

# California High-Speed Train Project



## Request for Proposal for Design-Build Services

RFP No.: HSR 11-16  
Design Variance Report

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

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FRESNO STATION CROSSOVER DISTANCE FROM STATION  
HST TRACK ALIGNMENT SPIRAL/VERTICAL CURVE OVERLAP  
OCS CLEARANCE ASHLAN AVE  
OCS CLEARANCE UNDER FUTURE RECONSTRUCTED FRESNO YARD OVERHEAD  
TRANSVERSE UTILITY ENCROACHMENT



# California High-Speed Train Project

## DESIGN VARIANCE COVER SHEET



Design Variance Request Number

0006

Design Variance Request Title

Fresno Station Crossover  
Distance from Station

**Prepared by:**

URS/HMM/Arup  
Regional Consultant

10-6-11  
Date

**PMT Review:**

Richard Schmedes

11-8-11

Systems

Date

John Chirco

11-9-11

Infrastructure

Date

Joseph Metzler

10-21-11

Operations/Maintenance/Safety

Date

Frank Banko

10-12-11

Rolling Stock

Date

Vladimir Kanevskiy

11-4-11

Regulatory Approvals

Date

Tony Murphy

10-28-11

System Integration

Date

**PMT Recommended:**

Thomas Tracy

11-19-11

PMT Regional Manager

Date

**PMT Approval:**

Ken Jong

11-16-11

Engineering Manager

Date

**Agency Concurrence:**

CHSR Authority Chief Engineer

Date

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



CHSR Authority Chief Engineer  
**CHST DESIGN VARIANCE REQUEST FORM**

**Part 1 – Design Variance Request Information**

**Title/Subject: Fresno Station Crossovers' Distance from Station**

**Number: URS-OPS-0-0006 Revision: 0**

**Contract Name & Number (Final Design): HSR 06-0003**

**Region: Fresno - Bakersfield**

**Location: Fresno**

**Regional Consultant's / Third Party Design Drawing Reference: TT-D1011 to TT-D1016**

**Date Submitted to RMT & PMT**

<p>PREPARED / SUBMITTED BY:</p> <p>NAME: Richard Coffin</p> <p>COMPANY: URS/HMM/Arup A Joint Venture Company</p> <p>SIGNATURE: </p> <p>DATE: 10/06/11</p>	
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*\*Note design variance numbers will follow the same convention: "ABC" will abbreviate the name of the firm submitting the variance, "DEF" abbreviates the name of firm receiving the variance request, "X" is the revision number starting from 0, and the last four*



numbers count the number of total submittals starting from one.

**Part 2 – Design Variance Request Information**

<p><b>CHSTP DESIGN REQUIREMENT</b> Include reference to drawings, design criteria, technical memos, specifications</p>	<p>TM2.1.3 – Turnouts and Station Tracks Rev 0, 06/29/09 Figure 6.1.4 stipulates the desirable run time to determine the “minimum distance between the end of station turnout and crossover turnout, where they are on the same track,” should be 1.5 seconds, or a minimum of 1 second.</p> <p>Verbal advice from EMT stated that station crossovers should not be more than a mile from the station.</p>
<p><b>DESIGN CRITERIA REQUIRING A VARIANCE</b></p>	<p>Desirable run time to determine the “minimum distance between the end of station turnout and crossover turnout, where they are on the same track,” should be 1.5 seconds, or a minimum of 1 second.</p>
<p><b>REASON FOR REQUESTING A VARIANCE</b></p>	<p>Crossovers for Fresno stations at STA 10851+72.74 to 10863+11.37 and 108664+61.37 to 10876+00.00. Station platform ends are at 10970+00. This is a maximum separation of 14,127ft.</p>
<p><b>JUSTIFICATION FOR VARIANCE</b></p>	<p>Fresno Station is centered on Mariposa St and the station platform track approaches extend from Stanislaus St to the north and Santa Clara St to the south. The high-speed rail (HSR) descends into trench immediately after Stanislaus St in order to cross under abutments supporting the SR180 overcrossing of the Union Pacific Railroad (UPRR) tracks, spur tracks belonging to the San Joaquin Valley Railroad (SJVR) Company, and a canal that crosses under both the UPRR and the SJVR.</p> <p>The HSR is on a vertical curve as the tracks descend into the trench followed by a constant gradient of only 800ft at a gradient of 1.550%, followed by another vertical curve and then another section of 1,000ft at a constant gradient of -1.900%. The HSR emerges from the trench and is back at-grade on a constant gradient of 0.110% around 9,000ft (1.7 miles) to the north of the station platform turnouts. There are no sufficiently long sections at a constant gradient within the trench to accommodate a crossover with a design speed of 110mph (i.e., 1,139ft).</p>
<p><b>PROPOSED ALTERNATIVE DESIGN</b></p>	<p>Continue an at-grade alignment between W</p>

<b>REQUIREMENT</b>	<p>Olive and the station. This would require grade separation junction to carry the SJVR spurs (if feasible) and closure of Dry Creek. SR180 would require major works to the embankments and probable reconstruction of the abutments of the bridge crossing UPRR.</p> <p>It may be feasible to provide a crossover on the 1,000-foot section of constant gradient within the trench, but this would require the imposition of an 80mph speed restriction due the short crossover. This option was not recommended.</p>
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**Part 3 – Impact Analysis**

<b>OPERATIONS</b>	<p>Increased run time required for trains to negotiate the crossover at the northern approach to the station.</p> <p>It is believed use of crossovers would not be a normal event but probably during perturbation or maintenance.</p>
<b>MAINTENANCE</b>	None identified
<b>INFRASTRUCTURE</b>	None identified
<b>RAILROAD SYSTEMS</b>	None identified
<b>RELIABILITY / FUNCTIONALITY</b>	None identified
<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	<p>Consultation required with UPRR and Flood Control district regarding Dry Creek if alternative considered.</p>
<b>SAFETY AND SECURITY</b>	None identified
<b>DIRECT COST</b>	Alternative – As pre previous at grade scheme.
<b>OTHER</b>	Revised impact assessment will be required.

**Part 4 – Mitigation measures**

<b>OPERATIONS</b>	None identified
<b>MAINTENANCE</b>	None identified
<b>INFRASTRUCTURE</b>	None identified
<b>RAILROAD SYSTEMS</b>	None identified

**Part 5 – List of Supporting Documentation to Design Variance Request**

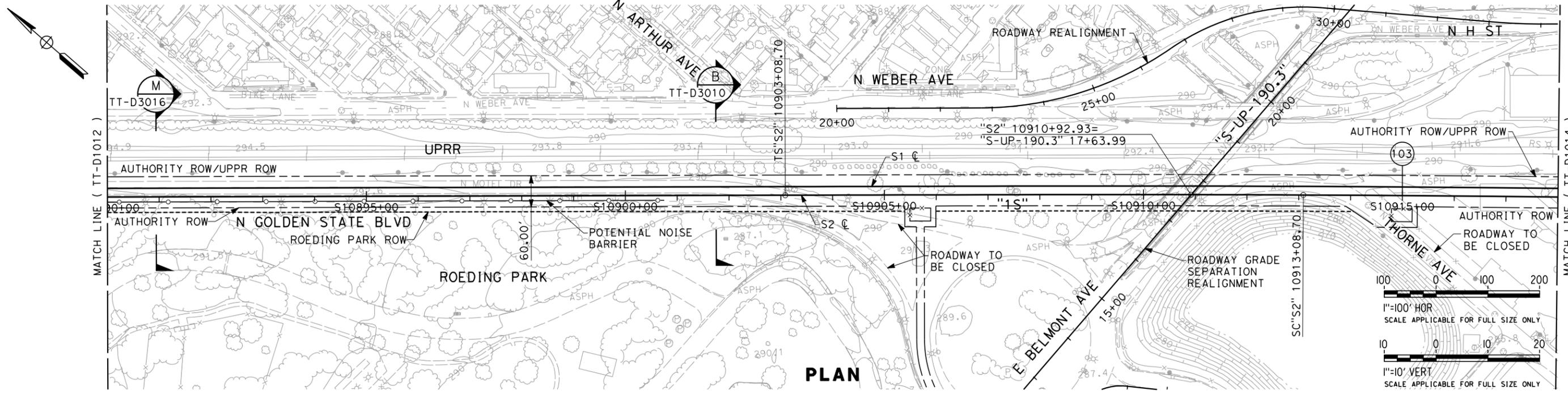
<b>ANALYSIS</b>	N/A
<b>PUBLICATION/STANDARD EXTRACTS</b>	N/A
<b>RISK ASSESSMENT</b>	N/A
<b>DRAWINGS</b>	30% Draft TT-D1010 to TT-D1016
<b>CALCULATIONS</b>	N/A
<b>EXPERT TESTIMONIALS</b>	N/A
<b>CORRESPONDENCE</b>	N/A
<b>OTHER</b>	N/A



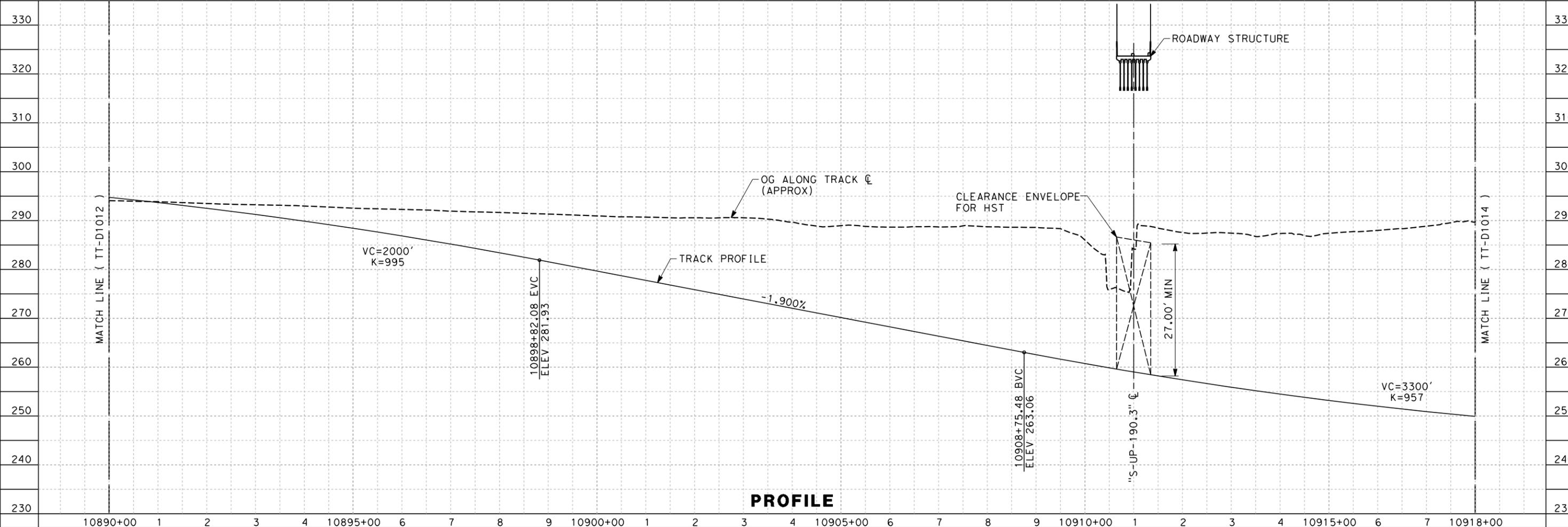
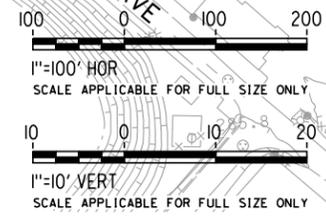




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**PLAN**



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
K. SEYMOUR  
DRAWN BY  
P. TONKIN  
CHECKED BY  
D. HUNT  
IN CHARGE  
R. PRUST  
DATE  
09/15/11

**30% DRAFT  
SUBMITTAL  
FOR INTERNAL  
USE ONLY**

**NOT FOR  
CONSTRUCTION**

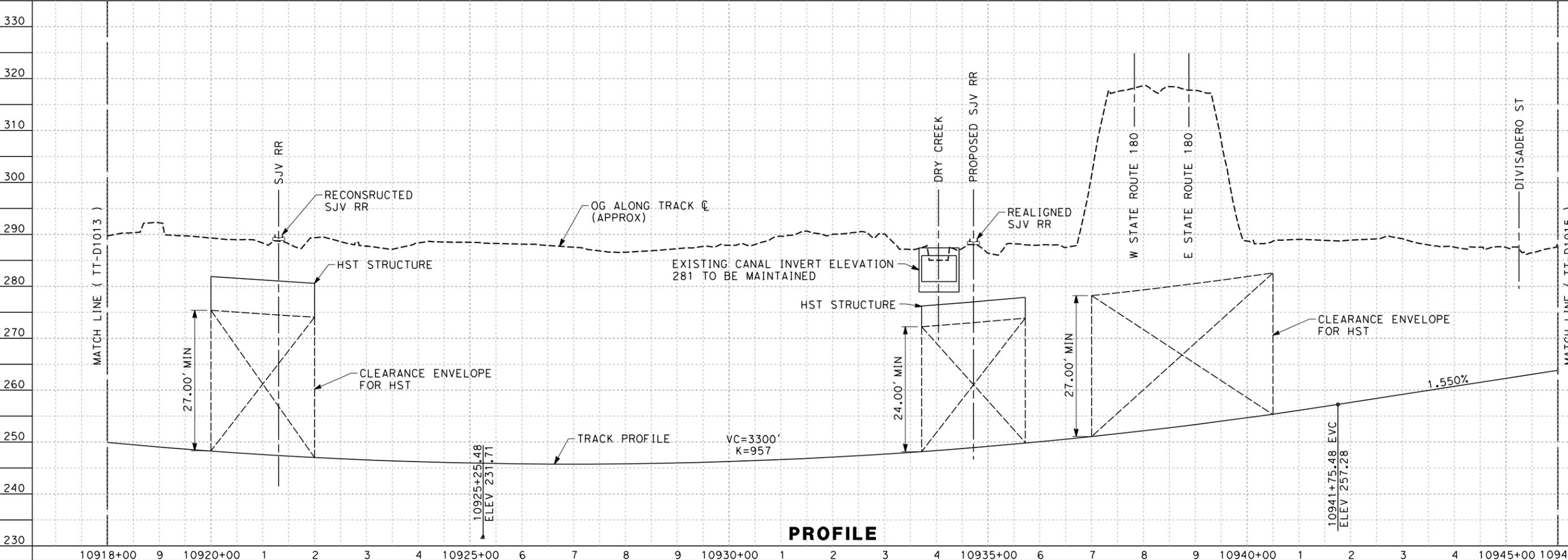
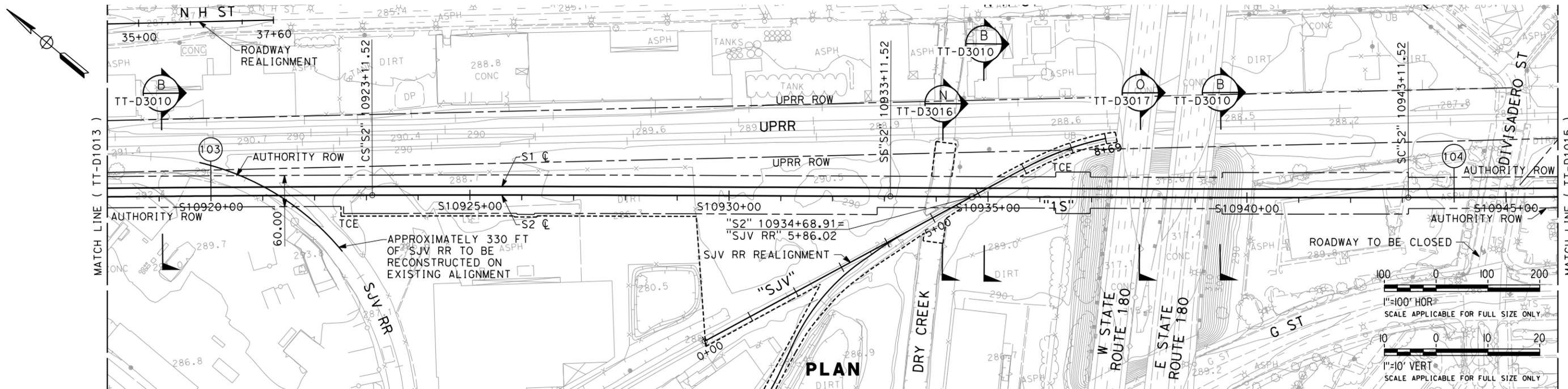


**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**  
PACKAGE 1  
PLAN AND PROFILE  
STA. 10890+00 TO 10918+00

CONTRACT NO.  
DRAWING NO.  
TT-D1013  
SCALE  
AS SHOWN  
SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

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**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
K. SEYMOUR  
DRAWN BY  
P. TONKIN  
CHECKED BY  
D. HUNT  
IN CHARGE  
R. PRUST  
DATE  
09/15/11

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CONSTRUCTION**

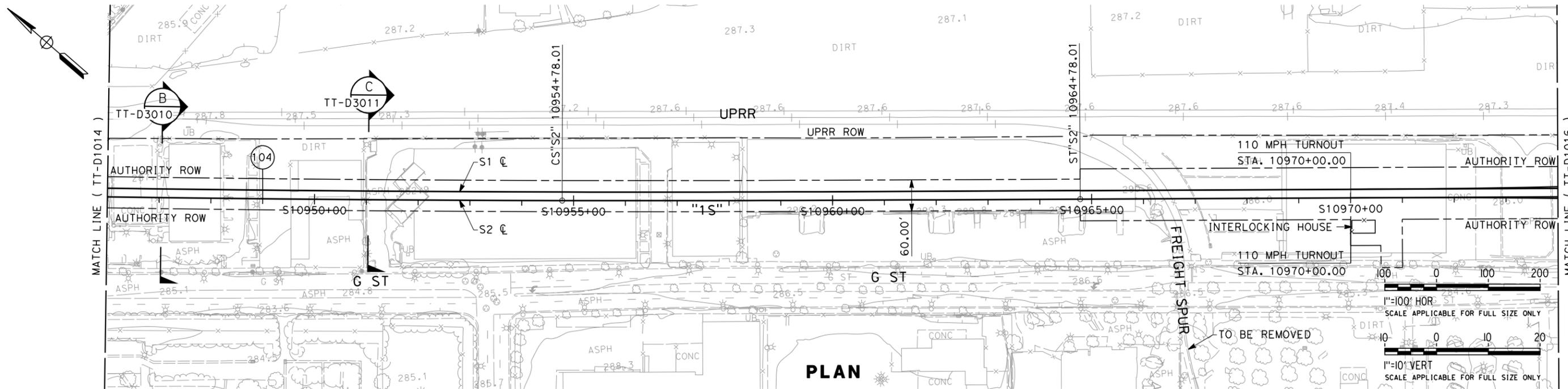


**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**  
PACKAGE 1  
PLAN AND PROFILE  
STA. 10918+00 TO 10946+00

CONTRACT NO.  
DRAWING NO.  
TT-D1014  
SCALE  
AS SHOWN  
SHEET NO.

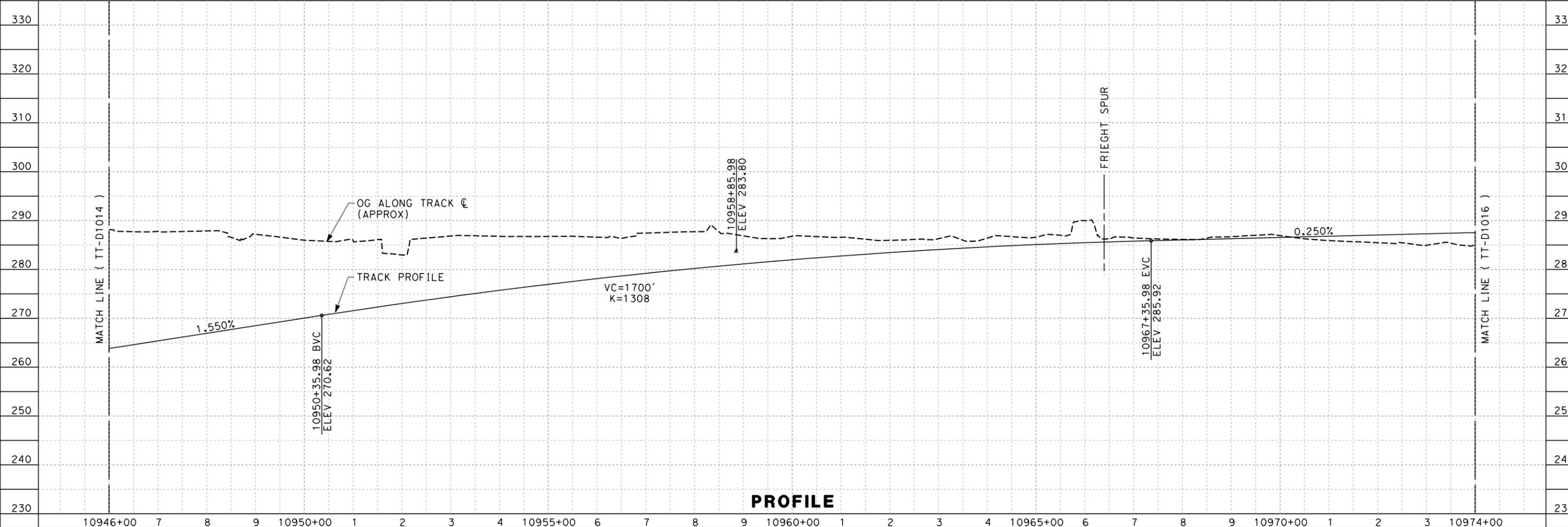
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 paul.tonkin



**PLAN**

1"=100' HOR  
 SCALE APPLICABLE FOR FULL SIZE ONLY  
 1"=10' VERT  
 SCALE APPLICABLE FOR FULL SIZE ONLY



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
 K. SEYMOUR  
 DRAWN BY  
 P. TONKIN  
 CHECKED BY  
 D. HUNT  
 IN CHARGE  
 R. PRUST  
 DATE  
 09/15/11

**30% DRAFT  
 SUBMITTAL  
 FOR INTERNAL  
 USE ONLY**  
  
**NOT FOR  
 CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
 SIERRA SUBDIVISION**  
 PACKAGE 1  
 PLAN AND PROFILE  
 STA. 10946+00 TO 10974+00

CONTRACT NO.  
 DRAWING NO.  
 TT-D1015  
 SCALE  
 AS SHOWN  
 SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



# California High-Speed Train Project

## DESIGN VARIANCE COVER SHEET



Design Variance Request Number

0004

Design Variance Request Title

HST Track Alignment Spiral /  
Vertical Curve Overlap

**Prepared by:**

AECOM  
Regional Consultant

9-16-11  
Date

**PMT Review:**

Richard Schmedes

11-4-11  
Date

Systems

John Chirco

10-27-11  
Date

Infrastructure

Joseph Metzler

11-7-11  
Date

Operations/Maintenance/Safety

Frank Banko

10-12-11  
Date

Rolling Stock

Vladimir Kanevskiy

11-4-11  
Date

Regulatory Approvals

Tony Murphy

11-4-11  
Date

System Integration

Date

**PMT Recommended:**

Peter Valentine

11-7-11  
Date

PMT Regional Manager

**PMT Approval:**

Ken Jong

11-7-11  
Date

Engineering Manager

**Agency Concurrence:**

CHSR Authority Chief Engineer

Date

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**Title/Subject: HST Track Alignment Spiral/Vertical Curve Overlap**

**Number: AECOM-SYS-0-0004 Revision: 0**

**Contract Name & Number (Final Design): HSR06-007**

**Region: Merced - Fresno**

**Location: Fresno County**

**Regional Consultant's / Third Party Design Drawing Reference:**

**Date Submitted to RMT & PMT**

<p>PREPARED / SUBMITTED BY:</p> <p>NAME: Alan Boone/Angela Shields</p> <p>COMPANY: AECOM</p> <p>SIGNATURE:</p> <p>DATE: (09-16-2011)</p>	
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*\*Note design variance numbers will follow the same convention: "ABC" will abbreviate the name of the firm submitting the variance, "DEF" abbreviates the name of firm receiving the variance request, "X" is the revision number starting from 0, and the last four numbers count the number of total submittals starting from one.*

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**Part 2 – Design Variance Request Information**

<b>CHSTP DESIGN REQUIREMENT</b> Include reference to drawings, design criteria, technical memos, specifications	TM 2.1.2 Section 6.1.7
<b>DESIGN CRITERIA REQUIRING A VARIANCE</b>	No overlap allowed between spiral curves and vertical curves for HST track alignment.
<b>REASON FOR REQUESTING VARIANCE</b>	To keep the top of rail profile as close to existing ground as possible thus avoiding the need for embankment fill or retaining walls.
<b>JUSTIFICATION FOR VARIANCE</b>	To avoid unneeded additional capital cost to the project.
<b>PROPOSED ALTERNATIVE DESIGN REQUIREMENT</b>	Allow overlap of vertical curves with spiral curves.

**Part 3 – Impact Analysis**

<b>OPERATIONS</b>	N/A
<b>MAINTENANCE</b>	Possible slight increase in maintenance costs due to complexity of HST track alignment.
<b>INFRASTRUCTURE</b>	<p><b>General</b> The HST alignment must pass underneath a proposed roadway overcrossing at Veterans Blvd. (station S10535+81) and a new roadway overcrossing at Shaw Ave. (station S10628+87). Between these locations the HST alignment will cross Herndon Canal on a new bridge at station 10592+66.</p> <p>The top of rail profile is designed to pass under the two roadway overcrossings and must rise to provide sufficient structure depth for the Herndon Canal bridge while maintaining proper freeboard over the water surface.</p> <p>There are three locations where the spiral/vertical curve overlaps. Location 1 is the vertical curve at station S10548+36 which overlaps the spiral on curve #101. Location 2 is the vertical curve at station S10592+66 which overlaps the spiral on curve #102. Location 3 is the vertical curve at station S10610+51 which overlaps the spiral on curve #102.</p> <p><b>Reason</b> Moving the two vertical curves identified above will result in a raised the top of rail profile between the proposed vertical curve PVI locations, a distance of approximately 4,430 feet. The top of rail would be approximately 8 feet higher along this section.</p> <p>This raised profile will require additional embankment fill along the 4,430 feet to accommodate the raised track profile.</p> <p><b>Other Options</b> Another option would be to introduce additional</p>

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



	vertical curves within this area of the alignment however this will result in a "roller coaster" type of effect for HST patrons. <b>Justification</b> The raised top of rail profile will require additional embankment fill, thus adding cost to the project. The increased embankment would eliminate the opportunity for open drainage ditches thus requiring a closed drainage system.
<b>RAILROAD SYSTEMS</b>	N/A
<b>RELIABILITY / FUNCTIONALITY</b>	N/A
<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	N/A
<b>SAFETY AND SECURITY</b>	N/A
<b>DIRECT COST</b>	No detailed cost estimate. The increased cost of the embankment and inclusion of a closed drainage system would alone will be in excess of \$500,000.
<b>OTHER</b>	Possible increased maintenance cost of drainage system.

**Part 4 – Mitigation Measures**

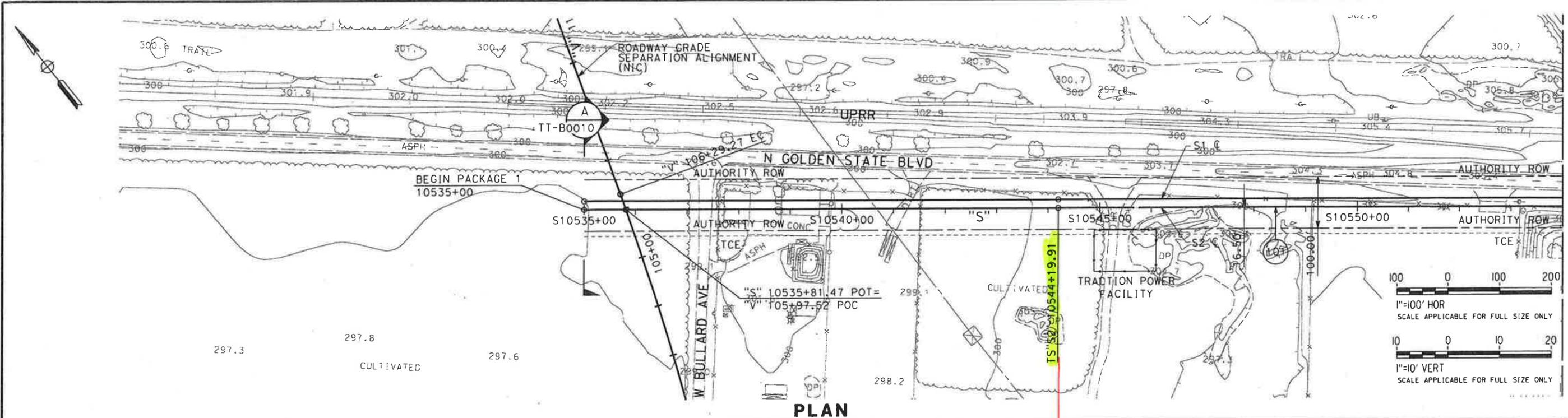

**Part 5 – List of Supporting Documentation to Design Variance Request**

<b>ANALYSIS</b>	See discussion above and attached exhibits.
<b>PUBLICATION/STANDARDS EXTRACTS</b>	N/A
<b>RISK ASSESSMENT</b>	N/A
<b>DRAWINGS</b>	See Attached
<b>CALCULATIONS</b>	N/A
<b>EXPERT TESTIMONIALS</b>	N/A
<b>CORRESPONDENCE</b>	N/A
<b>OTHER</b>	

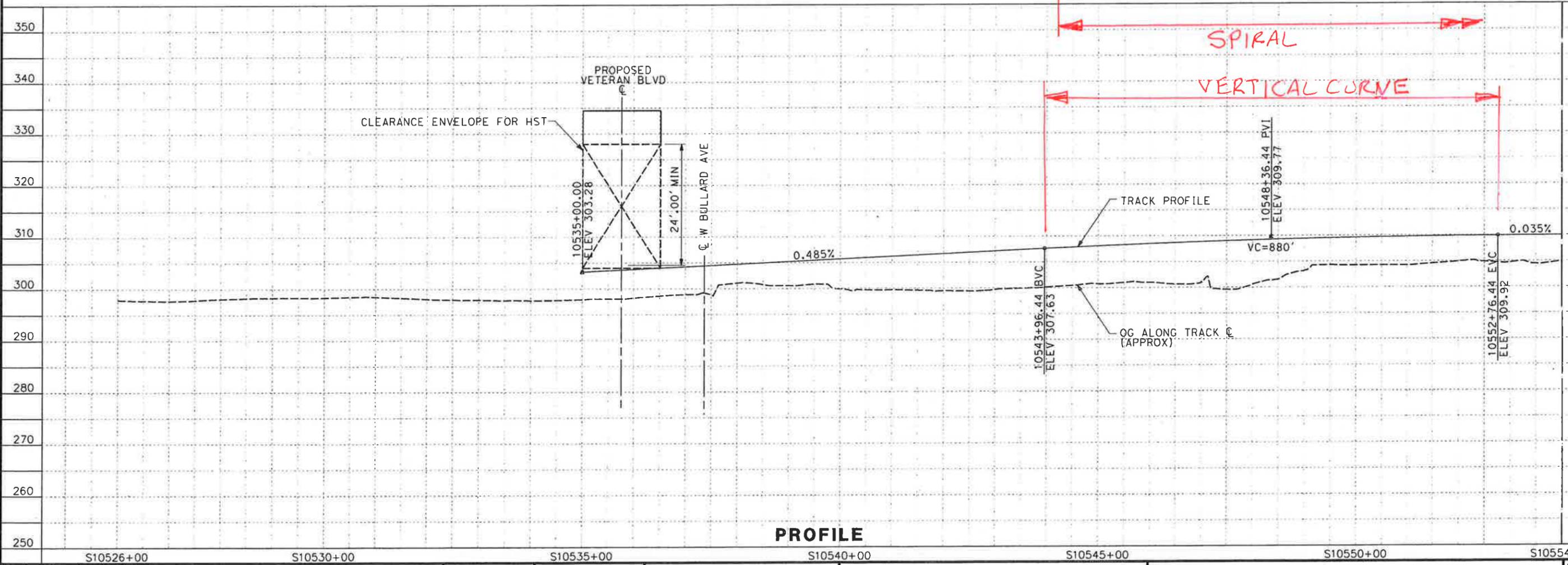
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**PLAN**



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
**A. SHIELDS**  
DRAWN BY  
**H. SULLIVAN**  
CHECKED BY  
**H. PHAN**  
IN CHARGE  
**A. BOONE**  
DATE  
**08/31/2011**

**30% IN-PROGRESS  
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USE ONLY**

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CONSTRUCTION**

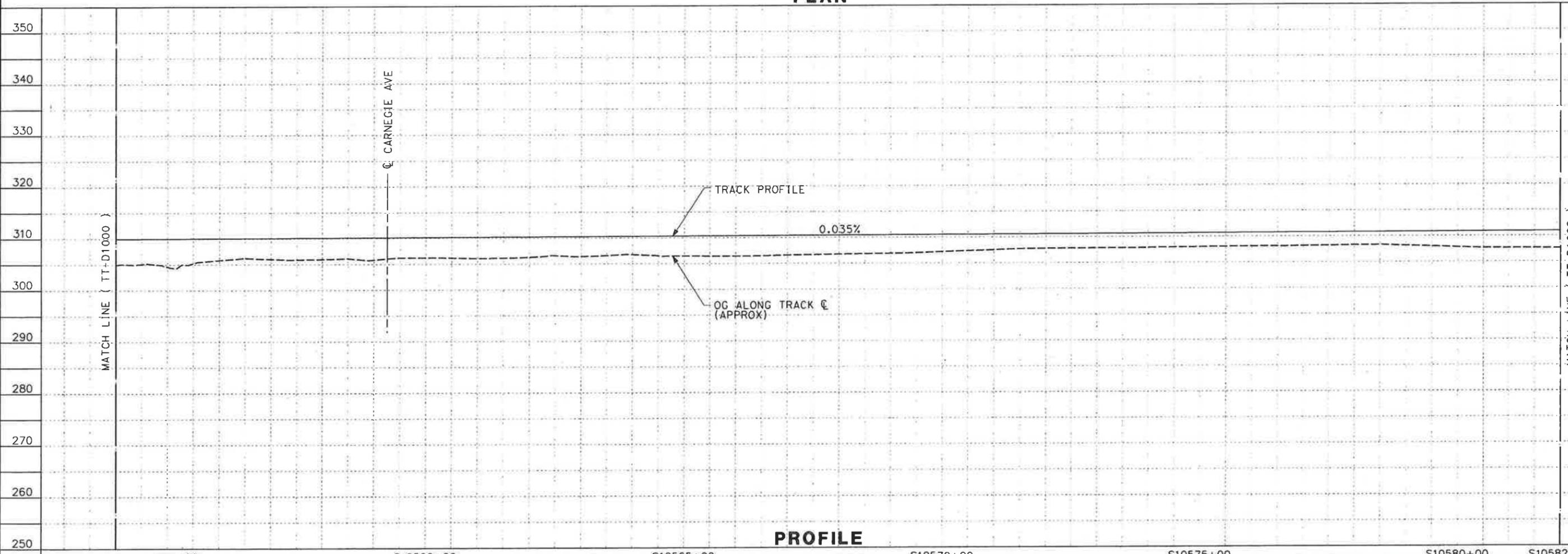
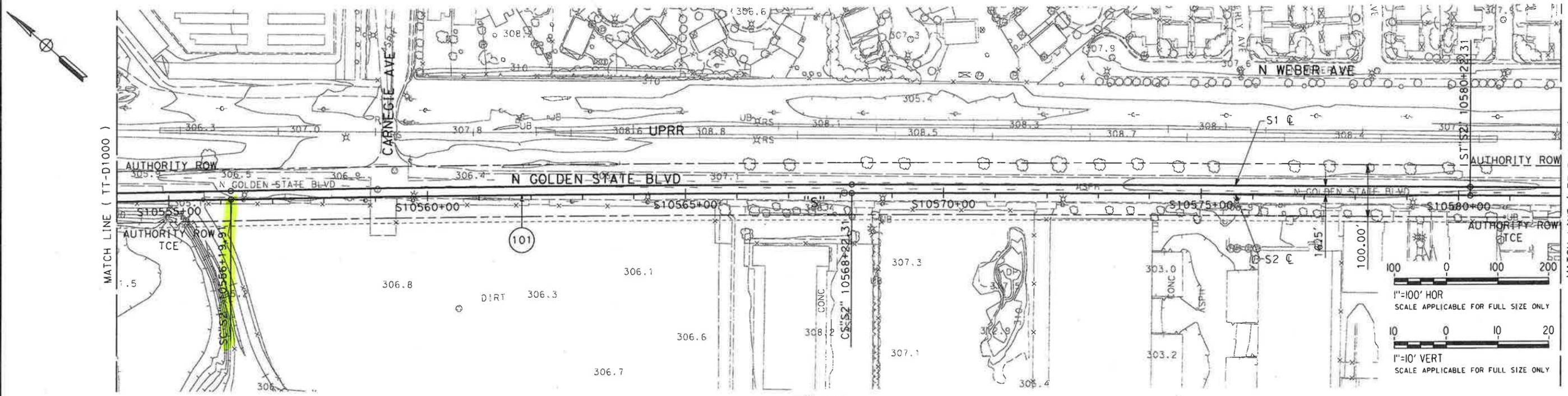


**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**  
PACKAGE 1  
TRACK GUIDEWAY  
PLAN AND PROFILE  
STA. 10535+00 TO 10554+00

CONTRACT NO.  
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SHEET NO.  
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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
**A. SHIELDS**  
DRAWN BY  
**H. SULLIVAN**  
CHECKED BY  
**H. PHAN**  
IN CHARGE  
**A. BOONE**  
DATE  
**08/31/2011**

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USE ONLY**

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CONSTRUCTION**



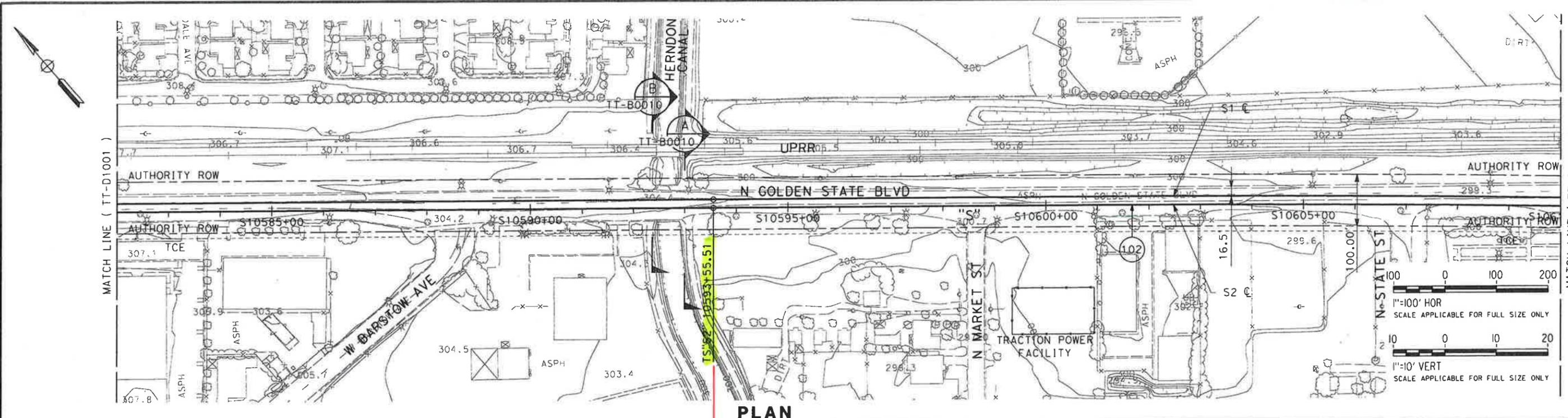
**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**

PACKAGE 1  
TRACK GUIDEWAY  
PLAN AND PROFILE  
STA. 10555+00 TO 10582+00

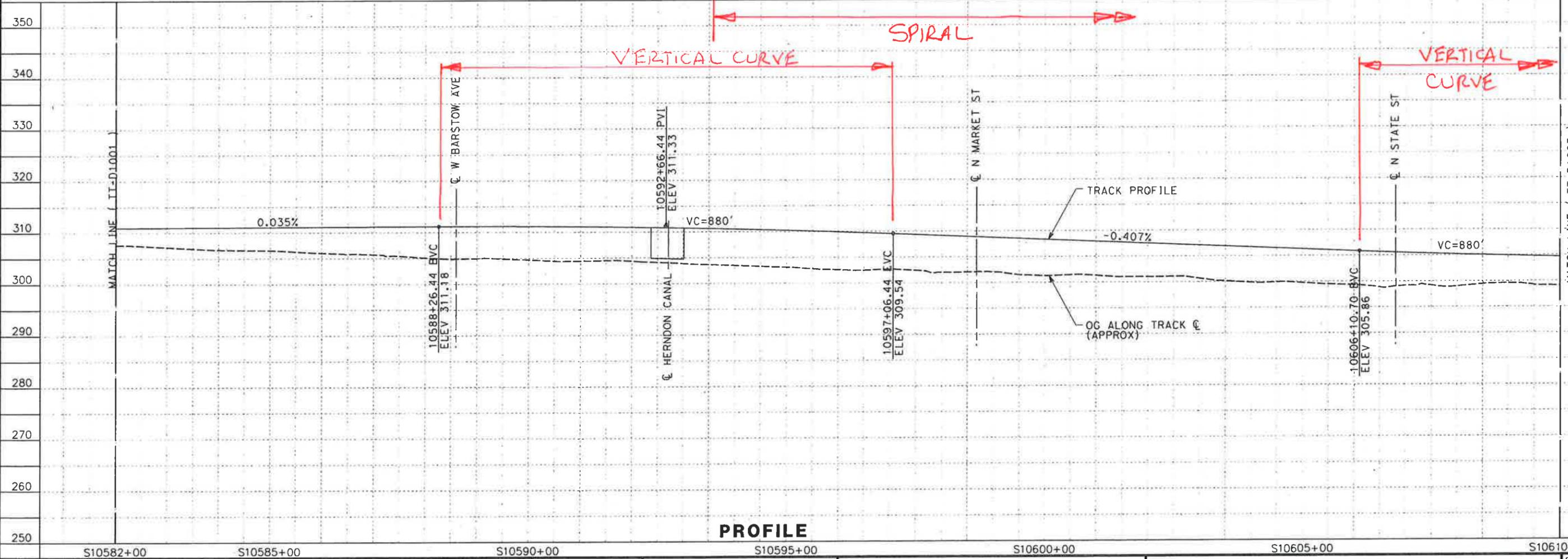
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SHEET NO.  
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**PLAN**



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
A. SHIELDS  
 DRAWN BY  
H. SULLIVAN  
 CHECKED BY  
H. PHAN  
 IN CHARGE  
A. BOONE  
 DATE  
08/31/2011

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**NOT FOR  
CONSTRUCTION**

**AECOM**  
 Technical Services, Inc.  
 2020 L Street, Suite 500  
 Sacramento, CA 95811  
**CH2MHILL**

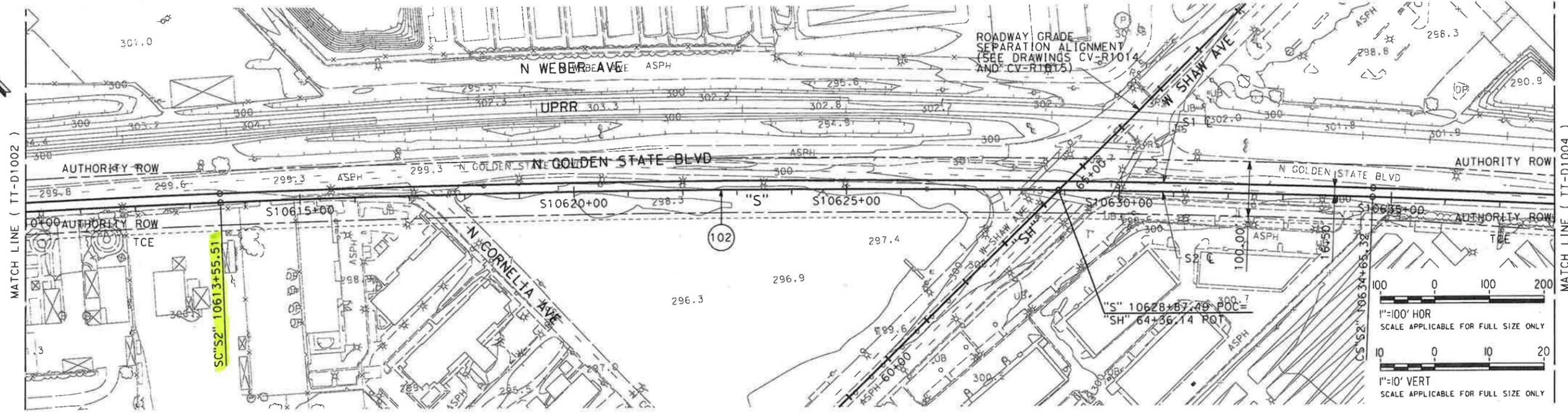


**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**  
 PACKAGE 1  
 TRACK GUIDEWAY  
 PLAN AND PROFILE  
 STA. 10582+00 TO 10610+00

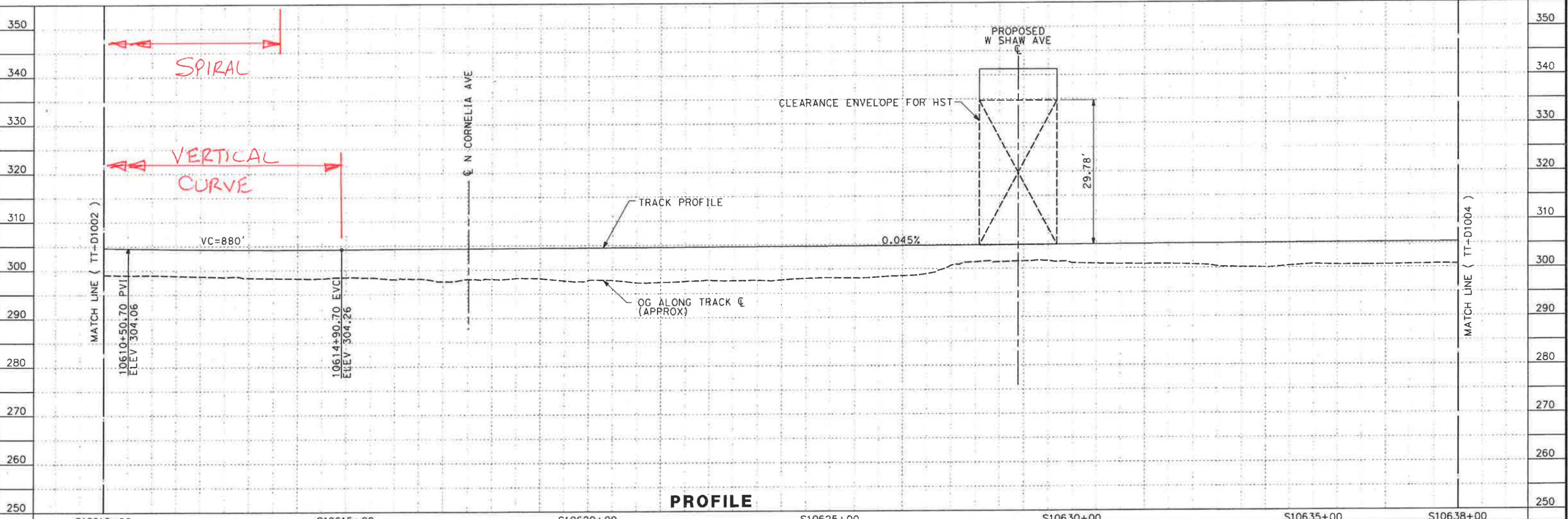
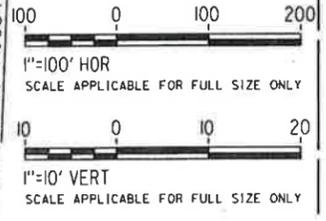
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**PLAN**



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
A. SHIELDS  
DRAWN BY  
H. SULLIVAN  
CHECKED BY  
H. PHAN  
IN CHARGE  
A. BOONE  
DATE  
08/31/2011

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USE ONLY**

**NOT FOR  
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**

PACKAGE 1  
TRACK GUIDEWAY  
PLAN AND PROFILE  
STA. 10610+00 TO 10638+00

CONTRACT NO.  
DRAWING NO.  
TT-D1003  
SCALE  
AS SHOWN  
SHEET NO.  
XX OF XX

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



MEETING SIGN - IN SHEET

SUBJECT: MF Design Variance Meeting

LOCATION: 6th Floor Main Conference Room

Date: October 4, 2011

Name       Telephone       Signature       Cell-phone       E-mail

CHSTP - EMT Infrastructure Subgroup					
Name	Company/Affiliation	Telephone	Signature	Cell-phone	E-mail
<input checked="" type="checkbox"/> Chirco	PB/Infrastructure Manager	415-243-4685			chirco@pbworld.com
<input checked="" type="checkbox"/> Wightman	PB/Infrastructure	415-284-4602		415-284-4602	wightman@pbworld.com
CHSTP - EMT Systems Integration Subgroup					
<input checked="" type="checkbox"/> Murphy	PB/Systems Integration Manager	415-243-4630		415-243-4630	murphy@pbworld.com
CHSTP - EMT Systems Subgroup					
<input checked="" type="checkbox"/> Schmedes	PB/Systems Manager	415-243-4621		415-259-2723	schmedes@pbworld.com
<input type="checkbox"/> Paz	PB/Systems	415-243-4756			paz@pbworld.com
<input checked="" type="checkbox"/> Hsiao	PB/Systems	415-243-4759		415-243-4759	hsiao@pbworld.com
<input type="checkbox"/> Lau	PB/Systems	415-243-4612			lau@pbworld.com
<input type="checkbox"/> Mortlock	PB/Systems	415-243-4780			mortlock@pbworld.com
<input type="checkbox"/> Muttic	PB/Systems	415-243-4794			muttic@pbworld.com
<input type="checkbox"/> Sibal	PB/Systems	973-565-4858			sibal@pbworld.com
CHSTP - Operations & Maintenance Team					
<input type="checkbox"/> Metzler	PB/OPS Manager	415-284-4264			metzler@pbworld.com
<input type="checkbox"/> Cockle	PB/OPS	415-243-4762			cockle@pbworld.com
<input type="checkbox"/> Walker	PB/OPS	909-556-2906			walkerr@pbworld.com
Name					
<input type="checkbox"/> FARRID NOBARI	AECOM/CH2M HILL	916-563-2523		916-335-5395	farnari@ch2m.com
<input type="checkbox"/> AMELIA SHIELDS	AECOM/CH2M Hill			916-719-0627	amel.shields@aecom.com
<input type="checkbox"/> ALAN BOONE	AECOM	916-414-1558		916-203-0037	alan.boone@aecom.com
<input type="checkbox"/> DAVE MINISTER	AECOM	916-414-1558		916-203-0037	dave.minister@aecom.com
<input type="checkbox"/> HARRIS, George	PB/Infrastructure	415-243-4749		850-208-1520	harris@pbworld.com
<input type="checkbox"/> WAI SUI	PB/PMT - MF	916-567-2562		916-468-8629	suiw@pbworld.com

PLEASE PRINT YOUR DETAILS. THANK YOU

## **Wightman, Christopher J.**

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**From:** Wightman, Christopher J.  
**Sent:** Monday, October 03, 2011 3:19 PM  
**To:** Recacho, Lyan; Chirco, John; Siu, Wai-on; Schmedes, Rick; Metzler, Joseph; Murphy, Anthony; Hsiao, Michael; Walker, Richard D.; Cameron, Craig; Valentine, Peter; Lau, John; Harris, George  
**Subject:** M-F Design Variance Request Submittal  
**Attachments:** M-F Design Variance Request Submittal - C.Wightman

See below items for discussion at tomorrow's DVR discussion. Please come prepared to discuss the following:

1. Confirm updated DVRs reflect new mapping
2. Confirm floodplain elevation
3. Confirm status of environmental documents
4. Cost avoidance is driver for these DVRs, show derivation of \$5M, \$5M, \$50M, & \$0.5M cost impact.
5. Discuss option of lowering HSR alignment
6. OCS considerations for lowered overhead clearance
7. 0001 - OCS Clearance under future Re-constructed W Clinton Ave Over-pass  
[https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0\\_c6977](https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0_c6977)  
-Next action  
-Next action by
8. 0002 - OCS Clearance Under Future Veterans Blvd Overpass  
[https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0\\_c697e](https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0_c697e)  
-Next action  
-Next action by
9. 0003 - OCS Clearance Ashlan Avenue  
[https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0\\_c7b3e](https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0_c7b3e)  
-Next action  
-Next action by
10. 0004 - HST Track Alignment Spiral/Vertical Curve Overlap  
[https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0\\_c7b73](https://ww3.projectsolve2.com/eRoom/SFOF7/Engineering/0_c7b73)  
-Next action  
-Next action by

Thanks

Chris

425-533-4146



## Memorandum

To: John Popoff, Deputy Program Director

From: Peter Valentine, Regional Manager Merced to Fresno

Copy: Hans Van Winkle, Program Director  
Ken Hartley, Richard Frankhuizen, Jeff Abercrombie

Date: September 16, 2011

Subject: CHSTP Merced to Fresno Section  
Regional Manager Activities – August 2011

Throughout the month of August progress was made in wrapping up all required areas that would contribute to the publication of the Draft EIR/EIS on schedule.

Final 15% Engineering record set for the Hybrid 21 alternative is progressed on schedule. Preliminary 30% design progressed in parallel with PMT over-the-shoulder review.

Public Information Workshops were held in Merced, Madera and Fresno. Good response from general public. Comments received were logged using "CommentSense".

### 1) Key Developments and Accomplishments:

- 08/02, ROW meeting with Patricia Jones, AECOM, BRI and O'Dell Engineering on development of ROW appraisal plans. Key notes: -
  1. BRI/O'Dell expressed concern that final alignment may change total number of parcels
  2. BRI to issue notices to landowners 3 days in advance for BRI surveyors to conduct field work. Notices, door hangers and standard reply approved by Jeff Abercrombie
- 08/02, Discussion with AECOM and URS on UPRR ROW and alignment at Clinton. Key notes: -
  1. Latest topographic map indicated that the 15% design alignment at Roeding Park needs adjustment (3.4' towards UPRR). This would affect the MF design
  2. AECOM to setup discussion with EMT on all these issues such as tolerance of UPRR ROW, alignment and min. HSR ROW needed for retained fill and necessity and size of crash wall
- 08/03, Design Issues Workshop. Key notes: -
  1. EMT will not provide a typical design on crash wall (at least not in 30% stage) but advised to use a 3' thick wall in the design and develop a site specific design x-sections and plan showing best possible design within current available ROW and submit for EMT review/comment
  2. For design purposes assume ballasted track and allow 2.5' from TOR to structure
- 08/03, Weekly Progress Meeting. Key notes: -
  1. Progress of 30% design
    - a. Need procurement task force (PTF) list of deliverables. [post note - already received]
    - b. Track alignment drawings ready for OTS review on 08/08. [post note - review comment returned 08/10]
    - c. RC responded to all Caltrans comments. Meeting with Caltrans 08/11

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- d. City of Fresno has not seen 15% plans but has been agreeable with process to date. Authority needs to process MOU w/ City of Fresno. RC can draft the MOU but needs a template on standard format
- e. ROW – good progress on appraisal maps. Need additional R/W to include GSB from south bank of SJR to Herndon
- f. Aerial Survey through Madera Acres began 08/08. Data should be ready middle of October
- 2. Budget
  - a. R/W has two to three weeks backlog
  - b. Engineering has 3 to 4 weeks budget remaining
  - c. AECOM to forward CR justifying FY10/11 over-spend
- 3. Status of DEIR/S
  - a. FRA signed cover sheets. Package delivered to FRA
- 08/04, AECOM/EMT/PMT meeting on 30% schedule and deliverables. Key notes: -
  - 1. RC briefed proposed delivery schedule of procurement package #1 engineering design is 09/30 with in-progress review by 08/31 for final package on 10/28. Weekly OTS review arranged between RC/PMT as the team progress. Sample sheets can be produced [Post notes – Draft In-progress submitted on 08/31]
- 08/08, RM completed HSR Energy Plan Survey
- 08/08, RM reviewed draft design variance submittal for Clinton and Veteran's Blvd, design baseline needs updating before review can be completed
- 08/08, Design Team Meeting with J Abercrombie (W Siu called in)
  - 1. To-Do Log was reviewed with URS and AECOM
  - 2. AECOM has scheduled meetings with Chowchilla re mitigation measures, 08/10
  - 3. AECOM has scheduled meetings with City of Fresno and Caltrans, 08/11
- 08/10, H van Winkle bi-weekly update meeting
  - 1. Draft EIR/EIS released and uploaded to HSR website
  - 2. Public Comment period is through 9/28/2011
  - 3. Public workshops will be held in late August and Public Hearings in September
  - 4. Meetings are scheduled with the City of Fresno re Veteran's Boulevard design and with Caltrans re SR 99 re-alignment and disposition of Caltrans review comments
- 08/10, Procurement Task Force Meeting
  - 1. Action Items - MF Team to follow up w/ J Chirco on the 15% comment resolution. RM confirmed that all 15% comments are closed
  - 2. Procurement Task Force Items
    - a. 30% design specific TM's are in final or draft format posted to PS2. Special Provisions posted on PS2 - Attorney's working on boilerplate. Draft Standard and Directive Drawings are 90% complete and available on PS2
    - b. Caltrans Special Provisions will be required in Caltrans Format. RC to forward sample for acceptance by EMT
    - c. EMT to issue Standard Drawings and Specifications as a standalone document to be referenced on RC Plans
    - d. 30% Deliverables Checklist Spreadsheet is available on PS2. MF & FB team to coordinate which special provisions each RC should provide so as to not duplicate effort
    - e. No demolition plans are scheduled to be furnished by RC. PTF to clarify and return direction
    - f. System integration and interface – RC's to comment on plans and suggest items of work that should be included to avoid rework or reconstruction

3. Merced to Fresno Items
  - a. Design Variance – update variance request forms to reflect new mapping
  - b. Mitigations - RC presented list of mitigation measures. Infrastructure related mitigation measures will be addressed in the plans. Non infrastructure related measures will be address by policy or specification
  - c. Structure complex/non complex matrix will send to EMT on 08/12 [post note – already sent]
- 08/11, Coordination Meeting with City of Fresno. Key notes: -
  1. Jeff Abercrombie briefed the team on current project status and expected local entity to be part of D/B contractor ensuring local employment. PV briefed the team on overall schedule up to RFQ/RFP. FN briefed the team on current design effort and achievements
  2. City raised concern of land use underneath aerial structures. JA advised that Authority welcome idea of land use and is open for discussion
  3. Veteran Boulevard Crossing
    - a. In response to question from RM, S. Mozier, City of Fresno, said that the consequences of raising the bridge height by 3' to accommodate a 27' HST clearance would be 2 years delay to environmental clearance and cost millions extra
    - b. CH2MHill to liaise with Mark Thomas, utilizing the latest map base, looking for opportunity to increase OCS vertical clearance as much as possible. Mark Thomas (designer of Veteran Blvd) advised that the project has already gone through EIR/S and is ready to present to Caltrans prior to public review
  4. Utilities
    - a. FN advised that within a couple of weeks a set of utility plan will be submitted to the City for comment [ post note – still working on it]
    - b. City advised that HSR may need to acquire land for a suitable storm water storage basin relocation due to GSB works [post note – site alternatives already identified]
- 08/11, Coordination Meeting with Caltrans District 6. Key notes: -
  1. Jeff Abercrombie briefed the team on the current project status and expected local entity to be part of D/B contractor ensuring local employment. PV briefed the team on overall schedule up to RFQ/RFP. FN briefed the team on current design effort and achievements
  2. FN advised that because of tight schedule suggested to hold routine (weekly) discussion with Caltrans. Caltrans advised because of current budget constraint it may not be possible to entertain additional work-load. Need to follow-up on progress of Caltrans/Authority MOU
  3. General discussions on designs of Shaw and Clinton. Both Caltrans and City staff suggested bike and pedestrian lane be considered in particular ADA requirements. RC will look into options but considering geographic constraints it may not be achievable
  4. Caltrans raised concern of utility arrangement and advised existence of AT&T fiber optic route along SR99. RC to note and investigate
- 08/15, 15% comments close-out, Teleconference with J Chirco/R Schmedes
  1. 75% of comments are closed with resolution; other comments are to be addressed in 30%. All comments have been accepted and signed off by AECOM PM
  2. R Schmedes suggested review of Ave 21/Hybrid TPSS package [Post note – design review arranged for 08/18 and all issues resolved]
  3. Design Variance, PV to review DVs along with new base mapping but stated that the only way to achieve 27' clearance would be depress the HSR alignment another 3ft. The existing roadway infrastructure is a limiting factor for changing bridge deck heights

4. J Chirco raised concerns about feasibility of Merced Station in particular meeting Operations and Maintenance issues. PV stated that it will be revisited when come to 30% design
- 08/16, Review of AECOM/URS interface cross-section with T Tracy and J Chirco
  1. J Chirco agreed that a 2' shift of the AECOM alignment within the 65' ROW to match the URS alignment exiting Roeding Park would be acceptable
  2. RM directed RC to make change to alignment as suggested by J Chirco
- 08/17, Weekly progress meeting with RC (PMO sat in)
  1. RW to submit formal CR for \$492K (not \$509K previously reported) within a week [post note – no action taken as of 08/31]
  2. Version 4 AWP request is forthcoming from PMO
  3. R/W Plans and acquisition plans to be extended sufficient to cover work included in the 30% package. RC estimates increased budget to be \$350K
    - a. Task 4 Budget - 22% (\$660k) spent. Burn rate \$200k per week
    - b. Task 9 Budget - 7% (\$300k) spent, Burn rate – \$80K per week
  4. Progress of 30% Design (JP sat in partly)
    - a. Geotechnical draft to be prepared and submitted in Sept with no field work included
    - b. RC reviewed status with J Popoff. J Popoff advise RC that the presented material did not convince him that they would make the 9/30 deadline
    - c. RM requested detailed sheet list. A very rough draft was presented which did not illustrate resources and % complete to give RM or J Popoff the level of comfort that RC can make the schedule
    - d. Schedule – 25% completed. On schedule to be completed by 9/30
    - e. Design Variances – PV explained that there was not enough information for EMT to make a variance determination. PV directed RC to assess the cost of achieving the 27' clearance vs. the existing design which achieves 24' clearance. For continuity PMT needs all 4 DV's submitted together. PMT to assist if necessary.
  5. PMO - No issue
- 08/18, Review of TPSS for Hybrid/Ave 21 Alignment with EMT/RC/PMT (W Siu attended)
  1. A Boone from AECOM presented plans that intended to address TPSS comments generated by EMT (Vinod Sibal and Michelle Paz)
  2. EMT/PMT concluded that all of the responses presented were acceptable with minor correction to the plan set. [post note – plans corrected and posted to PS2]
- 08/19, MF & FB Environmental Schedule review with B Porter (C Cameron attended)
  1. MF/FB Schedule consistency
    - a. End dates for both teams (NOD/ROD) consistent
    - b. Nomenclature of tasks needs to be consistent for the two teams
    - c. Checkpoint C field work to be performed in September
  2. USFWS/NMFS
    - a. One BA will be submitted for all three alternatives
    - b. Corp/EPA will not review BA until preferred Alternative is selected
    - c. Needs funding agreement with USFWS in preparation for submittal
- 08/22, Environmental Coordination Update Call
  1. Authority proposed to extend comment period by up to 15 days (to 10/13) due to impact of corrupted DVDs having been sent out with the initial distribution of documents. This extension could be an issue to overall schedule

2. R Wenzel confirmed Authority will not be billed for remedial work in response to D Leavitt's comments
  3. L Nungesser said AECOM has not complied with requirement for only 6 topical areas
  4. After discussion about noise demonstration models, D Leavitt said not to do now for CV while in comment period. To follow at a later date
  5. KL is preparing draft letter re A3 for environmental agency. Denai concerned that it is not potentially the LEDPA. KL confirmed that AA level data only is being utilized. Dan wants farmers issues well articulated
- 08/23, Public Workshop Training Session with L Nungesser
    1. L Nungesser provided list of Q & A positions to be used at Workshops
    2. Any requests for extension will be subject to Board decision
  - 08/23, RM attended Public Information workshop in Fairmead
    1. Plant Manager for Arm and Hammer supplier expressed concern that our alignment bisects their plant. Recommended he submit comments re impact to the business. Confirmed that he will do so and speak at the Public Hearing
  - 08/23, H/H – Section 208.10 Meeting
    1. AECOM, URS, EMT, RMs participated
    2. 208/408 Permits Application
      - a. CH2MHill raised questions on 208/408 process and asked for clarifications. It is confirmed that there is no immediate need of 208/408 issue within Construction Package 1 (CP1) and the discussion is for future reference
      - b. J Chirco replied that current TMs are drafted based on the 800 miles long project. 208/408 is more environmental than technical and are geographic specific questions that should be handled case-by-case
      - c. CH2MHill stated that in order to proceed with submission additional works need to be conducted and that involves budget
    3. Flood-plain Design
      - a. CH2MHill asked about design parameters for flood-plain whether 100 years is adequate. CH2MHill further stated that DWR is working on a 200 years flood-plain database but the detail will not be available by 2015
      - b. J Chirco advised that it is not likely that the EMT could provide guidance on this matter and understand that it might need additional budget for both EMT and RC to develop this issue further
      - c. T Bernard advised that, prior to 2015, the CVFPB will accept whatever the design team may have proposed. J Chirco concurred
  - 08/24, RM attended Public Information workshop in Le Grand
    1. Spoke to Manager for Azteca Milling, he requested meeting at their plant to discuss details with their engineers. He confirmed he is submitting detailed comments
  - 08/24, Call with A Koby, G Van de Merwe, AECOM and URS re Schedule Revisions
    1. Schedule to be revised to extend comment period to 10/13/2011 (15 days)
    2. Adjustments to activities 7.2.6 through 7.2.9.1 were discussed and agreed
    3. Date for Board approval of Preferred Alternative in December was confirmed to be maintained
    4. Checkpoint C will need some adjustment when it is decided how to progress with Authority
  - 08/24, Procurement Meeting #6
    1. Briefing was given by Becky Mincio (EMT CADD Manager) on the coordination between MF & FB

2. Reviewed deliverable sheet with both teams. MF and FB teams are tasked with coordinating special provisions, details, title sheet, cover sheet etc, updating the deliverables list
  3. MF team to provide Right of Way drawings per TM 0.1.1 [Post note – PTF confirmed that ROW plans are not required for PP#1]
  4. MF team to provide sample plans for informal review 8/31 as set forth on July PTF meetings. [Post note – MF team submitted 132 sheets on 08/31 for informal review]
  5. Baseline Summary Report documenting contractor scope in bullet format, listing design assumptions and qualifications was requested by PTF. PTF to supply backbone document, RC's to flesh out after IP submittal.
  6. Demolition to be covered by specification in CP1
- 08/24, Bi weekly call with H van Winkle
    1. Business Plan will be issued 10/3/2011
    2. The next CV bidders forum will be held 10/8/2011
    3. RM reported first Public Workshop was held in Fairmead, went well, no big issues, about 100 attendees
    4. 30% design to south of SJ River is progressing on schedule, but budget will run out by 9/23, RC needs further authorization to maintain continuity
    5. RC is proceeding with 30% design for SR 99 relocation
    6. RC is revising AWP and there is no provision for any 30% design other than the ICS
  - 08/29, Environmental Coordination Update Call
    1. Selection of HMF site for MF - RM pointed out that 4 of the 5 sites were dependent upon west to east alignment decision, 2 sites work with Ave 21 only and 2 sites work with Ave 24 only. One site cannot be determined prior to ROD/NOD for M-F that does not address west to east connections
    2. Discussion and decision to send postcard mailers out re comment period extension, Rachel, Rebecca, Shay to co-ordinate
    3. DL requested AECOM and URS co-ordinate on wind/dust affects of HSR and supplement existing TMs for consistency
    4. RM raised extent of design development that could be discussed/reviewed with Caltrans or City of Fresno. JA asked AECOM to prepare Shaw Ave development as a specific example for the group to review
  - 08/30, Call with A Koby and Comment Sense staff
    1. AK concerned about lack of input to system so far, expected input by now from workshops. RW advised and requested some immediate attention
  - 08/30, AECOM Monthly Progress meeting
    1. Environmental Update
      - a. Extended Public Hearing by 15 days to 10/13/11
      - b. J Abercrombie thanked the team for the success in LeGrand re Public Information Workshop
      - c. Permitting
        - i. BA – NMFS & USFWS – Applications underway
        - ii. 404 Application Submitted
        - iii. Checkpoint C – Needs LEDPA from USACE, additional field work in September
    2. PM
      - a. AWP V4 will be submitted shortly. Needs NTP ASAP
      - b. Existing budget running low. July Invoice submitted. Change Request for AWP FY10/11 completed. [Post note – CR not submitted yet]

3. Station Area Planning
    - a. Rick Phillips – completed thorough revised plan for Site C.
    - b. Converting it into a CADD submittal
    - c. Needs to verify track alignment with Operations
  4. Preliminary Engineering
    - a. Wrapping up 15 % TPSS with copies go to RM and EMT
    - b. Utility and Geotechnical reports are being reproduced
    - c. 30% - 1/3 complete, expended 1/3 budget, spending \$180k / week
    - d. On time for informal IP submission.
    - e. All plans due 9/30 – special provisions and reports included
    - f. Design Variance – in progress, anticipated mid September
    - g. Caltrans – City of Fresno meetings. Design exceptions favorable. Caltrans expressed interest in taking design roll after 30% and not go to procurement
  5. Right of Way update
    - a. Survey – 25% complete for boundary
    - b. Oct 9th BRI data due, AECOM to take from there to complete plans Oct 28th.
    - c. 500K budget will be expended by mid September
  6. Outreach
    - d. Postcard notifications, ad in newspapers and e-blast to stakeholders
  - 08/31, Weekly Meeting
    1. Version 4 AWP will be provided today. [Post note – V4 submitted but rejected by Authority]
    2. Progress update – 30% design in progress as scheduled. Overall 33% complete. A total of 132 sheets scheduled to submit OCB. [Post note - Total 132 drawings submitted 08/31]
    3. PV directed RC to continue billing R/W work to task 9 up to \$500k after which R/W work will be billed to task 10 once budget is available
    4. FRA Comments - A Boone to review and provide response
- 2) Key Meetings Attended:
- 08/03, Design Issue Workshop
  - 08/03, AECOM Team Weekly Progress Meeting
  - 08/04, AECOM/EMT/PMT meeting on 30% schedule and deliverables
  - 08/08, Design Team Meeting with J Abercrombie (W Siu called in)
  - 08/08, Procurement Task Force Meeting with H van Winkle
  - 08/10, H van Winkle bi-weekly update meeting
  - 08/10, Procurement Task Force Meeting
  - 08/11, HSR MF Weekly RC Meeting
  - 08/11, Coordination Meeting with City of Fresno
  - 08/11, Coordination Meeting with Caltrans District 6.
  - 08/15, Design Team Meeting with J Abercrombie
  - 08/15, 15% comments close-out, Teleconference with J Chirco/R Schmedes
  - 08/17, In progress review of Design Plans
  - 08/17, Weekly Progress meeting with RC
  - 08/18, Review Meeting, TPSS for Hybrid/Ave 21 Alignment with EMT
  - 08/19, Environmental Schedule review with B Porter.
  - 08/22, Environmental Coordination Update Call

- 08/23, Weekly RM meeting with J Popoff
- 08/23, Public Workshop Training Session with L Nungesser
- 08/23, RM attended Public Information workshop in Fairmead
- 08/23, H/H – Section 208.10 Meeting
- 08/24, RM attended Public Information workshop in Le Grand
- 08/24, Call with A Koby, G Van de Merwe, AECOM and URS re Schedule Revisions
- 08/24, Procurement Meeting #6
- 08/24, Bi weekly call with H van Winkle
- 08/29, Environmental Coordination Update Call
- 08/30, Comment Sense discussion with A Koby
- 08/30, AECOM Monthly Progress meeting
- 08/31, AECOM weekly Progress Meeting

3) Documents Reviewed:

- 08/01, AECOM June Invoice
- 08/02, PMT Monthly Deliverable update
- 08/10, PMT Weekly schedule
- 08/11, Generated list of comments in preparation for comment resolution meeting
- 08/12, PMT Monthly Deliverable update
- 08/12, Update to RM's AWP
- 08/17, In progress review of Design Plans
- 08/18, Review Meeting, TPSS for Hybrid/Ave 21 Alignment with EMT
- 08/19, Review of AECOM staff changes with recommendation to Authority
- 08/22, In progress review and comment of CP1 Utility Plan
- 08/23, MF Sheet List
- 08/23, Hydrology/Hydraulics Memo from CH2M Hill
- 08/24, ICS Section Schedule & RC Schedule
- 08/25, RC 11/12 AWP Version 4 scope changes
- 08/30, FRA 15% Review Comments

4) Issues and Areas of Concern:

- New Issues:
  1. Authority decision to proceed with DEIR/EIS without A3 alternative (contrary to EPA and COE request) has been identified as a risk to schedule in the event the COE and EPA cannot be convinced by Authority that A3 elimination was appropriate
  2. Authority decided to extend the Public comment period by up to 15 days (from 9/28 to 10/13) driven by some distributed DVDs being corrupt in the M-F Section and requests for extension from public
- Continuing or Resolved (✓) Issues:
  1. Procedure for approval of Caltrans resources to support M-F 30% accelerated schedule needs to be finalized. The first ARRA section includes re-alignment of 9,000ft of SR 99 which needs significant Caltrans support/review. With requirement to complete the ARRA 30% PE by 10/28

2. UPRR response to HSR adjacency of at-grade alignment is needed to determine if proposed at-grade alignment is viable (north of Fresno and Merced Station traveling south). Absence of UPRR co-operation continues to be a MAJOR RISK to the currently proposed alignments. Some straddle bent columns will be on UPRR property for the south of SJ River crossing making this all the more critical. With requirement to complete the ARRA 30% PE by 10/28
3. Notified by RC that FY 2010 authorization had exceeded by \$492,000. RC to provide details and notify Authority of situation. RM will support to gain approval for payment (presumably by CR). At 8/31, RC has still not submitted request
4. RC AWP does not include any provision for response to RFIs once the RFP for Design Build Contract has been issued. Decision is needed on who has responsibility for RFI responses
5. AECOM's LNTP Authorization of \$2m for Design will be expended before the end of September. Additional Authorization is required by mid-September to maintain the 30% design schedule requirement

5) Action Items and Planned Work Next Month:

- Weekly Progress meeting with AECOM every Wednesday
- Review of AECOM schedule to ensure key activities are being met leading to ROD/NOD completion
- Attend weekly Engineering conference calls
- Attend weekly Environmental coordination conference calls
- Review comments from AECOM on FY11/12 AWP, revise, and resubmit as requested
- Attend Public Hearing in Merced 09/13. Madera 09/14 and Fresno 09/20

6) Financial Reporting:

AECOM August 2011 Monthly Progress Report received 09/16 (invoice not received yet) indicated that staff worked a total of 13,654 labor hours, which exceeded planned 13,193 by 3.5%. Expenditures were \$1,596,968 which is lower than planned \$1,829,490 by 14.5%.

It is anticipated that expenses of September and October would be around \$1.8m each month. The \$5m FY11/12 NTP#1 would be enough for the team to work until end of September.

7) Other Information:

- Nil

# California High-Speed Train Project

## DESIGN VARIANCE COVER SHEET



Design Variance Request Number	0003
Design Variance Request Title	OCS Clearance Ashlan Ave
<b>Prepared by:</b> AECOM / CH2M HILL	10-11-11
Regional Consultant	Date
<b>PMT Review:</b> Richard Schmedes	1-6-12
Systems	Date
John Chirco	12-30-11
Infrastructure	Date
Joseph Metzler	12-16-11
Operations/Maintenance/Safety	Date
Frank Banko	9-19-11
Rolling Stock	Date
Vladimir Kanevskiy	12-16-11
Regulatory Approvals	
Tony Murphy	1-10-12
System Integration	Date
<b>PMT Recommended:</b> Peter Valentine	1-11-12
PMT Regional Manager	Date
<b>PMT Approval:</b> Ken Jong	2-2-12
Engineering Manager	Date
<b>Agency Concurrence:</b>	
CHSR Authority Chief Engineer	Date

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



CHSR Authority Chief Engineer

Date

**Part 1 – Design Variance Request Information****Title/Subject:** OCS Clearance under future reconstructed Ashlan Avenue Overhead**Number:** AECOM-SYS-0-0003 **Revision:** 3**Contract Name & Number (Final Design):** HSR06-007**Region:** Merced - Fresno**Location:** Fresno County**Regional Consultant's / Third Party Design Drawing Reference:****Date Submitted to RMT & PMT**

PREPARED / SUBMITTED BY:

NAME: Alan Boone/Doug Fredericks

COMPANY: AECOM/CH2M HILL

SIGNATURE:

DATE: (10-11-2011)



\*Note design variance numbers will follow the same convention: "ABC" will abbreviate the name of the firm submitting the variance, "DEF" abbreviates the name of firm receiving the variance request, "X" is the revision number starting from 0, and the last four numbers count the number of total submittals starting from one.



**Part 2 – Design Variance Request Information**

<p><b>CHSTP DESIGN REQUIREMENT</b> Include reference to drawings, design criteria, technical memos, specifications</p>	<p>TM3.2.1 – OCS requirements, Track work Flood elevation clearance</p>
<p><b>DESIGN CRITERIA REQUIRING A VARIANCE</b></p>	<p>The vertical clearance of 27 ft for installation of OCS system under new or planned over-crossing structure</p> <p>TOR 2.5 ft above flood elevation</p>
<p><b>REASON FOR REQUESTING VARIANCE</b></p>	<p>Any rise of profile of the new structure relative to the existing structure it replaces results in higher project impact, mitigation, delays and cost.</p> <p>Lowering HST will result in track work below estimated flood elevation, which may require boat-section and pump station</p> <p>To eliminate the requirement to lower the track work below the estimated flood elevation a variance to reduce the vertical bridge clearance to 22ft would be required</p>
<p><b>JUSTIFICATION FOR VARIANCE</b></p>	<p>To minimize the dip in the alignment under Ashlan Ave, maintain track elevation above existing ground and 2.5ft above estimated flood elevation.</p> <p>Achieves best possible vertical track alignment with minimum grade change, eliminates need for boat section and pumping equipment/maintenance. Provides the best track alignment profile for the least cost</p>
<p><b>PROPOSED ALTERNATIVE DESIGN REQUIREMENT</b></p>	<p>Allow minimum clearance under replacement bridge to be <b>22 to 24ft</b>, this equates to TM 3.2.1 Directive Drawing for existing bridges up to 120 ft wide with free running OCS and reduced System Depth. Use Up to 2 ft of Walls/boat section for flood protection</p> <p>Or</p> <p>Allow deeper track work construction below flood elevation, while protected by a boat-section and pump station may be needed</p>

**Part 3 – Impact Analysis**

<p><b>OPERATIONS</b></p>	<p>N/A</p>
<p><b>MAINTENANCE</b></p>	<p>N/A</p>
<p><b>INFRASTRUCTURE</b></p>	<p><b>General</b> The existing overhead structure clearance over UPRR is at 23.68 ft. This overhead will be demolished and rebuilt.</p>

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	<p>While technically the replacement bridge can be considered to be “new”, due to compatibility with other adjacent facilities that will not be replaced, the design must accommodate “existing” site conditions and profiles.</p> <p>Since replacing an existing structure which needs to conform to existing configurations and constraints on either side of the structure, it is proposed to consider clearance requirements for this location as those required for crossing under an existing overhead (i.e. 22 to 24 ft clearance), while maintaining flood elevation clearance with up to 2 ft of walls/boat section</p> <p>Raising Ashlan Ave profile to provide the 27 feet clearance over HSR will result in impacts to the approach and ramp features of Ashlan Ave and SR99 interchange, making the revisions impractical. Exhibits 1 through 5 show draft 30% design plans at Ashlan Ave. Exhibit 4 shows revised Ashlan profile grade of 6.6% to the Caltrans Ashlan/SR99 interchange ramps. This grade is already substandard, pending consideration and approval by Caltrans. Since Ashlan/SR99 interchange in its existing conditions does not meet current standards, further revisions of its configurations may lead to the requirement of replacing the interchange.</p> <p>Design options to consider at this location are:</p> <ul style="list-style-type: none"> <li>• Raising Ashlan Ave roadway Profile</li> <li>• Design Variance to reduce 27 ft clearance</li> <li>• Lowering HST profile with higher potential impact to flood elevation requirements</li> <li>• Combination of above</li> </ul> <p><b><u>Roadway Profile Adjustments</u></b></p> <p>Modifying the Ashlan Ave replacement design to raise the roadway profile further so that clearance over HST can be raised to 27 ft is not feasible due to geometric factors including the following:</p> <ul style="list-style-type: none"> <li>• Raising the profile to clear 27' will extend the roadway profile closer to Caltrans interchange structure over SR 99.</li> <li>• Additional modifications of the interchange configuration will be required, including NB loop on-ramp and NB off-ramp.</li> <li>• These ramps in their existing conditions do not meet current standards. Further</li> </ul>
--	---



	<p>revisions of these ramps for HST clearance may require major improvement or replacement of the ramp to meet current standards.</p> <ul style="list-style-type: none"> <li>• Revisions to the ramp may quickly involve other substandard features of the interchange, and possible requirement to replace much of the interchange at an estimated cost of \$50M.</li> <li>• Further rise of the profile and interchange modification will impact additional ROW.</li> <li>• Raising Ashlan Ave profile will impact intersection with Golden State Blvd and complicate staged construction of the new Ashlan structure in halves.</li> <li>• None of the additional footprint or project features associated with partial or full interchange replacement have been included in project footprint or environmental documents. Re-evaluation of these additional features will delay the project and procurement of package 1 (ARRA funded) project.</li> </ul> <p><b><u>Revised HSR track profile to provide 22 ft to 24 ft clearance</u></b></p> <p>Original HSR profile design was based on preliminary mapping. In addition, in absence of floodplain information, a conservative approach of keeping TOR 4 ft above average existing ground elevation in the vicinity was used to meet the flood elevation requirements.</p> <p>Current draft 30% design, as shown in Exhibit 4 is based on current mapping. It should be noted that as a result of the poor accuracy of the initial mapping (+/- 3 ft accuracy), much lower clearance was discovered when using the updated mapping. The current draft 30% design has already adjusted the roadway and HST profile to provide additional 2 ft clearance due to the initial mapping accuracy issues.</p> <p>Subsequent evaluation and adjustment of the 30% profile design were conducted based on :</p> <ul style="list-style-type: none"> <li>• Updated mapping (+/- 0.5 ft accuracy)</li> <li>• Estimated flood elevation requirement which sets the TOR at a minimum of 3 ft above existing ground elevation</li> </ul> <p>Based on FEMA evaluations and maps, 100 year flood event will impact regions near San Joaquin River, Herndon Canal and south of</p>
--	---

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	<p>Clinton. <u>Local area adjacent to Clinton Ave, is therefore subject to only localized flooding for which flood agencies use 6 inch water elevation above existing ground/Golden State Blvd.</u> At Ashlan crossing, existing ground is at 295 ft. Allowing for 0,5 flood elevation (i.e. elevation 295.5), TOR at 2.5 ft higher will be at minimum elevation of 298 ft.</p> <p>As shown in exhibits 8 and 9, the draft 30% design HST profile (in black) will have TOR below the estimated flood elevation of 295.5 ft level, for nearly 2500 ft. This is primarily due to the HST profile adjustment required due to the initial mapping accuracy/errors, and recent determination of floodplain and local jurisdiction flood elevation estimates. To meet flood protection requirements noted above the revised track profile (blue) at 298 ft will clear flood elevation requirements, while providing minimum of 22 ft clearance to the critical point on the soffit of the new Ashlan bridge. Alternatively, a 24 ft clearance will require 2 ft walls/boat section to protect against local flooding. Note TM 3.2.1 allows 22 ft clear for similar conditions for existing bridge.</p> <p>See Exhibit 7 for vertical clearance, and flood elevation clearance options.</p> <p><b><u>Refined HSR track profile to provide 27 ft clearance</u></b></p> <p>As a basis of comparison, the draft final 30% design of HSR profile was further refined to examine conditions which can increase clearance under the new Ashlan Ave structure from to standard 27 ft. As shown in calculations in Exhibit 8, and profile design plan in Exhibit 9 (Red line), this condition will result in TOR at lower elevation than the required elevation of 298 ft to clear estimated flood conditions (TOR 293 ft). In fact, TOR under this condition will be 2 ft below existing ground elevation (2.5 ft below estimated flood elevation). To provide flood protection a 2500 long wall/boat section, 5 ft deep will be required. Additionally since the lowered HST TOR and drainage system is now lower than the existing grounds, feasibility of draining HST into nearby facilities will have to be re-examined. Lowered drainage outlet may require pump station to elevate drained storm water above the local drainage inlets and basins.</p>
--	---

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**Other requirements for Adjusted HST profile**

For standard 27 ft clearance the potential design issues to be considered are:

- May result in more frequent profile rise and fall at constrained locations (Veterans Blvd, Ashlan, Clinton)
- Where HST tracks are below estimated flood elevation, boat-section will be needed. If available drainage facilities (i.e. inlets and basins) are above those lowered system, pump station may also be required

Drainage conditions of the boat-section will have to be refined to investigate feasibility of draining the boat-section into a nearby flood control facility. In absence of such options, design must consider implementation and operation of a pump station to pump storm water and/or local flood water from the boat-section.

The boat-section unit cost is estimated at 18.5M/mile for a 7 ft deep section ( \$9M for 2500 ft of 5 ft deep). Pump stations are estimated at \$3 million, with equipment replacement and O&M equivalent to \$300K over 20 year intervals.

**Recommendation**

**Consider a variance of 24 ft clearance, along with flood protection walls/boat section of 2 ft in height. Flood elevations are based on local flood agency coordination, and are assumed to be 6 inches above existing Golden State Boulevard surface (existing ground).**

**Justification**

Without raising the Ashlan Ave profile which has the potential to impact the SR99 interchange, refinement of the current draft 30% HST profile design provide the following options:

1. With an approved DVR, consider 24 ft clearance, as permitted for crossing under existing structures, since the existing constraints bounding the replaced Ashlan Ave overhead are prohibitive from further adjusting the roadway profile. Provide 2 ft tall walls/boat section to protect against local flooding.



<b>RAILROAD SYSTEMS</b>	N/A																																														
<b>RELIABILITY / FUNCTIONALITY</b>	N/A																																														
<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	<p>Raising Ashlan Ave profile will require coordination and approval by Caltrans on resulting impacts to the SR99 interchange</p> <p>Drainage of the boat-section storm water and flood water require coordination with local flood protection agencies</p>																																														
<b>SAFETY AND SECURITY</b>	N/A																																														
<b>DIRECT COST</b>	<table border="1"> <tr> <th colspan="2"><b>Raising Ashlan Roadway profile and revising Interchange *</b></th> </tr> <tr> <td>Interchange modification</td> <td>\$50M+/-</td> </tr> <tr> <td>Other</td> <td>Cost associated with additional engineering, environmental and delays</td> </tr> <tr> <td colspan="2">* assume profile raised so there is no boat section</td> </tr> </table> <table border="1"> <tr> <th colspan="2"><b>22 ft Clearance DVR</b></th> </tr> <tr> <td colspan="2">No Wall/Boat section</td> </tr> <tr> <td colspan="2">No pump station</td> </tr> <tr> <td colspan="2">No additional cost</td> </tr> </table> <table border="1"> <tr> <th colspan="2"><b>RECOMMENDED OPTION</b></th> </tr> <tr> <th colspan="2"><b>24 ft Clearance, No DVR + 2ft wall/boat-section and pump station*</b></th> </tr> <tr> <td>Wall/Boat Section</td> <td>\$8M (2 ft deep)</td> </tr> <tr> <td>Pump equipment</td> <td>\$0.5M</td> </tr> <tr> <td>Pump Station &amp; facility</td> <td>\$2.5 Million</td> </tr> <tr> <td>Reoccurring pump replacement cost</td> <td>\$300 K/20 years</td> </tr> <tr> <td>Other</td> <td>General maintenance</td> </tr> <tr> <td colspan="2">* Pump station will be needed if lowered HST drainage cannot be drained into existing drainage facilities</td> </tr> </table> <table border="1"> <tr> <th colspan="2"><b>27 ft Clearance, No DVR + 5ft boat-section and pump station*</b></th> </tr> <tr> <td>Wall/Boat Section</td> <td>\$9M (5 ft deep)</td> </tr> <tr> <td>Pump equipment</td> <td>\$0.5M</td> </tr> <tr> <td>Pump Station &amp; facility</td> <td>\$2.5 Million</td> </tr> <tr> <td>Reoccurring pump replacement cost</td> <td>\$300 K/20 years</td> </tr> <tr> <td>Other</td> <td>General maintenance</td> </tr> <tr> <td colspan="2">* Pump station will be needed if lowered HST drainage cannot be drained into existing drainage facilities</td> </tr> </table>	<b>Raising Ashlan Roadway profile and revising Interchange *</b>		Interchange modification	\$50M+/-	Other	Cost associated with additional engineering, environmental and delays	* assume profile raised so there is no boat section		<b>22 ft Clearance DVR</b>		No Wall/Boat section		No pump station		No additional cost		<b>RECOMMENDED OPTION</b>		<b>24 ft Clearance, No DVR + 2ft wall/boat-section and pump station*</b>		Wall/Boat Section	\$8M (2 ft deep)	Pump equipment	\$0.5M	Pump Station & facility	\$2.5 Million	Reoccurring pump replacement cost	\$300 K/20 years	Other	General maintenance	* Pump station will be needed if lowered HST drainage cannot be drained into existing drainage facilities		<b>27 ft Clearance, No DVR + 5ft boat-section and pump station*</b>		Wall/Boat Section	\$9M (5 ft deep)	Pump equipment	\$0.5M	Pump Station & facility	\$2.5 Million	Reoccurring pump replacement cost	\$300 K/20 years	Other	General maintenance	* Pump station will be needed if lowered HST drainage cannot be drained into existing drainage facilities	
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06/04/2012 ADDENDUM 2 - RFP HSR 11-16



<b>OTHER</b>	Raising the profile of the roadway will result in change of project footprint, additional ROW impact, environmental and engineering effort, delays in environmental, design as well as procurement package 1 (ARRA)
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**Part 4 – Mitigation Measures**

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**Part 5 – List of Supporting Documentation to Design Variance Request**

<b>ANALYSIS</b>	See discussion above, attached exhibits, and draft 30% design plans.
<b>PUBLICATION/STANDARDS EXTRACTS</b>	N/A
<b>RISK ASSESSMENT</b>	N/A
<b>DRAWINGS</b>	See Exhibits 1 thru 7, and 9
<b>CALCULATIONS</b>	See Exhibit 8 for recommended option
<b>EXPERT TESTIMONIALS</b>	N/A
<b>CORRESPONDENCE</b>	N/A
<b>OTHER</b>	

Do not attach superfluous materials, such as complete project plan sets or engineering reports unless specifically requested.





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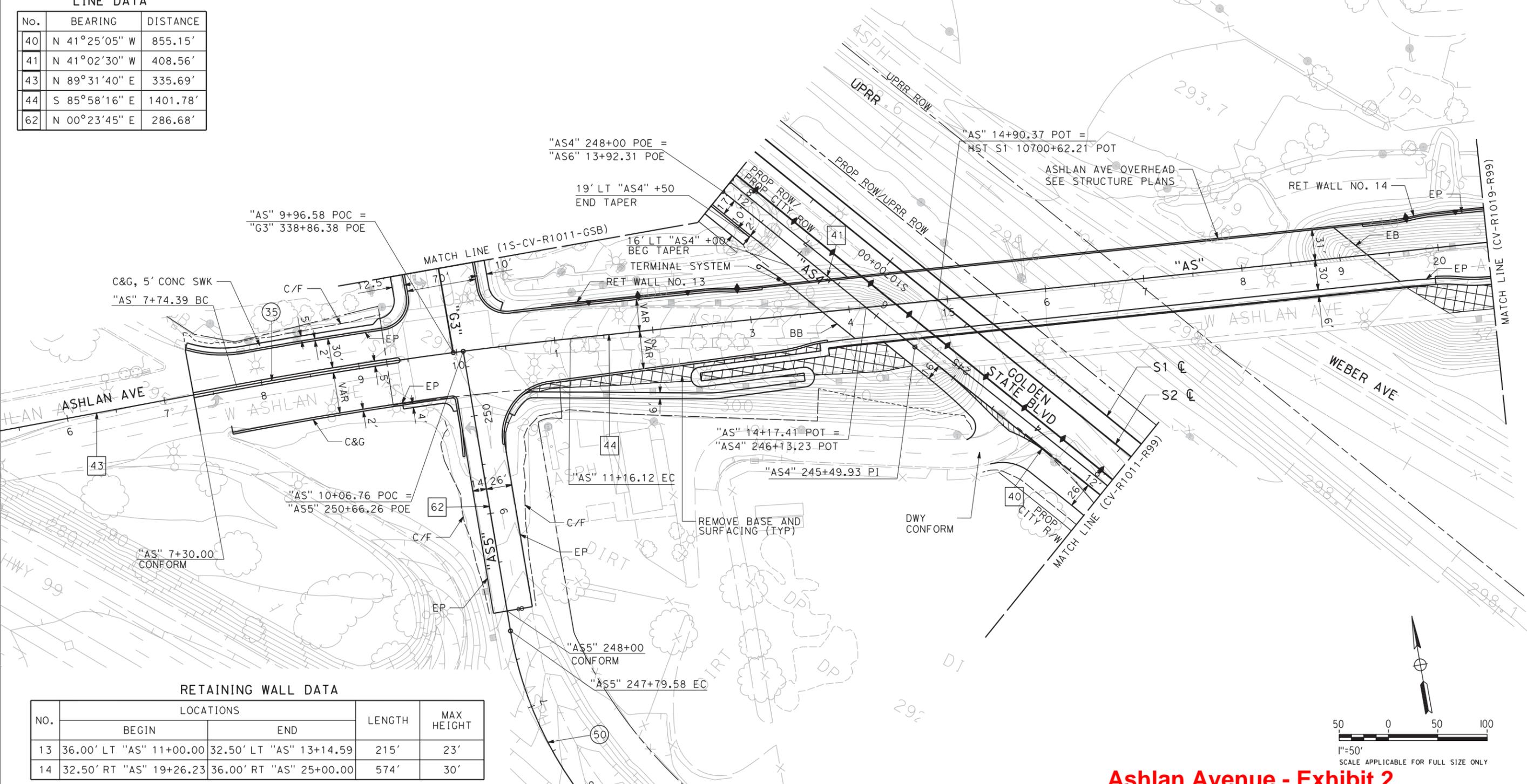
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50	380.00'	49°42'58"	176.05'	329.73'

**LINE DATA**

No.	BEARING	DISTANCE
40	N 41°25'05" W	855.15'
41	N 41°02'30" W	408.56'
43	N 89°31'40" E	335.69'
44	S 85°58'16" E	1401.78'
62	N 00°23'45" E	286.68'

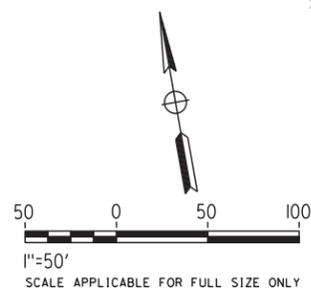
**NOTES:**

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO AWARD.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



**RETAINING WALL DATA**

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
13	36.00' LT "AS" 11+00.00	32.50' LT "AS" 13+14.59	215'	23'
14	32.50' RT "AS" 19+26.23	36.00' RT "AS" 25+00.00	574'	30'



**Ashlan Avenue - Exhibit 2**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**  
PACKAGE 1  
ROADWAY  
LAYOUTS  
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-R1018-R99
SCALE AS SHOWN
SHEET NO.

DESIGNED BY  
**G. MANOREK**  
DRAWN BY  
**R. MITRY**  
CHECKED BY  
**L. HEUSTON**  
IN CHARGE  
**F. NOBARI**  
DATE  
09/30/2011

**PROPOSED  
PRELIMINARY  
DESIGN**  
  
**NOT FOR  
CONSTRUCTION**



REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

**CURVE DATA**

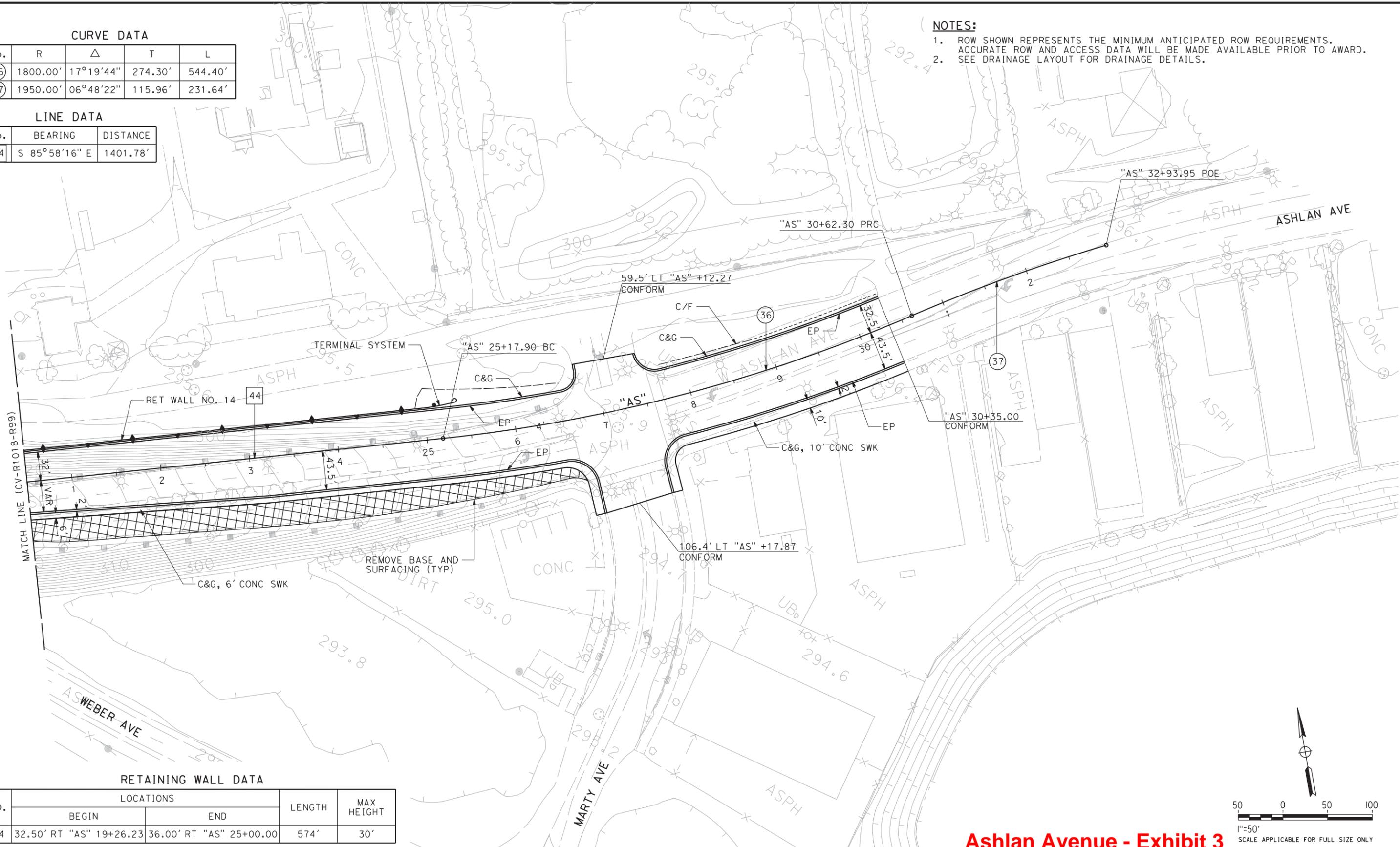
No.	R	Δ	T	L
36	1800.00'	17°19'44"	274.30'	544.40'
37	1950.00'	06°48'22"	115.96'	231.64'

**LINE DATA**

No.	BEARING	DISTANCE
44	S 85°58'16" E	1401.78'

**NOTES:**

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO AWARD.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



**RETAINING WALL DATA**

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
14	32.50' RT "AS" 19+26.23	36.00' RT "AS" 25+00.00	574'	30'

**Ashlan Avenue - Exhibit 3**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**SIERRA SUBDIVISION**  
 PACKAGE 1  
 ROADWAY  
 LAYOUTS  
 SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-R1019-R99
SCALE AS SHOWN
SHEET NO.

DESIGNED BY  
G. MANOREK  
 DRAWN BY  
R. MITRY  
 CHECKED BY  
L. HEUSTON  
 IN CHARGE  
F. NOBARI  
 DATE  
09/30/2011

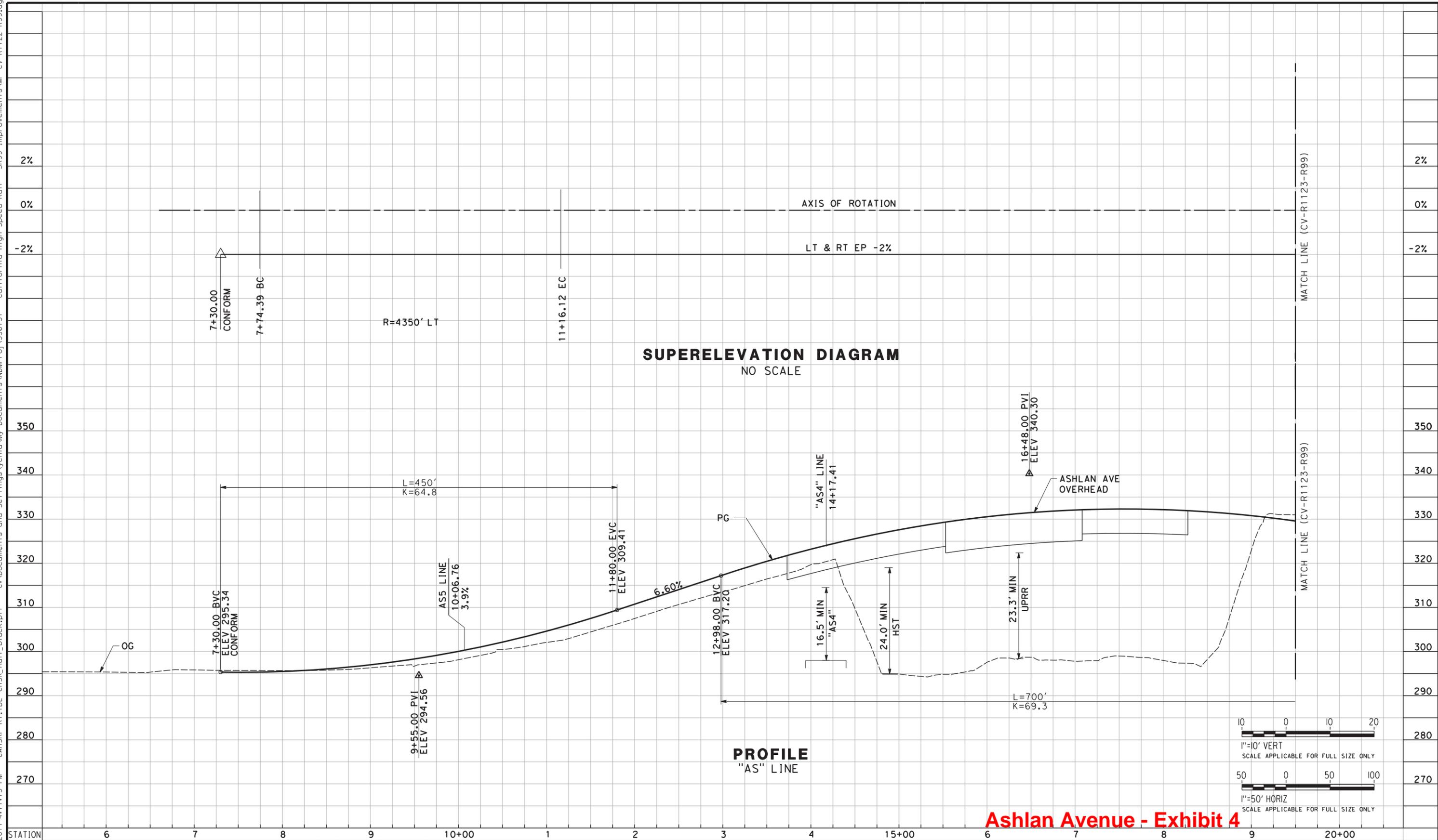
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 DESIGN**  
  
**NOT FOR  
 CONSTRUCTION**



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**Ashlan Avenue - Exhibit 4**

REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
G. MANOREK  
 DRAWN BY  
B. CHAN  
 CHECKED BY  
L. HEUSTON  
 IN CHARGE  
F. NOBARI  
 DATE  
09/30/2011

**PROPOSED  
PRELIMINARY  
DESIGN**  
  
**NOT FOR  
CONSTRUCTION**

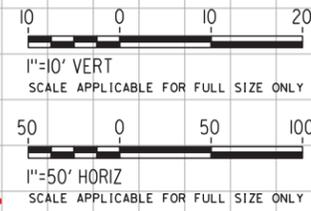
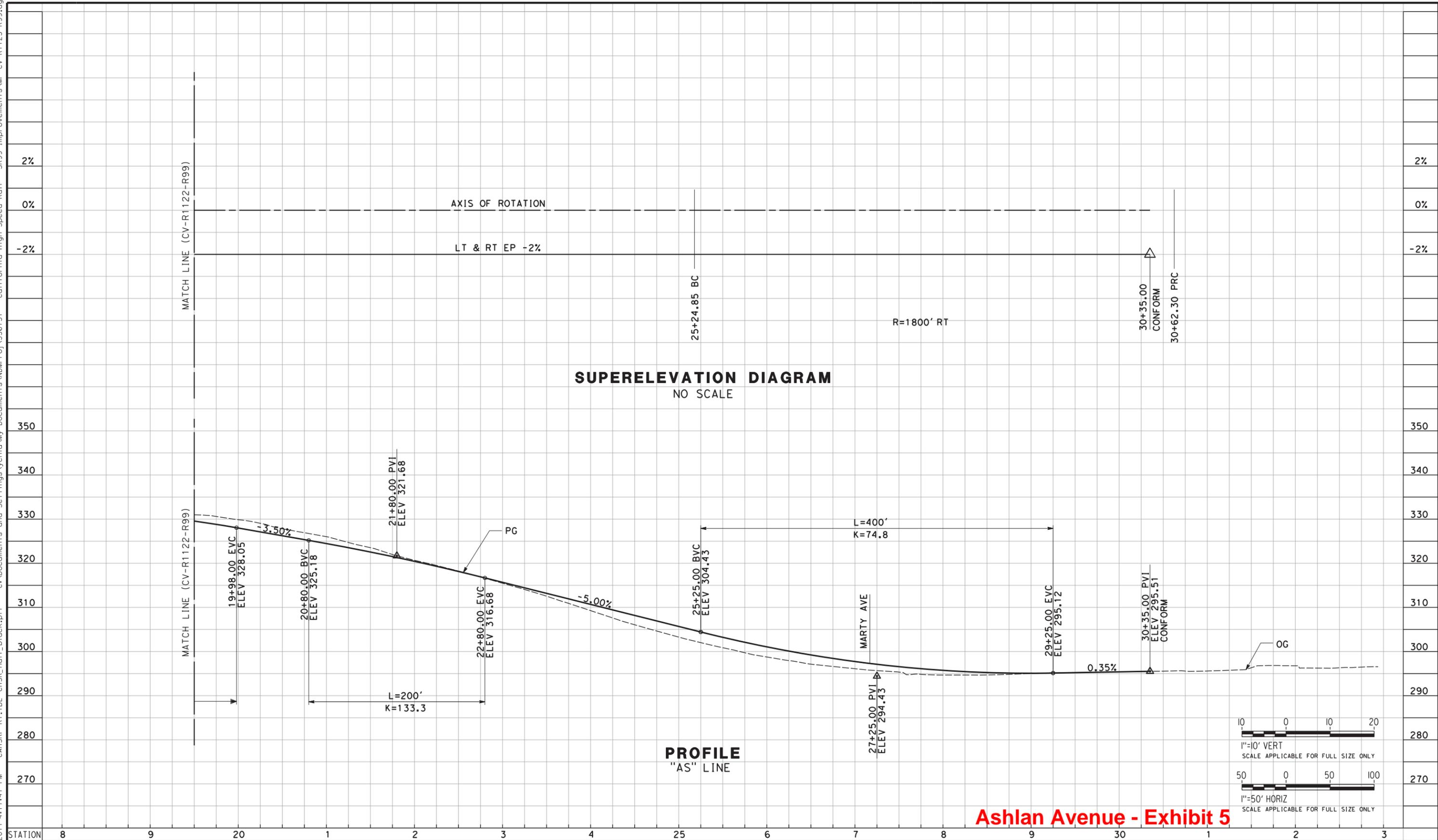


**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**SIERRA SUBDIVISION**  
 PACKAGE 1  
 ROADWAY  
 PROFILE AND SUPERELEVATION  
 SR 99 RE-ALIGNMENT

CONTRACT NO.  
 DRAWING NO.  
CV-R1122-R99  
 SCALE  
AS SHOWN  
 SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

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**Ashlan Avenue - Exhibit 5**

REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
G. MANOREK  
 DRAWN BY  
B. CHAN  
 CHECKED BY  
L. HEUSTON  
 IN CHARGE  
F. NOBARI  
 DATE  
09/30/2011

**PROPOSED  
PRELIMINARY  
DESIGN**

**NOT FOR  
CONSTRUCTION**

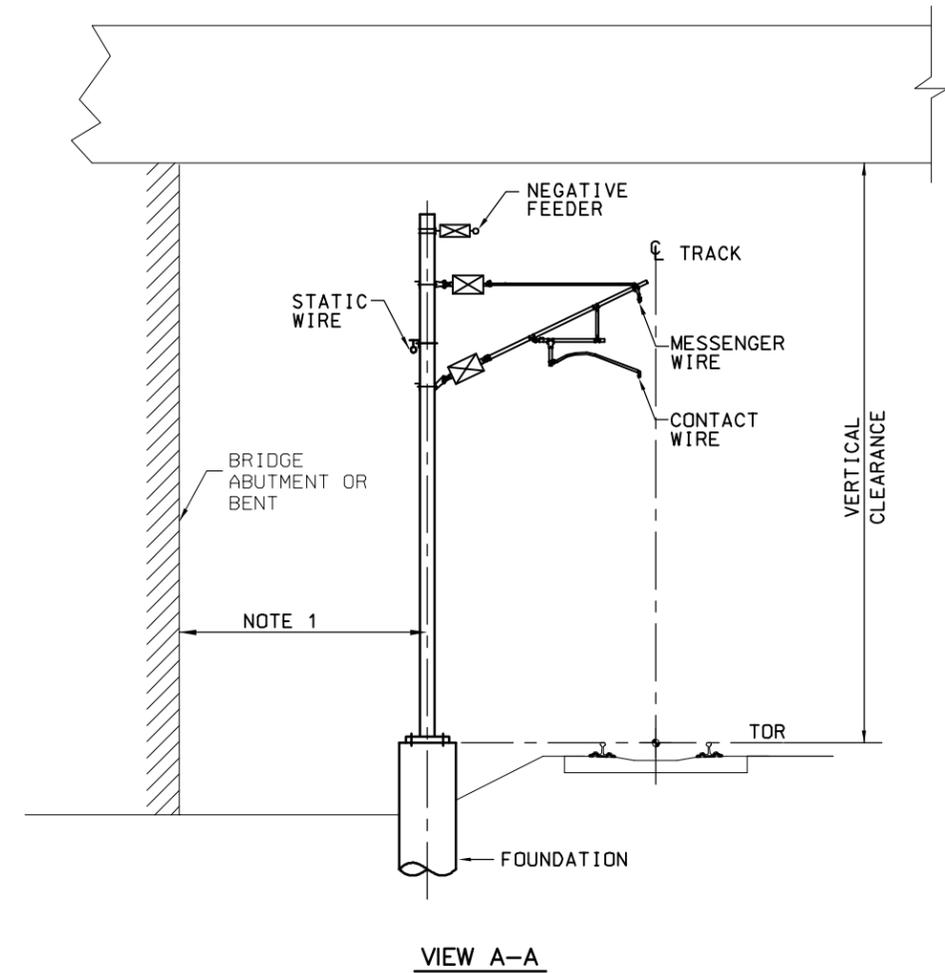
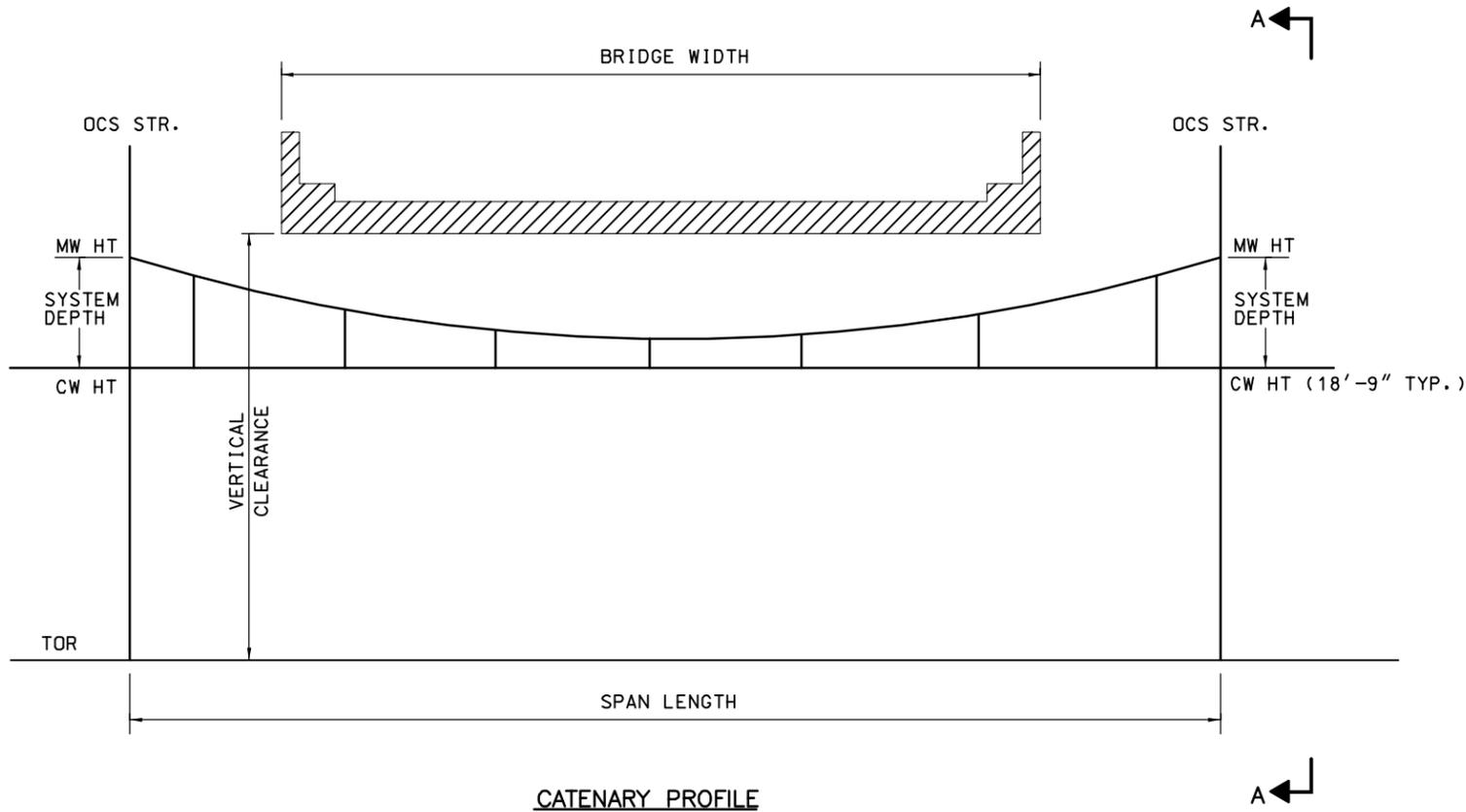


**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**

PACKAGE 1  
ROADWAY  
PROFILE AND SUPERELEVATION  
SR 99 RE-ALIGNMENT

CONTRACT NO.  
DRAWING NO.  
CV-R1123-R99  
SCALE  
AS SHOWN  
SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



MINIMUM VERTICAL CLEARANCE FOR SPEED UP TO 125 MPH					
CONDITIONS	NO BRIDGE ATTACHMENT				BRIDGE ATTACHMENT ALLOWED
	NEW BRIDGE	EXISTING BRIDGE	EXISTING BRIDGE	EXISTING BRIDGE	EXISTING BRIDGE
MAXIMUM BRIDGE WIDTH	200'	200'	120'	50'	-
OCS SPAN LENGTH	210'	210'	210'	210'	60'
OCS FREE RUNNING WITH FULL SYSTEM DEPTH (4'-0") VERTICAL HEIGHT REQ'D	27'-0"	24'-0"	23'-0"	22'-6"	-
OCS FREE RUNNING WITH REDUCED SYSTEM DEPTH (3'-0") VERTICAL HEIGHT REQ'D	-	23'-0"	22'-0"	21'-6"	-
OCS FREE RUNNING WITH REDUCED SYSTEM DEPTH (1'-0") VERTICAL HEIGHT REQ'D	-	-	-	-	21'-6"

**NOTES:**

1. WHEN THE VERTICAL CLEARANCE IS LESS THAN 27', NEGATIVE FEEDER CABLE SHALL BE INSTALLED ON THE FIELD SIDE OF THE POLE. IN THAT CASE, THE MINIMUM CLEARANCE 7'-6" FROM THE CENTER OF THE POLE TO THE BRIDGE ABUTMENT OR BENT SHALL BE MAINTAINED.
2. THESE CLEARANCES ARE BASED ON CuMg05 AC-150 CONTACT WIRE WITH 4,500LB TENSION AND 300 KCMIL MESSENGER WIRE WITH 5,000LB TENSION. THE VERTICAL CLEARANCE MIGHT BE ADJUSTED BASED ON THE FINAL WIRE TENSIONS AND MATERIALS.

Exhibit 6 - From TM 3.2.1/ OCS clearance options

\$USER\$ \$DATE\$ \$TIME\$ \$FILE\$

REV	DATE	BY	CHK	APP	DESCRIPTION

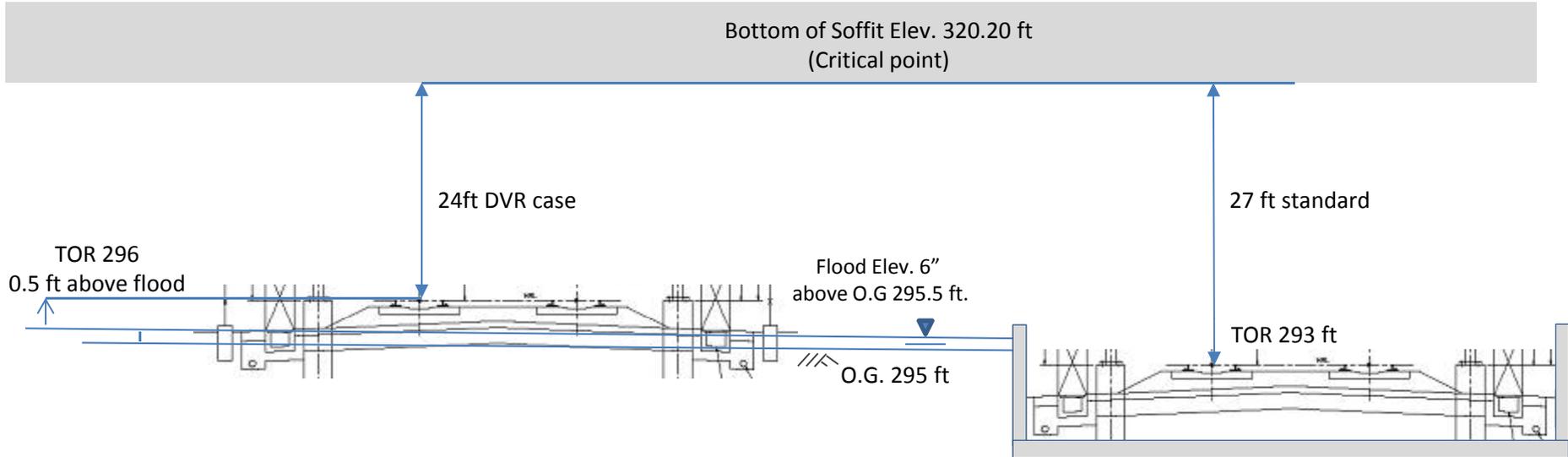
DESIGNED BY  
M. HSIAO  
DRAWN BY  
J. LAU  
CHECKED BY  
R. SCHEMES  
IN CHARGE  
K. JONG  
DATE  
OCT. 2010



**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**OVERHEAD CONTACT SYSTEM**  
 DIRECTIVE DRAWING  
 TYPICAL CATENARY FREE RUNNING CHART  
 FOR OVERHEAD BRIDGE  
 SPEED UP TO 125 MPH

CONTRACT NO.  
DRAWING NO.  
TM 3.2.1-U  
SCALE  
NTS  
SHEET NO.

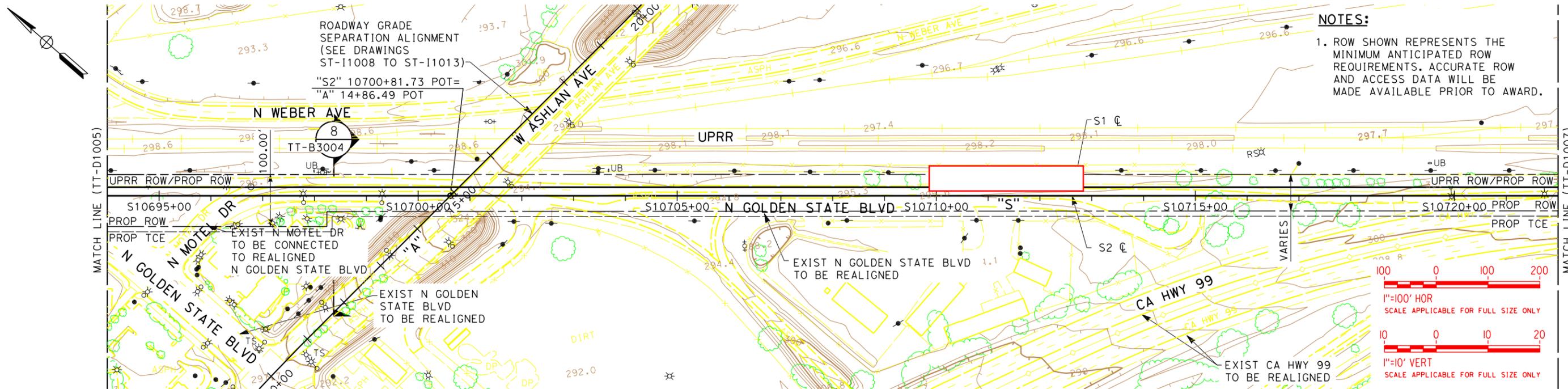
# Exhibit 7 – Section Clearance Options



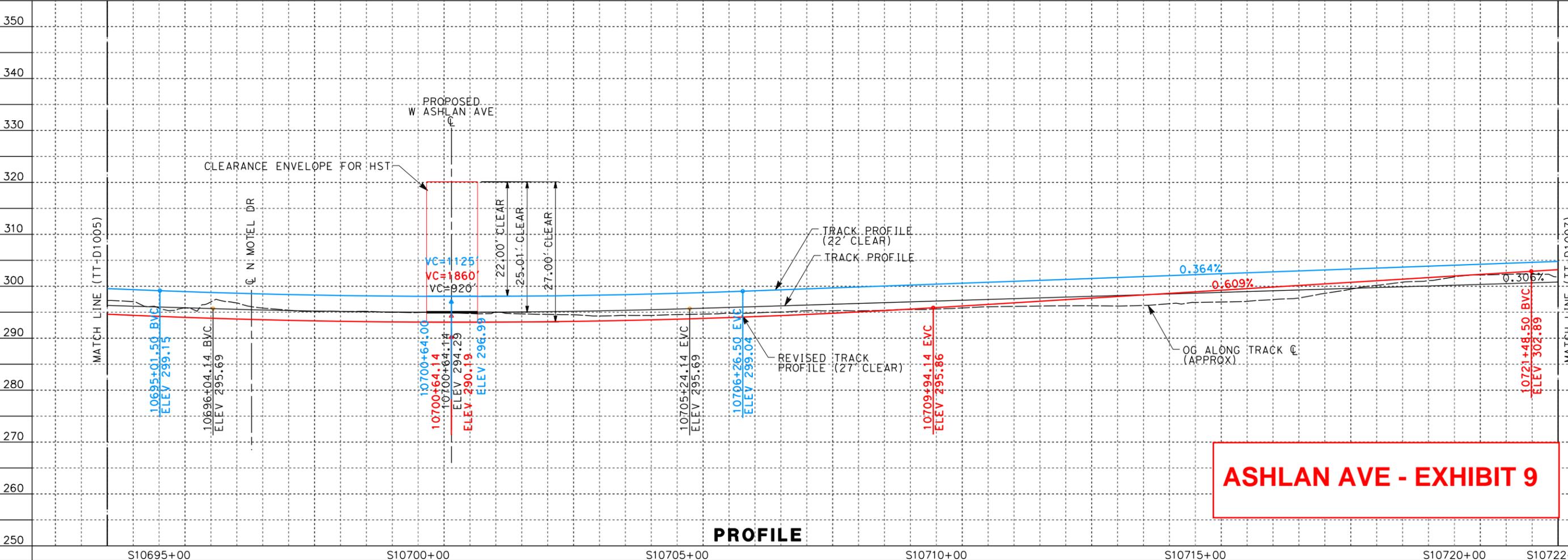
## Exhibit 8

### 24 ft Min Vertical Clearance (Recommended)

ASHLAN BLVD					
Structure Depth =	5.14'	(@ SB Track)			
Structure Depth =	5.46'	(@ NB Track)			
Clearance Check Locations:	STA ("AS")	CL ELEV	Offset	EP ELEV	Soffit ELEV
A - NB Track	14+81.17	326.87	32.50	326.22	320.76
B - NB Track	15+50.80	329.27	37.00	328.53	323.07
<b>C - SB Track</b>	<b>14+57.81</b>	<b>325.90</b>	<b>32.50</b>	<b>325.25</b>	<b>320.11</b>
D - SB Track	15+27.45	328.54	37.00	327.80	322.66
Clearance Check Locations:	STA ("S1" or "S:TOR ELEV	<b>Vert Clr (Soffit - TOR)</b>			
A - NB Track	10700+32.73	296.00	<b>24.76</b>		
B - NB Track	10701+31.12	296.01	<b>27.06</b>		
<b>C - SB Track</b>	<b>10700+16.20</b>	<b>296.00</b>	<b>24.11 Min</b>		
D - SB Track	10701+14.59	296.00	<b>26.66</b>		



**PLAN**



**PROFILE**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
A. SHIELDS  
 DRAWN BY  
H. SULLIVAN  
 CHECKED BY  
A. BOONE  
 IN CHARGE  
A. BOONE  
 DATE  
10/10/2011

**PROPOSED  
PRELIMINARY  
DESIGN**

**NOT FOR  
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**

PACKAGE 1  
 TRACK GUIDEWAY  
 PLAN AND PROFILE  
 STA. 10694+00 TO 10722+00

CONTRACT NO.  
 DRAWING NO.  
TT-D1006  
 SCALE  
AS SHOWN  
 SHEET NO.

\$USER\$ \$DATE\$ \$TIME\$ \$SPENTBL\$ \$PLTDV\$ \$FILE\$

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

# California High-Speed Train Project

## DESIGN VARIANCE COVER SHEET



Design Variance Request Number 0001  
Design Variance Request Title OCS Clearance Under Future Re-constructed Fresno Yard Overhead (West Clinton Ave)

<b>Prepared by:</b> AECOM / CH2M HILL Regional Consultant	10-11-11 Date
<b>PMT Review:</b> Richard Schmedes Systems	1-6-12 Date
John Chirco Infrastructure	12-22-11 Date
Joseph Metzler Operations/Maintenance/Safety	12-22-11 Date
Frank Banko Rolling Stock	7-26-11 Date
Vladimir Kanevskiy Regulatory Approvals	11-4-11 Date
Tony Murphy System Integration	1-9-12 Date
<b>PMT Recommended:</b> Peter Valentine PMT Regional Manager	1-11-12 Date
<b>PMT Approval:</b> Ken Jong Engineering Manager	2-2-12 Date
<b>Agency Concurrence:</b> CHSR Authority Chief Engineer	Date

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**Part 1 – Design Variance Request Information**

**Title/Subject:** OCS Clearance under future re-constructed  
Fresno Yard Overhead (W Clinton Ave)

**Number:** AECOM-SYS-0-0001 **Revision:** 3

**Contract Name & Number (Final Design):** HSR06-007

**Region:** Merced - Fresno

**Location:** Fresno County

**Regional Consultant's / Third Party Design Drawing Reference:**

**Date Submitted to RMT & PMT**

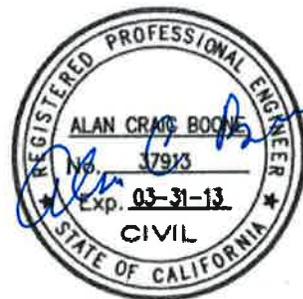
PREPARED / SUBMITTED BY:

NAME: Alan Boone/Doug Fredericks

COMPANY: AECOM/CH2M HILL

SIGNATURE:

DATE: (10-11-2011)



*\*Note design variance numbers will follow the same convention: "ABC" will abbreviate the name of the firm submitting the variance, "DEF" abbreviates the name of firm receiving the variance request, "X" is the revision number starting from 0, and the last four numbers count the number of total submittals starting from one.*



**Part 2 – Design Variance Request Information**

<p><b>CHSTP DESIGN REQUIREMENT</b>                  Include reference to drawings, design criteria, technical memos, specifications</p>	<p>TM3.2.1 – OCS requirements,                  Track work Flood elevation clearance</p>
<p><b>DESIGN CRITERIA REQUIRING A VARIANCE</b></p>	<p>The vertical clearance of 27 ft for installation of OCS system under new or planned over-crossing structure</p> <p>TOR 2.5 ft above flood elevation</p>
<p><b>REASON FOR REQUESTING VARIANCE</b></p>	<p>Any further rise of profile of the new structure results in higher project impact, mitigation, delays and cost.</p> <p>Lowering HST will result in track work below estimated flood elevation, which may require boat-section and pump station</p> <p>To eliminate the requirement to lower the track work below the estimated flood elevation a variance to reduce the vertical bridge clearance to 24ft would be required</p>
<p><b>JUSTIFICATION FOR VARIANCE</b></p>	<p>To avoid additional environmental impact, mitigation, ROW, Cost, and delay</p>
<p><b>PROPOSED ALTERNATIVE DESIGN REQUIREMENT</b></p>	<p>Allow minimum clearance under the new replacement bridge to be <b>24 ft (DVR 24 ft)</b> as permitted condition for existing structures *, which also will avoid the need for walls/boat-sections,</p> <p>OR</p> <p>Allow minimum clearance under the new replacement bridge to be <b>25.5 ft (DVR 25.5 ft)</b> as permitted condition for existing structures *, as shown in Draft 30%, however will require a <u>1.5 ft walls/boat section</u> and potentially pumping facilities,</p> <p>OR</p> <p>Maintain standard <b>27 ft clearance</b>, but provide deeper <u>3 ft walls/boat section</u> and potentially pumping facilities</p> <p>* as permitted by TM 3.2.1 for crossing under existing bridges of less than 160 ft width.</p>

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**Part 3 – Impact Analysis**

OPERATIONS	N/A
MAINTENANCE	N/A
INFRASTRUCTURE	<p><b>General</b></p> <p>The existing overhead structure clearance over UPRR is at 22.94 ft. As part of Clinton interchange replacement, this overhead will be demolished and rebuilt.</p> <p>While technically the replacement bridge can be considered to be “new”, due to compatibility of replaced Clinton bridges and approaches with other adjacent intersections and facilities that will not be replaced, the design must accommodate “existing” site conditions and profiles.</p> <p>Since replacing an existing structure which needs to conform to existing configurations and constraints on either side of the structure, it is proposed to consider clearance requirements for this location as those required for crossing under an existing overhead (i.e. 24 ft clearance).</p> <p>Current draft 30% design has provided a transitional profile grade to the Fresno-Bakersfield (FB) design group which leads to a boat-section further south adjacent to Roeding Park. This grade provides for HST track clearance of 25.5 ft (requires DVR 25.5 ft plus 1.5 ft wall/boat section). Raising Clinton Ave profile further to provide the 27 feet clearance over HSR will result in impacts to the approach, bridge and nearby intersection and ROW, making the revisions impractical. Exhibits 1 through 5 show draft 30% design plans at Clinton Ave. Exhibit 1 and 5 show revised Clinton overhead bridge profile grade and clearance over HST. Note the profile grade of 6.0% from local Weber street intersection to the Caltrans Clinton/SR99 interchange and ramps. This grade is already substandard, pending consideration and approval by Caltrans.</p> <p>Design options to consider at this location are:</p> <ul style="list-style-type: none"> <li>A. Raising Clinton Ave roadway Profile</li> <li>B. Design Variance to reduce clearance to 24 ft, with no need for flood protection walls/boat section</li> <li>C. Design Variance to reduce clearance to 25.5 ft, with 1.5 ft deep flood protection walls/boat section (Intermediate Option)</li> <li>D. Standard 27 ft clearance, requiring 3 ft deep flood protection walls/boat section</li> </ul>

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



	<p><b><u>A- Roadway Profile Adjustments</u></b></p> <p>Modifying the Clinton Ave overhead replacement structure to raise the roadway profile further so that clearance over HST can be raised to 27 ft is not feasible due to geometric factors including the following:</p> <ul style="list-style-type: none"><li>• Compared to 15% design, the roadway profile has already been raised by approximately 1.5 ft to offset clearance errors associated with the initial mapping accuracy of +/- 3 ft.</li><li>• The profile rise impact already has resulted in modification of Weber/Clinton intersection by raising the intersection and tapering the effects on approach roadway (see Exhibit 3). This "refinement" which is beyond the DEIR/EIS footprint has already been noted to the agencies, and considered to be minor refinement to avoid/minimize impacts. When impacts exceed "minor" level, reevaluation and recirculation of DEIR/EIS may be required.</li><li>• Further raising of Clinton Ave overhead structure to achieve 27' clearance will require profile grade modification which can impact both approaches, Weber street intersection and profile of the structure approaching the interchange, SR99 crossing and ramps.</li><li>• The profile grade modification will further raise the Weber street intersection, rise the approaching roadways even further, increase the footprint impact to the intersection, further impact the adjacent parcels, and may require retaining wall which can impact property access adjacent to this intersection.</li><li>• Note that geometry, and width of the structure includes several exceptions, pending review and approval of Caltrans.</li></ul> <p><b><u>B-DVR 24 ft clearance, w/ no walls/Boat Section</u></b></p> <p>Original HSR profile design was based on preliminary mapping. In addition, in absence of flood elevation information, a conservative approach of keeping TOR 4 ft above average existing ground elevation in the vicinity was</p>
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06/04/2012 ADDENDUM 2 - RFP HSR 11-16



	<p>used to meet the flood elevation requirements.</p> <p>Current draft 30% roadway design, as shown in Exhibit 4 is based on current mapping. It should be noted that as a result of the poor accuracy of the initial mapping (+/- 3 ft accuracy), lower clearance was discovered when using the updated mapping. The current draft 30% design has already adjusted the roadway profile and HST profile to provide additional 1 ft clearance due to the initial mapping accuracy issues.</p> <p>Subsequent evaluation and adjustment of the 30% profile design were conducted based on :</p> <ul style="list-style-type: none"> <li>• Updated mapping (+/- 0.5 ft accuracy)</li> <li>• Estimated flood elevation requirement</li> </ul> <p>Based on FEMA evaluations and maps, 100 year flood event will impact regions near San Joaquin River, Herndon Canal and south of Clinton. <u>Local area adjacent to Clinton Ave. is therefore subject to only localized flooding for which flood agencies use 6 inch water elevation above existing ground/Golden State Blvd..</u> At Clinton crossing, existing ground is at 297.5 ft. Allowing for 0.5 flood elevation (i.e. elevation 298), TOR at 2.5 ft higher will be at minimum elevation of 300.5 ft.</p> <p><u>A track profile with 24 ft clearance below the Clinton overhead structure, will meet flood elevation requirements with no need for boat section.</u></p> <p><b><u>C-DVR 25.5 ft clearance, w/ 1.5 ft deep Wall/Boat Section</u></b></p> <p>The draft 30% HST track profile design shown in Exhibit 4, provides for an intermediate option of 1.5 ft higher 25.5 ft clearance over HSR tracks, by lowering the profile.</p> <p><u>The estimated flood elevation will impact the current 30% design with the DVR 25.5 ft clearance condition, requiring a 1.5 ft wall/boat section.</u></p> <p>As shown in exhibit 7, the draft 30% design HST profile (in black) will have TOR below minimum 300.5 ft level to clear flood elevation requirement, for nearly 1000 ft North of Clinton. This is primarily due to the HST profile adjustment required due to the initial mapping accuracy/errors. To meet flood elevation clearance requirements, it is proposed to consider wall/boat-section to protect track work</p>
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	<p>under the estimated flood elevation condition.</p> <p>It should be noted that Clinton is the interface with Fresno-Bakersfield (FB) section to the South, and that the segment directly south of Clinton transitions to a boat-section, adjacent to Roeding Park. It is feasible to have the boat-section at Clinton transition to the FB boat-section.</p> <p><b><u>D-Standard 27 ft clearance (no DVR), w/ 3 ft Wall/Boat Section</u></b></p> <p>The current draft final 30% design of HSR profile was further refined to examine conditions which can increase clearance under the new Clinton Ave structure from 25.5 ft to the standard 27 ft clearance. As shown in profile design plan in Exhibit 7 (Red line), without increasing the length of the boat-section, the profile of HSR can be revised/steepened to sag another 1.5 ft under Clinton and meet the 27 ft clearance.</p> <p><u>The estimated flood elevation will impact the lowered track profiles to meet the standard 27 ft clearance condition, requiring a 3 ft wall/boat section.</u></p> <p><b><u>Other requirements for Adjusted HST profile</u></b></p> <p>For both the existing 30% design (25.5 ft clearance) as well as the refined profile design (27 ft clearance requiring DVR), the potential design issues to be considered are:</p> <ul style="list-style-type: none"> <li>• May result in more frequent profile rise and fall at constrained locations (Veterans Blvd, Ashlan, Clinton)</li> <li>• For DVR 25.5 ft and Standard 27 ft clearance, where HST tracks are below estimated flood elevation, walls/boat-section maybe required. Additionally, drainage of the lowered HST section may require pump station</li> </ul> <p>As shown in Exhibit 6 calculations, for clearance under the replaced Clinton Ave , the tracks below the estimated requirement for flood elevation clearance (i.e. TOR of 300.5 ft) will be 1.5 ft wall for 25.5 ft clearance. Note that the length of the required walls/boat-section however does not change since the additional clearance is providing by steepening the HST profile grade only. DVR 24 ft clearance option will clear flood elevation requirements with no need for walls/boat sections.</p>
--	--



	<p>Drainage conditions of the low point will have to be refined to investigate feasibility of draining into a nearby flood control facility. In absence of such options, design may consider implementation and operation of a pump station to pump storm water and/or local flood water from the low point. As noted earlier, the pump station near Clinton can be considered in conjunction with the boat-section design of the FB design, adjacent to Roeding Park.</p> <p>The boat-section unit cost is estimated at 18.5M/mile for a 7 ft deep section (\$2M to \$3M for 1000 ft of 1.5 to 3.0 ft deep). Pump stations are estimated at \$3 million, with equipment replacement and O&amp;M equivalent to \$300K per 20 year intervals.</p> <p>The requested DVR for 24 ft clearance under Clinton Overhead will satisfy flood elevation requirements with no need for boat sections. A 1.5 ft or 3.0 ft boat-section (with or without pump station) will be required for both conditions of 25.5 ft DVR, or 27 ft standard clearance conditions, respectively. The local topography however may be draining storm water to the south with limited chance of local flooding at Clinton. This can further be addressed, if the section is transitioned to FB boat-section with lower grade.</p> <p><b><u>Recommendation</u></b></p> <p><b><u>Consider a variance of 25.5 ft clearance, along with flood protection walls/boat section of 1.5 ft in height. Flood elevations are based on local flood agency coordination, and are assumed to be 6 inches above existing Golden State Boulevard surface (existing ground) .</u></b></p> <p><b><u>Justification</u></b></p> <p>Without raising the Clinton Ave profile which has the potential to increase project impact and footprint beyond the DEIR/EIS coverage, refinement of the current draft 30% HST profile design provide the following options:</p> <ol style="list-style-type: none"> <li>1. With an approved DVR, consider 25.5 ft clearance, as permitted for crossing under existing structures, since the existing constraints bounding the replaced Clinton Ave overhead are prohibitive from further adjusting the roadway profile. In addition may need</li> </ol>
--	--



	<p>to use 1.5 ft deep boat-section and pump station to protect track work from the estimated flood elevation.</p> <p>Note that since the FB section immediately south of Clinton uses a boat section adjacent to Roeding Park, this alternative will provide a compatible design, while meeting clearance requirements.</p>																														
<b>RAILROAD SYSTEMS</b>	N/A																														
<b>RELIABILITY / FUNCTIONALITY</b>	N/A																														
<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	<p>Raising Clinton Ave profile will require coordination and approval by Caltrans and City of Fresno.</p> <p>Drainage of the boat-section storm water and flood water may require coordination with local flood protection agencies</p>																														
<b>SAFETY AND SECURITY</b>	N/A																														
<b>DIRECT COST</b>	<table border="1"> <tr> <td colspan="2" style="text-align: center;"><b>Raising Clinton Roadway profile and revising Interchange *</b></td> </tr> <tr> <td>Other</td> <td>Changes beyond DEIR/EIS footprint, requiring reevaluation, cost associated with additional engineering, environmental and delays</td> </tr> <tr> <td colspan="2">* assume profile raised so there is no boat section</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>24 ft Clearance DVR (no need for boat-section/ pump station)</b></td> </tr> <tr> <td colspan="2">No additional cost</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>RECOMMENDED OPTION</b></td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>25.5 ft Clearance DVR + 1.5 ft wall/boat-section and pump station</b></td> </tr> <tr> <td>Wall/Boat Section</td> <td>\$2M (1.5 ft deep)</td> </tr> <tr> <td>Pump equipment</td> <td>\$0.5M</td> </tr> <tr> <td>Pump Station &amp; facility</td> <td>\$2.5 Million</td> </tr> <tr> <td>Reoccurring pump replacement cost</td> <td>\$300 K/20 years</td> </tr> <tr> <td>Other</td> <td>General maintenance</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>27 ft Clearance, No DVR + 3.0 ft wall/boat-section and pump station</b></td> </tr> <tr> <td>Wall/Boat Section</td> <td>\$3M (3.0 deep)</td> </tr> <tr> <td>Pump equipment</td> <td>\$0.5M</td> </tr> </table>	<b>Raising Clinton Roadway profile and revising Interchange *</b>		Other	Changes beyond DEIR/EIS footprint, requiring reevaluation, cost associated with additional engineering, environmental and delays	* assume profile raised so there is no boat section		<b>24 ft Clearance DVR (no need for boat-section/ pump station)</b>		No additional cost		<b>RECOMMENDED OPTION</b>		<b>25.5 ft Clearance DVR + 1.5 ft wall/boat-section and pump station</b>		Wall/Boat Section	\$2M (1.5 ft deep)	Pump equipment	\$0.5M	Pump Station & facility	\$2.5 Million	Reoccurring pump replacement cost	\$300 K/20 years	Other	General maintenance	<b>27 ft Clearance, No DVR + 3.0 ft wall/boat-section and pump station</b>		Wall/Boat Section	\$3M (3.0 deep)	Pump equipment	\$0.5M
<b>Raising Clinton Roadway profile and revising Interchange *</b>																															
Other	Changes beyond DEIR/EIS footprint, requiring reevaluation, cost associated with additional engineering, environmental and delays																														
* assume profile raised so there is no boat section																															
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<b>RECOMMENDED OPTION</b>																															
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Wall/Boat Section	\$3M (3.0 deep)																														
Pump equipment	\$0.5M																														

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



	Pump Station & facility	\$2.5 Million
	Reoccurring pump replacement cost	\$300 K/20 years
	Other	General maintenance
<b>OTHER</b>	Raising the profile of the roadway will result in change of project footprint, additional ROW impact, environmental and engineering effort, delays in environmental, design as well as procurement package 1 (ARRA)	

**Part 4 – Mitigation Measures**


**Part 5 – List of Supporting Documentation to Design Variance Request**

<b>ANALYSIS</b>	See discussion above, attached exhibits, and draft 30% design plans.
<b>PUBLICATION/STANDARDS EXTRACTS</b>	N/A
<b>RISK ASSESSMENT</b>	N/A
<b>DRAWINGS</b>	See Exhibits 1 thru 5, and 7
<b>CALCULATIONS</b>	See Exhibit 6 for recommended case
<b>EXPERT TESTIMONIALS</b>	N/A
<b>CORRESPONDENCE</b>	N/A
<b>OTHER</b>	

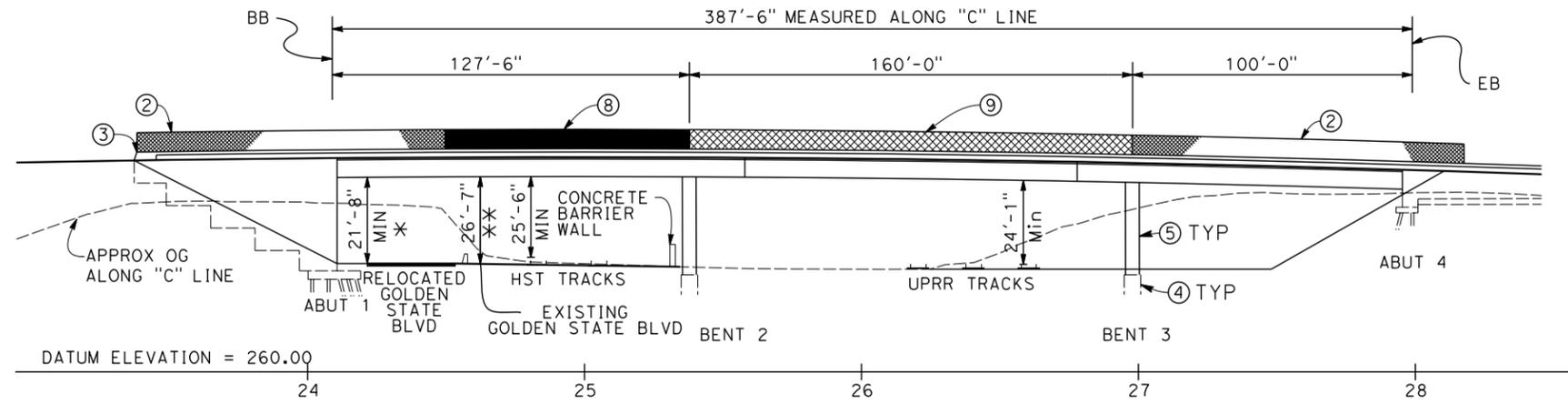
Do not attach superfluous materials, such as complete project plan sets or engineering reports unless specifically requested.



1/16/2012 9:21:36 AM CAHSR-R1-TBL\_CHSR\_half\_black.plt C:\Users\pwalker\Documents\NDMPProj\356751 - California High Speed Rail - SR99\_Improvements\X-15-ST-K1013-R99.DGN

BVC 19+74.00 ELEV 320.97  
 4.95%  
 1100' VC R/C = 0.99%/STA  
 EVC 30+74.00 ELEV 315.23  
 -6.00%

**PROFILE GRADE**  
 NO SCALE



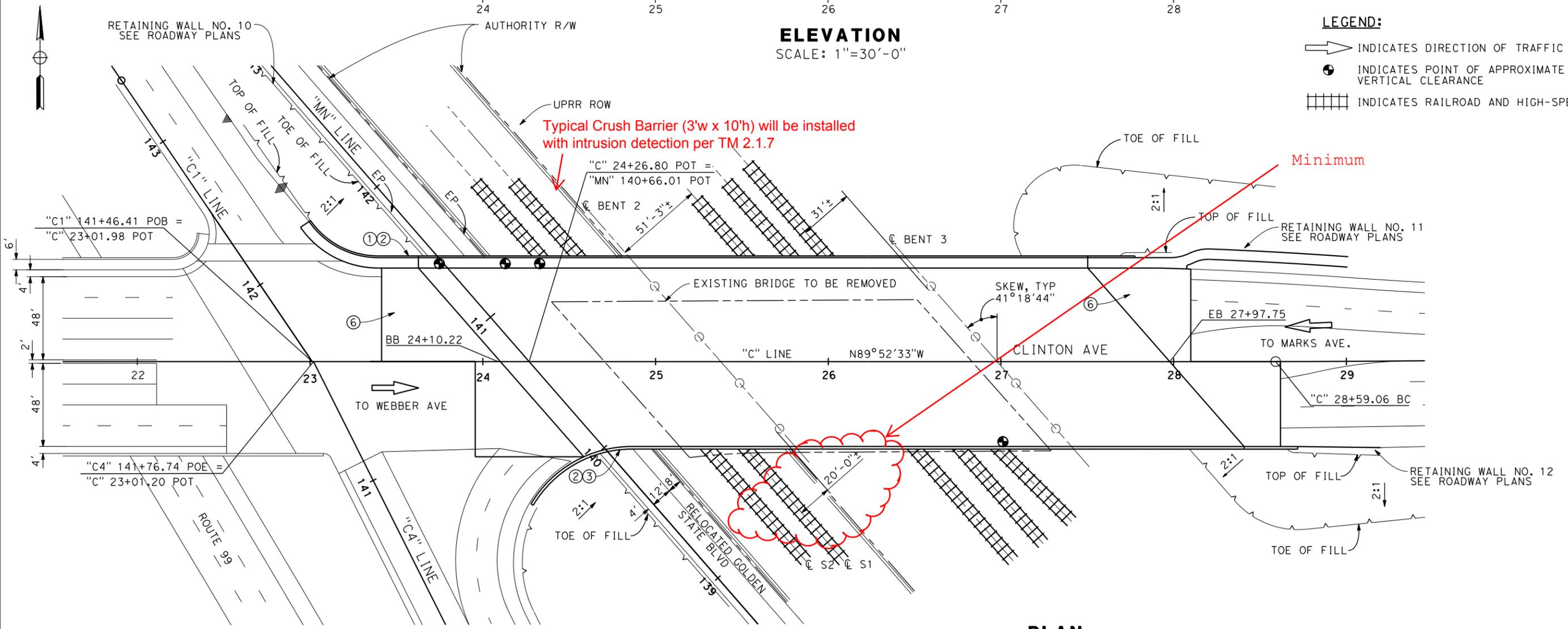
**NOTES:**

- ① CONCRETE BARRIER (TYPE 26 MODIFIED)
- ② CHAIN LINK RAILING (TYPE 7 MODIFIED)
- ③ CONCRETE BARRIER (TYPE 736 MODIFIED)
- ④ 6'-0" DIA CIDH PILE
- ⑤ 5'-6" DIA COLUMN
- ⑥ STRUCTURE APPROACH, TYPE N(30S)
- ⑦ EXISTING UPRR ROW TO BE CONFIRMED ON SITE
- ⑧ AR FENCE WITH SOLID PLATE
- ⑨ AR FENCE
- \* TEMPORARY FALSEWORK CLEARANCE = 19'-9" FALSEWORK DEPTH = 1'-10"
- \*\* TEMPORARY FALSEWORK CLEARANCE = 24'-8" FALSEWORK DEPTH = 1'-10"

**ELEVATION**  
 SCALE: 1"=30'-0"

**LEGEND:**

- ➔ INDICATES DIRECTION OF TRAFFIC
- INDICATES POINT OF APPROXIMATE MINIMUM VERTICAL CLEARANCE
- ▨▨▨▨ INDICATES RAILROAD AND HIGH-SPEED TRAIN TRACK



**PLAN**  
 SCALE: 1"=30'-0"

Clinton Avenue - Exhibit 1

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
D. FREDERICKS  
 DRAWN BY  
P. WALKER  
 CHECKED BY  
H. STRANDGAARD  
 IN CHARGE  
F. NOBARI  
 DATE  
12/08/11

**PROPOSED  
 PRELIMINARY  
 DESIGN**

**NOT FOR  
 CONSTRUCTION**

**AECOM**  
 Technical Services, Inc.  
 2020 L Street, Suite 300  
 Sacramento, CA 95811

**CH2MHILL**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**MERCED TO FRESNO**  
 PACKAGE 1A  
 ROADWAY  
 FRESNO YARD OVERHEAD (CLINTON/UPRR)  
 GENERAL PLAN

CONTRACT NO.	
DRAWING NO.	ST-11017
SCALE	AS SHOWN
SHEET NO.	

**CURVE DATA**

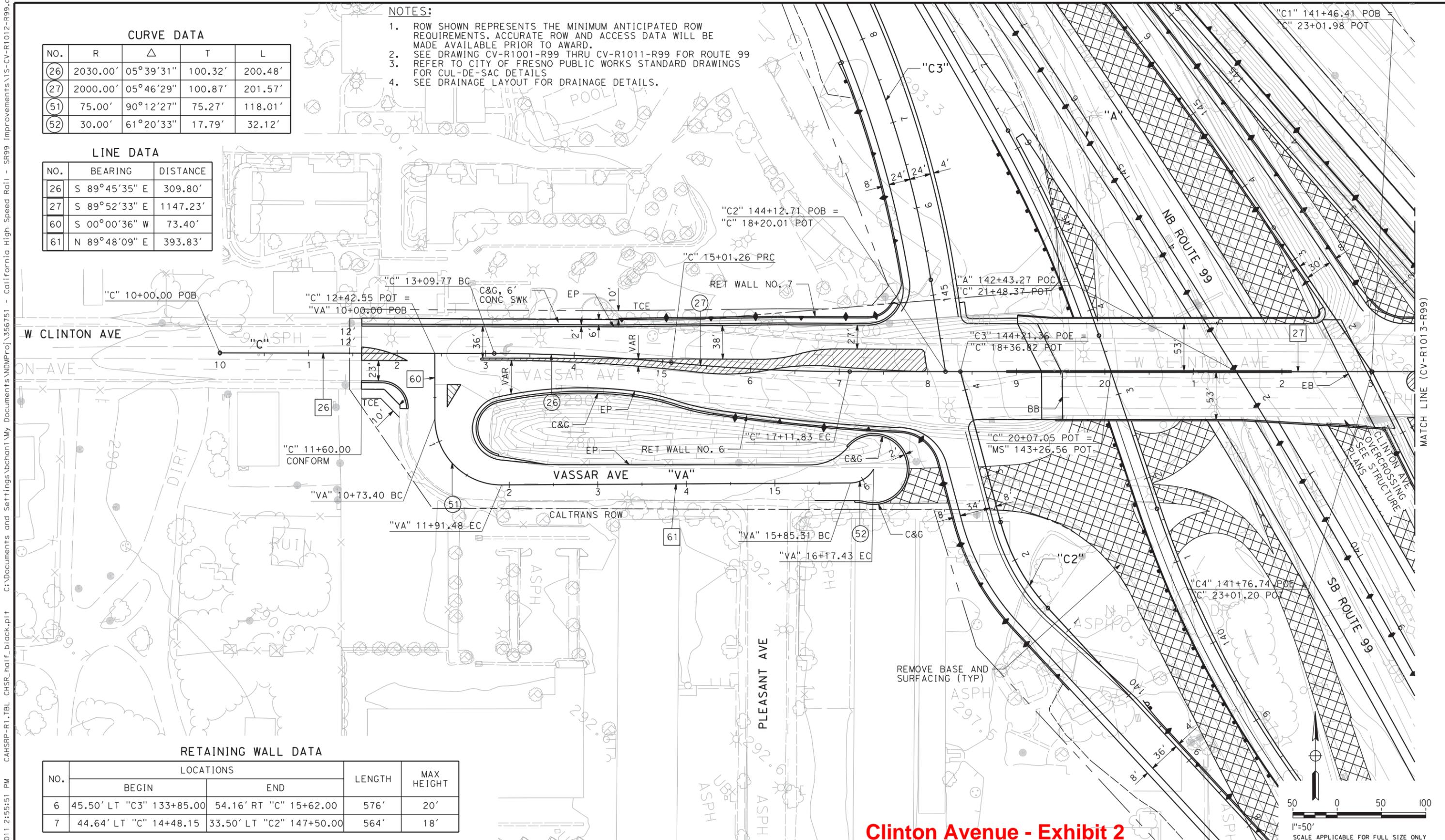
NO.	R	Δ	T	L
26	2030.00'	05°39'31"	100.32'	200.48'
27	2000.00'	05°46'29"	100.87'	201.57'
51	75.00'	90°12'27"	75.27'	118.01'
52	30.00'	61°20'33"	17.79'	32.12'

**LINE DATA**

NO.	BEARING	DISTANCE
26	S 89°45'35" E	309.80'
27	S 89°52'33" E	1147.23'
60	S 00°00'36" W	73.40'
61	N 89°48'09" E	393.83'

**NOTES:**

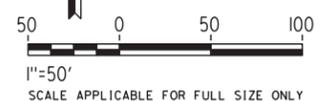
1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO AWARD.
2. SEE DRAWING CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



**RETAINING WALL DATA**

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
6	45.50' LT "C3" 133+85.00	54.16' RT "C" 15+62.00	576'	20'
7	44.64' LT "C" 14+48.15	33.50' LT "C2" 147+50.00	564'	18'

**Clinton Avenue - Exhibit 2**



REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
**G. MANOREK**  
DRAWN BY  
**R. MITRY**  
CHECKED BY  
**L. HEUSTON**  
IN CHARGE  
**F. NOBARI**  
DATE  
**09/30/2011**

**PROPOSED  
PRELIMINARY  
DESIGN**

**NOT FOR  
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION**

PACKAGE 1  
ROADWAY  
LAYOUTS  
SR 99 RE-ALIGNMENT

CONTRACT NO.  
DRAWING NO.  
CV-R1012-R99  
SCALE  
AS SHOWN  
SHEET NO.

9/27/2011 2:55:51 PM CAHSR-R1-TBL CHSR\_half\_black.plt C:\Documents and Settings\bchan1\My Documents\NDMP\Proj\_356751 - SR99 Improvements\15-CV-R1012-R99.dgn

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

MATCH LINE (CV-R1013-R99)

9/27/2011 2:57:28 PM CAHSR-R1-TBL CHSR\_half\_black.plt C:\Documents and Settings\bchan1\My Documents\NDMP\Proj\_356751 - California High Speed Rail - SR99 Improvements\15-CV-R1013-R99.dgn

**CURVE DATA**

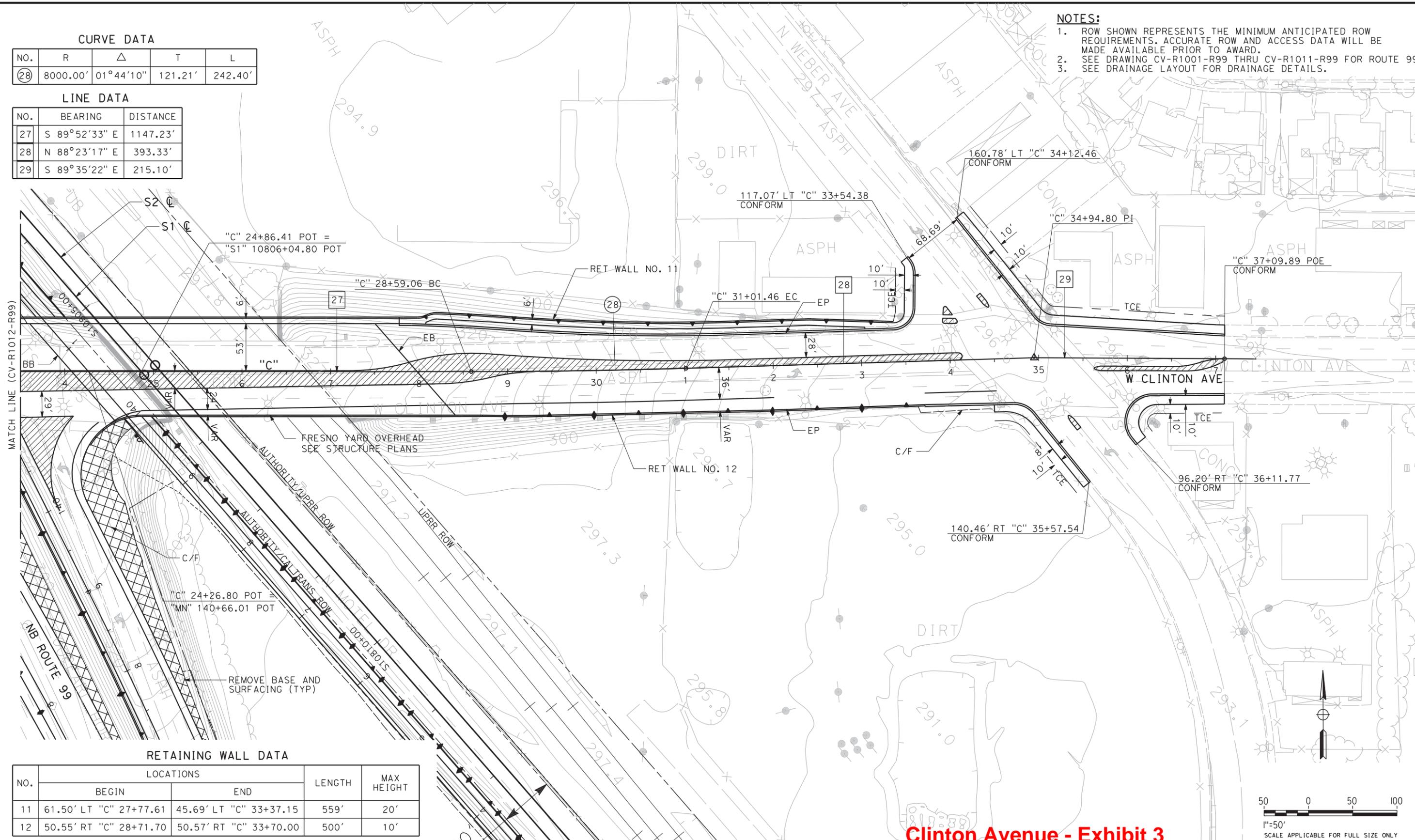
NO.	R	Δ	T	L
28	8000.00'	01°44'10"	121.21'	242.40'

**LINE DATA**

NO.	BEARING	DISTANCE
27	S 89°52'33" E	1147.23'
28	N 88°23'17" E	393.33'
29	S 89°35'22" E	215.10'

**NOTES:**

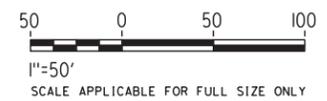
1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO AWARD.
2. SEE DRAWING CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



**RETAINING WALL DATA**

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
11	61.50' LT "C" 27+77.61	45.69' LT "C" 33+37.15	559'	20'
12	50.55' RT "C" 28+71.70	50.57' RT "C" 33+70.00	500'	10'

**Clinton Avenue - Exhibit 3**



REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
G. MANOREK  
DRAWN BY  
R. MITRY  
CHECKED BY  
L. HEUSTON  
IN CHARGE  
F. NOBARI  
DATE  
09/30/2011

**PROPOSED PRELIMINARY DESIGN**

**NOT FOR CONSTRUCTION**

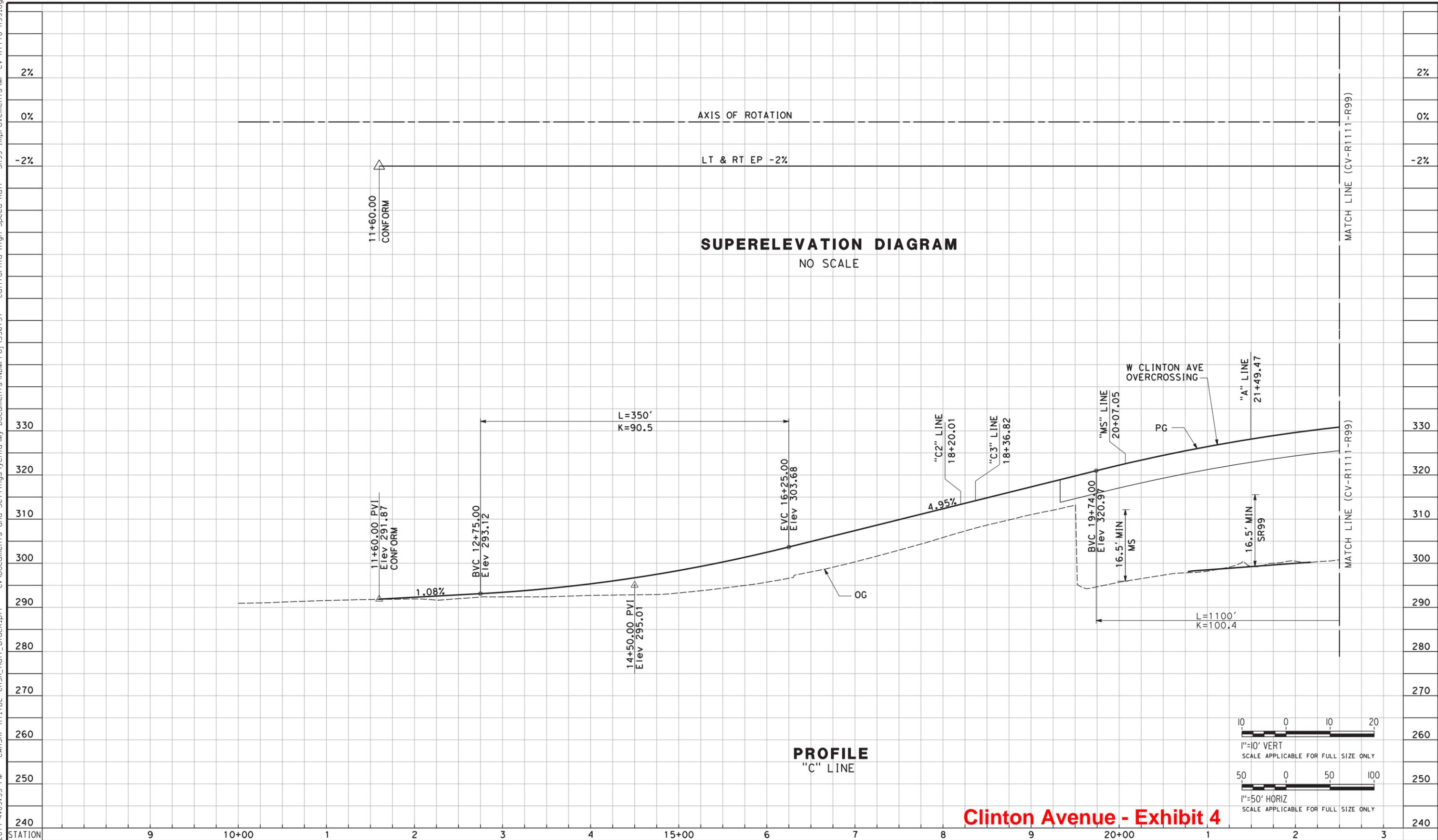


**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**SIERRA SUBDIVISION**  
PACKAGE 1  
ROADWAY LAYOUTS  
SR 99 RE-ALIGNMENT

CONTRACT NO.  
DRAWING NO.  
CV-R1013-R99  
SCALE  
AS SHOWN  
SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

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REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
G. MANOREK  
 DRAWN BY  
B. CHAN  
 CHECKED BY  
L. HEUSTON  
 IN CHARGE  
F. NOBARI  
 DATE  
09/30/2011

**PROPOSED  
PRELIMINARY  
DESIGN**  
  
**NOT FOR  
CONSTRUCTION**

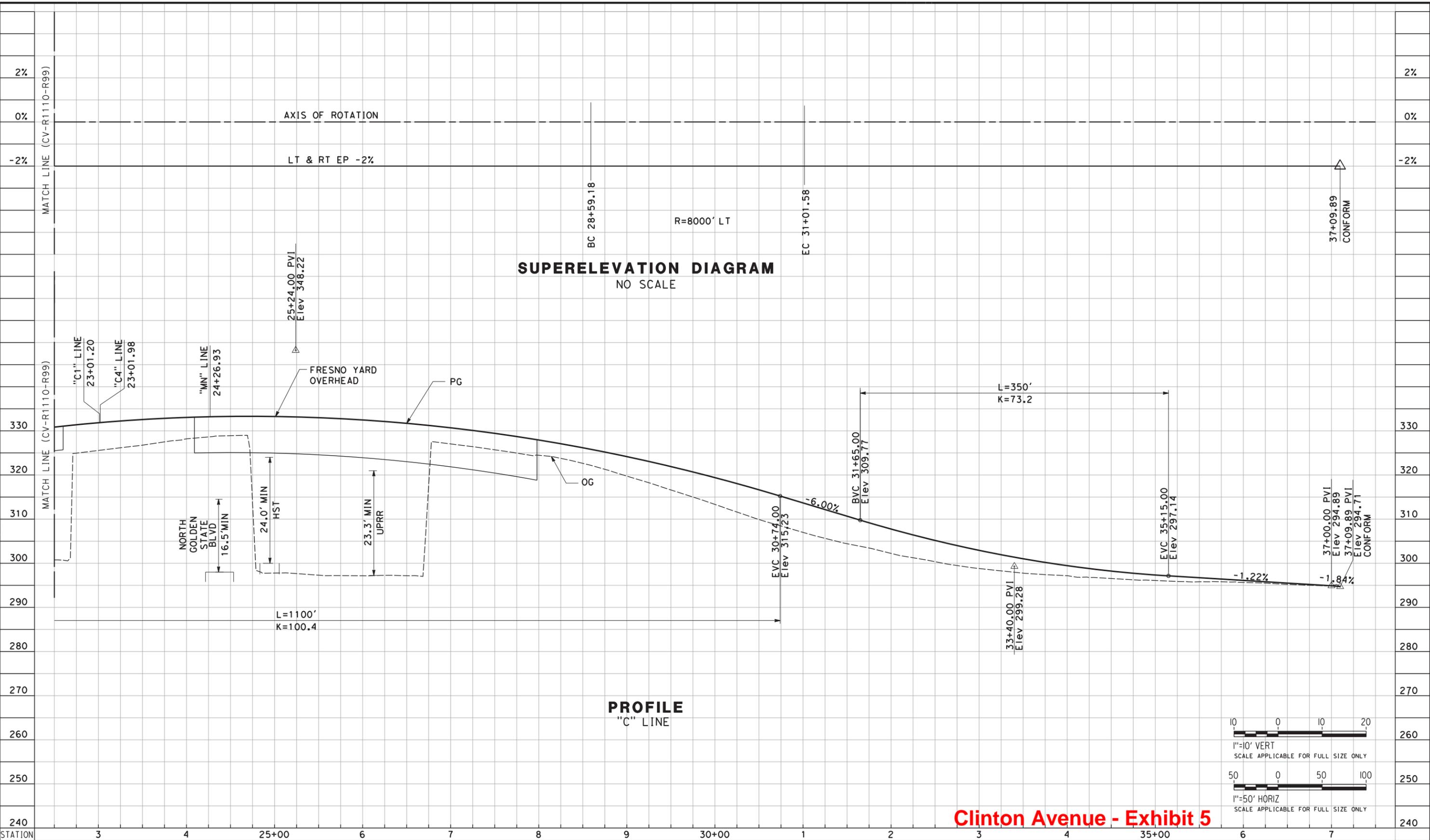


**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**SIERRA SUBDIVISION**  
 PACKAGE 1  
 ROADWAY  
 PROFILE AND SUPERELEVATION  
 SR 99 RE-ALIGNMENT

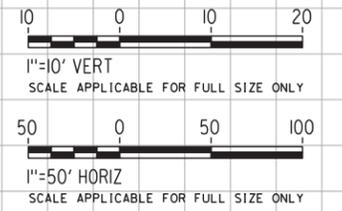
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CV-R1110-R99  
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AS SHOWN  
 SHEET NO.

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**Clinton Avenue - Exhibit 5**



REV	DATE	BY	CHK	APP	DESCRIPTION
A	##/##/##	XX	XX	XX	

DESIGNED BY  
G. MANOREK  
 DRAWN BY  
B. CHAN  
 CHECKED BY  
L. HEUSTON  
 IN CHARGE  
F. NOBARI  
 DATE  
09/30/2011

**PROPOSED  
PRELIMINARY  
DESIGN**  
  
**NOT FOR  
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**SIERRA SUBDIVISION**  
 PACKAGE 1  
 ROADWAY  
 PROFILE AND SUPERELEVATION  
 SR 99 RE-ALIGNMENT

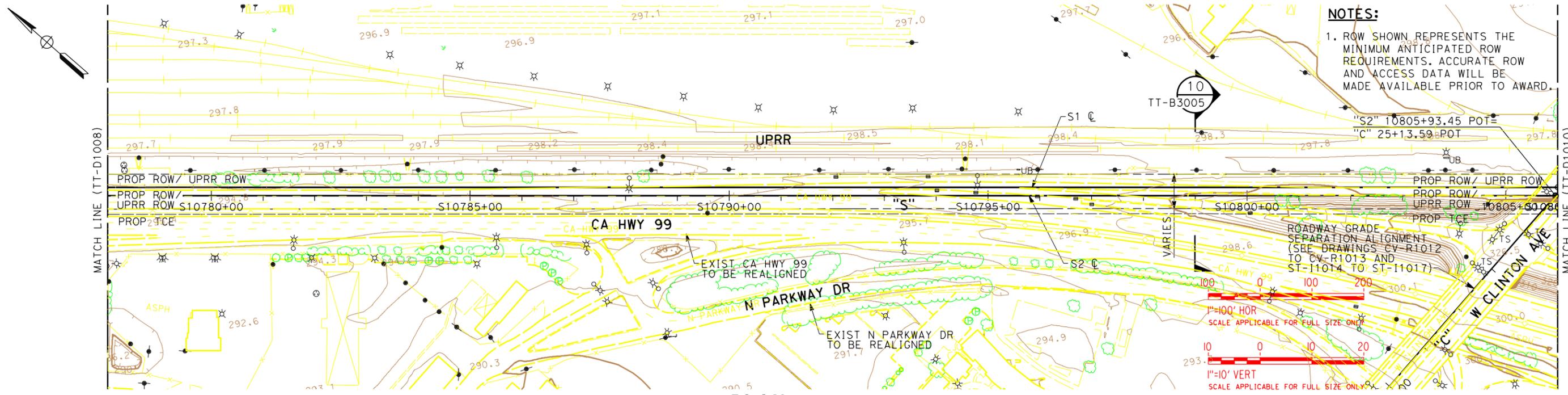
CONTRACT NO.  
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CV-R1111-R99  
 SCALE  
AS SHOWN  
 SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

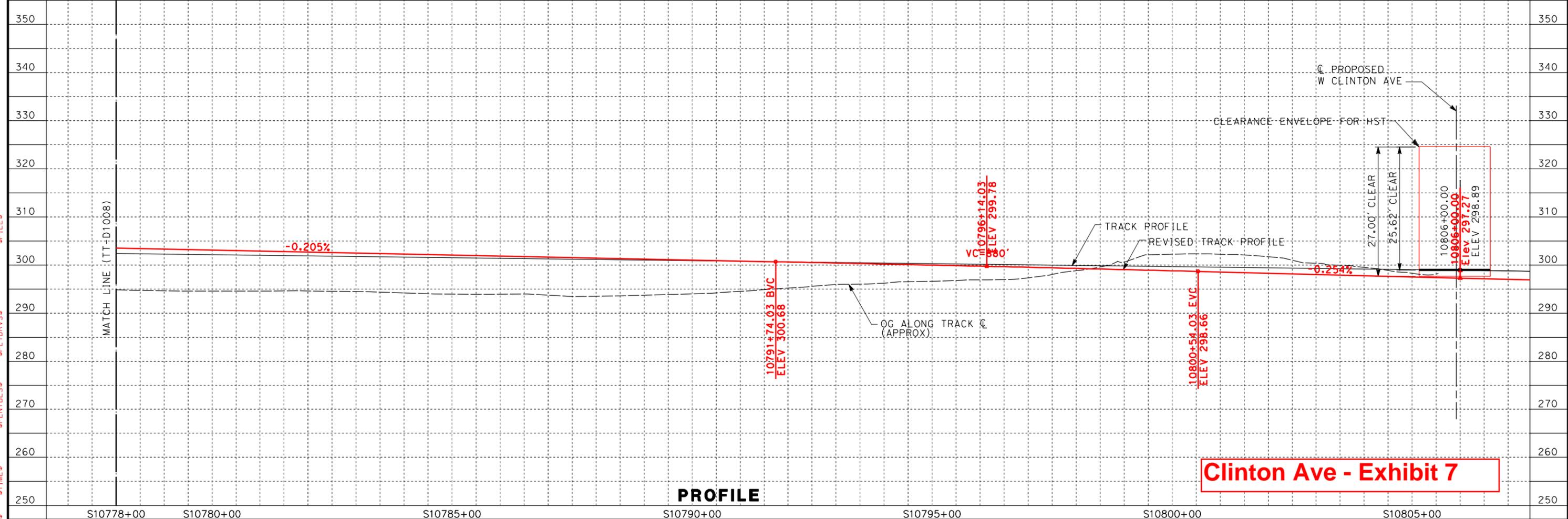
**Exhibit 6**

**25.5' Min Vertical Clearance (Recommended)**

CLINTON AVE					
Structure Depth =	7.33'				
Clearance Check Locations:	STA ("C")	CL ELEV	Offset	EP ELEV	Soffit ELEV
A - NB Track	24+54.58	333.28	61.50	332.05	324.72
B - NB Track	25+52.49	332.97	50.53	331.96	324.63
<b>C - SB Track</b>	<b>24+32.67</b>	<b>333.22</b>	<b>61.50</b>	<b>331.99</b>	<b>324.66</b>
D - SB Track	25+30.57	333.12	50.53	332.11	324.78
Clearance Check Locations:	STA ("S1" or "S2")	TOR ELEV	Vert Clr (Soffit - TOR)		
A - NB Track	10805+28.13	297.98	<b>26.74</b>		
B - NB Track	10806+76.72	298.80	<b>25.83</b>		
<b>C - SB Track</b>	<b>10805+13.71</b>	<b>299.00</b>	<b>25.66 Min</b>		
D - SB Track	10806+62.30	298.82	<b>25.96</b>		



**PLAN**



**PROFILE**

**Clinton Ave - Exhibit 7**

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY  
A. SHIELDS  
 DRAWN BY  
H. SULLIVAN  
 CHECKED BY  
A. BOONE  
 IN CHARGE  
A. BOONE  
 DATE  
10/10/2011

**PROPOSED  
PRELIMINARY  
DESIGN**

**NOT FOR  
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT  
SIERRA SUBDIVISION  
PACKAGE 1  
TRACK GUIDEWAY  
PLAN AND PROFILE  
STA. 10778+00 TO 10806+00**

CONTRACT NO.  
DRAWING NO.  
TT-D1009  
SCALE  
AS SHOWN  
SHEET NO.

06/04/2012 ADDENDUM 2 - RFP HSR 11-16



**CHST DESIGN VARIANCE REQUEST FORM**

**Part 1 – Design Variance Request Information**

**Title/Subject: Traverse Utility Encroachment**

**Number: URS-INF-1-0009 Revision: 1**

**Contract Name & Number (Final Design): HSR 06-0003**

**Region: Fresno - Bakersfield**

**Location: Fresno**

**Regional Consultant's / Third Party Design Drawing Reference:**

**Date Submitted to RMT & PMT**

<p>PREPARED / SUBMITTED BY:</p> <p>NAME: James A. Labanowski Jr., P.E.</p> <p>COMPANY: URS/HMM/Arup A Joint Venture Company</p> <p>SIGNATURE: <i>James A. Labanowski Jr.</i></p> <p>DATE: 01/10/12</p>	
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*\*Note design variance numbers will follow the same convention: "ABC" will abbreviate the name of the firm submitting the variance, "DEF" abbreviates the name of firm receiving the variance request, "X" is the revision number starting from 0, and the last four numbers count the number of total submittals starting from one.*

06/04/2012 ADDENDUM 2 - RFP HSR 11-16

**Part 2 – Design Variance Request Information**

<p><b>CHSTP DESIGN REQUIREMENT</b></p>	<p>TM 2.7.5 Designer’s Responsibilities and Utility Requirements for 30% Design Level</p>
<p><b>DESIGN CRITERIA REQUIRING A VARIANCE</b></p>	<p>TM 2.7.5 Section 6.6.1 – Underground Utilities, states, “At trench sections of the CHSTP, 8 feet or less from the original ground, the utilities shall cross under CHSTP trench sections in casing and top of casing shall be at minimum 8 feet below top of rail. Where the CHSTP trench section is deep, utilities shall cross over the trench section in a utility bridge that spans the entire width of trench section.”</p>
<p><b>REASON FOR REQUESTING VARIANCE</b></p>	<p>The existing 96-inch storm drain would be in direct conflict with the trench. The bottom of the trench is proposed to be approximately 40 feet below the original ground at the existing 96-inch storm drain. A utility crossing at this location would induce significant risk and liabilities associated with pipe failure.</p> <p>Therefore, the existing 96-inch storm drain will be re-routed north of Belmont Ave in order to provide a more favorable crossing. The 96-inch storm drain will turn south and run between Roeding Park and the trench for approximately 500 feet. In this area the trench is planned to be approximately 11 feet from the edge of Roeding Park. Horizontally, the storm drain will be conveyed in a box culvert outside the CHSTP right-of-way (ROW). At the crossing, the 96-inch storm drain will pass under the trench structure when the bottom of the trench is more than 8 feet from original ground. Exhibits in Appendix A illustrate how this pipe could be relocated.</p>
<p><b>JUSTIFICATION FOR VARIANCE</b></p>	<p>To cross at a point where the bottom of trench is 8 feet or less from the original ground would relocate the pipe an additional 600 feet north of the proposed crossing location. The distance between the CHSTP ROW and Roeding Park is smaller at this point compared to the proposed crossing location and would likely result in a substandard horizontal clearance. Achieving the standard vertical clearance for the 96-inch storm drain would require an additional 1,200 feet of pipe, excavation to lower a portion of the existing basin floor, and installation of a ramp for maintenance access to the proposed outlet structure. This type of impact to the existing basin has not been cleared environmentally.</p> <p>The addition of another 1,200 feet of 96-inch pipe would unnecessarily impact several more utilities and would prove more difficult to construct outside the CHSTP ROW being within the area having reduced spacing between Roeding Park and the CHSTP ROW.</p> <p>In that case achieving the standard horizontal clearances for the 96-</p>

	<p>inch storm drain using a standard circular pipe would require either an encroachment into Roeding Park, an encroachment into Union Pacific Railroad (UPRR) right-of-way, a substandard CHSTP right-of-way, or a design variance for the longitudinal encroachment.</p> <p>Roeding Park is a Section 4(f) property and is not to be impacted by the footprint of the CHSTP. UPRR will not allow the CHSTP to encroach upon their right-of-way. A substandard CHSTP right-of-way is not practicable due to the complexity of construction for the trench in the area. Every effort is being made to avoid the necessity of a design variance for a longitudinal encroachment as a highest goal.</p> <p>Possible alternatives include having the 96-inch storm drain maintain its existing horizontal alignment but cross under the trench at a deeper location. The bottom of the trench is approximately 40 feet below original ground at this location and a utility crossing here carries a higher risk.</p> <p>An additional alternative would be a utility crossing over the CHSTP, which would require a pump station. The FMFCD considers pump stations undesirable due to maintenance and associated liabilities.</p> <p>The existing 96-inch storm drain is the outlet into Basin RR-2 for approximately 1,170 acres of urban development in Fresno. To be relocated along the existing horizontal alignment the depth of the existing storm drain would require a pump for the pipe to cross over the trench section. The liability of a pump failure and the subsequent flooding that would occur upstream, and possibly spill in to the trench section, is much greater than the encased pipe below and alongside the trench. The large flows into Basin RR-2 during large rain events render the pumps impracticable.</p>
<p><b>PROPOSED ALTERNATIVE DESIGN REQUIREMENT</b></p>	<p>Require 100+ year design life, plus casing, and increased inspections for all utilities crossing under a trench section deeper than 8 feet from original ground.</p>

**Part 3 – Impact Analysis**

<p><b>OPERATIONS</b></p>	<p>There are no additional CHSTP operations impacts identified from this variance request.</p>
<p><b>MAINTENANCE</b></p>	<p>There are no additional CHSTP maintenance impacts identified from this variance request.</p>
<p><b>INFRASTRUCTURE</b></p>	<p>There are no additional CHSTP infrastructure impacts identified from this variance.</p>
<p><b>RAILROAD SYSTEMS</b></p>	<p>There are no additional CHSTP railroad systems impacts identified from this variance request.</p>
<p><b>RELIABILITY / FUNCTIONALITY</b></p>	<p>Would increase reliability compared to a pump option.</p>

<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	The Fresno Metropolitan Flood Control District, owner and operator of the 96-inch storm drain, prefers this option to the pump on the east side of UPRR.
<b>SAFETY AND SECURITY</b>	There are no additional CHSTP safety and security impacts identified from this variance request.
<b>DIRECT COST</b>	Accommodating the CHSTP criteria for transverse utilities could result in two separate and distinct cost and schedule delays. The first could be associated with shifting UPRR to the east to provide the required area between the CHSTP ROW and Roeding Park to place the storm drain. The second could be the construction complexity and related costs associated constructing the trench structure within a reduced CHSTP ROW to allow for the storm drain to existing between Roeding Park and the CHSTP ROW.
<b>OTHER</b>	None identified

**Part 4 – Mitigation measures**

<b>THIRD PARTY (Utility, Freight, Caltrans, RR, other)</b>	Contribute to increased inspections of the 96-inch storm drain to ensure its integrity.
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**Part 5 – List of Supporting Documentation to Design Variance Request**

<b>ANALYSIS</b>	N/A
<b>PUBLICATION/STANDARD EXTRACTS</b>	N/A
<b>RISK ASSESSMENT</b>	N/A
<b>DRAWINGS</b>	N/A
<b>CALCULATIONS</b>	N/A
<b>EXPERT TESTIMONIALS</b>	N/A
<b>CORRESPONDENCE</b>	N/A
<b>OTHER</b>	Memorandum: CHSR Fresno to Bakersfield, 96-inch Storm Drain and Fresno Grade Separation Construction Alternative Analysis

## **Appendix A**

Memorandum: CHSR Fresno to Bakersfield, 96-inch Storm Drain and Fresno Grade Separation  
Construction Alternative Analysis



## URS/HMM/Arup Joint Venture

2495 Natomas Park Drive, Suite 530

Sacramento, CA 95833

Tel: 916-399-0580

Fax: 916-399-0582

# MEMORANDUM

**To:** Tom Tracy, Regional Manager  
**cc:** Melisa Bittancourt, Johnny Kuo, Richard Prust, Tim Corcoran, Andrew Armstrong  
**From:** James Labanowski, Utility Discipline Lead  
**Date:** December 15, 2011  
**Subject:** CHSR Fresno to Bakersfield, 96-inch Storm Drain and Fresno Grade Separation Construction Alternative Analysis

## INTRODUCTION

The existing 96-inch storm drain near Belmont Avenue is in conflict with the Fresno Grade Separation (Trench) of the HST. In order to resolve this conflict the 96-inch storm drain has been relocated to the north of its existing alignment as shown in the 30% Design plans. This memorandum will discuss pertinent background information and potential construction alternatives for the Trench and relocation of the 96-inch storm drain.

## BACKGROUND

Alternatives were developed by the URS/HMM/Arup Joint Venture (JV) in coordination with the PMT and Fresno Metropolitan Flood Control District (FMFCD) for the relocation of the existing 96-inch storm drain. Direction was given by the PMT to include in the 30% Design plans Alternative 3 (Gravity Under HST, Reroute System) from the memorandum titled "CHSR Fresno to Bakersfield, 96-inch Storm Drain at Fresno Grade Separation Alternative Analysis" dated September 9, 2011.

The proposed 96-inch storm drain relocation will cross under the Trench in a more favorable location, compared to its existing horizontal alignment, and then parallel the Trench adjacent to Roeding Park. There is approximately 9 feet between the edge of the HST ROW and the boundary of Roeding Park and approximately 6 feet between the outside of the Trench and HST ROW. Roeding Park is a Section 4(f) property and as such is not to be impacted by the construction of the HST.

Three viable construction alternatives were developed and discussed at a meeting held November 17, 2011. Concern was voiced at this meeting by the PMT and EMT regarding the increased longitudinal encroachment and impacts to HST operations when maintenance is required for the 96-inch storm drain. As a result the EMT requested the development of an alternative using a box culvert integrated into the shoring wall that did not encroach into the HST ROW. All four alternatives are presented in the following section. Figures for each alternative are included as attachments.

## ALTERNATIVES

### Common Features

Common to all alternatives is a steel casing that will be jacked under UPRR and placed first under the Trench. The 96-inch reinforced concrete pipe storm drain will then be placed

Tom Tracy  
December 15, 2011  
Page 2



within the casing. Additionally, the portion of 96-inch storm drain that is longitudinal to the HST alignment will be constructed prior to the Trench. The longitudinal section of the storm drain will also be placed in a steel casing. Then the construction of the Trench itself will begin.

#### **Alternative 1 – Shoring Wall at Roeding Park Boundary**

Alternative 1, presented in Attachment A, proposes using a shoring wall along the boundary of Roeding Park. The shoring wall along the Roeding Park Boundary would be constructed first and allow the construction of the 96-inch storm drain across and longitudinal to the HST alignment. The shoring wall could also be used to form against for one wall of the junction box. The manhole access to the junction boxes would be placed outside the HST ROW. For this alternative, approximately 4.9 feet of the pipe's diameter would encroach into the HST ROW. The outside of the 96-inch storm drain would be approximately 0.7 feet from the outside of the Trench structure.

Concerns over future replacement of the pipe could be mitigated for the longitudinal encroachment by including a stem in the trench structure extending down past the bottom of the 96-inch storm drain to allow for future excavation and removal of the 96-inch storm drain without compromising the integrity of the Trench structure. However, it is doubtful that maintenance of the 96-inch storm drain would require the removal of the pipe. Given the large diameter of the pipe, maintenance activities would more likely occur from inside the pipe.

#### **Alternative 2 – Trench Plate, Flowable Concrete Backfill**

Alternative 2, presented in Attachment B, proposes a solution using thin, removable shoring, such as trench plates with hydraulic bracing, and a flowable concrete backfill of the area excavated for the longitudinal 96-inch storm drain construction. The 96-inch storm drain would be constructed longitudinally to the HST alignment using trench plates. Junction boxes would be constructed with wooden forms between the trench plates. In this alternative the 96-inch storm drain encroaches into the HST ROW by approximately 2.7 feet. The outside of the 96-inch storm drain would be approximately 2.9 feet from the outside of the trench structure. For this alternative the excavated area would be backfilled with a flowable concrete mixture.

Future replacement of the pipe is not anticipated. The flowable concrete backfill would encase the pipe and maintenance could occur from the inside of the pipe thereby negating the need to remove the pipe. One potential benefit of Alternative 2 would be the possible use of the concrete backfill in lieu of a separate shoring wall. Further structural analysis and geotechnical investigations would be needed to verify this option. If use of the flowable concrete backfill cannot be substantiated a shoring wall would be necessary and Alternative 2 would effectively become Alternative 3.

#### **Alternative 3 – Trench Plate, Shoring Wall Adjacent to Trench Wall**

Alternative 3, presented in Attachment C, proposes a solution using thin, removable shoring, such as trench plates with hydraulic bracing, and a shoring wall adjacent to the Trench. The 96-inch storm drain would be constructed longitudinally to the HST alignment using trench plates. The junction boxes would be constructed with wooden forms between the trench plates. In this alternative the 96-inch storm drain encroaches into the HST ROW by approximately 2.7 feet. The outside of the 96-inch storm drain would be approximately 2.9 feet from the outside of the Trench structure. For this alternative the excavated area would

Tom Tracy  
December 15, 2011  
Page 3



be backfilled with compacted soil. A shoring wall would then be constructed adjacent to the Trench wall to allow for the construction of the Trench. In order to construct this alternative the shoring wall needs to be 2.5 feet thick opposed to the standard 3 feet. This is because the 96-inch storm drain would encroach 0.1 feet into the standard shoring wall. There would be approximately 0.4 feet between the outside of the 96-inch storm drain and the shoring wall. Further structural analysis and geotechnical investigations would be needed to verify this option.

This shoring wall would provide for the future excavation and removal of the 96-inch storm drain without compromising the integrity of the Trench structure. There are possible construction complications from the close tolerance between the shoring wall and the 96-inch storm drain. As an option the shoring wall could be removed and any future excavation to the pipe could be accomplished using trench plates.

#### **Alternative 4 – Box Culvert, Shoring Wall Adjacent to Trench Wall**

Alternative 4, presented in Attachment D, presents a proposed solution similar to Alternative 3 but replaces the longitudinal section of 96-inch storm drain with a 6'x10' precast concrete box culvert. The box culvert would be constructed longitudinally to the HST alignment using trench plates. Junction boxes could be modified sections of the precast concrete box culvert.

This shoring wall would provide for the future excavation and removal of the 96-inch storm drain without compromising the integrity of the Trench structure.

The advantage for this alternative is there is no longitudinal encroachment into the HST ROW. However, this alternative presents some drawbacks. The hydraulic behavior of the box culvert will impact the performance of the upstream storm drainage system. There would be a significant cost increase for this option as a substantial structure. Finally, the FMFCD may find this alternative unacceptable given the risk they would assume and the non-standard replacement/maintenance responsibilities and costs.

#### **ESCAPE STAIRS CONSTRUCTION**

As an additional discussion item, concerns were raised over how the construction of the HST Trench escape stairs interacts with the 96-inch storm drain. The placement of the escape stairs for the Trench has been coordinated to not conflict with the 96-inch storm drain. The 96-inch storm drain will be routed away from the Trench south of Roeding Park to avoid a possible conflict with the escape stairs. Attachment E illustrates the placement of the stairs in the vicinity of the relocated 96-inch storm drain.

#### **SOUNDWALL**

Concerns were also raised over the placement and construction of the future soundwall along this portion of the Trench. The specifications will direct the contractor to allow for the future construction of the soundwall. The trench wall or the shoring wall could be used as the base for the soundwall.

Tom Tracy  
December 15, 2011  
Page 4



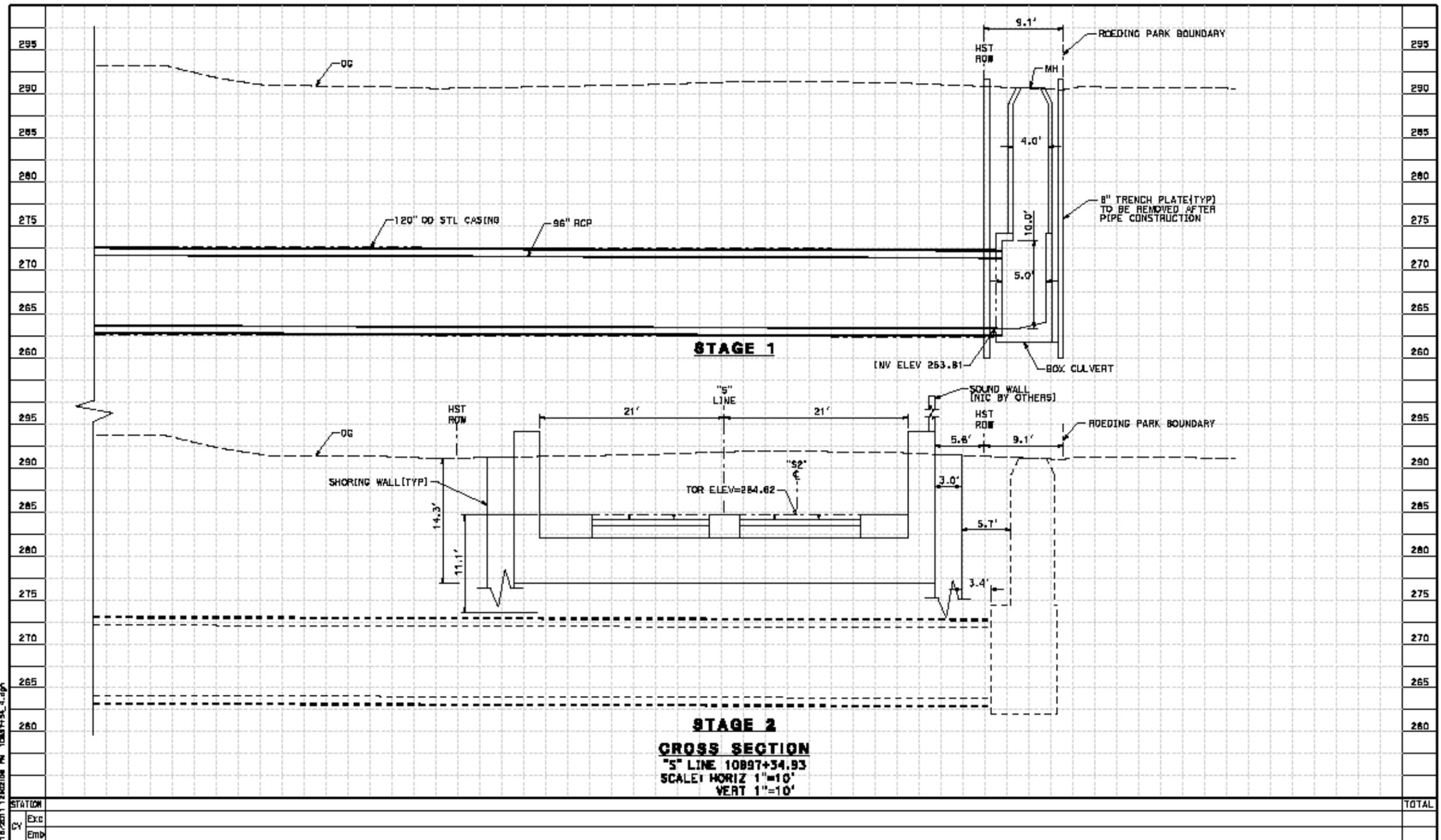
**CONCLUSION**

The intent of this memorandum is to detail possible construction alternatives for the relocation of the 96-inch storm drain and request direction from the PMT and EMT as to which alternative to show in the 30% Final Design Plans. The options presented are all feasible and constructable and could be incorporated into the 30% Final Design Plans.



## **ATTACHMENT D**

**Alternative 4 – Box Culvert, Shoring Wall Adjacent to Trench Wall**



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**DISCLAIMER**  
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PRELIMINARY WORKING DRAFT MATERIALS, SUBJECT TO CHANGE, NOT APPROVED BY THE CHSR.  
DATE: December 8, 2011 SOURCE: SDC DESIGN



**CALIFORNIA HIGH-SPEED TRAIN PROJECT**  
**FRESNO TO BAKERSFIELD**  
**CROSS SECTION**  
**ALTERNATIVE 4**  
**"S" LINE 10897+34.93**

DRAWN BY  
C. ALLEN  
CHECKED BY  
J. LABANOWSKI  
DATE  
12/01/11

06/04/2012 ADDENDUM 2 - RFP HSR 11-16