALL BE LOCATED ON OPPOSITE SIDES OF THE CHANNEL AND WILL BE OFFSET BY APPROXIMATELY THE WIDTH OF THE CHANNEL BOTTOM.



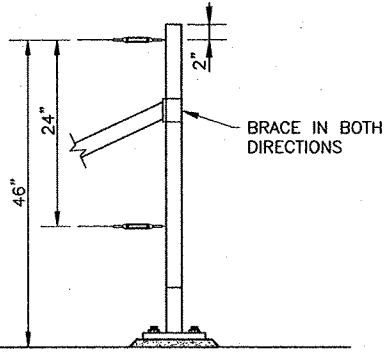
NOTES:

1. ALL POSTS SHALL BE SET PLUMB.
2. RAILING POSTS & FITTINGS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. CHAIN SAFETY GATES SHALL BE PROVIDED AT LADDER LOCATIONS SEE DETAIL "C" (THIS DWG)
4. ANGLE POST SEE DETAIL "D" (THIS DWG).
5. CABLE SHALL BE STRETCHED TAUT
6. TURN BUCKLE POST SPACING:
STRAIGHT SEGMENTS - 350' O.C. MAX
CURVED SEGMENTS - 175' O.C. MAX
7. BRACES ARE NOT TO BE INSTALLED ACROSS EXPANSION JOINTS
8. ONE CABLE AND SHORT POST PER DETAIL E MAY BE USED WHEN WALL HEIGHT PLUS RAIL IS 42" OR GREATER ABOVE FINISH GRADE.

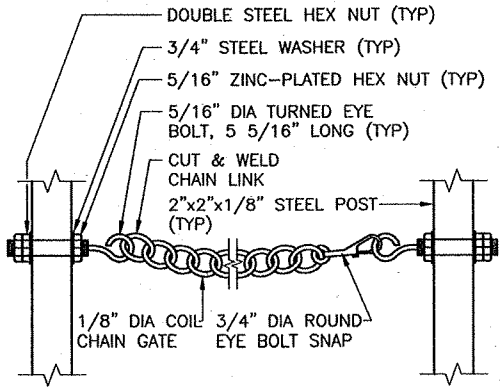
CHANNEL LADDER LOCATION SCHEDULE	
STATION	OFFSET
28+50	12' RT
28+75	12' LT
33+00	12' RT
33+25	12' LT
40+70	12' LT
40+95	12' RT
38+45	19' LT
38+20	23' RT



TURN BUCKLE - DETAIL B
N.T.S.

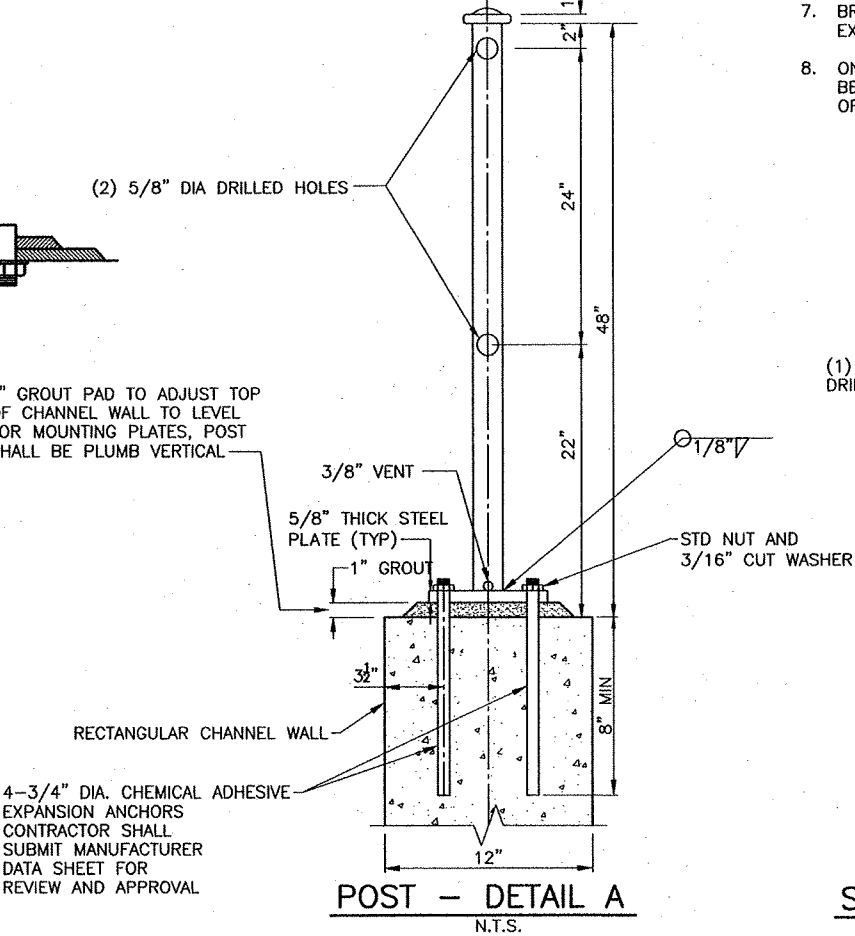


ANGLE POST - DETAIL D
N.T.S.

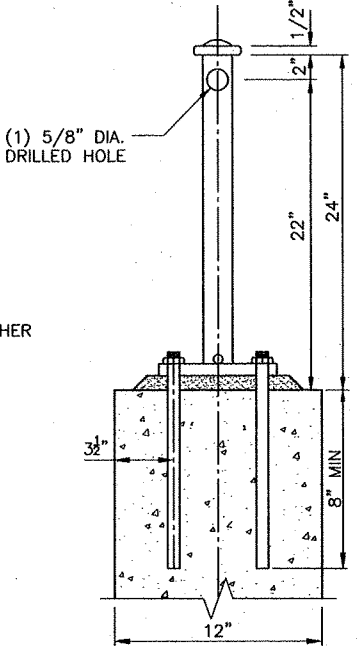


CHAIN SAFETY GATE - DETAIL C
N.T.S.

1" GROUT PAD TO ADJUST TOP OF CHANNEL WALL TO LEVEL FOR MOUNTING PLATES, POST SHALL BE PLUMB VERTICAL



POST - DETAIL A
N.T.S.

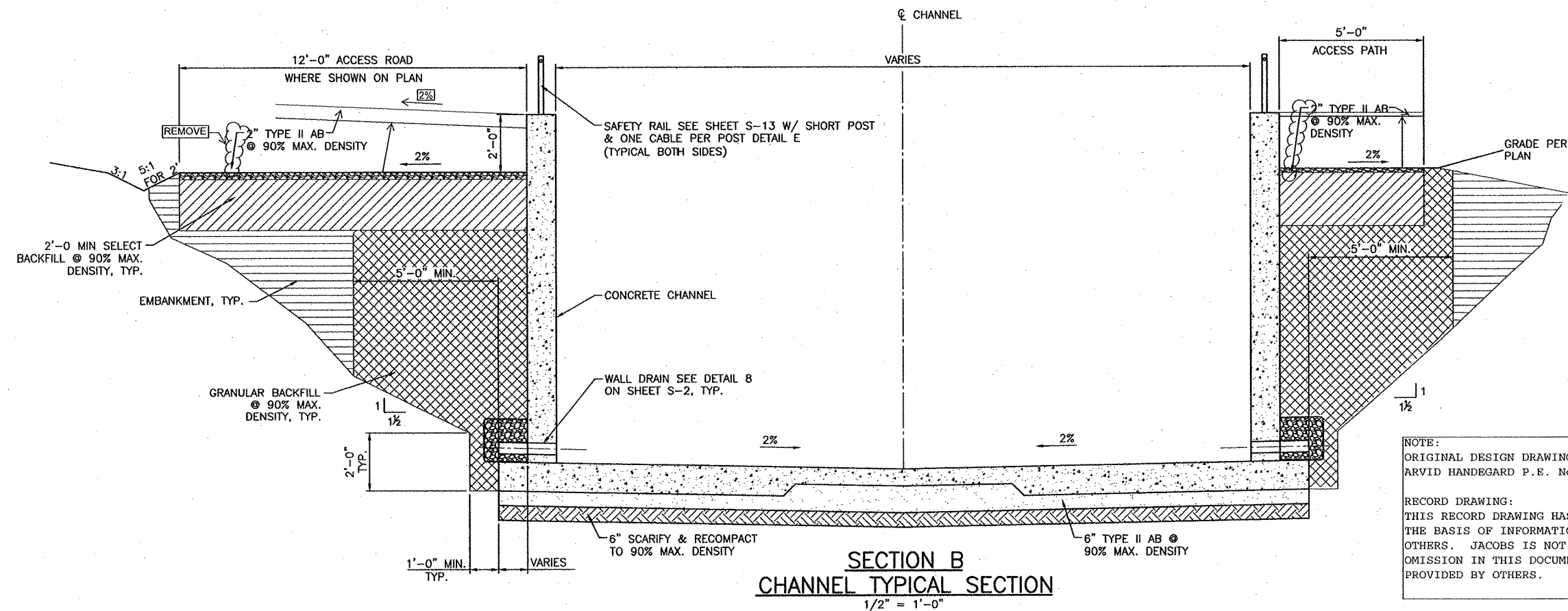
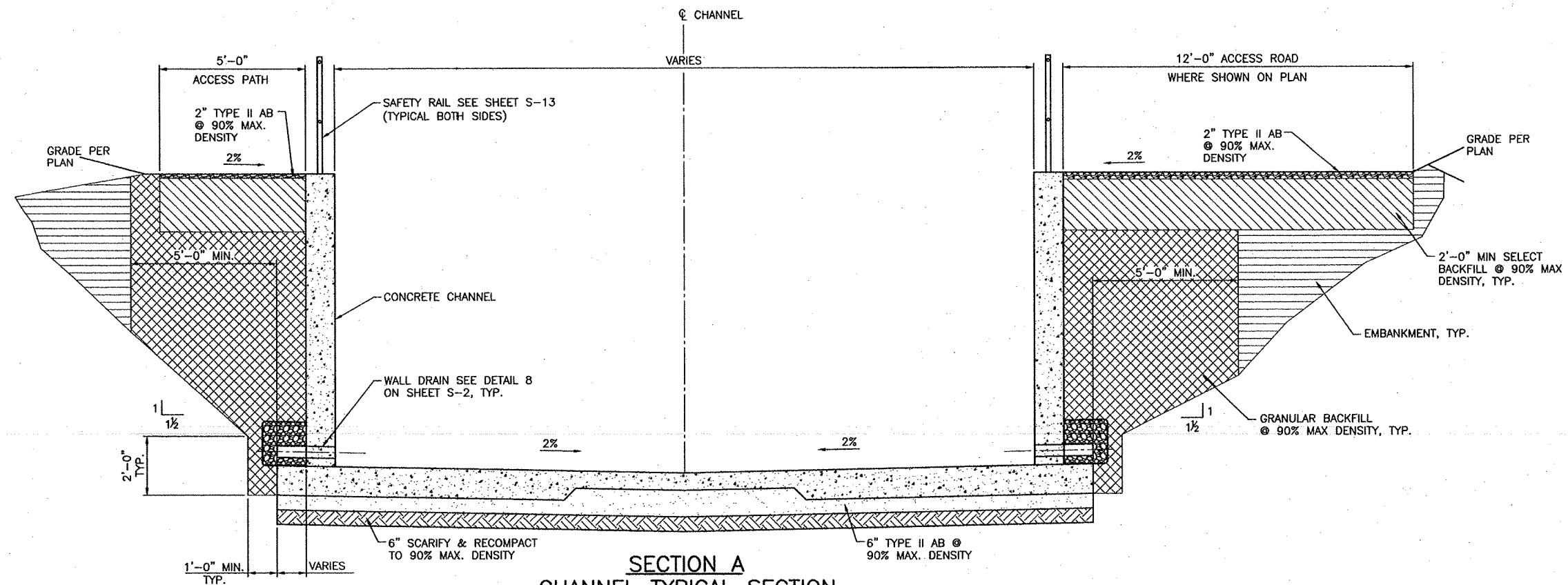


SHORT POST - DETAIL E
N.T.S.
(SEE POST - DETAIL A FOR ADD'L. NOTES)

JACOBS
7700 Bermuda Road
Suite 200
Las Vegas, Nevada 89139
(702) 885-5400 Fax (702) 885-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: SAFETY CABLE RAILING DETAILS

REVISIONS	
No.	Date



NOTE:
ORIGINAL DESIGN DRAWINGS SIGNED BY:
ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
PROVIDED BY OTHERS.

[illegible]

DESIGNED:	MSZ
DRAWN:	ALA
CHECKED:	AK
JOB No:	P4249700
HORIZ:	AS SHOWN
VERT:	AS SHOWN
DATE:	JANUARY 2008

JACOBS™

7760 Bermuda Road
SUITE 200
Las Vegas, NEVADA 89119
(702) 938-5400 Fax (702) 938-5454

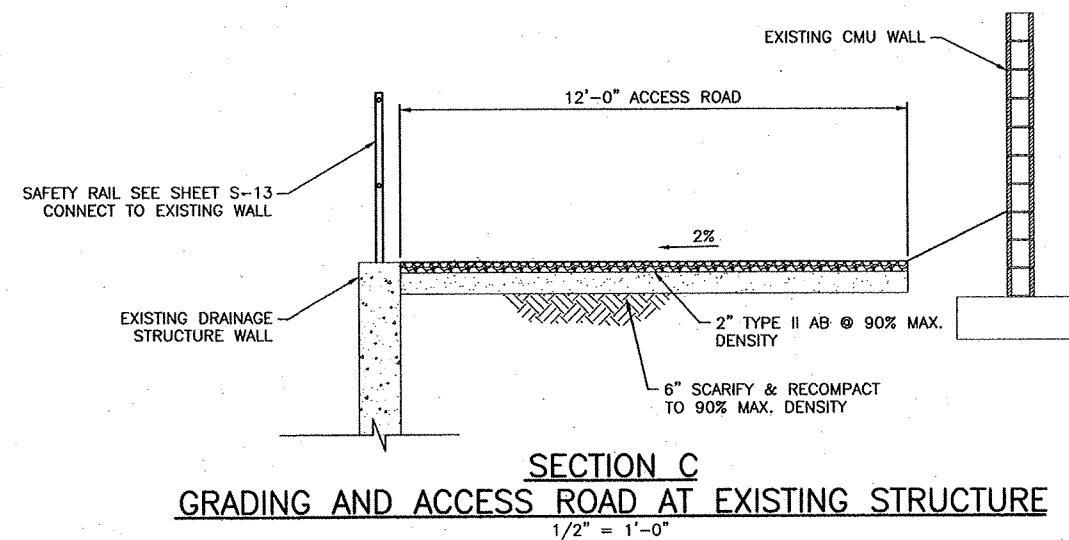
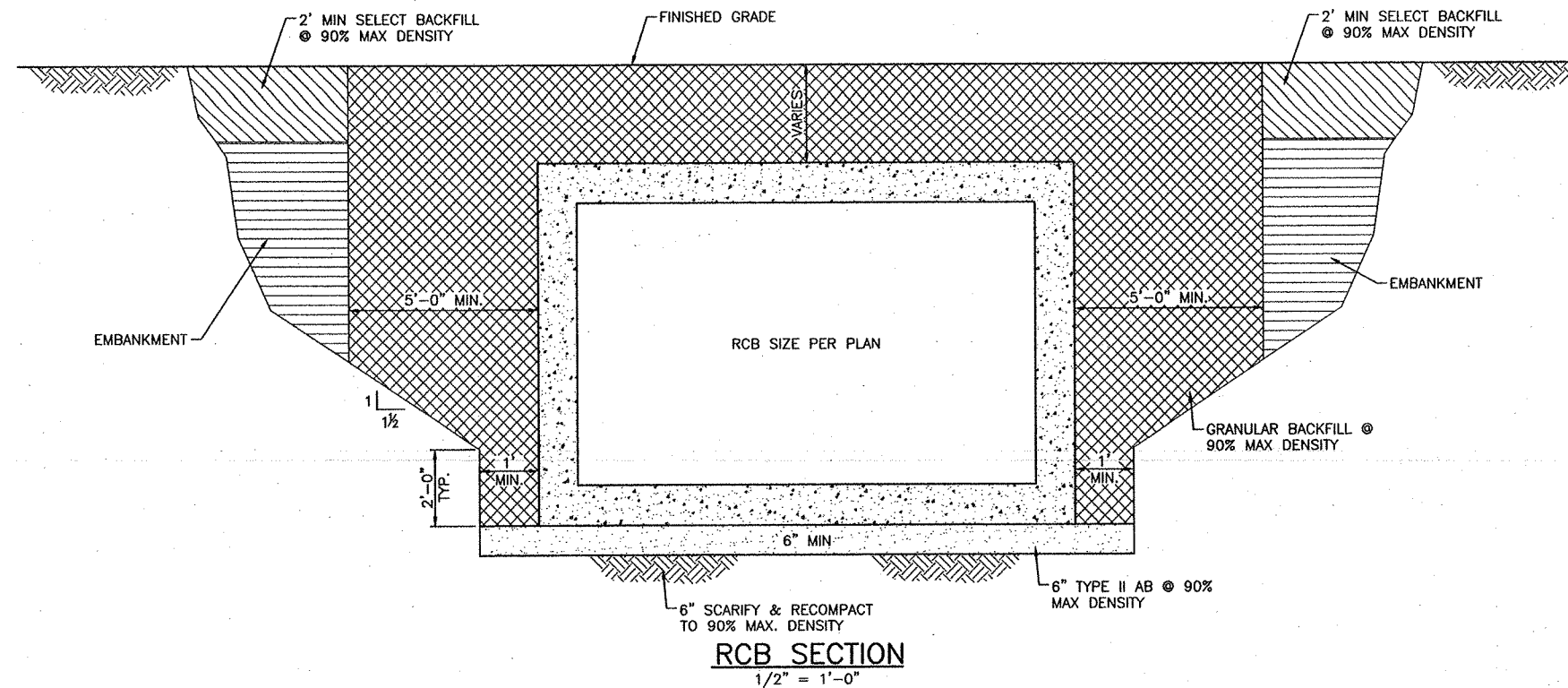
PROJECT: PITTMAN MACDONALD RANCH CHANNEL
AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
DESCRIPTION: TYPICAL EXCAVATION AND BACKFILL DETAILS

SHEET

S-14

07498

19 OF 20



NOTE:
 ORIGINAL DESIGN DRAWINGS SIGNED BY:
 ARVID HANDEGARD P.E. No. 14754; JACOBS

RECORD DRAWING:
 THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON
 THE BASIS OF INFORMATION COMPILED AND FURNISHED BY
 OTHERS. JACOBS IS NOT RESPONSIBLE FOR ANY ERROR OR
 OMISSION IN THIS DOCUMENT AS A RESULT OF INFORMATION
 PROVIDED BY OTHERS.

REVISIONS

DESIGNED:	DATE:
DRN:	AL
CHECKED:	AL
JOB NO:	2446700
REVISION:	AS SHOWN
DATE:	JANUARY 2008

JACOBS
 760 Barracks Road
 Suite 200
 Las Vegas, Nevada 89109
 (702) 886-4400 Fax (702) 886-5454

PROJECT: PITTMAN MACDONALD RANCH CHANNEL
 AMARGOSA POWER EASEMENT TO ARROYO GRANDE BLVD.
 DESCRIPTION: RCB EXCAVATION AND BACKFILL DETAIL

SHEET
 6-15
 20 OF 20

07498